MVS Diagnosis: Reference
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About this document

This document supports z/OS® (5694-A01).

The two sections in this document are:

- **Part 1, “System Reference”** provides MVS™ system reference material useful for diagnosing system problems. It also contains pointers to other documents that contain more information.

- **Part 2, “Component Reference”** consists of component-specific information describing diagnostic tools and information available for that component.

Who should use this document

This document is intended for anyone who diagnoses system-wide problems. Usually, this person is a systems programmer. The document assumes a solid working knowledge of system functions.

Where to find more information

Where necessary, this document references information in other documents, using shortened versions of the document title. For complete titles and order numbers of the documents for all products that are part of z/OS, see [z/OS Information Roadmap](http://www.s390.ibm.com:80/bookmgr-cgi/bookmgr.cmd/BOOKS/ZIDOCMST/CCONTENT).

### Information updates on the web

For the latest information updates that have been provided in PTF cover letters and Documentation APARs for z/OS, see the online document at:


This document is updated weekly and lists documentation changes before they are incorporated into z/OS publications.

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  GA22-7588-17
• The topic and page number related to your comment
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Summary of changes

This document contains terminology, maintenance, and editorial changes to improve consistency and retrievability. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Changes made in z/OS Version 1 Release 13 as updated September 2012

This document contains information previously presented in z/OS MVS Diagnosis: Reference, GA22-7588-16, which supports z/OS Version 1 Release 13.

New information:
- Instructions have been added for restarting the system logger address space (IXGLOGR). See “Restarting the system logger address space” on page 24-25.
- “HIGHVIRTUAL STAT” on page 21-14 is updated for 1 MB pageable large pages
- “VIRTUAL STAT” on page 21-37 is updated for 1 MB pageable large pages
- “RSMDATA HIGHVIRTUAL subcommand output” on page 21-12 is updated for storage-class memory (SCM)
- “RSMDATA SHRDATA subcommand output” on page 21-29 is updated for storage-class memory (SCM)
- “RSMDATA SUMMARY subcommand output” on page 21-33 is updated for storage-class memory (SCM)
- “RSMDATA VIRTPAGE subcommand output” on page 21-35 is updated for storage-class memory (SCM)
- “ASMCHECK subcommand output” on page 14-1 is updated for storage-class memory (SCM)

Changed information:
- None.

Changes made in z/OS Version 1 Release 13

This document contains information previously presented in z/OS MVS Diagnosis: Reference, GA22-7588-15, which supports z/OS Version 1 Release 12.

New information:
- Chapter 1, “Identifying modules, components, and products,” on page 1-1 contains new entries for Runtime Diagnostics, z/OS Batch Runtime, and Predictive Failure Analysis (PFA)
- A new real storage manager (RSM) report, “RSMDATA HVCOMMON subcommand output” on page 21-16, is now in Chapter 21, “Real Storage Manager (RSM),” on page 21-1.
- IXCMIAPU output has been updated to include new system logger log stream specification. See “Interpreting IXCMIAPU output” on page 24-15.
- System logger latch conventions has been updated. See “System logger latch conventions” on page 24-26.

Changed information:
- None.
Changes made in z/OS Version 1 Release 12

This document contains information previously presented in z/OS MVS Diagnosis: Reference, GA22-7588-14, which supports z/OS Version 1 Release 11.

New information:
- The "Readers' Comments - We'd Like to Hear from You" section at the back of this publication has been replaced with a new section "How to send your comments to IBM" on page xv. The hardcopy mail-in form has been replaced with a page that provides information appropriate for submitting readers comments to IBM.
- The "Relating a Module Prefix to Component and Product" table contains new component ID information. See "Relating a module prefix to component and product" on page 1-2.
- The ENQ/DEQ summary table contains a new entry SYSZSMFL. See "ENQ/DEQ summary" on page 6-4.
- A new SVC dump title
  \texttt{COMPON=NIP,COMPID=SC1C9,ISSUER=IEAVTEDS,TIMED EVENT DATA SERVICE} is added to "System-Defined SVC dumps with titles" on page 10-1.
- "z/OS UNIX System Services latch identities" on page 20-48 describes the latch identity strings for z/OS UNIX System Services latches that can be displayed by using the D GRS,ANALYZE,LATCH command.
- A new bullet is added to "Correcting common problems" on page 24-1 and a new topic "LISTCAT (IDCAMS) messages for offload data sets" on page 24-22.

Changed information:
- The inputs and outputs for SYSEVENT ENCASSOC are updated. See 3-42
- The PLIST for the SVC 39 is updated. See "SVC 39 (0A27)" on page 4-40.
- The ENQ/DEQ summary table contains a changed entry for SYSIGGV1. See "ENQ/DEQ summary" on page 6-4.
- "COMCHECK UCM subcommand output" on page 15-27 is updated.
- The following sample IPCS reports are updated:
  - IPCS COUPLE SIGNAL DETAIL
  - IPCS COUPLE SYSPLEX DETAIL
  - IPCS STRDATA for cache and list
  - IPCS XESDATA FACILITY DETAIL

Deleted information:
- References to telecommunications access method (TCAM) are deleted from this information.
IPCS XESDATA CONNECTION


Deleted information:
- The ENQ name IGWTVSCS is removed from the ENQ/DEQ summary table.
- Obsolete information about lock characteristics is removed from Chapter 6, “Serialization summary,” on page 6-1.

Changes made in z/OS Version 1 Release 11 as updated April 2010

This document contains information previously presented in z/OS MVS Diagnosis: Reference, GA22-7588-13, which supports z/OS Version 1 Release 11.

New information:
- The ENQ/DEQ summary table contains a new entry for z/OSMF. See “ENQ/DEQ summary” on page 6-4.
- The PC services table contains multiple new entries. See Chapter 5, “Program Call (PC) services in system function table,” on page 5-1.
- A new sample JCL procedure IXGCONLS is added. See “Logger JCL procedures” on page 24-2.

Changed information:
- The “Relating a Module Prefix to Component and Product” table is updated with current product ID and component ID information. See “Relating a module prefix to component and product” on page 1-2.

Changes made in z/OS Version 1 Release 11

This document contains information previously presented in z/OS MVS Diagnosis: Reference, GA22-7588-12, which supports z/OS Version 1 Release 10.

New information:
- z/OS file system (zFS) issues additional serialization ENQs and DEQs that store zFS aggregate ownership information and that serialize multiple SET MSGFLD=xx commands. See SYSZIOEZ and SYSZMCS in “ENQ/DEQ summary” on page 6-4 in Chapter 6, “Serialization summary,” on page 6-1.
- New section “System logger latch conventions” is added. See “System logger latch conventions” on page 24-26 in “Formatting system logger dump data” on page 24-25.

Changed information:
- Updated information about the description of SVC 32 (0A20). See “SVC 32 (0A20)” on page 4-33 in Chapter 4, “SVC summary,” on page 4-1.
- Updated ENQs and DEQs summary. See SYSZDMO in “ENQ/DEQ summary” on page 6-4 in Chapter 6, “Serialization summary,” on page 6-1.
- Updated the list of MVS system commands that can be useful diagnostic aids when the system logger encounters a problem. See “Relevant MVS system commands” on page 24-33.
- Add a common header to IPCS COUPLE report samples. See “Formatting dump data using the IPCS subcommand - COUPLE” on page 27-8 in Chapter 27, “Sysplex Services (XCF and XES),” on page 27-1.
- Updated information about XESDATA FACILITY report for remote CF chpids need and new section "Moving Weighted Average Subchannel Delay Time (MWASDT) Information" is added to the report examples. See “XESDATA FACILITY DETAIL report” on page 27-43 in “Formatting dump data using the IPCS subcommand - XESDATA” on page 27-36.
Chapter 1. Identifying modules, components, and products

This topic contains three tables to help you identify module, component, and product information related to where an error is occurring. The three tables contain the same information, indexed three different ways. Use the tables as follows:

- If you need to identify a module by component and product, use “Relating a module prefix to component and product” on page 1-2.
- If you need to identify the module prefix or product for a component, use “Relating component name to module, component, and product” on page 1-18.
- If you need to identify a component ID by component name, module prefix, and product, see “Relating component ID to component name, module prefix, and product” on page 1-29.

Each table contains the following sections:

- **Module prefix**: The module prefix is the first three or more characters in:
  - CSECT name
  - Entry point name
  - Macro name
  - Module name

  The name of a module or macro owned by IBM usually begins with the characters A through I. There are a few exceptions beginning with S or X.

- **Component name**: The component name shows the component associated with the module prefix. In some cases, this section shows the name of a command or macro.

- **Product ID**: The product ID is a number identifying the product that a component is associated with. Each separately orderable product has a unique product ID.

- **Component ID**: The component ID is an alphanumeric identifier unique for each component. For component identifiers of products not shown in this table, see the programming support manual for the product or subsystem or use SMP/E reports.

- **Product or subsystem name**: The products and subsystems are:

  - **BTAM** Basic Telecommunications Access Method
  - **DFSMS/MVS** DFSMS/MVS includes the following functional components:
    - **DFSMSdfp** Data Facility System Managed Storage DFP
    - **DFSMSdss** DFSMS Data Set Services
    - **DFSMSshm** DFSMS hierarchical storage manager
    - **DFSMSrmm** DFSMS removable media manager
  - **DSM/MVS** Distributed Security Manager for MVS components:
    - **DSM/MVS Utilities**
    - **DSM/MVS Client and Server**
    - **DSM/MVS RDM**
    - **DSM/MVS MVD Agent**
    - **DSM/MVS VM Agent**
    - **DSM/MVS OS/400® Agent**
    - **DSM/MVS OS/2 Agent**
    - **DSM/MVS Novell Netware Agent**
  - **EREP** Environmental Record Editing and Printing program
### Modules, Components, and Products

- **GAM/SP**: Graphics Access Method
- **JES2**: JES2 of legacy MVS
- **JES3**: JES3 of legacy MVS
- **MVS**: Control program for MVS
- **RACF®**: Resource Access Control Facility
- **RMF™**: Resource Management Facility
- **SMP/E**: System Modification Program Extended
- **TSO/E**: Time Sharing Option Extensions
- **VTAM®**: Virtual Telecommunications Access Method

### Relating a module prefix to component and product

Use this table to relate a module prefix to its component name, product identifier (ID), component ID, and product name.

**Note:** If a prefix is not listed in the table, check the SMP/E data base. It has information on other IBM products, such as application programs. See [SMP/E User’s Guide](#) for information on using SMP/E.

#### Table 1-1. Relating a Module Prefix to Component and Product

<table>
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<th>Module prefix</th>
<th>Component name</th>
<th>Product ID</th>
<th>Component ID</th>
<th>Product or subsystem</th>
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<td>DFSMSdss</td>
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<td>5694-A01</td>
<td>5752SC111</td>
<td>MVS</td>
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**Note:** Excluding CEQA, CEQL, and CEQN

| CEQA, CEQL, CEQN | Open Cryptographic Enhanced Plug-ins                     | 5694-A01     | 565506809    | Security Server      |

Chapter 1. Identifying modules, components, and products 1-3
### Module Prefixes

**Table 1-1. Relating a Module Prefix to Component and Product (continued)**

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## Module Prefixes

### Table 1-1. Relating a Module Prefix to Component and Product (continued)

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## Module Prefixes

Table 1-1. Relating a Module Prefix to Component and Product (continued)

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## Module Prefixes

Table 1-1. Relating a Module Prefix to Component and Product (continued)

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## Module Prefixes

Table 1-1. Relating a Module Prefix to Component and Product (continued)

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### Module Prefixes

Table 1-1. Relating a Module Prefix to Component and Product (continued)

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### Relating component name to module, component, and product

Use this table to relate a component name to its module prefix, product ID, component ID, and product name.

Table 1-2. Relating Component Name to Module, Component, and Product

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### Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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## Component Names

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## Component Names

Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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<td>• SVC dump</td>
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### Component Names

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*Table 1-2. Relating Component Name to Module, Component, and Product (continued)*
Component Names

Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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<td>IPCS (See interactive problem control system)</td>
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Chapter 1. Identifying modules, components, and products 1-23
### Component Names

Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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### Component Names

Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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### Component Names

Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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**Table 1.2. Relating Component Name to Module, Component, and Product (continued)**

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### Component Names

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### Component Names

Table 1-2. Relating Component Name to Module, Component, and Product (continued)

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Relating component ID to component name, module prefix, and product

Use this table to relate a component ID to its component name, module prefix, product ID and product name.

Table 1-3. Relating Component ID to Component Name, Module Prefix, and Product

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<td>• Scheduler JCL facility (SJF)</td>
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### Component IDs

#### Table 1-3. Relating Component ID to Component Name, Module Prefix, and Product (continued)

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### Component IDs

**Table 1-3. Relating Component ID to Component Name, Module Prefix, and Product (continued)**

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## Component IDs

Table 1-3. Relating Component ID to Component Name, Module Prefix, and Product (continued)

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<td>IEH, IGC, IGG</td>
<td>5665-XA3</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>28441</td>
<td>IEBISAM utility</td>
<td>IEB</td>
<td>5665-XA3</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>28442</td>
<td>IEBDG utility</td>
<td>IEB</td>
<td>5665-XA3</td>
<td>DFSMSdfp</td>
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<tr>
<td>28443</td>
<td>IEBCOMPR utility</td>
<td>IEB</td>
<td>5665-XA3</td>
<td>DFSMSdfp</td>
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<tr>
<td>28444</td>
<td>IEBIMAGE utility</td>
<td>IEB</td>
<td>5665-XA3</td>
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</tr>
<tr>
<td>28445</td>
<td>SGIEH402</td>
<td>SGI</td>
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<td>DFSMSdfp</td>
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<td>5665-XA3</td>
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<tr>
<td>28448</td>
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<td>5665-XA3</td>
<td>DFSMSdfp</td>
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<tr>
<td>28450</td>
<td>3800 offline utility</td>
<td>CIP, GRAF, GVF, XTB</td>
<td>5665-XA3</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>28451</td>
<td>VSAM open/close/EOV (end-of-volume)</td>
<td>IDA</td>
<td>5665-XA3</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>28452</td>
<td>VSAM record management</td>
<td>IDA</td>
<td>5665-XA3</td>
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<td>28460</td>
<td>DASD common services</td>
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<td>DFSMS</td>
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<td>Interactive storage management</td>
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<td>28463</td>
<td>Device console services</td>
<td>IGU</td>
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<td>28465</td>
<td>Asynchronous operations manager (AOM)</td>
<td>AOM, IEC, IGX</td>
<td>5665-XA3</td>
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<tr>
<td>28484</td>
<td>Network File System Server (NFSS)</td>
<td>GFSA</td>
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### Component IDs

Table 1-3. Relating Component ID to Component Name, Module Prefix, and Product (continued)

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<tr>
<th>Component ID</th>
<th>Component name</th>
<th>Module prefix</th>
<th>Product ID</th>
<th>Product or subsystem</th>
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<tr>
<td>28501</td>
<td>TSO/E EDIT</td>
<td>IKJ, SGI</td>
<td>5665</td>
<td>TSO/E</td>
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<tr>
<td>28502</td>
<td>TSO and TSO/E scheduler</td>
<td>IEE, IGX, IHA, IKJ, JBB, SGIKJ</td>
<td>5665</td>
<td>TSO/E</td>
</tr>
<tr>
<td>28503</td>
<td>TSO/E TEST</td>
<td>IKJ</td>
<td>5665</td>
<td>TSO/E</td>
</tr>
<tr>
<td>28504</td>
<td>TSO/E transmit/receive</td>
<td>INM</td>
<td>5665</td>
<td>TSO/E</td>
</tr>
<tr>
<td>28505</td>
<td>TSO and TSO/E session manager</td>
<td>ADF, END, IHA, SGI</td>
<td>5665</td>
<td>TSO/E</td>
</tr>
<tr>
<td>28506</td>
<td>TSO/E Information Center Facility (ICF)</td>
<td>ICQ, SCI</td>
<td>5665</td>
<td>TSO/E</td>
</tr>
<tr>
<td>28507</td>
<td>TSO/E cooperative processing</td>
<td>CHS</td>
<td>5665</td>
<td>TSO/E</td>
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<tr>
<td>28508</td>
<td>TSO/E REXX</td>
<td>IRX</td>
<td>5665</td>
<td>TSO/E</td>
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<tr>
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<td>CLIST</td>
<td>IKJ</td>
<td>5665</td>
<td>TSO/E</td>
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<td>29101</td>
<td>Input/output configuration program (IOCP)</td>
<td>ICP</td>
<td>5665</td>
<td>TSO/E</td>
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<td>Input/output configuration program (IOCP)</td>
<td>ICP</td>
<td>5665</td>
<td>TSO/E</td>
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<tr>
<td>29105</td>
<td>MVS configuration program (MVSCP)</td>
<td>CBPA - CBPN</td>
<td>5665</td>
<td>MVS</td>
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<td>32701</td>
<td>DFDSS</td>
<td>ADR</td>
<td>5665-327</td>
<td>DFDSS</td>
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<tr>
<td>32901</td>
<td>Hierarchical Storage Manager</td>
<td>ARC</td>
<td>5665-329</td>
<td>DFSMSshm</td>
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<td>5655A2800</td>
<td>Firewall Technologies</td>
<td>CTZ</td>
<td>5694-A01</td>
<td>Security Server</td>
</tr>
<tr>
<td>5655A4501</td>
<td>C/C++ Performance Analyzer</td>
<td>CTZ</td>
<td>5655-A45</td>
<td>MVS</td>
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<tr>
<td>5655D4401, 5655D4403</td>
<td>XML Toolkit for z/OS</td>
<td>IXM</td>
<td>5655-J51</td>
<td>MVS</td>
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<tr>
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<td>IBM Policy Director Authorization Services for z/OS</td>
<td>HPD</td>
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<td>HPD</td>
<td>5655-F95</td>
<td>IBM Policy Director Authorization Services for z/OS</td>
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<td>EZA, EZB, EZY, EZZ</td>
<td>5647 - A01</td>
<td>Communication Server for z/OS IP Services</td>
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<td>LDAP Server</td>
<td>GLD</td>
<td>5694 - A01</td>
<td>Integrated Security Server</td>
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<td>Open Cryptographic Services Facility</td>
<td>CDS</td>
<td>5694 - A01</td>
<td>Cryptographic Services</td>
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<td>565506805</td>
<td>System SSL</td>
<td>CDS</td>
<td>5694 - A01</td>
<td>Cryptographic Services</td>
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<tr>
<td>565506807</td>
<td>Network Authentication Service</td>
<td>EUVF</td>
<td>5694 - A01</td>
<td>Integrated Security Services</td>
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<tr>
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<td>Open Cryptographic Enhanced Plug-ins</td>
<td>CEQA, CEQL, CEQN</td>
<td>5694 - A01</td>
<td>Security Server</td>
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<tr>
<td>56551210D</td>
<td>Run-Time Library Extensions</td>
<td>CDA, CDA, CLB, CLE</td>
<td>5694 - A01</td>
<td>MVS</td>
</tr>
<tr>
<td>56551210A</td>
<td>XL C/C++ Compiler</td>
<td>CNN</td>
<td>5694 - A01</td>
<td>MVS</td>
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<td>SMP/E</td>
<td>GIM</td>
<td>5647-A01</td>
<td>SMP/E</td>
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<td>Component ID</td>
<td>Component name</td>
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<td>Product or subsystem</td>
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<tr>
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<td>SMP/E Planning and Migration Assistant</td>
<td>BCN</td>
<td>5647-A01</td>
<td>SMP/E</td>
</tr>
<tr>
<td>568505101</td>
<td>Integrated Cryptographic Service Facility</td>
<td>CSF</td>
<td>5694 - A01</td>
<td>Cryptographic Services</td>
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<tr>
<td>568505102</td>
<td>Integrated Cryptographic Service Facility/Trusted Key Entry</td>
<td>CSF</td>
<td>5694 - A01</td>
<td>Cryptographic Services</td>
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<td>568819807</td>
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<td>CRT</td>
<td>5694 - A01</td>
<td>Language Environment</td>
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<td>569511701</td>
<td>TSO Virtual Telecommunications Access Method (VTAM)</td>
<td>IKT, IST</td>
<td>5647-A01</td>
<td>Communication Server for z/OS SNA Services</td>
</tr>
<tr>
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<td>5694 - A01</td>
<td>Distributed File Service SMB Server</td>
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<td>569694200</td>
<td>z/OS Distributed File Service</td>
<td>IOE</td>
<td>5694 - A01</td>
<td>Distributed File Service SMB Server</td>
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<td>IOE</td>
<td>5694 - A01</td>
<td>zSeries File System (zFS)</td>
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<td>5740 - XYS</td>
<td>Cryptographic Services</td>
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<tr>
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<td>z/OS Batch Runtime</td>
<td>BCD</td>
<td>5694-A01</td>
<td>MVS</td>
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<td>5752SC1BN</td>
<td>Security Support</td>
<td>IRR</td>
<td>5694-A01</td>
<td>RACF</td>
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<td>5752CRTD</td>
<td>Runtime Diagnostics</td>
<td>HZR</td>
<td>5694-A01</td>
<td>MVS</td>
</tr>
<tr>
<td>5752XXPKI</td>
<td>PKI Services</td>
<td>IKY</td>
<td>5694-A01</td>
<td>Cryptographic Services</td>
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<tr>
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<td>Graphics Access Method (GAM)</td>
<td>GAB, IFF, IGC, IGG</td>
<td>5741 5752 5665</td>
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<td>9920I</td>
<td>Device Support Facilities</td>
<td>ICK</td>
<td>5655</td>
<td>ICKDSF</td>
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</tbody>
</table>
Component IDs
Chapter 2. Specifying symptoms

The following table shows the values for the KEY parameter of the VRADATA macro in relation to the MVS and RETAIN® keywords. The keys are mapped by VRAMAP (IHAVRA mapping macro).

The table also shows the keywords for the MVS and RETAIN symptoms and explains the meanings of the symptoms. The MVS symptoms are used to describe dumps. The RETAIN symptoms are used to describe problems and to search the RETAIN problem database.

The Fm column identifies the form of the source data:
- E  EBCDIC
- F  Flag
- H  Hexadecimal

Incorrect keys: The following keys are considered incorrect if used as a symptom:

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'3E9'</td>
<td>EFABS</td>
<td>AB/S</td>
<td>SDWACMPH</td>
</tr>
<tr>
<td>X'3EA'</td>
<td>EAFBU</td>
<td>AB/U</td>
<td>SDWACMPH</td>
</tr>
<tr>
<td>X'3EB'</td>
<td>EFLDMD</td>
<td>MOD/</td>
<td>SDWAMODN</td>
</tr>
<tr>
<td>X'3EC'</td>
<td>EFCSCT</td>
<td>CSECT/</td>
<td>SDWACSCT</td>
</tr>
<tr>
<td>X'3ED'</td>
<td>EFREX</td>
<td>REXN/</td>
<td>SDWAREXN</td>
</tr>
<tr>
<td>X'3F3'</td>
<td>EFPSW</td>
<td>REGS/</td>
<td>SDWAGRSV</td>
</tr>
<tr>
<td>X'44D'</td>
<td>E1CID1C</td>
<td>CID1/</td>
<td>SDWACID</td>
</tr>
<tr>
<td>X'44E'</td>
<td>E1SUB1C</td>
<td>SUB1/</td>
<td>SDWASC</td>
</tr>
<tr>
<td>X'451'</td>
<td>E1AMD1C</td>
<td>AMD1/</td>
<td>SDWAMDAT</td>
</tr>
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</table>

ABEND CODE-SYSTEM. The system obtains this data for all dumps, if the data is available.

ABEND CODE-USER

LOAD MODULE NAME

ASSEMBLY MODULE CSECT NAME

RECOVERY ROUTINE CSECT NAME

REG/PSW DIFFERENCE. The system obtains this data for all dumps, if the data is available.

The system can generate two or less PSW/REGISTER differences as symptoms, depending on the number of registers found within the range of X'0'-X'FF'. For a failing PSW address less than 512, the symptom generated is REGS/FE000.

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### Specifying symptoms

Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'452'</td>
<td>E1VRS1C</td>
<td>VRS1/</td>
<td>VALU/C</td>
<td>SDWAMVRS</td>
</tr>
<tr>
<td>X'454'</td>
<td>E1HRC1C</td>
<td>HRC1/</td>
<td>PRCS/</td>
<td>SDWAHRC</td>
</tr>
<tr>
<td>X'456'</td>
<td>E1RRL1C</td>
<td>RRL1/</td>
<td>FLDS/</td>
<td>SDWARRL</td>
</tr>
<tr>
<td>X'45A'</td>
<td>E1CDB1C</td>
<td>CDB1/</td>
<td>VALU/C</td>
<td>SDWACIDB</td>
</tr>
<tr>
<td>X'45C'</td>
<td>E1CCR1C</td>
<td>CCR1/</td>
<td>VALU/B</td>
<td>SDWACCRC</td>
</tr>
<tr>
<td>X'45E'</td>
<td>E1HLH1C</td>
<td>HLH1/</td>
<td>VALU/H</td>
<td>SDWAHLHI</td>
</tr>
<tr>
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<td>E1SUP1C</td>
<td>SUP1/</td>
<td>VALU/H</td>
<td>SDWASUPR</td>
</tr>
<tr>
<td>X'464'</td>
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<td>SPN1/</td>
<td>VALU/H</td>
<td>SDWASPN</td>
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<tr>
<td>X'466'</td>
<td>E1FI1C</td>
<td>FI/</td>
<td>VALU/H</td>
<td>SDWAFAIN</td>
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<tr>
<td>X'468'</td>
<td>E1FRR1C</td>
<td>FRR1/</td>
<td>VALU/H</td>
<td>SDWAFRRE</td>
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<td>X'46A'</td>
<td>E1ASID1C</td>
<td>ASID1/</td>
<td>VALU/H</td>
<td>SDWAASID</td>
</tr>
<tr>
<td>X'46C'</td>
<td>E1ORCC1C</td>
<td>ORCC1/</td>
<td>PRCS/</td>
<td>SDWAOCMP</td>
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<td>X'46E'</td>
<td>E1ORRC1C</td>
<td>ORRC1/</td>
<td>PRCS/</td>
<td>SDWAOCRC</td>
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<tr>
<td>X'470'</td>
<td>E1PIDS1C</td>
<td>PIDS/</td>
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FROM SDWARC2 EXTENSION OF SDWA

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<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
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<td>E2MCIC</td>
<td>MCI2/</td>
<td>VALU/H</td>
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</table>

FROM ABDUMP SYMPTOM AREA PRDHDR (See the AMDDATA macro.)

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<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
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<tr>
<td>X'3E9'</td>
<td>EFABS</td>
<td>AB/S</td>
<td>AB/S</td>
<td>PRDSMABD</td>
</tr>
<tr>
<td>X'3EA'</td>
<td>EFABU</td>
<td>AB/U</td>
<td>AB/U</td>
<td>PRDSMABD</td>
</tr>
<tr>
<td>X'3EB'</td>
<td>EFLDMD</td>
<td>MOD/</td>
<td>RIDS/name#L</td>
<td>PRDSMLMN</td>
</tr>
<tr>
<td>X'3EC'</td>
<td>E1F11C</td>
<td>FI/</td>
<td>VALU/H</td>
<td>PRDSMPDA</td>
</tr>
<tr>
<td>X'3ED'</td>
<td>E1HRC1C</td>
<td>HRC1/</td>
<td>VALU/H</td>
<td>PRDSMGPR</td>
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</table>
Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
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<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
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</thead>
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<tr>
<td>X'3F3'</td>
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<td>REGS/</td>
<td>REGS/</td>
<td>PRDSMPSW</td>
</tr>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>REG/PSW DIFFERENCE. The system obtains this data for all dumps, if the data is available. The system can generate two or less PSW/REGISTER differences as symptoms, depending on the number of registers found within the range of X'0'-X'FFF'. For a failing PSW address that is less than 512, the symptom generated is REGS/FE000.</td>
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</table>

FROM SDWAVRA - CREATED IN VRADATA MACRO FORMAT

<table>
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<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
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<td>VALU/C</td>
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<td>VRASC</td>
<td>VSC/</td>
<td>VALU/C</td>
<td>E SUBCOMPONENT IDENTIFIER</td>
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<tr>
<td>X'03'</td>
<td>VRALVL</td>
<td>VLVL/</td>
<td>VALU/C</td>
<td>E COMPONENT LEVEL</td>
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<td>X'04'</td>
<td>VRADT</td>
<td>VDT/</td>
<td>VALU/C</td>
<td>E MODULE ASSEMBLY DATE</td>
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<td>X'05'</td>
<td>VRAPTF</td>
<td>VPTF/</td>
<td>PTPS/</td>
<td>E MODULE/PRODUCT PTF IDENTIFIER</td>
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<tr>
<td>X'06'</td>
<td>VRARC</td>
<td>VARC/</td>
<td>PRCS/</td>
<td>E ABEND REASON CODE or REASON CODE</td>
</tr>
<tr>
<td>X'07'</td>
<td>VRAQVOD</td>
<td>VQVOD/</td>
<td>VALU/H</td>
<td>H QUEUE VERIFIER DATA. Defined by the IHAQVOD macro.</td>
</tr>
<tr>
<td>X'08'</td>
<td>VRAQERR</td>
<td>VQERR/</td>
<td>VALU/H</td>
<td>H QUEUE ERROR DATA</td>
</tr>
<tr>
<td>X'09'</td>
<td>VRALVLS</td>
<td>VLVLS/</td>
<td>LVLS/</td>
<td>E RELEASE or LEVEL. The release of the system or level of the program product or component on which the problem occurred.</td>
</tr>
<tr>
<td>X'10'</td>
<td>VRARRP</td>
<td>VRRP/</td>
<td>VALU/H</td>
<td>H RECOVERY ROUTINE PARAMETER</td>
</tr>
<tr>
<td>X'11'</td>
<td>VRACBM</td>
<td>VCBM/</td>
<td>FLDS/</td>
<td>E MAPPING MACRO NAME</td>
</tr>
<tr>
<td>X'12'</td>
<td>VRACB</td>
<td>VCB/</td>
<td>VALU/H</td>
<td>H CONTROL BLOCK DATA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X'13'</td>
<td>VRACBF</td>
<td>VCBF/</td>
<td>FLDS/</td>
<td>E CONTROL BLOCK FIELD NAME</td>
</tr>
<tr>
<td>X'14'</td>
<td>VRACBA</td>
<td>VCBA/</td>
<td>ADRS/</td>
<td>H CONTROL BLOCK ADDRESS</td>
</tr>
<tr>
<td>X'15'</td>
<td>VRACBO</td>
<td>VCBO/</td>
<td>ADRS/</td>
<td>H CONTROL BLOCK FIELD OFFSET</td>
</tr>
</tbody>
</table>

FROM SDWAVRA - CREATED IN VRADATA MACRO FORMAT

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'16'</td>
<td>VRACBL</td>
<td>VCBL/</td>
<td>VALU/H</td>
<td>H CONTROL BLOCK LENGTH</td>
</tr>
<tr>
<td>X'18'</td>
<td>VRACBI</td>
<td>VCBI/</td>
<td>VALU/H</td>
<td>H CONTROL BLOCK ID NUMBER</td>
</tr>
<tr>
<td>X'19'</td>
<td>VRACBIA</td>
<td>VCBI/</td>
<td>VALU/H</td>
<td>H CONTROL BLOCK ID AND ADDRESS</td>
</tr>
<tr>
<td>X'1A'</td>
<td>VRACBII</td>
<td>VCBI/</td>
<td>VALU/H</td>
<td>H CONTROL BLOCK ID AND DATA</td>
</tr>
</tbody>
</table>

Specifying symptoms
### Specifying symptoms

**Table 2-1. VRADATA macro KEY values related to symptoms (continued)**

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'20'</td>
<td>VRAPLI</td>
<td>VPL/</td>
<td>FLDS/</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PARAMETER LIST ID. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'21'</td>
<td>VRAPL</td>
<td>VPL/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PARAMETER LIST DATA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X'22'</td>
<td>VRAFPI</td>
<td>VFPI/</td>
<td>PCSS/</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FOOTPRINT IDENTIFIER. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'23'</td>
<td>VRAFP</td>
<td>VFP/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FOOTPRINT DATA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X'24'</td>
<td>VRAPA</td>
<td>VPA/</td>
<td>VALU/C</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EXECUTION PATH DATA. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'25'</td>
<td>VRAP2</td>
<td>VP2/</td>
<td>VALU/C</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EXECUTION PATH DATA. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'26'</td>
<td>VRALK</td>
<td>VLK/</td>
<td>FLDS/</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NAME OF LOCK HELD. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
</tbody>
</table>
### Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'27'</td>
<td>VRAWAI</td>
<td>VWAI/</td>
<td>PCSS/</td>
<td>E WORK AREA ID. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'28'</td>
<td>VRAWA</td>
<td>VWA/</td>
<td>VALU/H</td>
<td>H WORK AREA DATA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X'29'</td>
<td>VRAWAP</td>
<td>VWAP/</td>
<td>ADRS/</td>
<td>H WORK AREA ADDRESS</td>
</tr>
<tr>
<td>X'30'</td>
<td>VRALBL</td>
<td>VLBL/</td>
<td>FLDS/</td>
<td>E LABEL RELATED TO FAILURE</td>
</tr>
<tr>
<td>X'31'</td>
<td>VRARRL</td>
<td>VRRL/</td>
<td>FLDS/</td>
<td>E RECOVERY ROUTINE LABEL</td>
</tr>
<tr>
<td>X'33'</td>
<td>VRAMID</td>
<td>VMID/</td>
<td>MSG/</td>
<td>E MESSAGE IDENTIFIER</td>
</tr>
<tr>
<td>X'34'</td>
<td>VRAMSG</td>
<td>VMSG/</td>
<td>MSG/</td>
<td>E MESSAGE TEXT. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'35'</td>
<td>VRAERR</td>
<td>VERR/</td>
<td>VALU/C</td>
<td>E ERROR INFORMATION. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'36'</td>
<td>VRAEHX</td>
<td>VEXH/</td>
<td>VALU/H</td>
<td>H ERROR INFORMATION. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X'37'</td>
<td>VRAHID</td>
<td>VHID/</td>
<td>PCSS/</td>
<td>E HEADER FOR DATA. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'38'</td>
<td>VRAHEX</td>
<td>VHEX/</td>
<td>VALU/H</td>
<td>H HEX ERROR DATA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
</tbody>
</table>
## Specifying symptoms

### Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>Key Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X’39’</td>
<td>VRAEBC</td>
<td>VEB/C</td>
<td>VALU/C</td>
<td>E ERROR DATA. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X’3A’</td>
<td>VRAAID</td>
<td>VAID/</td>
<td>VALU/H</td>
<td>H CALLER’S ASID</td>
</tr>
<tr>
<td>X’3B’</td>
<td>VRATCB</td>
<td>VTCB/</td>
<td>ADRS/</td>
<td>H TCB ADDRESS</td>
</tr>
<tr>
<td>X’3C’</td>
<td>VRACA</td>
<td>VCA/</td>
<td>ADRS/</td>
<td>H CALLER’S ADDRESS</td>
</tr>
<tr>
<td>X’3D’</td>
<td>VRACAN</td>
<td>VCAN/</td>
<td>RIDS/</td>
<td>E MODULE NAME OF CALLER</td>
</tr>
<tr>
<td>X’40’</td>
<td>VRAOA</td>
<td>VOA/</td>
<td>PRCS/</td>
<td>H ORIGINAL ABEND CODE</td>
</tr>
<tr>
<td>X’41’</td>
<td>VRAPSW</td>
<td>VPSW/</td>
<td>VALU/H</td>
<td>H RELATED FAILING PSW</td>
</tr>
<tr>
<td>X’42’</td>
<td>VRAINS</td>
<td>VINS/</td>
<td>VALU/H</td>
<td>H FAILING INSTRUCTION AREA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X’43’</td>
<td>VRAREGS</td>
<td>VREGS/</td>
<td>VALU/H</td>
<td>H REGISTERS ASSOCIATED WITH ABEND. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X’44’</td>
<td>VRAREGA</td>
<td>VREGA/</td>
<td>ADRS/</td>
<td>H REGISTER AREA ADDRESS</td>
</tr>
<tr>
<td>X’45’</td>
<td>VRAOR15</td>
<td>VOR15/</td>
<td>PRCS/</td>
<td>H ORIGINAL CONTENTS OF REGISTER</td>
</tr>
<tr>
<td>X’46’</td>
<td>VRADSN</td>
<td>VDSN/</td>
<td>PCSS/</td>
<td>E DATA SET NAME. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X’47’</td>
<td>VRADEV</td>
<td>VDEV/</td>
<td>PCSS/</td>
<td>E DEVICE NAME. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X’48’</td>
<td>VRASN</td>
<td>VSN/</td>
<td>VALU/H</td>
<td>H I/O SENSE DATA. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
</tbody>
</table>
### Specifying symptoms

Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'49'</td>
<td>VRAST</td>
<td>VST/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td>X'4A'</td>
<td>VRAU</td>
<td>VU/</td>
<td>VALU/C</td>
<td>H</td>
</tr>
<tr>
<td>X'4B'</td>
<td>VRACCW</td>
<td>VCCW/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td>X'4C'</td>
<td>VRACSW</td>
<td>VCSW/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td>X'4D'</td>
<td>VRADVT</td>
<td>VDT/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td>X'4E'</td>
<td>VRAVOL</td>
<td>VVOL/</td>
<td>VALU/C</td>
<td>E</td>
</tr>
<tr>
<td>X'60'</td>
<td>VRAFREG</td>
<td>VFREG/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td>X'63'</td>
<td>VRACSCB</td>
<td>VSCB/</td>
<td>VALU/H</td>
<td>H</td>
</tr>
<tr>
<td>X'64'</td>
<td>VRACSCBA</td>
<td>VSCBA/</td>
<td>ADRS/</td>
<td>H</td>
</tr>
<tr>
<td>X'65'</td>
<td>VRAJOB</td>
<td>VJOB/</td>
<td>PCSS/</td>
<td>E</td>
</tr>
<tr>
<td>X'66'</td>
<td>VRASTP</td>
<td>VSTP/</td>
<td>PCSS/</td>
<td>E</td>
</tr>
<tr>
<td>X'67'</td>
<td>VRACMD</td>
<td>VCMD/</td>
<td>PCSS/</td>
<td>E</td>
</tr>
</tbody>
</table>
### Specifying symptoms

Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>MVS</th>
<th>RETAIN</th>
<th>Label</th>
<th>Fm</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'68'</td>
<td>VRAJCL</td>
<td>VJCL/</td>
<td>PCSS/</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td>JCL STATEMENT. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'73'</td>
<td>VRAEPN</td>
<td>VEPN/</td>
<td>RIDS/</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td>ENTRY POINT NAME</td>
</tr>
<tr>
<td>X'77'</td>
<td>VRAETF</td>
<td>VETF/</td>
<td>ADRS/</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>ENTRY POINT ADDRESS</td>
</tr>
<tr>
<td>X'78'</td>
<td>VRACTF</td>
<td>VCTF/</td>
<td>ADRS/</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>FAILING CSECT ADDRESS</td>
</tr>
<tr>
<td>X'79'</td>
<td>VRALTF</td>
<td>VLTF/</td>
<td>ADRS/</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>FAILING LOAD MODULE ADDRESS</td>
</tr>
<tr>
<td>X'7A'</td>
<td>VRAMO</td>
<td>VMO/</td>
<td>ADRS/</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>CSECT OFFSET IN LOAD MODULE</td>
</tr>
<tr>
<td>X'7B'</td>
<td>VRAILO</td>
<td>VILO/</td>
<td>ADRS/</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>OFFSET IN LOAD MODULE</td>
</tr>
<tr>
<td>X'7C'</td>
<td>VRAIMO</td>
<td>VIMO/</td>
<td>ADRS/</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>OFFSET IN ASSEMBLY MODULE</td>
</tr>
<tr>
<td>X'7D'</td>
<td>VRAFID</td>
<td>VFID/</td>
<td>PCSS/</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td>FEATURE IDENTIFIER. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'7E'</td>
<td>VRAPID</td>
<td>VPID/</td>
<td>PCSS/</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td>PRODUCT IDENTIFIER. If the original data in the SDWAVRA is in printable form, the system uses all the characters possible for symptoms. The total size, including the keyword and data, cannot exceed 50 characters for an MVS symptom or 15 characters for a RETAIN symptom.</td>
</tr>
<tr>
<td>X'A0'</td>
<td>VRAIAP</td>
<td>VIAP/</td>
<td>RIDS/</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td>ANALYTIC PROCEDURE NAME</td>
</tr>
<tr>
<td>X'A1'</td>
<td>VRAIAL</td>
<td>VIAL/</td>
<td>VALU/H</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>PARAMETER LIST FOR PROCEDURE. The system converts the first 12 bytes to printable hexadecimal for MVS symptoms. It converts only the last 4 bytes of these 12 bytes to printable hexadecimal for RETAIN symptoms.</td>
</tr>
<tr>
<td>X'A2'</td>
<td>VRAICL</td>
<td>VICL/</td>
<td>VALU/H</td>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td>PARAMETER LIST FOR PROGRAM</td>
</tr>
<tr>
<td>X'A3'</td>
<td>VRAIDP</td>
<td>VIDP/</td>
<td>RIDS/</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td>PROGRAM TO RUN</td>
</tr>
</tbody>
</table>
### Specifying symptoms

Table 2-1. VRADATA macro KEY values related to symptoms (continued)

<table>
<thead>
<tr>
<th>Key Numbers</th>
<th>KEY Value</th>
<th>Keyword</th>
<th>Source Data</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'C8'</td>
<td>VRARRK</td>
<td>@nnn/</td>
<td>VALU/C</td>
<td>DEVELOPER ASSIGNED SYMPTOM KEYS. A program assigns one of these symptom keys. The IHAVRA macro defines decimal keys 200 to 239 as assignable to any symptom desired by the programmer. The IHAVRA macro assigns all other keys. If programmer-assigned keys are used, a visible key, such as @204 for decimal key 204, is created by the system. The decimal keys are appropriate for the following forms of data:</td>
</tr>
<tr>
<td>X'C9'</td>
<td>VRARRK1</td>
<td>@nnn/</td>
<td>VALU/C</td>
<td></td>
</tr>
<tr>
<td>X'CA'</td>
<td>VRARRK2</td>
<td>@nnn/</td>
<td>VALU/C</td>
<td></td>
</tr>
<tr>
<td>X'CB'</td>
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<td>X'ED'</td>
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<td>X'EF'</td>
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</table>
Specifying symptoms
Chapter 3. SYSEVENT summary

This summary describes system events (SYSEVENTs) that are indicated by entry to system resources manager (SRM) through direct branch or SVC 95 (SVC X'5F'). These SYSEVENTs appear in the generalized trace facility (GTF) and system trace records.

Locking for SYSEVENTs

All issuers of enabled, branch-entry SYSEVENTs must hold the local lock when the SYSEVENT is issued. The following SYSEVENTs are serialized by the CPU lock:

- QSCEST X'0C'
- TGETTPUT X'22'

SRM obtains the SRM lock on all SYSEVENT entries except the following:

- USERRDY X'04'
- SWOUTCMP X'0F'
- RSMCNSTS X'16'
- AVQLOW X'17'
- AVQOK X'18'
- SQAOK X'1A'
- SQALOW X'19'
- HOLD X'32'
- NOHOLD X'33'
- DIRECTPO X'38'
- MSCHECK X'3A'
- OMVSWAIT X'3B'
- SOUTSUSP X'45'
- AUXTREQ X'4C'
- REQFASD X'51'
- SCTCNV X'6C'

The issuer of any of these SYSEVENTs, with the exception of HOLD, NOHOLD, and DIRECTPO, must be disabled when issuing the SYSEVENT because SRM uses processor-related save areas while processing the SYSEVENTs. The issuer of HOLD, NOHOLD, and DIRECTPO must also be in key 0. Issuers of SYSEVENTs not in the preceding list must not hold the SRM lock or any global lock when they issue the SYSEVENT.

Table 3-1 lists all SYSEVENTs in alphabetical order with their associated codes.

<table>
<thead>
<tr>
<th>SYSEVENT</th>
<th>Code (in hexadecimal)</th>
</tr>
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<tbody>
<tr>
<td>ALTCPREC</td>
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<td>AVAILPUP</td>
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### SYSEVENT Summary

<table>
<thead>
<tr>
<th>SYSEVENT</th>
<th>Code (in hexadecimal)</th>
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<td>AVQOK</td>
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<td>CANCEL</td>
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<td>CHANNEL</td>
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<td>CLSPYENC</td>
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<tr>
<td>CMDEND</td>
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<td>CMDSTART</td>
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<td>CONFIGCH</td>
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<td>COPYDMDT</td>
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<td>COPYTXSH</td>
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<td>CPUTCONV</td>
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<td>DDR</td>
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<td>DEVALLOC</td>
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<td>DIRECTPO</td>
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<td>DONTSWAP</td>
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<td>EASINIT</td>
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<td>ENCASSOC</td>
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<td>ENCDELETE</td>
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### Table 3-1. SYSEVENT List (continued)

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SYSEVENT Summary

Table 3-1. SYSEVENT List (continued)

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<td>TRAXFRPT (or EVENT54)</td>
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<td>TRAXRPT (or EVENT55)</td>
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<td>WLMSTCHG</td>
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</table>

Summary

The SYSEVENTs are listed in order by hexadecimal code.

SYSEVENT Code: 00 (hex)
Mnemonic: PPMODE
Meaning of Mnemonic: A time sharing command, or a subcommand of EDIT or TEST, is to be run.
Circumstances: The TSO/E terminal monitor program or the EDIT/TEST command processor issues this SYSEVENT when the command or subcommand is about to be run. It causes no action on the part of SRM.
Locks Required: Local
Inputs: Reg 0, bytes 0-1: ASID.
Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the first four characters of the command or subcommand name.
Reg 15: Contains the last four characters of the command or subcommand name.
Outputs: None.
SYSEVENT Code: 01 (hex)
Mnemonic: TIMEREXP
Meaning of Mnemonic: Time of day (TOD) clock initialized.
Purpose: At TOD clock initialization, the SYSEVENT schedules SRM time-driven routines. Subsequent scheduling is done through SYSEVENT 05 (Time).
Circumstances: TOD clock initialized.
Locks Required: Local
Inputs: Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 3: Contains X'01' to indicate entry from system TOD clock initialization.
Outputs: None.

SYSEVENT Code: 02 (hex)
Mnemonic: TERMWAIT
Meaning of Mnemonic: Terminal wait.
Purpose: Indicates that a TSO/E session has entered terminal wait.
Circumstances: A TSO/E session is in terminal wait after the issuance of a TGET or a TPUT. Receiving the TERMWAIT SYSEVENT indicates to SRM that the current transaction for a TSO/E address space should be ended, provided that the address space has entered long wait status and is swappable. Note that the occurrence of this SYSEVENT does not guarantee that the entire address space is in a long wait status. This determination can only be made by the quiesce function.
Locks Required: Local
Inputs: Reg 0, byte 0-1: ASID.
Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 0: contains:
X'00' If for an input terminal wait.
X'80' If for an output terminal wait.
Outputs: None.

SYSEVENT Code: 03 (hex)
Mnemonic: NIOWAIT
Meaning of Mnemonic: Address space suspected of being in long wait.
Purpose: Indicates to SRM when an address space is suspected of having entered long wait.
Circumstances: Some task in the address space just entered long wait. Occurrence of this SYSEVENT does not guarantee that the entire address space is in a long wait status. This determination can only be made only
SYSEVENT Summary

by the quiesce function. The time spent by a swappable address space in long wait will not be considered part of the current transaction for that address space.

Locks Required: Local
Inputs: Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 3: SYSEVENT code.
Outputs: None.
SYSEVENT Code: 04 (hex)
Mnemonic: USERRDY
Meaning of Mnemonic: User ready.
Purpose: Indicates that a swapped out address space in a wait state or an address space for which the quiesce function is running has at least one dispatchable unit, (SRB) that is ready to run.

Circumstances: Something has occurred causing a dispatchable unit (SRB) to be scheduled to this address space.

Locks Required: Dispatcher (Note: The dispatcher lock may not always be held.)
Inputs: Reg 0, bytes 0-1: ASID.
Reg 0, byte 3: SYSEVENT code.
Outputs: None.
SYSEVENT Code: 05 (hex) This SYSEVENT is not traced by GTF.
Mnemonic: TIME
Meaning of Mnemonic: SRM timer interval has expired.
Purpose: Invokes the time slice dispatching algorithm if it is active and is to execute. Schedules all other SRM algorithms that are due. Calculates the time of the next invocation of this SYSEVENT and informs the timer routine.

Circumstances: The time routines have recognized that the SRM time interval has elapsed. At the time the SYSEVENT is issued, SRM's timer queue element has been removed from the queue.

Locks Required: Local
Inputs: Reg 0, byte 3: SYSEVENT code.
Outputs: None.
SYSEVENT Code: 06 (hex)
Mnemonic: MEMCREAT
Meaning of Mnemonic: Address space create.
Purpose: Indicates that a new address space is about to be created. Indicates the type of origin of the new
address space (i.e., START, LOGON, MOUNT).
Gives SRM a chance to prohibit the creation of the address space.

Circumstances: At the earliest point where the ASID is known and the space for the ASCB has been obtained.

Locks Required: Local

Inputs:
- Reg 0, bytes 0-1: ASID.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 3: contains:
  - X'01': If START.
  - X'02': If LOGON.
  - X'03': If MOUNT.

Outputs:
- Reg 1, byte 0: contains:
  - X'00': If address space creation can proceed.
  - X'80': If the address space should not be created because of a resource shortage determined by SRM.

SYSEVENT Code: 07 (hex)
Mnemonic: MEMDEL
Meaning of Mnemonic: Address space delete.
Purpose: Indicates the deletion of an address space to SRM, allowing SRM to release resources assigned to that address space.

Circumstances: The memory delete function is about to free the storage for the ASCB and unassign the ASID.

Locks Required: Local

Inputs:
- Reg 0, bytes 0-1: ASID.
- Reg 0, byte 2: Contains X'80' indicating that no more swap-ins are to be started until the next MEMDEL SYSEVENT.
- Reg 0, byte 3: SYSEVENT code.

Outputs:
- Reg 1, byte 3: contains X'00' indicating that the memory delete function can proceed.

SYSEVENT Code: 08 (hex)
Mnemonic: JOBSELECT
Meaning of Mnemonic: Job selection.
Purpose: Indicates that an address space has started using system services on behalf of a new job, START or MOUNT command, or a TSO/E session.

Locks Required: Local

Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
SYSEVENT Summary

Reg 1, bytes 0-3: Contains the address of a serialized parameter list. The parameter list is mapped by the IRAICSP mapping macro.

Output: None.
SYSEVENT Code: 09 (hex)
Mnemonic: JOBTERM
Meaning of Mnemonic: Job termination.
Purpose: Indicates that an address space has completed using system services on behalf of a job, START or MOUNT command, or a TSO/E session.
Locks Required: Local
Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: pointer to an 8-byte area containing the jobname or user ID.
Outputs: None.

SYSEVENT Code: 0A (hex)
Mnemonic: INITATT
Meaning of Mnemonic: Attached by initiator.
Purpose: Indicates that an initiator has attached a task; this SYSEVENT is related to a JOBSELCT SYSEVENT (code 8).
Locks Required: Local
Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: contains the address of a serialized parameter list. The parameter list is mapped by the IRAICSP mapping macro.
Outputs: None.

SYSEVENT Code: 0B (hex)
Mnemonic: INITDET
Meaning of Mnemonic: Detach by initiator.
Purpose: Indicates that a task has been detached by an initiator.
Locks Required: Local
Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
Outputs: None.

SYSEVENT Code: 0C (hex)
Mnemonic: QSCEST
Meaning of Mnemonic: Quiesce started.
SYSEVENT Summary

Purpose: Permits an initial assessment of whether an address space, suspected of being in long wait, is in fact in long wait. Provides for reversing the quiesce of an address space.

Circumstances: SRM has recently posted quiesce.

Locks Required: Local

Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 0: contains:
  - X'00' If the address space is not in a long wait.
  - X'80' If all tasks in the address space are in a long wait.

Outputs:
- Reg 1, byte 3: contains:
  - X'00' If the region control task (RCT) is to continue with the quiesce.
  - X'08' If the address space should be restored to its original status.

SYSEVENT Code: 0D (hex)

Mnemonic: QSCECMP

Meaning of Mnemonic: Quiesce completed.

Purpose: Permits a final assessment of whether the address space is to be swapped out. If between QSCEST (code 0C) and QSCECMP, a USERRDY (code 04) has been received for the address space, the quiesce function will be notified that the address space is not in true long wait status. Also allows SRM to determine if the address space should be logically or physically swapped.

Note: The swapped in interval is defined to end with this SYSEVENT.

Circumstances: The region control task (RCT) has completed quiesce processing for an address space.

Locks Required: Local

Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 0: contains:
  - X'00' If the address space is not in a long wait.
  - X'80' If the address space is in long wait.
- Reg 1, byte 1: contains:
  - X'40' Indicates a successful In-Real-Swap for a logically swapped address space.
  - X'80' Indicates a failure (RSM returned with an error).
Outputs:
Reg 1, byte 0: contains X'00' if USERRDY (code 04) was just received; unchanged by SRM if no USERRDY received since QSCEST (code 0C).

Reg 1, byte 2: Contains the swap reason code. The swap reason code values and descriptors are mapped by the IRASRCD mapping macro.

Reg 1, byte 3: contains:
X'00' If the RCT is to schedule swap-out.
X'04' If the RCT is to wait while the address space is logically swapped.
X'08' If the address space is to be restored.
X'0C' Indicates a TRANSWAP.
X'10' Indicates a REALSWAP.

SYSEVENT Code: 0E (hex)
Mnemonic: TRANSWAP
Meaning of Mnemonic: Transition swap an address space.
Purpose: Causes the transition of an address space from swappable to non-swappable.

Note: If you specify an ASID with DONTSWAP, OKSWAP, or TRANSWAP, that ASID must specify the home address space. In other words, you can only control swapping in the address space in which the SYSEVENT is issued. If you specify a different address space, the request will fail.

Circumstances: A TRANSWAP is issued for a V=R job step or a non-swappable program to force a swap out. After the subsequent swap in, frames are allocated from preferred storage and the address space is marked non-swappable. TRANSWAP prevents these programs from being assigned frames in reconfigurable storage.

Locks Required: Local
Inputs:
Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Address of the ECB to be posted, or zero if there is no dependency on the transition. (Note: An ECB can only be specified if the request is for the current address space.)

Outputs:
Reg 1, byte 3: contains:
X'00' Transition request accepted.
X'04' Transition was done previously.

Post codes:
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>0F (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>SWOUTCMP</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Swap-out completed.</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Indicates that swap-out processing has completed.</td>
</tr>
<tr>
<td>Circumstances:</td>
<td>All I/O needed to swap-out this address space has just completed.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>RSMAD</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, bytes 0-1: ASID or zero.</td>
</tr>
<tr>
<td></td>
<td>Reg 0, byte 3: SYSEVENT code.</td>
</tr>
<tr>
<td></td>
<td>Reg 1, bytes 0-3: Address of a parameter list. The format is as follows:</td>
</tr>
<tr>
<td></td>
<td><strong>Word 1</strong>: The number of pages swapped out</td>
</tr>
<tr>
<td></td>
<td><strong>Word 2</strong>: The working set size (the number of pages to be swapped in)</td>
</tr>
<tr>
<td></td>
<td><strong>Word 3, bytes 0-2</strong>: Reserved</td>
</tr>
<tr>
<td></td>
<td><strong>Word 3, byte 3</strong>: Flag byte:</td>
</tr>
<tr>
<td></td>
<td><strong>Bits 0-6</strong>: Reserved</td>
</tr>
<tr>
<td></td>
<td><strong>Bit 7</strong>: Contains 0 if the address space is in long wait; contains 1 if the address space is waiting for an unfinished real storage manager service.</td>
</tr>
<tr>
<td>Outputs:</td>
<td>None.</td>
</tr>
</tbody>
</table>

### SYSEVENT Summary

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>10 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>SWINSTAT</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Swap-in status.</td>
</tr>
</tbody>
</table>
SYSEVENT Summary

Circumstances: Swap-in processing for an address space that has just started, or just completed.

Locks Required: None

Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 3: contains:
  - X'00': Swap-in is starting.
  - X'01': Resources needed to perform the swap-in were obtained.
  - X'02': Swap-in is complete.

Outputs: None.

SYSEVENT Code: 11 (hex)

Mnemonic: SWINFL

Meaning of Mnemonic: Swap-in failed.

Circumstances: Swap-in processing failed to obtain or initialize the LSQA and fixed pages for the specified address space.

Locks Required: Local

Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 3: contains:
  - X'01': Swap-in failed because there are not enough page control blocks (PCBs) available to complete the swap-in.
  - X'02': Swap-in failed because there are not enough frames available for the working set.
  - X'03': Swap-in failed because swapping in this address space would cause the number of fixed frames to exceed the limit that SRM passed to RSM on the swap-in request.
  - X'04': Swap-in failed because there are not enough frames available for the address space's segment table.

Outputs: None.

SYSEVENT Code: 12 (hex)

Mnemonic: QSCEFL

Meaning of Mnemonic: Quiesce failed.

Purpose: Notifies SRM that during an attempt to quiesce an address space the quiesce function has failed. The address space has been restored when the SYSEVENT is issued.
Circumstances: Region control task failed to complete quiesce processing due to an abnormal situation.

Locks Required: Local

Inputs: Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 3: SYSEVENT code.

Outputs: None.

SYSEVENT Code: 13 (hex)

Mnemonic: RSTORCMP

Meaning of Mnemonic: Restore completed.

Purpose: Permits an assessment of whether an address space, suspected of having left long wait status, is in fact ready.

Note: The swapped in interval is defined to begin with this SYSEVENT.

Circumstances: Region control task has completed restore processing for an address space. The circumstances giving rise to the restoring of an address space still in long wait stem from not knowing that the address space is waiting on more than one event.

Locks Required: Local

Inputs: Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 0: contains:
X’00’ If the address space is ready.
X’80’ If the address space is in a long wait.

Outputs: None.

SYSEVENT Code: 14 (hex)

Mnemonic: ENQHOLD

Meaning of Mnemonic: ENQ contention occurred.

Purpose: Identifies a holder of a resource causing contention. SRM may boost the service to the holder (enclave or address space) of the resource to resolve the contention.

Circumstances: Application dependent.

Locks Required: Local and CMSEQDQ

Inputs for Type 0 Callers: Reg 0, bytes 0-1: ASID of address space holding the resource. If the high order bit of the ASID is set to 1, then this ENQHOLD is for an enclave, and access registers 0-1 contain the 8-byte enclave token.
Reg 0, byte 2, bits 0-6: Reserved.
Reg 0, byte 2, bit 7: Set to 0 for Type 0 callers.
**SYSEVENT Summary**

Reg 0, byte 3: SYSEVENT code.

Access Registers 0-1: Contains the enclave token or 0.

**Inputs for Type 2 Callers:**

Reg 0, bytes 0-1: ASID of address space holding the resource.

Reg 0, byte 2, bits 0-6: Reserved.

Reg 0, byte 2, bit 7: Set to 2 for Type 2 callers.

Reg 0, byte 3: SYSEVENT code.

Reg 1, bytes 0-3: Contains the address of a parameter list. The parameter list is mapped by the IRAEVPL macro.

**Inputs for Type 3 Callers:**

Reg 0, bytes 0-1: '8000'X.

Reg 0, byte 2: Set to 3 for Type 3 callers.

Reg 0, byte 3: SYSEVENT code.

Reg 1, bytes 0-3: Contains the address of a parameter list. The parameter list is mapped by the IRAEVPL macro.

**Outputs:**

None.

**SYSEVENT Code:**

15 (hex)

**Mnemonic:**

ENQRLSE

**Meaning of Mnemonic:**

Notify SRM that a resource causing contention has been released

**Purpose:**

Notify SRM that the holder of a resource causing contention has released the resource.

**Circumstances:**

Application dependent.

**Locks Required:**

Local and CMSEQDQ

**Inputs for Type 0 Callers:**

Reg 0, bytes 0-1: ASID of address space holding the resource. If the high order bit of the ASID is set to 1, then this ENQRLSE is for an enclave, and access registers 0-1 contain the 8-byte enclave token.

Reg 0, byte 2, bits 0-6: Reserved.

Reg 0, byte 2, bit 7: Set to 0 for Type 0 callers.

Reg 0, byte 3: SYSEVENT code.

Access Registers 0-1: Contains the enclave token or 0.

**Inputs for Type 2 Callers:**

Reg 0, bytes 0-1: ASID of address space holding the resource.

Reg 0, byte 2, bits 0-6: Reserved.

Reg 0, byte 2, bit 7: Set to 2 for Type 2 callers.

Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the address of a parameter list. The parameter list is mapped by the IRAEVPL macro.

Inputs for Type 3 Callers:
- Reg 0, bytes 0-1: ‘8000’x.
- Reg 0, byte 2: Set to 3 for Type 3 callers.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Contains the address of a parameter list. The parameter list is mapped by the IRAEVPL macro.

Outputs:
None.

SYSEVENT Code: 16 (hex)
Mnemonic: RSMCNSTS
Meaning of Mnemonic: Real storage manager constants
Purpose: Notifies SRM that the amount of online real storage has changed and that SRM should calculate new storage threshold values.
Circumstances: Issued when the amount of online real storage has changed.
Locks Required: RSMGL (under certain conditions)
Inputs:
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 3: contains:
  - X'00' If the RSM frame counts are not being initialized.
  - X'04' If the RSM frame counts are being initialized.
  - X'08' If expanded storage reconfiguration is underway.
  - X'0C' If expanded storage reconfiguration is complete.

Outputs: None.

SYSEVENT Code: 17 (hex)
Mnemonic: AVQLOW
Meaning of Mnemonic: Available frame queues below limit.
Purpose: Notifies SRM that the number of frames on the available frame queues has dropped below predefined limits.
Circumstances: Issued whenever allocation of a frame causes the number left on the available frame queues to drop below one of the predefined limits.
Locks Required: RSMGL
Inputs:
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, byte 3: contains:
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>SYSEVENT Code</th>
<th>Mnemonic</th>
<th>Meaning of Mnemonic</th>
<th>Purpose</th>
<th>Circumstances</th>
<th>Locks Required</th>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'01'</td>
<td>AVQOK</td>
<td>Available frame queue above limit.</td>
<td>Notifies SRM that the number of frames on the available frame queues has risen above a predefined limit.</td>
<td>Is issued whenever unallocation of a frame causes the number left on the available frame queues to rise above the predefined limit. This SYSEVENT is issued only when the number of frames rises above the predefined limit after the “available frame queues below limit” SYSEVENT (code 17) was issued.</td>
<td>RSMGL</td>
<td>Reg 0, byte 3: SYSEVENT code.</td>
<td>None.</td>
</tr>
</tbody>
</table>
| X'02'         | SQALOW   | Unallocated SQA and CSA below threshold. | Indicates that the amount of unallocated virtual SQA and CSA has dropped below one of two predefined thresholds. | Virtual storage manager has just satisfied an SQA or CSA allocation request which resulted in the amount of unallocated SQA and CSA dropping below one of the two predefined thresholds. | VSMFIX | Reg 0, byte 3: SYSEVENT code. | Reg 1, byte 3: contains:
|               |          | X'01' If the first (less serious) threshold is passed. | | | | |
|               |          | X'02' If the second threshold is passed. | | | | |
Outputs: None.

SYSEVENT Code: 1A (hex)
Mnemonic: SQAOK
Meaning of Mnemonic: Unallocated SQA and CSA above threshold.
Purpose: Indicates that the amount of unallocated SQA has risen above one of two predefined thresholds.
Circumstances: Virtual storage manager has just handled an SQA or CSA unallocation request which resulted in the amount of unallocated SQA and CSA rising above one of the two predefined thresholds.
Locks Required: VSMFIX
Inputs: Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 3: contains:
X'01' If the first (less serious) threshold is passed.
X'02' If the second threshold is passed.
Outputs: None.

SYSEVENT Code: 1B (hex)
Mnemonic: EASINIT
Meaning of Mnemonic: A system component address space has been initiated for operation.
Purpose: Indicates that a system component address space has been initialized but has not been allowed to contend for system resources as yet. Accumulation of its residency time and active time needs to be started.
Circumstances: Before the completion of master scheduler initialization, a system component address space has been initialized for operation.
Locks Required: Local
Inputs: Reg 0, bytes 0 and 1: The ASID of the address space being initialized.
Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 3: A type code identifying the kind of address space that has been initialized. The type code is:
X'01' An address space in which high-priority system services execute.
Outputs: None.

SYSEVENT Code: 1C (hex)
Mnemonic: DEVALLOC
Meaning of Mnemonic: Device allocation request.
### SYSEVENT Summary

| **Purpose:** | Provides SRM with necessary data for making a device allocation decision where two or more candidates exist. |
| **Locks Required:** | Local |
| **Inputs:** | Reg 0, bytes 0-1: ASID or zero.  
Reg 0, byte 3: SYSEVENT code.  
Reg 1, bytes 0-3: Address of a list of three full-word addresses. The first points to a list of candidate UCB addresses. The second points to a list of addresses of UCBs already allocated to the requesting jobstep. The third points to a 2-word return area.  
The first word in the list of candidate UCBs contains a count of the number of candidates in the list. The first word of the list of addresses of already allocated UCBs contains a count of the number of addresses in the list. All input and output data areas must be fixed. |
| **Outputs:** | Reg 1, bytes 0-3: Contains the same address present at input.  
Return area 1st word: Contains the address of the candidate list entry which was selected.  
Reg 15, byte 3: contains:  
X'00': If allocation selection was successfully made.  
X'08': If allocation selection was unsuccessfully made. |
| **SYSEVENT Code:** | 1D (hex) |
| **Mnemonic:** | CONFIGCH |
| **Meaning of Mnemonic:** | System configuration change. |
| **Purpose:** | Indicates that a central processor is to be removed from or added to the system. Also can indicate whether the system is to bring online or take offline the Vector Facility attached to a central processor. |
| **Circumstances:** | The system operator has issued a CONFIG central processor (online or offline) command. |
| **Locks Required:** | None |
| **Inputs:** | Reg 0, byte 3: SYSEVENT code.  
Reg 1, bytes 0-3: Contains the address of the PCCA for the central processor being removed from or added to the system. |
| **Outputs:** | None. |
| **SYSEVENT Code:** | 1E (hex) |
| **Mnemonic:** | VERIFYPG |
Meaning of Mnemonic: Not valid in goal mode.
SYSEVENT Code: 1F (hex)
Mnemonic: RESETPG

Note: This SYSEVENT is obsolete. Issuance results in a return code of 16. It has been replaced by the WLM service IWMRESET. See z/OS MVS Programming: Workload Management Services for more information on IWMRESET.

Meaning of Mnemonic: Alternate central processor recovery (ACR)
Purpose: Notifies SRM that one central processor has been removed from the configuration.
Circumstances: As a result of some error, ACR has had to reconfigure one central processor out of the system.
Locks Required: None
Inputs: Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the address of the PCCA for the failed central processor.

Outputs: None.

Meaning of Mnemonic: TGET/TPUT satisfied.
Purpose: Indicates a change in the status of the current TSO/E transaction.
Circumstances: TGET or TPUT completed.
Locks Required: Local
Inputs: Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 0: - Flag byte, as follows:

Bit 0
Contains 0 if TGET was satisfied. Contains 1 if TPUT was satisfied.

Bit 1
(Appplies to TGET satisfied only.) Contains 0 if all the data in the TSO/E input message was transferred by the TGET. Contains 1 if part of the data in the TSO/E input message was not yet transferred by this TGET (at least one more TGET is required to obtain the rest of the data in the TSO/E input message).

Bits 2-7
Reserved

Outputs: None.
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>25 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>SETDMN</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Not valid in goal mode.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>26 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>REQSERVC</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Request for service data.</td>
</tr>
</tbody>
</table>

**Purpose:**
Permits service-related data to be obtained for a given address space from SRM.

**Circumstances:**
- TSO/E TIME command will also use the REQSERVC SYSEVENT to obtain service data.
- The output area does not have to be fixed, and the issuer is not required to be authorized.

**Locks Required:**
Local

**Inputs:**
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Contains the address of a 3-word area where the service data is to be stored.

**Outputs:**
Service data supplied by SRM:
- In the case of a TSO/E address space, the 3-word area contains:
  - **Word 1**
    - Total service for the job
  - **Word 2**
    - Total transaction active time
  - **Word 3**
    - Contents are as follows:
      - Bytes 0-1: Performance group number last assigned to the address space
      - Bytes 2-3: For TSO/E users, the total number of transactions.

- In the case of a non-TSO/E address space, the 3-word area contains:
  - **Word 1**
    - Total service for the session
  - **Word 2**
    - Total active time for all transactions
  - **Word 3**
    - Contents are as follows:
      - Bytes 0-1: Performance group number last assigned to the address space
      - Bytes 2-3: Zeros.
Reg 15, byte 3: contains:
X'04'  If data was lost due to accumulation
      control block error.
X'00'  Otherwise

**SYSEVENT Code:** 27 (hex)

**Mnemonic:** REQPGDAT

**Meaning of Mnemonic:** Request by SMF for job paging data.

**Purpose:** Permits SMF to obtain paging data for a given
      address space from SRM.

**Circumstances:** SMF issues REQPGDAT during step termination.

**Locks Required:** Local

**Inputs:**
Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 2, bit 0: 0 indicates that this paging
      data request is for the end of a job step; 1 indicates
      that this paging data request is for an SMF
      accounting interval.
Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the address of a fixed
      area where the paging data is to be stored.

**Outputs:**
Reg 1 contains the same address as on input.
Reg 15, byte 3: contains:
X'00'  Data successfully returned.
X'04'  Data not returned.

**SYSEVENT Code:** 28 (hex)

**Mnemonic:** COPYDMDT

**Meaning of Mnemonic:** Not valid in goal mode.

**SYSEVENT Code:** 29 (hex)

**Mnemonic:** DONTSWAP

**Meaning of Mnemonic:** Address space is now not swappable.

**Purpose:** Indicates to SRM that the issuing address space
      must not be swapped until further notice.

**Note:** If you specify an ASID with DONTSWAP,
      OKSWAP, or TRANSWAP, that ASID must
      specify the home address space. In other
      words, you can only control swapping in the
      address space in which the SYSEVENT is
      issued. If you specify a different address
      space, the request will fail.

**Circumstances:** Application dependent.

**Locks Required:** Local

**Inputs:**
Reg 0, bytes 0-1: ASID of issuing address space, or
      zero.
Reg 0, byte 3: SYSEVENT code.

**Outputs:**
Reg 1, byte 3: contains:

- X'00' If the request to mark the address space as non-swappable was honored.
- X'04' If request is not for the current address space.
- X'08' If request was not authorized, or if the outstanding count of DONTSWAP requests (code 29) has reached its maximum value.

**SYSEVENT Code:** 2A (hex)

**Mnemonic:** OKSWAP

**Meaning of Mnemonic:** Address space is now swappable.

**Purpose:** Indicates to SRM that the issuing address space can now be swapped.

**Note:** If you specify an ASID with DONTSWAP, OKSWAP, or TRANSWAP, that ASID must specify the home address space. In other words, you can only control swapping in the address space in which the SYSEVENT is issued. If you specify a different address space, the request will fail.

**Circumstances:** Application dependent.

**Locks Required:** Local

**Inputs:**
Reg 0, bytes 0-1: ASID of issuing address space, or zero.

Reg 0, byte 3: SYSEVENT code.

**Outputs:**
Reg 1, byte 3: contains:

- X'00' If the request to mark the address space as swappable was honored.
- X'04' If the request is not for the current address space.
- X'08' If the request was not authorized.

**SYSEVENT Code:** 2B (hex)

**Mnemonic:** RSTORFL

**Meaning of Mnemonic:** Restore of an address space failed.

**Purpose:** When it is not possible to restore an address space, the region control task (RCT) issues a RSTORFL SYSEVENT to inform SRM.

**Circumstances:** This SYSEVENT gets issued by the region control task (RCT), when it is currently not possible to restore the address space. SRM tells the region control task (RCT) how to continue.

**Locks Required:** Local
Inputs: Reg 0, bytes 0-1: ASID or zero.
Reg 0, byte 2: SYSEVENT type.
Reg 0, byte 3: SYSEVENT code.

Outputs: Reg 1, byte 3: contains:
X'00' RCT continues to wait on the ASCBQECB.
X'08' RCT cancels the address space.

SYSEVENT Code: 30 (hex)
Mnemonic: None.
Purpose: Issued by SRM itself in order to invoke its control routine immediately without waiting for a SYSEVENT issued by another component.

Locks Required: None

Inputs: Reg 0, bytes 0-1: ASID or 0.
Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Address of the service request block under which this SYSEVENT is issued.

Outputs: None.

SYSEVENT Code: 31 (hex)
Mnemonic: REQSVDAT
Meaning of Mnemonic: Request service data.
Purpose: Permits SMF to obtain service-related data for a given address space.

Circumstances: SMF issues REQSVDAT during job or session completion processing.

Locks Required: Local

Inputs: Reg 0, bytes 0-1: ASID or 0.
Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: The address of a fixed area where the service data is to be stored.

Outputs: The contents of the area are mapped by the IRARQSERV macro in SYS1.MODGEN.

SYSEVENT Code: 32 (hex) This SYSEVENT is not traced by GTF.
Mnemonic: HOLD
Meaning of Mnemonic: Hold the address space from being swapped out.
Purpose: Notify SRM that the issuing address space must not be swapped out until a SYSEVENT NOHOLD (X'33') occurs.

Circumstances: The running program has a short instruction sequence during which the address space cannot be swapped out.

Locks Required: None
**SYSEVENT Summary**

**Inputs:**
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.

**Outputs:**
- None.

**SYSEVENT Code:**
- 33 (hex) This SYSEVENT is not traced by GTF.

**Mnemonic:**
- NOHOLD

**Meaning of Mnemonic:**
- No longer hold the address space from being swapped out.

**Purpose:**
- Notify SRM that the issuing space which has previously issued a HOLD (SYSEVENT X'32'), can be considered for swapping.

**Circumstances:**
- The issuing program no longer has a requirement that its address space be non-swappable.

**Locks Required:**
- None

**Inputs:**
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.

**Outputs:**
- None.

**SYSEVENT Code:**
- 34 (hex)

**Mnemonic:**
- NEWOPT

**Meaning of Mnemonic:**
- Set new OPT.

**Purpose:**
- Change the OPT currently in use by SRM.

**Circumstances:**
- The system operator has entered a SET command with the OPT keyword. To synchronize the setting of the new OPT values, all values established by the old OPT are replaced under the SRM lock. The SET command processor is responsible for obtaining and releasing the OPT parameter list.

**Locks Required:**
- Local

**Inputs:**
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Contains the address of the OPT parameter list (IRAOLST) that describes the new OPT.

**Outputs:**
- None.

**SYSEVENT Code:**
- 35 (hex) This SYSEVENT is not traced by GTF.

**Mnemonic:**
- TRAXERPT or EVENT53

**Meaning of Mnemonic:**
- Report the start time and service data for a completed transaction.

**Purpose:**
- Allows a subsystem to use RMF to report transaction data.

**Circumstances:**
- At the completion of a transaction, the subsystem provides the data needed for RMF to report the number of transactions, the average elapsed time per transaction, and the service used.
Locks Required: None

Inputs:
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Contains the address of a serialized parameter list. The parameter list is mapped by the IHATREPL mapping macro.

Outputs:
- Reg 15, byte 3: Contains one of the following return codes:
  - X'00': The data for the transaction has been reported correctly.
  - X'08': Processing could not be completed at this time. No queue elements are available for recording data. No statistics are reported, but a retry could be successful.
  - X'0C': Reporting is temporarily suspended. RMF is not running online reports, or the TOD clock is stopped. No statistics are reported, but a later retry might be successful.
  - X'10': Reporting is inoperative. The clock is in error, or the reporting facility is not installed. No statistics can be reported.

SYSEVENT Code: 36 (hex) This SYSEVENT is not traced by GTF.

Mnemonic: TRAXFRPT or EVENT54

Meaning of Mnemonic: Report the elapsed time for a completed transaction.

Purpose: Allows a subsystem to use RMF to report transaction data.

Circumstances: At the completion of a transaction, the subsystem provides SRM with the data RMF needs to report the number of transactions and the average elapsed time per transaction.

Locks Required: None

Inputs:
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Contains the address of a serialized parameter list. The parameter list is mapped by the IHATREPL mapping macro.

Outputs:
- Reg 15, bytes 0-3: Contains one of the following return codes:
  - X'00': The data for the transaction has been reported correctly.
  - X'08': Processing could not be completed at this time. No queue elements are available for recording data. No statistics are reported, but a retry could be successful.
  - X'0C': Reporting is temporarily suspended. RMF is not running online reports, or the TOD clock is stopped. No statistics are reported, but a later retry might be successful.
  - X'10': Reporting is inoperative. The clock is in error, or the reporting facility is not installed. No statistics can be reported.
SYSEVENT Summary

clock is stopped. No statistics are reported, but a later retry might be successful.

X'10'   Reporting is inoperative. The clock is in error, or the reporting facility is not installed. No statistics can be reported.

SYSEVENT Code: 37 (hex) This SYSEVENT is not traced by GTF.
Mnemonic: TRAXRPT or EVENT55
Meaning of Mnemonic: Report the start time for a completed transaction.
Purpose: Allows a subsystem to use RMF to report transaction data.
Circumstances: At the completion of a transaction, the subsystem provides SRM with the data RMF needs to report the number of transactions and the average elapsed time per transaction.
Locks Required: None
Inputs: Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the address of a serialized parameter list. The parameter list is mapped by the IHATRBPL mapping macro.
Outputs: Reg 15, bytes 0-3: Contains one of the following return codes:
X'00'   The data for the transaction has been reported correctly.
X'08'   Processing could not be completed at this time. No queue elements are available for recording data. No statistics are reported, but a retry could be successful.
X'0C'   Reporting is temporarily suspended. RMF is not running online reports. There currently is no report performance group (RPGN) specified for non-TSO/E users, or the TOD clock is stopped. No statistics are reported, but a later retry might be successful.
X'10'   Reporting is inoperative. The clock is in error, or the reporting facility is not installed. No statistics can be reported.

SYSEVENT Code: 38 (hex) This SYSEVENT is not traced by GTF.
Mnemonic: DIRECTPO
Meaning of Mnemonic: Directions for a page-out.
Purpose: To determine where to send a page being removed from real storage.
Circumstances: RSM issues this SYSEVENT to determine whether a page-out page that is being removed from real storage is to be moved to expanded storage or to auxiliary storage.
SYSEVENT Summary

Locks Required: RSM or higher must be held on entry to SRM.

Inputs:
Reg 0, bytes 0-1: ASID of the address space that owns the page.

Note: For common area pages, the ASID is X'FFFF'.
Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 3: contains:
X'01' If the page is a page-out page.
X'03' If the page is a VIO page.
X'04' If the page is in a hiperspace (a block-addressable data page).
X'05' Self-steal.

Outputs:
Reg 15, byte 3: Return code:
X'00' Send the page to expanded storage.
X'04' Send the page to auxiliary storage.

SYSEVENT Code: 39 (hex) This SYSEVENT is not traced by GTF.

Mnemonic: VIOSAVE
Meaning of Mnemonic: Can SAVE processing be performed for a VIO data set.
Purpose: Used by ASM to ask SRM if a job associated with a particular VIO data set is eligible for journaling and therefore eligible for SAVE processing.
Circumstances: This SYSEVENT will be issued when ASM receives a SAVE request for data in expanded storage.

Locks Required: None
Inputs:
Reg 0, byte 3: SYSEVENT code.
Reg 13: Contains the address of a 72 byte save area that SRM will use.

Outputs:
Return code 0 in register 15 indicates that the job is eligible for restart (ASM should process the SAVE).
Return code 4 in register 15 indicates that the job is not eligible for restart and the SAVE can be ignored.

SYSEVENT Code: 3A (hex) This SYSEVENT is not traced by GTF.

Mnemonic: MSCHECK
Meaning of Mnemonic: Check migration swap directions.
Purpose: RSM issues MSCHECK to determine whether or not a swapped out address space should be moved from expanded to auxiliary storage.
Circumstances: RSM issues the MSCHECK SYSEVENT to determine if primary or secondary working set pages should be migrated.

Locks Required: RSM lock
**SYSEVENT Summary**

**Inputs:**
Reg 0, byte 3: SYSEVENT code.

**Output:**
Reg 15, bytes 0-3: Contains one of the following return codes:
- X'00': Page should be migrated
- X'04': Page should not be migrated

**SYSEVENT Code:**
3B (hex)

**Mnemonic:**
OMVSWAIT

**Meaning of Mnemonic:**
z/OS UNIX System Services wait.

**Purpose:**
Signal to SRM that z/OS UNIX System Services is changing status with respect to either an input or output wait.

**Circumstances:**
z/OS UNIX System Services indicates that the address space is either running in non-canonical mode and is waiting for input, or the z/OS UNIX System Services address space is waiting for output.

**Inputs:**
Reg 0, bytes 0-1: ASID.
Reg 0, byte 3: SYSEVENT code
Reg 1, bytes 0-3: Contain the function code for the OMVSWAIT SYSEVENT as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OMVSWAIT address space is waiting for input</td>
</tr>
<tr>
<td>2</td>
<td>OMVSWAIT address space is no longer waiting for input</td>
</tr>
<tr>
<td>3</td>
<td>OMVSWAIT address space is waiting for output</td>
</tr>
<tr>
<td>4</td>
<td>OMVSWAIT address space is no longer waiting for output</td>
</tr>
</tbody>
</table>

**Outputs:**
Reg 15, bytes 0-3 contain one of the following return codes:
- X'00': SYSEVENT is successful
- X'04': The function code in register 1 is not valid

**SYSEVENT Code:**
3E (hex)

**Mnemonic:**
STGIFAIL

**Meaning of Mnemonic:**
SYS1.STGINDEX data set is inactive.

**Purpose:**
Used by ASM to inform SRM that the SYS1.STGINDEX data set is not present or has become unusable.

**Circumstances:**
This SYSEVENT will be invoked either at master scheduler initiation, or later during VIO mainline processing when a SYS1.STGINDEX failure is detected.
Locks Required: None

Inputs:
Reg 0, byte 3: SYSEVENT code.
Reg 13: Contains the address of a 72 byte save area that SRM will use.

Outputs None

SYSEVENT Code: 3F (hex)
Mnemonic: CMDSTART
Meaning of Mnemonic: Command start.

Purpose: Notify SRM that the current transaction is the first transaction for a TSO/E command.

Circumstances: A TSO/E command was invoked by the terminal monitor program. SRM is not notified for subcommand invocation or commands invoked by processors other than the terminal monitor program.

Locks Required: Local

Inputs:
Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the address of a fixed parameter list. The format of the parameter list is:

<table>
<thead>
<tr>
<th>Word</th>
<th>Offset</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word 1, byte 0</td>
<td>0</td>
<td>1</td>
<td>X'80': Command came from an “in-storage” list.</td>
</tr>
<tr>
<td>Word 1, bytes 1-3</td>
<td>1</td>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>Words 2-3</td>
<td>4</td>
<td>8</td>
<td>Command name (left-justified, EBCDIC padded with blanks).</td>
</tr>
</tbody>
</table>

Outputs: None.

SYSEVENT Code: 40 (hex) This SYSEVENT is not traced by GTF.
Mnemonic: CMDEND
Meaning of Mnemonic: Command end.

Purpose: Notify SRM that the transaction is the last transaction for the current command.

Circumstances: A TSO/E command processor has just ended and control is returned to the terminal monitor program.

Locks Required: None

Inputs:
Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 0: Contains X'80' if this command put the next command on an in-storage list.
Reg 1, bytes 1-3: Reserved.

SYSEVENT Code: 41 (hex)
Mnemonic: WKLDCFHG
Meaning of Mnemonic: Workload change.
Purpose: Requests the SRM to perform fast workload acceptance (FWA).
Circumstances: In an extended recovery facility (XRF) environment, an address space associated with an alternate subsystem issues this SYSEVENT to indicate that a takeover is in progress.
Locks Required: None
Inputs: Reg 0, bytes 0-1: ASID of the address space for which FWA is requested, or zero to indicate the current ASID.
Reg 0, bytes 1-3: SYSEVENT code.
Outputs: None.
SYSEVENT Code: 42 (hex)
Mnemonic: MIGCNSTR
Meaning of Mnemonic: Migration constraint.
Purpose: Either indicates that there is a shortage of expanded storage frames eligible for migration on a least-recently-used (LRU) basis, or indicates that this shortage is relieved.
Circumstances: RSM initially issues this SYSEVENT when there is a shortage of expanded storage frames eligible for migration on an LRU basis, and subsequently when this shortage is relieved.
Locks Required: None
Inputs: Reg 0, byte 3: SYSEVENT code.
Reg 1, byte 3: contains:
X'00' If migration is constrained by a lack of expanded storage frames eligible for migration on an LRU basis.
X'01' If migration is no longer constrained because enough expanded storage frames have been made available for migration.
X'02' If expanded storage is not available due to a lack of frames eligible for migration.
X'03' If expanded storage is not available due to a lack of real storage for migration.
Outputs: Reg 15, byte 3: Return code (issued only when migration is constrained):
X'00' Disregard the storage isolation working set targets. This causes pages to be migrated regardless of these targets.
X'04' Continue to honor the storage isolation working set targets.
SYSEVENT Code: 43 (hex)
Mnemonic: MIGPURGE
Meaning of Mnemonic: Migration purge.
Purpose: Either indicates that there is a shortage of available expanded storage frames and affords SRM the opportunity to designate an address space whose pages residing on expanded storage should be migrated, or indicates that the designated address space’s pages have been migrated.

Circumstances: RSM initially issues this SYSEVENT when there is a shortage of available expanded storage frames. The issuing of this SYSEVENT affords SRM the opportunity to designate an address space whose pages on expanded storage should be migrated (that is, before they would be selected for migration on a least-recently-used (LRU) basis). RSM subsequently issues this SYSEVENT after the expanded storage frames of the designated address space have been successfully migrated.

Locks Required: None

Inputs:
Reg 0, byte 3: SYSEVENT code:
Reg 1, bytes 1-3: Address of a 3-word parameter area. (SRM also uses this parameter area to return information.) In the parameter area, words 1-3 are reserved for output.

Outputs:
Reg 1, bytes 1-3: Address of a 3-word parameter area as follows:

Word 1
Zero or the address of the ASCB of the designated address space

Word 2
Zero or the number of pages to migrate.

Word 3
Zero or the number of non-working set pages that are to be converted to secondary pages and migrated.

Reg 15: Return code:
X'00' The address of the ASCB has been returned in the first word of the parameter area.
X'04' There are no more address spaces that have pages to purge. The parameter area is set to zeroes.

SYSEVENT Code: 44 (hex)
Mnemonic: MIGSWAP
Meaning of Mnemonic: Migration swap in.
Purpose: Indicates that a primary working set has been chosen to be migrated to auxiliary storage and that SRM must swap in the designated address space.
Circumstances:
RSM issues this SYSEVENT when it has migrated the non-working set and secondary set pages of an address space, and has then encountered a primary working set page. SRM determines whether the address space should be swapped in to real storage and swapped out to auxiliary storage, or remain in expanded storage.

Locks Required:
None

Inputs:
Reg 0, bytes 0-1: ASID of the address space chosen to be swapped out to auxiliary storage.
Reg 0, byte 3: SYSEVENT code.
Reg 1: Address of the input parameter list, which has the following format:

Word 1
Contains the type of migration code:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>This address space is being migrated to free expanded storage frames.</td>
</tr>
<tr>
<td>1</td>
<td>This address space is being purged from expanded storage. (SRM returned this address space using a MIGPURGE SYSEVENT.)</td>
</tr>
<tr>
<td>2</td>
<td>This address space is being migrated because it has resided in expanded storage too long.</td>
</tr>
</tbody>
</table>

Word 2
Contains the number of expanded storage frames that are being migrated.

Outputs:
Reg 1: Address of the parameter list, which contains the following:

Word 1
Reserved for input.

Word 2
If the return code is zero, this word contains the number of pages that are being migrated. Otherwise, this word contains zero.

Reg 15, byte 3: Return code:
X'00' The address space is to be migrated.
X'04' The address space cannot be migrated at this time.

SYSEVENT Code: 45 (hex)
Mnemonic: SOUTSUSP
Meaning of Mnemonic: Suspended swap out.
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>Indicates that an address space swap-out was suspended because of a shortage of expanded storage frames.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circumstances:</td>
<td>RSM issues this SYSEVENT when an address space cannot be swapped out because there are not enough free frames in expanded storage. SRM determines whether to end the swap-out, or to defer it until enough expanded storage frames are freed.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>None</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, bytes 0-1: ASID of the address space being swapped out. Reg 0, byte 3: SYSEVENT code.</td>
</tr>
</tbody>
</table>
| Outputs: | Reg 15, byte 3: Return code:  
| | X'00'  Defer the swap-out until enough expanded storage frames are freed and the SRB can be rescheduled.  
| | X'04'  End the swap-out. |
| SYSEVENT Code: | 46 (hex) |
| Mnemonic: | UCBCHG |
| Meaning of Mnemonic: | UCB change. |

### Purpose: Notify SRM that a device or a channel path was varied online or offline or that a device was boxed.  
**Locks Required:** Any locks lower than SRM  
**Inputs:** Reg 0, byte 3: SYSEVENT code. Reg 1, bytes 0-3: UCB address.  
**Outputs:** None.  
**SYSEVENT Code:** 47 (hex)  
**Mnemonic:** DDR  
**Meaning of Mnemonic:** Dynamic device reconfiguration.  

### Purpose: Notify SRM that a dynamic device reconfiguration (DDR) function occurred.  
**Locks Required:** Any locks lower than SRM  
**Inputs:** Reg 0, byte 3: SYSEVENT code. Reg 1, bytes 0-3: Address of the parameter list, which contains the addresses of the "to" and "from" UCBs.  
**Outputs:** None.  
**SYSEVENT Code:** 48 (hex)  
**Mnemonic:** CHANNEL  
**Meaning of Mnemonic:** Change in status of the channel measurement facility.
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>Notify SRM that there is a change in the status of the channel measurement facility.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locks Required:</td>
<td>Any locks lower than SRM</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code.</td>
</tr>
<tr>
<td></td>
<td>Reg 1, bytes 0-3: Address of the channel facilities recovery block (IOSDCFRB).</td>
</tr>
<tr>
<td>Outputs:</td>
<td>None.</td>
</tr>
<tr>
<td>SYSEVENT Code:</td>
<td>49 (hex)</td>
</tr>
<tr>
<td>Mnemonic:</td>
<td>AVAILPUP</td>
</tr>
</tbody>
</table>

**Purpose:** Reserve or release storage for dumping purposes.

**Circumstances:** DUMPSRV reserves frames during IPL. DUMPSRV releases frames when needed for capturing a dump.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Number of frames reserved.

**Outputs:** None

**SYSEVENT Code:** 4A (hex)

**Mnemonic:** CPUTCONV

**Meaning of Mnemonic:** central processor time conversion.

**Purpose:** Return the conversion factor needed to convert central processor seconds into service units.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Conversion factor.

**Outputs:** None

**SYSEVENT Code:** 4B (hex)

**Mnemonic:** STGTEST

**Meaning of Mnemonic:** Storage test.

**Purpose:** Indicate a snapshot of storage utilization.

**Circumstances:** Used as an aid in determining how much storage can be exploited by an application.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 0-1: ASID
- Reg 0, byte 2: Request type, as follows:
  - X'80' Request for addressable storage (read, expanded, and auxiliary)
  - X'00' Request for block addressable storage (expanded only)
- Reg 0, byte 3: SYSEVENT code.
SYSEVENT Summary

Reg 1, bytes 0-3: Address of the return area.

Outputs:  
The contents of the return area are as follows:

Word 1  
The amount of processor storage available, with little or no exposure to system paging or as directed by the installation through storage isolation, in units of 4K bytes.

Word 2  
The amount of processor storage available, with some increased paging or as directed by the installation through storage isolation, in units of 4K bytes.

Word 3  
The amount of total virtual storage available including auxiliary in units of 4K bytes.

Reg 15, byte 3: Contains X'00' if processing was successful.

SYSEVENT Code: 4C (hex)  
Mnemonic: AUXTREQ  
Meaning of Mnemonic: Auxiliary storage shortage threshold request.  
Purpose: Obtain the auxiliary storage shortage threshold.  
Locks Required: None  
Inputs: Reg 0, byte 3: SYSEVENT code.  
Outputs: Reg 1, bytes 0-3: Auxiliary storage shortage threshold.

SYSEVENT Code: 4D (hex)  
Mnemonic: APPCREQ  
Meaning of Mnemonic: APPC Request.  
Purpose: Record APPC conversations.  
Circumstances: There is an APPC request that requires a corresponding verb complete signal.  
Locks Required: None  
Inputs: Reg 0, bytes 0-1: ASID or 0.  
Reg 0, byte 3: SYSEVENT code.  
Reg 1, bytes 0-3: Address of parameter list that indicates the type of verb request.  
Outputs: Reg 15, byte 3: Return code:  
X'00' Request was recorded.  
X'04' Request was incorrect.  
X'08' Request was incorrect.  
X'0C' Request was not recorded because no storage is available.
Request was not recorded because address space is no longer active.

**SYSEVENT Code:** 4E (hex)

**Mnemonic:** INITID

**Meaning of Mnemonic:** Initiator identified.

**Purpose:** Initialize address space information pertaining to the initiator.

**Circumstances:** A started task is recognized as an initiator.

**Locks Required:** None

**Inputs:**
- Reg 0, bytes 0-1: ASID or 0.
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Parameter list mapped by the IRAICSP mapping macro.

**Outputs:** None.

**SYSEVENT Code:** 4F (hex)

**Mnemonic:** SADBRSTR

**Meaning of Mnemonic:** System activity display block (SADB) restart.

**Purpose:** Asynchronous notification of the completion of a SADB request.

**Circumstances:** A SADB failure is encountered and a restart is attempted.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code.
- Reg 1, bytes 0-3: Address of a three word parameter list.

**Outputs:** None.

**SYSEVENT Code:** 50 (hex)

**Mnemonic:** CHKSWIN

**Meaning of Mnemonic:** Check address space status.

**Purpose:** Determine whether an address space is currently swapped in, is in the process of being swapped in, or is ready to be swapped in.

**Circumstances:** Issued by SMF to avoid unnecessary system overload.

**Locks Required:** None

**Inputs:**
- Reg 0, bytes 0-1: ASID.
- Reg 0, byte 3: SYSEVENT code.

**Outputs:**
- Reg 15, byte 3: Return code: X'00' Address space is swapped in, in the process of being swapped in, or ready to be swapped in.
**SYSEVENT Summary**

**SYSEVENT Code:** 51 (hex)

**Mnemonic:** REQFASD

**Meaning of Mnemonic:** Request fast path address space data

**Purpose:** Allows a caller to retrieve address space data. This SYSEVENT is not traced by GTF.

**Circumstances:** Application dependent.

**Locks Required:** None

**Note:** No serialization is obtained, runs under the caller's recovery. If invoked while WLM is changing policies or modes, an abend may result. In this case, no dumping or recording should be done as part of the caller's recovery. SYSEVENT REQASD can be used if serialization to prevent possible abends is desired.

**Inputs:**
- Reg 0, bytes 0-1: ASID
- Reg 0, byte 3: SYSEVENT code
- Reg 1, bytes 0-3: address of IRARASD parameter list
- Reg 13: address of workarea

**Outputs:**
- Reg 15: Return code:
  - X'00' Successful completion. The IRARASD parameter list has been filled in.
  - X'08' The IRARASD parameter list is too small.
  - X'12' The ASID is not valid.

**SYSEVENT Code:** 52 (hex)

**Mnemonic:** REQASD

**Meaning of Mnemonic:** Request address space data

**Purpose:** Allows a caller to retrieve address space data.

**Circumstances:** Application dependent.

**Locks Required:** None

**Inputs:**
- Reg 0, bytes 0-1: ASID
- Reg 0, byte 3: SYSEVENT code
- Reg 1, bytes 0-3: address of IRARASD parameter list

**Outputs:**
- Reg 15: Return code:
  - X'00' The IRARASD parameter list has been filled in correctly.
  - X'08' The IRARASD parameter list is too small.
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>53 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>WLMSTCHG</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>WLM state change</td>
</tr>
<tr>
<td>Circumstances:</td>
<td>Issued when reporting is impacted due to a change in the state of the system.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>WLM local lock</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code</td>
</tr>
<tr>
<td>Outputs:</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>54 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>WLMCOLL</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>WLM collect workload information</td>
</tr>
<tr>
<td>Purpose:</td>
<td>To collect the workload activity information to be provided when a caller issues the IWMRCOLL service.</td>
</tr>
<tr>
<td>Circumstances:</td>
<td>Application dependent.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>WLM local lock</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code, Reg 1, bytes 0-3: address of output area parameter list (mapped by the IWMWRCAA data area).</td>
</tr>
<tr>
<td>Outputs:</td>
<td>Reg 15: Return code: X'00' Successful completion, X'08' Insufficient space for data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>55 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>REQSRMST</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Request SRM status</td>
</tr>
<tr>
<td>Purpose:</td>
<td>To provide information about the status of SRM on a system.</td>
</tr>
<tr>
<td>Circumstances:</td>
<td>Application dependent.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>None</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code, Reg 1: address of IRASRMST parameter list</td>
</tr>
<tr>
<td>Outputs:</td>
<td>Reg 15: Return code: X'00' Successful completion. The IRASRMST parameter list has been filled in, X'08' The IRASRMST parameter list is too small.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>56 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>RCVPADAT</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Receive policy data</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Provides the latest information to SRM about how</td>
</tr>
</tbody>
</table>
well each system in the sysplex is processing towards goals in a service policy.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code
- Reg 1: address of policy data

**Outputs:** None.

**SYSEVENT Code:** 57 (hex)

**Mnemonic:** ENCCREAT

**Meaning of Mnemonic:** Create enclave

**Purpose:** Create an enclave, validate the service class token, classify the enclave work, register the enclave as active, start transaction processing for the enclave.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code, byte 2: SYSEVENT type
- Reg 1: address of parameter list

**Outputs:** Enclave token
- Reg 15, byte 3 contains:
  - X'00': If successful completion.
  - X'04': If successful completion, but ENVT was expanded.
  - X'08': If service class token sequence is not valid, and the enclave is not created.
  - X'12': The maximum amount of active enclaves in the system has been reached. The enclave was not created.

**SYSEVENT Code:** 58 (hex)

**Mnemonic:** ENCDELET

**Meaning of Mnemonic:** Delete enclave

**Purpose:** Delete an enclave, validate the enclave token, and end the enclave transaction.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code.
- Reg 1: address of parameter list.

**Outputs:**
- Reg 15, byte 3 contains:
  - X'00': If successful completion. The enclave token has been deleted.
  - X'04': If enclave SRBs are active at the time of delete.
  - X'08': If input enclave token is not valid.
  - X'0C': If enclave token represents foreign enclave.
**SYSEVENT Summary**

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>59 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>STATEXIT</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>WLM sysplex management state change exit</td>
</tr>
<tr>
<td>Purpose:</td>
<td>WLM uses STATEXIT when a state change occurs on a remote system.</td>
</tr>
<tr>
<td>Circumstances:</td>
<td>WLM uses STATEXIT when a state change occurs on a remote system that requires an update to the VTAM generic, sysplex router, or ARM-related data used by SRM on the receiving system.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>SRM lock</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code.</td>
</tr>
<tr>
<td></td>
<td>Reg 1: address of parameter list.</td>
</tr>
<tr>
<td>Output:</td>
<td>None.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>5A (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>CLSFYENC</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Re-classify enclave transactions</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Indicates when enclave transactions may be re-classified during policy activation.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>None</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code.</td>
</tr>
<tr>
<td></td>
<td>Reg 13: address of standard 72 byte savearea.</td>
</tr>
<tr>
<td>Outputs:</td>
<td>None.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>5B (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>REQASCL</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Request address space classification attributes</td>
</tr>
<tr>
<td>Purpose:</td>
<td>To query classification attributes of an address space</td>
</tr>
<tr>
<td>Circumstances:</td>
<td>Application dependent.</td>
</tr>
<tr>
<td>Locks Required:</td>
<td>SRM lock</td>
</tr>
<tr>
<td>Inputs:</td>
<td>Reg 0, byte 3: SYSEVENT code.</td>
</tr>
<tr>
<td></td>
<td>Reg 1: address of parameter list mapped by IRARASC.</td>
</tr>
<tr>
<td>Output:</td>
<td>Reg 15, bytes 0-3: Contains one of the following return codes:</td>
</tr>
<tr>
<td></td>
<td>X'00'  Normal completion.</td>
</tr>
</tbody>
</table>
|                | X'04'  Information returned, but address space may not be in the service class or PGN assigned in the classification rules. For example, the address space may have been moved by the RESET operator command into a different PGN or service class, or the
SYSEVENT Summary

address space is assigned the system defined service class (SYSTEM, or SYSSTC).

X'08'  Input parameter list is not properly initialized (eyecatcher, version or size specified is too small)

X'12'  Classification information is not available. This may be true for MASTER address space, for an address space that is starting up or ending.

SYSEVENT Code: 65 (hex)
Mnemonic: ENCSTATE
Meaning of Mnemonic: Enclave state change.
Purpose: Inform SRM of enclave state changes.
Locks Required: None
Inputs: Reg 0, byte 3: SYSEVENT code.
Reg 1, bytes 0-3: Contains the address of IRAEVPL.
Reg 13, bytes 0-3: Contains the address of a 72 byte save area.
Outputs: Reg 15, bytes 0-3: Set to 0; no non-zero return codes.

SYSEVENT Code: 66 (hex)
Mnemonic: HSPCQRY
Meaning of Mnemonic: Request recommendations for expanded storage management
Purpose: Based on WLM's expanded storage policy, WLM will attempt to make a recommendation on a caller's home address space hiperspace pages to:
  • Use expanded storage
  • Recommend the caller make its own decision
  • Not use expanded storage
Locks Required: None
Inputs: Reg 13, bytes 0-3: Contains the address of a 72 byte save area.
Output: Reg 15, byte 3: Contains one of the following return codes:
  X'00' Yes, use expanded storage to cache HSP
  X'04' Maybe, caller is to make its own decision.
  X'08' No, do not use expanded storage

SYSEVENT Code: 69 (hex)
Mnemonic: WLMQUEUE
Meaning of Mnemonic: WLM work queue management event.
Purpose: Inform SRM of changes in WLM-managed work queues.
### SYSEVENT Summary

<table>
<thead>
<tr>
<th>Locks Required</th>
<th>Inputs</th>
<th>Outputs</th>
<th>SYSEVENT Code</th>
<th>Mnemonic</th>
<th>Meaning of Mnemonic</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLMQ, WLMRES, WLM local may be held on entry; none required by SRM.</td>
<td>Reg 0, byte 3: SYSEVENT code. Reg 1, bytes 0-3: Contains the address of the parameter list mapped by IRAWLMPL.</td>
<td>Return codes in IRAWLMPL.</td>
<td>6A (hex)</td>
<td>ENCASSOC</td>
<td>Enclave is associated with an address space. Indicates to SRM that an enclave and an address space are related for purposes of storage management. IWMEJOIN and IWMSTBGN register this same association.</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Reg 0, byte 0-1: The high order bit of byte 0-1 must be set and the 8-byte enclave token must be specified in access register 0-1. Reg 0, byte 2: Contains the function code. The values are documented in IRAEVPL. Reg 0, byte 3: SYSEVENT code. Reg 1, bytes 0-3: Contains the address of the parameter list mapped by IRAEVPL.</td>
<td>Reg 15, bytes 0-3: Contains the return code. The values are documented in IRAEVPL.</td>
<td>6B (hex)</td>
<td>IWMRESET</td>
<td>Reset address space. Issued by WLM to change the service class of an address space. This is called by the RESET operator command and by the IWMRESET programming interface.</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Reg 0, bytes 0-1: ASID Reg 0, byte 2: The request type documented in IRAWLMPL Reg 0, byte 3: SYSEVENT code</td>
<td>Reg 1, byte 3: Contains the return code. The values are documented in IRAWLMPL.</td>
<td>6C (hex) This SYSEVENT is not traced by GTF.</td>
<td>SCTCNV</td>
<td>Convert service class token.</td>
<td></td>
</tr>
</tbody>
</table>
Purpose: To convert a service class token into the service class index and report class index.

Locks Required: None

Inputs: Reg 1, bytes 0-3: Pointer to service class token.

Outputs: Reg 0, bytes 0-3: Report class index.
          Reg 15, bytes 0-3: Service class index.

SYSEVENT Code: 6D (hex)

Mnemonic: COPYTXSH

Meaning of Mnemonic: Copy transaction server history.

Purpose: To re-establish server history relationships after a policy switch.

Locks Required: None

Inputs: Reg 1, bytes 0-3: Contains the address of the old policy mapped by IRAWMST.

Outputs: None.

SYSEVENT Code: 6E (hex)

Mnemonic: FREEAUX

Meaning of Mnemonic: Return recommendation for free available AUX storage

Locks Required: None

Inputs: None

Outputs: Reg 0: Recommended number of free AUX slots

SYSEVENT Code: 6F (hex)

Mnemonic: ENCS97

Meaning of Mnemonic: Multisystem enclave SMF97 recording

SYSEVENT Code: 70 (hex)

Mnemonic: ENCXSYS

Meaning of Mnemonic: Multisystem enclave processing

SYSEVENT Code: 71 (hex)

Mnemonic: ENCREADY

Meaning of Mnemonic: Move enclave from inactive enclave queue to active enclave queue

SYSEVENT Code: 72 (hex)

Mnemonic: LPARMGMT

Meaning of Mnemonic: LPAR management processing (BCP-only, not for external use)

SYSEVENT Code: 73 (hex)

Mnemonic: SUBSSORT

Meaning of Mnemonic: CHPID sort I/O subsystem
<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>74 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>IOVIOLAT</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>CHPID IO violate</td>
</tr>
<tr>
<td>SYSEVENT Code:</td>
<td>75 (hex)</td>
</tr>
<tr>
<td>Mnemonic:</td>
<td>IODEL</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>I/O subsystem delete processing</td>
</tr>
<tr>
<td>SYSEVENT Code:</td>
<td>76 (hex)</td>
</tr>
<tr>
<td>Mnemonic:</td>
<td>NEWSTSI</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Store system information</td>
</tr>
<tr>
<td>SYSEVENT Code:</td>
<td>77 (hex)</td>
</tr>
<tr>
<td>Mnemonic:</td>
<td>QVS</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Query virtual server</td>
</tr>
</tbody>
</table>

**Purpose:** Return capacity information for software licensing.

**Locks Required:** None.

**Inputs:**
- Register 1 contains the address of the parameter list mapped by IRAQVS. Field QvsLen must be filled in with the length of the parameter list.

**Outputs:**
- Contains the return code. The values are documented in IRAQVS.

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>78 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>REALSWAP</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Swap Real Frames processing</td>
</tr>
</tbody>
</table>

**Purpose:** Inform SRM about the start of recovering fixed real storage from a swappable address space.

**Locks Required:** None.

<table>
<thead>
<tr>
<th>SYSEVENT Code:</th>
<th>79 (hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mnemonic:</td>
<td>ENCREG</td>
</tr>
<tr>
<td>Meaning of Mnemonic:</td>
<td>Enclave registration/deregistration</td>
</tr>
</tbody>
</table>

**Purpose:** Register an enclave to avoid premature deletion of the enclave. Undo (deregister) a previous registration of the enclave.

**Locks Required:** None

**Inputs:**
- Reg 0, byte 3: SYSEVENT code.
- Reg 1: Address of parameter list.

**Outputs:**
- Reg 15, byte 3: Contains one of the following:
  - X'00' Successful completion
  - X'04' Enclave is delete pending
  - X'08' Invalid function code
  - X'0C' Invalid enclave token
SYSEVENT Summary

SYSEVENT Code: 7D (hex)
Mnemonic: ENCEWLM
Meaning of Mnemonic: Work request management
Purpose: This SYSEVENT is used by WLM when a work request is started or stopped.
Locks Required: None
Inputs:
- Reg 0, byte 0-1: SYSEVENT code
- Reg 1: Address of parameter list
Outputs:
- Reg 15, byte 3: contains one of the following:
  - X'00': Successful completion
  - X'04': Work request was not found
  - X'08': Invalid function code
  - X'0C': Invalid enclave
  - X'10': Parent work request handle is zero
  - X'14': Dependent enclave
  - X'18': Failed to validate process ID
  - X'1C': Output buffer for this request code was too small

SYSEVENT Code: 7F (hex)
Mnemonic: CANCEL
Meaning of Mnemonic: Notify SRM that an address space is being cancelled.
Purpose: When the CANCEL command for an address space has been accepted by the command processor, the command processor notifies SRM that cancel processing is starting for the address space.
Locks Required: Local
Inputs:
- Reg 0, bytes 0-1: ASID or zero.
- Reg 0, byte 3: SYSEVENT code.
Outputs:
- Reg 1, byte 3: contains:
  - X'00': The CANCEL request was honoured.
  - X'04': The CANCEL request was not successful.

SYSEVENT Code: 81 (hex)
Mnemonic: FULLPRE
Meaning of Mnemonic: Changes the preemption of an address space.
Purpose: Sysevent allows to switch full preemption on and off.
Locks Required: None
### SYSEVENT Summary

**Inputs:**
- Reg 0, bytes 0-1: zero.
- Reg 0, byte 2 contains a function code:
  - X'00': Switch full preemption on
  - X'01': Switch full preemption off
- Reg 0, byte 3: SYSEVENT code.

**Outputs:**
- None

**SYSEVENT Code:** 82 (hex)

**Mnemonic:** PBGDD

**Meaning of Mnemonic:** Pass descriptions for generic PB delay states from WLM to SRM.

**Purpose:** Internal sysevent called by WLM to link the descriptions for the generic delay states to SRM control blocks.

**Locks Required:** None

**Inputs:**
- Reg 0, bytes 0-1: zero.
- Reg 0, byte 2 contains a function code:
  - X'00': Define descriptions
  - X'01': Retrieve descriptions
- Reg 0, byte 3: SYSEVENT code.

- Reg 1, contains the address of the area that contains the descriptions for the delay states.

**Outputs:**
- Reg 1: contains X'00' or the address of a data area that contains descriptions for delay states, which can be the case for function:
  - **retrieve**
    - In this case, the use is obvious.
  - **define**
    - In this case, the area is not used by SRM anymore and can be freed by the caller.
    - This case happens when descriptions are replaced, which means the old descriptions are not needed anymore and thus are returned to be disposed by the caller.

**Note:** The caller is WLM code, which means no external users.
Chapter 4. SVC summary

This summary covers the following:
• Defines the five types of SVC routines.
• Briefly describes the SVC table.
• Summarizes each system-defined SVC instruction.

SVC routines

If you are writing an SVC, use the information here in conjunction with “User-Written SVC Routines” in Z/OS MVS Programming: Authorized Assembler Services Guide. There are five types of SVC routines, which are distinguished as follows:

Residence
• SVC types 1, 2, and 6 are part of the nucleus.
• SVC types 3 and 4 reside in the link pack area (LPA).

A type 3 routine is a single load module, while a type 4 routine consists of two or more load modules.

Naming conventions for SVC routines

SVC routines are load modules which are named as follows:
• The routines for SVC types 1, 2 and 6 are named IGCxxx, where xxx is the SVC number (decimal).
• The routines for SVC types 3 and 4 are named IGC00xxx, where xxx is the SVC number.

If a type 4 SVC routine calls for multiple SVC loads, the naming convention is to identify each load by increasing 00 by one. For example, IGC03xxx indicates the third module loaded within a type 4 SVC routine.

For types 3 and 4 SVC routines, the internal format of the SVC number (xxx) is zoned decimal with a four-bit sign code (1100) in the four high-order bits of the low order byte. Any low-order digit in a type 3 or 4 SVC number that is between 1 and 9 will be an EBCDIC character between A and I in the load module name. For example, the load module name for SVC 51 (X’33’) would be IGC0005A because the low order byte is 1100 0001, or A in zoned decimal. A low-order zero in the SVC number corresponds to a hexadecimal C0 in the load module name.

ESR type 3 routines have names in the format IGX00nnn where nnn is the decimal code placed in register 15 when SVC 109 is issued.

Register conventions

SVC routines are entered with the following data in the general purpose registers:
• Registers 0, 1, 13, and 15 – Contents when the SVC instruction was processed.
• Register 3 – Address of the CVT.
• Register 4 – Address of the TCB.
• Register 5 – Address of the current RB (for type 1 or type 6 SVC), or address of the SVRB for SVC routine (for type 2, 3, or 4 SVC).
• Register 6 – Address of the SVC routine entry point.
### SVC Summary

Register 7 – Address of the ASCB.
Register 14 – Return address.
Other registers – Unpredictable.

#### Locks

Each SVC routine is entered with the locks specified for the routine in the SVC table. In addition, each type 1 SVC routine is entered with the LOCAL lock held; this lock must not be released by the SVC. The LOCAL lock should be specified on the SVC parmlib statement in the appropriate IEASVCxx member. An SVC routine can acquire any lock(s), and runs enabled or disabled depending on the lock held. To avoid disabled page faults, a type 3 or 4 SVC routine must fix its pages in central storage before acquiring a disabled lock (any lock other than LOCAL, CMS, or CMSEQDQ). A type 6 SVC cannot be suspended for a lock request.

For more information, see Chapter 6, “Serialization summary.”

#### Page faults

An SVC routine can be restarted after a page fault, provided that the routine does not hold a disabled lock.

#### SVC instructions

An SVC routine can issue SVC instructions, provided that it does not hold any lock. **(Note:** A type 1 SVC routine cannot issue SVC instructions, because it always holds at least the LOCAL lock.)

#### Other characteristics

All SVC routines are entered in supervisor state with a zero storage protect key (other keys can be used during processing). The SVC table specifies whether or not the caller must have APF authorization. A type 6 SVC runs disabled and must not enable.

### SVC table

The SVC table is a system data area that contains one eight-byte entry for each system-defined or user-defined SVC instruction.

Locate the SVC table as follows:
1. Find the CVTABEND field in the CVT control block. This points to the SCVT control block.
2. The SCVTSVCT field in the SCVT points to the SVC table.

**References** For the CVT and SCVT control block, see *z/OS MVS Data Areas* in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/)

Each word entry in the SVC table contains the following information:

- Byte 0, bit 0 contains the AMODE.
- Bytes 0-3 contain the SVC entry point address.
- Byte 4 contains the SVC type and authorization:

<table>
<thead>
<tr>
<th>Type</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>000.</td>
<td>is type 1</td>
</tr>
<tr>
<td>100.</td>
<td>is type 2</td>
</tr>
</tbody>
</table>
110. .... is type 3 or 4
001. .... is type 6
.... 0... is an unauthorized SVC
.... 1... is an authorized SVC
.... .1.. is an extended SVC
.... ..1. is a non-preemptive SVC
.... ...1 SVC can be assisted.

• Byte 5 contains the SVC attributes:

1... .... SVC can be issued in access register mode.

• Byte 6 indicates which locks are to be obtained by the SVC first level interruption handler (FLIH) before the SVC routine is processed:
  X'80' is LOCAL lock.
  X'40' is CMS lock.
  X'20' is SRM lock.
  X'10' is SALLOC lock.
  X'08' is DISP lock.

For more information about defining SVCs to the SVC Table, see z/OS MVS Initialization and Tuning Reference.

System SVC instructions

The rest of this topic provides a summary of each SVC, its associated macro, and the following information:

• The SVC instruction number in assembler language (decimal) and machine language (hexadecimal).
  Example: SVC 16 (0A10)
• The macro instructions that generate the SVC instruction.
• The SVC type (1, 2, 3, 4, or 6).
• Locks acquired by the SVC routine or by the SVC FLIH.
• Authorized program facility (APF) protected, if applicable. Unless otherwise noted, the SVC in question is not APF protected.
• Generalized trace facility (GTF) trace data:
  – Information passed to the SVC routine in general registers 15, 0, and 1. This includes the extended SVC routing codes for SVC 109, SVC 116, and SVC 122.
  – The PLIST for the SVC. This is information related to the request triggered by the SVC that is captured by GTF.
  – Additional information displayed in GTF comprehensive trace records (but omitted in GTF minimal trace records).

For the general format of an SVC GTF trace record, see the GTF chapter of z/OS MVS Diagnosis: Tools and Service Aids.

SVCs and associated macros

The following topic contains two tables that list SVCs with their associated macros.

• Table 4-1 on page 4-4 contains a list of decimal SVC numbers, showing the associated macros for each SVC.
• Table 4-2 on page 4-9 contains a list of macros in alphabetical order showing the associated SVC number for each.
### Table 4-1. SVC Numbers and Associated Macros

<table>
<thead>
<tr>
<th>DEC</th>
<th>HEX</th>
<th>Macro</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(00)</td>
<td>EXCP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>XDAP</td>
</tr>
<tr>
<td>1</td>
<td>(01)</td>
<td>PRTOV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WAIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WAITR</td>
</tr>
<tr>
<td>2</td>
<td>(02)</td>
<td>POST</td>
</tr>
<tr>
<td>3</td>
<td>(03)</td>
<td>EXIT</td>
</tr>
<tr>
<td>4</td>
<td>(04)</td>
<td>GETMAIN (TYPE 1) (get storage below 16 megabytes - with R operand)</td>
</tr>
<tr>
<td>5</td>
<td>(05)</td>
<td>FREEMAIN (TYPE 1)</td>
</tr>
<tr>
<td>6</td>
<td>(06)</td>
<td>LINK</td>
</tr>
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|     |      | CHNGNTRY  
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|     |      | IECTCHGA  
|     |      | IECTRDTI  
|     |      | RESETPL |
| 117 | (75) | DEBCHK |
| 118 | (76) | Reserved |
| 119 | (77) | TESTAUTH |
| 120 | (78) | FREEMAIN (free storage above 16 megabytes - TYPE 1)  
|     |      | GETMAIN (get storage above 16 megabytes - TYPE 1) operand |
| 121 | (79) | No Macro (for VSAM) |
| 122 | (7A) | EVENTS(TYPE 2)  
|     |      | Extended LINK  
|     |      | Extended LOAD  
|     |      | Extended XCTL  
|     |      | LINK - Extended LINK  
|     |      | LOAD - Extended LOAD  
|     |      | Service Processor Call  
|     |      | STIMERE  
|     |      | VALIDATE |
| 123 | (7B) | PURGEDQ |
| 124 | (7C) | TPIO |
| 125 | (7D) | EVENTS(TYPE 1) |
| 126 | (7E) | Reserved |
| 127 | (7F) | Reserved |
| 128 | (80) | Reserved |
| 129 | (81) | Reserved |
| 130 | (82) | RACHECK |
| 131 | (83) | RACINIT |
| 132 | (84) | RACLST |
| 133 | (85) | RACDEF |
| 134 | (86) | Reserved |
| 135 | (87) | Reserved |
| 136 | (88) | Reserved |
| 137 | (89) | ESR(TYPE 6) |
| 138 | (8A) | PGSER |
| 139 | (8B) | CVAF  
|     |      | CVAFDIR  
|     |      | CVAFDSM  
|     |      | CVAFSEQ  
|     |      | CVAFVOL  
|     |      | CVAFVRF |
| 143 | (8F) | CIPHER  
|     |      | EMK(TYPE 4)  
|     |      | GENKEY  
|     |      | RETKEY |
## Table 4-1. SVC Numbers and Associated Macros (continued)

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### SVC Summary

**Table 4-2. Macros and associated SVC number (continued)**

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### SVC descriptions

#### SVC 0 (0A00)

**EXCP/XDAP macro - is type 1, gets LOCAL lock.**

Calls module IECVEXCP, entry point IGC000.

GTF data is:

- **R15**: No applicable data.
- **R0**: Address of the IOBE when IOBFLAG4 is on in the IOB.
- **R1**: Address of the IOB associated with this request.

**DDNAME**: cccccc
Name of the associated DD statement.

**DCB**: xxxxxxxx
Address of the DCB associated with this I/O request.

**DEB**: xxxxxxxx
Address of the DEB associated with this I/O request.

#### SVC 1 (0A01)

**WAIT/WAITR/PRTOV macro - is type 1, gets LOCAL lock.**

Calls module IEAVEWAT, entry point IGC001.

GTF data is:

- **R15**: No applicable data.
- **R0**: Count of the number of events being waited for. If the count is zero, the wait is treated as a NOP. Bit 0 equals one indicates a long wait.
- **R1**: If positive, the address of the ECB being used. If complemented, the address of a list of ECB addresses.

**PLIST**: The list is a series of fullwords, each containing the address of an ECB.

#### SVC 2 (0A02)

**POST**

Macro - is type 1, gets LOCAL lock.

Calls module IEAVEPST, entry point IGC002.
SVC Summary

GTF data is:
R15 No applicable data.
R0 For POST: The completion code to be placed in the ECB.
R1 For POST: The address of the ECB to be posted or (if the high-order bit is 1), the address of a parameter list as follows:
Bytes
0-3 Address of the ECB.
4-7 Address of the ASCB for the address space that contains the ECB
8-11 Address of the ERRET routine.
12 Bits 0-3 contain the storage protection key of the ECB if the high-order bit of R0 is on and the high-order bit of R1 is on.

SVC 3 (0A03)
EXIT macro - is type 1, gets LOCAL lock.

Calls module IEAVEOR, entry point IGC003.

GTF data is:
R0,R1 No applicable data.
R15 The low order three bytes contain the system/user completion code, which is placed into the TCBCMPC when the exiting RB causes normal task ending.

SVC 4 (0A04)
GETMAIN macro - is type 1, gets LOCAL lock.

Calls module IGVVSM24, entry point IGC004.

Note: The GETMAIN/FREEMAIN interface provided by SVC 4 can be called in either 24- or 31-bit addressing mode. Storage area addresses and lengths are treated as 24-bit addresses and values. If the caller’s addressing mode is 31-bit, the parameter list address and the pointers to the length and address lists in the parameter list, if present, are treated as 31-bit addresses. Otherwise, they are treated as 24-bit addresses with the high byte of the address ignored. GTF data is:
R15 and R0 No applicable data.
R1 Address of the parameter list passed when the SVC was called.
PLIST 10 bytes in length:
Bytes

0-3 a. Single area request - length requested.
b. Variable request - address of a doubleword containing the minimum maximum length requested. Format is:
Bytes
0 Zero.
1-3 Minimum length.
4 Zero.
5-7 Maximum length.
c. List request - address of a list of lengths requested (one word per request); last word contains X’80’ in byte 0.
4 Zero
**SVC Summary**

5-7   a. Single area request - address of a word GETMAIN initializes with the address of the area acquired.
   b. Variable area request - address of a doubleword GETMAIN initializes with the address of the area acquired and the actual length allocated.
   c. List request - address of a list of areas that GETMAIN initializes with the addresses of the areas allocated for each requested length in the length list.

8 Flag byte, format is:
   10 Request is for storage aligned on a page boundary.
   00 Unconditional single area request.
   20 Conditional single area request.
   80 Unconditional list request.
   A0 Conditional list request.
   C0 Unconditional variable request.
   E0 Conditional variable request.

9 Subpool identification.

Register contents on return:
   R1 unchanged.
   R15 00 if storage is available.
   04 if storage is not available.

**SVC 5 (0A05)**

[FREEMAIN] macro - is type 1, gets LOCAL lock.

Calls module IGVVSM24, entry point IGC005.

**Note:** The GETMAIN/FREEMAIN interface provided by SVC 5 can be called in either 24-bit or 31-bit addressing mode. Storage area addresses and lengths are treated as 24-bit addresses and values. If the caller’s addressing mode is 31-bit, the parameter list address and the pointers to the length and address lists in the parameter list, if present, are treated as 31-bit addresses. Otherwise, they are treated as 24-bit addresses with the high byte of the address ignored. GTF data is:

R15 and R0 No applicable data.
R1 Address of the input parameter list.
PLIST 10 bytes, contents are:

**Bytes**

0-3   a. Single area request - length to be freed.
   b. List area request - address of a list of FREEMAIN length requests (1 word per request); last word contains X’80’ in byte 0.
   c. Variable Request-zero

4-7   a. Single area request - address of a word containing the address of the area to be freed.
   b. List area request - address of a list of addresses of areas to be freed.
   c. Variable request-address of a doubleword containing the address to be freed in the first word and the length to be freed in the second word.
8  Flag byte, format is:
   00  Unconditional single area request.
   20  Conditional single area request.
   80  Unconditional list area request.
   A0  Conditional list area request.
   C0  Unconditional variable request.
   E0  Conditional variable request.

9  Subpool identification.

Register contents on return:
R15  00 if the storage was freed 04 if the status of the storage is unchanged

SVC 6 (0A06)
[LINK or LINKX] macro - is type 2, gets LOCAL and CMS locks.

Calls module CSVLINK, entry point IGC006.

GTF data is:
R15  Address of the parameter list.
R0   No applicable data.
R1   Address of the user optional parameter list.

NAME       entry point/directory entry (EP/DE) name of the module to be linked to or given control.
NAME       cccccccc
PLIST      The parameter list is twelve bytes long; the format is:
Bytes
  0-3  If the high-order bit of byte 0 is set to one, then bytes 0-3 contain
       the address of the directory entry list.
       If the high-order bit of byte 0 is set to zero, then bytes 0-3 contain
       the address of the entry point name.
  4    Indicates an extended parameter list. If X'80'.
  5    DCB address or zero.
  8    Contains the address of routine to get control on error (ERRET parameter) if byte 4 is X'80'.

SVC 7 (0A07)
[XCTL or XCTLX] macro - is type 2, gets LOCAL and CMS locks.

Calls module CSVXCTL, entry point IGC007.

GTF data is:
R15  Address of the parameter list.
R0   No applicable data.
R1   No applicable data.

NAME       entry point/directory entry (EP/DE) name of the module to be linked to or given control.
NAME       cccccccc
PLIST      The parameter list is eight bytes long; the format is:
Bytes
0-3 If the high-order bit of byte 0 is set to one, then bytes 0-3 contain the address of the directory entry list.

If the high-order bit of byte 0 is set to zero, then bytes 0-3 contain the address of the entry point name.

4 No applicable data.

5 DCB address or zero.

**SVC 8 (0A08)**

The **LOAD** macro is type 2, gets LOCAL and CMS locks.

Calls module CSVLOAD, entry point IGC008.

GTF data is:

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15</td>
<td>No applicable data.</td>
</tr>
<tr>
<td>R0</td>
<td>Content:</td>
</tr>
<tr>
<td></td>
<td>For the macro instruction specifying the EP or EPLOC parameter, contains the 24- or 31-bit address of the entry point name.</td>
</tr>
<tr>
<td></td>
<td>For the macro instruction specifying the DE parameter, contains the address of the directory entry list in twos-complement form.</td>
</tr>
<tr>
<td>R1</td>
<td>24- or 31-bit DCB address. The high-order bit indicates whether a return was requested.</td>
</tr>
</tbody>
</table>

**NAME** ccccccccc entry point/directory entry name of the module to be loaded.

Register contents on return:

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0</td>
<td>Virtual storage address of the designated entry point</td>
</tr>
<tr>
<td>R1</td>
<td>Bytes</td>
</tr>
<tr>
<td>0</td>
<td>Authorization code of the loaded module</td>
</tr>
<tr>
<td>1-3</td>
<td>Length of the loaded module in doublewords</td>
</tr>
<tr>
<td>R15</td>
<td>If equal to 00 - LOAD function was successful. If greater than 00 - LOAD function was not successful.</td>
</tr>
</tbody>
</table>

**SVC 9 (0A09)**

The **DELETE** macro is type 2, gets LOCAL and CMS locks.

Calls module CSVDELETE, entry point IGC009.

GTF data is:

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15</td>
<td>No applicable data.</td>
</tr>
<tr>
<td>R0</td>
<td>Address of the entry point name.</td>
</tr>
</tbody>
</table>

**NAME** ccccccccc entry point name of the module to be deleted.

Register contents on return:

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15</td>
<td>00 - successful completion of requested function</td>
</tr>
<tr>
<td></td>
<td>04 - request was not issued by the task that issued the LOAD macro instruction or attempt was made to delete a system module.</td>
</tr>
</tbody>
</table>
SVC Summary

**SVC 10 (0A0A)**

`GETMAIN` or `FREEMAIN` macro with R operand - is type 1, gets LOCAL lock.

Calls module IGVVSM24, entry point IGC010.

**Notes:**
1. SVC 10 cannot be used to GETMAIN or FREEMAIN storage whose address is greater than 16 megabytes.
2. The GETMAIN/FREEMAIN interface provided by SVC 10 can be called in either 24-bit or 31-bit addressing mode. Storage area addresses and lengths are treated as 24-bit addresses and values. If the caller is in 31-bit addressing mode, and the caller passes a 31-bit address, the address is treated as a 24-bit address with the high-order byte of the address ignored.

**GTF data is:**
- **R15** No applicable data.
- **R0** Number of the subpool requested in the high-order byte, and the length of the area requested in bytes 1-3. (A zero length is required for a subpool FREEMAIN).
- **R1** Any negative value if the request is for a GETMAIN. Address of the storage to be freed if the request is for a FREEMAIN. Zero if the request is for a FREEMAIN of an entire subpool.

Register contents on return:
- **R1** Address of the allocated virtual storage area if the request was for a GETMAIN.
- **R15** 00 - storage available if the request was for a GETMAIN; storage freed if the request was for a FREEMAIN.
- **R15** 04 - storage not available if request was for a GETMAIN; storage status unchanged if request was for a FREEMAIN.

**SVC 11 (0A0B)**

`TIME` macro - is type 3, gets no lock.

Calls module IEAVRT01, entry point IGC001A.

**GTF data is:**
- **R15** No applicable data.
- **R0** Address of the area into which the microsecond elapsed time or the current TOD clock value is to be placed.
- **R1** Low-order byte has flag bits that designate that the time will be returned in register 0, and in what format.

**Bits**
- 0000 32-bit unsigned binary number representing the number of elapsed timer units. (A timer unit is approximately 26.04 microseconds.)
- 0001 Elapsed time in hundredths of a second.
- 0010 Packed decimal digits representing elapsed time in hours, minutes, seconds, tenths of a second, and hundredths of a second (HHMMSShh).
- 0011 Elapsed time where bit 51 of doubleword is equivalent to one microsecond.
- 0100 The current TOD clock value is to be returned.
- 1000 The routine specified by the ERRET operand gets control on an environmental error.
- 1111 GMT values are to be returned.
SVC 12 (0A0C)

**SYNCH or SYNCHX macro** - is type 2, gets LOCAL and CMS locks.

Calls module CSVSYNCH, entry point IGC012.

GTF data is:
- **R15**: Address of the entry point for the processing program that is to be given control.
- **R14**: Points to a parameter list if the low order bit of register 15 is set. The parameter list is in the following format:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Flag bits as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Flag bits as follows:</td>
</tr>
<tr>
<td></td>
<td>1... .... Restore R2 - R12 at exit.</td>
</tr>
<tr>
<td></td>
<td>.000 00.. Reserved (must be zero).</td>
</tr>
<tr>
<td></td>
<td>.... .00 Routine to receive control in 24-bit mode.</td>
</tr>
<tr>
<td></td>
<td>.... .01 Addressing mode of called routine is defined via R15; if the high order bit of R15 is set, the routine receives control in 31-bit mode: otherwise, 24 bit mode.</td>
</tr>
<tr>
<td></td>
<td>.... ..10 Routine to receive control in 31-bit mode.</td>
</tr>
<tr>
<td></td>
<td>.... ..11 Routine to receive control in the addressing mode of the caller.</td>
</tr>
<tr>
<td>1</td>
<td>Flag bits as follows:</td>
</tr>
<tr>
<td></td>
<td>1... .... Key of called routine supplied via KEYADDR option.</td>
</tr>
<tr>
<td></td>
<td>.1.. .... Called routine to receive control in supervisor state.</td>
</tr>
<tr>
<td></td>
<td>_.00 0000 Reserved (must be zero).</td>
</tr>
<tr>
<td>2</td>
<td>The high order 4 bits contain the key which is supplied via the KEYADDR option. The low order 4 bits must be zero.</td>
</tr>
<tr>
<td>3</td>
<td>Macro level - if byte 3 = 1, the parameter list includes 4 bytes for the KEYMASK field.</td>
</tr>
<tr>
<td>4</td>
<td>Address of a halfword containing the keymask value supplied via the KEYMASK option.</td>
</tr>
</tbody>
</table>

- **R0 and R1**: Optional user parameters.

SVC 13 (0A0D)

**ABEND** macro - is type 4, gets LOCAL lock.

Calls module IEAVTRT2, entry point IGC0101C.

GTF data is:
- **R15**: Contains a 4 byte reason code if the REASON parameter is specified. If the REASON parameter is not specified, then R15 contains no applicable data.
- **R0**: If the DUMPOPT or DUMPOPTX parameter is specified, R0 contains the address of a parameter list valid for the SNAP or SNAPX macro.
- **R1**: Applicable if SVC 13 was not called by the ABTERM routines; format is:

<table>
<thead>
<tr>
<th>Bytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>
SVC Summary

Bits
1... DUMP option.
.1... STEP option.
.1... DUMPOPT specified.
...1 Entry to RTM for memory purge.
.... 1... Exit to RTM (normal end of task).
.... .1.. REASON parameter specified.
.... .xx Reserved.

1-3 ABEND Completion code.

CMP CODE
The ABEND completion code if SVC 13 was called by ABTERM routines. It is the content of the TCBRCMP field of the current TCB at the time the SVC interruption occurred. If ABEND recursion has occurred, this field contains the recursive completion code.

SVC 14 (0A0E)
SPIE macro - is type 3, gets LOCAL lock.

Calls module IEAVTESP, entry point IGC0001D.

GTF data is:
R15 and R0 No applicable data.
R1 Address of the PICA.
PICA xxxxxxxx PICA from the associated SPIE macro instruction.

SVC 15 (0A0F)
ERREXCP macro - is type 1, gets LOCAL, IOSUCB, IOSYNCH, and CPU locks.

Calls module IECVPST, entry point IGC015.

APF protected via TESTAUTH. GTF data is:
R15 and R0 No applicable data.
R1 Address of the IOSB that was assigned to this I/O request by IOS.

DDNAME cccccc Name of the DD statement associated with this I/O request.
U/A Indicates that the DDNAME was unavailable because the DEB address was verified as not valid.
****** A program check occurred trying to gather the DDNAME.

ERP flags:
IOSFLA flags from IOSB assigned to this request by IOS.
Format is:
IOSERR .1. Error routine is in control of this SRB. If the ERP returns with this bit on a retry is assumed. If the ERP returns with this bit off, the error is considered to be permanent or corrected depending on the setting of bit IOSEX.
IOSEX .... .1.. Exceptional condition is set by IOS. Upon return from
the abnormal or normal exit with this bit on, ERP
processing is initiated if this is an initial error
condition. If this bit is off, it is assumed that the exit
corrected the condition or did not consider it an error.
When the error routine returns with this bit on and
bit IOSERR is off, the error is considered permanent.
When the ERP returns with both bits off, the error
has been corrected.

xx.x x.xx No meaning for ERREXCP.

TCB Address of the TCB associated with the SRB scheduled to handle this I/O
request.

DCUU Device number, in channel-unit form, of the device associated with this
I/O request.

SVC 16 (0A10)
PURGE macro - is type 2, gets LOCAL, IOSUCB, CMS, and IOSYNCH locks.

Calls module IOSPURGA, entry point IGC016.

GTF data is:

R15 and R0 No applicable data.

R1 If positive, contains the address of the purge parameter list. If
negative (complemented), contains the address of the IPIB.

DDNAME cccccccc Name of the DD statement associated with the
requests being purged.

U/A Indicates that the DDNAME was unavailable because
the DEB address was unavailable.

******* Indicates that a program check interruption occurred
while trying to gather the DCB address or DDNAME.

DCB xxxx Address of the DCB associated with the purge
request.

U/A Unavailable because PPLDSID was 0 or verified as an
incorrect DEB address.

**** Indicates that a program check interruption occurred
while trying to gather the DCB address.

PLIST Purge parameter list. Format is:

Bytes

0 PPLOPT1 Option byte 1. Bit settings are:

Bits

PPLDS 1... .... If DSID purge was requested (bit 6), purge a
single DSID (see PPLDSID). If zero, purge the
DSID list.

PPLPOST .1.. .... ECBs associated with I/O requests purged
should be posted with X'48'.

PPLHIO .1. .... Halt the I/O requests and do not build a PIRL.

PPLREL ...1 .... Purge only the I/O requests marked related
and associated with the argument.

.... x... Reserved; must be zero.

PPLRB .... .1.. Do not purge the RB chain for asynchronously
scheduled routines.
### SVC Summary

- **PPLTASK** .... ..1. If ASID purge is not specified, purge a single TCB.
- **PPLEXR** .... ...1 Option byte 2 is present and contains valid information.
- **PPLSIDA** 1-3 Address of the DEB, the argument used for DSID purge.
- **PPLCC** 4 Completion code.
  - If bit 7 of option byte 1 is 0, the only completion code is X'7F'. If bit 7 of option byte 1 is 1, the completion codes are as follows:
    - **X'7F'**: Successful completion of the purge request.
    - **X'40'**: Unsuccessful completion. Details in register 15.
- **PPLTCBA** 5-7 Address of the TCB.
- **PPLDVRID** 8 Driver ID for the DSID purge – X'00' implies EXCP is the owner.
- **PPLPIRL** 9-11 This is the address of the anchor from which the purged I/O Request List (PIRL) will be chained. The anchor is a fullword whose right most 3 bytes are used for a pointer to the PIRL. If the address in the anchor is X'FFFFFF', no I/O request was purged.
- **PLOPT2** 12 Option byte 2, present if PLOPT1, bit 7 is 1.
- **PPLCAN** 13 Cancel Command request.
- **PPLMEM** .1. Reserved; must be zero.
- **PPLVC** ...1. Perform the DSID validity check.
- **PPLTREX** .... 1... Purge the I/O requests so that when they are restored they will be associated with the TCB that originated them.
- **PPLTSKM** .... ...1. Purge called by task ending.
- **PPLBSS** ...1. Purge was called by the RCT – bypass the status start SRBs.
- **PPLUCB** .... ...1 Purge DSID by UCB only.
- **PPLASID** 13 Reserved; must be zero.
- **PPLASID** 14-15 ASID of address space with which I/O requests are associated.
- **PPLUCB** 14-15 Offset of UCB within DEB for purge by UCB only. PPLUCB is on.

### SVC 17 (0A11)

RESTORE macro - is type 3, gets no lock.

Calls module IGCO001G, entry point IGCO17.

GTF data is:
- **R15** and **R0** No applicable data.
- **R1** Address of the pointer to the PIRL created by PURGE or a pointer to the fullword of X'FFFFFFF', which means there are no requests to RESTORE.
- **PLIST** As follows:
Bytes

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PIROPT</td>
<td>Option byte, bits meaning:</td>
</tr>
<tr>
<td></td>
<td>PIROTCB</td>
<td>1... ..... Restore the I/O requests to the TCB(s) that originally started them. If they were not purged with that possibility, restore them to the restoring TCB.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0... ..... Restore the I/O requests to the restoring TCB.</td>
</tr>
<tr>
<td></td>
<td>PIRSUPCK</td>
<td>.1... ..... Perform the RESTORE TCB validity check even though the caller can be in supervisor state.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.0... ..... Perform the TCB validity check based on the state of the caller.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>....      Reserved; must be zero.</td>
</tr>
<tr>
<td>2</td>
<td>PIRCNT</td>
<td>Number of PIRRSTR entries in the PIRL.</td>
</tr>
<tr>
<td>3-4</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>5-8</td>
<td>PIRRSTR</td>
<td>The pointer to the I/O request list in the form required by the appropriate driver.</td>
</tr>
<tr>
<td>9-C</td>
<td>PIRDVRU</td>
<td>The pointer to additional data the driver maintains.</td>
</tr>
</tbody>
</table>

**Note:** PIRRSTR and PIRDVRU are repeated the number of times specified in PIRCNT.

**SVC 18 (0A12)**

BLDL/FIND (Type D) macro - is type 2, gets no lock.

Calls module IGC018.

GTF data is:

**R15** If bit 0 is on and bits 1–32 point to 8 bytes prior to the parameter list, then an 8-byte BLDL PLIST prefix exists.

**R0** Address of the parameter list. If bit 0 is on, then R15 may point to a BLDL PLIST prefix.

**R1** DCB address. If the address is positive, this is a BLDL request. If negative, this is a FIND request. If zero, this is a BLDL request on TASKLIB, STEPLIB, or JOBLIB concatenated with SYS1.LINKLIB.

**PLIST** 12 bytes of the parameter list are traced.

(The parameter list can be longer than 12 bytes.)

**Bytes**

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,1</td>
<td>BLDL</td>
<td>Number of entries.</td>
</tr>
<tr>
<td>2,3</td>
<td>BLDL</td>
<td>Length of each entry</td>
</tr>
<tr>
<td>4-11</td>
<td>BLDL</td>
<td>Hexadecimal representation of the first member name for which the BLDL was issued.</td>
</tr>
<tr>
<td>0-7</td>
<td>FIND</td>
<td>Hexadecimal representation of the member name.</td>
</tr>
</tbody>
</table>

**PREFIX**

8 bytes, immediately preceding the PLIST and pointed to by register 15.

**Bytes**

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Start concatenation number</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Stop concatenation number</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Flags:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1... .....</td>
<td>BLDL NOCONNECT option specified.</td>
</tr>
<tr>
<td></td>
<td>.1... .....</td>
<td>BLDL BYPASSLLA option specified.</td>
</tr>
<tr>
<td></td>
<td>..1... .....</td>
<td>BLDL NODEBCHK option specified.</td>
</tr>
<tr>
<td></td>
<td>...1 ...</td>
<td>BLDL START= option specified.</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>BLDL STOP= option specified.</td>
</tr>
</tbody>
</table>
SVC Summary

4-7

Length of prefix.

**SVC 19 (0A13)**

OPEN macro - is type 4, gets LOCAL lock.

Calls module IGC0001H.

If MODE=24 (R1 not = 0), GTF data is:

- **R15** No applicable data.
- **R0** Address of parameter list if R1 contains zero. Otherwise, no applicable data.
- **R1** Address of parameter list or zero. Contains zero if ‘MODE=31’ was specified in the OPEN macro.

**PLIST** Four to 40 bytes of OPEN parameter list, which has a maximum length of 1020 bytes. The list is a series of 4-byte entries in the following format:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Option byte; bit settings are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bits</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Last entry indicator.</td>
</tr>
<tr>
<td>.000</td>
<td>DISP.</td>
</tr>
<tr>
<td>.011</td>
<td>LEAVE.</td>
</tr>
<tr>
<td>.001</td>
<td>REREAD.</td>
</tr>
<tr>
<td>....</td>
<td>INPUT.</td>
</tr>
<tr>
<td>....</td>
<td>OUTPUT.</td>
</tr>
<tr>
<td>....</td>
<td>UPDAT.</td>
</tr>
<tr>
<td>....</td>
<td>OUTIN.</td>
</tr>
<tr>
<td>....</td>
<td>INOUT.</td>
</tr>
<tr>
<td>....</td>
<td>RDBACK.</td>
</tr>
<tr>
<td>....</td>
<td>EXTEND.</td>
</tr>
<tr>
<td>1-3</td>
<td>ACB or DCB address.</td>
</tr>
</tbody>
</table>

If MODE=31 (R1 = 0), GTF data is:

- **R15** No applicable data.
- **R0** Address of parameter list.

**PLIST** Eight to 80 bytes of OPEN parameter list, which has a maximum length of 1020 bytes. The list is a series of 8-byte entries in the following format:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Option byte; bit settings are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bits</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Last entry indicator.</td>
</tr>
<tr>
<td>.000</td>
<td>DISP.</td>
</tr>
<tr>
<td>.011</td>
<td>LEAVE.</td>
</tr>
<tr>
<td>.001</td>
<td>REREAD.</td>
</tr>
<tr>
<td>....</td>
<td>INPUT.</td>
</tr>
<tr>
<td>....</td>
<td>OUTPUT.</td>
</tr>
<tr>
<td>....</td>
<td>UPDAT.</td>
</tr>
<tr>
<td>....</td>
<td>OUTIN.</td>
</tr>
<tr>
<td>....</td>
<td>INOUT.</td>
</tr>
<tr>
<td>....</td>
<td>RDBACK.</td>
</tr>
<tr>
<td>....</td>
<td>EXTEND.</td>
</tr>
</tbody>
</table>
SVC 20 (0A14)

CLOSE macro - is type 4, gets LOCAL lock.

Calls module IGC00020.

If MODE=24 (R1 not = 0), GTF data is:

R15 No applicable data.
R0 Address of parameter list if R1 contains zero. Otherwise, no applicable data.
R1 Address of the parameter list or zero. Zero if "MODE=31" was specified in the CLOSE macro.

PLIST Four to 40 bytes of the CLOSE parameter list, which has a maximum length of 1020 bytes. The list is a series of 4-byte entries in the following format:

Bytes

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Option byte; bit settings are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bits</td>
</tr>
<tr>
<td>0</td>
<td>Last entry indicator.</td>
</tr>
<tr>
<td>1...</td>
<td>DISP.</td>
</tr>
<tr>
<td>.000</td>
<td>REWIND.</td>
</tr>
<tr>
<td>.100</td>
<td>FREE.</td>
</tr>
<tr>
<td>.010</td>
<td>LEAVE.</td>
</tr>
<tr>
<td>.011</td>
<td>REREAD.</td>
</tr>
<tr>
<td>.001</td>
<td>REREAD.</td>
</tr>
<tr>
<td>1-3</td>
<td>ACB or DCB address.</td>
</tr>
</tbody>
</table>

If MODE=31 (R1 = 0), GTF data is:

R15 No applicable data.
R0 Address of parameter list.

PLIST Eight to 80 bytes of CLOSE parameter list, which has a maximum length of 1020 bytes. The list is a series of 8-byte entries in the following format:

Bytes

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Option byte; bit settings are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bits</td>
</tr>
<tr>
<td>0</td>
<td>Last entry indicator.</td>
</tr>
<tr>
<td>1...</td>
<td>DISP.</td>
</tr>
<tr>
<td>.000</td>
<td>REWIND.</td>
</tr>
<tr>
<td>.100</td>
<td>FREE.</td>
</tr>
<tr>
<td>.010</td>
<td>LEAVE.</td>
</tr>
<tr>
<td>.011</td>
<td>REREAD.</td>
</tr>
<tr>
<td>.001</td>
<td>REREAD.</td>
</tr>
<tr>
<td>1-3</td>
<td>Zeroes.</td>
</tr>
<tr>
<td>4-7</td>
<td>ACB or DCB address.</td>
</tr>
</tbody>
</table>

SVC 21 (0A15)

STOW macro - is type 3, gets no lock.

Calls module IGC0002A.
GTF data is:
R15  No applicable data.
R0   Address of the parameter list.
R1   Address of the associated DCB.
The sign of R0 and R1 indicate the directory action STOW is to take:

<table>
<thead>
<tr>
<th>R0</th>
<th>R1</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>ADD</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>REPLACE</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>DELETE</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>CHANGE</td>
</tr>
<tr>
<td>0</td>
<td>+</td>
<td>INIT</td>
</tr>
</tbody>
</table>

DDNAME cccccccc name of the associated DD statement.

PLIST  The parameter list is of variable length, depending on the directory action
being performed: For ADD or REPLACE — 12 bytes of the parameter list
will be dumped. The first 8 bytes contain the member name; the next 3
bytes contain the member's TTR; and the next byte contains the alias bit,
number of TTRNs in the user data area, and the length of the user data
area in halfwords. (The user data area varies from 0-62 bytes in length and
does not appear.) For DELETE — 8 bytes long and contains the member
name or alias of the PDS directory entry being acted upon. For CHANGE
— 16 bytes long; first 8 bytes contain the old member name or alias;
second 8 bytes contain the new member name or alias.

SVC 22 (0A16)

OPEN (TYPE=J) macro - is type 4, gets LOCAL lock.

Calls module IGC0002B.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the parameter list.
PLIST  Four to 40 bytes of the OPEN parameter list, which has a
maximum length of 1020 bytes. The list is a series of 4-byte entries
in the following format:

Bytes
0   Option byte; bit settings are:
Bits
1... .... Last entry indicator.
.000 .... DISP.
.011 .... LEAVE.
.001 .... REREAD.
.... 0000 INPUT.
.... 1111 OUTPUT.
.... 0100 UPDAT.
.... 0111 OUTIN.
.... 0011 INOUT.
.... 0001 RDBACK.
.... 1110 EXTEND.
.... 0110 OUTINX.
1-3  DCB address.
SVC Summary

SVC 23 (0A17)
CLOSE (TYPE=T) macro - is type 4, gets LOCAL lock.

Calls module IGC0002C.

GTF data is:
R15 No applicable data.
R0 Address of long-form parameter list if R1 contains zero. Otherwise, no applicable data.
R1 Address of the short-form parameter list or zero. Zero if "MODE=31" was specified in the CLOSE macro.

PLIST Four to 40 bytes of the short-form CLOSE parameter list, which has a maximum length of 1020 bytes or 8 to 80 bytes of the long-form parameter list. The short-form list is a series of 4-byte entries in the following format:

Bytes
0 Option byte; bit settings are:
Bits
1... .... Last entry indicator.
.011 ..... LEAVE.
.001 ..... REREAD.
1-3 ACB or DCB address.

The long-form parameter list is in the following format:

Bytes
0 Option byte; bit settings are:
Bits
1... .... Last entry indicator.
.011 ..... LEAVE.
.001 ..... REREAD.
1-3 Zero
4-7 ACB or DCB address.

SVC 24 (0A18)
DEVTYPE macro - is type 3, gets no lock.

Calls module IGC0002D.

GTF data is:
R15 No applicable data.
R0 If positive, contains the address of 8-byte output area. If negative and R1 is positive, then contains the complemented address of 20-byte output area. If negative and R1 is negative, then contains the complemented address of 24-byte output area. If zero, then R1 contains the address of parameter list.
R1 If R0 is not zero, then contains the address of the DD name or the two's complement form of the address of the DD name. If R0 is zero, then contains the address of a parameter list in the following format:

PLIST
Bytes
SVC Summary

Parm list length code prior to DFSMS/MVS 1.1.0, this was a code of X'10', which represented a parameter list length of 20 bytes. As of DFSMS/MVS 1.1.0, the macro expands a 24-byte parameter list and stores the real length in this byte.

1 Version (X'01')
2 Offset 4 points to DD name, not UCB list
3 Reserved
4-7 Address of UCB list or address of DD name
8-11 Number of words in UCB address list
12-15 Address of return area
16-19 Return area size
20-23 Address of INFO area or zero. Zero means to return 24 bytes per UCB or DD.

DDNAME cccccccc  DDNAME associated with this request.

SVC 25 (0A19)
TRKBAL macro - is type 3, gets no lock.

Calls module IGC0002E.
R15 and R0 No applicable data.
R1 Address of the associated DCB.
If R1 is negative, the address is in complement form and the DCBFAD and DCBTRBAL fields of the DCB are meaningless.

DDNAME cccccccc  name of the associated DD statement.
DCBFAD xxxxxxxx full direct access address (MBBCCHHR) from the DCB that is pointed to by R1.
DCBTRBAL xxxx track balance — number of bytes remaining on the current track after a write; negative if no bytes remain.

SVC 26 (0A1A)
CATALOG/INDEX/LOCATE macro - is type 4, gets no lock.

Calls module IGC0002F.

GTF data is:
R15 and R0 No applicable data.
R1 Address of the parameter list when a SVC 26 is issued.
The parameter list is in the format of a OS/VS CAMLST.
The CAMLST macro is used to generate the CAMLST when the CATALOG, INDEX, or LOCATE macro issues the SVC call.

CAMLST:
Bytes

-4 -1 CTGPLXPT CPL prefix pointer
0 First option byte:

Bits
1... CVOL specified. CVOLs are no longer supported.
1... Reserved.
1... CATALOG or CATBX specified.
1... RECAT (re-catalog) specified.
1... UNCAT or UCATDX specified.
Second option byte:

Bits
1...  ...  Do not allocate CVOL.
.1...  ...  BLDX/CATBX specified.
..1...  ...  BLDA specified.
...1...  ...  LNKK specified.
....1...  ...  DLTX/UCATDX specified.
....  .1...  DSCB TTR specified.
....  ...1  DLTA specified.

Third option byte:

Bits
1...  ...  DRPX specified.
.1...  ...  Indicate DELETE option.
..1...  ...  RENAME specified.
...1...  ...  SYSZTIOT is enqueued exclusively.
....  1...  ...  Indicate the EMPTY option.
....  .11.  Reserved.
....  ...0  The caller supplied a CAMLST.
....  ...1  The caller supplied a CTGPL.

Address of the name or TTR if byte 0, bit 6 is “on”.
Address of the CVOL volser or zeroes if byte 0, bit 0 is zero.

When cataloging, the address of the volume list.
When performing LNKK, the address of a 10-byte area that contains a 4-byte device code followed by the 6-byte
volume serial number of the CVOL to be connected.
When performing the LOCATE function, the address of a 265-byte work area that must be on a doubleword
boundary. If the issuer of LOCATE has a non-zero protect key, then the work area must have a matching storage
protect key.
Address of the DSCB TTR when cataloging it.

CTGPLEXT - CPL extension. The CPL extension contains additional fields that define the catalog management request and its options. It is pointed to by
CTGPLXPT of the CPL.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Bytes/Bits</th>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (0)</td>
<td>48</td>
<td>CTGPLEXT</td>
<td>CPL extension.</td>
</tr>
<tr>
<td>0 (0)</td>
<td>10</td>
<td>CTGXHDR</td>
<td>Extension header.</td>
</tr>
<tr>
<td>0 (0)</td>
<td>6</td>
<td>CTGXID</td>
<td>Extension ID 'CPLEXT'.</td>
</tr>
<tr>
<td>6 (6)</td>
<td>2</td>
<td>CTGXVERN</td>
<td>Extension version number.</td>
</tr>
<tr>
<td>8 (8)</td>
<td>2</td>
<td>CTGXLEN</td>
<td>Extension length.</td>
</tr>
<tr>
<td>10 (A)</td>
<td>2</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>12 (C)</td>
<td>4</td>
<td>CTGXFLD</td>
<td>Extension fields.</td>
</tr>
<tr>
<td>12 (C)</td>
<td>1</td>
<td>CTG2FUNC</td>
<td>Secondary function byte.</td>
</tr>
<tr>
<td>13 (D)</td>
<td>1</td>
<td>CTGXFG01</td>
<td>Extension flag byte 1.</td>
</tr>
<tr>
<td>1...</td>
<td>....</td>
<td>CTGNBCS</td>
<td>No BCS update.</td>
</tr>
<tr>
<td>.1...</td>
<td>....</td>
<td>CTGNVVDS</td>
<td>No VVDS update.</td>
</tr>
<tr>
<td>..1...</td>
<td>....</td>
<td>CTGNBCK</td>
<td>No BCS check.</td>
</tr>
<tr>
<td>...1...</td>
<td>....</td>
<td>CTGTCOMP</td>
<td>Component name of temporary data set name passed.</td>
</tr>
<tr>
<td>....</td>
<td>1...</td>
<td>CTGTSMS</td>
<td>SMS managed temporary data set.</td>
</tr>
<tr>
<td>....</td>
<td>.111</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>14 (E)</td>
<td>1</td>
<td>CTGXFG02</td>
<td>Extension flag byte 2.</td>
</tr>
<tr>
<td>15 (F)</td>
<td>1</td>
<td>CTGXFG03</td>
<td>Extension flag byte 3.</td>
</tr>
</tbody>
</table>
**SVC Summary**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Bytes/Bits</th>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 (10)</td>
<td>4</td>
<td>CTGXUCBP</td>
<td>UCB address list pointer.</td>
</tr>
<tr>
<td>20 (14)</td>
<td>4</td>
<td>CTNVRBA</td>
<td>NVR RBA.</td>
</tr>
<tr>
<td>20 (14)</td>
<td>3</td>
<td>CTGDIRBA</td>
<td>Compressed data/index RBA.</td>
</tr>
<tr>
<td>24 (18)</td>
<td>4</td>
<td>CTGLBDAT</td>
<td>Last backup date pointer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CTGLRDAT</td>
<td>Last referenced date pointer.</td>
</tr>
<tr>
<td>28 (1C)</td>
<td>4</td>
<td>CTGDADSM</td>
<td>DADSM parm list pointer.</td>
</tr>
<tr>
<td>32 (20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 (24)</td>
<td>12</td>
<td>CTGDIAG</td>
<td>Diagnostic information.</td>
</tr>
<tr>
<td>32 (20)</td>
<td>4</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>36 (24)</td>
<td>4</td>
<td>CTGSFI</td>
<td>Catalog subfunction information.</td>
</tr>
<tr>
<td>36 (24)</td>
<td>1</td>
<td>CTGCATPC</td>
<td>Catalog problem code.</td>
</tr>
<tr>
<td>37 (25)</td>
<td>1</td>
<td>CTGOPNER</td>
<td>ACBERFLG (open error).</td>
</tr>
<tr>
<td>38 (26)</td>
<td>2</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>40 (28)</td>
<td>4</td>
<td>CTGRPLER</td>
<td>RPL feedback word.</td>
</tr>
<tr>
<td>44 (2C)</td>
<td>4</td>
<td></td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

DSN/CI ccccc.... data set name/control interval name.

VOLIST The volume list is variable in length; format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>Number of 12-byte volume list entries to follow.</td>
</tr>
<tr>
<td>2-5</td>
<td>UCB device code.</td>
</tr>
<tr>
<td>6-11</td>
<td>Volume serial number.</td>
</tr>
<tr>
<td>12-13</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

**SVC 27 (0A1B)**

OBTAIN macro - is type 3, gets LOCAL lock.

Calls module IGC0002G.

GTF data is:

| R15 and R0 | No applicable data. |
| R1          | Address of the parameter list. |
| PLIST       | Parameter list is 16 bytes long; format is: |

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>Operation code.</td>
</tr>
<tr>
<td>2</td>
<td>Option byte.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1...</td>
<td>Bypass TIOT ENQ, enqueued by caller</td>
</tr>
<tr>
<td>.1..</td>
<td>Do not build a dummy format-1 DSCB</td>
</tr>
<tr>
<td>..1.</td>
<td>Do not allocate catalog in obtains address space</td>
</tr>
<tr>
<td>...1</td>
<td>Authorized caller wants name hiding</td>
</tr>
<tr>
<td>.... 1...</td>
<td>EADSCB=OK keyword is specified</td>
</tr>
</tbody>
</table>

| 3     | Number of DSCBs. The number of 140-byte DSCBs consecutive return areas that are provided in bytes 12-15. When this value is zero, one 140-byte return area must be provided. |
SVC Summary

4-7 Address of the data set name or address of the track
described in the DSCB (CCHHR) depending on the operation
code.

8-11 Address of the volume serial number.

12-15 Address of a 140-byte workarea or address of consecutive
140-byte return areas as described by byte 3.

VOLSER ccccc volume number of an associated volume.

DSN/CCHHR ccccc... data set name (displayed when the operation code in
word 1 of the parameter list indicates SEARCH), or
track address (displayed when the operation code in
word 1 of the parameter list indicates SEEK).

SVC 28 (0A1C)
Reserved.

SVC 29 (0A1D)

SCRATCH macro - is type 3, gets LOCAL lock.

Calls module IGCH0021.

GTF data is:

R15 No applicable data.
R0 Zeros or the address of a UCB for a device upon which volumes can be
mounted.
R1 Address of the SCRATCH parameter list (PLIST).
PLIST The parameter list is 16 bytes long; the format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0100</td>
<td>0001 Operation code (set to X'41' for SCRATCH).</td>
</tr>
<tr>
<td>1</td>
<td>1...</td>
<td>.... Dynamic Unallocation by job or step ending.</td>
</tr>
</tbody>
</table>
|   .1  | 1... | .... When set to 1 and JSCBPASS is 1, the RACDEF macro is not issued. In all other cases, except
|   .1  | .1.. | .... When set to 1 and the caller is in supervisor state, RACF processing will be bypassed. This allows the
catalog to continue RACF processing and to eliminate redundant RACF processing.
|   ... | .1.. | .... When set to 1, all DASD tracks occupied by the data set will be erased (made unreadable) before being released for reuse. |
| 3     | xxxx | xxxx Reserved set to zeros.                                                |

DSN ccccc... data set name.
**SVC Summary**

VOLIST The volume list is variable in length; format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>Number of 12-byte volume list entries to follow.</td>
</tr>
<tr>
<td>2-5</td>
<td>UCB device code.</td>
</tr>
<tr>
<td>6-11</td>
<td>Volume serial number.</td>
</tr>
<tr>
<td>12</td>
<td>SCRATCH secondary status code. (X'80' if SCRATCH successful and the user has RACF authority).</td>
</tr>
<tr>
<td>13</td>
<td>Scratch status byte.</td>
</tr>
</tbody>
</table>

**Note:** Each succeeding volume list entry (if any) has the same format as offset 2-13.

**SVC 30 (0A1E)**

RENAME macro - is type 3, gets LOCAL lock.

Calls module IGC00030.

GTF data is:

- **R15** No applicable data.
- **R0** Address of the UCB for the device on which volumes can be mounted, or zeros.
- **R1** Address of the parameter list.

**PLIST** The parameter list is 16 bytes long; format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>X'C1002000' If bit 1 of byte 1 is set to 1 and JSCBPASS=1 then the RACDEF macro is not issued.</td>
</tr>
<tr>
<td>4-7</td>
<td>Address of the old data set name.</td>
</tr>
<tr>
<td>8-11</td>
<td>Address of the new data set name.</td>
</tr>
<tr>
<td>12-15</td>
<td>Address of the volume list.</td>
</tr>
</tbody>
</table>

**OLDDSN** ccccc... fully qualified name of the data set to be renamed.

**NEWDSN** ccccc... new name of the data set being renamed.

**VOLIST**

The volume list is variable in length; format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>Number of 12-byte volume list entries to follow.</td>
</tr>
<tr>
<td>2-5</td>
<td>UCB device code.</td>
</tr>
<tr>
<td>6-11</td>
<td>Volume serial number.</td>
</tr>
<tr>
<td>12</td>
<td>Reserved.</td>
</tr>
<tr>
<td>13</td>
<td>Rename status byte.</td>
</tr>
</tbody>
</table>

**Note:** Each succeeding volume list entry (if any) has the same format as offset 2-13.

**SVC 31 (0A1F)**

FEOV macro - is type 4, gets LOCAL lock.

Calls module IGC0003A.

GTF data is:

- **R15 and R0** No applicable data.
- **R1** High-order byte–flags as follows:
  - 00 No option specified.
  - 20 REWIND specified.
30 LEAVE specified.
Three low-order bytes—address of DCB.

DDNAME cccccc DDNAME associated with this request.

**SVC 32 (0A20)**

REALLOC or No macro - is type 4, gets LOCAL lock.

Calls module IGGDAC01.

APF protected. The REALLOC macro always loads the parameter list address in register 1 and complements it. Other combinations have no macro. GTF data is:

- **R15** No applicable data.
- **R0** If positive, contains address of associated JFCB. If negative (not complemented — high-order bit is set on), contains the address of the associated partial DSCB.
- **R1** If positive, contains the address of a fullword containing: device code. If call made for a VIO data set (JFCVRDS is set on) UCB address.

If negative (complement address), contains the address of a REALLOC parameter list and R0 contains no applicable data. The parameter list is 32 bytes long as described below:

To pass a dummy REALLOC parameter list on the JFCB or partial DSCB interface, where R0 contains applicable data, specify byte 9 bit 0 in the REALLOC parameter list. The UCB address must also be set. The Minimum Allocation Unit can optionally be set. All other fields in the REALLOC parameter list are ignored.

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>'CREAL', ID of parameter list.</td>
</tr>
<tr>
<td>4-5</td>
<td>Length of parameter list.</td>
</tr>
<tr>
<td>6-7</td>
<td>Return code.</td>
</tr>
<tr>
<td>8</td>
<td>Parameter flag byte.</td>
</tr>
<tr>
<td>9</td>
<td>Processing flag byte.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1...</td>
<td>Dummy REALLOC parameter list is passed.</td>
</tr>
<tr>
<td></td>
<td>Only the processing flag byte (byte 9), Minimum</td>
</tr>
<tr>
<td></td>
<td>Allocation Unit (bytes 16-19), and UCB address</td>
</tr>
<tr>
<td></td>
<td>(bytes 24-27) are used. Ignore all other bytes</td>
</tr>
<tr>
<td></td>
<td>and use the values in the JFCB or Partial DSCB</td>
</tr>
<tr>
<td></td>
<td>interface as passed in register 0.</td>
</tr>
<tr>
<td>1..</td>
<td>Space must be allocated from track-managed space.</td>
</tr>
<tr>
<td>1...</td>
<td>Reserved set to zeros.</td>
</tr>
<tr>
<td>..1.</td>
<td>Applicable to EAV. The request is to be allocated</td>
</tr>
<tr>
<td></td>
<td>using a combination of the track-managed or the</td>
</tr>
<tr>
<td></td>
<td>cylinder-managed spaces. If the exact space is not</td>
</tr>
<tr>
<td></td>
<td>available, then the request is failed.</td>
</tr>
<tr>
<td>....</td>
<td>Unused.</td>
</tr>
</tbody>
</table>
### SVC Summary

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.... 11</td>
<td>The extended attribute (EATTR=) value to be used. Valid when byte 9, bit 0 is set and when the JFCB is passed in register 0.</td>
</tr>
<tr>
<td>b'00'</td>
<td>EATTR has not been specified. The defaults for EAS eligibility apply. VSAM data sets default is EAS-eligible. This is equivalent to EATTR=OPT being specified. Non-VSAM data sets default is not EAS eligible. This is equivalent to EATTR=NO being specified.</td>
</tr>
<tr>
<td>b'01'</td>
<td>EATTR=NO has been specified. The data set cannot have extended attributes (format 8 and 9 DSCBs) or optionally reside in EAS.</td>
</tr>
<tr>
<td>b'10'</td>
<td>EATTR=OPT has been specified. The data set can have extended attributes and optionally reside in EAS. This is the default for VSAM data sets.</td>
</tr>
<tr>
<td>b'11'</td>
<td>Reserved for future use.</td>
</tr>
</tbody>
</table>

| 10 | Number of contiguous partial format 9 DSCBs that are located at the address in bytes 32-35. The default is 1. |
| 11 | Reserved. |
| 12-15 | Data set size in tracks. |
| 16-19 | Minimum allocation unit in tracks. |
| 20-23 | Address of partial DSCB or format 1 DSCB. |
| 24-27 | UCB Address. |
| 28-31 | Partitioned data set directory quantity in tracks. |
| 32-35 | Address of format 2 DSCB or contiguous partial format 9 DSCBs. Byte 10 defines the number of partial format 9 DSCBs. Format 9 DSCBs with a subtype field with a value other than 1 is ignored. Only format 9 DSCB attribute data in this model is used. |
| 36-39 | Address of format 3 DSCB. |

CUU  cccc  Device number from the UCB pointed to by R1.

DSN  cccc...  Data set name from the DSN field of either the JFCB or DSCB pointed to by R0.

### SVC 33 (0A21)

IOHALT macro - is type 2, gets IOSUCB lock.

Calls module IGC0003C.

**Note:** This SVC can be used in two ways. The first way (which is used by the IOHALT macro) is used by setting the low order bit of R1 to 1; the second way is used by setting the low order bit of R1 to 0.

GTF data for the first way (low-order bit of R1 is 1) is:

| R15 | No applicable data. |
| R0 | UCB address (common segment), a fullword pointer; or address of a UCBCOPY. (See z/OS MVS Programming: Assembler Services Reference [LAR-XCT](https://www.ibm.com) for more information.) |
| R1 | Contents: |
| Bytes |
SVC Summary

0-1 If byte 1 of R1 is X'81' then R0 contains the offset from the IOB to the virtual CCW that corresponds to the central CCW to be modified to a NOP.

2 Ignored

3 Input Option
   = "01" use IOS HALT I/O subroutine.
   = "81" use EXCP CCW modify subroutine.

CUU dddd The device number associated with the device being halted.

GTF data for the second way (low-order bit of R1 is 0) is:

R15 No applicable data.

R0 If byte 1 of R1 is X'81' then R0 contains the offset from the IOB to the virtual CCW that corresponds to the central CCW to be modified to a NOP.

R1 Contents:

Bytes

0 Ignored

1 Input Option
   = "00" use IOS HALT I/O subroutine.
   = "80" use EXCP CCW modify subroutine.

2-3 Address of the UCB or UCBCOPY associated with the HALT request.

CUU dddd The device number associated with the device being halted.

SVC 34 (0A22)

MGCR/ MGCRE/ QEDIT/ macro - is type 4, gets LOCAL and CMS lock.

Calls module IEE003D.

For a system task issuing SVC34:

R1 R0 R15 FUNCTION or ACTION.
POS N/A N/A Process CMD: to IEE0403D.
ZERO POS N/A Free the CIB chain.
ZERO ZERO ZERO GETCSCB processing.
ZERO NEG N/A Set CHCIBCT to zero.
NEG POS N/A CIB chain ADD or DELETE.
NEG ZERO SEE * CSCB processing.
NEG NEG N/A Store R1 in CHCIBCT.

* If CHABT bit set in CSCB, then R15 contains ABTERM parm list. If CHABT bit is zero, then R15 is N/A.

SVC 35 (0A23)

WTO/ WTOR macro - is type 4, gets LOCAL and CMS locks.

Calls module IEAVM600.

GTF data is:

R15 No applicable data.
R1 Address of the parameter list.
R0 Three high order bytes—a new line is to be connected to the message with this three byte message ID. For a message reissuance - address of the Write-To-Operator Queue Element (WQE) control block created from the original issuance. If the information was specified on the WTO macro - contains zeros.

Length of PLIST (1 byte) includes routing and descriptor code field, if present.

PLIST If routing and descriptor codes are present, they are appended to the parameter lists, increasing the lengths of the parameter lists by four bytes. However, if a WPX is generated, it extends the length by up to 124 bytes.

PLIST for WTO:

Bytes
0 Length of reply buffer, if for a 31-bit WTOR. Otherwise zero.
1 Message length plus four if text is inline, fixed length if bytes 4-11 contain a pointer to a data area containing the message text.
2 MCS flag byte, bit settings are:
   1... .... Routing and descriptor codes are present.
   .1.. .... Reserved.
   ..1. .... WTO is an immediate command response.
   ...1 .... Message type field exists.
   .... 1... WTO reply to a WTOR macro instruction.
   .... .1.. Message should be broadcast to all active consoles.
   .... ..1. Message queued for hard copy only.
   .... ...1 Reserved.
3 Second MCS flag byte: bit settings are:
   1... .... Do not timestamp this message.
   .1.. .... Message is a multiline WTO.
   ..1. .... Primary subsystem use only. JES3: Do not log minor WQEs if major WQE is not hardcopied. JES2: not used.
   ...1 .... Extended WPL format (WPX) exists.
   .... 1... Message is an operator command.
   .... .1.. Message should not be queued to hardcopy.
   .... ..1. Message reissued via WQEBLK keyword.
   .... ...1 Reserved.
4-n The message text, normally the message ID, or a pointer to a data area containing the message text. The message text can be of variable length, but if a pointer is specified it will always occupy 4 bytes.

The following offsets are unpredictable due to the variable length of the previous field.
If a WPX is not generated, routing and descriptor codes (if present) are as follows:

(n+1)-(n+3) Routing and descriptor codes, if present:
Descriptor first byte bit settings:
   1... .... System failure.
   .1.. .... Immediate action required.
   ..1. .... Eventual action required.
   ...1 .... System status.
   .... 1... Immediate command response.
   .... .1.. Job status.
Application program message or DOM at job-step task termination.

Out-of-line message.

Descriptor second byte bit settings:
- Status display.
- Dynamic status display.
- Critical eventual action message.
- Important information message.
- Message was previously automated.
- Reserved.
- Reserved.
- Reserves.
- Reserved.

Routing first byte bit settings:
- Primary console action.
- Primary console information.
- Tape pool.
- Direct access pool.
- Tape library.
- Disk library.
- Unit record pool.
- Teleprocessing control (TPCNTL).

Routing second byte bit settings:
- System security.
- System error/maintenance/system programmer information.
- Programmer information.
- Emulator information.
- For installation use.
- For installation use.
- For installation use.
- For installation use.

If a WPX is generated, however, it follows the message text:

WPX. Its format follows:

1. Version level.
2. Flags.
3. Length of reply buffer.
4. Length of WPX.
5-6. Extended MCS flags.
7-8. Control program flags.
9-12. Reply buffer address.
13-16. Reply ECB address.
17-20. DOM/Connect ID.
21-22. Descriptor codes (same mapping as above).
41-42. Message type flags.
43-44. Reserved.
45-52. Job ID.
53-60. Job name.
61-68. Retrieval key.
69-72. Token for DOM.
73-76. Console ID.
77-84. System name.
85-92. Console name.
SVC Summary

93-96 Address of a 12-byte field for replying console name/ID.
97-100 Address of CART.
101-104 Address of wait state parameter list.
105-108 ASCB address.
109-124 Reserved.

**PLIST for succeeding lines in a multiple line WTO:**

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>First byte of Inline type flags, bit settings are:</td>
</tr>
<tr>
<td>1</td>
<td>Control line.</td>
</tr>
<tr>
<td>.1</td>
<td>Label line.</td>
</tr>
<tr>
<td>...1</td>
<td>Data line.</td>
</tr>
<tr>
<td>...1</td>
<td>End line.</td>
</tr>
<tr>
<td>....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>1</td>
<td>Second byte of inline type flags.</td>
</tr>
<tr>
<td>2</td>
<td>Console area ID identifier.</td>
</tr>
<tr>
<td>3</td>
<td>Number of message lines in the WTO.</td>
</tr>
<tr>
<td>4</td>
<td>Reserved.</td>
</tr>
<tr>
<td>5</td>
<td>Count of the message characters plus 4.</td>
</tr>
<tr>
<td>6-77</td>
<td>The message text.</td>
</tr>
<tr>
<td>OR</td>
<td>A pointer to a data area containing the message text.</td>
</tr>
</tbody>
</table>

**PLIST for WTOR (24-bit mode):**

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Length of the reply. High order bit is set to 1.</td>
</tr>
<tr>
<td>1-3</td>
<td>Address of the reply buffer.</td>
</tr>
<tr>
<td>4-7</td>
<td>Address of the reply ECB.</td>
</tr>
<tr>
<td>8</td>
<td>Zeros.</td>
</tr>
<tr>
<td>9</td>
<td>Message length + 4.</td>
</tr>
<tr>
<td>10-11</td>
<td>MCS flag bytes (same as in WTO PLIST).</td>
</tr>
<tr>
<td>12-19</td>
<td>First 8 bytes of the message text. Normally, the message ID.</td>
</tr>
<tr>
<td>20-23</td>
<td>Routing and descriptor codes, if present.</td>
</tr>
</tbody>
</table>

**PLIST for WTOR (31-bit mode) without a WPX:**

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Addressing mode indicator and address of the reply buffer. High order bit of byte 0 is set to 1.</td>
</tr>
<tr>
<td>4-7</td>
<td>Address of the reply ECB.</td>
</tr>
<tr>
<td>8</td>
<td>Length of reply buffer.</td>
</tr>
<tr>
<td>9</td>
<td>Message length + 4.</td>
</tr>
<tr>
<td>10-11</td>
<td>MCS flag bytes (same as in WTO PLIST).</td>
</tr>
<tr>
<td>12-19</td>
<td>First 8 bytes of the message text. Normally, the message ID.</td>
</tr>
<tr>
<td>20-23</td>
<td>Routing and descriptor codes, if present.</td>
</tr>
</tbody>
</table>

**PLIST for WTOR (31-bit mode) with a WPX:**

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>High order bit is set to 1, others set to 0.</td>
</tr>
</tbody>
</table>
1    Message length + 4.
2-3  MCS flag bytes (same as in WTO PLIST).
4-11 First 8 bytes of the message text. Normally, the message ID.
12-115 WPX. Its format follows:
   1    Version level.
   2    MPF/SUBSMOD flags.
   3    Length of reply buffer.
   4    Reserved.
   5-6  Extended MCS flags.
   7-8  Reserved.
   9-12 Reply buffer address.
  13-16 Reply ECB address.
  17-20 DOM/Connect ID.
  21-22 Descriptor codes (same mapping as above).
  23-24 Reserved.
  25-40 Routing codes.
  41-42 Message type flags.
  43-44 Message’s priority.
  45-52 Job ID.
  53-60 Job name.
  61-68 Retrieval key.
  69-72 Token for DOM.
  73-76 Console ID.
  77-84 System name.
  85-92 Console name.
  93-96 Address of a 12-byte field for replying console name/ID.
  97-100 Address of CART
  101-104 Address of wait state parameter list.

PLIST for WTO with WQEBLK (WPLMCSFO bit is on):

Contains only 4 bytes of data (the parameter list length and the MCS flags).

**SVC 36 (0A24)**

WTL macro - is type 4, gets LOCAL and CMS locks.

Calls module IEEMBB04.

GTF data is:

R15 No applicable data.
R0 Contains 0 if no prefix is present. Contains 4 if a 2-byte prefix is present.
R1 Pointer to the WTL parameter list.
PLIST 5 to 130 bytes; format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>Length of PLIST in bytes.</td>
</tr>
<tr>
<td>2-3</td>
<td>Reserved.</td>
</tr>
<tr>
<td>4-nn</td>
<td>Message text.</td>
</tr>
</tbody>
</table>

**SVC 37 (0A25)**

SEGLD/SEGWT macro - is type 2, gets no lock.

Calls module IEGSU0VR, entry point IGC037.

GTF data is:
SVC Summary

R15  No applicable data.
R0   Zero entry was from SEGLD. Nonzero entry from SEGWT.
R1   Address of the parameter list.
PLIST 12 bytes, format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Branch instruction to a SVC 45.</td>
</tr>
<tr>
<td>4-7</td>
<td>Address of the referred-to-symbol.</td>
</tr>
<tr>
<td>8</td>
<td>&quot;TO&quot; segment number.</td>
</tr>
<tr>
<td>9-11</td>
<td>Previous caller or zero.</td>
</tr>
</tbody>
</table>

SVC 38 (0A26)
Reserved.

SVC 39 (0A27)
LABEL macro - is type 3, gets no lock.

Calls module IGC0003I.

APF protected. GTF data is:
R15 and R0  No applicable data.
R1   Address of the parameter list. This parameter list must be in 24-bit addressable storage.
PLIST 68 bytes long, format is:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>C00004  REWIND option.</td>
</tr>
<tr>
<td></td>
<td>C00000  UNLOAD option.</td>
</tr>
<tr>
<td>3</td>
<td>Relative UCB in the TIOT to use for mounting purposes. XTiot is supported by setting SPLUCLST bit and passing address of the UCB list in SPLDDPTR.</td>
</tr>
<tr>
<td>4-7</td>
<td>Address of the 8-byte ddname for the DD card that allocates the device or address of the UCB list in the XTiot when SPLUCLST is set.</td>
</tr>
<tr>
<td>8-11</td>
<td>Address of the volume label set.</td>
</tr>
<tr>
<td>12-13</td>
<td>Length of one volume label.</td>
</tr>
<tr>
<td>14</td>
<td>Number of labels in the volume label set.</td>
</tr>
<tr>
<td>15</td>
<td>Command byte of the control CCW.</td>
</tr>
<tr>
<td>16-19</td>
<td>Address of the first 10 bytes of the volume header label.</td>
</tr>
<tr>
<td>20-22</td>
<td>Flags bytes for communicating with the calling program.</td>
</tr>
</tbody>
</table>

Bytes byte - Bits as follows:

- 1... LACS message issued during SVC.
- .1... Extended PLIST passed in.
- ..1... SERVO INIT without permission.
- ...1... Do not do SERVO INIT.
- .... 1... Cannot SERVO INIT.
- ..... .1... RACHECK authorization failure.
- ..... ..1... ANSI access passed in.
- ..... ...1 SPLUCLST is set for XTiot support - UCB list passed in SPLDDPTR.

Bytes byte - Bits as follows:

- 1... Second load of SVC 39 not available.
- .1... ANSI label requested.
- ..1... Do not read mounted volume label (READLBL=NO' specified).
- ...1... NUMBTAPE specified in INITT statement.
SVC Summary

... xxxx
   Reserved.
  22   Third flags byte - Reserved.
  23   Requested ANSI access code.
  24   LACS error return code.
  25-26 LACS error reason code.
  27-34 LACS function at point of failure.
  35   RACHECK error return code.
  36-37 RACHECK error reason code.
  38   RACF SAF error return code.
  39   Dynamic exit service error return code.
  40-41 Dynamic exit service error reason code.
  42-43 Return code of the last exit routine that failed.
  44-45 Reason code of the last exit routine that failed.
  46-47 Unused.
  48-51 Return code from RMM EDGXCI API call.
  52-55 Reason code from RMM EDGXCI API call.
  56-59 Flags bytes for communication between IGC0003I and
         IGC0103I
  60-63 Flags bytes for passing the results of processing to the post
         exit.
  64-67 Flags bytes for reasons why the request failed.

SVC 40 (0A28)

EXTRACT macro - is type 3, gets LOCAL lock.

Calls module IEAVTB00, entry point IGC00040.

GTF data is:
R15 and R0  No applicable data.
R1   Address of the parameter list.
PLIST 12 bytes long; format is:
Bytes
  0   Reserved; should be zeros.
  1-3 Address of the list area in which the extracted information
       will be stored.
  4   Reserved; should be zeros.
  5-7 Address of the TCB from which the EXTRACT will get
       requested information. Zeros indicate that the EXTRACT
       will get information from the current TCB and/or its
       related control blocks.
  8   Flag bytes that indicates the fields to be extracted:
Bits
  1... ..... Address of the general register save area.
  .1... ..... Address of the floating point register save area.
  ..0. ..... Reserved.
  ...1 ..... Address of the end-of-task exit routine.
  .... 1... Limit priority and dispatching priority.
  .... .1. Task completion code.
  .... ..1. Address of the TIOT.
  .... ...1 Address of the command scheduler
           communication list in the CSCB.

  9 Flag Byte 2
SVC Summary

Bits
1... .... Address of a byte. If the high order bit is 1, it
indicates a TS address space.
.1... .... Address of the protected storage control block.
..1. .... ASID (only if a TS address space). Where AUTH
ONLY is indicated, the parameter is valid only for
an authorized task-authorized by system key,
supervisor state, or APF authorized. If the
attaching task is not authorized, the parameter is
ignored.
...1 .... ASID.
.... xxxx Reserved.

10-11 Reserved should be zeros.

SVC 41 (0A29)
IDENTIFY macro - is type 3, gets LOCAL and CMS locks.

Calls module IEAVID00.

GTF data is:
R15 No applicable data.
R0 Entry point name address or zero.
R1 Address of the entry point name being added or of the parameter list.

EPNAME cccccc The entry point name being added.

SVC 42 (0A2A)
ATTACH or ATTACHX macro - is type 2, gets LOCAL lock.

Calls module IEAVEAT0.

GTF data is:
R15 Address of the parameter list being passed to the SVC routine
(SUPRVLIST).
R0 No applicable data.
R1 Address of the parameter list being passed to the called program,
or zeros (no parameter list being passed).

SUPRVLIST - The parameter list passed to the SVC routine is 72 or 100 bytes
long. Format is:

Bytes
0-3 Entry Address.
4-7 DCB address.
8-11 ECB address.
1... .... Indicates new format; else old format.
12-15 Give subpool value or list address.
16-19 Share subpool value or list address.
20-23 ETXR address.
24-25 Dispatching priority.
26 Limit priority.
27 Option flags.
1... .... "DISP=NO" KEYWORD GIVEN
.1... .... "JSCB" ADDRESS GIVEN
..1 .... "GIVEJFQ=YES" GIVEN
...1 .... "KEY=ZERO" KEYWORD
SVC Summary

28-35
28-35 Program name.
36-39
36-39 JSCB address.
40-43
40-43 STAI/ESTAI parameter list address.
44-47
44-47 STAI/ESTAI exit routine address.
48-51
48-51 Tasklib DCB address.
52
52 Flag byte.
1... ATTNSHLV field indicator.
.1... RSAPF indication.
..1... Reserved.
...1... Term indication.
.... 1... ESTAI present indication.
.... .1... ASYNCH indication.
.... ..11 PURGE parameter values.
53
53 Task ID.
54-55
54-55 Length of parameter list.
56-59
56-59 NSHSPV or NSHSPL parameter list.
60
60 Flag byte.
1... Directory entry indication.
.1... Give subpool list indication.
..1... Share subpool list indication.
...1... Module from APF library indication.
.... 1... Reserved.
.... .1... Reserved.
.... ..1... Tasklib DCB present.
.... ...1 STAI/ESTAI exit address present.
61 Format number, 1 indicates a parameter list for MVS; 2 indicates a parameter list from ATTACHX.
62-63
62-63 Reserved.
64-67
64-67 EP/DE ALET.
68-71
68-71 DCB ALET.
72-75
72-75 ECB ALET.
76-79
76-79 GSPL ALET.
80-83
80-83 SHSPL ALET.
84-87
84-87 JSCB ALET.
88-91
88-91 STAI ALET.
92-95
92-95 TASKLIB ALET.
96-100
96-100 NSLSPL ALET.

Length of PLIST (1 byte):

PLIST
PLIST up to 40 bytes of parameter list passed to a program. The parameter list is a series of 4-byte entries. Each entry has its high-order byte reserved and an address in the low-order three bytes.

Register contents on return:

R1 Address of TCB for the new task (for any return code other than zero, R1 is set to zero upon return).

R15

00 - Successful completion (subtask might not have been successfully created).
04 - ATTACH issued in a STAE exit; processing not completed.
SVC Summary

08 - Insufficient storage available for control block for STAI/ESTAI request; processing not completed.
0C - Invalid address of exit routine or parameter list specified with STAI parameter; processing not completed.

SVC 43 (0A2B)

CIRB macro - is type 1, gets LOCAL lock.

Calls module IEAVEF00, entry point IGC043.

GTF data is:
R15 No applicable data.
R0 Entry point address of the user’s asynchronous exit routine. When the routine is dispatched it will get control at this entry point.
R1 The meanings of the bytes of the register are as follows:

<table>
<thead>
<tr>
<th>Byte 1</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0100</td>
<td>A normal IRB is being created.</td>
</tr>
<tr>
<td>0000</td>
<td>An SIRB is being created. This is used only by IOS to run ERP routines.</td>
</tr>
<tr>
<td>....</td>
<td>Problem program key.</td>
</tr>
<tr>
<td>....</td>
<td>Supervisor key.</td>
</tr>
<tr>
<td>....</td>
<td>Supervisor state.</td>
</tr>
<tr>
<td>....</td>
<td>Problem program state.</td>
</tr>
<tr>
<td>....</td>
<td>No save area requested.</td>
</tr>
<tr>
<td>...1</td>
<td>Save area for registers requested.</td>
</tr>
<tr>
<td>...0</td>
<td>No save area requested.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Byte 2</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>Reserved - always zero.</td>
</tr>
<tr>
<td>....</td>
<td>Indicates that the IQEs are going to schedule the routine.</td>
</tr>
<tr>
<td>....</td>
<td>Indicates that the RQEs are going to schedule the routine.</td>
</tr>
<tr>
<td>....</td>
<td>Return the IQEs at exit if the IRB has a work area and the RBUSIOE flag is not on.</td>
</tr>
<tr>
<td>....</td>
<td>Do not return the IQEs at exit.</td>
</tr>
<tr>
<td>....</td>
<td>Indicates that the RB will not be freed when the exit issues an SVC 3.</td>
</tr>
<tr>
<td>....</td>
<td>Indicates that the RB will be freed when the exit issues an SVC 3.</td>
</tr>
</tbody>
</table>

| Byte 3 | Reserved. |
| Byte 4 | Indicates the size in doublewords of the work area to be acquired. CIRB will unconditionally request space from subpool 253. The maximum size is 255 doublewords. |

SVC 44 (0A2C)

CHAP macro - is type 2, gets LOCAL lock.

Calls module IEAVECH0.

GTF data is:
R15 No applicable data.
R0 Signed value to be added to the dispatching priority of the specified task; negative value will be in two's-complement form.
R1 Address of the area containing the address of TCB whose priority is to be changed; or zeros. Zeros indicates that the active task's priority is to be changed.
SVC Summary

CHAP TCB  hhhhhhh  Address of the TCB whose priority is to be changed.
               Must be a subtask of the current task.

SVC 45 (0A2D)

OVLYBRCH macro - is type 2, gets no lock.

Calls module IEWSUOVR, entry point IGC045.

GTF data is:
R15  Address of the entry-table entry that caused the SVC to be issued.
R0 and R1  No applicable data.
PLIST  12 bytes long; format is:
Bytes
0-3  Branch instruction to SVC 45.
4-7  Address of the referred-to symbol.
8     "To" segment number.
9-11  Previous caller or zero.

SVC 46 (0A2E)

SVC 46 (0A2E)

TTIMER macro and STIMERM macro (TEST and CANCEL options) - is type 2, gets
local and dispatcher locks.

For TTIMER macro, GTF data is:
R15  No applicable data.
R0  Pointer to 8-byte area containing the interval remaining if "MIC" is
     specified.
R1  Low-order byte contains code indicating the type of request and the format
     of the returned value.
Bytes
0-2  Reserved.
3  Flag bits as follows:
     0000 ....  Reserved; must be zero.
     .... 0...  TTIMER macro present.
     .... 1...  ERRET option. Routine specified by the ERRET
                 parameter gets control on an environmental error.
                 Register 15 contains the return code.
     .... ..1.  MIC option. Interval remaining is returned to the
                 specified address in microseconds. (Bit 51 is equivalent to
                 approximately 1 microsecond.)
     .... ..0.  TU option. Time remaining in the current task's time
                 interval is to be in register 0 in timer units.
     .... ...1 CANCEL option. Current task's time interval is to be
                 canceled.

R4  Points to requester's TCB.
R5  Points to the SVRB.
R7  Points to the ASCB.
R14 Contains the return address.

For STIMERM macro (TEST and CANCEL options) GTF data is:
R15  No applicable data.
R0  Pointer to a 16-byte parameter list which is formatted as follows:
Bytes
0  Flag bits as follows:
SVC Summary

000. .... Reserved; must be zero.
...1 .... TU option. Time remaining in the current task's time interval is placed in a 4 byte field supplied by the user. It is recorded in timer units.
.... 1... "ID=ALL" option.
.... .1. ERRET option. Routine specified by the ERRET parameter gets control on an environmental error. Register 15 contains the return code.
.... .1. MIC option.Interval remaining is returned to the specified address in microseconds. (Bit 51 is equivalent to approximately 1 microsecond.)
.... ...1 CANCEL option. Specified time interval is to be cancelled.

1-2  Reserved; must be zero.
3    Flag bits as follows: Level number of the parameter list. Must be X'01'

4-7  Pointer to 4-byte area containing the TQE ID.

8-11 Pointer to area in which interval remaining will be stored. If "TU" is specified, the area must be 4 bytes. If "MIC" is specified, the area must be 8 bytes.

12-16 Reserved; must be zero.

R1    Flag bytes formatted as follows:
Bytes
0-2  Reserved; must be zero.
3    Flag bits as follows:

    Bytes
    0000 .... Reserved; must be zero.
    .... 1... STIMERM macro present.
    .... .00  Reserved; must be zero.

R4    Points to the requester's TCB.
R5    Points to the SVRB.
R7    Points to the ASCB.
R14   Contains the return address.

SVC 47 (0A2F)

STIMER macro and STIMERM macro (SET option) is type 2, gets local and dispatcher locks.

For STIMER macro, GTF data is:

R15   No applicable data (old format only). Exit routine address (new format only).
R0    Contents:
Bytes
    STIMER option byte as follows:

    Bytes
    0... .... Indicates old format parameters.
    1... .... Indicates new format parameters.
    .000 .... TUINTVL option.
    .001 .... BINTVL option.
    .010 .... MICVL option.
    .011 .... DINTVL option.
    .110 .... GMT option.
    .111 .... TOD option.
SVC Summary

.... 1... ERRET option. Control is returned because of errors.
    Register 15 is set to 8.
.... .0.. STIMER macro present.
.... .00 Task request. Decrease the interval only when the task is active.
.... .01 Wait request. Decrease the interval continuously and put the task in a wait state until the interval expires.
.... .11 Real request. Decrease the interval continuously.

1-3 Exit address (old format only).

No applicable data (new format only).

R1 Address of the time value.

Time Value - 4 or 8 bytes depending on option in force:
   a. DINTVL,TOD,MICVL, and GMT - 8 bytes; represents the time value.
   b. BINTVL and TUINTVL - 4 bytes; represents the time value.

R4 Points to requester's TCB.
R5 Points to the SVRB.
R7 Points to the ASCB.
R14 Contains the return address.

For STIMER SET, GTF data is:
R0 Flag bytes formatted as follows:
   Bytes
   
   0 Flag bits as follows:
   
   0000 0... Reserved; must be zero.
   .... 1... STIMER macro present.
   .... .00 Reserved; must be zero.

1-3 Reserved; must be zero.

R1 Points to a 24-byte parameter list, which is formatted as follows:
   Bytes
   
   0 Flag bits as follows:
   
   0... .... Reserved; must be zero.
   .000 .... TUINTVL option.
   .001 .... BINTVL option.
   .010 .... MICVL option.
   .011 .... DINTVL option.
   .110 .... GMT option.
   .111 .... TOD option.
   .... 1... ERRET option.
   .... .0.. Reserved; must be zero.
   .... .01 WAIT=YES option.
   .... .11 WAIT=NO option.

1-2 Reserved; must be zero.
3 Level number of parameter list. Must be X'01'.
4-7 Address of requester's field in which the TQE id will be returned.
8-11 Address of time interval.
12-15 Address of user specified exit routine or zero.
16-19 Parameter value to be passed to exit routine or zero.
20-23 Reserved; must be zero.

R4 Points to requester's TCB.
R5  Points to the SVRB.
R7  Points to the ASCB.
R14 Contains the return address.

SVC 48 (0A30)

**DEQ** macro - is type 2, gets LOCAL and CMSEQDQ locks.

Calls module ISGGRT, entry point IGC048.

GTF data is:
- **R15** and **R0**  No applicable data.
- **R1**  Address of the parameter list.
- **PLIST**  20 bytes of the DEQ parameter list, representing a DEQ request for a single resource. The complete parameter list can include requests for up to 65,535 resources.

**Bytes**
- **-4**  Contains the TCB address when TCB= is specified (see flag byte 0); otherwise, contents will be zero.
- **0**  Flag bits as follows:
  - **0000 0000**  List request
  - **.... .0..**  RNL=YES
  - **1... ....**  End-of-list indicator; if zero, the parameter list contains another request. Up to 65,535 requests can be included in one parameter list.
  - **.0... ....**  New options are in effect (bits 2-7 have meaning).
  - **.011 11..**  Reserved.
  - **.0.. ..1.**  A generic DEQUEUE (by major name) was requested.
  - **.0.. ...1**  "TCB=tcbaddr" was requested; parmlist prefix contains the TCB address.

- **1**  Length of the minor name whose address is in bytes 8 - 11 of this element.

Zeros indicate that the length of the minor name is in the first byte of the minor name field whose address is in bytes 8 - 11 of this element (does not include length byte itself).

- **2**  DEQ parameter byte; bit settings are:

  **Bits**
  - **0... ....**  Reserved.
  - **.0.. 0...**  Scope of the minor name is STEP.
  - **.0.. 1...**  Resource is known across systems, and UCB= was specified. (This combination means that the last word in the parmlist contains the UCB address.)
  - **.1.. 0...**  Scope of the minor name is SYSTEM.
  - **.1.. 1...**  Scope of the minor name is SYSTEMS.
  - **.1. ....**  Obsoleted.
  - **...1 ....**  Reset "must complete".
  - **.... .000**  RET=NONE.
  - **.... .001**  RET=HAVE.

- **3**  Return code field for codes returned to the issuer by DEQ.

- **4-7**  Address of the major resource name (QNAME).

- **8-11**  Address of the minor resource name (RNAME).
If bits 1 and 4 of the DEQ parameter byte are set to 0 and 1 respectively, this word contains the address of a word containing the UCB address; otherwise, the content of this word will be zero.

Register contents on return (provided only if RET=HAVE):
R15  00 if each return code for each resource named in DEQ is 0. Otherwise, R15 contains the address of a virtual storage area containing the return codes.

SVC 49 (0A31)
Reserved.

SVC 50 (0A32)
Reserved.

SVC 51 (0A33)
SNAP or SNAPX SDUMP or SDUMPX macro - is type 4, gets LOCAL, CMS, CMSSEQDQ, DISP, VSMPAGE, VSMFIX, CPU, and SALLOC locks (see also the SNAP, SNAPX, SDUMP, OR SDUMPX control block in z/OS MVS Data Areas in z/OS Internet Library at http://www.ibm.com/systems/z/os/zos/bkserv/).

Calls module IEAVAD00.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the parameter list.
PLIST  For SNAP or SNAPX and SDUMP or SDUMPX parameter lists, see z/OS MVS Data Areas in z/OS Internet Library at http://www.ibm.com/systems/z/os/zos/bkserv/.

SVC 52 (0A34)
RESTART macro - is type 4, gets LOCAL, CMS, and SALLOC locks.

Calls module IEFRSTRT.

APF protected. GTF data is:
R15 and R0  No applicable data.
R1  Address of parameter list, SVC 52 is issued to initiate a checkpoint restart.

Parameter list contains:

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPLNGTH</td>
<td>H</td>
<td>Length of the parameter list.</td>
</tr>
<tr>
<td>REPCIRAD</td>
<td>F</td>
<td>TTR of CIR records in the checkpoint data set entry.</td>
</tr>
<tr>
<td>REPCOUNT</td>
<td>H</td>
<td>Number of checkpoints taken.</td>
</tr>
<tr>
<td>REPCKIDL</td>
<td>H</td>
<td>Length of check ID.</td>
</tr>
<tr>
<td>REPCHKID</td>
<td>4F</td>
<td>Check ID.</td>
</tr>
<tr>
<td>REPDDNM</td>
<td>2F</td>
<td>DD Name of the checkpoint data set.</td>
</tr>
<tr>
<td>REPPPM</td>
<td>F</td>
<td>Low order address of the P/P area.</td>
</tr>
<tr>
<td>REPPPE</td>
<td>F</td>
<td>Size of the P/P area.</td>
</tr>
<tr>
<td>REPBLKSI</td>
<td>H</td>
<td>Checkpoint data set blocksize.</td>
</tr>
<tr>
<td>REPTIOTL</td>
<td>H</td>
<td>Length of the TIOT.</td>
</tr>
<tr>
<td>REPFLAGS</td>
<td>CL1</td>
<td>Checkpoint flag byte 1.</td>
</tr>
<tr>
<td>REPWACL</td>
<td>CL3</td>
<td>Checkpoint work area length.</td>
</tr>
</tbody>
</table>
SVC Summary

REPFLAG2  CL1  Checkpoint flag byte 2.
RSCKPPML  CL4  V=R Tests.

SVC 53 (0A35)
RELEX macro - is type 3, gets no lock.

Calls module IGC0005C.

GTF data is:
R15  No applicable data.
R0   If R1 is negative, no applicable data. If R1 is positive, the address of a
     parameter list that contains:
     HHHHHHHH  Relative block or TTR
     or
     MBBCCHHR  Actual address.
R1   If positive, SVC was part of a RELEX macro call and R1 contains the DCB
     address. If negative, SVC was issued as part of some BDAM exclusive
     control processing and R1 contains the two's complement of the IOB
     address.

DDNAME  cccccccc  DDNAME associated with this request.

SVC 54 (0A36)
DISABLE macro - is type 3, gets LOCAL lock.

Calls module IGC0005D.

GTF data is:
R15 and R0  No applicable data.
R1   Address of the associated DCB.

DDNAME  cccccccc  name of the associated DD statement.
DCB    hhhhhhhhh  address of the associated DCB.
DEB    hhhhhhhhh  address of the associated DEB.

SVC 55 (0A37)
EOV macro - is type 4, gets LOCAL lock.

Calls module IGC0005E.

If MODE=24 (R1 not = 0), GTF data is:
R15  No applicable data.
R0   IOB address if:

    DCOFLGS = ...1 ....
    DCBMACRF = 0... ....

or

    Internal code for problem determination if R1 is negative,
    indicating DMABCOND was issued with the SVC = YES parameter,
or
X'0000 1000', indicating that the calling program is requesting a 001 ABEND.

Note: If none of the situations listed above is relevant, R0 be cleared (set to zeros) or the results are unpredictable.

R1  DCB address. If R1 is negative, the DCB address must be in complement form and R0 is expected to contain an internal code for problem determination.

DDNAME  cccccc  DDNAME associated with this request.

If MODE=31 (R1 = 0), GTF data is:
R15  31-bit address of AMB or DCB.
R0  IOB address if:

  DCBOFLGS = ...1 ....
  DCBMACRF = 0... ....

DDNAME  cccccc  DDNAME associated with this request.

SVC 56 (0A38)

ENQ RESERVE macro - is type 2, gets LOCAL and CMSEQDQ locks.

Calls module ISGGRT.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the parameter list.
PLIST  36 bytes of the ENQ/RESERVE parameter list, representing an ENQ request for a single resource. The complete parameter list can include requests for additional resources; the last request is identified by a flag bit described below.

Bytes
-20  Reserved.
-16  If an MASID ENQ and an ECB is specified, contains the ECB address.
-12  If an MASID ENQ, contains the MASID operand value.
-8   If an MASID ENQ, contains the MTCB operand value; otherwise, contains the TCB address if both the TCB and the ECB are specified.
-4   If an MASID ENQ, contains the format word of decimal 20; otherwise, contains the TCB or the ECB address depending on whether TCB= or ECB= was specified. (See the flag bytes following.)
0    Flag bits as follows:

  ....   .0..  RNL=YES
  1...   ....  End-of-list indicator; if zero, the parameter list includes another resource request.
  .1..   ....  Old options are in effect (bits have no meaning).
  .01.   ....  Indicates LOC=ANY specified on a RESERVE request. The UCB may reside in 31-bit storage.
SVC Summary

.0.1 .... Indicates that the requester of the resource now owns the resource and the resource is shared. If zero, the resource is owned exclusively.

.0. 1... Format word indicator. If zero, the list of PELS does not have the MASID format prefix.

.0. ...1 "TCB=tcbaddr" was requested; parmlist prefix contains the TCB address.

1 Length of the minor name whose address is in bytes 8-11 of this element. Zeros indicates the length of minor name is in the first byte of the minor name field whose address is in bytes 8-11 of this element (does not include the length byte itself).

2 ENQ parameters byte; bit settings are:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...</td>
<td>Exclusive request.</td>
</tr>
<tr>
<td>1...</td>
<td>Shared request.</td>
</tr>
<tr>
<td>.0. 0...</td>
<td>Scope of the minor name is STEP.</td>
</tr>
<tr>
<td>.0. 1...</td>
<td>RESERVE type. The resource is known across systems and UCB= was specified. The last word of the parameter list is the address of a word containing the UCB address.</td>
</tr>
<tr>
<td>.1. 0...</td>
<td>Scope of the minor name is SYSTEM.</td>
</tr>
<tr>
<td>.1. 1...</td>
<td>Scope of the minor name is SYSTEMS.</td>
</tr>
<tr>
<td>...1</td>
<td>Obsolete.</td>
</tr>
<tr>
<td>...1</td>
<td>Set “must complete” equal to STEP.</td>
</tr>
<tr>
<td>.... .000</td>
<td>RET=None.</td>
</tr>
<tr>
<td>.... .001</td>
<td>RET=HAVE.</td>
</tr>
<tr>
<td>.... .010</td>
<td>RET=CHNG.</td>
</tr>
<tr>
<td>.... .011</td>
<td>RET=USE.</td>
</tr>
<tr>
<td>.... .100</td>
<td>&quot;ECB=addr&quot;. The ECB address is contained in the parameter list prefix.</td>
</tr>
<tr>
<td>.... .111</td>
<td>RET=TEST.</td>
</tr>
</tbody>
</table>

3 Field for codes returned to the issuer by ENQ.

4-7 Address of the major resource name (QNAME).

8-11 Address of the minor resource name (RNAME).

12-15 If bits 1 and 4 of the ENQ parameter byte are set to 0 and 1 respectively, this word contains the address of a word containing the UCB address; otherwise, the content of this word will be zero.

Note: RESERVE is basically an ENQ with UCB= specified. See flag byte 2 above.

Register contents on return (provided only if RET=TEST, RET=USE, RET=CHNG, or RET=HAVE): 

R15 00 if each return code for each resource named in ENQ is 0. Otherwise, R15 contains the address of a storage area containing the return codes.

SVC 57 (0A39)

FREEDBUF macro - is type 3, gets no lock.

Calls module IGC0005G.

GTF data is:

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15</td>
<td>No applicable data.</td>
</tr>
<tr>
<td>R0</td>
<td>DECB address. The address is in two’s complement form and indicates an extended function.</td>
</tr>
</tbody>
</table>
SVC Summary

R1  DCB address.

DDNAME  cccccccc  DDNAME associated with this request.

SVC 58 (0A3A)
RELBUF/REQBUF macro - is type 1, gets local lock.

Calls module IGC058.

GTF data is:
R15  No applicable data.
R0   Request count or release address.
R1   DCB address.

DDNAME  cccccccc  DDNAME associated with this request.

DDNAME  cccccccc  Name of the associated DD statement.
DCB    xxxxxxxx   Address of the DCB associated with this I/O request.
DEB    xxxxxxxx   Address of the DEB associated with this I/O request.

SVC 59 (0A3B)
OLTEP macro - is type 3, gets LOCAL and CMS locks.

Calls module IGC0005I.

APF protected via TESTAUTH. GTF data is:
R15  No applicable data unless specified
R1=00 No function performed
R1=04 UCB lookup for the control unit test.
R0=  RSRM address:
      Word 0 = Base address of the control unit.
      Word 1 = bytes 0,1 - number of devices on the control unit.
                 bytes 2,3 - a code (0 or 1)
R1=08 To determine if OLTEP is in a MP environment.
R1=0C To vary offline a 3830 attached to a 3850 mass storage system.
R1=10 To put a 3330 SSID (when attached to a 3850 mass storage system) into a list for cleanup.
R1=14 To cleanup the UCBs and DEB chains and zero the CVTOLTEP word.
R1=18 No function performed.
R1=1C No function performed.
R1=20 No function performed.
R1=24 No function performed.
R1=28 No function performed.
R1=2C No function performed.
R1=30 No function performed.
R1=34 No function performed.
R1=38 No function performed.
R1=3C To check online or offline status.
R0=  RSRM address:
      Word 0 = pointer to the UCB.
      Word 1 = pointer to the 8-byte workarea.
R1=40 UCB lookup for each DEVTAB entry.
SVC Summary

R0=  RSRM address:
    Word 0 = pointer to the DEVTAB.
    Word 1 = number of entries in DEVTAB.
    Word 2 = pointer to the save area.
R1=44 No function performed.
R1=4C To translate a central address to a virtual address.
R1=50 OLTEP will purge an I/O event and free the necessary control
     blocks and areas.
R1=48 No function performed.
R1=54 Test UCB not ready bit.
R0=  RSRM address:
    Word 0 = pointer to the UCB.
R1=58 Initialization (MVS).
R0=  RSRM address:
    Word 0 = DIE address.
    Word 1 = DIEPTR address.
    Word 2 = TESTDEB address.
R15=  
    00   OK.
    04   Second OLTEP.
    08   PGFIX for subpool 245 failed.

R1=5C-STARTIO - Move the IOSB.

R0=  RSRM address:
    Word 0 = Model the IOSB address.
R15=  
    00   IOSB moved and the STARTIO issued.
    04   SRB/IOSB set not available, all are in use.
    XX   CCW translator failure. XX is the return code from the
         translator.

R1=60 Verify and set the processor affinity.
R0=  RSRM address:
    Word 0 = pointer to the requested affinity.
R15=  
    00   OK.
    04   Requested affinity cannot be set.

R1=64 Invoke IOSMAP for device
R0=  RSRM address:
    Word 0 = UCB address.
    Word 1 = address of area to contain path map.

SVC 60 (0A3C)

STAE ESTAE macro - is type 2, gets LOCAL lock.

Calls module IEAVSTA0, entry point IGC060.

GTF data is:
FOR STAE REQUESTS
R15   No applicable data.
R0  Contents:
  00  Create.
  100 Create.
  04  Cancel.
  08  Overlay.
  108 Overlay.

R1  Address of the parameter list. The high-order bit is set to 1 if the
     XCTL=YES parameter was coded.

PLIST  12 bytes long; format is:
Bytes
  0  Flag byte:
      1... .... TCB address is supplied.
      .... .1.. Allow asynchronous exit scheduling.
      .... ..10 Do not purge I/O operations.
      .... ..01 Purge I/O operations with the halt option.
      .... ..00 Purge I/O operations with the quiesce option.
      .000 0... Reserved and set to zero.
  1-3  If zero, the CANCEL operand is in effect; otherwise, the address of
       the STAE exit routine.
  4-7  Address of the exit routine parameter list; if zero, no exit routine
       parameter list exists.

FOR ESTAE REQUESTS

R15  No applicable data.
R0  Contents:
  00  A new ESTAE parameter list is to be created.
  100 A new ESTAE parameter list is to be created with zeroes placed in
       the reserved fields.
  04  Cancel the most recent STAE request.
  A4  Cancel the most recent STAE with TOKEN request.
  84  Cancel the most recent ESTAE request.
  94  Branch enter to cancel the most recent ESTAE request.
  B4  Branch enter to cancel the most recent ESTAE with TOKEN
       request.
  08  Overlay the previous ESTAE parameter list with the parameters
      passed in this request.
  108 Overlay the previous ESTAE parameter list with the parameters
       passed in this request and zeroes placed in the reserved fields.
 100  The high-order bit is set to 1 if the ESTAE macro is not to be
       canceled when an XCTL is issued, and to 0 if the ESTAE macro
       is to be canceled when an XCTL is issued.

PLIST  See the mapping of the ESTA macro in z/OS MVS Data Areas in z/OS
       Internet Library at http://www.ibm.com/systems/z/os/zos/bkserv/

SVC 61 (0A3D)

(Appplies to TSO/E only) - is type 3, gets LOCAL lock.

Calls module IGC006A.

GTF data is:
R15  No applicable information.
R0  Contains the address of the Fetch work area if invoked by Contents
    Supervisor. Otherwise, no applicable data.
R1  Contains: Zeros if the routine is being entered from the overlay supervisor.
Negative address of the DCB used to fetch the module if the routine is being entered from the contents supervisor.

**SVC 62 (0A3E)**

`DETACH` macro - is type 2, gets LOCAL lock.

Calls module IEAVEED0, entry point IGC062.

GTF data is:
- **R15 and R0**: No applicable data.
- **R1**: Address of the fullword containing the address of the subtask TCB to be detached. If bit 0 = 1, STAE=YES was specified. This affects the abend code with which an incomplete subtask is abended. If STAE=YES the code is 33E, otherwise it is 13E.

**DETACH TCB** `hhhhhhh` Address of the subtask TCB to be detached.

**Note:** If R1 contains zeros, the DETACH TCB field is meaningless, and the issuer of SVC 62 will be abended with code 23E.

Register contents on return:
- **R15**: 00 - successful completion
  - 04 - an incomplete subtask was detached with STAE=YES specified; DETACH processing successfully completed

**SVC 63 (0A3F)**

`CHKPT` macro - is type 4, gets LOCAL and CMS locks.

Calls module IHJACP00, entry point IGC0006C.

GTF data is:
- **R15 and R0**: No applicable data.
- **R1**: Contents:
  - a. Address of the parameter list.
  - b. Zero if for a CANCEL request.
- **PLIST**: 8 bytes long; format is:
  - **Bytes**
  - **0** `00` Check the ID address provided in the second parameter of CHKPT macro instruction.
  - 80 No check ID address is provided.
  - 1-3 Address of the checkpoint DCB.
  - 4 `00` Check ID address is provided.
  - 01 to 10 Check ID length is provided via the third parameter of the CHKPT macro instruction.
  - FF 'S' specified as the third parameter of the CHKPT macro instruction; the system-generated check ID is to be placed at the address specified in bytes 5-7.
  - 5-7 Address for storing the system-generated check ID or the address of the user provided check ID.
SVC 64 (0A40)

RDJFCB macro - is type 3, gets LOCAL lock.

Calls module IGC0006D.

GTF data is:
- **R15 and R0** No applicable data.
- **R1** The 24-bit address of the parameter list.
- **PLIST** Four to 40 bytes of the RDJFCB parameter list, which has a maximum of 1020 bytes. The list is a series of 4-byte entries, each containing a 24-bit address DCB. The high-order byte has bit 0 set to one to indicate the last entry. The address of the parameter list that is passed must be a 24-bit address.

SVC 65 (0A41)

Reserved.

SVC 66 (0A42)

BTAMTEST macro - is type 4, gets no lock.

Calls module IGC0006F.

GTF data is:
- **R15 and R0** No applicable data.
- **R1** Address of the IOB when the SVC was issued.
- **IOBERINF** Address of the RFT message, inserted by the channel end appendage (IGG019MB).
- **IOBERNIF+4** Address of the parameter list, inserted by the terminal test control (IGG019MR).

SVC 67 (0A43)

Reserved.

SVC 68 (0A44)

SYNADAF/SYNADRLS macro - is type 4, gets no lock.

Calls module IGC0006H: is type 4, gets no lock.

GTF data is:

**Entry from SYNADAF:**
- **R15** High-order position is a flag byte; three low-order bytes of user data or the address of the entry point to the SYNAD routine. Flag byte codes are:
  - **Code**
    - X'00' EXCP request.
    - X'01' BPAM request.
    - X'02' BSAM request.
    - X'03' QSAM request.
    - X'04' BDAM request.
    - X'05' BISAM request.
    - X'06' QISAM request.
    - X'07' BTAM request.
    - X'09' GAM request.
SVC Summary

R0  Three low order bytes: Address of the DECB if BSAM, BPAM, BDAM, or BISAM. Address of the status indicators if QSAM. Dependent on high-order bit if QISAM.

High order byte:

QSAM  Offset of the first CCW in the status indicator area except when using the large block interface.

QISAM  If bit 0 is 0, the low-order three bytes point to work area. If bit 0 is 1, the low-order three bytes point to key that is out of sequence.

R1  High-order byte has a flag byte; three low-order bytes have the address of the DCB, or Address of the IOB for QISAM or EXCP. Flag byte bit settings are: Bits-reserved for EXCP, BISAM, QISAM, BDAM, BPAM, BSAM, and QSAM as follows:

1... .....  Error caused by an input operation.
.1. .....  Error caused by an output operation.
..1. ....  Error caused by a BSP, CNTRL, or POINT.
...1 ....  Record has been successfully read.
.... 1...  Invalid request.
.... .1..  Paper tape conversion - invalid character.
.... ..1.  BDAM only - hardware error.
.... ...1  BDAM only - no space for the record.

Entry from SYNADRLS:

GTF data is:
R0 and R1  No applicable data.
R15  High-order byte has X'FF' and three low-order bytes are user data.
X'FF'  Indicates that the SVC routine is being entered from the SYNADRLS macro instruction.
R13  Save area address.

SVC 69 (0A45)

BSP macro - is type 3, gets no lock.

Calls module IGC0006I.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the DCB.

SVC 70 (0A46)

GSERV macro - is type 2, gets LOCAL lock.

Calls module IGC070.

GTF data is:
R15 and R0  No applicable data.
R1  Contents:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Mask indicating which bits in the graphic control byte (GCB) should be reset.</td>
</tr>
<tr>
<td>1-3</td>
<td>Address of a fullword field that identifies the DCB related to the GCB in which bits are to be reset.</td>
</tr>
</tbody>
</table>
PLIST  4 bytes displays the fullword pointed to by register 1. Byte 0 is a unit index factor used to locate the UCB address in the DEB associated with the DCB. (The GCB to be reset is in the UCB).

**SVC 71 (0A47)**

ASGNBFR/BUFINQ/RLSEBFR macro - is type 3, gets LOCAL lock.

Calls module IGC0007A.

GTF data is:
- **R15 and R0**  No applicable data.
- **R1**  Address of the parameter list.

**DDNAME**  cccccccc name of the DD statement associated with the DCB specified by the macro instruction.

**PLIST**  parameter list up to 12 bytes long pointed to by R1. The content varies according to the macro instruction calling the SVC; contents are:

**Entry from ASGNBFR:**

**Bytes**
0  Request byte; settings are:
   04  Indicates ASGNBFR.
1-3  DCB address.
4-7  Address of the halfword field containing the number of bytes of buffer to be assigned.

**Entry from RLSEBFR:**

**Bytes**
0  Request byte; settings are:
   08  RLSEBFR.
   0C  RLSEBFR ALL.
1-3  DCB address.
4-7  Address of the halfword field containing the number of bytes of buffer to be released.

**Entry from BUFINQ:**

**Bytes**
0  Request byte; settings are:
   10  Indicates BUFINQ.
1-3  DCB address.
4-7  Address of the table of buffer addresses (must be on a fullword boundary).
8-11  The number of bytes specified to be available for the table of buffer addresses.

**SVC 72 (0A48)**

No macro - is type 4, gets LOCAL and CMS locks.

Calls module IEAVVCTR.

GTF data is:
- **R15**  No applicable data.
- **R0**  Address of the IOBE when IOBFLAG4 is on in the IOB.
- **R1**  Address of the parameter list that contains:
  - **Offset**
SVC Summary

X'00'  Device service processor name.
X'08'  Console failure reason code.
X'09'  UCME address.
X'0C'  UCM base address.

SVC 73 (0A49)
SPAR macro - is type 3, gets LOCAL lock.

Calls module IGC0007C.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the parameter list.

PLIST up to 40 bytes.
It is a series of 4-byte entries. First entry has format:
_bytes  
0  Priority specified for the attention routine by the SPAR
   macro instruction.
1  Reserved.
2-3  Number of words in the parameter list.

Each additional entry contains the GACB address specified by the
SPAR macro instruction.

SVC 74 (0A4A)
DAR macro - is type 3, gets LOCAL lock.

Calls module IGC0007D.

GTF data is:
R15 and R0  No applicable information.
R1  Address of the parameter list.

PLIST up to 40 bytes.
It is a series of 4-byte entries. First entry has the format:
_bytes  
0-1  Reserved.
2-3  Number of words in the parameter list.

Each additional entry contains the GACB address specified by the
DAR macro instruction.

SVC 75 (0A4B)
DQUEUE macro - is type 3, gets LOCAL lock.

Calls module IGC0007E.

GTF data is:
R15  No applicable data.
R0  Address of next the IQE on the IRB active list for the attention
   routine when ATTNINQ has specified the clear mode; otherwise,
   contains zeros.

R1 content:
_bytes  
0  Unit index to identify a particular 2260 display station; or
   00 for a 2250 station.
1-3  GACB address.
IQE  When ATTNINQ specifies clear mode this field contains
the first 3 words of the IQE pointed to by R0:
Bytes  
0-3    Address of the next IQE in the chain, or zeros.
4-7    No applicable data.
8-11   Address of the IRB associated with the IQE. N/A
will appear in this field whenever the ATTNINQ
macro instruction did not specify the clear mode.

SVC 76 (0A4C)
No macro - is type 3, gets no lock.

Calls module IFBSVC76, entry point IGC0007F.

APF protected. GTF data is:
R15    Contains a return code, as follows:

<table>
<thead>
<tr>
<th>Return Code (hex)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Recording to logrec recording medium complete</td>
</tr>
<tr>
<td>08</td>
<td>Storage not available (no recording attempted)</td>
</tr>
<tr>
<td>0C</td>
<td>One of the following:</td>
</tr>
<tr>
<td></td>
<td>• Space not available (no recording attempted). Record override switch set.</td>
</tr>
<tr>
<td></td>
<td>• Buffer overflow condition reached for log stream blocks.</td>
</tr>
<tr>
<td>10</td>
<td>One of the following:</td>
</tr>
<tr>
<td></td>
<td>• Permanent I/O error.</td>
</tr>
<tr>
<td></td>
<td>• Format error in the header record.</td>
</tr>
<tr>
<td>14</td>
<td>Record length error; the record would not fit in a logrec log stream block.</td>
</tr>
</tbody>
</table>

R0    If positive, contains the function indicator in byte 3:
00    Indicates that the EOD recording is requested.
04    Indicates that the EREP entry to record statistical information in
      the logrec data set is requested.
08    Indicates that an IPL recording is requested.
0C    Indicates entry to update date and time values in the logrec data
      set time-stamp record.

If negative (complemented), contains the length in bytes of a record to be
placed in the logrec set.

R1    If R0 is positive, R1 contains no applicable data. If R0 is negative, R1
contains the address of the record to be written.

SVC 77 (0A4D)
Reserved.
SVC Summary

**SVC 78 (0A4E)**

The **LSPACE** macro - is type 3, gets LOCAL lock.

Calls module IGC0007H.

GTF data is:

<table>
<thead>
<tr>
<th>Register</th>
<th>Function</th>
<th>Register 1</th>
<th>Register 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15</td>
<td>No applicable data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R0</td>
<td>Address of the associated UCB or zero.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If R0 = 0, R1 points to a parameter list.

See z/OS DFSMSdss Advanced Services for a description.

**R1**

SMF indicator and/or the message buffer address as follows:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Function</th>
<th>Register 1</th>
<th>Register 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SMF indicator (caller must be in protect key 0 or authorized to specify either SMF indicator).</td>
<td>N/A*</td>
<td>N/A*</td>
</tr>
<tr>
<td></td>
<td>X'80'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build SMF record type 19.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>X'40'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LSPACE should test if the SMF volume information is requested before building the SMF record type 19.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>zero or the address of a 30-byte message buffer.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CUU**

dddd The device number in channel-unit format.

---

**SVC 79 (0A4F)**

The **STATUS** macro - is type 2, gets LOCAL, CMS, CMSEQDQ, SALLOC, and DISP locks, plus the local and global intersect.

Calls module IEAVSETS, entry point IGC079.

GTF data is:

The two low-order bytes of register 0 contain a STATUS function code. Depending on the code, registers 1 and 15 contain other information as shown.

<table>
<thead>
<tr>
<th>Register 0</th>
<th>Function</th>
<th>Register 1</th>
<th>Register 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>2-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>0001</td>
<td>MCSTEP</td>
<td>N/A*</td>
</tr>
<tr>
<td>MASK</td>
<td>0003</td>
<td>NDSTEP</td>
<td>N/A*</td>
</tr>
<tr>
<td>N/A*</td>
<td>0004</td>
<td>NDSYS</td>
<td>N/A*</td>
</tr>
<tr>
<td>MASK</td>
<td>0005</td>
<td>NDTCB</td>
<td>TCB</td>
</tr>
<tr>
<td>0000</td>
<td>0006</td>
<td>STOP</td>
<td>0 or TCB</td>
</tr>
<tr>
<td>0000</td>
<td>0007</td>
<td>START</td>
<td>0 or TCB</td>
</tr>
<tr>
<td>ASID**</td>
<td>0008</td>
<td>SDSTEP</td>
<td>N/A*</td>
</tr>
<tr>
<td>N/A*</td>
<td>0009</td>
<td>SDSYS</td>
<td>N/A*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Register 0</th>
<th>Function</th>
<th>Register 1</th>
<th>Register 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASID</td>
<td>000A</td>
<td>SDTCB</td>
<td>TCB</td>
</tr>
<tr>
<td>ASID</td>
<td>000B</td>
<td>SDETCB</td>
<td>TCB</td>
</tr>
<tr>
<td>MASK</td>
<td>000C</td>
<td>NDETCB</td>
<td>TCB</td>
</tr>
<tr>
<td>ASID**</td>
<td>000D</td>
<td>SRBS</td>
<td>N/A*</td>
</tr>
<tr>
<td>0000</td>
<td>000E</td>
<td>SYCH</td>
<td>N/A*</td>
</tr>
<tr>
<td>0000</td>
<td>000F</td>
<td>Caller, SD</td>
<td>N/A*</td>
</tr>
<tr>
<td>MASK</td>
<td>0010</td>
<td>Caller, ND</td>
<td>N/A*</td>
</tr>
<tr>
<td>0000</td>
<td>0011</td>
<td>SRBs only</td>
<td>N/A*</td>
</tr>
</tbody>
</table>
Note: The sign bit of register one indicates:

0 = set(stop).
1 = reset(start).

* not applicable to codes 6, 7, 14, 15, 16.
** XM status only for reset/start

SVC 80 (0A50)
Reserved.

SVC 81 (0A51)
SETPRT or SETDEV macro - is type 4, gets no lock.

Calls module IGC0008A.

GTF data is:

R15 and R0  No applicable data.
R1  Address of the parameter list.

DDNAME  cccccccc  Name of the DD statement associated with the data set being printed.

PLIST  Parameter list of up to 14 words being passed to SVC 81.

Bytes

0-3  address of the DCB.
4-7  EBCDIC UCS image ID.
8  LOAD MODE indicator; bit settings are:

Bits

.0.  ....  UCS = fold not specified.
.1.  ....  UCS = fold.
.x.x  xxxx  Reserved.

9  Verification indicator; bit settings are:

Bits

..1  ....  Display the image on the printer for verification.
..0  ....  Do not display the image on the printer for verification.
.xxx  xxxx  Reserved.

10  Data check indicator; bit settings are:

Bits

10.  ....  Block data checks.
01.  ....  Unblock data checks.
00.  ....  Data checks the DCB specifies.
..10  ....  Schedule SYSOUT data segment for printing now.
..01  ....  Do not schedule SYSOUT data segment for immediate printing.
....  10.  OPTCD = unfold option.
....  01.  OPTCD = fold option.
.xx  .x  Reserved.
....  ...1  SETPRT parameter list is extended to at least 48 bytes in length.

11-14  EBCDIC FCB image ID.
15  FCB parameter options; bit settings are:
SVC Summary

1... .... Verify the FCB.
.1... .... Bypass auto forms positioning.
.... ...1 Align.
.xx xxx. Reserved.

16 SPPFLAG1 Flag indicators; bit settings are:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...</td>
<td>BURST=N, thread continuous forms stacker.</td>
</tr>
<tr>
<td>1...</td>
<td>BURST=Y, thread burster-trimmer-stacker.</td>
</tr>
<tr>
<td>.1...</td>
<td>REXMIT=Y, retransmission-only change COPIES, FLASH and starting copy number.</td>
</tr>
<tr>
<td>.1.</td>
<td>INIT=Y, initialize the printer.</td>
</tr>
</tbody>
</table>
...1. | PRTMSG=N, suppress error messages in the printer. |
....1... | Bypass the “load forms overlay” message and status display. |
.... .1... | Bypass the stacker setup message and status display. |
.... ..1. | Bypass WCGM overflow message. |
.... ...1 | Load the requested FCB image without checking current FCB status. |

17 SPPFLAG2 Flag indicators; bit settings are:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1...</td>
<td>MODIFY is specified as an address.</td>
</tr>
<tr>
<td>0...</td>
<td>MODIFY is not specified or is specified as a name.</td>
</tr>
<tr>
<td>.1...</td>
<td>First character arrangement table is specified as an address.</td>
</tr>
<tr>
<td>.0...</td>
<td>First character arrangement table is specified as a name or is not specified.</td>
</tr>
<tr>
<td>.1.</td>
<td>Second character arrangement table is specified as an address.</td>
</tr>
<tr>
<td>.0.</td>
<td>Second character arrangement table is specified as a name or is not specified.</td>
</tr>
</tbody>
</table>
...1... | Third character arrangement table is specified as an address. |
...0... | Third character arrangement table is specified as a name or is not specified. |
....1... | Fourth character arrangement table is specified as an address. |
.... 0... | Fourth character arrangement table is specified as a name or is not specified. |
.... .1... | FCB is specified as an address (3800 only). |
.... .0... | FCB is specified as a name or is not specified. |
.... ..xx | Reserved. |

18 Number of copies to be printed on this transmission.
19 Starting copy number.
20 Length of the parameter list.
22 Number of copies to be forms flashed on this transmission.
23 Table reference character for copy modification.
24 The last 4 bytes of a module name or a pointer to the copy modification control record.
28 The 4 character name of a forms overlay frame.
32 The last 4 bytes of a member name or a pointer to the first character arrangement table module.
36 The last 4 bytes of a member name or a pointer to the second character arrangement table module.
40 The last 4 bytes of a member name or a pointer to the third character arrangement table module.
44 The last 4 bytes of a member name or a pointer to the fourth character arrangement table module.
Address of the message communication area for error information.

Address of the DCB for a user library to load 3800 setup modules.

Caller's COPYP specifications.

SPPFLAG3 FCB options. Copied into SETPRT work area. Bit settings are:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1...</td>
<td>COPYP specified</td>
</tr>
<tr>
<td>.1..</td>
<td>PSPEED specified</td>
</tr>
<tr>
<td>..11</td>
<td>Reserved</td>
</tr>
<tr>
<td>...</td>
<td>Caller's PSPEED specification as follows:</td>
</tr>
<tr>
<td>....</td>
<td>Unchanged</td>
</tr>
<tr>
<td>....</td>
<td>Low</td>
</tr>
<tr>
<td>....</td>
<td>Medium</td>
</tr>
<tr>
<td>....</td>
<td>High</td>
</tr>
<tr>
<td>....</td>
<td>Reserved, must be set to zero</td>
</tr>
</tbody>
</table>

**SVC 82 (0A52)**
Reserved.

**SVC 83 (0A53)**
SMFWTM macro or SMFEWTM macro, BRANCH=NO - is type 3, gets no lock.

Calls module IEEMB830.

APF protected. GTF data is:
R15 and R0  No applicable data.
R1           The address of an SMF record that is to be written to an SMF data set.

**SVC 84 (0A54)**
GRAPHICS macro - is type 1, gets LOCAL lock.

Calls module IGC084, entry point IGC00084.

GTF data is:
R15  No applicable data.
R0   High-order two bytes have the buffer restart address stored in the UCB;
     two low-order bytes contain the address of the UCB.
R1   Zeros.

**SVC 85 (0A55)**
No macro - is type 3, gets LOCAL lock.

Calls module IGC0008E.

APF protected. GTF data is:
R15, R0 and R1 - No applicable data.

**SVC 86 (0A56)**
ATLAS macro - is obsolete, no longer supported.
**SVC Summary**

### SVC 87 (0A57)

The **DOM** macro - is type 3, gets LOCAL and CMS locks.

Calls module IEAVXDOM, entry point IGC0008G.

GTF data is:

- **R15**: No applicable data.
- **R0**: Count of 4 byte IDs.

**Bytes**

- **0**: Count of 4 byte IDs.

**Note:** In byte 0, if the high order bit is ON, then the DOM request is a list of ID numbers and REPLY=YES is not specified.

- **1**: SYSID.
- **2-3**: Flags, as follows:
  - **00**: One ID number and REPLY=YES not specified.
  - **01**: One ID number specified.
  - **02**: A DOM control block specified.
  - **04**: One ID number and REPLY=YES specified.
  - **08**: List of ID numbers specified.
  - **0C**: List of ID numbers and REPLY=YES specified.
  - **10**: System ID specified.
  - **11**: One ID number and system ID specified.
  - **18**: List of ID numbers and system ID specified.
  - **20**: Token specified.
  - **30**: Token, system ID specified.
  - **40**: One ID number, SCOPE=SYSTEMS specified.
  - **41**: A DOM control block, SCOPE=SYSTEMS specified.
  - **48**: List of ID numbers, SCOPE=SYSTEMS specified.
  - **50**: System ID, SCOPE=SYSTEMS specified.
  - **51**: System ID, one ID number, SCOPE=SYSTEMS specified.
  - **58**: System ID, list of ID numbers, SCOPE=SYSTEMS specified.
  - **60**: Token, SCOPE=SYSTEMS specified.
  - **70**: Token, system ID, SCOPE=SYSTEMS specified.
  - **80**: One ID number, SCOPE=SYSTEM specified.
  - **81**: DOM control block, SCOPE=SYSTEM specified.
  - **88**: List of ID numbers, SCOPE=SYSTEM specified.
  - **90**: System ID, SCOPE=SYSTEM specified.
  - **91**: One ID number, system ID, SCOPE=SYSTEM specified.
  - **98**: List of ID numbers, system ID, SCOPE=SYSTEM specified.
  - **A0**: Token, SCOPE=SYSTEM specified.
  - **B0**: Token, system ID, SCOPE=SYSTEM specified.

- **R1**: Contains one of the following (contents are determined by R0):

  - List of ID numbers
  - 24-bit right-adjusted ID number of the message to be deleted
  - Token
  - Address of the DOM control block
  - 0 (if DOM by SYSID specified alone)

**PLIST**

Up to 240 bytes long. It is a series of 4-byte entries. Each entry is a message ID word. If the COUNT keyword is not specified, the last entry is identified by 1 in the first bit of the high-order byte. If the COUNT keyword is specified, the last entry contains the number of entries in the list.
SVC 88 (0A58)
Reserved.

SVC 89 (0A59)
Reserved.

SVC 90 (0A5A)
Reserved.

SVC 91 (0A5B)
VOLSTAT macro - is type 3, gets no lock.

Calls module IGC0009A.

GTF data is:
R15 No applicable information.
R0 If negative, contains the address of the UCB. If positive, contains address of the DCB.
R1 Contents:

The SVC was issued by CLOSE.
X'32' The SVC was issued by DDR.
X'33' The SVC was issued by EOD.
X'63' The SVC was issued by EOV.
Any other, the SVC was issued by UNALLOCATION.

SVC 92 (0A5C)
TCBEXCP macro - is type 1, gets LOCAL lock.

Calls module IECVEXCP, entry point IGC092.

GTF data is:
R15 No applicable data.
R0 If the high order byte is X'FF', the low order three bytes contain the address of the EPCB. Otherwise, the low order three bytes contain the address of the TCB to which the I/O is related.
R1 Address of the IOB associated with this request. (If the high order bit is zero, SVC 92 is functionally equivalent to SVC 0; if the high order bit is one, SVC 92 is functionally equivalent to SVC 114.)

DDNAME cccccccc Name of the associated DD statement.
DCB xxxxxxxx Address of the DCB associated with this I/O request.
DEB xxxxxxxx Address of the DEB associated with this I/O request.

SVC 93 (0A5D)
TGET macro - is type 3, gets LOCAL and CMS locks. GTF data is:
R15 No applicable data.
R0 Two high-order bytes are reserved. Two low-order bytes contain the buffer size in bytes.
R1 High-order byte is a flag byte; three low-order bytes contain the address of the buffer that is to receive data from the input line. Flag byte bit settings are:
Bits
1... TGET specified.
0... TPUT specified.
.1.. Reserved.
..1. Reserved for TPUT.
...1 NOWAIT specified; control should be returned to the program that issued the TGET whether or not an input line is available from the terminal. If no input line is obtained, a return code of 4 will be found in register 15.
...0 WAIT specified; control will not be returned to the program that issued the TGET until an input line has been put into the program's buffer. If an input line is not available from the terminal, the issuing program will be put into a wait state until a line does become available and is placed in program's buffer.
...
1... Reserved for TPUT.
... .1.. Reserved for TPUT.
...
..01. ASIS specified; normal or minimal editing will be performed.
...
..00. EDIT specified; further editing will be performed in addition to the normal (ASIS) editing.

SVC 93 (0A5D)
TPG macro is type 3, gets LOCAL and CMS locks. GTF data is:
R0 The high-order bit is set.
R1 Pointer to a 4 word parameter list. The format is:
Bytes
0-1 Reserved.
2-3 Buffer size.
4-7 Address of buffer.
8-11 Reserved.
12 Flag 2.

Bits
1... End of list.
.11 11. Reserved.
.... .1. TPG specified.
.... ...1 NOEDIT specified.
1... Reserved for TGET.
0... Reserved for TPUT.
.1.. Reserved for TPUT.
..1. Reserved for TPUT.
...1 NOWAIT specified; control should be returned to the program that issued the TPG macro, whether or not TIOC buffers are available for the output line. If no buffers are available, the TPG SVC places a return code of 4 in register 15.
...0 WAIT specified; control will not be returned to the program that issued the TPG macro until an output line has been placed in a TIOC output buffer. If no buffers are available, the issuing program will be put into a wait state until buffers do become available and the output line is placed in them.
.... 1... HOLD specified; the program that issued the TPG macro cannot continue processing until the issued output line has either been written to the terminal or deleted.
NOHOLD specified; control should be returned to the
program that issued the TPG macro as soon as the
output line has been placed on the output queue.

Reserved for TPUT.

Reserved for TPUT.

Reserved for TGET and TPUT.

Reserved for TGET and TPUT.

Reserved for TPUT.

Reserved.

TPUT macro - is type 3, gets LOCAL and CMS locks. GTF data is:

R15  Pointer to the USERID if specified. (See flag byte, bit 1 in register 1).
R0   Two high-order bytes contain the address space identifier (ASID) of the
destination terminal. Two low-order bytes contain the size of the input
buffer in bytes.
R1   The high-order is a flag byte; low order bytes have the address of the
buffer to hold line of output. Flag byte bit settings are:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TGET specified</td>
</tr>
<tr>
<td>0</td>
<td>TPUT specified</td>
</tr>
<tr>
<td>.1</td>
<td>USERID specified by register 15.</td>
</tr>
<tr>
<td>.1</td>
<td>LOWP specified; the terminal will not receive any inter-terminal messages</td>
</tr>
<tr>
<td></td>
<td>from non-supervisory routines if TSBITOFF is on, even if a key-zero task</td>
</tr>
<tr>
<td></td>
<td>is sending messages. Can only be specified on TPUT with ASID or USERID.</td>
</tr>
<tr>
<td>.0</td>
<td>HIGHP specified; the terminal will receive inter-terminal messages if</td>
</tr>
<tr>
<td></td>
<td>TSBITOFF is on. Can only be specified with ASID or USERID.</td>
</tr>
<tr>
<td>...1</td>
<td>NOWAIT specified; control should be returned to program that issued TPUT,</td>
</tr>
<tr>
<td></td>
<td>whether or not TIOC buffers are available for the output line. If buffers</td>
</tr>
<tr>
<td></td>
<td>are not available, a return code of 4 will be placed in register 15.</td>
</tr>
<tr>
<td>...0</td>
<td>WAIT specified; control will not be returned to the program that issued the</td>
</tr>
<tr>
<td></td>
<td>TPUT until an output line has been placed in a TIOC output buffer. If no</td>
</tr>
<tr>
<td></td>
<td>buffers are available, the issuing program will be put into a wait state</td>
</tr>
<tr>
<td></td>
<td>until buffers do become available and the output line is placed in them.</td>
</tr>
<tr>
<td>....1</td>
<td>HOLD specified; the program that issued the TPUT cannot continue its</td>
</tr>
<tr>
<td></td>
<td>processing until this output line has been either written to the terminal or</td>
</tr>
<tr>
<td></td>
<td>deleted.</td>
</tr>
<tr>
<td>....0</td>
<td>NOHOLD specified; control should be returned to the program that issued the</td>
</tr>
<tr>
<td></td>
<td>TPUT as soon as the output line has been placed on the output queue.</td>
</tr>
<tr>
<td>....1</td>
<td>BREAKIN specified; output has precedence over input. If the user at the</td>
</tr>
<tr>
<td></td>
<td>terminal is transmitting, he is interrupted, and this output line is sent.</td>
</tr>
<tr>
<td></td>
<td>Any data that was received before the interruption is kept and displayed at</td>
</tr>
<tr>
<td></td>
<td>the terminal following this output line.</td>
</tr>
<tr>
<td>....0</td>
<td>NOBREAK specified; input has precedence over output. The output message will</td>
</tr>
<tr>
<td></td>
<td>be placed on the output queue to be printed at some future time when the user</td>
</tr>
<tr>
<td></td>
<td>is not entering a line.</td>
</tr>
<tr>
<td>....1</td>
<td>CONTROL specified; the line is composed of terminal control characters and</td>
</tr>
<tr>
<td></td>
<td>will not print or move the carriage on the terminal.</td>
</tr>
</tbody>
</table>
GTF data for the execute and the standard extended form of TPUT macro is:

**R0**  The high order bit is set

**R1**  Pointer to a 4 word parameter list. The format is:

- **0-1**  ASID if specified.
- **2-3**  Buffer size.
- **4**    Flag byte.

**Bits**

- **1...**  TGET specified.
- **0...**  TPUT specified.
- **.1...**  USERID specified.
- **.1.**   LOWP specified; the terminal will not receive any inter-terminal messages from non-supervisory routines if TSBITOFF is on, even if a key zero task is sending messages. Can only be specified on TPUT with ASID or USERID.
- **.0.**   HIGHP specified; the terminal will receive inter-terminal messages if TSBITOFF is on. Can only be specified with ASID or USERID.
- **...1**  NOWAIT specified; control should be returned to the program that issued the TPUT, whether or not TIOC buffers are available for the output line. If buffers are not available, the TPUT SVC places a return code of 4 in register 15.
- **...0**  WAIT specified; control will not be returned to the program that issued the TPUT macro, until an output line has been placed in a TIOC output buffer. If no buffers are available, the issuing program will be put into a wait state until buffers do become available and the output line is placed in them.
- **.... 1..**  HOLD specified; the program that issued the TPUT macro cannot continue processing until the issued output line has either been written to the terminal or deleted.
- **.... 0..**  NOHOLD specified; control should be returned to the program that issued the TPUT as soon as the output line has been placed on the output queue.
- **.... .1..**  BREAKIN specified; output has precedence over input. If the user at the terminal is transmitting, he is interrupted, and this output line is sent. Any data that was received before the interruption is kept and displayed at the terminal following the output line.
- **.... .0..**  NOBREAK specified; input has precedence over output. The output message will be placed on the output queue to be printed at some future time when the user is not entering a line.
- **.... .10**  Control specified; the line is composed of terminal control characters and will not print or move the carriage on the terminal.
- **.... .01**  ASIS specified; normal minimal editing will be performed.
- **.... .00**  EDIT specified; further editing will be performed in addition to the normal ASIS editing.
SVC Summary

FULSCR specified; no editing is performed.

5-7 Buffer address.
8-11 USERID if specified.
12 Bits

1... .... End of list.
.11 11.. Reserved.
.... ..1. Reserved for TPG macro.
.... ..1 NOEDIT specified; indicates that the message will be transmitted completely unedited.

13-15 Reserved.

SVC 94 (0A5E)
STCC macro - is type 3, gets LOCAL and CMS locks.

Calls module IGC0009D.

SVC 94 is called by the following macro instructions: TCLEARQ, STBREAK, STCOM, STCC, STAUTOLN, STSIZE, GTDEVSIZ, GTSIZE, STAUTOCP, STTRAN, STFSMODE, STLINENO, STTMPMD, and GTTERM.

GTF data is (in entry code order):

Entry from TCLEARQ:
R15 No applicable data.
R0 Contents as follows:

Bytes:
0 01 Entry code.
1-3 0 Reserved.

R1 Contents as follows:

Bytes:
0 80 INPUT specified.
00 OUTPUT specified.
1-3 0 Reserved.

Entry from STBREAK:
R15 No applicable data.
R0 Contents as follows:

Bytes:
0 04 Entry code.
1-3 0 Reserved.

R1 Contents as follows:

Bytes:
0 80 YES specified.
00 NO specified.
1-3 0 Reserved.

Entry from STCOM:
**SVC Summary**

**R15**  No applicable data.

**R0**  Contents as follows:

**Bytes:**
0 05  Entry code.
1-3 0  Reserved.

**R1**  Contents as follows:

**Bytes:**
0 80  YES specified.
00 NO specified.
1-3 0  Reserved.

**Entry from STCC:**

**R15**  No applicable data.

**R0**  Contents as follows:

**Bytes:**
0 07  Entry code.
1-3 0  Reserved.

**R1**  Contents as follows:

**Bytes:**
0 Flag byte; bit settings are:
1... .... First operand specified.
.1.. .... ATTN specified.
..1. .... LD specified.
...1 .... CD specified.
0000 0000 No operands specified; retain the previously-used characters.
1 0  Reserved.
2 hh  Hexadecimal representation of any EBCDIC character on the terminal keyboard except new line (NL) and carriage return (CR) control characters.
c Character representation of any EBCDIC character on the terminal keyboard.
hh Character - delete the control character; the hexadecimal representation of any EBCDIC character on the terminal keyboard except new line (NL) and carriage return (CR) characters.
c Character representation of any EBCDIC character on the terminal keyboard.

**Entry from STATTN:**

**R15**  No applicable data.

**R0**  Contents as follows:

**Bytes:**
0 08  Entry code.
1 00  Reserved.
2 hh  Line byte; number of consecutive lines of output that can be directed to the terminal before the keyboard will unlock.
00 Output line counting is not used.
3 hh  Tens byte; tens of seconds that can elapse before the keyboard will unlock.
Locked keyboard timing is not used.

R1 Contents as follows:

Bytes
0 Flag byte; bit settings are:
  1... .... LINES specified.
  .1.. .... TENS specified.
  ..1. .... Input address specified.
  0000 0000 No operands specified; results in a NOP instruction.
1-3 Character string address; if zeros, no character string was specified.

Entry from STAUTOLN:
R15 No applicable data.
R0 Contents as follows:

Bytes:
0 09 Entry code.
1-3 Address of a fullword containing the number to be assigned to the first line of terminal input.

R1 Contents as follows:

Bytes:
0 00 Reserved.
1-3 Address of a fullword containing the increment value used in assigning line numbers.

Entry from STSIZE:
R15 No applicable data.
R0 Contents as follows:

Bytes:
0 0A Entry code.
1-2 Reserved; should be zeros.
3 Lines byte; number of lines (depth) that can appear on the screen.

R1 Contents as follows:

Bytes:
0-2 00 Reserved; should be zeros.
3 Size byte; the logical line size (width), in characters, for the terminal.

Entry from GTSIZE, STAUTOCP, SPAUTOPT, RTAUTOPT:
R15 No applicable data.
R0 Contents as follows:

Bytes:
0 Entry codes are:
  OB GTSIZE.
  OC STAUTOCP
  OD SPAUTOPT
  OE RTAUTOPT
1-3 0 Reserved.
R1  No applicable data; The default is zero.

Entry from STTRAN:
R15  No applicable data.
R0  Contents as follows:

Bytes:
  0  0F  Entry code.
  1  Flag byte
  1...  ....  NOTRAN specified.
  .1...  ....  NOCHAR specified.
  ..1.  ....  TCHAR and SCHAR specified.
  2  Terminal character to be translated in the system.
  3  System character to be translated at the terminal.

R1  Address of the parameter list containing the address and the name of the
user table.

Entry from STCLEAR:
R15  No applicable data.
R0  Contents as follows:

Bytes:
  0  10  Entry code.
  1-3  Reserved; should be zeros.

R1  Contents as follows:

Bytes:
  0  Reserved; should be zeros.
  1-3  Erasure character string address.

Entry from GTTERM:
R15  No applicable data.
R0  Contents as follows:

Bytes:
  0  11  Entry code.
  1-3  0  Reserved.

R1  Parameter list address.

Entry from STFSMODE:
R15  No applicable data.
R0  Contents as follows:

Bytes:
  0  12  Entry code.
  1-3  0  Reserved.

R1  Contents as follows:

Bytes:
  0  80  ON specified.
  40  INITIAL=YES.
  20  NOEDIT=YES.
  10  PARTITIONS=YES.
SVC Summary

Entry from STLINENO:
R15  No applicable data.
R0  Contents as follows:
   Bytes:
   0  13  Entry code.
   1-3  0  Reserved.

R1  Contents as follows:

Entry from STTMPMD:
R15  No applicable data.
R0  Contents as follows:
   Bytes:
   0  14  Entry code.
   1-3  0  Reserved.

R1  Contents as follows:

Entry from GTDEVSIZ:
R15  No applicable data.
R0  Contents as follows:
   Bytes:
   0  15 _gtdevsiz
   1-3  0  Reserved.

R1  No applicable data; should be zero.

SVC 95 (0A5F)

SYSEVENT macro - is type 1, gets SRM lock (dependent on SYSEVENT code in register 0).

Calls module IRARMINT.
SVC Summary

GTF data is:
R15  For some SYSEVENT codes, contains the return code value.
R0   Contents:
      Bytes
      0-1  Zeros, address space identifier (ASID), or not applicable.
      2    Contents variable.
      3    SYSEVENT code.
R1   Contents variable.

SVC 96 (0A60)

STAX macro - is type 3, gets LOCAL lock.

Calls module IEAVAX00.

GTF data is:
R15 and R0  No applicable data.
R1   Address of the parameter list.
PLIST  24 bytes long; format is:
      Bytes
      0-3  Address of the user program to get control at the time of
            the attention interruption.
      4-5  Size of the input buffer (max 4095).
      6-7  Size of the output buffer (max 4095).
      8-11 Address of the output buffer.
      12-15 Address of the input buffer.
      16   STAX option flag byte; bit settings are:
            Bits
            1... .... Reserved.
            .0.  ... REPLACE = YES.
            .1... .... REPLACE = NO.
            .1.  ... DEFER = YES.
            ...1 ... DEFER = NO.
            .... 1... Increment CLIST attention counter
            .... .1.  Decrement CLIST attention counter
            .... .1.  Byte 17 contains a format number
            .... ...1 Reserved.
            17   A one indicates a format 1 parameter list.
            18-19 Reserved.
            20-23 User parameter list.

SVC 97 (0A61)

(Applies to TSO/E only) - is type 3, gets LOCAL lock.

Calls module IGC009G.

GTF data is:
Used by any module of the tested program; as a breakpoint handler, the
TCBTPC bit is X'1' in the current TCB.
R15, R0, and R1 - No applicable data.
Used by any module of the TSO/E TEST command processor; the current
TCBTPC bit is X'0' and registers contain:
R15 and R0 - No applicable data.
R1   Contents - address of the following three-word parameter list:
Address of a TCB, PRB, or IRB

Value or an address of a value:

C000 Not applicable.
A000 Not applicable.
9000 Address of TCOMTAB or zeros.
8800 The instruction address, including the appropriate AMODE indicator in the high order bit.
8400 New value for specified general register.
8200 Address of the 64 byte area containing new values for the general registers.
8100 New value for specified floating-point register.
8080 Not applicable.
8040 Address of area to be validity checked.
8010 Not applicable.
8008 New value for specified vector register element.
8004 New value for specified vector register pair element.
8002 New value for entire specified vector register.
8001 New value for entire specified vector register pair.

Two bytes of flags indicating the requested service:

C000 Set the TCBTCP bit to "1".
A000 Set the TCBTCP bit to "0".
9000 Getmain/Freemain TCOMTAB or alter TCBTRN field.
8800 Alter the instruction address in the RBOPSW.
8400 Alter the specified register in SVC 97's SVRB register save area.
8200 Alter all register's in SVC 97's SVRB register save area.
8100 Alter the specified floating-point register in the TCB save area.
8080 Set the RB wait count to 0.
8040 Validity check the specified address to determine if the user has read or write access.
8010 Freemain the SVQ and SVB control blocks.
8008 Alter the specified vector register element in the vector status save area (VSSA).
8004 Alter the specified vector register pair element in the vector status save area (VSSA).
8002 Alter the entire specified vector register in the vector status save area (VSSA).
8001 Alter the entire specified vector register pair in the vector status save area (VSSA).

Two-byte register number if ”8400” or ”8100” is requested; ((Register number x CVTVSS) + Element number) – if ’8008’ or ’8002’ is requested; ((Register number x CVTVSS) + (2 x Element number)) – if ’8004’ or ’8001’ is requested.

**SVC 98 (0A62)**

PROTECT macro - is type 4, gets LOCAL and CMS locks.

Calls module IGC0009H.

GTF data is:

R15 and R0 No applicable data.
R1 Address of the parameter list.
PLIST first 4-bytes of the parameter list; format is:
SVC Summary

0  Entry code.
   01  ADD function.
   02  REPLACE function.
   03  DELETE function.
   04  LIST function.
   05  TTR function.

1-3  Depends on the function indicated in byte 0:

   000000  Add function.
   000000  Replace function.
   000000  Delete function.
   hhhhhh  LIST function - address of an 80-byte buffer.

SVC 99 (0A63)

DYNALLOC macro - is type 3, gets LOCAL and CMS locks.

Calls module IEFDB400, entry point IGC0009I.

Additional GTF tracing for SVC 99 records is provided through GTF USR trace
record EIDs EF1D, EF1E, and EF1F. See z/OS MVS Diagnosis: Tools and Service Aids,
GA22-7589 for further information.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the parameter list.
PLIST  SVC 99 request block (S99RB)

See z/OS MVS Programming: Authorized Assembler Services Guide for more information about the request block.

SVC 100 (0A64)

(Applies to TSO/E only) - is type 3, gets LOCAL and CMS locks.

Calls module IKJEFF00, entry point IGC00100.

GTF data is:
R15  No applicable data.
R1  Address of the parameter list.
R0  Number identifying the caller.
PLIST  32 bytes long. Format is:
 Bytes
  0-3  Address of the TMP parameter list.
  4-7  Pointer to the parameter list extension for OPERATOR or PROFILE
       processors.
  8-11 Error return code.
 12-19 Failing macro name.
 20-21 Caller's ID number.
 22-23 Length of the user-defined extension.
 24-31 Reserved.

SVC 100 is used by the SUBMIT, OUTPUT, OPERATOR, PROFILE and
CANCEL/STATUS processors.
SVC Summary

SVC 101 (0A65)

QTIP macro - is type 1, gets LOCAL and CMS locks. SVC 101 is used only by TSO/E and the MCP, and is the interface between these functions for cross-address space communication and data movement.

GTF data is:

**R15**

<table>
<thead>
<tr>
<th>Contents:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bytes</strong></td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1-3</td>
</tr>
<tr>
<td><strong>Entry Code</strong></td>
</tr>
<tr>
<td>00</td>
</tr>
<tr>
<td>01</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>03</td>
</tr>
<tr>
<td>04-0B</td>
</tr>
<tr>
<td>0C</td>
</tr>
<tr>
<td>0D</td>
</tr>
<tr>
<td>0E</td>
</tr>
<tr>
<td>0F-10</td>
</tr>
<tr>
<td>12-13</td>
</tr>
<tr>
<td>15-16</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>1B</td>
</tr>
<tr>
<td>1C</td>
</tr>
<tr>
<td>1D</td>
</tr>
</tbody>
</table>

**R0**

<table>
<thead>
<tr>
<th>Contents:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bytes</strong></td>
</tr>
<tr>
<td>0-2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>00</td>
</tr>
<tr>
<td>01</td>
</tr>
<tr>
<td>03</td>
</tr>
<tr>
<td>04</td>
</tr>
<tr>
<td>05-09</td>
</tr>
<tr>
<td>0A</td>
</tr>
<tr>
<td>0B-0D</td>
</tr>
<tr>
<td>0E</td>
</tr>
<tr>
<td>0F-10</td>
</tr>
<tr>
<td>12-13</td>
</tr>
<tr>
<td>15-16</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>1B</td>
</tr>
<tr>
<td>1C</td>
</tr>
<tr>
<td>1D</td>
</tr>
</tbody>
</table>
SVC Summary

R1  Contents:
   Bytes
   0  Zero.
   1-3  Zero or address of a 12 word parameter list which is to be restored
        upon exit from SVC 101.

SVC 102 (0A66)
AQCTL macro - is type 3, gets LOCAL and CMS locks.
Calls module IEDQEB, entry point IGC0010B.

GTF data is:
R15 and R0  No applicable data.
R1  Address of the parameter list.
PLIST  The parameter list is either one, two or three full words, the last of
        which has the high order bit on (X'80') to indicate the end. Byte
        zero of the first word contains the function code.

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>BYTE 0</th>
<th>BYTES 1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opctl/network control</td>
<td>X'84'</td>
<td>Pointer to the APCIB.</td>
</tr>
<tr>
<td>Move in address space</td>
<td>X'08'</td>
<td>From pointer.</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>To pointer.</td>
</tr>
<tr>
<td></td>
<td>X'80'</td>
<td>Pointer to the length.</td>
</tr>
<tr>
<td>Tpost to ready queue</td>
<td>X'0C'</td>
<td>Pointer to the RCB.</td>
</tr>
<tr>
<td></td>
<td>X'00'</td>
<td>Pointer to the RCB.</td>
</tr>
<tr>
<td></td>
<td>X'80'</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>X'8C'</td>
<td>Pointer to the RCB.</td>
</tr>
<tr>
<td>Get/Read</td>
<td>X'90'</td>
<td>Pointer to the ECB.</td>
</tr>
<tr>
<td>Put/Write</td>
<td>X'94'</td>
<td>Pointer to the ECB.</td>
</tr>
<tr>
<td>Point</td>
<td>X'98'</td>
<td>Pointer to the ECB.</td>
</tr>
<tr>
<td>CKREQ</td>
<td>X'9C'</td>
<td>Pointer to the ECB.</td>
</tr>
<tr>
<td>Post ECB.</td>
<td>X'20'</td>
<td>Pointer to the ECB.</td>
</tr>
<tr>
<td>Qreset.</td>
<td>X'A4'</td>
<td>Pointer to the ASID.</td>
</tr>
</tbody>
</table>

SVC 103 (0A67)
XLATE macro - is type 3, gets LOCAL lock.
Calls module IGC0010C.

GTF data is:
R15  No applicable data.
R0  Length of the field to be translated.
R1  Contents:

   Bits:
   0  0  Translate from ASCII to EBCDIC.
   1  Translate from EBCDIC to ASCII.
   1-31  Address of the field to be translated (in bits 8-31 if issued in 24-bit mode).

SVC 104 (0A68)
TOPCTL macro - is type 4, gets no lock.
Calls module IGC0010D.
APF protected. GTF data is:
R15 No applicable data.
R0 Indicates the subroutine to be run:

Bytes:
0-2 0000 0001 IGC0010D entry point routine.
0000 0002 GTFILEDA decode routine.
0000 0003 STTNME operator command addressing routine.
0000 0004 IEDQCA02 scan routine.

R1 Address of the operator control work area.

**SVC 105 (0A69)**
IMGLIB macro - is type 3, gets no lock.

Calls module IGC0010E.

GTF data is:
R15 and R0 No applicable data.
R1 Indicates the actions to be taken:

0000 0000 Create an open DCB for SYS1.IMAGELIB and return its address.

hhhh hhhh Delete the DCB at this address and also the DEB pointed to by this DCB.

**SVC 106 (0A6A)**
Reserved.

**SVC 107 (0A6B)**
MODESET macro - is type 6, gets no lock.

Calls module IEAVMODE, entry point IGC107.

APF protected. GTF data is:
R15 and R0 No applicable data.
R1 Parameter list:

Bytes:
0-2 Reserved (must be zero).
3 Indicator bits:

0000 .... No action.
0001 .... Invalid.
0010 .... Place the TCB key in the RBOPSW field of the RB.
0011 .... Set the RBOPSW key to zero.
.... 0000 No action.
.... 0100 Turn on the state bit in RBOPSW field of the RB (problem state).
.... 1000 Invalid.
.... 1100 Turn off the state bit in RBOPSW field of the RB (supervisor state).

**SVC 108 (0A6C)**
Reserved.
SVC Summary

**SVC 109 (0A6D)**

ESR (type 4) SVC - is type 2.

Calls module IGC0010F.

Routes control to type 3 and 4 extended supervisor service routines based on the routing code in register 15. Codes X’00’ through X’C7’ (00 - 199) are reserved for IBM use.

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Macro</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>01</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>04</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>05</td>
<td>GTFSRV</td>
<td>Reserved</td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>07</td>
<td>MFSTART(RMF)</td>
<td>Authorization required - gets no locks.</td>
</tr>
<tr>
<td>08</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>09</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0A</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0B</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0C</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0D</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0E</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>0F</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>11</td>
<td>Sort SVC.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>16</td>
<td>MFDATA(RMF)</td>
<td>Internal data collection for RMF, authorization required - gets no locks.</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Reserved</td>
</tr>
<tr>
<td>18</td>
<td>HSM</td>
<td>Calls module IGX00024</td>
</tr>
<tr>
<td>19</td>
<td>IFAUSAGE</td>
<td>SMF transaction count (IFAUSAGE) calls module IGX00025, gets no locks.</td>
</tr>
<tr>
<td>1A</td>
<td>TSO/E</td>
<td>Gets local lock.</td>
</tr>
<tr>
<td>1B</td>
<td>TSO/E</td>
<td>Gets local lock.</td>
</tr>
<tr>
<td>1C</td>
<td><strong>ESPIE</strong></td>
<td>Gets local lock.</td>
</tr>
</tbody>
</table>

GTF data is:

- **R15**: No applicable data.
- **R0**: Function register.
  - 4: ESPIE set function.
  - 8: ESPIE reset function.
  - 12: ESPIE test function.
- **R1**: If set or test request, address of IHAESPI. If reset request, TOKEN value.

| 1D        |             | Reserved                                         |
| 1E        | MSGDISP     | DFSMSdfp tape message display.                   |
| 1F        | SYNCDEV     | Synchronize device and system                    |
| 20        | NOTE,POINT  | Note and Point with TYPE=ABS. Register 0 points to an eight-byte parameter list. |
| 21        | **OUTDEL,OUTADD** |                                                   |
**SVC Summary**

22 MVS/bulk data transfer - Gets no locks.
23 Reserved.
24 ISPF Library Management Facility - calls module
   IGX00036, gets local lock.
25 Reserved.
26 DFSORT.
27 AOM in DFSMSdfp
28 Reserved.
29 Reserved.
2A Reserved.
2B Reserved.
2C OAM in DFSMSdfp.
2D - 2E Reserved.
2F DFSMSdfp.
30 - C7 Reserved.
C8 - FF Reserved for customer use.

**SVC 110 (0A6E)**

Reserved.

**SVC 111 (0A6F)**

No macro - is type 2, gets LOCAL and CMS locks.

Calls module IGC111.

GTF data is:

R15 No applicable data.
R0 Contains the function indicator in the low-order byte; refer to HASCHAM
   for JES2 or IATDMEB for JES3 program listing for an interpretation.
R1 If positive, contains the address of the RPL. If negative (complemented),
   contains the address of the ACB.

**SVC 112 (0A70)**

**PGRLSE** macro - is type 1, gets LOCAL lock.

Calls module IARPS, entry point IGC112.

GTF data is:

R15 No applicable data.
R0 Starting address of the virtual area to be operated on.
R1 End address of that area plus 1.
R4 TCB address.
R5 RB address.
R6 Entry point address of IGC112.
R7 ASCB address.

**SVC 113 (0A71)**

**PGFIX** [PGFREE] [PGLOAD] [PGOUT] [PGANY] macro - is type 1, gets LOCAL
   lock.

Calls module IARPS, entry point IGC113.

GTF data is:
**SVC Summary**

**R15**  If the high-order bit of register 1 is off, contains the second word of the virtual subarea list (VSL).

**R0**  If positive, contains the address of the ECB.

**R1**  If the high-order bit is on, contains the address of the VSL. If high-order bit is off, contains the first word of the VSL; register 15 will contain the second word.

**R4**  TCB address.

**R5**  RB address.

**R6**  Entry point address of IGC113.

**R7**  ASCB address.

**Virtual Subarea List**

**Byte 0 Flags:**

- **Bit 0 (1... ....)** This bit indicates that bytes 1-3 are a chain pointer to the next VSL entry to be processed; bytes 4-7 are ignored, but the checking of this bit is subject to the setting of byte 4, bit 1. This feature allows several parameter lists to be chained as a single logical parameter list.

- **Bit 1 (.1... ....)** PGFIX is to be performed; reserved, set by macro instruction.

- **Bit 2 (.1... ....)** PGFREE is to be performed; reserved, set by macro instruction.

- **Bit 3 (...1 ....)** PGLOAD is to be performed; reserved, set by macro instruction.

- **Bit 4 (.... 1...) PGRLSE is to be performed; reserved, set by macro instruction.

- **Bit 5 (.... 1...) PGANY is to be performed; reserved, set by macro instruction.

- **Bit 6 (.... ..1.) Long-term PGFIX is to be performed; reserved, set by macro instruction.

- **Bit 7 (.... ...1) Reserved.**

**Bytes 1-3 Start Address:**

The virtual address of the origin of the virtual area to be processed.

**Byte 4 Flags:**

- **Bit 0 (1... ....)** This flag indicates the last entry of the list. It is set in the last doubleword entry in the list.

- **Bit 1 (1... ....)** When this flag is set, the entry in which it is set is ignored. This bit takes precedence over byte 0, bit 0.

- **Bit 2 (.1... ....)** Reserved.

- **Bit 3 (...1 ....)** This flag indicates that a return code of 4 was issued from a page service function other than PGRLSE.

- **Bit 4 (.... 1...) Reserved.

- **Bit 5 (.... .1..) PGOUT is to be performed; reserved, set by macro instruction.

- **Bit 6 (.... ..1.) KEEPREAL option of PGOUT is to be performed; reserved, set by macro instruction.

- **Bit 7 (.... ...1) Reserved.**

**Bytes 5-7 End Address + 1:**

The virtual address of the byte immediately following the end of the virtual area.
SVC 114 (0A72)

EXCPVR macro - is type 1, gets LOCAL lock.

Calls module IECVEXCP, entry point IGC114.

GTF data is:
- **R15 and R0**  No applicable data.
- **R1** Address of the IOB associated with this request.

- **DDNAME ccccccc** Name of the associated DD statement.
- **DCB xxxxxxxx** Address of the DCB associated with this I/O request.
- **DEB xxxxxxxx** Address of the DEB associated with this I/O request.

SVC 115 (0A73)

Reserved.

SVC 116 (0A74)

ESR (type 1) SVC - is type 1, gets LOCAL lock.

Calls module IECTSVC, entry point IECTRDIL.

**Routing code in register 15 determines the type 1 SVC routine to be run.**

<table>
<thead>
<tr>
<th>Code</th>
<th>Macro</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>IECTRDTI</td>
<td>BTAM 3270 read initial UCB scan.</td>
</tr>
<tr>
<td>01</td>
<td>IECTATNR</td>
<td>BTAM 3270 attention reset.</td>
</tr>
<tr>
<td>02</td>
<td>CHNGNTRY</td>
<td>BTAM 3270 CHNGNTRY skip.</td>
</tr>
<tr>
<td>03</td>
<td>IECTCHGA</td>
<td>BTAM 3270 CHNGNTRY activate.</td>
</tr>
<tr>
<td>04</td>
<td>RESETPL</td>
<td>BTAM 3270 read initial.</td>
</tr>
<tr>
<td>05</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td><strong>CALLDISP</strong></td>
<td>Dispatcher call.</td>
</tr>
<tr>
<td>09</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0A</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0B</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0C</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0D</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0E</td>
<td>Reserved.</td>
<td></td>
</tr>
</tbody>
</table>

SVC 117 (0A75)

DEBCHK macro - is type 2, gets LOCAL lock.

GTF data is:
- **R15** Contains the value 2.
- **R0** Bits 0-7 Access Method Value
  - X'82' VTAM
  - X'81' SUBSYS
  - X'80' ISAM
  - X'40' BDAM
  - X'20' SAM
  - X'20' BPAM
**SVC Summary**

| X'10'     | TAM |
| X'08'     | GAM |
| X'02'     | EXCP |
| X'01'     | VSAM |
| X'00'     | None |

Bits 8-31: Type Function Code
- 0: Verify
- 1: Add
- 2: Delete
- 3: Purge

**R1**

Bits 0-7: X'00'

Bits 8-31: Address of the DCB if the type code is not PURGE.
Address of the DEB if the type code is PURGE.

---

**SVC 118 (0A76)**

Reserved.

**SVC 119 (0A77)**

[TESTAUTH] macro - is type 1, gets LOCAL lock.

Calls module IEAVTEST, entry point IGC119.

GTF data is:
- **R15**: No applicable data.
- **R0**: Applies only if flag bit 7 in register one is zero.

If positive, contains the authorization code.
If negative, does not contain the authorization code.

**R1** Bytes have meaning as follows:

<table>
<thead>
<tr>
<th>Byte</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved - must be set to zero.</td>
</tr>
<tr>
<td>1</td>
<td>Flag bits:</td>
</tr>
<tr>
<td></td>
<td>xxxx</td>
</tr>
<tr>
<td></td>
<td>....</td>
</tr>
<tr>
<td></td>
<td>.... 1..</td>
</tr>
<tr>
<td></td>
<td>.... 0..</td>
</tr>
<tr>
<td></td>
<td>.... 1..</td>
</tr>
<tr>
<td></td>
<td>.... 0..</td>
</tr>
<tr>
<td></td>
<td>.... 1.</td>
</tr>
<tr>
<td></td>
<td>.... 0..</td>
</tr>
<tr>
<td></td>
<td>.... 1.</td>
</tr>
<tr>
<td></td>
<td>.... 0..</td>
</tr>
<tr>
<td>2</td>
<td>Reserved - must be set to zero.</td>
</tr>
<tr>
<td>3</td>
<td>FCTN code - applies only if flag bit 7 is &quot;0&quot;.</td>
</tr>
</tbody>
</table>

**Register contents on return:**
- **R15**: 00 - Task is authorized.
  - 04 - Task is not authorized.
SVC 120 (0A78)

**GETMAIN** | **FREEMAIN** macro - is type 1, gets LOCAL lock.

Calls module IGVVSM31, entry point IGC120.

**Notes:**
1. SVC 120 can be used to GETMAIN storage whose address is above 16 M bytes.
2. The interface provided by this macro can be called in either 24-bit or 31-bit addressing mode. All values and addresses will be treated as 31-bit values and addresses.

**GTF data is:**

**R15** Bytes as follows:

0  Flags:
  X... .... RESERVED.
  .1.. .... KEY was specified.
  ..1. .... AR 15 is in use.
  ..0. .... AR 15 is not in use.
  ...1 .... LOC=(nnn,64) was specified.

  Storage can be backed above the bar.

  .... 1... CHECKZERO=YES was specified.
  .... 0... CHECKZERO=NO was specified explicitly, or by default.
  .... .1.. TCBADDR was specified on STORAGE OBTAIN or RELEASE.
  .... ..00 OWNER=HOME was specified explicitly, or by default.
  .... ..01 OWNER=PRIMARY was specified.
  .... ..10 OWNER=SECONDARY was specified.
  .... ..11 OWNER=SYSTEM was specified.

1  Key of storage to be obtained/freed for subpools 229, 230, 231, 241, or 249 for a branch entry only.
2  Subpool number of storage to be obtained/freed.
3  Option byte:

0... .... Reserved - Ignored, should be zero.
..1... .... Storage can be backed anywhere.
..00 .... Storage should have residency of caller.
..01 .... Storage address must be 24 bits.
..11 .... Storage address valid to full 31 bits.
.... 1... Request is variable.
.... .1.. Storage should be on page boundary.
.... ..1. Request is unconditional.
.... ...1 Request is a FREEMAIN.

**R0** The number of bytes of storage to be obtained or freed (Zero for a subpool FREEMAIN).

**R1** The address of the area to be freed (Zero for GETMAIN requests).

**Register contents on return:**

**R1** Address of the allocated virtual storage area if the request was for a GETMAIN.

**R15**

00 - Storage available if the request was for a GETMAIN; storage freed if the request was for a FREEMAIN.

04 - Storage not available if request was for a GETMAIN; storage status unchanged if request was for a FREEMAIN.
SVC Summary

SVC 121 (0A79)
VSAM macro - is type 1, gets LOCAL lock.

Calls module IGC121.

GTF data is:
- **R15**: Contains the pointer to the buffer control block.
- **R0**: Contains the pointer to the place holder entry, used for a record management request.
- **R1**: Contains the pointer to the IOMB (VSAM I/O management control block).

SVC 122 (0A7A)
ESR(type2) SVC - is type 2.

Routes control to type 2 extended supervisor service routines based on a routing code in register 15.

<table>
<thead>
<tr>
<th>Code</th>
<th>Macro</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>01</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>04</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>05</td>
<td>EVENTS</td>
<td>Gets local lock.</td>
</tr>
<tr>
<td></td>
<td>R0</td>
<td>Bytes have meaning as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Bytes</strong></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Flag bits</td>
</tr>
<tr>
<td></td>
<td>.</td>
<td>1... .... ENTRIES=n (create request); delete is requested if FC=5.</td>
</tr>
<tr>
<td></td>
<td>.111</td>
<td>1111 Reserved.</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>2-3</td>
<td></td>
<td>Number of ENTRIES requested or zero.</td>
</tr>
<tr>
<td></td>
<td>R1</td>
<td>Address of the EVENT table if a delete is requested.</td>
</tr>
</tbody>
</table>

06  Service Processor Call
Gets no locks.

R1 Has the address of the parameter list. The two word parameter list has the following format:

**WORD 1**
Address of the requester's data block.

**WORD 2**
Address of the service processor command word.

07  Extended LINK macro
is type 2, gets local and CMS locks. GTF data is:

R1 Address of the parameter list. The 20 byte parameter list has the following format:

**Bytes** | **Meaning** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Address of the entry point name or directory entry.</td>
</tr>
<tr>
<td>4-7</td>
<td>DCB address or zero.</td>
</tr>
<tr>
<td>8-9</td>
<td>Reserved.</td>
</tr>
<tr>
<td>10</td>
<td>Flag byte:</td>
</tr>
<tr>
<td>80</td>
<td>Directory entry present</td>
</tr>
<tr>
<td>40</td>
<td>LSEARCH option specified</td>
</tr>
<tr>
<td>20</td>
<td>ERRET address given</td>
</tr>
<tr>
<td>11</td>
<td>Reserved.</td>
</tr>
<tr>
<td>12-15</td>
<td>ERRET address or zero.</td>
</tr>
<tr>
<td>16-19</td>
<td>Address of user optional parameter list.</td>
</tr>
</tbody>
</table>

08  Extended XCTL macro is type 2, gets LOCAL and CMS locks. GTF data is:
R1  Address of the parameter list. The 16 byte parameter list has the following format:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Address of the entry point name or directory entry.</td>
</tr>
<tr>
<td>4-7</td>
<td>DCB address or zero.</td>
</tr>
<tr>
<td>8-9</td>
<td>Reserved.</td>
</tr>
<tr>
<td>10</td>
<td>Flag byte:</td>
</tr>
<tr>
<td></td>
<td>80 - Directory entry present</td>
</tr>
<tr>
<td></td>
<td>40 - LSEARCH option specified</td>
</tr>
<tr>
<td>11</td>
<td>Reserved.</td>
</tr>
<tr>
<td>12-15</td>
<td>Address of user optional parameter list.</td>
</tr>
</tbody>
</table>

R1  Address of the parameter list. The 16 byte parameter list has the following format:

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Address of the entry point name or directory entry.</td>
</tr>
<tr>
<td>4-7</td>
<td>DCB address or zero.</td>
</tr>
<tr>
<td>8-9</td>
<td>Reserved.</td>
</tr>
<tr>
<td>10</td>
<td>Flag byte:</td>
</tr>
<tr>
<td></td>
<td>80 - Directory entry present</td>
</tr>
<tr>
<td></td>
<td>40 - LSEARCH option specified</td>
</tr>
<tr>
<td></td>
<td>20 - ERRRET address given</td>
</tr>
<tr>
<td></td>
<td>10 - Global load specified</td>
</tr>
<tr>
<td></td>
<td>08 - Load to fixed global storage requested</td>
</tr>
<tr>
<td></td>
<td>04 - Explicit load requested</td>
</tr>
<tr>
<td></td>
<td>02 - Delete at end-of-memory requested</td>
</tr>
<tr>
<td></td>
<td>01 - Load point address requested.</td>
</tr>
<tr>
<td>11</td>
<td>Reserved.</td>
</tr>
<tr>
<td>12-15</td>
<td>Explicit load address or the address where to place the load point.</td>
</tr>
</tbody>
</table>

R15  00 - LOAD function was successful.

If greater than 00 - LOAD function was not successful.

0A  Service Processor Interface SVC is type 2, gets no locks.
0B  ISNAXSCV is type 2, gets no locks.
0C  Reserved.
0D  CSVXCEF is type 2, gets LOCAL lock.
0E  Reserved.
0F  CSVHFLDM is type 2, gets LOCAL lock.
10  CSVHFDLM is type 2, gets LOCAL lock.
11  Reserved.
12  Reserved.
13  Reserved.

**SVC 123 (0A7B)**

PURGEDQ macro - is type 2, gets DISP lock.

Calls module IEAVEPD0, entry point IGC123.

APF protected. GTF data is:

| R15  | No applicable data. |
| R0   | Parameter to be passed to the RMTR if the SRB is purged. |
| R1   | Address of the parameter list. |
SVC Summary

SVC 124 (0A7C)
TPIO macro - is type 1, gets LOCAL locks.
Calls module ISTAPC22.

GTF data is:
R15  No applicable data.
R0   Bytes have meaning as follows:

<table>
<thead>
<tr>
<th>Byte</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Flag bits:</td>
</tr>
<tr>
<td></td>
<td>x... .... Reserved.</td>
</tr>
<tr>
<td></td>
<td>.1. ... On LCPB indicates.</td>
</tr>
<tr>
<td></td>
<td>.1. ... On LCPB indicates.</td>
</tr>
</tbody>
</table>

Bits 2-7

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Specific request.</td>
</tr>
<tr>
<td>04</td>
<td>Any request.</td>
</tr>
<tr>
<td>08</td>
<td>Open.</td>
</tr>
<tr>
<td>0C</td>
<td>TPPOST.</td>
</tr>
<tr>
<td>0F</td>
<td>CLOSE ACB.</td>
</tr>
<tr>
<td>10</td>
<td>Session control request.</td>
</tr>
<tr>
<td>1-3</td>
<td>DEB address.</td>
</tr>
</tbody>
</table>

R1   Work element address.

SVC 125 (0A7D)
EVENTS macro - is type 1, gets LOCAL lock.
Calls module IEAVEVT0, entry point IGC125.

GTF data is:
R15  Address of LAST= entry or, address of ECB if ECB= is specified.
R0   Bytes have meaning as follows:

<table>
<thead>
<tr>
<th>Byte</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Flag bits:</td>
</tr>
<tr>
<td></td>
<td>1... .... WAIT=YES.</td>
</tr>
<tr>
<td></td>
<td>.1. ... WAIT=NO.</td>
</tr>
<tr>
<td></td>
<td>.1. ... ECB= address.</td>
</tr>
<tr>
<td>...1</td>
<td>Byte 1 contains a format number</td>
</tr>
<tr>
<td>....</td>
<td>1111 Reserved.</td>
</tr>
</tbody>
</table>

1   A one indicates format 1 input data.

R1   Address of the EVENT table.

SVC 126 (0A7E)
Reserved.

SVC 127 (0A7F)
Reserved.

SVC 128 (0A80)
Reserved.
SVC 129 (0A81)
Reserved.

SVC 130 (0A82)

`RACHECK` macro - is type 3, gets no lock.

If RACF is installed, calls module IRRRCK00. Some RACHECK options require APF-authorization. This is enforced appropriately by RACF.

When SVC 130 is issued as a result of a RACHECK request, GTF data is:
- **R15 and R0**: No applicable data.
- **R1**: Address of the parameter list. See ACHKL data area in z/OS Security Server RACF Data Areas.

When SVC 130 is issued as a result of a RACROUTE request, and RACF is installed, GTF data is:
- **R0**: Address of the parameter list. See z/OS Security Server RACF Diagnosis Guide.
- **R1**: Zero.
- **R15**: No applicable data.

On return from SVC 130, GTF data is:
- **R0**: RACF reason code, if defined for the RACF return code in R15.
- **R1**: If applicable, has address of return data.
- **R15**: RACF return code.

SVC 131 (0A83)

`RACINIT` macro - is type 3, gets no lock.

If RACF is installed, calls module ICHRIN00.

Usually requires APF authorization, which is enforced by RACF.

When SVC 131 is issued as a result of a RACINIT request, GTF data is:
- **R15 and R0**: No applicable data.
- **R1**: Address of the parameter list. See RIPL data area in z/OS Security Server RACF Data Areas.

When SVC 131 is issued as a result of a RACROUTE request, and RACF is installed, GTF data is:
- **R0**: Address of parameter list. See z/OS Security Server RACF Diagnosis Guide.
- **R1**: Zero.
- **R15**: RACF return code.

On return from SVC 131, GTF data is:
- **R0**: RACF reason code, if defined for the RACF return code in R15.
- **R1**: No applicable data.
- **R15**: RACF return code.

SVC 132 (0A84)

`RACLST`, `RACXTRT`, or `ICHEINTY` macro - is type 3, gets no lock.

If RACF is installed, calls module ICHRSV00.
Usually requires APF authorization, which is enforced by RACF.

When SVC 132 is issued as a result of a RACLST, RACXTRT, or ICHEINTY request, GTF data is:
- **R15 and R0**: No applicable data.
- **R1**: Address of the parameter list. For RACLST requests, see RLST data area in [z/OS Security Server RACF Data Areas](https://www.ibm.com). For RACXTRT requests, see RXTL data area in [z/OS Security Server RACF Data Areas](https://www.ibm.com). For ICHEINTY requests, see [z/OS Security Server RACF Diagnosis Guide](https://www.ibm.com).

When SVC 132 is issued as a result of a RACROUTE request, and RACF is installed, GTF data is:
- **R0**: Address of parameter list. See [z/OS Security Server RACF Diagnosis Guide](https://www.ibm.com).
- **R1**: Zero.
- **R15**: No applicable data.

On return from SVC 132, GTF data is:
- **R0**: RACF reason code, if defined for the RACF return code in R15.
- **R1**: For RACXTRT, has address of return data. Otherwise, no applicable data.
- **R15**: RACF return code.

**SVC 133 (0A85)**

**RACDEF** macro - is type 3, gets no lock.

If RACF is installed, calls module IRRRDF00.

Requires APF authorization, which is enforced by RACF.

When SVC 133 is issued as a result of a RACDEF request, GTF data is:
- **R15 and R0**: No applicable data.
- **R1**: Address of the parameter list. See RDDFL data area in [z/OS Security Server RACF Data Areas](https://www.ibm.com).

When SVC 133 is issued as a result of a RACROUTE request, and RACF is installed, GTF data is:
- **R0**: Address of parameter list. See [z/OS Security Server RACF Diagnosis Guide](https://www.ibm.com).
- **R1**: Zero.
- **R15**: No applicable data.

On return from SVC 133, GTF data is:
- **R0**: RACF reason code, if defined for the RACF return code in R15.
- **R1**: No applicable data.
- **R15**: RACF return code.

**SVC 134 (0A86)**

Reserved.

**SVC 135 (0A87)**

Reserved.

**SVC 136 (0A88)**

Reserved.
**SVC 137 (0A89)**

ESR macro is type 6, gets no locks. The routing code in register 15.

Calls module IEAVEDS0.

Identifies the type 6 SVC routine to be run.

<table>
<thead>
<tr>
<th>Code (Hex)</th>
<th>Macro</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>CALLDISP</td>
<td>Dispatcher call.</td>
</tr>
<tr>
<td>01</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Reserved</td>
<td></td>
</tr>
</tbody>
</table>

**SVC 138 (0A8A)**

PGSER macro - is type 2, gets no locks.

Calls module IARPI, entry point IGC138.

GTF data is:

- **R0** ECB address or 0 if no ECB.
- **R1**
  - Bit 0
    - If 0, then register format (R form).
    - If 1, then list format (L form).
  - Bits 1-31
    - If R1 bit 0 = 0, then the register contains a 31-bit address of the start of the virtual area.
    - If R1 bit 0 = 1, then the register contains a 31-bit pointer to the first PSL in the user supplied PSL list.
- **R2-R3** Irrelevant
- **R4** TCB address
- **R5** RB address
- **R6-R12** Irrelevant
- **R13** Address of a standard 72 byte save area.
- **R14** If R1 bit 0 = 0, for register format macro, then:
  - Bits 0-15 Reserved
  - Bits 16-23 Same as FUNC in PSL
  - Bits 24-31 Same as FLAG2 in PSL
  - If R1 bit 0 = 1, then R14 is irrelevant, and not examined by page services.
- **R15** If R1 bit 0 = 0, for register format macro, then R15 contains a 31-bit address of the last byte of the virtual area (end address).
  - If R1 bit 0 = 1, then R15 is irrelevant, and not examined by page services.

**On return, the register contents will be as follows:**

- **R0** Unpredictable
- **R1-R14** Same as for input
- **R15** Return code.
SVC Summary

**SVC 139 (0A8B)**
CVAF macros - are type 3, get local lock.

Calls module IGC0013I.

GTF data is:
- **R15 and R0** No applicable data.
- **R1** Address of 64-byte parameter list mapped by macro ICVAFPL.

**SVC 143 (0A8F)**
GENKEY, RETKEY, CIPHER, or EMK macro - is type 4, gets no lock. GTF data is:
- **R15 and R0** No applicable data.
- **R1** Address of the parameter list. Parameter list is determined by the macro that is invoked.

**Note:** This SVC is used when Cryptographic Unit Support (CUSB) or Programmed Cryptographic Facility (PCF) macros are run on a system with Integrated Cryptographic Service Facility/MVS (ICSF/MVS) installed.

**SVC 144 (0A90)**
This SVC is used only by an interactive debugger working with z/OS UNIX PTRACE functions. When the SVC is run, it causes the z/OS UNIX PTRACE SVC routine to get control. The SVC routine communicates back to the debugger to notify it that a breakpoint has been reached. After the debugging is complete, control returns to the program. For more information, refer to the description of BPX1PTR in [z/OS UNIX System Services Programming: Assembler Callable Services Reference](https://www.ibm.com).

**SVC 146 (0A92)**
BPESVC macro - is type 3, gets no lock.

Calls module BPESVC00, entry point BPESVC00.

GTF data is:
- **R15** For all function codes except 3: No applicable data. For function code 3: Address of name of requested function.
- **R0** Function code:

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Query function status.</td>
</tr>
<tr>
<td>1</td>
<td>Register named function.</td>
</tr>
<tr>
<td>2</td>
<td>Deregister named function.</td>
</tr>
<tr>
<td>3</td>
<td>Call named function.</td>
</tr>
<tr>
<td>4</td>
<td>Termination cleanup.</td>
</tr>
</tbody>
</table>

- **R1** Address of parameter list.

**PLIST** The size of the parameter list depends on the function; format is:

Function code 0 (Query function status):

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Parmlist version number.</td>
</tr>
<tr>
<td>4-7</td>
<td>Function name address.</td>
</tr>
<tr>
<td>8-11</td>
<td>Address of word to receive function routine address.</td>
</tr>
<tr>
<td>12-15</td>
<td>Address of word to receive function routine length.</td>
</tr>
<tr>
<td>16-19</td>
<td>Address of word to receive function routine version.</td>
</tr>
<tr>
<td>20-23</td>
<td>Address of 8-byte area to receive owning address space STOKEN.</td>
</tr>
</tbody>
</table>
Function code 1 (Register named function):

**Bytes**

0-3  Parmlist version number.
4-7  Function name address.
8-11 Function routine address.
12-15 Function routine length.
16-19 Function routine version.
20-23 Pointer to 8-byte parameter area, a copy of which will be passed to
     the function routine.
24  Option byte 1:
    Bits
    
    0000 0000  Never replace function module.
    0000 0001  Replace if new version higher than old version.
    0000 0010  Always replace function module.
25  Option byte 2:

    1... ....  Function caller must be supervisor state/key 0-7.
    .1... ....  Function provider is in a BPE environment.
    ..1....  Cleanup function at provider termination.
    ...1....  Delete function module at cleanup/deregistration.
    .... xxxx  Reserved, must be 0.
26  Reserved, must be 0.
27  Bits
    0xxx ....  PSW execution key (0-7) of function module.
    .... xxxx  Reserved, must be 0.

Function code 2 (Deregister named function):

**Bytes**

0-3  Parmlist version number.
4-7  Function name address.

Function code 3 (Call named function):

**R1**  Pointer to the parmlist for the specific named function being called.

Function code 4 (Termination cleanup):

**Bytes**

0-3  Parmlist version number.
4-7  Address of STOKEN of terminating address space.
Chapter 5. Program Call (PC) services in system function table

This topic lists the program calls (PCs) by number, with their related services and modules.

<table>
<thead>
<tr>
<th>PC number (hexadecimal)</th>
<th>Service description</th>
<th>Component or module</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000000</td>
<td>Linkage index reserve</td>
<td>IEAVXLRE</td>
</tr>
<tr>
<td>00000001</td>
<td>Linkage index free</td>
<td>IEAVXLFR</td>
</tr>
<tr>
<td>00000002</td>
<td>Entry table create</td>
<td>IEAVXECR</td>
</tr>
<tr>
<td>00000003</td>
<td>Entry table destroy</td>
<td>IEAVXEDE</td>
</tr>
<tr>
<td>00000004</td>
<td>Entry table connect</td>
<td>IEAVXECO</td>
</tr>
<tr>
<td>00000005</td>
<td>Entry table disconnect</td>
<td>IEAVXEDI</td>
</tr>
<tr>
<td>00000006</td>
<td>Authorization index reserve</td>
<td>IEAVXRFE</td>
</tr>
<tr>
<td>00000007</td>
<td>Authorization index free</td>
<td>IEAVXRFE</td>
</tr>
<tr>
<td>00000008</td>
<td>Authorization index extract</td>
<td>IEAVXRFE</td>
</tr>
<tr>
<td>00000009</td>
<td>Authorization index set</td>
<td>IEAVXSET</td>
</tr>
<tr>
<td>0000000A</td>
<td>Authorization table set</td>
<td>IEAVXSET</td>
</tr>
<tr>
<td>0000000B</td>
<td>PC/AUTH resource manager</td>
<td>IEAVXPAM</td>
</tr>
<tr>
<td>0000000C</td>
<td>For use by IBM code only</td>
<td>IEAVXREX</td>
</tr>
<tr>
<td>0000000D</td>
<td>ALESERV ADD/ADDPASN services</td>
<td>IEAVXALA</td>
</tr>
<tr>
<td>0000000E</td>
<td>ALESERV DELETE service</td>
<td>IEAVXALD</td>
</tr>
<tr>
<td>0000000F</td>
<td>ALESERV EXTRACT/EXTRACTH services</td>
<td>IEAVXALE</td>
</tr>
<tr>
<td>00000010</td>
<td>ALESERV SEARCH service</td>
<td>IEAVXALS</td>
</tr>
<tr>
<td>00000011</td>
<td>DualPool Router</td>
<td></td>
</tr>
<tr>
<td>00000012</td>
<td>ENQ/DEQ/RESERVE resource termination manager</td>
<td>ISGGTRM1</td>
</tr>
<tr>
<td>00000013</td>
<td>Global resource serialization dump services</td>
<td>ISGDCB0</td>
</tr>
<tr>
<td>00000014</td>
<td>Global resource serialization queue scan services (SCOPE is STEP, SYSTEM, or SYSTEMS)</td>
<td>ISGQSC</td>
</tr>
<tr>
<td>00000015</td>
<td>Global resource serialization storage management interface</td>
<td>ISGSMI</td>
</tr>
<tr>
<td>00000016</td>
<td>Global resource serialization QScan services (SCOPE is LOCAL or GLOBAL)</td>
<td>ISGQSC</td>
</tr>
<tr>
<td>00000017</td>
<td>Cross Memory DEQ Service, LINKAGE=SYSTEM</td>
<td>ISGGRT</td>
</tr>
<tr>
<td>00000018</td>
<td>Cross Memory ENQ Service, LINKAGE=SYSTEM</td>
<td>ISGGRT</td>
</tr>
<tr>
<td>00000019</td>
<td>Global resource serialization mainline ESTAE routine</td>
<td>ISGGEST0</td>
</tr>
<tr>
<td>0000001C</td>
<td>GRS Latch internal processing</td>
<td>ISGLRLQE</td>
</tr>
<tr>
<td>0000001D</td>
<td>GRS Latch CREATE service</td>
<td>ISGLCRTS</td>
</tr>
<tr>
<td>0000001E</td>
<td>GRS Latch internal processing</td>
<td>ISGLRTR</td>
</tr>
<tr>
<td>0000001F</td>
<td>GRS Latch PURGE service</td>
<td>ISGLPRGS</td>
</tr>
<tr>
<td>000000110</td>
<td>GRS Latch internal processing</td>
<td>ISGLTM</td>
</tr>
<tr>
<td>000000111</td>
<td>GRS Latch internal processing -ISGLTM2</td>
<td>ISGLTM</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>PC number (hexadecimal)</th>
<th>Service description</th>
<th>Component or module</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000112</td>
<td>GRS Latch PURGE by address space services</td>
<td>ISGLPRBA</td>
</tr>
<tr>
<td>00000113</td>
<td>GRS SETGRS command internal processing</td>
<td>ISGCSETP</td>
</tr>
<tr>
<td>00000114</td>
<td>GRS ISGEC A service and DISPLAY GR S, ANALYZE command</td>
<td>ISGCDANG</td>
</tr>
<tr>
<td>00000115</td>
<td>GRS Latch internal processing</td>
<td>ISGLDELS</td>
</tr>
<tr>
<td>00000117</td>
<td>GRS Internal processing</td>
<td>ISGSCPME</td>
</tr>
<tr>
<td>0000011A</td>
<td>ISGENQ service</td>
<td>ISGGRT</td>
</tr>
<tr>
<td>0000011B</td>
<td>ISQUERY service</td>
<td>ISGQPC</td>
</tr>
<tr>
<td>0000011C</td>
<td>ISGADMIN service</td>
<td>ISGGADMN</td>
</tr>
<tr>
<td>0000011D</td>
<td>Non-cross memory ENQ service (LINKAGE=SVC) redrives to GRS</td>
<td>ISGGRT</td>
</tr>
<tr>
<td>0000011E</td>
<td>Non-cross memory DEQ service (LINKAGE=SVC) redrives to GRS</td>
<td>ISGGRT</td>
</tr>
<tr>
<td>0000011F</td>
<td>Non-cross memory ENQ or DEQ services (LINKAGE=SVC) wait for redriving to GRS</td>
<td>ISGGRT</td>
</tr>
<tr>
<td>00000120</td>
<td>Generic PC to GRS address space to perform various functions</td>
<td>ISGGHOM</td>
</tr>
<tr>
<td>00000200</td>
<td>Display allocation tables manager</td>
<td>IEFHB410</td>
</tr>
<tr>
<td>00000201</td>
<td>DAL T Dynamic Activate Config change</td>
<td>IEFHB420</td>
</tr>
<tr>
<td>00000202</td>
<td>Allocation Component Trace Record</td>
<td>IEFCTRCD</td>
</tr>
<tr>
<td>00000203</td>
<td>ATS Tape sharing Operations</td>
<td>IEFHB4IG</td>
</tr>
<tr>
<td>00000204</td>
<td>Allocation Device Management (offline, online, unload)</td>
<td>IEFHBPDF</td>
</tr>
<tr>
<td>00000300</td>
<td>VSM CPOOL build service</td>
<td>IGVCPBDP</td>
</tr>
<tr>
<td>00000301</td>
<td>VSM CPOOL expansion interface</td>
<td>IGVCPEXP</td>
</tr>
<tr>
<td>00000302</td>
<td>VSM CPOOL delete service</td>
<td>IGVCPDLP</td>
</tr>
<tr>
<td>00000303</td>
<td>VSMLIST service</td>
<td>IGVLISTP</td>
</tr>
<tr>
<td>00000304</td>
<td>VSMLOC service</td>
<td>IGVLOCP</td>
</tr>
<tr>
<td>00000305</td>
<td>CPUTIMER service</td>
<td>IEAVRT04</td>
</tr>
<tr>
<td>00000306</td>
<td>Virtual fetch CSVVFORK service</td>
<td>CSVVFORK</td>
</tr>
<tr>
<td>00000307</td>
<td>Data-in-virtual</td>
<td>ITVCCTL</td>
</tr>
<tr>
<td>00000308</td>
<td>Symptom records</td>
<td>ASRSERVP</td>
</tr>
<tr>
<td>00000309</td>
<td>LSEX PAND service</td>
<td>IEAVLSEX</td>
</tr>
<tr>
<td>0000030A</td>
<td>LOCASCB STOKEN= service</td>
<td>IEAVESTA</td>
</tr>
<tr>
<td>0000030B</td>
<td>Storage obtain</td>
<td>IGVVSTOR</td>
</tr>
<tr>
<td>0000030C</td>
<td>RTM dynamic resource manager</td>
<td>IEAVTR2C</td>
</tr>
<tr>
<td>0000030D</td>
<td>WAIT LINKAGE=SYSTEM service</td>
<td>IEAVEWTP</td>
</tr>
<tr>
<td>0000030E</td>
<td>POST LINKAGE=SYSTEM service</td>
<td>IEAVEPTP</td>
</tr>
<tr>
<td>0000030F</td>
<td>PC-ESTAE Service</td>
<td>IEAVSTAI</td>
</tr>
<tr>
<td>00000310</td>
<td>ASCRE/ASDES/ASEX services</td>
<td>ASEMAIN</td>
</tr>
<tr>
<td>00000311</td>
<td>Storage release</td>
<td>IGVVSTOR</td>
</tr>
<tr>
<td>00000312</td>
<td>TCBTOKEN service</td>
<td>IEAVTTKN</td>
</tr>
<tr>
<td>00000313</td>
<td>TESTART service</td>
<td>IEAVXTAR</td>
</tr>
<tr>
<td>00000314</td>
<td>CSVQUERY Service</td>
<td>CSVQYSRV</td>
</tr>
<tr>
<td>00000315</td>
<td>For use by IBM code only</td>
<td>ITVCF</td>
</tr>
<tr>
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<td>IWMQ2DIS</td>
</tr>
<tr>
<td>00001426</td>
<td>Queue manager insert</td>
<td>IWMQ2INS</td>
</tr>
<tr>
<td>00001427</td>
<td>Queue manager delete</td>
<td>IWMQ2DEL</td>
</tr>
<tr>
<td>00001428</td>
<td>Server environment manager connect</td>
<td>IWME2CON</td>
</tr>
<tr>
<td>00001429</td>
<td>Server environment manager disconnect</td>
<td>IWME2DIS</td>
</tr>
<tr>
<td>0000142A</td>
<td>Server environment manager select</td>
<td>IWME2SEL</td>
</tr>
<tr>
<td>0000142B</td>
<td>Execution delay register</td>
<td>IWMX2REG</td>
</tr>
<tr>
<td>0000142C</td>
<td>Execution delay deregister</td>
<td>IWMX2DRG</td>
</tr>
<tr>
<td>0000142D</td>
<td>Enclave join service</td>
<td>IWMW2JOI</td>
</tr>
<tr>
<td>0000142E</td>
<td>Enclave leave service</td>
<td>IWMW2LEA</td>
</tr>
<tr>
<td>0000142F</td>
<td>Begin server transaction service</td>
<td>IWME2BGN</td>
</tr>
<tr>
<td>00001430</td>
<td>End server transaction service</td>
<td>IWME2END</td>
</tr>
<tr>
<td>00001431</td>
<td>Environment manager command interface</td>
<td>IWME2REQ</td>
</tr>
<tr>
<td>00001432</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>00001433</td>
<td>Sysplex routing find server service</td>
<td>IWMW4FSV</td>
</tr>
<tr>
<td>00001434</td>
<td>Verify data structures for QM and EM</td>
<td>IWMQ2VEQ</td>
</tr>
<tr>
<td>00001435</td>
<td>Write symptom record</td>
<td>IWMM2SYM</td>
</tr>
<tr>
<td>00001436</td>
<td>EM Server Refresh</td>
<td>IWME2SRF</td>
</tr>
<tr>
<td>00001437</td>
<td>Scheduling Environment Query Service</td>
<td>IWMS4QRY</td>
</tr>
<tr>
<td>00001438</td>
<td>Scheduling Environment Set Service</td>
<td>IWMS4SET</td>
</tr>
<tr>
<td>00001439</td>
<td>Scheduling Environment Validate Service</td>
<td>IWMS4VAL</td>
</tr>
<tr>
<td>0000143A</td>
<td>Scheduling Environment Determine Execution Service</td>
<td>IWMS4DES</td>
</tr>
<tr>
<td>0000143B</td>
<td>Batch Queue Registration</td>
<td>IWME2REG</td>
</tr>
<tr>
<td>0000143C</td>
<td>Batch Queue Deregistration</td>
<td>IWME2DRG</td>
</tr>
<tr>
<td>0000143D</td>
<td>Sysplex Router Query Service</td>
<td>IWMW4DNS</td>
</tr>
<tr>
<td>0000143E</td>
<td>Reset Job Service Routine</td>
<td>IWME2DNS</td>
</tr>
<tr>
<td>0000143F</td>
<td>Update Service Class Token</td>
<td>IWMP2RES</td>
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<tr>
<td>00001440</td>
<td>WLM OE Get Address Space</td>
<td>IWME2WON</td>
</tr>
<tr>
<td>00001441</td>
<td>WLM OE Delete Address Space</td>
<td>IWME2FGT</td>
</tr>
<tr>
<td>00001442</td>
<td>WLM OE Get work Service</td>
<td>IWME2NOW</td>
</tr>
<tr>
<td>00001443</td>
<td>Sysplex Capacity Query Service</td>
<td>IWMD3BAT</td>
</tr>
<tr>
<td>00001444</td>
<td>Batch Init Connect</td>
<td>IWME2BCN</td>
</tr>
<tr>
<td>00001445</td>
<td>Batch Init Job Select</td>
<td>IWME2BSL</td>
</tr>
<tr>
<td>00001446</td>
<td>Server Manager Inform Service</td>
<td>IWME2INF</td>
</tr>
<tr>
<td>00001447</td>
<td>Application Environment Limit Service</td>
<td>IWME2LIM</td>
</tr>
<tr>
<td>00001448</td>
<td>Demand Batch Select Locator</td>
<td>IWME2BLC</td>
</tr>
</tbody>
</table>

Chapter 5. Program Call (PC) services in system function table
<table>
<thead>
<tr>
<th>PC number (hexadecimal)</th>
<th>Service description</th>
<th>Component or module</th>
</tr>
</thead>
<tbody>
<tr>
<td>00001449</td>
<td>Demand Batch Initiator Requestor</td>
<td>IWME2BRQ</td>
</tr>
<tr>
<td>0000144A</td>
<td>Batch Queue Query Service</td>
<td>IWME2BQY</td>
</tr>
<tr>
<td>0000144B</td>
<td>Batch Initiator Placement</td>
<td>IWME2RIP</td>
</tr>
<tr>
<td>0000144C</td>
<td>BQS Queue Verifier</td>
<td>IWMD3BQV</td>
</tr>
<tr>
<td>0000144D</td>
<td>EM Select Secondary Service</td>
<td>IWME2SEM</td>
</tr>
<tr>
<td>0000144E</td>
<td>EM Delete Secondary Work</td>
<td>IWME2SV1</td>
</tr>
<tr>
<td>0000144F</td>
<td>WLM Control Region Register</td>
<td>IWMW4CRR</td>
</tr>
<tr>
<td>00001450</td>
<td>WLM Control Region Deregister</td>
<td>IWMW4CRD</td>
</tr>
<tr>
<td>00001451</td>
<td>WLM Control Region Get Group Names</td>
<td>IWMW4GCN</td>
</tr>
<tr>
<td>00001452</td>
<td>WLM Build Routing Group</td>
<td>IWMW4BRG</td>
</tr>
<tr>
<td>00001453</td>
<td>WLM Control Region Recommend</td>
<td>IWMW4CRI</td>
</tr>
<tr>
<td>00001454</td>
<td>WLM Build Routing Table</td>
<td>IWMW4BRT</td>
</tr>
<tr>
<td>00001455</td>
<td>WLM Control Region Reporting</td>
<td>IWMW4CRN</td>
</tr>
<tr>
<td>00001456</td>
<td>WLM Export Service</td>
<td>IWMC3EXP</td>
</tr>
<tr>
<td>00001457</td>
<td>WLM Import Service</td>
<td>IWMC3IMP</td>
</tr>
<tr>
<td>00001458</td>
<td>WLM Undo Export Service</td>
<td>IWMC3UEX</td>
</tr>
<tr>
<td>00001459</td>
<td>WLM Undo Import Service</td>
<td>IWMC3UIM</td>
</tr>
<tr>
<td>0000145A</td>
<td>Export/Import Connect Service</td>
<td>IWMC3CON</td>
</tr>
<tr>
<td>0000145B</td>
<td>Export/Import Disconnect Service</td>
<td>IWMC3DIS</td>
</tr>
<tr>
<td>0000145C</td>
<td>Cleanup Latch resources</td>
<td>IWMC3CLR</td>
</tr>
<tr>
<td>0000145D</td>
<td>Get PB Transaction Trace token from active</td>
<td>IWMW2GPB</td>
</tr>
<tr>
<td>0000145E</td>
<td>Dynamic Channel Path Management Timestamp Service</td>
<td>IWMC4TMP</td>
</tr>
<tr>
<td>0000145F</td>
<td>Dynamic Channel Path Management Project I/O Velocity Service</td>
<td>IWMC4PIV</td>
</tr>
<tr>
<td>00001460</td>
<td>LPAR Management CPU Affinity Service</td>
<td>IWMC4CAF</td>
</tr>
<tr>
<td>00001461</td>
<td>Dynamic Channel Path Management Switch Timestamp Service</td>
<td>IWMC4SWT</td>
</tr>
<tr>
<td>00001462</td>
<td>Temporal Affinity Service</td>
<td>IWME2TAF</td>
</tr>
<tr>
<td>00001463</td>
<td>Delete Region Work</td>
<td>IWME2SV2</td>
</tr>
<tr>
<td>00001464</td>
<td>WLM Enclave Register Service</td>
<td>IWMW2ERG</td>
</tr>
<tr>
<td>00001465</td>
<td>WLM Enclave Deregister Service</td>
<td>IWMW2EDR</td>
</tr>
<tr>
<td>00001466</td>
<td>Queue IRD Command</td>
<td>IWML4QIC</td>
</tr>
<tr>
<td>00001467</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>00001468</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>00001469</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>0000146A</td>
<td>Change an Enclave</td>
<td>IWMW2ERE</td>
</tr>
<tr>
<td>0000146B</td>
<td>WLM Contention Notification Service</td>
<td>IWMR2CNT</td>
</tr>
<tr>
<td>0000146C</td>
<td>Define Application Environment</td>
<td>IWMD2DAE</td>
</tr>
<tr>
<td>0000146D</td>
<td>Work Request Start Service</td>
<td>IWMW2WRS</td>
</tr>
<tr>
<td>0000146E</td>
<td>Work Request Stop Service</td>
<td>IWMW2WRP</td>
</tr>
<tr>
<td>0000146F</td>
<td>Work Request Unblock Service</td>
<td>IWMW2WRB</td>
</tr>
<tr>
<td>00001470</td>
<td>Work Request Unblock Service</td>
<td>IWMW2WRL</td>
</tr>
<tr>
<td>PC number (hexadecimal)</td>
<td>Service description</td>
<td>Component or module</td>
</tr>
<tr>
<td>-------------------------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>00001471</td>
<td>Correlator Retrieval Service</td>
<td>IWMW2GCR</td>
</tr>
<tr>
<td>00001472</td>
<td>ARM Services Router</td>
<td>IWMA3BRI</td>
</tr>
<tr>
<td>00001473</td>
<td>EWLM Function Router</td>
<td>IWMA3PCR</td>
</tr>
<tr>
<td>00001475</td>
<td>EWLM Get Completion Phase 1</td>
<td>IWMA3RC1</td>
</tr>
<tr>
<td>00001504</td>
<td>System Logger</td>
<td>Logger</td>
</tr>
<tr>
<td>00001600</td>
<td>BOSS</td>
<td>BOSS</td>
</tr>
<tr>
<td>00001700</td>
<td>IOS Space Switching Service</td>
<td>IOSVIOSW</td>
</tr>
</tbody>
</table>
Chapter 6. Serialization summary

This topic describes the use of locks and system ENQ/DEQ names. In the following table, the locks are arranged by hierarchy (from highest to lowest); the table also describes the categories, types of locks, and the bit setting for the lock in the PSACLHS field in the prefixed save area (PSA):

<table>
<thead>
<tr>
<th>Lock Name</th>
<th>Description</th>
<th>Category</th>
<th>Type</th>
<th>PSACLHS (or PSACLHSE) bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSMGL</td>
<td>Real storage manager (RSM) lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 08 00 00</td>
</tr>
<tr>
<td>VSMFIX</td>
<td>Virtual storage management (VSM) fixed subpools lock - serializes global VSM queues and the VSMWK for global fixed subpools.</td>
<td>Global</td>
<td>Spin</td>
<td>00 04 00 00</td>
</tr>
<tr>
<td>ASM</td>
<td>Auxiliary storage manager (ASM) lock - serializes ASM resources on an address space level.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 08 00</td>
</tr>
<tr>
<td>ASMGL</td>
<td>ASM global lock - serializes ASM resources on a global level.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 02 00 00</td>
</tr>
<tr>
<td>RSMDS</td>
<td>RSM lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 01 00</td>
</tr>
<tr>
<td>RSMST</td>
<td>RSM lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 01 00 00</td>
</tr>
<tr>
<td>RSMCM</td>
<td>RSM lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 10 00 00</td>
</tr>
<tr>
<td>RSMXM</td>
<td>RSM lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 80 00</td>
</tr>
<tr>
<td>RSMAD</td>
<td>RSM lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 40 00</td>
</tr>
<tr>
<td>RSM</td>
<td>RSM lock.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>08 00 00 00</td>
</tr>
<tr>
<td>BMFLSD</td>
<td>BMF Class lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>80 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>VSMMPAG</td>
<td>VSM pageable subpools lock - serializes the VSWK for the VSWK for global pageable subpools.</td>
<td>Global</td>
<td>Spin</td>
<td>00 00 20 00</td>
</tr>
<tr>
<td>XCFDS</td>
<td>Cross-system coupling facility (XCF) data space lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>40 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>SSD</td>
<td>Supervisor lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 01 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>DISP</td>
<td>Dispatcher - serializes certain global functions, for example, TIMER queues.</td>
<td>Global</td>
<td>Spin</td>
<td>00 00 10 00</td>
</tr>
<tr>
<td>SALLOC</td>
<td>Space allocation lock - serializes external routines that enable a processor for either an emergency signal (EMS) or a malfunction alert (MA).</td>
<td>Global</td>
<td>Spin</td>
<td>00 00 04 00</td>
</tr>
<tr>
<td>IXLDS</td>
<td>Cross-system extended services (XES) data space lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>01 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>IXLSCCH</td>
<td>Cross-system extended services (XES) subchannel lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>04 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>IXLREQST</td>
<td>Cross-system extended services (XES) request lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 20 00 00 (in PSACLHSE)</td>
</tr>
</tbody>
</table>
Serialization summary

<table>
<thead>
<tr>
<th>Lock Name</th>
<th>Description</th>
<th>Category</th>
<th>Type</th>
<th>PSACLHS (or PSACLHSE) bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXLSHELL</td>
<td>Cross-system extended services (XES) shell lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 80 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>IXLSHR</td>
<td>Cross-system extended services (XES) SHR/EXCL lock.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>02 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>XCFRES</td>
<td>XCF signalling path lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>20 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>IOSYNCH</td>
<td>I/O supervisor (IOS) synchronization locks - serializes IOS resources, such as intermediate status processing, IOS storage manager page scanning, and HOT I/O.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 02 00</td>
</tr>
<tr>
<td>IOSUCB</td>
<td>IOS unit control block (UCB) lock - serializes access and updates to the UCBs. One IOSUCB exists per UCB.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 00 80</td>
</tr>
<tr>
<td>IOSULUT</td>
<td>IOS lock.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>00 40 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>IOS</td>
<td>IOS lock - serializes storage access maintained by the IOS IOQ storage manager.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>02 00 00 00</td>
</tr>
<tr>
<td>HCWPSLK1</td>
<td>HCWPSLK1 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 40 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>HCWPNLK1</td>
<td>HCWPNLK1 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 20 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>HCWIOLK1</td>
<td>HCWIOLK1 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 10 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>HCWPXLK1</td>
<td>HCWPXLK1 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 08 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>HCWDRLK3</td>
<td>HCWDRLK3 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 04 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>HCWDRLK2</td>
<td>HCWDRLK2 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 02 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>HCWDRLK1</td>
<td>HCWDRLK1 lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 01 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>XCFQ</td>
<td>XCF queue lock.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>10 00 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>REGSRV</td>
<td>Registration services lock used to serialize registration services structures.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>00 02 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>CONTEXT</td>
<td>Context services lock used to serialize context services structures.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 04 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>TPACBDEB</td>
<td>ATCAM lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 00 00 08</td>
</tr>
<tr>
<td>SRM</td>
<td>System resource management (SRM) lock - serializes SRM control blocks and associated data.</td>
<td>Global</td>
<td>Spin</td>
<td>00 00 00 04</td>
</tr>
<tr>
<td>WLMRES</td>
<td>WLMRES lock - workload management lock.</td>
<td>Global</td>
<td>Spin/Class</td>
<td>00 10 00 00 (in PSACLHSE)</td>
</tr>
<tr>
<td>WLMQ</td>
<td>WLMQ lock - workload management lock.</td>
<td>Global</td>
<td>SHR/EXCL</td>
<td>00 08 00 00 (in PSACLHSE)</td>
</tr>
</tbody>
</table>
The lock interface table is pointed to by PSA location PSA + X'2FC'.

Use of locks

The use of locks is based on the following considerations:

- At any one time, a processor can hold only one lock per hierarchical level (with the exception of the CPU lock).
- The CPU lock has no hierarchy in respect to the other spin type locks. However, once obtained, no suspend locks can be obtained. This lock can be held by any number of units of work. There is only one CPU lock per processor.
- The cross memory services locks (CMSSMF, CMSEQDQ, CMS, and CMSLATCH) are equal to each other in the hierarchy. After obtaining a local lock, the caller can obtain all or any subset of the cross memory services locks (CMSSMF, CMSEQDQ, CMS, and CMSLATCH) in a single lock manager request. If a caller holds any one and requests another, an abend results. When requesting any other lock, it is not necessary for a program to own locks that are lower in the hierarchy.
- The CML and LOCAL locks are equal to each other in the hierarchy. One unit of work can hold one local lock, either a CML or a LOCAL lock, not both.
Serializaton summary

- Page faults on non-DREF storage are permitted for programs that own the LOCAL, CML, and/or CMS locks, but not for programs that own locks higher in the hierarchy.
- Locks can be requested conditionally or unconditionally. However, only locks higher than those currently held by the processor can be requested unconditionally.
- PSACLH (also referred to as PSAHLHI (PSA X'2F8')) and PSACLH (PSA+X'4C4') indicate the current locks held. There is no hierarchy indicated by the bit positions within the strings. For the valid hierarchy of locks, see the above list.

For information about the use of locks by SVC routines, see Chapter 4, “SVC summary” in this manual.

ENQ/DEQ summary

The following table shows major and minor ENQ/DEQ names and the resources that issue the ENQ/DEQ. These names are resources at the SYSTEM or SYSTEMS level.

<table>
<thead>
<tr>
<th>Major (QNAME)</th>
<th>Minor (RNAME)</th>
<th>Resource - Using modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSZSCM1</td>
<td>various</td>
<td>Used by VSAM RLS when DFSMS CF cache structures or volumes are changing state.</td>
</tr>
<tr>
<td>SYSZSCM2</td>
<td>various</td>
<td>Used when the VSAM RLS command V SMS,SMSVSAM,FALLBACK is issued.</td>
</tr>
<tr>
<td>IGDCSDS</td>
<td>COMMDS, ACDS, or SCDs data set name</td>
<td>SMS IGDCSDSS</td>
</tr>
<tr>
<td>IGDCSDSXS</td>
<td>COMMDS, ACDS, or SCDs data set name</td>
<td>SMS IGDCSDSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: This is a device RESERVE rather than an ENQ macro.</td>
</tr>
<tr>
<td>SYSZSCM3</td>
<td>various</td>
<td>Used for &gt;4k DFSMS CF cache processing for VSAM RLS.</td>
</tr>
<tr>
<td>SYSZSCM4</td>
<td>various</td>
<td>Used for &gt;4k DFSMS CF cache processing for VSAM RLS.</td>
</tr>
<tr>
<td>SYSZMMF1</td>
<td>various</td>
<td>Serialization for RLS Locking</td>
</tr>
<tr>
<td>SYSZSCM5</td>
<td>various</td>
<td>Used to serialize special lock requests for VSAM RLS.</td>
</tr>
<tr>
<td>SYSZSCM6</td>
<td>various</td>
<td>Used during VSAM RLS initialization to serialize &gt;4k DFSMS CF cache processing.</td>
</tr>
<tr>
<td>SYSZSCM8</td>
<td>various</td>
<td>Used for TVS display processing.</td>
</tr>
<tr>
<td>SYSZSCM9</td>
<td>various</td>
<td>Used for TVS initialization.</td>
</tr>
<tr>
<td>SYSZSCMA</td>
<td>various</td>
<td>Used for TVS peer recovery processing.</td>
</tr>
<tr>
<td>SYSZSCM7</td>
<td>various</td>
<td>Serialization for RLS Locking</td>
</tr>
<tr>
<td>SYSZDMO</td>
<td>DMO_REFVTOC_VOLSER_volser</td>
<td>Used by the DEVMAN address space to serialize requests to perform the DEVMAN function identified in the minor name of the SYSZDMO resource. Scope is SYSTEMS.</td>
</tr>
<tr>
<td>SERLOG</td>
<td>Logrec data set</td>
<td>Logrec data set - IFCAIHNED</td>
</tr>
<tr>
<td>SPFDSN</td>
<td>dname</td>
<td>ISPRESV, ISPRESL</td>
</tr>
<tr>
<td>SPFEDIT</td>
<td>dname + membeiname (blank for sequential data set)</td>
<td>ISPCNQ, ISPQCD</td>
</tr>
<tr>
<td>SYSDSN</td>
<td>dname</td>
<td>Data sets, Note: Normally issued under initiator TCB.</td>
</tr>
<tr>
<td>Major (QNAME)</td>
<td>Minor (RNAME)</td>
<td>Resource - Using modules</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>SYSIEA01</td>
<td>DMPDSEMQ</td>
<td>Serializes DUMPDS commands. IEECB923, IEECB926, IEECB910</td>
</tr>
<tr>
<td></td>
<td>DPLxxx</td>
<td>Used as serialization mechanism for SVC dumps (data set initialization).</td>
</tr>
<tr>
<td></td>
<td>DPLCHAIN</td>
<td>Serializes captured dump queue.</td>
</tr>
<tr>
<td></td>
<td>IEA</td>
<td>Serializes dump data sets. IEAVTBD.</td>
</tr>
<tr>
<td></td>
<td>SDDSQ</td>
<td>Serializes dump data set queue.</td>
</tr>
<tr>
<td></td>
<td>SDPOSTEX</td>
<td>IEAVTDSV, IEAVTSDC, IEAVAD00</td>
</tr>
<tr>
<td></td>
<td>SDUMPENQ</td>
<td>Serializes SVC dump’s scheduled dump. IEAVTSDT, IEAVAD00</td>
</tr>
<tr>
<td>SYSIEFSD</td>
<td>ALLOCTP</td>
<td>Serializes teleprocessing device allocations.</td>
</tr>
<tr>
<td>ALLOC_PARAMETERS</td>
<td></td>
<td>Using Allocation parameters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enqueue: IEFAB4A2, IEFAB493, IEFBB401, IEFDAPRM, IEFDB400, IEFEIS01, IEFASLLC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dequeue: IEFAB4A2, IEFAB4E4, IEFAB493, IEFBB401, IEFDAPRM, IEFDB400, IEFDB402, IEFEIS01, IEFASLLC</td>
</tr>
<tr>
<td>CHNGDEVS</td>
<td></td>
<td>UCB, IEEMB813, ALLOCATION, DFSMSdss</td>
</tr>
<tr>
<td>DDRTPUR</td>
<td></td>
<td>Swap unit record or tape device. IGFDU0, IGFDT0, ALLOCATION</td>
</tr>
<tr>
<td>DDRDA</td>
<td></td>
<td>Swap DASD device. IGFDDO, ALLOCATION</td>
</tr>
<tr>
<td>Q4</td>
<td></td>
<td>UCB, IEEVCPU, IEEVPHT, ., ALLOCATION. Dequeue only: IEGO1A05I, IEECB838, IEECB841, IEECB842, IEECB851, IEECB857</td>
</tr>
<tr>
<td>Q6</td>
<td></td>
<td>Protect key resource. IEFS161, IEFS166. Dequeue only: IEFIB620</td>
</tr>
<tr>
<td>Q10</td>
<td></td>
<td>CSCB, IEECB800, IEECB866, IEEMB810, IEEMMNT1, IEEVND, IEVST, IEVWAIT, IEE0303D, IEE0703D, IEE0803D, IEE3703D, IEE5103D, IEFIRECM, IEFIRECM, IEEMB881, IEECB894, IEEFCFLS, IEEMB860, IEEVIPL, IEE24110, IEE7903D.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dequeue: IEESB665, IEFISEXR, IEECB894, IEEFCFLS, IEEMB860, IEEVIPL, IEE24110, IEE7903D.</td>
</tr>
<tr>
<td>RPLL</td>
<td></td>
<td>Job journal data set. IEFX5B501</td>
</tr>
<tr>
<td>STCQUE</td>
<td></td>
<td>Started task control. IEFSWT, IEEVWAIT, IEEMB860</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dequeue: IEESB670, IEEMB860.</td>
</tr>
<tr>
<td>TSOQUE</td>
<td></td>
<td>TSO/E data sets. IEFSWT, IEEVWAIT. IEEMB860</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dequeue: IEESB670, IEEMB860.</td>
</tr>
<tr>
<td>VARYDEV</td>
<td></td>
<td>Vary device command: IEECB838, IEECB841, IEECB842, IEECB851, IEECB857, IEEMB813, IEE20110</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dequeue: IEECB838, IEECB841, IEECB842, IEECB851, IEECB857, IEEMB813, IEE22110</td>
</tr>
<tr>
<td></td>
<td>IOS: IOVCMMN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dequeue: IOVCMMN, IOVCMES</td>
<td></td>
</tr>
<tr>
<td>SYSIEWLP</td>
<td>dsname for SYSMOD</td>
<td>Data set - HEWLFINT. Dequeue only: HEWLFNL.</td>
</tr>
<tr>
<td>SYSIGGV1</td>
<td>Catalog name</td>
<td>Serializes catalog opens. Using modules: IDACAT11 IGG0CLF5</td>
</tr>
<tr>
<td>SYSIGGV2</td>
<td>Catalog name</td>
<td>Catalog - IGG0CLA3.</td>
</tr>
</tbody>
</table>
## Serialization summary

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<th>Major (QNAME)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SYSIKJBC</td>
<td>RBA</td>
<td>TSO/E broadcast data set (RBA = relative block address) - IEEVSND2, IEEVSND3, IEEVSND8, IKJEE10, IKJEE40, IKJEE75, IKJRBBCR</td>
</tr>
<tr>
<td>SYSIKJUA</td>
<td>OPENUADS</td>
<td>User attribute data set - IKJEFA10, IKJEFA20, IKJEFA30, IKJEFLF, IKJEBLC, IKJRBBCR</td>
</tr>
<tr>
<td></td>
<td>userid</td>
<td>TSO/E users - IKJEFA12, IKJEFA20, IKJEFA30, IKJEFLB, IKJRBBCR, IKJRBBU0. Dequeue only: IKJEFLS.</td>
</tr>
<tr>
<td>SYSMMF01</td>
<td>data set</td>
<td>SYS1.MAN data set - IEEMB829, IFASMFDP</td>
</tr>
<tr>
<td>SYSVSAM</td>
<td>dscatnameL1L2L3*</td>
<td>VSAM data sets (dsn = data set name, catname = catalog name, L1 = RNAME length, L2 = data set name length, L3 = catalog name length, * = ENQ/DEQ control indicator). IDA0200T, IDA0231T, IDA0557A, IGG0CLBG</td>
</tr>
<tr>
<td>SYSVTOC</td>
<td>volser</td>
<td>VTOC: IGG0007H, IGG0C18U, IGG020P1, IGG0290E, IGG03001, IGG03213, IGG03214, IGG03215, IGG3218, IGG0325A, IGG0325E, IGG0553A, IGG0806A. Dequeue only: IFGORR0E, IGG0107H, IGG0020P3, IGG03217H, IGG020P3, IGG03217, IGG0325H, IGG0806AE. Note: This is normally a device RESERVE rather than an ENQ macro. IGG0290E, IGG03001, IGG03213, IGG03214, IGG03215, IGG3218, IGG0325A, IGG0325E, IGG0553A, IGG0806A. Dequeue only: IFGORR0E, IGG0107H, IGG0020P3, IGG03217H, IGG020P3, IGG03217, IGG0325H, IGG0806AE. Serialize volume labelling SCOPE=SYSTEMS Note: This is normally a device RESERVE rather than an ENQ macro. IGD2WRT, IGD4RPC, IGL1SDS. The reserve is dequeued by IGD2WRT, IGD4RPC, IGL1SDS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSZ#SSI</td>
<td>SSI</td>
<td>Control structures associated with the subsystem interface (SSI). SUBSYS_ + name of subsystem A specific subsystem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSZAPPC</td>
<td>APPC_ADDRESS_SPACE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APPC_PARMLIB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ATBTRACE.dataset_name</td>
<td>Serializes the use of the API trace data set</td>
</tr>
<tr>
<td></td>
<td>LUM_WORK_QUEUE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SDFMDSN.dataset_name</td>
<td>Serializes the use of the TP profile data set</td>
</tr>
<tr>
<td>SYSZASCH</td>
<td>ASBSCAD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASBSCIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASCH_ASBSCAD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASCH_ASBSCST</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASCH_PARMLIB</td>
<td></td>
</tr>
<tr>
<td>SYSZATR</td>
<td>gname-COMPRESSION</td>
<td>Serializes resource manager restart processing with other RRS log stream processing. lgname-RESTART</td>
</tr>
</tbody>
</table>
## Serialization summary

<table>
<thead>
<tr>
<th>Major (QNAME)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SYSZATS</td>
<td>NED &lt;ned&gt;</td>
<td>Tape Device Serialization. ALLOCATION. For self describing devices, where NED is followed by the node descriptor of the device.</td>
</tr>
<tr>
<td></td>
<td>DEV &lt;devnum&gt;</td>
<td>Tape Device Serialization. ALLOCATION. For devices that do not support self description, where DEV is followed by the 4-digit hexadecimal device number.</td>
</tr>
<tr>
<td>SYSZATST</td>
<td>DEVICETYPE &lt;devtype&gt;</td>
<td>Device Type Serialization. ALLOCATION. Where devtype is one of 3420, 3480, 348X, 3490, 3590.</td>
</tr>
<tr>
<td></td>
<td>EPIVALUE &lt;epival&gt;</td>
<td>Device Type Serialization. ALLOCATION. Where epival is the EPI value of a 3590 device.</td>
</tr>
<tr>
<td>SYSZAUDT</td>
<td>ENQDEQ</td>
<td>Serializes GRS EQDQ Monitor Instances - ISGAUDIT</td>
</tr>
<tr>
<td></td>
<td>GVTNQMON.SERIALIZATION</td>
<td>Serializes GRS EQDQ Monitor processing - ISGAUDIT, ISGAMED1</td>
</tr>
<tr>
<td></td>
<td>GVTNQMON.dataset name of EQDQ monitor output</td>
<td>Used to serialize access to a GRS EQDQ Monitor output dataset that is defined by the user - ISGAUDIT, ISGAMEDM, ISGAMED2</td>
</tr>
<tr>
<td>SYSZAVM</td>
<td>AVM PROCESS QUEUE</td>
<td>Serializes various internal AVM queues and data areas - Various AVM modules.</td>
</tr>
<tr>
<td>SYSZBDT</td>
<td>Installation’s MVS/Bulk Data Transfer Node Name</td>
<td>Controlled resource: BITMAPS.</td>
</tr>
</tbody>
</table>
| SYSZBNDX | volser | Used by Common VTOC Access Facilities (CVAF) and ICKDSF to serialize the process of rebuilding a volumes INDEX data set while the volume remains online to all sharing systems in a GRSplex. Resource also used to serialize the process of refreshing the volumes VTOC and expanding the volumes VTOC and/or INDEX while the volumes remains online to all sharing systems. CVAF will issue an exclusize, systems enqueue on this resource when it finds the CVAF caller not serialized on SYSVTOC.volser and ICKDSF is in the process of executing one of these functions.  

**Restriction:** This version of SYSZBNDX should not be in SYSTEMS exclusion RNL. For RNL details, see RNL processing in z/OS MVS Planning: Global Resource Serialization automatic tasks. |
| ICKDSF HELD | | Used by ICKDSF to notify CVAF that is running in all the systems in the GRSplex that the process of rebuilding a volumes INDEX, refreshing a volumes VTOC or expanding a volumes VTOC/INDEX is about to begin. CVAF being notified begins testing if its caller is serialized on SYSVTOC.volser and issues an exclusive enqueue on .volser as needed to obtain proper serialization.  

**Restriction:** This version of SYSZBNDX should not be in SYSTEMS exclusion RNL. For RNL details, see RNL processing in z/OS MVS Planning: Global Resource Serialization. |
| volserRESERVE | | Used by ICKDSF to ensure a RESERVE command is issued against a volume that is being processed. It is recommended that this generic resource of SYSZBNDX is not defined to be converted to a global enqueue in the global resource serialization convert RNL. |
| SYSZCAXW | CAXW | Catalog auxiliary work area (CAXWA) - IDACAT11, IDACAT12, IGG0CLBG |
| SYSZCMDS | MTTSWAP | Master trace command - CNZM1TRC |
| SYSZCNZ | CONNAME#consname | Serializes on the console name. |
| | USERID#username or USERID#username | consname | Serializes on the userid attempting logon. |
| SYSZCOMM | Various | Serialize access to global resource work areas and processing. |
# Serialization summary

<table>
<thead>
<tr>
<th>Major (QNAME)</th>
<th>Minor (RNAME)</th>
<th>Resource - Using modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSZCSD</td>
<td>CSDCPUJS</td>
<td>CSD field - IEEVCPU, IEFICPUA. Dequeue only: IEF1B620.</td>
</tr>
<tr>
<td>SYSZCSV</td>
<td>CSVDYNL</td>
<td>Serializes LNKLST set for the LNKLST concatenation.</td>
</tr>
<tr>
<td>SYSZCT</td>
<td>CTAB or ITTaaa</td>
<td>Resource: aaaa is an address. Serializes component trace data areas.</td>
</tr>
<tr>
<td>SYSZDAE</td>
<td>DATA SET</td>
<td>Serializes updates to the DAE data set in the Sysplex environment.</td>
</tr>
<tr>
<td>SYSZDSCB</td>
<td>volerno + x + dsname</td>
<td>Serializes certain DSCB fields in OPEN/CLOSE/EOV with an exclusive enqueue with DISP=SHR for PDs and any DISP with PDSEs. The “x” is A or S. Blanks are truncated from dsname.</td>
</tr>
<tr>
<td>SYSZDSN</td>
<td>DATA SET NAME</td>
<td>Serializes the root file system. (In a shared file system environment, the &quot;root file system&quot; is known as the version file system.) See [[Mounting your root file system for execution]] in [z/OS UNIX System Services Planning] for more information on serialization of the root file system.</td>
</tr>
<tr>
<td>SYSZDSTB</td>
<td>ASID + JCT address</td>
<td>Data Set Information Table - ENQ/DEQ: IEFAB490, IEFAB4A2. DEQ Only: IEFAB4E8, IEFAB4DE.</td>
</tr>
<tr>
<td>SYSZDTSK</td>
<td>ISPF/TSO_WINDOW.Serialization + unique id for the TSO address space</td>
<td>ISPF GUI with TSO line mode support — ISPDTSSK and ISPDTPC ISPF SVC 93 exit — ISPSC93 and ISPSC93X</td>
</tr>
<tr>
<td>SYSZEC16</td>
<td>PURGE</td>
<td>Purge data set - IOSPURGA</td>
</tr>
<tr>
<td>SYSZGGLG</td>
<td>UCB address and CCHHR of block</td>
<td>Block in a direct (BDAM) data set.</td>
</tr>
<tr>
<td>SYSZGSYS</td>
<td>group name</td>
<td>The name of a group of systems in a sysplex, as defined by the IEEGSYS samplib member.</td>
</tr>
<tr>
<td>SYSZGTF1</td>
<td>GTF</td>
<td>Generalized trace facility (GTF) processing.</td>
</tr>
<tr>
<td>SYSZHIS</td>
<td>HIS</td>
<td>Serializes hardware instrumentation services startup.</td>
</tr>
<tr>
<td>SYSZHIS</td>
<td>IBM Health Checker For z/OS</td>
<td>Used to serialize IBM Health Checker startup - HZSINIT. &lt;check owner&gt;&amp;&lt;check name&gt; Used to ensure that the identified global health check is only run on one system in a sysplex- HZSTKSCH.</td>
</tr>
<tr>
<td>SYSZIAT</td>
<td>none</td>
<td>In a JES3 environment, include an entry for the checkpoint data set. The name must be generic. Note: This is a device RESERVE rather than an ENQ macro.</td>
</tr>
<tr>
<td>SYSZIGDI</td>
<td>ICMRT.CMDSADDR_LOCKED.SWITCH_CONFIGURATION.SMS_VECTOR.TABLE IGDSSI00 IGDSSI01</td>
<td>SMS IGDICMS0, IGDSSI00, IGDSSI01</td>
</tr>
<tr>
<td>SYSZIGF</td>
<td>DDRSSI</td>
<td>Serialize DDR calls to SSI. IGFDT2, IGFDV1, IGFDL1, IGFDH1, IGFDW0. Dequeue Only: IGFDE1</td>
</tr>
<tr>
<td>SYSZIGGI</td>
<td>ASID</td>
<td>TSB - IGC009C, IGG09302</td>
</tr>
<tr>
<td>SYSZIOW0</td>
<td>ASID</td>
<td>PDSE</td>
</tr>
<tr>
<td>SYSZIOW1</td>
<td>ASID</td>
<td>PDSE</td>
</tr>
<tr>
<td>SYSZIOW3</td>
<td>IGWSHC01</td>
<td>Serializes updates to the VSAM RLS Sharing Control Data Set. 0 Serialization for VSAM RLS • initialization • lock rebuild • display command.</td>
</tr>
<tr>
<td>SYSZIOW5</td>
<td>PDSEASRESTART</td>
<td>Insures only one PDSE restart.</td>
</tr>
<tr>
<td>SYSZIOW5</td>
<td>VIOCGDELP</td>
<td>Serializes PAGEDEL command processing.</td>
</tr>
</tbody>
</table>
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<th>Major (QNAME)</th>
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<tr>
<td>SYSZJOEZ</td>
<td>IOEZNS</td>
<td>Locks the z/OS file system (zFS) V1R11 namespace across the sysplex.</td>
</tr>
<tr>
<td></td>
<td>IOEZJOIN</td>
<td>Serializes joining the zFS V1R11 namespace across the sysplex.</td>
</tr>
<tr>
<td></td>
<td>IOEZDC.sysname.aggregatename</td>
<td>A temporary ENQ used to ensure not more than one task on a zFS system processes a catchup mount or unmount for a specific aggregate.</td>
</tr>
<tr>
<td></td>
<td>IOEZTM.aggregatename</td>
<td>Serializes administration of an aggregate.</td>
</tr>
<tr>
<td></td>
<td>IOEZLT.aggregatename</td>
<td>Indicates ownership of an aggregate.</td>
</tr>
<tr>
<td></td>
<td>IOEZLR.aggregatename</td>
<td>Indicates ownership of a R/O aggregate by a system before V1R11.</td>
</tr>
<tr>
<td></td>
<td>IOEZLQ.aggregatename-qsysname</td>
<td>Indicates that an aggregate that is attached R/O is quiesced. The qsysname is the system that issued the quiesced.</td>
</tr>
<tr>
<td>SYSZIOS</td>
<td>DISPRSV</td>
<td>Serializes IOS Display Reserve processing.</td>
</tr>
<tr>
<td></td>
<td>DYNAMIC</td>
<td>Serializes against dynamic configuration changes.</td>
</tr>
<tr>
<td></td>
<td>DYNAMIC.groupname</td>
<td>Serializes against dynamic channel path management changes.</td>
</tr>
<tr>
<td></td>
<td>EKM</td>
<td>Serializes against changes to the Encryption Key Manager parameters.</td>
</tr>
<tr>
<td></td>
<td>LPEP</td>
<td>Serializes around checking for devices to Vary online in IOSVLPEP.</td>
</tr>
<tr>
<td></td>
<td>LPEPSYSRES</td>
<td>Serializes multiple instances of IOSVLPEP processing a no paths condition on the SYSRES.</td>
</tr>
<tr>
<td></td>
<td>MIH</td>
<td>Serializes against changes to the MIH information for devices.</td>
</tr>
<tr>
<td></td>
<td>QRQUEUE</td>
<td>Serializes the IOACTION STOP</td>
</tr>
<tr>
<td></td>
<td>SETIOS.groupname</td>
<td>Serializes the SETIOS DCM=ON</td>
</tr>
<tr>
<td></td>
<td>SWITCH</td>
<td>Serializes against accessing the SWITCH table.</td>
</tr>
<tr>
<td></td>
<td>VS SWITCH.groupname</td>
<td>Serializes the vary switch command.</td>
</tr>
<tr>
<td>SYSZISTC</td>
<td>Configuration Restart Data Set ddname</td>
<td>RDT segment/checkpoint data set.</td>
</tr>
<tr>
<td>SYSZJES2</td>
<td>vvvvvvxxxxxxx...</td>
<td>vvvvvv - Parameter is CKPTDEF CKPTI = (VOLSER=vvvvvv) xxxxxx... is the 44 character dsname for the checkpoint data set. Parameter is CKPTDEF CKPTI = (DSNAME=xxxxx...).</td>
</tr>
<tr>
<td>SYSZJWTP</td>
<td>JSCB WTP</td>
<td>Job step messages.</td>
</tr>
<tr>
<td></td>
<td>RPL + asid</td>
<td>Message data set - (RPL = request parameter list pointer, asid = address space identifier). CNZSIWTP, IEEAB401.</td>
</tr>
<tr>
<td>SYSZLLA1</td>
<td>UPDATE</td>
<td>LLACOPY</td>
</tr>
<tr>
<td>SYSZLOGR</td>
<td>L.logstreamname</td>
<td>Log stream name - System Logger in a PLEXCFG=MULTISYSTEM environment.</td>
</tr>
<tr>
<td></td>
<td>L.systemname.logstreamname</td>
<td>Log stream name - System Logger in a PLEXCFG=MONOPLEX environment.</td>
</tr>
<tr>
<td></td>
<td>RECORDER</td>
<td>Logrec data set — IFBSVC76, IFCDIP00, IFCZIHND.</td>
</tr>
</tbody>
</table>
### Serialization summary

<table>
<thead>
<tr>
<th>Major (QNAME)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SYSZMCS</td>
<td>CNZSCLOT</td>
<td>Serializes WTO CONNECT processing.</td>
</tr>
<tr>
<td></td>
<td>DELAYED_SVC_PROCESSING</td>
<td>Serializes the delayed issue queue.</td>
</tr>
<tr>
<td></td>
<td>EMCMD5#IEAMxxx</td>
<td>Serializes on the EMCS message dataspace.</td>
</tr>
<tr>
<td></td>
<td>MFATABLE</td>
<td>Serializes multiple SET MSGFLD=xx commands.</td>
</tr>
<tr>
<td></td>
<td>MPFTABLE</td>
<td>Serializes on the MPF and general user exit (GENX) table.</td>
</tr>
<tr>
<td></td>
<td>PDMODE_CHANGE</td>
<td>Serializes changes to the PDMODE of the system console.</td>
</tr>
<tr>
<td></td>
<td>ROUTE-GROUP-CNID</td>
<td>Serializes the ROUTE EMCS console during ROUTE group or ROUTE *ALL command processing.</td>
</tr>
<tr>
<td></td>
<td>SETCON MODE COMMAND IN PROGRESS</td>
<td>Serializes on SETCON MODE commands.</td>
</tr>
<tr>
<td></td>
<td>SETCONMIGRATE</td>
<td>Serializes on a system IPLing while performing a migration.</td>
</tr>
<tr>
<td></td>
<td>SMT</td>
<td>Serializes the cleanup of the SMT during system partitioning.</td>
</tr>
<tr>
<td></td>
<td>SMT2</td>
<td>Serializes the overall cleanup of a system during system partitioning.</td>
</tr>
<tr>
<td></td>
<td>SYSMCS#MCS, SYSMCS#CL1, SYSMCS#CL2, SYSMCS#CL3, SYSMCS#EMCS</td>
<td>Serializes on all MCS/EMCS console updates and sysplex wide console commands.</td>
</tr>
<tr>
<td></td>
<td>TRACKING_TAB</td>
<td>Serializes access to the TAB, TIDB, and TEDB.</td>
</tr>
<tr>
<td></td>
<td>UCMSSET</td>
<td>Serializes on subsystem entry table.</td>
</tr>
<tr>
<td></td>
<td>UPDATEVSLEVER</td>
<td>Serializes on console updates and lever processing.</td>
</tr>
<tr>
<td>SYSZNIP</td>
<td>CONSOLE</td>
<td>SVC 35 and 87 paths and SVCUPDTE calls for SVC 35 and 87.</td>
</tr>
<tr>
<td>SYSZOPEN</td>
<td>dsname</td>
<td>Opening data sets - IGC0002B</td>
</tr>
<tr>
<td>SYSZPCCB</td>
<td>PCCB</td>
<td>Private catalog control block (PCCB) - ALLOCATION, IGG0CLA3</td>
</tr>
<tr>
<td>SYSZPGAD</td>
<td>PAGEADD</td>
<td>(1) Serializes PAGEADD command processing, (2) Serializes the paging configuration during DISPLAY ASM command to ensure that the command does not change ILRPGDSP. (3) Serializes the DSNLIST and TBPARTBLE during processing of a PAGEDEL command.</td>
</tr>
<tr>
<td>SYSZPGDL</td>
<td>PAGEDEL</td>
<td>Serializes PAGEDEL command processing.</td>
</tr>
<tr>
<td>SYSZPSWD</td>
<td>dsname</td>
<td>Password data set - IEG0195U, IEG0195V. Dequeue only: IEG0RR0E</td>
</tr>
<tr>
<td>SYSZRBMF</td>
<td>ACTIVE</td>
<td>Indicates that MF/1 is already active - IRBMFMFC</td>
</tr>
<tr>
<td>SYSZRCF</td>
<td>CHPREG</td>
<td>Reconfiguration commands: CONFIG CHP, VARY PATH, DISPLAY M=CHP (IEEVCHTR, IEEVRCHP)</td>
</tr>
</tbody>
</table>
## Serialization summary

<table>
<thead>
<tr>
<th>Major (QNAME)</th>
<th>Minor (RNAME)</th>
<th>Resource - Using modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSZRMM</td>
<td>BUFFER CONTROL</td>
<td>Buffer management SCOPE=STEP</td>
</tr>
<tr>
<td></td>
<td>EDGINERS.volser</td>
<td>Serialize volume labelling SCOPE=SYSTEMS</td>
</tr>
<tr>
<td></td>
<td>EXIT_IS_ACTIVE</td>
<td>Exit recovery serialization SCOPE=SYSTEM</td>
</tr>
<tr>
<td></td>
<td>EXIT_id_UNAVAIL</td>
<td>Exit recovery serialization where id can be 100 or 200 representing the last three characters of the DFSMSrmm installation exits EDGUX100 or EDGUX200 SCOPE=SYSTEM</td>
</tr>
<tr>
<td></td>
<td>HSKP.dsn.volser</td>
<td>Inventory management data set serialization SCOPE=SYSTEMS</td>
</tr>
<tr>
<td></td>
<td>INACTIVE</td>
<td>Serialize DFSMSrmm activation enabling only a single WTOR to be issued to the operator SCOPE=SYSTEM</td>
</tr>
<tr>
<td></td>
<td>MASTER.RESERVE</td>
<td>DFSMSrmm control data set serialization at startup and when the CDSID is not yet known SCOPE=SYSTEMS</td>
</tr>
<tr>
<td></td>
<td>MASTER.RESERVE.cdsid</td>
<td>RMM control data set serialization SCOPE=SYSTEMS</td>
</tr>
<tr>
<td></td>
<td>MHKP.ACTIVE</td>
<td>Serialize inventory management functions on the same DFSMSrmm subsystem SCOPE=SYSTEM</td>
</tr>
<tr>
<td></td>
<td>MHKP.dsn.volser</td>
<td>Inventory management data set serialization SCOPE=SYSTEMS</td>
</tr>
<tr>
<td></td>
<td>RMM.ACTIVE</td>
<td>Ensure only one system run per MVS image SCOPE=SYSTEM</td>
</tr>
<tr>
<td></td>
<td>SHUTDOWN</td>
<td>Serialize DFSMSrmm shutdown and refresh processing SCOPE=SYSTEM</td>
</tr>
<tr>
<td></td>
<td>WTOR_ENQ</td>
<td>Exit recovery serialization SCOPE=SYSTEM</td>
</tr>
<tr>
<td>SYSZRPLW</td>
<td>Catalog name + catalog ACB address</td>
<td>Catalog - IGG0CLA3. Dequeue only: IGG0CLA9.</td>
</tr>
<tr>
<td>SYSZSVO5</td>
<td>DLF resource names</td>
<td>Serialize various DLF resources.</td>
</tr>
<tr>
<td>SYSZSMF1</td>
<td>BUF</td>
<td>SMF buffer.</td>
</tr>
<tr>
<td>SYSZSMFD</td>
<td>ExitTable</td>
<td>Used by IFASMFDL, IFASMFDP and SET SMF=xx/SETSMF processing to serialize exit tables built for exit validation.</td>
</tr>
<tr>
<td>SYSZSMFL</td>
<td>Logstream name</td>
<td>Used by IFASMFDL to serialize read and deleting from the logstream specified in the minor name.</td>
</tr>
<tr>
<td>SYSZSPI</td>
<td>LISTENERS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SERVICECALL</td>
<td></td>
</tr>
<tr>
<td>SYSZSVC</td>
<td>TABLE</td>
<td>Programs that update the SVC table while saving the previous data.</td>
</tr>
<tr>
<td>SYSZTIOT</td>
<td>ASID + DSAB QDB address</td>
<td>Task input/output table (TIOT) (ASID = address space identifier, DSAB QDB addr=address of the DSAB QDB). IDACAT11, IDACAT12, IFG0TC0A, IFG019RA, IGC0002A, IGC00030, IGG020RI, IGG08117. Dequeue only: IFG0RR0E, IGG0290D, IGG03001.</td>
</tr>
<tr>
<td>SYSZTTRC</td>
<td>SYSTEM TRACE</td>
<td>System trace address space creation - IEAVETAC, IEAVETRM, IEECB8924</td>
</tr>
<tr>
<td>SYSZUSRL</td>
<td>ucbaddr</td>
<td>User label tracks - IFG0202C, IFG0554L</td>
</tr>
<tr>
<td>SYSZVARY</td>
<td>CPU</td>
<td>Reconfiguration commands: CONFIG CPU (IEECB927) DISPLAY M (IEEMPDM, IEEMPDEV)</td>
</tr>
<tr>
<td></td>
<td>PATH</td>
<td>Reconfiguration commands: CONFIG CHP (IEECB927) DISPLAY M (IEEMPDM, IEEMPDEV) VARY PATH (IEEVP7H)</td>
</tr>
<tr>
<td></td>
<td>STORAGE</td>
<td>Reconfiguration command: CONFIG STOR (IEECB927) DISPLAY M (IEEMPDM, IEEMPDEV)</td>
</tr>
<tr>
<td>SYSZVMV</td>
<td>ucbaddr</td>
<td>Volume mount and verify - ALLOCATION</td>
</tr>
</tbody>
</table>
### Serialization summary

<table>
<thead>
<tr>
<th>Major (QNAME)</th>
<th>Minor (RNAME)</th>
<th>Resource - Using modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSZVVDS</td>
<td>catalog name</td>
<td>Catalog</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: This is a device RESERVE and sometimes an ENQ with scope SYSTEM.</td>
</tr>
<tr>
<td></td>
<td>volser</td>
<td>VVDS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: This is a device RESERVE.</td>
</tr>
<tr>
<td></td>
<td>volser + relative control interval number</td>
<td>VVDS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: This is a device RESERVE.</td>
</tr>
<tr>
<td>SYSZWLM</td>
<td>WLM_SERVICE_DEFINITION_INSTALL</td>
<td>Programs that install and extract a service definition from the WLM couple data set.</td>
</tr>
<tr>
<td></td>
<td>WR_STATE_CHANGE</td>
<td>IEMB812, IWMW3CST, IWMW3IN1, IWMW3RBD</td>
</tr>
<tr>
<td></td>
<td>WLM_SYSTEM_IO_PRIORITY</td>
<td>IWMD45IO</td>
</tr>
<tr>
<td></td>
<td>WLM_SYSTEM_RECOVERY_LATCHES</td>
<td>IWMS2LPR</td>
</tr>
<tr>
<td></td>
<td>WLM_SYSTEM.sysname</td>
<td>Where sysname is the name of a system in the sysplex.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IWMS2TIS and IWMS2XRP</td>
</tr>
<tr>
<td></td>
<td>WLM_CACHE_IDENTIFIER_TABLE</td>
<td>Controls access to the WLM cache identifier table used to identify LPAR cache entries in the WLM LPAR cluster structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IWMC3CST, IWMC3DST, IWMC3EVP, IWMC3GLI, IWMC3LPR, IWMC3LSR, IWMC4TSK, IWMS2MON</td>
</tr>
<tr>
<td></td>
<td>DCM_SYSZWLM_xxxxyyyy</td>
<td>Controls access to the WLM Index Data Entry that is used to identify I/O Subsystem data in the WLM LPAR cluster structure. The CEC is identified by number (xxxx is the serial number, yyyy is the model number).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IWMC4CPY, IWMC4DEL, IWMC4PRI, IWMC4PRO, IWMC4RFS, IWMC4SIO, IWMC4TM2, IWMC4TWK, IWMC4WRI</td>
</tr>
<tr>
<td></td>
<td>SERVER4_appl_env</td>
<td>appl_env - is the 32-byte name of an application environment, used to enforce the option of restricting an application environment to one address space per subsystem instance per sysplex.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IWMW2CON acquires the ENQ; IWMW2DIS releases it. Global resource serialization releases it during task or memory termination of the connector.</td>
</tr>
<tr>
<td></td>
<td>SERVER4_ttttaename</td>
<td>tttt - is the 4-byte subsystem type.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aename - is the 32-byte application environment name.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both tttt and aename must be padded by blanks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IWMW2CON acquires the ENQ; IWMW2DIS releases it. Global resource serialization releases it during task or memory termination of the connector.</td>
</tr>
<tr>
<td>SYSZWTOR</td>
<td>REPLYnnnn</td>
<td>WTOR reply nnnn - CNZW1WTO, IECB811</td>
</tr>
<tr>
<td>SYSZssss</td>
<td>MONITOR</td>
<td>Monitor - IGTD00.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: sssss represents the subsystem name</td>
</tr>
</tbody>
</table>
### Serialization summary

<table>
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<tr>
<th>Major (QNAME)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SYSZxxxx</td>
<td>TTABaddr</td>
<td>TRACE tables where xxxx is the JES subsystem (JES2, JESA, and so forth). addr is a 4-byte address of a JES2 trace table buffer. Enqueued shared by the JES2 subtask and application address space users of TRACE. Enqueues exclusive by the JES2 event trace log processor.</td>
</tr>
<tr>
<td>AWAITING SPOOL SPACE</td>
<td></td>
<td>This is issued to serialize when the pool of immediately usable spool track groups is depleted, and address spaces must be queued up until the JES2 address spaces refreshes it. xxxx is the subsystem name.</td>
</tr>
<tr>
<td>CVCBnnnn</td>
<td></td>
<td>nnnn is the checkpoint version number.</td>
</tr>
<tr>
<td>TRACK GROUP ALLOCATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSZZFSC</td>
<td>AGGREGATE NAME</td>
<td>Specified in uppercase. This is issued by zFS during takeover on the target system and on mount, unmount, attach, detach, create file system, delete file system, rename file system, set file system quota, clone file system and during quiesce (for grow and explicit quiesce) and unquiesce (for grow, quiesce owner system gone down).</td>
</tr>
<tr>
<td>SYSZZFSG</td>
<td>GROUP NAME (default is IOE.ZFS)</td>
<td>Specified in uppercase. This is issued by zFS during initialization when joining the sysplex group and during termination when leaving the sysplex group.</td>
</tr>
<tr>
<td>SYSZZFSP</td>
<td>IOE.ZFS.CONFIG</td>
<td>This is issued by zFS when changing the size of the user cache, the client cache, the vnode cache or the vnode cache limit.</td>
</tr>
<tr>
<td>ZOSMF</td>
<td>dsname</td>
<td>Serializes the use of the z/OS Management Facility (z/OSMF) data file system. Do not list the QNAME ZOSMF ENQ in the resource name list (RNL) in the GRSRNLxx member of your installation.</td>
</tr>
</tbody>
</table>
Serialization summary
Chapter 7. Status indicators for system resources

This section describes the various locations used by the system to store status information for its resources. Use Figure 7-1 and Figure 7-2 to help you locate the general placement of the control blocks and fields described in this topic. Figure 7-1 shows the control blocks that contain system and address space indicators in effect during normal operations. Figure 7-2 shows the control blocks that contain status indicators for the system and address spaces after an abnormal operation.

Status information is included in this topic for the following system resources:
- Processors
- ENQ/DEQ control blocks
- WTO buffers and WTOR reply queue elements
- Service request block (SRB)

For a list of ENQ/DEQ names and associated resources, see “ENQ/DEQ summary” on page 6-4.
Status Indicators

**System Level**
- **PSA**: Contains PSW, interruption codes, registers, and register save area for lock manager and FLIHs.
- **LCCA**: Registers saved by FLIHs, program check OPSW.
- **WSAVT**: Contains table of save area addresses.

**Address Space Level**
- **ASCB**: Contains lock indicator
- **LDA**: Contains information about address space relative virtual storage and VSM control block pointers.
- **ASXB**: Contains 72 byte save area.
- **IHSA**: Contains save area for locally locked interrupts, PSW, registers, and FRR stack.
- **RB**: Contains PSW, register save area, extended save area.
- **TCB**: Contains task mode register save area.
- **WSAVT**: Contains table of save area addresses.
- **XSB**: Contains cross memory status, PCLINK stack header, CML lock information.

*Figure 7-1. System and address space status indicator locations - normal status areas*
System Level

PSA - Contains program check registers and PSW external FLIH registers.

PSA - Contains PSWs, interrupt codes, super flags, pointer to the current stack, and pointer to the FLIH stack. Location C00 begins normal stack. Location C38 points to the RT1W. RT1W then points to the SDWA and EED. Location 380 points to the current stack.

Address Space Level

ASSB - Contains address space related information to be kept above 16 megabytes.

RB - Contains flags, PSW, and registers.

RTM2WA - Contains error data

STCB - Contains task related information to be kept above 16 megabytes.

TCB - Contains completion code, flags, and registers.

Figure 7-2. System and address space status indicator locations - error status areas
Processor resources

1. Current address space identifier (ASID)
   - The ASCBASID field of the ASCB is the ASID (2 bytes).

2. Current task control block (TCB)
   - The PSATNEW field of the PSA is the pointer to the new TCB. The PSATOLD field of the PSA is the pointer to the old TCB. If the old TCB pointer, PSATOLD, is zero, an SRB has been dispatched.
   - If the TCBRBP field of the TCB points to itself, instead of to a request block (RB), the TCB is the pseudo-wait TCB and is not chained to any other TCB.

3. TCB Chain (by priority)
   - Location X'10' points to the communication vector table (CVT).
   - The CVTASVT field of the CVT points to the address space vector table (ASVT).
   - The ASVTENTY field of the ASVT begins a series of one word entries that point to address space control blocks (ASCB), one for each active ASID.
   - The ASCBASXB field of the ASCB points to the ASXB.
   - The ASXBFTCB field of the ASXB points to the first TCB in the TCB queue.
   - The ASXBLTLCB field of the ASXB points to the last TCB in the TCB queue.
   - The TCBBACK field of the TCB points to the previous TCB. In the first TCB on the queue, this field contains a fullword of zeros.

4. Subtask chains (end of chain is always zero)
   - The TCBOTC field of the TCB points to the TCB that attached this TCB.
   - The TCBLTC field of the TCB points to the TCB most recently attached.
   - The TCBNRTC field of the TCB points to another TCB attached by the TCB.
   - The region control task (RCT) TCB is the only TCB not created by an ATTACH.

5. Dispatching
   - Task dispatchability flags are in the TCBFLGS4 and TCBFLGS5 fields of the TCB. If any bit in these two bytes is set to 1, the TCB is nondispatchable. If bit 7 of TCBFLGS5 is set to 1, the reason for nondispatchability is indicated by a flag bit set to 1 in the TCBNDSP1, TCBNDSP2, or TCBNDSP3 field of the TCB. See z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/)

Memory resources — ENQ/DEQ control blocks

1. In IPCS, the ANALYZE subcommand performs contention analysis.

2. In IPCS, the VERBEXIT GRSTRACE subcommand formats global resource serialization control blocks.

WTO buffers and WTOR reply queue elements

1. WQE (write-to-operator queue element) exists in the CONSOLE address space.
   - The CVTCUCB field of the CVT points to the UCM.
   - UCM + X'18' points to the first WQE (or zero).
   - UCM + X'3C' points to the last WQE (or zero).
   - UCM + X'1C' points to the first ORE (or zero).
   - WQE + 0 (4 bytes) points to the next WQE (or zero).
   - ORE + 0 (4 bytes) points to the next ORE (or zero).
ORE + X'28' points to the WQE for the ORE (or zero if the WQE is not queued to the ORE yet).
UCM + X'2C' (2 bytes) is the maximum number of OREs (RLIM).
UCM + X'2E' (2 bytes) is maximum number of WQEs.
UCM + X'34' (4 bytes) is number of active WQEs.
UCM + X'38' (2 bytes) is number of outstanding OREs.

2. In IPCS, the COMCHECK subcommand performs console services analysis and lists outstanding WTORs.

Service request block (SRB)

1. Global SRB (enqueued on global service priority list)
   - The CVTGSPL field of the CVT points to SVTGSPL in the SVT.
   - The SVTGSPL field of the SVT points to the SRB on the global service priority list (GSPL).
   - The SVTGSMQ field of the SVT points to the first SRB on the global service management queue (GSMQ).

2. Local SRB (processing based on an address space priority)
   - The ASCBLSPPL field of the ASCB points to the local service priority list (LSPL).
   - The ASCBLSMQ field of the ASCB points to the local service management queue (LSMQ).
Status Indicators
Chapter 8. Storage summary

This summary briefly describes the use of storage in MVS. Topics are:
- Storage maps
- Storage protection
- Storage subpools

Reference

See [z/OS MVS Initialization and Tuning Guide](http://www.ibm.com/systems/z/os/zos/bkserv/) for more information on storage usage.

### Storage maps

The following figures describe the layout of central and virtual storage. For a description of the prefixed storage area (PSA), see the PSA control block section in [z/OS MVS Data Areas](http://www.ibm.com/systems/z/os/zos/bkserv/) in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/).

```
Extended Private
   { Extended User Region
     { Extended LSQA
       { Extended SWA
         Extended 229/230/249
       { Extended CSA
         Extended MLPA
         Extended FLPA
         Extended PLPA
         Extended SQA
         Extended NUC
         NUC
         SQA
         PLPA
         FLPA
         MLPA
         CSA
       LSQA
       SWA
     229/230/249 (Authorized User Key)
   User Region
   System Region
   PSA

2G

Extended Common
   { Extended 229/230/249
     Extended CSA
     Extended MLPA
     Extended FLPA
     Extended PLPA
     Extended SQA
     Extended NUC
     NUC
     SQA
     PLPA
     FLPA
     MLPA
     CSA
   LSQA
   SWA

16Mb

Common
   { Common
     { Private
     229/230/249 (Authorized User Key)
   User Region
   System Region
   PSA

8K

Common
   { Common
     { Private
     229/230/249 (Authorized User Key)
   User Region
   System Region
   PSA

0

Figure 8-1. Virtual Storage Layout for Single Address Space
```
Storage protection

For each 4-kilobyte block of central storage, there is a 7-bit control field, called a storage key. This key is used as follows:

Access control bits

Bits 0-3 are matched against the 4-bit protection key in the program status word (PSW) whenever information is stored, or whenever information is fetched from a location that is protected against fetching.

The 16 protection keys provided by the PSW (and matched against the access control bits) are assigned as follows:

<table>
<thead>
<tr>
<th>Key</th>
<th>Assigned to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Supervisor and other system functions that require access to all areas of storage</td>
</tr>
<tr>
<td>1</td>
<td>Job scheduler, job entry subsystem (JES), APPC, and TSO/E</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>Availability manager (AVM)</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
Data management, including Open/Close/EOV

VTAM

IMS™ and DB2®

All V=V problem programs

V=R problem programs (each protected by a unique protection key)

Fetch protection bit

Bit 4 indicates whether protection applies to fetch-type references. A zero indicates that only store-type references are monitored, and that fetching with any protection key is permitted; a one indicates that protection applies to both fetching and storing. No distinction is made between the fetching of instructions and the fetching of operands.

Reference bit

Bit 5 is associated with dynamic address translation (DAT). It is normally set to one whenever a location in the related 4-kilobyte storage block is referred to for either storing or fetching of information.

Change bit

Bit 6 is also associated with DAT. It is set to one each time that information is stored into the corresponding 4-kilobyte block of storage.

Storage subpools

A subpool is a group of logically related storage blocks identified by a subpool number. In a request for virtual storage, a subpool number indicates the type of storage that is requested. Table 8-1 lists the subpools and their attributes. Be sure to read the notes at the end of the table where applicable.

Reference

See z/OS MVS Programming: Authorized Assembler Services Guide for more information about subpools.

<table>
<thead>
<tr>
<th>Subpool Decimal (Hex)</th>
<th>Location</th>
<th>Fetch Protection</th>
<th>Type</th>
<th>Storage Built Top-Down or Bottom-Up</th>
<th>Owner</th>
<th>Storage Key</th>
<th>See Notes at End of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-127 (0-7F)</td>
<td>Private low</td>
<td>Yes</td>
<td>Pageable</td>
<td>B</td>
<td>Task. TCB identified in note 11.</td>
<td>Same as TCB key at the time of the first storage request.</td>
<td>1,6,8,10,11,14</td>
</tr>
<tr>
<td>129 (81)</td>
<td>Private low</td>
<td>Yes</td>
<td>Pageable</td>
<td>B</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB identified in note 11.</td>
<td>Selectable. See Table 8-2 on page 8-8</td>
<td>1,11,14</td>
</tr>
<tr>
<td>130 (82)</td>
<td>Private low</td>
<td>No</td>
<td>Pageable</td>
<td>B</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB identified in note 11.</td>
<td>Selectable. See Table 8-2 on page 8-8</td>
<td>1,11,14</td>
</tr>
</tbody>
</table>
### Storage Summary

#### Table 8-1. Storage subpools and attributes (continued)

<table>
<thead>
<tr>
<th>Subpool Decimal</th>
<th>Location</th>
<th>Fetch Protection</th>
<th>Type</th>
<th>Storage Built Top-Down or Bottom-Up</th>
<th>Owner</th>
<th>Storage Key</th>
<th>See Notes at End of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>131 (83)</td>
<td>Private low</td>
<td>Yes</td>
<td>Pageable</td>
<td>B</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB identified in note 11.</td>
<td></td>
<td>Selectable. See Table 8-2 on page 8-8</td>
</tr>
<tr>
<td>132 (84)</td>
<td>Private low</td>
<td>No</td>
<td>Pageable</td>
<td>T</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB identified in note 11.</td>
<td></td>
<td>Selectable. See Table 8-2 on page 8-8</td>
</tr>
<tr>
<td>203 (CB)</td>
<td>Private ELSQA</td>
<td>No</td>
<td>DREF</td>
<td>T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>204 (CC)</td>
<td>Private ELSQA</td>
<td>No</td>
<td>DREF</td>
<td>T</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>205 (CD)</td>
<td>Private ELSQA</td>
<td>No</td>
<td>DREF</td>
<td>T</td>
<td>Address space</td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>213 (D5)</td>
<td>Private ELSQA</td>
<td>Yes</td>
<td>DREF</td>
<td>T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>214 (D6)</td>
<td>Private ELSQA</td>
<td>Yes</td>
<td>DREF</td>
<td>T</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>215 (D7)</td>
<td>Private ELSQA</td>
<td>Yes</td>
<td>DREF</td>
<td>T</td>
<td>Address space</td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>223 (DF)</td>
<td>Private ELSQA</td>
<td>Yes</td>
<td>Fixed</td>
<td>T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2,4</td>
</tr>
<tr>
<td>224 (E0)</td>
<td>Private ELSQA</td>
<td>Yes</td>
<td>Fixed</td>
<td>T</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2,4</td>
</tr>
<tr>
<td>225 (E1)</td>
<td>Private ELSQA</td>
<td>Yes</td>
<td>Fixed</td>
<td>T</td>
<td>Address space</td>
<td>0</td>
<td>2,4</td>
</tr>
<tr>
<td>226 (E2)</td>
<td>Common SQA/ESQA</td>
<td>No</td>
<td>Fixed</td>
<td>T</td>
<td>System</td>
<td>0</td>
<td>3,5</td>
</tr>
<tr>
<td>227 (E3)</td>
<td>Common CSA/ECSA</td>
<td>Yes</td>
<td>Fixed</td>
<td>T</td>
<td>System</td>
<td>Selectable. See Table 8-2 on page 8-8</td>
<td>1</td>
</tr>
<tr>
<td>228 (E4)</td>
<td>Common CSA/ECSA</td>
<td>No</td>
<td>Fixed</td>
<td>T</td>
<td>System</td>
<td>Selectable. See Table 8-2 on page 8-8</td>
<td>1</td>
</tr>
<tr>
<td>229 (E5)</td>
<td>Private high</td>
<td>Yes</td>
<td>Pageable</td>
<td>T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>Selectable. See Table 8-2 on page 8-8</td>
<td>1</td>
</tr>
</tbody>
</table>
### Table 8-1. Storage subpools and attributes (continued)

<table>
<thead>
<tr>
<th>Subpool Decimal (Hex)</th>
<th>Location</th>
<th>Fetch Protection</th>
<th>Type</th>
<th>Storage Built Top-Down or Bottom-Up</th>
<th>Owner</th>
<th>Storage Key</th>
<th>See Notes at End of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>230 (E6)</td>
<td>Private high</td>
<td>No</td>
<td>Pageable T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>System</td>
<td>Selectable. See Table 8-2 on page 8-9</td>
<td>1</td>
</tr>
<tr>
<td>231 (E7)</td>
<td>Common CSA/ECSA</td>
<td>Yes</td>
<td>Pageable T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>System</td>
<td>Selectable. See Table 8-2 on page 8-9</td>
<td>1</td>
</tr>
<tr>
<td>233 (E9)</td>
<td>Private LSQA/ELSQA</td>
<td>No</td>
<td>Fixed T</td>
<td>Task. TCB shown in Table 8-3 on page 8-9</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>234 (EA)</td>
<td>Private LSQA/ELSQA</td>
<td>No</td>
<td>Fixed T</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>235 (EB)</td>
<td>Private LSQA/ELSQA</td>
<td>No</td>
<td>Fixed T</td>
<td>Address space</td>
<td>System</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>236 (EC)</td>
<td>Private high</td>
<td>No</td>
<td>Pageable T</td>
<td>Task. TCB identified in note 12.</td>
<td>Task. TCB identified in note 12.</td>
<td>1</td>
<td>2,12</td>
</tr>
<tr>
<td>237 (ED)</td>
<td>Private high</td>
<td>No</td>
<td>Pageable T</td>
<td>Task. TCB identified in note 12.</td>
<td>Task. TCB identified in note 12.</td>
<td>1</td>
<td>2,12</td>
</tr>
<tr>
<td>239 (EF)</td>
<td>Common SQA/ESQA</td>
<td>Yes</td>
<td>Fixed T</td>
<td>System</td>
<td></td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>240 (F0)</td>
<td>Private low</td>
<td>Yes</td>
<td>Pageable B</td>
<td>Task. TCB identified in note 11.</td>
<td>Same as TCB key at the time of the first storage request.</td>
<td>1,9,10,11,14</td>
<td></td>
</tr>
<tr>
<td>241 (F1)</td>
<td>Common CSA/ECSA</td>
<td>No</td>
<td>Pageable T</td>
<td>System</td>
<td>Selectable. See Table 8-2 on page 8-9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>244 (F4)</td>
<td>Private Low</td>
<td>No</td>
<td>Pageable B</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB identified in note 11.</td>
<td>Selectable. See Table 8-2 on page 8-9</td>
<td>1,14</td>
<td></td>
</tr>
<tr>
<td>245 (F5)</td>
<td>Common SQA/ESQA</td>
<td>No</td>
<td>Fixed T</td>
<td>System</td>
<td></td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>247 (F7)</td>
<td>Common ESQA</td>
<td>Yes</td>
<td>DREF T</td>
<td>System</td>
<td></td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>248 (F8)</td>
<td>Common ESQA</td>
<td>No</td>
<td>DREF T</td>
<td>System</td>
<td></td>
<td>0</td>
<td>2,4,13</td>
</tr>
<tr>
<td>249 (F9)</td>
<td>Private high</td>
<td>No</td>
<td>Pageable T</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>Selectable. See Table 8-2 on page 8-9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>250 (FA)</td>
<td>Private low</td>
<td>Yes</td>
<td>Pageable T</td>
<td>Task. TCB identified in note 11.</td>
<td>Same as TCB key at the time of the first storage request.</td>
<td>1,9,10,11,14</td>
<td></td>
</tr>
<tr>
<td>251 (FB)</td>
<td>Private low</td>
<td>Yes</td>
<td>Pageable B</td>
<td>Job step. TCB whose address is in TCBJSTCB of TCB shown in Table 8-3 on page 8-9</td>
<td>Same as TCB key at the time of the first storage request.</td>
<td>1,10,14</td>
<td></td>
</tr>
</tbody>
</table>
Table 8-1. Storage subpools and attributes (continued)

<table>
<thead>
<tr>
<th>Subpool</th>
<th>Location</th>
<th>Fetch Protection</th>
<th>Type</th>
<th>Storage Built Top-Down or Bottom-Up</th>
<th>Owner</th>
<th>Storage Key</th>
<th>See Notes at End of Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>252 (FC)</td>
<td>Private low No</td>
<td>Pageable B</td>
<td>Job step. TCB whose address is in TCB/JSTCB of TCB shown in Table 8-3 on page 8-9.</td>
<td>0</td>
<td>1,14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>253 (FD)</td>
<td>Private LSQA/ELSQA No</td>
<td>Fixed T</td>
<td>Task TCB shown in Table 8-3 on page 8-9.</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>254 (FE)</td>
<td>Private LSQA/ELSQA No</td>
<td>Fixed T</td>
<td>Job step TCB shown in TCB/JSTCB of TCB shown in Table 8-3 on page 8-9.</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>255 (FF)</td>
<td>Private LSQA/ELSQA No</td>
<td>Fixed T</td>
<td>Address space</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. Virtual storage is first backed by central storage when it is referenced or when it is page-fixed by a program using the PGSER macro. The location of the central storage backing this subpool depends on the value of the LOC parameter on the GETMAIN, STORAGE, or CPOOL macro invocation used to obtain the storage. Central storage is assigned below 16 megabytes only if one of the following is true:
   - The program obtaining the storage specified LOC=BELOW when obtaining the storage.
   - The program obtaining the storage resides below 16 megabytes, specified LOC=RES either explicitly or by default, and specified a subpool supported below 16 megabytes.
2. Central storage backing this subpool can be above or below 16 megabytes.
3. Central storage backing this subpool resides below 16 megabytes.
4. This subpool is valid only when allocating virtual storage above 16 megabytes.
5. Although central storage for this subpool must be below 16 megabytes, virtual storage for this subpool may be above or below 16 megabytes.
6. Subpools 0-127, 131, and 132 are the only valid subpools for unauthorized programs. A request by an unauthorized program for a subpool other than 0-127, 131, or 132 causes abnormal termination of the program.
7. A program can issue a request to obtain or release storage from subpool 131 or 132 in a storage key that does not match the PSW key under which the program is running. However, the system will accept the storage request only if the requesting program is authorized in one of the following ways:
   - Running in supervisor state
   - Running under PSW key 0-7
   - APF-authorized
   - Having a PSW-key mask (PKM) that allows it to switch its PSW key to match the storage key of the storage specified. On a request to release all the storage in the subpool, the program must be able to switch its PSW key to match all the storage keys in the subpool.
8. Subpool 0 requests by programs in supervisor state and PSW key 0 are
translated to subpool 252 requests and assigned a storage key of 0.

9. Subpool 240 and 250 requests are translated to subpool 0 requests. This
permits programs running in supervisor state and PSW key 0 to acquire or
free subpool 0 storage. If a program is running in supervisor state and key 0,
the system translates subpool 0 storage requests to subpool 252 storage
requests.

10. The system assigns the storage key based on the key in the requesting task’s
TCB at the time of the task’s first storage request, not the current key in the
TCB (unless this is the task’s first storage request).

11. The GSPV, SHSPV, and SZERO parameters on the ATTACH or ATTACHX
macro invocation used to create the currently active task determine which TCB
owns the storage in this subpool. These parameters specify the subpools to be
owned by the subtask being attached (GSPV) and the subpools to be shared
by the attaching task and the subtask being attached (SHSPV, SZERO). If the
currently active task was given ownership of the subpool, then the TCB of the
currently active task owns the storage in this subpool. If the currently active
task is sharing this subpool with the task that created it, then the TCB of the
attaching task owns the storage in this subpool. For more information, see the
descriptions of the ATTACH and ATTACHX macros in [z/OS MVS
Programming: Authorized Assembler Services Reference ALE-DYN] and the virtual
storage management topic in [z/OS MVS Programming: Assembler Services Guide].

12. Virtual storage is located within the scheduler work area (SWA). The storage
is freed at the end of the started task or at initiator termination for subpool
236 and at the end of the job for subpool 237. The NSHSPL and NSHSPV
parameters on the ATTACH or ATTACHX macro invocation used to create the
currently active task determine ownership of the subpool. If the currently
active task was given ownership of the subpool, then the TCB of the currently
active task owns the storage in this subpool. If the currently active task is
sharing this subpool with the attaching task, then the TCB of the attaching
task owns the storage in this subpool. For more information, see the
description of the ATTACH and ATTACHX macros in [z/OS MVS
Programming: Authorized Assembler Services Reference ALE-DYN] and the virtual storage
management topic in [z/OS MVS Programming: Assembler Services Guide]. For additional
information about the SWA, see [z/OS MVS Initialization and Tuning
Guide].

13. If a GETMAIN macro is issued in AMODE 31 for a DREF subpool, the
LOC=BELOW parameter is ignored. VSM gives the user storage above 16M.

14. Central storage backing this subpool can be pageable 1 MB page frames.

Storage keys for selectable key subpools

Table 8-2 on page 8-8 provides detailed information about the subpools with
selectable storage keys (as listed in Table 8-1 on page 8-3).
### Table 8-2. Storage keys for selectable key subpools

<table>
<thead>
<tr>
<th>Subpool</th>
<th>Macros and parameters</th>
<th>Storage key</th>
</tr>
</thead>
<tbody>
<tr>
<td>129-132</td>
<td>• GETMAIN with LC, LU, VC, VU, EC, EU, or R; BRANCH not specified&lt;br&gt;• FREEMAIN with LC, LU, VC, VU, V, EC, EU, E, or R; BRANCH not specified.&lt;br&gt;• STORAGE with OBTAIN or RELEASE;&lt;br&gt;CALLRKY=YES is specified</td>
<td>The storage key equals the caller’s PSW key. (The KEY parameter is not allowed.)</td>
</tr>
<tr>
<td></td>
<td>• GETMAIN with LC, LU, VC, VU, EC, EU, or R; BRANCH=YES specified&lt;br&gt;• FREEMAIN with LC, LU, VC, VU, V, EC, EU, E, or R; BRANCH=YES specified</td>
<td>The storage key is 0. (The KEY parameter is not allowed.)</td>
</tr>
<tr>
<td></td>
<td>• GETMAIN with RC, RU, VRC, VRU; BRANCH not specified&lt;br&gt;• FREEMAIN with RC, RU; BRANCH not specified&lt;br&gt;• CPOOL with BUILD</td>
<td>The storage key is the key the caller specifies on the KEY parameter. If KEY is not specified, the default equals the caller’s PSW key.</td>
</tr>
<tr>
<td></td>
<td>• GETMAIN with RC, RU, VRC, VRU; BRANCH=YES specified&lt;br&gt;• FREEMAIN with RC, RU; BRANCH=YES specified&lt;br&gt;• STORAGE with OBTAIN or RELEASE;&lt;br&gt;CALLRKY=YES is omitted, or CALLRKY=NO is specified</td>
<td>The storage key is the key the caller specifies on the KEY parameter. If KEY is not specified, the default is zero.</td>
</tr>
<tr>
<td>227-231, 241, 244, 249</td>
<td>• All GETMAIN requests with BRANCH not specified&lt;br&gt;• All FREEMAIN requests with BRANCH not specified&lt;br&gt;• STORAGE with OBTAIN or RELEASE;&lt;br&gt;CALLRKY=YES specified</td>
<td>The storage key equals the caller’s PSW key. (For RC, RU, VRC, and VRU, the KEY parameter is ignored. For other GETMAIN and FREEMAIN requests, the KEY parameter is not allowed.)</td>
</tr>
<tr>
<td></td>
<td>• GETMAIN with LC, LU, VC, VU, EC, EU, or R; BRANCH=YES specified&lt;br&gt;• FREEMAIN with LC, LU, VC, VU, V, EC, EU, E, or R; BRANCH=YES specified</td>
<td>The storage key is 0 (The KEY parameter is not allowed.)</td>
</tr>
<tr>
<td></td>
<td>• GETMAIN with RC, RU, VRC, VRU; BRANCH specified&lt;br&gt;Note: BRANCH=(YES,GLOBAL) is not valid for subpools 229, 230, 244, and 249.&lt;br&gt;• FREEMAIN with RC, RU; BRANCH specified&lt;br&gt;Note: BRANCH=(YES,GLOBAL) is not valid for subpools 229, 230, 244, and 249.&lt;br&gt;• STORAGE with OBTAIN or RELEASE;&lt;br&gt;CALLRKY=YES omitted, or CALLRKY=NO specified</td>
<td>The storage key is the key the caller specifies on the KEY parameter. If KEY is not specified, the default is zero.</td>
</tr>
<tr>
<td></td>
<td>• CPOOL with BUILD</td>
<td>The storage key is the key the caller specifies on the KEY parameter. If KEY is not specified, the default equals the caller’s PSW key.</td>
</tr>
</tbody>
</table>

#### Task owned and job step owned storage

Table 8-3 on page 8-9 shows how the system determines the input TCB for task or jobstep owned storage.
For task owned storage, the owning TCB is the input TCB.

For job step owned storage, the owning TCB is the job step task TCB of the input TCB shown in Table 8-3.

**Table 8-3. How the system determines the input TCB for task owned storage**

<table>
<thead>
<tr>
<th>Macro</th>
<th>Conditions</th>
<th>Input TCB</th>
<th>Event causing storage to be freed</th>
</tr>
</thead>
<tbody>
<tr>
<td>GETMAIN and FREEMAIN macros</td>
<td>If the caller specifies SVC entry</td>
<td>TCB of the currently active task, whose address is in PSATOLD</td>
<td>Currently active task terminates</td>
</tr>
<tr>
<td></td>
<td>If the caller specifies local branch entry and specifies GPR 4 with a value of zero</td>
<td>TCB owning the cross-memory resources in the target address space, whose address is in ASCBXTCB</td>
<td>Task, whose TCB address is in ASCBXTCB, terminates</td>
</tr>
<tr>
<td></td>
<td>If the caller specifies local branch entry and specifies GPR 4 with a nonzero value</td>
<td>TCB address specified by the caller in GPR 4</td>
<td>Task, whose TCB address is passed in GPR 4, terminates</td>
</tr>
<tr>
<td>STORAGE macro</td>
<td>If the caller is in task mode and the target address space is the home address space</td>
<td>TCB of the currently active task, whose address is in PSATOLD</td>
<td>Currently active task terminates</td>
</tr>
<tr>
<td></td>
<td>If the caller is in SRB mode or the target address space is not the home address space</td>
<td>TCB owning the cross-memory resources in the target address space, whose address is in ASCBXTCB</td>
<td>Task, whose TCB address is in ASCBXTCB, terminates</td>
</tr>
<tr>
<td></td>
<td>If the caller specifies the TCBADDR parameter</td>
<td>TCB specified by the caller with the TCBADDR parameter</td>
<td>Task whose TCB address is specified with the TCBADDR parameter terminates</td>
</tr>
<tr>
<td>CPOOL macro</td>
<td>If the caller omits the TCB parameter</td>
<td>TCB of the currently active task, whose address is in PSATOLD</td>
<td>Currently active task terminates</td>
</tr>
<tr>
<td></td>
<td>If the caller specifies the TCB parameter with a value of 0</td>
<td>TCB owning the cross-memory resources in the target address space, whose address is in ASCBXTCB</td>
<td>Task, whose TCB address is in ASCBXTCB, terminates</td>
</tr>
<tr>
<td></td>
<td>If the caller specifies the TCB parameter with a nonzero value</td>
<td>TCB specified by the caller with the TCB parameter</td>
<td>Task, whose TCB address is specified with the TCB parameter, terminates</td>
</tr>
</tbody>
</table>
Storage Summary
Chapter 9. Error recording on the logrec data set

Table 9-1 lists the incidents and the types of records that can be recorded on the logrec data set for each incident. The following notes describe how to read the figure.

Notes:
1. When indicated, the notes (A through M) at the end of the figure give more information on the record types specified for the incident.
2. Reading horizontally, the numbers in Table 9-1 indicate the approximate chronological creation of the record types that can be recorded for each incident. For example, a permanent channel control check incident generates SLH records (Note A) before generating a long OBR record (Note B).
3. An asterisk (*) denotes mutually exclusive, device-dependent records. For example, an EOV request on an IBM magnetic tape drive (3420, 3422, 3430) generates a long OBR record (Note D). The MDR record is ignored (Note E).

Reference
See the recording logrec error records chapter of z/OS MVS Diagnosis: Tools and Service Aids for information about initializing the logrec data set.

Table 9-1. Incident/Record table

<table>
<thead>
<tr>
<th>Incidents</th>
<th>ANR</th>
<th>CRW</th>
<th>DDR</th>
<th>EOD</th>
<th>IPL</th>
<th>IOS</th>
<th>MCH</th>
<th>MDR</th>
<th>MIH</th>
<th>OBR, Long</th>
<th>OBR, Short</th>
<th>Software</th>
<th>SLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Address Limit Check</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1(A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffer Overflow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Channel Control Check</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2(B)</td>
<td>1(A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel Data Check</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2(B)</td>
<td>1(A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel End (Missing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1(F)</td>
<td></td>
</tr>
<tr>
<td>Channel Report Word</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLOSE Request (Demount)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1*(E)</td>
<td>1*(D)</td>
</tr>
<tr>
<td>Central Processor Failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1*(E)</td>
<td>1*(D)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>DASD Service Required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1(K)</td>
<td></td>
</tr>
<tr>
<td>DDR Swap (Demount)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1*(E)</td>
<td>1*(D)</td>
<td></td>
</tr>
<tr>
<td>Deallocate Condition (Demount)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1*(E)</td>
<td>1*(D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device End (Missing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1(F)</td>
<td></td>
</tr>
<tr>
<td>DFDSS Demount</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1(C)</td>
<td></td>
</tr>
</tbody>
</table>

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## Error Recording

### Table 9-1. Incident/Record table (continued)

<table>
<thead>
<tr>
<th>Incidents</th>
<th>Record types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Pathing Validation</td>
<td></td>
</tr>
<tr>
<td>EOD Command (Demount or System Ending)</td>
<td>4</td>
</tr>
<tr>
<td>EOV Request (Demount)</td>
<td>1*(E)</td>
</tr>
<tr>
<td>ETR External Interrupt</td>
<td>1(L)</td>
</tr>
<tr>
<td>ETR Failure</td>
<td>1(L)</td>
</tr>
<tr>
<td>ETR-Related Machine Checks</td>
<td>1(L)</td>
</tr>
<tr>
<td>Hot I/O Conditions</td>
<td></td>
</tr>
<tr>
<td>Interface Control Check</td>
<td></td>
</tr>
<tr>
<td>Intermittent Failure - I/O Devices</td>
<td>1*(G)</td>
</tr>
<tr>
<td>Incorrect SVC Issued</td>
<td></td>
</tr>
<tr>
<td>IPL (System Initialization)</td>
<td></td>
</tr>
<tr>
<td>Lost Records</td>
<td></td>
</tr>
<tr>
<td>Measurement Check</td>
<td></td>
</tr>
<tr>
<td>Non-ABEND Software Failure</td>
<td></td>
</tr>
<tr>
<td>Paging I/O Error</td>
<td>1</td>
</tr>
<tr>
<td>Path Failures</td>
<td></td>
</tr>
<tr>
<td>Permanent Failure - I/O and TP Devices</td>
<td>1*</td>
</tr>
<tr>
<td>Program Check</td>
<td></td>
</tr>
<tr>
<td>Restart Key Pressed</td>
<td></td>
</tr>
<tr>
<td>Serial Link Degraded</td>
<td>1(M)</td>
</tr>
<tr>
<td>Serial Link Failure</td>
<td>1(M)</td>
</tr>
<tr>
<td>Statistic Counter Overflow</td>
<td></td>
</tr>
<tr>
<td>Statistic Counter Overflow - TP Devices and Variable Length Table Entries</td>
<td>1</td>
</tr>
<tr>
<td>Storage Failure</td>
<td>1</td>
</tr>
<tr>
<td>Storage Key Failure</td>
<td>1</td>
</tr>
<tr>
<td>System Restartable Wait</td>
<td></td>
</tr>
<tr>
<td>Temporary Device Failure</td>
<td>1*(G)</td>
</tr>
<tr>
<td>Vary Offline</td>
<td>1*(G)</td>
</tr>
</tbody>
</table>
Error Recording

Note: (letters in parentheses indicate the following):

A Created one SLH record for each ERP retry attempt for same incident before considering error to be permanent.
B Created only if condition is permanent (uncorrectable).
C Created only for devices with a buffered log and removable disk packs (such as the IBM 3330, 3340, 3344, and 3850).
D Created only for the IBM magnetic tape drives (3420, 3422, 3430). For EOD command, created randomly and can precede short OBR records or follow MDR records.
E Created only for devices with buffered logs (such as the IBM 3330, 3340, 3344, 3350, 3375, 3380, and 3850). For EOD command, created randomly and can precede or follow short and long OBR records.
F Not created for teleprocessing devices other than the local 3704/3705 and 3791.
G Created only for those devices having an ERP that records certain intermittent or permanent incidents (such as the ERPs for the IBM 3330, 3340, 3344, 3350, 3375, 3380, and 3850).
H Created randomly; MDR and long OBR records can precede short OBR records.
I Created only for hard machine failures which indicate recording on the logrec data set.
J Although lost records are reported in a software record, the records lost may be software or hardware records or both.
K Created to report servicing needs for any I/O device that supports service information message (A3).
L Created for ETR incidents (port changes, failures).
M Created for serial link incidents (degradation, failure).

Record header

All records on the logrec data set contain a standard 24-byte header followed by data that is specific for the record type and the device type or machine model. The header provides the information necessary to identify the type and origin of the record.

- **Type** information - which defines the specific type of record, the specific source of the record, the general reason the record was made, and any special record-dependent attributes (such as record length, content, hardware features, format).
- **Origin** information - which includes the operating system the record was generated on, the generating program, the time and date the record was generated, the processor identity, and the processor serial number on which the record was generated. For a multiprocessing system, the processor that generated the record may not be the processor on which the incident occurred.
Error Recording

Record type indicators

The following list identifies the valid record types or classes (the first hexadecimal digit, bits 0 through 3, of the record) and specific record sources (second digit, bits 4 through 7).

1x Machine check (MCH record)
   10 MCH
   13 MCH in the system.

2x Channel subsystem records
   23 SLH.
   25 CRW.

3x Unit check (OBR record)
   30 OBR; unit check.
   34 No longer generated (previously TCAM OBR).
   36 VTAM OBR.
   3A DPA OBR.

4x Software error (software record)
   40 Software-detected software error.
   42 Hardware-detected software error.
   44 Operator-detected error.
   48 Hardware-detected hardware error.
   4C Symptom record.
   4F Lost record summary.

5x System initialization (IPL record)
   50 IPL.

6x Reconfiguration (DDR record)
   60 DDR.

7x Missing interruption (MIH record)
   71 MIH.

8x System ending (EOD record)
   80 EOD.
   81 System-initiated end; restart not possible.
   84 EOD from IOS; restart possible.

9x Non-Standard (MDR record)
   90 SVC 91.
   91 MDR.

Ax Asynchronous notification record (ANR)
   A1 ETR
   A2 LMI
   A3 SIM

Cx IOS recovery records
   C2 Dynamic pathing services validation (DPSV).
Record format

The format of the records represented in this topic is:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The meanings are:

**Offset**

The numeric address of the field relative to the beginning of the data area.

**Dec Hex**

The first number is the offset in decimal, followed by the hexadecimal equivalent in parentheses. Example: 16 (10).

**Size (bytes)**

The field size in bytes.

**Alignment (bits)**

This column also shows the bit settings of switch fields. Significant bit settings are shown and described. Users should not use the reserved bits. The alignment or state of the bits in a byte is as follows:

- .... .... The eight bit positions (0 through 7) in a byte. For ease of scanning, the high-order (left-hand) four bits are separated from the low-order four bits.
- .x. .... A reference to bit 1.
- 1... .... Bit zero is on.
- 0... .... Bit zero is off.
- .... ..11 A reference to bits 6 and 7.

**Field name**

A symbol that identifies the field.

**Description**

The use of a field. Where the field’s use relates directly to a value coded by a user, the coded value is shown. Where the hexadecimal code for a particular bit setting would be helpful, it is shown separated from the rest of the description.

---

Logrec data set header record

*Table 9-2. Format of the logrec data set header record*

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0)</td>
<td>2</td>
<td>CLASRC</td>
</tr>
<tr>
<td>2</td>
<td>(2)</td>
<td>4</td>
<td>LOWLIMIT</td>
</tr>
<tr>
<td>6</td>
<td>(6)</td>
<td>4</td>
<td>UPLIMIT</td>
</tr>
<tr>
<td>10</td>
<td>(A)</td>
<td>1</td>
<td>MSGCNT</td>
</tr>
<tr>
<td>11</td>
<td>(B)</td>
<td>7</td>
<td>RESTART</td>
</tr>
</tbody>
</table>
Error Recording

Table 9-2. Format of the logrec data set header record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>(12) 2</td>
<td>BYTSREM</td>
<td>Remaining bytes on track. Number of bytes remaining on track upon which last record entry was written.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>TRKCAP</td>
<td>Total bytes on track. Number of bytes which can be written on a track of volume containing the logrec data set.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 7</td>
<td>LASTTR</td>
<td>Address of last record written. Track address (BBCCHHR format) of last record written on the logrec data set.</td>
</tr>
<tr>
<td>29</td>
<td>(1D) 2</td>
<td>TRKSPER</td>
<td>Highest addressable track for each cylinder on volume containing the logrec data set.</td>
</tr>
<tr>
<td>31</td>
<td>(1F) 2</td>
<td>EWMCNT</td>
<td>Warning count. Number of bytes remaining on early warning message track of the logrec data set when 90% full point of data set is reached. When this is detected by a recording routine, it issues a message and turns on early warning message switch at displacement 38.</td>
</tr>
</tbody>
</table>
| 33     | (21) 1      | DEVCODE    | Device code. Code indicating device type of volume on which the logrec data set resides:

<table>
<thead>
<tr>
<th>Code</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>2302</td>
</tr>
<tr>
<td>07</td>
<td>2305 Model II</td>
</tr>
<tr>
<td>09</td>
<td>3330 and 3333 Model I or 3350 operating in 3330-1 compatibility mode.</td>
</tr>
<tr>
<td>0A</td>
<td>3340 and 3344</td>
</tr>
<tr>
<td>0B</td>
<td>3350 native mode</td>
</tr>
<tr>
<td>0C</td>
<td>3375</td>
</tr>
<tr>
<td>0D</td>
<td>3330 and 3333 Model II or 3350 operating in 3330-II compatibility mode.</td>
</tr>
<tr>
<td>0E</td>
<td>3380</td>
</tr>
<tr>
<td>0F</td>
<td>3390 device.</td>
</tr>
</tbody>
</table>

| 34     | (22) 4      | EWMTRK     | Early warning message track. Track address (in CCHH format) on which 90% full point for data set exists. |
| 38     | (26) 1      | EWMSW      | Switch byte:

1... 90% full point message has been issued. This switch is turned on by recording routine detecting 90% full point and is turned off by EREP when clearing the logrec data set to hexadecimal zeros.

xxx xxxx Reserved.

| 39     | (27) 1      | SFTYBYTES  | Check byte. Each bit in this field is set to 1 and is used to check validity of header record identifier. |

Logrec data set time stamp record

Table 9-3. Format of the time stamp record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0) 1</td>
<td>CLASRC</td>
<td>Class/Source:</td>
</tr>
<tr>
<td>1</td>
<td>(1) 1</td>
<td>OPSYS</td>
<td>System/Release level:</td>
</tr>
</tbody>
</table>

100... Operating System (OS)/Virtual Storage (VS)2.

bits 3-7  |

0-1F Release level 0-31.
Table 9-3. Format of the time stamp record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>SW1</td>
<td>Record switches:</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1...</td>
<td>..</td>
<td>More records follow.</td>
<td></td>
</tr>
<tr>
<td>0...</td>
<td>..</td>
<td>Last record.</td>
<td></td>
</tr>
<tr>
<td>.1...</td>
<td>..</td>
<td>Time-of-day clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
<td></td>
</tr>
<tr>
<td>..1...</td>
<td>..</td>
<td>Record truncated. (Not used for time stamp record.)</td>
<td></td>
</tr>
<tr>
<td>...1...</td>
<td>..</td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td>.xxx</td>
<td>TIME macro used.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Bytes 1 and 2</td>
<td></td>
<td>Not used for time stamp record.</td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>Incremental release number (alphanumeric) of operating system.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Not used for time stamp record.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>DATE</td>
<td>System date for IPL records (updated by input/output supervisor (IOS) outage recorder at 3 minute time intervals).</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>TIME</td>
<td>System time for IPL records (updated by IOS outage recorder at 3 minute time intervals).</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>Verno</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>Cuser</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>Cpmode</td>
<td>Central processor machine model number (for example, 3090).</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>Mcellng</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24</td>
<td>16</td>
<td></td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

Asynchronous notification record (ANR) records

ANR records are recorded on the logrec data set for information:
- Related to the Sysplex Timer®
- Gathered for a particular link incident
- To report the need for 3990 or 3390 service

The three types of ANR records are:
- External timer reference (ETR) records for Sysplex Timer incidents (A1)
- Link maintenance information (LMI) records (A2)
- Direct access storage device-service information message (DASD-SIM) records (A3)

Automatic problem reporting

When MVS creates the following logrec records and the error is unique, the Hardware Management Console creates a problem record (PMR) in RETAIN® to notify IBM that service is needed.
- ETR record
- DASD-SIM record

External timer reference (ETR) record

An ETR provides signals that can be used to synchronize all time-of-day (TOD) clocks in an installation. Each ETR provides a number of ports that can be connected to the central processing complexes (CPC). The on-time event (OTE)
signal checks that the synchronization is correct. An ETR record is recorded on the logrec data set when an ETR-related event is processed.

ETR is the MVS generic name for the IBM Sysplex Timer (9037).

### Table 9-4. Format of the ETR record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0) 1</td>
<td>A1KEY1</td>
<td>Class/Source:</td>
</tr>
<tr>
<td>1</td>
<td>(1) 1</td>
<td>A1KEY2</td>
<td>System/Release level:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100. ....</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>...x xxxx</td>
</tr>
<tr>
<td>2</td>
<td>(2) 1</td>
<td>A1SMS</td>
<td>Record-independent switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1... ...</td>
<td>More records follow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0... ...</td>
<td>Last record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1... ...</td>
<td>Time-of-day (TOD) clock instruction issued.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...1....</td>
<td>Record truncated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1...</td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.... 1...</td>
<td>TIME macro issued.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.... xxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>3</td>
<td>(3) 3</td>
<td>A1SW1</td>
<td>Record-dependent switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Byte 0</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Byte 1</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Byte 2</td>
<td>Reserved.</td>
</tr>
<tr>
<td>6</td>
<td>(6) 1</td>
<td>A1RCDCT</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>xxxx ....</td>
<td>Record sequence number.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... xxxx</td>
<td>Total number of physical records in this logical record.</td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>8</td>
<td>(8) 4</td>
<td>A1DT</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>A1TIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>A1VER</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>A1SER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>A1MOD</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>A1CEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>END OF STANDARD HEADER</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>(18) bits 0-15</td>
<td>ETRCTRLRG</td>
<td>The current values in the ETR-attachment control register.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Byte 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1... ...</td>
<td>CREO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1... ...</td>
<td>CRE1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.xx ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1...</td>
<td>CRETR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.... xx</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.... ...1</td>
<td>CRAPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Byte 1</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>(19) 1</td>
<td>CRP0M</td>
<td>Port availability change mask for port 0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1... ...</td>
<td>CRP1M</td>
</tr>
</tbody>
</table>
### Error Recording

#### Table 9-4. Format of the ETR record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.......x..</td>
<td>...Reserved....</td>
<td>CREAM</td>
<td>ETR alert interrupt mask.</td>
</tr>
<tr>
<td>.......1..</td>
<td>...CRESM</td>
<td>ETR synchronization check interrupt mask.</td>
<td></td>
</tr>
<tr>
<td>.......1..</td>
<td>...CRSLM</td>
<td>Switch to local interrupt mask.</td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>(1A)</td>
<td>CSYN</td>
<td>When 1, indicates that the configuration is currently in local stepping mode; otherwise, the configuration is in the ETR-stepping mode.</td>
</tr>
<tr>
<td>.....xxx</td>
<td>....Reserved....</td>
<td>CCSID</td>
<td>The CPC side ID of the side whose ports are currently supplying ETR signals used by the configuration.</td>
</tr>
<tr>
<td>.....xx</td>
<td>....Reserv...</td>
<td>CCSPN</td>
<td>When bit 16 is 0, the port number of the stepping port; otherwise, unpredictable.</td>
</tr>
<tr>
<td>.....xx</td>
<td>....Reserved....</td>
<td>CCDPN</td>
<td>When bit 16 is 0, the port number of the data port; otherwise, unpredictable.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>(1B)</td>
<td>CPS0</td>
<td>Current port 0 state.</td>
</tr>
<tr>
<td>.....xxxx</td>
<td>.....Current port 1 state.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>(1C)</td>
<td>CPS0</td>
<td>The ETR-data status word</td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>(1E)</td>
<td>OCSID</td>
<td>The ID of the CPC side with the active ETR port at the most recent ETR OTE.</td>
</tr>
<tr>
<td>.....xx</td>
<td>....Reserved....</td>
<td>OCPN</td>
<td>The port number of the data port at the most recent ETR-data OTE.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>(1F)</td>
<td>VWORD4</td>
<td>When 1, word 4 of the ETR attachment information is valid.</td>
</tr>
<tr>
<td>.....1..</td>
<td>.....WORD5</td>
<td>When 1, word 5 of the ETR attachment information is valid.</td>
<td></td>
</tr>
<tr>
<td>.....1..</td>
<td>.....WORD6</td>
<td>When 1, word 6 of the ETR attachment information is valid.</td>
<td></td>
</tr>
<tr>
<td>.....1..</td>
<td>.....WORD7</td>
<td>When 1, word 7 of the ETR attachment information is valid.</td>
<td></td>
</tr>
<tr>
<td>.....xxxx</td>
<td>.....Reserved....</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Words 3 and 4</td>
<td></td>
<td>The TOD-clock value at last OTE.</td>
<td></td>
</tr>
<tr>
<td>Word 5</td>
<td></td>
<td>The ETR-data word 1</td>
<td></td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>(28)</td>
<td>UNTN</td>
<td>The untuned bit. Indicates the tuning status of the link connected to the CPC port by which the ETR data in bytes 16-31 of the ETR-attachment information block was received. When 0, all link segments in the path from the ETR to the CPC are tuned or ETR does not provide the link-tuning function. When 1, the ETR provides the link-tuning function but one or more link segments in the path are not yet tuned.</td>
</tr>
<tr>
<td>.....x...</td>
<td>.Reserved....</td>
<td>SRV</td>
<td>The service request bit. When this bit changes values a value change in the reason code field occurs.</td>
</tr>
<tr>
<td>.....x.xxx.</td>
<td>..Reserved....</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 9-4. Format of the ETR record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte 1</td>
<td>41 (29)</td>
<td>xxx. ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 2</td>
<td>42 (2A)</td>
<td>xxx. ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 3</td>
<td>43 (2B)</td>
<td>xxx. ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Word 5</td>
<td>44 (2C)</td>
<td>TIMEH</td>
<td>High order word of ETR time at last OTE.</td>
</tr>
<tr>
<td>Byte 0</td>
<td>48 (30)</td>
<td>xxxx xxxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 1</td>
<td>49 (31)</td>
<td>xxx. ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 2</td>
<td>50 (32)</td>
<td>BUO</td>
<td>The local-time-offset value, biased by . . .</td>
</tr>
<tr>
<td>Byte 3</td>
<td>51 (33)</td>
<td>BUO</td>
<td>The accumulated number of leap seconds biased by excess-128 notation.</td>
</tr>
<tr>
<td>Word 7</td>
<td>52 (34)</td>
<td>EM</td>
<td>The sign and the magnitude of the error between the ETR time and an external time standard at the time of the last capture.</td>
</tr>
<tr>
<td>Byte 0</td>
<td>53 (35)</td>
<td>xxx xxxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Bytes 2 and 3</td>
<td>54 (36)</td>
<td>TALC</td>
<td>The ETR time at the last time the master ETR correctly received the signal from an external time standard.</td>
</tr>
<tr>
<td>Words 8-11</td>
<td>56 (38)</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Word 12</td>
<td>72 (48)</td>
<td>Information for the Alternate Port</td>
<td></td>
</tr>
</tbody>
</table>
Table 9-4. Format of the ETR record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td></td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>73</td>
<td>(49)</td>
<td>xxx ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1111 SCID</td>
<td>The ETR-network ID. Identifies the time source for all CPCs directly connected to the ETR.</td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>(50)</td>
<td>xxx ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1111 ID</td>
<td>The ETR ID of the ETR to which the alternate CPC port is connected.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>(51)</td>
<td>xxx ....</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1111 PN</td>
<td>The port number of the ETR (output) port to which the alternate CPC port is immediately connected.</td>
</tr>
<tr>
<td>76</td>
<td>(52)</td>
<td>84 bytes</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96 bytes</td>
<td>Character data containing the text of a message issued to the console or to the system log (SYSLOG).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Link maintenance information (LMI) record

The LMI record provides detailed device/CPC node information that is gathered for a particular link incident. An LMI record describes link-degraded and link-failure incidents.

Table 9-5. Format of the LMI record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>(0)</td>
<td>1 A2KEY1</td>
<td>Class/Source:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1010 0010</td>
<td>Link maintenance information (LMI) record; type = X'A2'.</td>
</tr>
<tr>
<td>1</td>
<td>(1)</td>
<td>1 A2KEY2</td>
<td>System/release level:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100. ....</td>
<td>OS/VS2 and later MVS systems.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>..., xxxx</td>
<td>Release level (0-1F).</td>
</tr>
<tr>
<td>2</td>
<td>(2)</td>
<td>1 A2SMS</td>
<td>Record-independent switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1... ....</td>
<td>More records follow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0... ....</td>
<td>Last record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... x....</td>
<td>Time-of-Day (TOD) clock instruction issued.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 0...</td>
<td>IBM System/360</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1...</td>
<td>IBM System/370</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1....</td>
<td>Record truncated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1....</td>
<td>370 XA mode record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1....</td>
<td>TIME macro used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... xxxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>3</td>
<td>(3)</td>
<td>3 A2SW1</td>
<td>Record-dependent switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A2SW1</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A2SW2</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A2SW3</td>
<td>Reserved.</td>
</tr>
<tr>
<td>6</td>
<td>(6)</td>
<td>1 A2RCDC1</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>xxx ....</td>
<td>Sequence number of this physical record.</td>
</tr>
</tbody>
</table>
### Table 9-5. Format of the LMI record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>A2DT</td>
<td>System date and time of incident:</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>A2DATE</td>
<td>System date of failure.</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>A2TIME</td>
<td>System time of failure.</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>A2CPUID</td>
<td>CPU identification.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>A2VER</td>
<td>Machine version code:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>x000 x000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>x000 x010</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>x000 x100</td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>A2SER</td>
<td>CPU serial number.</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>A2MOD</td>
<td>CPU machine model number</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>A2CEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>A2INQUAL</td>
<td>Incident qualifiers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td>1111111111</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>A2INCODE</td>
<td>Incident code.</td>
</tr>
<tr>
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</tr>
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<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td>26</td>
<td>2</td>
<td>A2DEDSCF</td>
<td>Statically Connected Switch Interface (SCSI).</td>
</tr>
<tr>
<td>28</td>
<td>32</td>
<td>A2INODES</td>
<td>INCIDENT Node Descriptor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Byte 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1111111111</td>
</tr>
<tr>
<td>Offset</td>
<td>Size (bytes)</td>
<td>Field Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td>Incident Node Type:</td>
</tr>
<tr>
<td>...x ...</td>
<td>A2NODPAR</td>
<td>DEVICE Node Parameters if byte 0 bit 3 = 0.</td>
<td></td>
</tr>
<tr>
<td>...0 ...</td>
<td>A2NODPAR</td>
<td>Device node</td>
<td></td>
</tr>
<tr>
<td>...1 ...</td>
<td>A2NODPAR</td>
<td>CPC node</td>
<td></td>
</tr>
<tr>
<td>...xxxx</td>
<td>A2NODPAR</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Bytes 1-3</td>
<td>A2NODPAR</td>
<td>DEVICE Node Parameters if byte 0 bit 3 = 0.</td>
<td></td>
</tr>
<tr>
<td>Byte 1</td>
<td>Reserved, X'00'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Class:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0000</td>
<td>A2NODPAR</td>
<td>Unspecified Class</td>
<td></td>
</tr>
<tr>
<td>0000 0001</td>
<td>A2NODPAR</td>
<td>Direct Access Storage (DASD)</td>
<td></td>
</tr>
<tr>
<td>0000 0010</td>
<td>A2NODPAR</td>
<td>Magnetic Tape</td>
<td></td>
</tr>
<tr>
<td>0000 0011</td>
<td>A2NODPAR</td>
<td>Unit Record (input)</td>
<td></td>
</tr>
<tr>
<td>0000 0100</td>
<td>A2NODPAR</td>
<td>Unit Record (output)</td>
<td></td>
</tr>
<tr>
<td>0000 0101</td>
<td>A2NODPAR</td>
<td>Printer</td>
<td></td>
</tr>
<tr>
<td>0000 0110</td>
<td>A2NODPAR</td>
<td>Communications Controller</td>
<td></td>
</tr>
<tr>
<td>0000 0111</td>
<td>A2NODPAR</td>
<td>Terminal (full screen)</td>
<td></td>
</tr>
<tr>
<td>0000 1000</td>
<td>A2NODPAR</td>
<td>Terminal (line mode)</td>
<td></td>
</tr>
<tr>
<td>0000 1001</td>
<td>A2NODPAR</td>
<td>Stand-alone Channel-to-Channel (CTC)</td>
<td></td>
</tr>
<tr>
<td>0000 1010</td>
<td>A2NODPAR</td>
<td>Switch</td>
<td></td>
</tr>
<tr>
<td>...xxxx</td>
<td>A2NODPAR</td>
<td>Reserved (11 - 255)</td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td>Reserved, X'00'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bytes 1-3</td>
<td>A2NODPAR</td>
<td>CPC Node Parameters if byte 0 bit 3 = 1.</td>
<td></td>
</tr>
<tr>
<td>Byte 1</td>
<td>Reserved, X'00'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Interface Class:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0000</td>
<td>A2NODPAR</td>
<td>Unspecified Class</td>
<td></td>
</tr>
<tr>
<td>0000 0001</td>
<td>A2NODPAR</td>
<td>ESA/370 channel</td>
<td></td>
</tr>
<tr>
<td>0000 0010</td>
<td>A2NODPAR</td>
<td>Integrated channel-to-channel adapter (CTCA)</td>
<td></td>
</tr>
<tr>
<td>...xxxx</td>
<td>A2NODPAR</td>
<td>Reserved (3 - 255)</td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td>Identification:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...xxxx</td>
<td>A2NODPAR</td>
<td>CHPID.</td>
<td></td>
</tr>
<tr>
<td>Bytes 4-9</td>
<td>A2ITYPE</td>
<td>Incident type number EBCDIC decimal value right justified.</td>
<td></td>
</tr>
<tr>
<td>Bytes 10-12</td>
<td>A2IMOD</td>
<td>Incident model number EBCDIC alphameric right justified.</td>
<td></td>
</tr>
<tr>
<td>Bytes 13-15</td>
<td>A2IMEG</td>
<td>Incident manufacturer EBCDIC alphameric right justified.</td>
<td></td>
</tr>
<tr>
<td>Bytes 16-17</td>
<td>A2IPMFG</td>
<td>Incident plant of manufacture EBCDIC alphameric right justified.</td>
<td></td>
</tr>
<tr>
<td>Bytes 18-29</td>
<td>A2ISEQ</td>
<td>Incident sequence number EBCDIC alphameric right justified.</td>
<td></td>
</tr>
<tr>
<td>Bytes 30-31</td>
<td>A2IID</td>
<td>Incident hexadecimal interface ID.</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>(3C)</td>
<td>32</td>
<td>A2ANODES</td>
</tr>
<tr>
<td>Byte 0</td>
<td>Incident flags.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...xxx ...</td>
<td>A2ANODES</td>
<td>Attached node-ID validity. X'3' - X'7' reserved.</td>
<td></td>
</tr>
<tr>
<td>...000 ...</td>
<td>A2ANODES</td>
<td>Valid node ID.</td>
<td></td>
</tr>
<tr>
<td>...0001 ...</td>
<td>A2ANODES</td>
<td>Valid node ID which may not be current.</td>
<td></td>
</tr>
<tr>
<td>...010 ...</td>
<td>A2ANODES</td>
<td>Invalid node ID; bytes 1-31 are not valid.</td>
<td></td>
</tr>
<tr>
<td>...0x ...</td>
<td>A2ANODES</td>
<td>Attached Node Type:</td>
<td></td>
</tr>
<tr>
<td>...0 ...</td>
<td>A2ANODES</td>
<td>Device node</td>
<td></td>
</tr>
<tr>
<td>...1 ...</td>
<td>A2ANODES</td>
<td>CPC node</td>
<td></td>
</tr>
</tbody>
</table>
## Direct access storage device-service information message (DASD-SIM) record

A SIM record is recorded on the logrec data set to show a symptom code associated with a failure. A sense record, requesting logging as an A3 record, is produced when information about maintenance requirements needs to be presented. A SIM record contains the following information:

- Identification of unit needing service
- Definition of the impact of the failure
- Definition of the impact of the repair

### Table 9-5. Format of the LMI record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>... xxxx</td>
<td>Reserved.</td>
<td>A2NOPARM</td>
<td>DEVICE Node Parameters if byte 0 bit 3 = 0.</td>
</tr>
<tr>
<td>Bytes 1-3</td>
<td>Reserved, X'00'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Class:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0000</td>
<td>Unspecified Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0001</td>
<td>Direct Access Storage (DASD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0010</td>
<td>Magnetic Tape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0011</td>
<td>Unit Record (input)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0100</td>
<td>Unit Record (output)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0101</td>
<td>Printer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0110</td>
<td>Communications Controller</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0111</td>
<td>Terminal (full screen)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 1000</td>
<td>Terminal (line mode)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 1001</td>
<td>Stand-alone Channel-to-Channel (CTC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 1010</td>
<td>Switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxxx xxxx</td>
<td>Reserved (11 - 255)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td>Reserved, X'00'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bytes 1-3</td>
<td>A2NOPARM</td>
<td>CPCNode Parameters if byte 0 bit 3 = 1.</td>
<td></td>
</tr>
<tr>
<td>Byte 1</td>
<td>Reserved, X'00'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Interface Class:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0000</td>
<td>Unspecified Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0001</td>
<td>ESA/370 channel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 0010</td>
<td>Integrated channel-to-channel adapter (CTCA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxxx xxxx</td>
<td>Reserved (3 - 255)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td>Identification:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxxx xxxx</td>
<td>CHPID.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bytes 4-9</td>
<td>Attached type number EBCDIC decimal value right justified.</td>
<td>A2ATYPE</td>
<td></td>
</tr>
<tr>
<td>Bytes 10-12</td>
<td>Attached model number EBCDIC alphameric right justified.</td>
<td>A2AMOD</td>
<td></td>
</tr>
<tr>
<td>Bytes 13-15</td>
<td>Attached manufacturer EBCDIC alphameric right justified.</td>
<td>A2AMFG</td>
<td></td>
</tr>
<tr>
<td>Bytes 16-17</td>
<td>Attached plant of manufacture EBCDIC alphameric right justified.</td>
<td>A2APMFG</td>
<td></td>
</tr>
<tr>
<td>Bytes 18-29</td>
<td>Attached sequence number EBCDIC alphameric right justified.</td>
<td>A2ASEQ</td>
<td></td>
</tr>
<tr>
<td>Bytes 30-31</td>
<td>Attached hexadecimal interface ID.</td>
<td>A2AIID</td>
<td></td>
</tr>
<tr>
<td>92 (5C) 36</td>
<td>Incident node-dependent information.</td>
<td>A2INDEP</td>
<td></td>
</tr>
</tbody>
</table>
## Table 9-6. Format of the SIM record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0)</td>
<td>A3KEY1</td>
<td>Class/Source: Service Information Message Record; type = X'A3'.</td>
</tr>
<tr>
<td>1</td>
<td>(1)</td>
<td>A3KEY2</td>
<td>System/release level:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OS/VS2 and later MVS systems.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Release level (0-1F).</td>
</tr>
<tr>
<td>2</td>
<td>(2)</td>
<td>A3SMS</td>
<td>Record-independent switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>More records follow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Last record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Time-of-day (TOD) clock instruction issued.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Record truncated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>370 XA mode record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TIME macro used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>3</td>
<td>(3)</td>
<td>A3SW1</td>
<td>Record-dependent switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SIM record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Severity Code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Severity not defined.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Information provided as part of PD or repair activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Degradation or intermittent failures for nonfunctional unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Permanent failure in nonfunctional unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No immediate performance impact. Expected loss or degradation of function if no action taken.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Degradation or intermittent failures for functional unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Permanent failure causing loss of function.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Permanent failure in functional unit which has redundant hardware.</td>
</tr>
<tr>
<td>6</td>
<td>(6)</td>
<td>A3RCDC1</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sequence number of this physical record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total number of physical records in this logical record.</td>
</tr>
<tr>
<td>7</td>
<td>(7)</td>
<td>A3DT</td>
<td>System date and time of incident:</td>
</tr>
<tr>
<td>8</td>
<td>(8)</td>
<td>A3DATE</td>
<td>System date of failure.</td>
</tr>
<tr>
<td>12</td>
<td>(C)</td>
<td>A3TIME</td>
<td>System time of failure.</td>
</tr>
<tr>
<td>16</td>
<td>(10)</td>
<td>A3CPUID</td>
<td>Central processor identification.</td>
</tr>
<tr>
<td>16</td>
<td>(10)</td>
<td>A3VER</td>
<td>Machine version code:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Version I central processors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Version II central processors.</td>
</tr>
<tr>
<td>17</td>
<td>(11)</td>
<td>A3SER</td>
<td>Central processor serial number.</td>
</tr>
</tbody>
</table>
Table 9-6. Format of the SIM record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>A3MOD</td>
<td>Central processor machine model number (3033, 4341, etc.).</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>A3CEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24</td>
<td>(18) 7</td>
<td>Reporting unit type or 0s. Type and model of device reporting the error.</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>(1F) 7</td>
<td>Control unit type or 0s. Type and model of control unit of device reporting the error (included if the reporting unit is connected to a control unit).</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>(26) 1</td>
<td>Manufacturer identity or 0s. Identity of device manufacturer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0000 0001</td>
<td>IBM.</td>
</tr>
<tr>
<td>39</td>
<td>(27) 9</td>
<td>Unique identifier or 0s. The manufacturing plant and serial number of the reporting device.</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>(30) 1</td>
<td>Length of SSI data field beginning at end of SI field. &gt;</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>(31) 3</td>
<td>A3SECUA</td>
<td>Byte 0 contains the channel path ID (CHPID) and Bytes 1 and 2 contain the reporting device number. (No retry is performed for DASD X'A3' records.)</td>
</tr>
<tr>
<td>52</td>
<td>(34) 1</td>
<td>Device type for the device associated with the error.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Byte 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1... ....</td>
<td>Byte 1 contains a control unit ID.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>xxx xxxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Byte 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Control unit ID if (Byte 0(Bit 0))=1. Otherwise system dependent data unused by EREP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Byte 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Device class code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Byte 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Device type code.</td>
</tr>
<tr>
<td>56</td>
<td>(38) 1</td>
<td>Length of SI data field.</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>(39) 3</td>
<td>A3PCUA</td>
<td>This field contains the device number.</td>
</tr>
<tr>
<td>60</td>
<td>(3C) Variable</td>
<td>SI data. Device dependent information from control program. Bytes 0-5 include the VOLID if it is contained in the record.</td>
<td></td>
</tr>
<tr>
<td>Var.</td>
<td>Var.</td>
<td>SSI data. Device dependent information from reporting subsystem.</td>
<td></td>
</tr>
</tbody>
</table>

Channel report word (CRW) record

CRW records are recorded on the logrec data set for all software- and hardware-generated channel report words. Software-generated CRWs are created by IOS modules to invoke channel path recovery. Hardware-generated CRWs are created by the channel to provide information describing a machine malfunction affecting a specific, or a collection of, channel subsystem facilities.

Table 9-7. Format of the CRW Record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0) 1</td>
<td>CRWKEY1</td>
<td>Class/Source:</td>
</tr>
<tr>
<td></td>
<td>.1...1.1</td>
<td></td>
<td>CRW record; type=X'25'.</td>
</tr>
<tr>
<td>1</td>
<td>(1) 1</td>
<td>CRWKEY2</td>
<td>System/Release level:</td>
</tr>
<tr>
<td></td>
<td>100...</td>
<td></td>
<td>OS/VS2.</td>
</tr>
<tr>
<td></td>
<td>.x xxxxx</td>
<td></td>
<td>Release level 0-31.</td>
</tr>
<tr>
<td>2</td>
<td>(2) 1</td>
<td>CRWSMS</td>
<td>Record-independent switches:</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td></td>
<td>More records follow.</td>
</tr>
<tr>
<td>Offset</td>
<td>Size (bytes)</td>
<td>Field name</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td>Description</td>
</tr>
<tr>
<td>0...</td>
<td>. . .</td>
<td>Last record.</td>
<td></td>
</tr>
<tr>
<td>1. .</td>
<td>.. .</td>
<td>Time-of-day (TOD) clock instruction issued.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>1. .</td>
<td>Record truncated.</td>
<td></td>
</tr>
<tr>
<td>... 1</td>
<td>. . .</td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
<td></td>
</tr>
<tr>
<td>... 1</td>
<td>. . .</td>
<td>TIME macro issued.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>xxx</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>(3) 3</td>
<td>Record-dependent switches:</td>
<td></td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>CRWBYTE1</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td>CRWBYTE2</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td>CRWBYTE3</td>
<td>Reserved.</td>
</tr>
<tr>
<td>6</td>
<td>(6) 1</td>
<td>CRWRCDCT</td>
<td>Record count:</td>
</tr>
<tr>
<td>xxxx</td>
<td></td>
<td>CRWRCSEQ</td>
<td>Record sequence number.</td>
</tr>
<tr>
<td>...</td>
<td>xxxx</td>
<td>CRWFZREC</td>
<td>Total number of physical records in this logical record.</td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(8) 4</td>
<td>CRWDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>CRWTIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>CRWVER</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>CRWSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>CRWMOD</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>CRWCEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24</td>
<td>(18) 8</td>
<td>CRWMODULE</td>
<td>CSECT name of module doing recording.</td>
</tr>
<tr>
<td>32</td>
<td>(20) 1</td>
<td>CRWRECCD</td>
<td>CRW recording code: Identifies the format of the variable portion of the record.</td>
</tr>
<tr>
<td>33</td>
<td>(21) 1</td>
<td>CRWFLAG1</td>
<td>Flag byte 1.</td>
</tr>
<tr>
<td>1...</td>
<td>. . .</td>
<td>CRWHARD</td>
<td>Hardware-stored CRW.</td>
</tr>
<tr>
<td>1. .</td>
<td>.. .</td>
<td>CRWSOFT</td>
<td>Software-created CRW.</td>
</tr>
<tr>
<td>.. xx</td>
<td>xxx</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>1</td>
<td>CRWINVAL</td>
<td>Incorrect CRW recording.</td>
</tr>
<tr>
<td>34</td>
<td>(22) 1</td>
<td>CRWFLAG2</td>
<td>Flag byte 2.</td>
</tr>
<tr>
<td>35</td>
<td>(23) 1</td>
<td>CRWCODE</td>
<td>CRW origin code.</td>
</tr>
<tr>
<td>0000</td>
<td>00000</td>
<td>CRW origin unknown.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>00001</td>
<td>CRW pending machine check.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>00010</td>
<td>System damage machine check.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>00011</td>
<td>Alternate central processor recovery (ACR).</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>0100</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>0101</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>0110</td>
<td>Hot I/O recover channel path.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>0111</td>
<td>Hot I/O remove channel path.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>1000</td>
<td>Vary channel path - forced.</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>1001</td>
<td>Reset Event Occurred - recover channel path</td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>1010</td>
<td>Link Level Error Occurred</td>
<td></td>
</tr>
<tr>
<td>X’0B’-X’FF’</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>(24) 2</td>
<td>CRWCP</td>
<td>Processor address CRW retrieved on.</td>
</tr>
</tbody>
</table>
Table 9-7. Format of the CRW Record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>(26)</td>
<td>2</td>
<td>Reserved.</td>
</tr>
<tr>
<td>40</td>
<td>(28)</td>
<td>4</td>
<td>CRWCRW</td>
</tr>
<tr>
<td>44</td>
<td>(2C)</td>
<td>2</td>
<td>CRWDEV</td>
</tr>
<tr>
<td>46</td>
<td>(2E)</td>
<td>2</td>
<td>Reserved.</td>
</tr>
<tr>
<td>48</td>
<td>(30)</td>
<td>4</td>
<td>CRWSEQNO</td>
</tr>
<tr>
<td>52</td>
<td>(34)</td>
<td>4</td>
<td>CRWASEQN</td>
</tr>
<tr>
<td>56</td>
<td>(38)</td>
<td>2</td>
<td>CRWDEVST</td>
</tr>
<tr>
<td>58</td>
<td>(3A)</td>
<td>2</td>
<td>CRWPMCW</td>
</tr>
<tr>
<td>60</td>
<td>(3C)</td>
<td>1</td>
<td>CRWCHPCT</td>
</tr>
<tr>
<td>61</td>
<td>(3D)</td>
<td>2</td>
<td>Reserved.</td>
</tr>
<tr>
<td>63</td>
<td>(3F)</td>
<td>1</td>
<td>CRWLEVEL</td>
</tr>
<tr>
<td>64</td>
<td>(40)</td>
<td>4</td>
<td>CRWLVMSK</td>
</tr>
<tr>
<td>68</td>
<td>(44)</td>
<td>4</td>
<td>CRWSCHRC</td>
</tr>
<tr>
<td>72</td>
<td>(48)</td>
<td>1</td>
<td>Reserved.</td>
</tr>
<tr>
<td>73</td>
<td>(49)</td>
<td>1</td>
<td>CRWICHPT</td>
</tr>
<tr>
<td>74</td>
<td>(4A)</td>
<td>8</td>
<td>CRWISDT</td>
</tr>
</tbody>
</table>

Dynamic device reconfiguration (DDR) record

DDR records are recorded on the logrec data set for each operator-initiated or system-initiated swap between direct access storage and magnetic tape devices and for each operator-initiated swap on a unit record device. The system requests DDR after a permanent (uncorrectable) I/O error has occurred. The operator can request DDR at any time by entering the SWAP command.

Table 9-8. Format of the DDR Record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>(0)</td>
<td>1</td>
<td>LRBHTYPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.11.</td>
</tr>
<tr>
<td>1</td>
<td>(1)</td>
<td>1</td>
<td>LRBHSYS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>bits 3-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-1F</td>
<td>Release level 0-31.</td>
</tr>
<tr>
<td>2</td>
<td>(2)</td>
<td>1</td>
<td>LRBHSWO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1...</td>
<td>More records follow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0...</td>
<td>Last record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1...</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...1...</td>
<td>Record truncated. (Not used for DDR record.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...1...</td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...TIME...</td>
<td>TIME macro used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...xxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>3</td>
<td>(3)</td>
<td>3</td>
<td>LRBHSW1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Byte 0</td>
<td></td>
</tr>
</tbody>
</table>
Table 9-8. Format of the DDR Record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1...</td>
<td>1...</td>
<td>Primary storage reconfiguration.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>Secondary storage reconfiguration.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>Operator requested reconfiguration.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>xxxx</td>
<td>Permanent error caused reconfiguration.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>xxx</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Bytes 1 and 2</td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>LRBHCNT</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td>bits 0-3</td>
<td></td>
<td>Sequence number of this physical record.</td>
</tr>
<tr>
<td></td>
<td>bits 4-7</td>
<td></td>
<td>Total number of physical records in this logical record.</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>LRBHDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>LRBHTIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>LRBHCPID</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>LRBHCSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>LRBHMDL</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>LRBHMCEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24</td>
<td>8</td>
<td>LRBRJOB</td>
<td>Name of job using ‘FROM’ device. Field valid only if system initiated swap for permanent error or for operator initiated tape swaps.</td>
</tr>
<tr>
<td>32</td>
<td>6</td>
<td>LRBRVOL1</td>
<td>VOLSER of volume mounted on ‘FROM’ swap device.</td>
</tr>
<tr>
<td>38</td>
<td>6</td>
<td>LRBRVOL2</td>
<td>VOLSER of volume mounted on ‘TO’ swap devices. Field is zero if no volume is mounted on ‘TO’ device.</td>
</tr>
<tr>
<td>44</td>
<td>1</td>
<td>LRBRPH1</td>
<td>Physical ID of ‘FROM’ device (not the address). DASD only.</td>
</tr>
<tr>
<td>45</td>
<td>3</td>
<td>LRBRCUA1</td>
<td>Device number of ‘FROM’ device.</td>
</tr>
<tr>
<td>48</td>
<td>4</td>
<td>LRBRDEV1</td>
<td>Device type of ‘FROM’ device.</td>
</tr>
<tr>
<td>52</td>
<td>1</td>
<td>LRBRPH2</td>
<td>Physical ID of ‘TO’ device. DASD only.</td>
</tr>
<tr>
<td>53</td>
<td>3</td>
<td>LRBRCUA2</td>
<td>Device number of ‘TO’ device.</td>
</tr>
<tr>
<td>56</td>
<td>4</td>
<td>LRBRDEV2</td>
<td>Device type of ‘TO’ device.</td>
</tr>
</tbody>
</table>

**System ending (EOD) record**

An EOD record is recorded on the logrec data set when either of the following occur:

- The system operator enters the HALT EOD command to end the system. The system operator usually enters the HALT EOD command before one of the following conditions:
  - When the power is turned off.
  - When the system is going to enter a long wait state.
- An abnormal end occurs because of a serious error that requires operator intervention (such as hot I/O).

For a normal end, the record consists of the 24-byte header. For an abnormal end, the header is followed by fields containing data related to the error.
**Table 9-9. Format of the EOD record**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>(0)</td>
<td>1</td>
<td>CLASRC</td>
</tr>
<tr>
<td>1...</td>
<td>1</td>
<td></td>
<td>Class/Source:</td>
</tr>
<tr>
<td>1...</td>
<td>1</td>
<td></td>
<td>EOD record; type=X'80'.</td>
</tr>
<tr>
<td>1...</td>
<td>1</td>
<td></td>
<td>System end (non-restartable); type=X'81'.</td>
</tr>
<tr>
<td>1...</td>
<td>1</td>
<td></td>
<td>EOD from IOS (restartable wait state); type=X'84'.</td>
</tr>
<tr>
<td>1</td>
<td>(1)</td>
<td>1</td>
<td>OPSYS</td>
</tr>
<tr>
<td>100...</td>
<td>bits 3-7</td>
<td></td>
<td>System/Release level:</td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td></td>
<td>Release level 0-31.</td>
</tr>
<tr>
<td>2</td>
<td>(2)</td>
<td>4</td>
<td>SW1</td>
</tr>
<tr>
<td>1...</td>
<td>More records follow.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0...</td>
<td>Last record.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1...</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>Record truncated. (Not used for EOD record.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>TIME macro used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...xxx</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bytes 1 and 2</td>
<td>Not used for EOD record.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td></td>
<td>Incremental release number (alphanumeric) of operating system.</td>
</tr>
<tr>
<td>6</td>
<td>(6)</td>
<td>2</td>
<td>DATE</td>
</tr>
<tr>
<td>8</td>
<td>(8)</td>
<td>4</td>
<td>TIME</td>
</tr>
<tr>
<td>12</td>
<td>(C)</td>
<td>4</td>
<td>VENO</td>
</tr>
<tr>
<td>16</td>
<td>(10)</td>
<td>1</td>
<td>CPUSER</td>
</tr>
<tr>
<td>17</td>
<td>(11)</td>
<td>3</td>
<td>CPUMODEL</td>
</tr>
<tr>
<td>20</td>
<td>(14)</td>
<td>2</td>
<td>MCELLNG</td>
</tr>
<tr>
<td>22</td>
<td>(16)</td>
<td>2</td>
<td>END OF STANDARD HEADER</td>
</tr>
<tr>
<td>24</td>
<td>(18)</td>
<td>40</td>
<td>EOD extension (see note).</td>
</tr>
<tr>
<td>24</td>
<td>(18)</td>
<td>4</td>
<td>Length of user data plus 8.</td>
</tr>
<tr>
<td>28</td>
<td>(IC)</td>
<td>4</td>
<td>Wait state code.</td>
</tr>
<tr>
<td>32</td>
<td>(20)</td>
<td>32</td>
<td>User data.</td>
</tr>
</tbody>
</table>

**Note:** If the wait state code is X'110', X'111' or X'112', hot I/O recovery processing writes this ending record. The 32-byte user data field contains the SCD entry for the channel with the “hot” condition. See z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/) for a detailed description of the SCD.

For other wait state codes that use the EOD extension, the length of the data field and the extension may vary.

---

**Input/Output Supervisor (IOS) recovery record**

IOS recovery records are recorded on the logrec data set to record IOS recovery information. The dynamic pathing services validation (DPSV) record is the only IOS recovery record.
Dynamic pathing services validation (DPSV) record
DPSV records are recorded on the logrec data set for DPSV recovery actions.

DPSV analyzes the sense path group identifier (SNID) to determine if the hardware dynamic pathing group is still valid and in synchronization with the software mapping.

Table 9-10. Format of the DPSV record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>LRBHTYPE</td>
<td>Type of Record:</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>LRBHREL</td>
<td>System/Release level:</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>LRBHDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>LRBHDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>LRBHCPID</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>LRBHCSER</td>
<td>Central processor serial number. &lt;</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>LRBHMDL</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>LRBHMCEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24</td>
<td>8</td>
<td>LXCHDESC</td>
<td>Name of the module requesting the dynamic pathing validation.</td>
</tr>
<tr>
<td>32</td>
<td>1</td>
<td>LXCHVERS</td>
<td>Cx record’s common header version field.</td>
</tr>
<tr>
<td>33</td>
<td>1</td>
<td>LXCHFLAG</td>
<td>Cx record’s common header flag field.</td>
</tr>
<tr>
<td>34</td>
<td>2</td>
<td>LXCHDVNM</td>
<td>Device number in hexadecimal.</td>
</tr>
<tr>
<td>36</td>
<td>4</td>
<td>LXCHDTYP</td>
<td>Device type information field.</td>
</tr>
<tr>
<td>40</td>
<td>8</td>
<td>LXCHR5VD</td>
<td>Reserved.</td>
</tr>
<tr>
<td>48</td>
<td>1</td>
<td>LXC2CODE</td>
<td>DPSV recording code.</td>
</tr>
<tr>
<td>49</td>
<td>1</td>
<td>LXC2FLAG</td>
<td>DPSV flag field.</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
<td>LXC2RSVL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>52</td>
<td>228</td>
<td>LXC2SNID</td>
<td>Sense path group identifier (SNID) table data. See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/zos/bkserv/">http://www.ibm.com/systems/z/zos/bkserv/</a> for a detailed description of the SNID.</td>
</tr>
<tr>
<td>280</td>
<td>4</td>
<td>LXC2RSV2</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>
IPL records are recorded on the logrec data set to document system initializations. The system creates one IPL record for each initialization of the system. The IPL record provides a way of measuring the approximate time interval between the ending and reinitializing of the system.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>CLASRC</td>
<td>Class/Source:</td>
</tr>
<tr>
<td>.1.</td>
<td></td>
<td>IPL record; type=X'50'.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>OPSYS</td>
<td>System/Release level:</td>
</tr>
<tr>
<td>100.</td>
<td></td>
<td>OS/VS2.</td>
<td></td>
</tr>
<tr>
<td>bits 3-7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td>Release level 0-31.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>SW1</td>
<td>Record switches:</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1...</td>
<td></td>
<td>More records follow.</td>
<td></td>
</tr>
<tr>
<td>0...</td>
<td></td>
<td>Last record.</td>
<td></td>
</tr>
<tr>
<td>.1...</td>
<td></td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
<td></td>
</tr>
<tr>
<td>...1.</td>
<td></td>
<td>Record truncated. (Not used for IPL record.)</td>
<td></td>
</tr>
<tr>
<td>...1.</td>
<td></td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td></td>
<td>TIME macro used.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Bytes 1 and 2</td>
<td></td>
<td>Not used for IPL record.</td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>Incremental release number (alphanumeric) of operating system.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>DATE</td>
<td>System date when system was initialized.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>TIME</td>
<td>System time when system was initialized.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>CPUSER</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>CPUSER1</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>CPUMODEL</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>MCELLNG</td>
<td>Reserved.</td>
</tr>
<tr>
<td>END OF STANDARD HEADER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>(18) 1</td>
<td>SUBSYSID</td>
<td>Device type or program that caused restart. See Table 9-13 on page 9-24</td>
</tr>
<tr>
<td>25</td>
<td>(19) 3</td>
<td></td>
<td>Not used for IPL record.</td>
</tr>
<tr>
<td>28</td>
<td>(1C) 2</td>
<td>REASON</td>
<td>Alphanumeric reason for IPL. See Table 9-12 on page 9-23</td>
</tr>
<tr>
<td>30</td>
<td>(1E) 2</td>
<td></td>
<td>Reserved.</td>
</tr>
</tbody>
</table>
### IPL recording

If the reliability data extractor (RDE) is in effect, the system issues message IFB010D:

```yaml
ID IFB010D ENTER 'IPL REASON, SUBSYSTEM ID' or 'U'
```

Message IFB010D requests the operator to provide one of the following:

- The reason for the IPL and the subsystem (device or program) responsible for the restart
- ‘U’ to continue with default values

The IPL reason code, (see Table 9-12), and the subsystem ID, (see Table 9-13 on page 9-24), are then included in the record when it is written.

Restart continues after either a valid reply or a ‘U’ reply. In the case of a ‘U’ reply, the IPL record is formatted with zeros in the subsystem ID field and a DF (default values) in the IPL reason field.

### Table 9-12. IPL reason codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Reason</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM</td>
<td>Normal.</td>
<td>Normal system initialization.</td>
</tr>
<tr>
<td>IE</td>
<td>IBM hardware/programming problem, CE/PSR not required.</td>
<td>System restarted after a stop caused by a hardware failure or IBM programming problem, and a customer engineer (CE)/program support engineer (PSR) was not required.</td>
</tr>
<tr>
<td>IM</td>
<td>IBM hardware/programming problem, CE/PSR required.</td>
<td>System restarted after a stop caused by a hardware failure or IBM programming problem, and it was necessary for a CE/PSR to correct problem.</td>
</tr>
<tr>
<td>ME</td>
<td>Media.</td>
<td>An IBM hardware unit failed because of faulty or damaged media, such as a damaged tape or disk.</td>
</tr>
<tr>
<td>UN</td>
<td>Unknown.</td>
<td>An undetermined hardware or software failure.</td>
</tr>
<tr>
<td>OP</td>
<td>Operational.</td>
<td>An operator error or procedural problem.</td>
</tr>
<tr>
<td>UP</td>
<td>User program.</td>
<td>A program other than an IBM supplied control program or programming product failed in such a way as to cause a system restart.</td>
</tr>
<tr>
<td>EN</td>
<td>Environmental.</td>
<td>A failure other than hardware/software or operational (such as power failure, air conditioning, etc.) caused system to be restarted.</td>
</tr>
<tr>
<td>CE</td>
<td>CE/PSR has system.</td>
<td>System restarted at CE/PSR request to correct problem.</td>
</tr>
<tr>
<td>DF</td>
<td>Default.</td>
<td>Operator replied ‘U’ or entered a null line in response to system message IFB010D.</td>
</tr>
</tbody>
</table>
### Table 9-13. Subsystem ID codes

<table>
<thead>
<tr>
<th>ID</th>
<th>Subsystem Name</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Null. Subsystem is unknown or subsystem code is not required by reason code.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Processor. Central processor, channels, storage units, operator consoles.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Direct access storage device (DASD).</td>
<td>Direct access storage devices and their control units.</td>
</tr>
<tr>
<td>30</td>
<td>Other. All devices other than those specified under other subsystem IDs.</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Tape. Magnetic tape devices and their control units.</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Card/Print. Card (unit record) and printing devices.</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>MICR/OCR. Magnetic ink (MICR) and optical (OCR) character recognition devices.</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Teleprocessing. Teleprocessing devices and their control units.</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Graphics/Display/Audio. Graphic, display, and audio devices.</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>IBM system control program. IBM programming system.</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>IBM programming product. IBM programming products such as FORTRAN, COBOL, or RPG.</td>
<td></td>
</tr>
</tbody>
</table>

### Machine check handler (MCH) record

MCH records [Table 9-14 on page 9-25](#) are recorded on the logrec data set when any of the following machine failures occur:
- Central processor
- Storage
- Storage key
- Timer

When a machine failure occurs, the machine check handler (MCH) receives control by way of a machine check interruption for a **soft** failure (one that was corrected by the hardware retry features: hardware instruction retry (HIR) or error checking and correction (ECC)), or for a **hard** failure (one that could not be corrected by HIR and ECC).

### Soft failures

The MODE command can be used to limit the number of MCH records that are recorded on the logrec data set. This command allows some records to be recorded on the logrec data set for diagnostic purposes, but prevents the logrec data set from becoming filled with records which describe failures that have already been detected and corrected by HIR and ECC.

### Hard failures

If the machine check interruption is for a hard failure, MCH analyzes the information in the model independent logout area to isolate the error.

Before the records are written, the system inserts the same error identifier in various pieces of diagnostic data that pertains to a particular error, so that all pieces can be used together for diagnosis. The system inserts the same error identifier in the software record(s), the SVC dump output associated with this particular error, and the console message that indicates an SVC dump was taken. See [Chapter 4, “SVC summary,” on page 4-1](#) for information on SVC dumps; see [z/OS MVS System Messages, Vol 7 (IEB-IEE)](#) for information on console messages.

The error identifier has the form:
With each IPL, the system begins a sequential count of errors. The sequence number is therefore unique for each software error or machine failure. It indicates which number this is since the most recent IPL. The sequence number remains constant for subsequent software records associated with the same error, although the time stamp may change.

**Note:** If the logrec data set record has no associated error identifier, the system prints the message NO ERRORID ASSOCIATED WITH THIS RECORD where the error identifier normally would be printed.

If the failure is going to cause the central processor to end and the system has only one central processor, the system collects environmental, model-independent, and model-dependent information to describe the failure. After formatting the information, the system writes this information on the logrec data set as an MCH record and issues a message to the operator. Then, before the system enters a wait state, the system writes MCH records to the logrec data set. Offset 3 of the MCH record format indicates that the failure resulted in system ending.

If, in a multiprocessing system, a failure occurs in one central processor, the system invokes alternate central processor recovery (ACR) on another central processor. The system records the error as a hard failure that does not cause the processor to end.

**Note:** System damage is recorded as a hard error (offset 33 bit 3) and not an ending error (offset 32 bit 6). See *Principles of Operation* for a detailed description of the machine check interruption code shown in the MCH record format.

### Table 9-14. Format of the MCH Record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0) 1</td>
<td>LRBHTYPE</td>
<td>Class/Source:</td>
</tr>
<tr>
<td></td>
<td>...1..11</td>
<td>LRBHMCH</td>
<td>MCH record recorded in the system environment; type=X’13’.</td>
</tr>
<tr>
<td>1</td>
<td>(1) 1</td>
<td>LRBHSYS</td>
<td>System/Release level:</td>
</tr>
<tr>
<td></td>
<td>100. ...</td>
<td></td>
<td>OS/VS2.</td>
</tr>
<tr>
<td></td>
<td>bits 3-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-1F</td>
<td></td>
<td>Release level 0-31.</td>
</tr>
<tr>
<td>2</td>
<td>(2) 1</td>
<td>LRBHSW0</td>
<td>Record-independent switches:</td>
</tr>
<tr>
<td></td>
<td>1. ...</td>
<td></td>
<td>More records follow.</td>
</tr>
<tr>
<td></td>
<td>0. ...</td>
<td></td>
<td>Last record.</td>
</tr>
<tr>
<td></td>
<td>1. ...</td>
<td></td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
</tr>
<tr>
<td></td>
<td>...1. ...</td>
<td></td>
<td>Record truncated. (Not used for MCH record.)</td>
</tr>
<tr>
<td></td>
<td>...1 ...</td>
<td>LRBHEAB</td>
<td>Extended addressing hardware.</td>
</tr>
</tbody>
</table>
## Error Recording

Table 9-14. Format of the MCH Record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.. 1...</td>
<td></td>
<td>TIME</td>
<td>TIME macro used.</td>
</tr>
<tr>
<td>.. .xxx</td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>(3) 3</td>
<td>LRBHSW1</td>
<td>Record-dependent switches:</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>LRBMNOIO</td>
<td>IOS (IOSRMCH) informing IGFPMTSIG not to perform any I/O.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMNVF</td>
<td>LRB may not be valid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSYST</td>
<td>System ended by MCH.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBTRACE</td>
<td>Set to 1 by IGFPMTIH before ALTRTRCsuspend and set to 0 after.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBDAT</td>
<td>Set to 1 by IGFPMTIH before loading aDATON PSW to go to IGFPMAIN. Set to 0 when IGFPMAIN receives control.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRB_RECV</td>
<td>Set to 1 when an error is totally recovered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMFA</td>
<td>Set to 1 after a malfunction alert.</td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td>LRBMACT</td>
<td>Buffer contains a record to be recorded on the logrec data set or moved to another buffer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMACT</td>
<td>MCH the logrec data set record buffer overlaid with another record. If this byte is X'FF', SVC 76 does not record this record on the logrec data set.</td>
</tr>
<tr>
<td>6</td>
<td>(6) 1</td>
<td>LRBHCNT</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bits 0-3</td>
<td>Sequence number of this physical record.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bits 4-7</td>
<td>Total number of physical records in this logical record.</td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(8) 4</td>
<td>LRBHDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>LRBHTIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>LRBHCPID</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>LRBHCSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>LRBHMDL</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>LRBHMCEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>END OF STANDARD HEADER</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>(18) 4</td>
<td>LRBMLNH</td>
<td>Length of record for the logrec data set.</td>
</tr>
<tr>
<td>28</td>
<td>(IC) 4</td>
<td>LRBMWSC</td>
<td>Wait state code.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMAOD</td>
<td>If the remaining bits in this byte are non zero, then this bit must be zero; otherwise a program check occurs when a PSW containing this bit in its address part is loaded.</td>
</tr>
<tr>
<td>32</td>
<td>(20) 4</td>
<td>LRBMEIA</td>
<td>Machine check error indication area.</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>LRBMTERM</td>
<td>Terminal error flags.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMTOIS</td>
<td>IOSRMCH has requested that this processor be ended.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRMMTHHR</td>
<td>Hard error threshold flag.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSEC</td>
<td>Secondary error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMTCKS</td>
<td>Check stop.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMTRWN</td>
<td>Power® warning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMTDMA</td>
<td>System damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMTINV</td>
<td>Incorrect logout flag; set when LRBMCIC=0 or when a store-status-at-address has failed after a malfunction alert.</td>
</tr>
</tbody>
</table>
## Table 9-14. Format of the MCH Record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec Hex</td>
<td>LRBMHARD</td>
<td>Hard machine error switches:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHRD</td>
<td>Hard error assumed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHIO</td>
<td>IOSRMCH has examined the MCIC and determined that a hard I/O Error has occurred.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHVS</td>
<td>Vector facility source.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHSD</td>
<td>System damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHSTO</td>
<td>Hard storage error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHSPF</td>
<td>Hard storage protection key error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMHIPD</td>
<td>Instruction processing damage.</td>
</tr>
<tr>
<td>Byte 2</td>
<td>LRBMINTM Intermediate error switches:</td>
<td>LRBMIPSD</td>
<td>Primary clock sync facility damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMIAFD</td>
<td>ETR attachment facility damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMISWL</td>
<td>Switch to local sync.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMISYC</td>
<td>ETR sync check condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMITOD</td>
<td>Time-of-day (TOD) clock error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMICKC</td>
<td>Clock comparator error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMICTM</td>
<td>Central processor timer error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMIVTE</td>
<td>Vector facility threshold exceeded.</td>
</tr>
<tr>
<td>Byte 3</td>
<td>LRBSOFT Soft machine error switches:</td>
<td>LRBMSSFT</td>
<td>Soft error assumed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSPD</td>
<td>Service processor damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMVF</td>
<td>Vector facility failure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMDBSE</td>
<td>Double bit storage error correction flag.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSTSL</td>
<td>ETR sync check threshold exceeded.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSECC</td>
<td>ECC corrected storage error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSHIR</td>
<td>HIR corrected processor (Central processor) error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMSDG</td>
<td>Degradation machine check.</td>
</tr>
<tr>
<td>36</td>
<td>(24) 1</td>
<td>LRBMPDAR</td>
<td>PDAR (program damage assessment and repair) data supplied by RTM:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>xxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMINVVP</td>
<td>Storage reconfigured; page invalidated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMRSRC</td>
<td>Storage reconfiguration status available at displacement 37.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMRSRF</td>
<td>Storage reconfiguration not attempted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>xxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>37</td>
<td>(25) 2</td>
<td>LRBMRSRS</td>
<td>Status returned to IGPPMTH by IARXMCKS, the status and key error storage routine. The details of the bits are described by IEERSRRB.</td>
</tr>
<tr>
<td>39</td>
<td>(27) 1</td>
<td>LRBMPWPL</td>
<td>Length of checking block used by machine model.</td>
</tr>
<tr>
<td>40</td>
<td>(28) 8</td>
<td>LRBMOSW</td>
<td>Machine check old PSW from storage locations 48-55.</td>
</tr>
<tr>
<td>48</td>
<td>(30) 8</td>
<td>LRBMCCIC</td>
<td>Machine check interruption code (from storage locations 232-239) as stored by hardware routines at time of machine check:</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>LRBMPSD</td>
<td>System damage (SD).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRBMFPD</td>
<td>Instruction-processing damage (PD).</td>
</tr>
</tbody>
</table>
## Error Recording

### Table 9-14. Format of the MCH Record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>.1.</td>
<td>LRBMFSR</td>
<td>System recovery (SR).</td>
</tr>
<tr>
<td>.1.</td>
<td>..</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>.1.</td>
<td>LRBMFCD</td>
<td>Timer-facility damage (CD).</td>
</tr>
<tr>
<td>...</td>
<td>.1.</td>
<td>LRBMFED</td>
<td>External damage (ED).</td>
</tr>
<tr>
<td>...</td>
<td>.1.</td>
<td>LRBMFVF</td>
<td>Vector facility failure (VF).</td>
</tr>
<tr>
<td>...</td>
<td>...1</td>
<td>LRBMFDG</td>
<td>Degradation (DG).</td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td>LRBMFWM</td>
<td>Power warning (W).</td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td>LRBMFLP</td>
<td>Available CRW is pending (CP).</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMFSPD</td>
<td>Service processor damage (SP).</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMFCK</td>
<td>Channel subsystem damage (CK).</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>...1</td>
<td>LRBMFVS</td>
<td>Vector facility source (VS).</td>
</tr>
<tr>
<td></td>
<td>...1</td>
<td>LRBMIBU</td>
<td>Backed up indicator (B).</td>
</tr>
<tr>
<td></td>
<td>... .x</td>
<td>LRBMIDY</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td>LRBMFSE</td>
<td>Storage error uncorrected (SE).</td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td>LRBMFSC</td>
<td>Storage error corrected (SC).</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMFKE</td>
<td>Storage key error uncorrected (KE).</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMDFDS</td>
<td>Storage degradation (DS).</td>
</tr>
<tr>
<td></td>
<td>... 1.</td>
<td>LRBMVWP</td>
<td>PSW-MWP is valid (WP).</td>
</tr>
<tr>
<td></td>
<td>...1</td>
<td>LRBMVMS</td>
<td>PSW masks and key are valid (MS).</td>
</tr>
<tr>
<td></td>
<td>...1</td>
<td>LRBMVPM</td>
<td>PSW program masks and condition code are valid (PM).</td>
</tr>
<tr>
<td></td>
<td>...1</td>
<td>LRBMVIA</td>
<td>PSW Instruction address is valid (IA^®).</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>LRBMVFA</td>
<td>Failing storage address is valid (FA).</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMVED</td>
<td>External damage code is valid (EC).</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMVFP</td>
<td>Floating point register is valid (FP).</td>
</tr>
<tr>
<td></td>
<td>... 1.</td>
<td>LRBMVGR</td>
<td>General purpose register is valid (GR).</td>
</tr>
<tr>
<td></td>
<td>... 1.</td>
<td>LRBMVCR</td>
<td>Control register is valid (CR).</td>
</tr>
<tr>
<td></td>
<td>... .x</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>... 1</td>
<td>LRBMVST</td>
<td>Storage logical is valid (ST).</td>
</tr>
<tr>
<td>Byte 4</td>
<td></td>
<td>LRBMARV</td>
<td>Access register is valid.</td>
</tr>
<tr>
<td></td>
<td>.1.</td>
<td>LRBMDAE</td>
<td>Delayed access exception.</td>
</tr>
<tr>
<td></td>
<td>.x xxx.</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>... .1</td>
<td>LRBMVAP</td>
<td>Ancillary Report</td>
</tr>
<tr>
<td></td>
<td>... .1</td>
<td>LRBMVPT</td>
<td>Processor timer is valid (CT).</td>
</tr>
</tbody>
</table>
Table 9-14. Format of the MCH Record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td></td>
</tr>
<tr>
<td>Bytes 6, 7</td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>56 (38)</td>
<td>4</td>
<td></td>
<td>240-243 storage data.</td>
</tr>
<tr>
<td>60 (3C)</td>
<td>4</td>
<td>LRBMEDCD</td>
<td>244-247 storage data: External damage code.</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>LRBMEDC</td>
<td>Data from 244.</td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td>LRBMEDC1</td>
<td>Data from 245.</td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td>LRBMEDC2</td>
<td>Data from 246.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>LRBMEDPS</td>
<td>Primary Sync damage.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>LRBMEDAD</td>
<td>ETR attachment damage.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>LRBMEDSL</td>
<td>Switch to local.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>LRBMEDSC</td>
<td>ETR sync check.</td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>LRBMEDEC</td>
<td>Side Control Element/Side Id Change.</td>
</tr>
<tr>
<td>64 (40)</td>
<td>4</td>
<td>LRBMPSA</td>
<td>248-251 storage data: Failing storage address</td>
</tr>
<tr>
<td>68 (44)</td>
<td>4</td>
<td>LRBSSPSW</td>
<td>252-255 storage data.</td>
</tr>
<tr>
<td>72 (48)</td>
<td>8</td>
<td>LRBSSPSW</td>
<td>256-263 storage data: Store status PSW.</td>
</tr>
<tr>
<td>80 (50)</td>
<td>7</td>
<td></td>
<td>264-270 storage data.</td>
</tr>
<tr>
<td>87 (57)</td>
<td>1</td>
<td>LRBADRSI</td>
<td>271 storage data: CPU address &amp; site code.</td>
</tr>
<tr>
<td>88 (58)</td>
<td>16</td>
<td></td>
<td>272-287 storage data.</td>
</tr>
<tr>
<td>104 (68)</td>
<td>64</td>
<td>LRBAREGS</td>
<td>288-351 storage data: Access Registers.</td>
</tr>
<tr>
<td>168 (A8)</td>
<td>32</td>
<td></td>
<td>352-383 storage data.</td>
</tr>
<tr>
<td>200 (C8)</td>
<td>64</td>
<td>LRBGREGS</td>
<td>384-447 storage data: General Purpose Registers.</td>
</tr>
<tr>
<td>264 (108)</td>
<td>64</td>
<td>LRBCREGS</td>
<td>448-511 storage data: Control Registers.</td>
</tr>
<tr>
<td>328 (148)</td>
<td>1</td>
<td>LRBMEVIA</td>
<td>Event Indicator Area.</td>
</tr>
<tr>
<td>329 (149)</td>
<td>63</td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>392 (188)</td>
<td>10</td>
<td>ERRORID</td>
<td>Error identifier, consisting of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2-byte sequence number</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2-byte central processor identifier</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2-byte ASID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 4-byte time stamp</td>
</tr>
</tbody>
</table>

Miscellaneous data (MDR) record

MDR records are recorded on the logrec data set for buffered log devices when the following conditions occur:
- Buffer overflow in a buffered log device
- Demount of a device
- Device failure
- Operator-initiated end of day (EOD), record on demand (ROD), or VARY OFFLINE commands
- Invocations of EREP that force the writing of statistical data
An MDR record is also recorded on the logrec data set for device failures on teleprocessing devices connected to an IBM 3704, 3705, or 3725 Communication Controller.

The buffered log devices (devices attached to a control unit with a buffer for recording or logging device-dependent, status and sense information) are listed in offset 26 of the MDR record format (Table 9-15).

### Table 9-15. Format of the MDR record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0) 1</td>
<td>MCLASRC</td>
<td>Class/Source:</td>
</tr>
<tr>
<td>1.1</td>
<td>...</td>
<td>MDR record formatted by SVC 91; type=X'90'.</td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>...</td>
<td>MDR record; type=X'91'.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(1) 1</td>
<td>MSYSREL</td>
<td>System/Release level:</td>
</tr>
<tr>
<td>100.</td>
<td>...</td>
<td>OS/VS2.</td>
<td></td>
</tr>
<tr>
<td>bits 3-7</td>
<td></td>
<td></td>
<td>Release level 0 through 31.</td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(2) 4</td>
<td>MSWITCHS</td>
<td>Record switches:</td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>...</td>
<td>More records follow.</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>...</td>
<td>Last record.</td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>...</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>...</td>
<td>Record truncated. (Not used for MDR record.)</td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>...</td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>...</td>
<td>TIME macro used.</td>
<td></td>
</tr>
<tr>
<td>...xxx</td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td>Not used by MDR record.</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>...</td>
<td>Record incomplete.</td>
<td></td>
</tr>
<tr>
<td>...xxx</td>
<td>xxx xxxxxx</td>
<td>Not used by MDR record.</td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>...</td>
<td>Variable length sub-ID field used by record.</td>
<td></td>
</tr>
<tr>
<td>...xxx</td>
<td>xxx xxxxxx</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>bits 4-7</td>
<td></td>
<td>Number of characters in sub-ID field of device identified at displacement 26.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(6) 1</td>
<td>MRCDCNT</td>
<td>Record count:</td>
</tr>
<tr>
<td>bits 0-3</td>
<td></td>
<td>Sequence number of this physical record.</td>
<td></td>
</tr>
<tr>
<td>bits 4-7</td>
<td></td>
<td>Total number of physical records in this logical record.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td>MCHPID</td>
<td>Channel path identifier.</td>
</tr>
<tr>
<td>8</td>
<td>(8) 4</td>
<td>MDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>MTIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>MVERNO</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>MCPUSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>MCPUMOD</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>MCELLNG</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>
Missing interruption handler (MIH) record

An MIH record is recorded on the logrec data set for a missing interruption on a device, except teleprocessing (TP) devices attached through a 3704 or 3705 in EP mode, or expiration of the I/O timing limit for an I/O request. The system, invoked at time intervals specified by the user or by the system, invokes the missing interruption handler (MIH) to check the unit control blocks (UCB) for pending conditions. If MIH detects that the time limit for an I/O request has been exceeded, it considers that interrupt to be missing and does the following:

- Attempts to clear the failing device or subchannel.
- Issues a message to the system operator.
- Obtains information about the missing interruption (such as the device number, recovery actions, and time interval used by MIH) to build an MIH record.

I/O timing

The system invokes the I/O timing facility to monitor I/O requests. If an active I/O request has exceeded the I/O timing limit, the system abnormally ends the request and does the following:

- Clears the subchannel of all active, start pending, or halt pending I/O requests.
- Issues a message to the system operator.
- Obtains information about the terminated request (such as whether the request was queued or started) to build an MIH record.

If a queued I/O request has exceeded the I/O timing limit, the system abnormally ends the request and does the following:

- Issues a message to the system hardcopy log
- Obtains information about the terminated request (such as whether the request was queued or started) to build an MIH record.

Table 9-16. Format of the MIH Record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td>alignment (bits)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>(0)</td>
<td>1</td>
<td>LRBHTYPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.111 ...1</td>
<td>MIH record; type=X’71’.</td>
</tr>
<tr>
<td>1</td>
<td>(1)</td>
<td>1</td>
<td>LRBHREL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100. ...</td>
<td>OS/VS2</td>
</tr>
</tbody>
</table>
## Error Recording

**Table 9-16. Format of the MIH Record (continued)**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>bits 3-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td></td>
<td>Release level 0-31.</td>
</tr>
<tr>
<td>2 (2)</td>
<td>1</td>
<td>LRBHSW0</td>
<td>Record independent switches:</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>1... .... More records follow.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>0... .... Last record.</td>
</tr>
<tr>
<td>.1..</td>
<td></td>
<td></td>
<td>Time-of-day (TOD) clock instruction issued.</td>
</tr>
<tr>
<td>..1.</td>
<td></td>
<td></td>
<td>Record truncated.</td>
</tr>
<tr>
<td>...1</td>
<td></td>
<td></td>
<td>Record created by MVS/SP Version 2, 3, or 4.</td>
</tr>
<tr>
<td>... 1..</td>
<td></td>
<td></td>
<td>TIME macro issued.</td>
</tr>
<tr>
<td>... xxx</td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>3 (3)</td>
<td>1</td>
<td>LRBHSW1</td>
<td>Reserved.</td>
</tr>
<tr>
<td>4 (4)</td>
<td>1</td>
<td>LRBHSW2</td>
<td>Reserved.</td>
</tr>
<tr>
<td>5 (5)</td>
<td>1</td>
<td>LRBHSW3</td>
<td>Reserved.</td>
</tr>
<tr>
<td>6 (6)</td>
<td>1</td>
<td>LRBHSW4</td>
<td>Reserved.</td>
</tr>
<tr>
<td>7 (7)</td>
<td>1</td>
<td>LRBHCNT</td>
<td>Record count:</td>
</tr>
<tr>
<td>bits 0-3</td>
<td></td>
<td>LRBSEQ</td>
<td>Record sequence number.</td>
</tr>
<tr>
<td>bits 4-7</td>
<td></td>
<td>LRBNUM</td>
<td>Total number of physical records in this logical record.</td>
</tr>
<tr>
<td>8 (8)</td>
<td>4</td>
<td>LRBDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12 (C)</td>
<td>4</td>
<td>LRBTIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>16 (10)</td>
<td>1</td>
<td>LRBCPID</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17 (11)</td>
<td>3</td>
<td>LRBCSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20 (14)</td>
<td>2</td>
<td>LRBMDL</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22 (16)</td>
<td>2</td>
<td>LRBCMCEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24 (18)</td>
<td>8</td>
<td>MIRJABNM</td>
<td>Job name from the ASID.</td>
</tr>
<tr>
<td>32 (20)</td>
<td>52</td>
<td>MIRSCSWT</td>
<td>Subchannel information block.</td>
</tr>
<tr>
<td>32 (20)</td>
<td>4</td>
<td>MIRPMCW0</td>
<td>Interruption parameter.</td>
</tr>
<tr>
<td>36 (24)</td>
<td>4</td>
<td>MIRPMCW1</td>
<td>Path manage control word 1.</td>
</tr>
<tr>
<td>40 (28)</td>
<td>1</td>
<td>MIRLPM</td>
<td>Logical path mask.</td>
</tr>
<tr>
<td>41 (29)</td>
<td>1</td>
<td>MIRPNOM</td>
<td>Path not operational mask.</td>
</tr>
<tr>
<td>42 (2A)</td>
<td>1</td>
<td>MIRLPMU</td>
<td>Last path used mask.</td>
</tr>
<tr>
<td>43 (2B)</td>
<td>1</td>
<td>MIRPIM</td>
<td>Path installed mask.</td>
</tr>
<tr>
<td>44 (2C)</td>
<td>2</td>
<td>MIRMBI</td>
<td>Measurement block index.</td>
</tr>
<tr>
<td>46 (2E)</td>
<td>1</td>
<td>MIRPOM</td>
<td>Path operational mask.</td>
</tr>
<tr>
<td>47 (2F)</td>
<td>1</td>
<td>MIRPAM</td>
<td>Path available mask.</td>
</tr>
<tr>
<td>48 (30)</td>
<td>8</td>
<td>MIRCHPID</td>
<td>CHPIDs 0-7.</td>
</tr>
<tr>
<td>56 (38)</td>
<td>4</td>
<td>MIRPMCW6</td>
<td>Path manage control word 6.</td>
</tr>
<tr>
<td>60 (3C)</td>
<td>12</td>
<td>MIRSCSW</td>
<td>Subchannel status words.</td>
</tr>
<tr>
<td>72 (48)</td>
<td>12</td>
<td>MIRMDEP</td>
<td>Model dependent area.</td>
</tr>
<tr>
<td>84 (54)</td>
<td>8</td>
<td>MIRINTVL</td>
<td>Interval used for detection.</td>
</tr>
<tr>
<td>92 (5C)</td>
<td>1</td>
<td>MIRTYPE</td>
<td>Type of missing interrupt:</td>
</tr>
<tr>
<td>1...</td>
<td></td>
<td></td>
<td>Missing CSCH interrupt.</td>
</tr>
</tbody>
</table>

END OF STANDARD HEADER
<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>93 (5D)</td>
<td>1</td>
<td>MIRACTND</td>
<td>Default actions to attempt.</td>
</tr>
<tr>
<td>94 (5E)</td>
<td>1</td>
<td>MIRACTNA</td>
<td>Actions to be attempted.</td>
</tr>
<tr>
<td>95 (5F)</td>
<td>1</td>
<td>MIRACTNS</td>
<td>Actions actually tried:</td>
</tr>
<tr>
<td>96 (60)</td>
<td>4</td>
<td>MIRPSID</td>
<td>Subchannel ID number.</td>
</tr>
<tr>
<td>100 (64)</td>
<td>2</td>
<td>MIRPPMCW</td>
<td>Path management control word from UCBPMCW1.</td>
</tr>
<tr>
<td>102 (66)</td>
<td>1</td>
<td>MIRPLPM</td>
<td>Logical path mask from UCBLPM.</td>
</tr>
<tr>
<td>103 (67)</td>
<td>1</td>
<td>MIRPLPUM</td>
<td>Last path used mask from UCBLPUM.</td>
</tr>
<tr>
<td>104 (68)</td>
<td>1</td>
<td>MIRPPIM</td>
<td>UCBPIM.</td>
</tr>
<tr>
<td>105 (69)</td>
<td>8</td>
<td>MIRPCHPS</td>
<td>CHPIDs from UCBCHPID.</td>
</tr>
<tr>
<td>113 (71)</td>
<td>1</td>
<td>MIRPLEVL</td>
<td>UCB level byte.</td>
</tr>
<tr>
<td>114 (72)</td>
<td>1</td>
<td>MIRPIO SF</td>
<td>IOS flags.</td>
</tr>
<tr>
<td>115 (73)</td>
<td>4</td>
<td>MIRPLVMS</td>
<td>Level mask from UCBLVMSK.</td>
</tr>
<tr>
<td>119 (77)</td>
<td>1</td>
<td>MIRPMIHT</td>
<td>MIH flag proc. (UCBMIHTI).</td>
</tr>
<tr>
<td>120 (78)</td>
<td>1</td>
<td>MIRFLAG1</td>
<td>Flag byte.</td>
</tr>
<tr>
<td>121 (79)</td>
<td>1</td>
<td>MIRUFLC</td>
<td>Flag byte from UCBFLC.</td>
</tr>
<tr>
<td>122 (7A)</td>
<td>2</td>
<td>MIRUCHAN</td>
<td>Device number from UCBCHAN.</td>
</tr>
<tr>
<td>124 (7C)</td>
<td>2</td>
<td>MIRUSFLS</td>
<td>Flag bytes from UCBSFLS.</td>
</tr>
<tr>
<td>126 (7E)</td>
<td>4</td>
<td>MIRUTYPE</td>
<td>UCB device class/type.</td>
</tr>
<tr>
<td>130 (82)</td>
<td>6</td>
<td>MIRDVOL1</td>
<td>Volume serial.</td>
</tr>
<tr>
<td>136 (88)</td>
<td>1</td>
<td>MIRFLAG4</td>
<td>Flag byte.</td>
</tr>
<tr>
<td>137 (89)</td>
<td>1</td>
<td>MIRDFL5</td>
<td>Flag byte from UCBFL4 (DASD only).</td>
</tr>
<tr>
<td>138 (8A)</td>
<td>1</td>
<td>MIRFLG1</td>
<td>MIH record flags.</td>
</tr>
<tr>
<td>139 (8B)</td>
<td>1</td>
<td>MIRFLG2</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>
Error Recording

Table 9-16. Format of the MIH Record  (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>140</td>
<td>(8C)</td>
<td>1</td>
<td>MIRRSNC</td>
</tr>
<tr>
<td>141</td>
<td>(8D)</td>
<td>3</td>
<td>MIRRSV1</td>
</tr>
<tr>
<td>144</td>
<td>(90)</td>
<td>1</td>
<td>MIRHLTRC</td>
</tr>
<tr>
<td>145</td>
<td>(91)</td>
<td>1</td>
<td>MIRCLRRCC</td>
</tr>
<tr>
<td>146</td>
<td>(92)</td>
<td>1</td>
<td>MIRSTRC1</td>
</tr>
<tr>
<td>147</td>
<td>(93)</td>
<td>1</td>
<td>MIRSTRC2</td>
</tr>
<tr>
<td>148</td>
<td>(94)</td>
<td>4</td>
<td>MIRCIRB1</td>
</tr>
<tr>
<td>152</td>
<td>(98)</td>
<td>4</td>
<td>MIRSIRB1</td>
</tr>
<tr>
<td>156</td>
<td>(9C)</td>
<td>8</td>
<td>MIRRSV2</td>
</tr>
</tbody>
</table>

Outboard (OBR) Record

OBR records are recorded on the logrec data set for any of the following:

- Permanent (uncorrectable or unit check) device failures
- Path failures handled by alternate path recovery
- Temporary or intermittent I/O device failures
- Paging I/O errors
- Counter overflow statistics for I/O devices
- End-of-day requests
- Statistical recording by EREP
- Counter overflow statistics and device failures on teleprocessing devices
- Demount conditions on an IBM magnetic tape device (3420, 3422, 3430)

Statistical recording

Error statistics, the number of times I/O devices have failed for specific device-dependent failures, are kept in a main storage table called the device statistics table. The device’s error recovery procedure (ERP) updates the table.

Note: Intermediate counters for buffered log devices, such as the IBM 3330 and 3850, are kept in the device's error recording buffer and are updated by the device's ERP. An overflow condition or end-of-day (EOD) request on these devices causes the information to be recorded on the logrec data set as an MDR record.

Counter overflow

When a counter for a device with a 10-byte entry in the statistics table reaches its device-dependent maximum setting or threshold, the system writes a short OBR record.

When a counter for a device with a variable-length statistics table entry (such as the IBM 3420 Magnetic Tape Unit, which has more than one 10-byte field in its entry) reaches its threshold, the system writes a long OBR record.
The system writes both long and short records to the logrec data set. Offset 2 of the OBR record format indicates that the record was written because of counter overflow.

**End-of-Day (EOD) request**
When the operator enters a HALT EOD command, the system writes a long OBR record. Offset 2 of the OBR record format indicates that the record was written because of an end-of-day request.

**Device failures**
The system builds a long OBR record to describe these errors:

- A permanent or temporary device failure (unit check) occurs on a TP device supported by Virtual Telecommunications Access Method (VTAM).
- The device is connected to the central processor by a channel path

**Magnetic tape drive (3420, 3422, 3430) demount recording**
A demount (DDR swap, CLOSE/EOV request, EOD command or deallocation condition) that involves an IBM magnetic tape drive (3420, 3422, 3430) causes a record to be built. The record contains environmental and statistical data that describes the magnetic tape drive having the tape demounted. Offset 2 of the OBR record format indicates that the record was written because of a volume demount.

**Note:** For magnetic tape drive (3420, 3422, 3430) demounts, the sense information, failing CCW in residence in an address space or a data space, and SCSW fields of the OBR record formats are not valid.

**Long OBR record**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(0) 1</td>
<td>CLASRC</td>
<td>Class/Source:</td>
</tr>
<tr>
<td>..11</td>
<td></td>
<td>OBR (unit check) record; type=X'30'.</td>
<td></td>
</tr>
<tr>
<td>..11</td>
<td></td>
<td>No longer generated.</td>
<td></td>
</tr>
<tr>
<td>..11</td>
<td></td>
<td>TP access method (VTAM) OBR record; type=X'36'.</td>
<td></td>
</tr>
<tr>
<td>..11</td>
<td></td>
<td>Dynamic pathing availability (DPA) OBR record; type=X'3A'.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(1) 1</td>
<td>SYSREL</td>
<td>System/Release level:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100. ....</td>
<td>OS/VS2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bits 3-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-1F</td>
<td>Release level 0-31.</td>
</tr>
<tr>
<td>2</td>
<td>(2) 4</td>
<td>SWITCHES</td>
<td>Record switches:</td>
</tr>
<tr>
<td></td>
<td>Byte 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.  ...</td>
<td>More records follow.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.  ...</td>
<td>Last record.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.1.  ...</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.1.  ...</td>
<td>Record truncated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>... 1.</td>
<td>Record created by MVS/SP Version 2 or 3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>... 1.</td>
<td>TIME macro used.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.... .xxx</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Byte 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Error Recording

Table 9-17. Format of the long OBR record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec Hex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1... ...</td>
<td>SDR counters dumped at EOD.</td>
<td></td>
</tr>
<tr>
<td>.1</td>
<td>... ...</td>
<td>Temporary error.</td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>... ...</td>
<td>Short record (0 for long record).</td>
<td></td>
</tr>
<tr>
<td>...1</td>
<td>... ...</td>
<td>MP system.</td>
<td></td>
</tr>
<tr>
<td>... 0</td>
<td>... 1...</td>
<td>Central processor A issued last SSCH.</td>
<td></td>
</tr>
<tr>
<td>... 1</td>
<td>... 1...</td>
<td>Central processor B issued last SSCH.</td>
<td></td>
</tr>
<tr>
<td>... .1</td>
<td>... 1...</td>
<td>Volume demount.</td>
<td></td>
</tr>
<tr>
<td>.... ..x</td>
<td>... 1...</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>... 1</td>
<td>... 1...</td>
<td>SECUA contains polling characters (instead of CUA). Only set for TP (teleprocessing) devices.</td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Not used for OBR record.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(6) 1</td>
<td>RCDCNT</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td>bits 0-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bits 4-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total number of physical records in this logical record.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(8) 4</td>
<td>DATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>TIME</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>Verno</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>CPUSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>CPUMOD</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>MCELLNG</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

**END OF STANDARD HEADER**

| 24     | (18) 8                        | JOBID      | Alphabetic name assigned to job (as identified, for example, by a job name on a JCL job statement) being processed or requesting service at time of failure. |             |
| 32     | (20) 8                        | FAILCCW    | CCW being processed at time of failure. |             |
| 40     | (28) 8                        | Reserved. |             |
| 48     | (30) 1                        | DEVDEPC    | Count of double words for device-dependent data. |             |
| 49     | (31) 1                        | CHPID      | Channel path identifier of path that encountered the error. |             |
| 50     | (32) 1                        | Low order two digits of device number. |             |
| 51     | (33) 1                        | DEVUA      | Reserved |             |
| 52     | (34) 4                        | DEVTYPE    | Device type associated with failing device. |             |
| 56     | (38) 1                        | SDRCNT     | Number of bytes of statistical data recorded in the statistical data recorder (SDR) work area. |             |
| 57     | (39) 3                        | DEVNUM     | Device number of device being used when failure occurred. For IBM 3330, 3340, 3375, or 3380 series of devices, field contains physical location (not address) of failing unit. |             |
| 60     | (3C) 2                        | IORETRY    | Number of I/O retries attempted for this error incident. |             |
| 62     | (3E) 2                        | SENSCNT    | Number of bytes of data in SENSE field. |             |
| 64     | (40) variable                | DEVDEP     | Device dependent information. |             |
|        | variable SDRINF              | SDR counter area that contains statistical counter/indicator data from device statistics table. |             |
## Error Recording

### Table 9-17. Format of the long OBR record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>alignment (bits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>variable</td>
<td>SENSE</td>
<td>Device-dependent sense information that was received on first sense command to failing device.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>IRB</td>
<td>Interrupt request block stored at time of error.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RCTWD</td>
<td>Flag bytes from the RCT used to create this record if the new OBR/MDR interface was used.</td>
<td></td>
</tr>
</tbody>
</table>

### Short OBR record

### Table 9-18. Format of the short OBR record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>alignment (bits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>CLASRC</td>
<td>Class/Source:</td>
<td></td>
</tr>
<tr>
<td>..11</td>
<td>..11 ..11..</td>
<td>OBR (unit check) record; type=X'30'.</td>
<td></td>
</tr>
<tr>
<td>..11</td>
<td>..11.11.</td>
<td>No longer generated.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>SYSREL</td>
<td>System/Release level:</td>
<td></td>
</tr>
<tr>
<td>100.</td>
<td>bits 3-7</td>
<td>OS/VS2.</td>
<td></td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td>Release level 0-31.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SWITCHES</td>
<td>Record switches:</td>
<td></td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>More records follow.</td>
<td></td>
</tr>
<tr>
<td>0..</td>
<td></td>
<td>Last record.</td>
<td></td>
</tr>
<tr>
<td>..1.</td>
<td></td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacements 8 and 12.</td>
<td></td>
</tr>
<tr>
<td>..1.</td>
<td></td>
<td>Record truncated.</td>
<td></td>
</tr>
<tr>
<td>..1..</td>
<td></td>
<td>Record created by MVS/SP Version 2 or 3.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td>1...</td>
<td>TIME macro used.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td>.xxx</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>Byte 1</td>
<td></td>
<td>SDR counters dumped at EOD.</td>
<td></td>
</tr>
<tr>
<td>1..</td>
<td></td>
<td>Temporary error.</td>
<td></td>
</tr>
<tr>
<td>1..</td>
<td></td>
<td>Short record (0 for long record).</td>
<td></td>
</tr>
<tr>
<td>1...</td>
<td></td>
<td>MP system.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td>0...</td>
<td>Central processor A issued last SSCH.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td>1...</td>
<td>Central processor B issued last SSCH.</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td>.1...</td>
<td>Volume demount.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RCDCNT</td>
<td>Record count:</td>
<td></td>
</tr>
<tr>
<td>(6)</td>
<td></td>
<td>Sequence number of this physical record.</td>
<td></td>
</tr>
<tr>
<td>bits 0-3</td>
<td></td>
<td>Total number of physical records in this logical record.</td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td></td>
<td>Not used for OBR record.</td>
<td></td>
</tr>
<tr>
<td>Byte 3</td>
<td></td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>(7)</td>
<td>Reserved.</td>
<td></td>
</tr>
</tbody>
</table>
Error Recording

Table 9-18. Format of the short OBR record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 8 (8)</td>
<td>4 DATE</td>
<td>System date of incident.</td>
<td></td>
</tr>
<tr>
<td>12 C (C)</td>
<td>4 TIME</td>
<td>System time of incident.</td>
<td></td>
</tr>
<tr>
<td>16 (10)</td>
<td>1 Verno</td>
<td>Machine version code.</td>
<td></td>
</tr>
<tr>
<td>17 (11)</td>
<td>3 CPUSER</td>
<td>Central processor serial number.</td>
<td></td>
</tr>
<tr>
<td>20 (14)</td>
<td>2 CPUMOD</td>
<td>Central processor machine model number.</td>
<td></td>
</tr>
<tr>
<td>22 (16)</td>
<td>2 Mcellng</td>
<td>Reserved.</td>
<td></td>
</tr>
</tbody>
</table>

END OF STANDARD HEADER

24 (18) 4 SDEVTYP Device type associated with failing device.
28 (1C) 1 SSDRCNT Number of bytes of statistical data to be recorded from SDR work area at displacement 32.
29 (1D) 3 SCUA Device number being used when failure occurred.
32 (20) variable SSDR SDR counter area containing statistical counter/indicator data from device statistics table.

Subchannel logout handler (SLH) record

The system writes a SLH record for any of the following channel-detected errors:
- Channel control check
- Interface control check
- Channel data check
- Address limit check
- Measurement check

Table 9-19. Format of the SLH record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (0) 1</td>
<td>LRBHTYPE</td>
<td>Class/Source:</td>
<td></td>
</tr>
</tbody>
</table>
|       ..1 ..11 | SLH Record; type=X’23’.
| 1 (1) 1 | LRBHREL          | System/Release level:  |
|       100 .... | OS/VS2.  |
| bits 3-7 | Release level 0-31. |
| 2 (2) 1 | LRBHSW0          | Record-independent switches:  |
|       1... .... | More records follow. |
|       0... .... | Last record.  |
|       ..1 .... | Time-of-day (TOD) clock instruction issued. |
|       ..1 .... | Record truncated. |
|       ... 1... | Record created by MVS/SP Version 2 or 3. |
|       ... 1... | TIME macro issued. |
|       ... .xxx | Reserved. |
| 3 (3) 3 | LRBHSW1          | Record-dependent switches:  |
|       Byte 0 | Reserved. |
|       Byte 1 | Reserved. |
### Table 9-19. Format of the SLH record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte 2</td>
<td>LRBHSW3</td>
<td>bits 0-5</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bits 6-7</td>
<td>'01' - Hard error - failure not recovered by the system. One or more jobs, or the operating system, may be lost or impacted. Hardware resources may be lost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>'02' - Degrade mode - failure was successfully recovered by the system. However, hardware resources may be lost, performance may be degraded, or a time-dependent application may be impacted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>'03' - Soft error - failure was successfully recovered by the system. A time-dependent application may be impacted.</td>
</tr>
<tr>
<td>6</td>
<td>(6) 1</td>
<td>LRBHCNT</td>
<td>Record count:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bits 0-3</td>
<td>LRBSEQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bits 4-7</td>
<td>LRBNUM</td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td>LRBHDATE</td>
<td>System date of incident.</td>
</tr>
<tr>
<td>8</td>
<td>(8) 4</td>
<td>LRBHDIM</td>
<td>System time of incident.</td>
</tr>
<tr>
<td>12</td>
<td>(C) 4</td>
<td>LRBHCPID</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>LRBHCSER</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>LRBHMDM</td>
<td>Central processor machine model number.</td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>LRBHCMEL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>24</td>
<td>(18) 8</td>
<td>SLHJOBNM</td>
<td>Job name or user ID.</td>
</tr>
<tr>
<td>32</td>
<td>(20) 8</td>
<td>SLHCCW</td>
<td>Last processed CCW.</td>
</tr>
<tr>
<td>40</td>
<td>(28) 4</td>
<td>SLHDEVT</td>
<td>Device type.</td>
</tr>
<tr>
<td>44</td>
<td>(2C) 8</td>
<td>SLHERPIB</td>
<td>ERP information block.</td>
</tr>
<tr>
<td>44</td>
<td>(2C) 1</td>
<td>SLHISEW01</td>
<td>First byte of ESW.</td>
</tr>
<tr>
<td>45</td>
<td>(2D) 3</td>
<td>SLHRSVDI</td>
<td>Reserved.</td>
</tr>
<tr>
<td>48</td>
<td>(30) 1</td>
<td>SLHFLG1</td>
<td>Flag byte.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 0 ...</td>
<td>SLHSSCH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHINT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 0 ...</td>
<td>SLHTSCH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 0 ...</td>
<td>SLHHSCH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.... x ...</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.... 1 ...</td>
<td>SLHSENSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHCWCT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHRETRY</td>
</tr>
<tr>
<td>49</td>
<td>(31) 1</td>
<td>SLHLPUM</td>
<td>Last path used mask.</td>
</tr>
<tr>
<td>50</td>
<td>(32) 1</td>
<td>SLHVALID</td>
<td>Validity indicators.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>x ...</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHVLPU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHVTERM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHVSEQC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHVDVST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... 1 ...</td>
<td>SLHVCCW</td>
</tr>
</tbody>
</table>
### Error Recording

**Table 9-19. Format of the SLH record (continued)**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>alignment (bits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>139</td>
<td>.1</td>
<td>SLHVDVNO</td>
<td>Device number validity.</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>SLHVDVNU</td>
<td>Device number validity.</td>
</tr>
<tr>
<td>51</td>
<td>(33) 1</td>
<td>SLHTRMSCQ</td>
<td>Ending and sequence codes:</td>
</tr>
<tr>
<td></td>
<td>xx</td>
<td>SLHTRMCD</td>
<td>Ending code:</td>
</tr>
<tr>
<td></td>
<td>00</td>
<td>SLHSEQCD</td>
<td>Interface disconnect.</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>SLHSEQCD</td>
<td>Stop, stack or normal end.</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>SLHSEQCD</td>
<td>Selective reset.</td>
</tr>
<tr>
<td></td>
<td>.xx</td>
<td>SLHSEQCD</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>SLHSEQCD</td>
<td>I/O error alert.</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>SLHSEQCD</td>
<td>Sequence code</td>
</tr>
<tr>
<td></td>
<td>... .000</td>
<td>SLHSEQCD</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>... .001</td>
<td>SLHSEQCD</td>
<td>Command sent but status not analyzed.</td>
</tr>
<tr>
<td></td>
<td>... .010</td>
<td>SLHSEQCD</td>
<td>Command accepted by device but no data transferred.</td>
</tr>
<tr>
<td></td>
<td>... .011</td>
<td>SLHSEQCD</td>
<td>At least one byte of data has been transferred.</td>
</tr>
<tr>
<td></td>
<td>... .100</td>
<td>SLHSEQCD</td>
<td>Command not sent or sent but not yet accepted.</td>
</tr>
<tr>
<td></td>
<td>... .101</td>
<td>SLHSEQCD</td>
<td>Command accepted but data transfer unpredictable.</td>
</tr>
<tr>
<td></td>
<td>... .110</td>
<td>SLHSEQCD</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>... .111</td>
<td>SLHSEQCD</td>
<td>Reserved.</td>
</tr>
<tr>
<td>52</td>
<td>(34) 64</td>
<td>SLHIRB</td>
<td>IRB, which includes the SCSW (subchannel status word) and the ESW (extended status word). See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/os/zos/bkserv/">http://www.ibm.com/systems/z/os/zos/bkserv/</a> for the detailed format of the IRB.</td>
</tr>
<tr>
<td>116</td>
<td>(74) 4</td>
<td>SLHUCBAD</td>
<td>UCB or RDEV address.</td>
</tr>
<tr>
<td>120</td>
<td>(78) 2</td>
<td>SLHDEVNO</td>
<td>Device number.</td>
</tr>
<tr>
<td>122</td>
<td>(7A) 6</td>
<td>SLHVOLSR</td>
<td>Volume serial number.</td>
</tr>
<tr>
<td>128</td>
<td>(80) 5</td>
<td>SLHUCBLV</td>
<td>UCB level byte and mask.</td>
</tr>
<tr>
<td>133</td>
<td>(85) 2</td>
<td>SLHUCBLV</td>
<td>Reserved.</td>
</tr>
<tr>
<td>135</td>
<td>(87) 1</td>
<td>SLHCIPID</td>
<td>Channel path id.</td>
</tr>
<tr>
<td>136</td>
<td>(88) 4</td>
<td>SLHSID</td>
<td>Subchannel ID number.</td>
</tr>
<tr>
<td>140</td>
<td>(8C) 4</td>
<td>SLHRSMAD</td>
<td>Absolute address of storage or key error if available.</td>
</tr>
<tr>
<td>144</td>
<td>(90) 2</td>
<td>SLHRSMRC</td>
<td>RSM return code for storage or key error.</td>
</tr>
<tr>
<td>146</td>
<td>(92) 2</td>
<td>SLHRSMER</td>
<td>Error type.</td>
</tr>
<tr>
<td></td>
<td>Byte 0</td>
<td>SLHRSMER</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>Byte 1</td>
<td>SLHRSMER</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>xxxx xx</td>
<td>SLHRSMER</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>... .00</td>
<td>SLHRSMER</td>
<td>Other.</td>
</tr>
<tr>
<td></td>
<td>... .01</td>
<td>SLHRSMER</td>
<td>Storage error.</td>
</tr>
<tr>
<td></td>
<td>... .10</td>
<td>SLHRSMER</td>
<td>Key error.</td>
</tr>
<tr>
<td>148</td>
<td>(94) 4</td>
<td>SLHRSMST</td>
<td>RSM status information.</td>
</tr>
</tbody>
</table>

### Software records

Software records are recorded on the logrec data set for any of the following:
Error Recording

- Hardware-detected hardware errors, such as software recovery attempts for hard machine failures
- Hardware-detected software errors, such as program checks
- Operator-detected errors, such as pressing the restart key
- Software-detected software errors, detected because:
  - The CALLRTM TYPE=ABTERM macro or the ABEND macro was invoked.
  - A non-abend error occurred and the detecting program invoked the symptom record reporting facility.
  - An abend occurred and a recovery routine requested that a system diagnostic work area (SDWA) be recorded through RTM.
  - A program issued an incorrect SVC
- Records for hardware-detected or software-detected errors that were lost because they could not be written to the logrec data set

The three types of software records are:
- SDWA record
- Lost record summary record
- Symptom record

See z/OS MVS Diagnosis: Tools and Service Aids for more information about the logrec data set.

System diagnostic work area (SDWA) record

When a software error occurs, the system gathers diagnostic information for the error and places it into a system diagnostic work area (SDWA) control block. A recovery routine can request that the system create a software-type record from the information in the SDWA and record it to the logrec data set. This software record contains the following information:

- Standard record header information.
- SDWA information such as registers, PSW, locks held at the time of error, completion code, data describing reasons and conditions for entering the recovery exit routine, the CSECT in which the error occurred, module name, and FRR ID. See z/OS MVS Data Areas in z/OS Internet Library at http://www.ibm.com/systems/z/os/zos/bkserv/ for the detailed format of the SDWA.
- Variable information that assists in isolating the specific error. A description of the specific variable information is in the program listing.
- Error identifier to identify any associated machine check record or SVC dump.

Table 9-20. Format of the SDWA record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (0)</td>
<td>1</td>
<td>HDRTP</td>
<td>Class/Source:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1...</td>
<td>Software-detected software error; type=X'40'.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1... .1...</td>
<td>Hardware-detected hardware error; type=X'48'.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1... .1...</td>
<td>Operator-detected error; type=X'44'.</td>
</tr>
<tr>
<td>1 (1)</td>
<td>1</td>
<td>HDROP RN</td>
<td>System/Release level:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100. ......</td>
<td>OS/VS2.</td>
</tr>
<tr>
<td></td>
<td>bits 3-7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Error Recording

### Table 9-20. Format of the SDWA record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Hex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td>Release level 0-31.</td>
<td></td>
</tr>
<tr>
<td>2 (2)</td>
<td>1 HDRIS</td>
<td>Record-independent switches:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x...</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1...</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacement 8.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>..1...</td>
<td>Record truncated. (When EREP detects this bit being on, it does not edit record but prints it out in hexadecimal.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...1...</td>
<td>Record created by MVS/SP Version 2 or 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... .xxx</td>
<td>TIME macro used.</td>
</tr>
<tr>
<td>3 (3)</td>
<td>3 HDRDS</td>
<td>Record-dependent switches:</td>
<td></td>
</tr>
<tr>
<td>Byte 0</td>
<td></td>
<td>x...</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.1...</td>
<td>Record incomplete. (Record truncated because of lack of buffer space.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>..1...</td>
<td>Record contains an ERRORID.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>... .xxx</td>
<td>Reserved.</td>
</tr>
<tr>
<td>Byte 1</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 (6)</td>
<td>1 HDRCNT</td>
<td>Not used for SDWA record.</td>
<td></td>
</tr>
<tr>
<td>7 (7)</td>
<td>1</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>8 (8)</td>
<td>8 HDRTM</td>
<td>Time-of-day clock.</td>
<td></td>
</tr>
<tr>
<td>16 (10)</td>
<td>1 HDRCPID</td>
<td>Machine version code.</td>
<td></td>
</tr>
<tr>
<td>17 (11)</td>
<td>3 Central processor serial number.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 (14)</td>
<td>2 Central processor machine model number.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 (16)</td>
<td>2 Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>END OF STANDARD HEADER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 (18)</td>
<td>8 JOBID</td>
<td>Alphameric name assigned to job (as identified, for example, by a job name on a JCL JOB statement) being processed or requesting service at time of failure.</td>
<td></td>
</tr>
<tr>
<td>32 (20)</td>
<td>400 SDWA</td>
<td>The SDWA is described by the IHASDWA mapping macro. See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/os/zos/bkserv">http://www.ibm.com/systems/z/os/zos/bkserv</a> for the detailed SDWA data area.</td>
<td></td>
</tr>
<tr>
<td>432 (1B0)</td>
<td>264 SDWARA</td>
<td>Variable recording area.</td>
<td></td>
</tr>
<tr>
<td>435 (1B3)</td>
<td>1 SDWAURAL</td>
<td>Length of the variable recording area (SDWAVRA) containing recovery exit data.</td>
<td></td>
</tr>
<tr>
<td>436 (1B4)</td>
<td>variable SDWAVRA</td>
<td>Contains FRR-dependent data such as damage assessment, recovery action information, and specific diagnostic information to assist in isolating or identifying problem. See the appropriate program listing for a description of specific data supplied by a recovery exit routine.</td>
<td></td>
</tr>
<tr>
<td>var. 456</td>
<td>SDWARC1</td>
<td>First recordable extension of the SDWA. Contains additional serviceability data. See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/os/zos/bkserv">http://www.ibm.com/systems/z/os/zos/bkserv</a> for the SDWA.</td>
<td></td>
</tr>
</tbody>
</table>
Table 9-20. Format of the SDWA record (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>var.</td>
<td>16</td>
<td>SDWARC2</td>
<td>Second recordable extension of the SDWA. Contains additional data concerning I/O machine checks. See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/os/zos/bkserv/">http://www.ibm.com/systems/z/os/zos/bkserv/</a> for the SDWA.</td>
</tr>
<tr>
<td>var.</td>
<td>32</td>
<td>SDWARC3</td>
<td>Third recordable extension of the SDWA. Contains additional data concerning locks to be freed by RTM. See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/os/zos/bkserv/">http://www.ibm.com/systems/z/os/zos/bkserv/</a> for the SDWA.</td>
</tr>
<tr>
<td>var.</td>
<td>360</td>
<td>SDWARC4</td>
<td>Fourth recordable extension of the SDWA. Contains z/Architecture® information. See z/OS MVS Data Areas in z/OS Internet Library at <a href="http://www.ibm.com/systems/z/os/zos/bkserv/">http://www.ibm.com/systems/z/os/zos/bkserv/</a> for the SDWA.</td>
</tr>
<tr>
<td>var.</td>
<td>10</td>
<td>ERRORID</td>
<td>Error identifier - not part of the SDWA, but located directly after the SDWA in the logrec data set record. ERRORID consists of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2-byte sequence number</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2-byte CPU identifier</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2-byte ASID</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 4-byte time stamp</td>
</tr>
</tbody>
</table>

### Lost record summary record

When the in-storage logrec data set buffer becomes filled before the recording task can be dispatched to write the stacked records to the logrec data set and remove them from the buffer, write-to-the logrec data set requests (via the RECORD service) that occur during this time are lost and cannot be written to the logrec data set. This can happen for either hardware-detected or software-detected errors. Types of errors that often result in lost records are:

- Channel checks occurring continuously and so quickly that the recording task cannot keep up
- Repetitive program checks in the supervisor

In both these cases, the incidents occur so close together that records cannot be written to the buffer. A count of these lost records is accumulated and later written to the logrec data set in the lost record summary (Table 9-21).

The lost record summary record is 25 bytes long (Table 9-21 on page 9-43). The first 24 bytes is the standard software record header; byte 25 contains a count (1 to 255) of the lost records that could not be written to the logrec data set since the last lost record summary was written.

Table 9-21. Format of the lost record summary record

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>HDRTYP</td>
<td>Class/Source:</td>
</tr>
</tbody>
</table>
|        |              |            | • Lost record summary; type=X’4F’.
| 1      | 1            | HDROPRN    | System/Release level: |
|        |              |            | • OS/VS2. |
|        |              |            | • Release level 0-31. |
| 2      | 1            | HDRIS      | Record-independent switches: |
|        |              |            | • Reserved. |
### Symptom record

When a module detects a programming failure, it constructs a symptom record containing a description of the failure.

A symptom record contains structured data base (SDB) symptom strings. Symptom strings are valuable problem determination aids. Symptom strings can be used by installations and the IBM Support Center to search for matching problems in a problem reporting data base.

The record is processed by two macros:
- The ADSR macro, which maps the record.
- SYMREC allows authorized programs to write records to the logrec data set.

Unauthorized programs are allowed to write to the logrec data set only if an installation provided user exit has been installed.

For more information on how to write an exit routine, see the z/OS MVS Installation Exits.

---

**Table 9-21. Format of the lost record summary record (continued)**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1......</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacement 8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>..1....</td>
<td>Record truncated. (When EREP detects this bit being on, it does not edit record but prints it out in hexadecimal.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1...</td>
<td>Record created by MVS/SP Version 2 or 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>....1...</td>
<td>TIME macro used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>....xxx</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 (3) 3</td>
<td>HDRDS Record-dependent switches:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 0</td>
<td>HDRDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1......</td>
<td>Short record. (Set for ‘4F’ type records to indicate that record is not as long as other software records.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.xxx xxxx</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 1</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byte 2</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 (6) 1</td>
<td>HDRCNT Not used for lost record summary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 (7) 1</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 (8) 8</td>
<td>HDRTM Time-of-day clock.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 (10) 1</td>
<td>HDRCPID Machine version code.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 (11) 3</td>
<td>HDRCPID Central processor serial number.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 (14) 2</td>
<td>HDRCPID Central processor machine model number.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 (16) 2</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 (18) 1</td>
<td>RCBLCNT Last field in the lost record summary. Contains the number of records that could not be written to the logrec data set.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

END OF STANDARD HEADER
### Table 9-22. Format of the symptom record (section 1)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>HDRTYP</td>
<td>Class/Source:</td>
</tr>
<tr>
<td>1.1.. 11..</td>
<td>Symptom record; type=X'4C'.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>HDROPRN</td>
<td>System/Release level:</td>
</tr>
<tr>
<td>100. ....</td>
<td>OS/VS2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bits 3-7</td>
<td>Release level 0-31.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>HDRIS</td>
<td>Record-independent switches:</td>
</tr>
<tr>
<td>x... ....</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1... ....</td>
<td>Time-of-day (TOD) clock instruction issued. Used in conjunction with date and time values at displacement 8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1 ...</td>
<td>Record truncated. (When EREP detects this bit being on, it does not edit record but prints it out in hexadecimal.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1 ...</td>
<td>Record created by MVS/SP Version 2 or 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>... 1...</td>
<td>TIME macro used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>... ...</td>
<td>3 Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>HDRDS</td>
<td>Record-dependent switches:</td>
</tr>
<tr>
<td>Byte 0</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x... ....</td>
<td>Record incomplete. (Record truncated because of lack of buffer space.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...x xxxx</td>
<td>Reserved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>HDRCNT</td>
<td>Not used for symptom record.</td>
</tr>
<tr>
<td>7</td>
<td>(7) 1</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>HDRTM</td>
<td>Time-of-day clock.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 1</td>
<td>HDRCPID</td>
<td>Machine version code.</td>
</tr>
<tr>
<td>17</td>
<td>(11) 3</td>
<td>HDRCPID</td>
<td>Central processor version number.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 2</td>
<td>Central processor machine model number.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>(16) 2</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>(18) 2</td>
<td>ADSRID</td>
<td>‘SR’ symptom record id.</td>
</tr>
<tr>
<td>26</td>
<td>(1A) 4</td>
<td>ADSRCPM</td>
<td>Central processor model number.</td>
</tr>
<tr>
<td>30</td>
<td>(1E) 6</td>
<td>ADSRCPM</td>
<td>Central processor serial number.</td>
</tr>
<tr>
<td>36</td>
<td>(24) 4</td>
<td>ADSRGMT</td>
<td>Local time zone conversion factor.</td>
</tr>
<tr>
<td>40</td>
<td>(28) 4</td>
<td>ADSRGMT</td>
<td>Time stamp.</td>
</tr>
<tr>
<td>44</td>
<td>(2C) 8</td>
<td>ADSRTOC</td>
<td>Time stamp (HHMMSSTH).</td>
</tr>
<tr>
<td>52</td>
<td>(34) 6</td>
<td>ADSRTOC</td>
<td>Date (YYYYMMDD).</td>
</tr>
<tr>
<td>58</td>
<td>(3A) 8</td>
<td>ADSSSID</td>
<td>Customer assigned system/node name.</td>
</tr>
<tr>
<td>66</td>
<td>(42) 4</td>
<td>ADSSSIDS</td>
<td>Product ID of BCP</td>
</tr>
<tr>
<td>70</td>
<td>(46) 8</td>
<td>ADSSSICML Feature and level of SYMREC macro.</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>(4E) 1</td>
<td>ADSSSFL1</td>
<td>Record status flags.</td>
</tr>
</tbody>
</table>
## Error Recording

### Table 9-22. Format of the symptom record (section 1) (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ADSRTRNC</td>
<td>Symptom record was truncated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADSRPMOD</td>
<td>The section 3 symptom string has been modified.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADSRSGEN</td>
<td>No record from component.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADSRSMOD</td>
<td>The section 4 symptom string has been modified.</td>
</tr>
<tr>
<td>79</td>
<td>(4F) 1</td>
<td>ADSRFL2</td>
<td>Record status flags.</td>
</tr>
<tr>
<td>80</td>
<td>(50) 8</td>
<td>ADSRDTP</td>
<td>Type of dump taken for this event.</td>
</tr>
</tbody>
</table>

### Table 9-23. Format of the symptom record (section 2)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>88</td>
<td>(58) 2</td>
<td>ADSRARID</td>
<td>Architectural level of the symptom record.</td>
</tr>
<tr>
<td>90</td>
<td>(5A) 2</td>
<td>ADSRL</td>
<td>Length of section 2.</td>
</tr>
<tr>
<td>92</td>
<td>(5C) 2</td>
<td>ADSRCSL</td>
<td>Length of section 2.1 (ADSRCMPS).</td>
</tr>
<tr>
<td>94</td>
<td>(5E) 2</td>
<td>ADSRCSO</td>
<td>Offset of section 2.1 (ADSRCMPS).</td>
</tr>
<tr>
<td>96</td>
<td>(60) 2</td>
<td>ADSRDBL</td>
<td>Length of section 3 (ADSRDBST).</td>
</tr>
<tr>
<td>98</td>
<td>(62) 2</td>
<td>ADSRDBO</td>
<td>Offset of section 3 (ADSRDBST).</td>
</tr>
<tr>
<td>100</td>
<td>(64) 2</td>
<td>ADSRRROSL</td>
<td>Length of section 4 (ADSRROSD).</td>
</tr>
<tr>
<td>102</td>
<td>(66) 2</td>
<td>ADSRRROSA</td>
<td>Offset of section 4 (ADSRROSD).</td>
</tr>
<tr>
<td>104</td>
<td>(68) 2</td>
<td>ADSRRONL</td>
<td>Length of section 5 (ADSR5ST).</td>
</tr>
<tr>
<td>106</td>
<td>(6A) 2</td>
<td>ADSRRONA</td>
<td>Offset of section 5 (ADSR5ST).</td>
</tr>
<tr>
<td>108</td>
<td>(6C) 2</td>
<td>ADSRRISL</td>
<td>Reserved.</td>
</tr>
<tr>
<td>110</td>
<td>(6E) 2</td>
<td>ADSRRISA</td>
<td>Reserved.</td>
</tr>
<tr>
<td>112</td>
<td>(70) 8</td>
<td>ADSRSRES</td>
<td>System data.</td>
</tr>
<tr>
<td>120</td>
<td>(78) 16</td>
<td></td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

### Table 9-24. Format of the symptom record (at offset ADSRCSO in ADSR) (section 2.1)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes) alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>(4) 2</td>
<td>ADSRC</td>
<td>Identiﬁer for section 2.1.</td>
</tr>
<tr>
<td>6</td>
<td>(6) 9</td>
<td>ADSRCID</td>
<td>Component identiﬁer.</td>
</tr>
<tr>
<td>15</td>
<td>(F) 1</td>
<td>ADSRFLC</td>
<td>Component status flags.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADSRNIBM</td>
<td>Non-IBM program.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reserved.</td>
</tr>
<tr>
<td>16</td>
<td>(10) 4</td>
<td>ADSRLVL</td>
<td>Component level.</td>
</tr>
<tr>
<td>20</td>
<td>(14) 8</td>
<td>ADSPRTF</td>
<td>PTF level.</td>
</tr>
<tr>
<td>28</td>
<td>(1C) 8</td>
<td>ADSRPID</td>
<td>PID level.</td>
</tr>
<tr>
<td>36</td>
<td>(24) 8</td>
<td>ADSRPIDL</td>
<td>PID release level.</td>
</tr>
</tbody>
</table>
## Error Recording

Table 9-24. Format of the symptom record (at offset ADSRCSO in ADSR) (section 2.1) (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>(2C)</td>
<td>32</td>
<td>ADSRCDSC</td>
<td>Text description.</td>
</tr>
<tr>
<td>76</td>
<td>(4C)</td>
<td>4</td>
<td>ADSRRET</td>
<td>Return code.</td>
</tr>
<tr>
<td>80</td>
<td>(50)</td>
<td>4</td>
<td>ADSRREA</td>
<td>Reason code.</td>
</tr>
<tr>
<td>84</td>
<td>(54)</td>
<td>8</td>
<td>ADSRPID</td>
<td>Problem identifier.</td>
</tr>
<tr>
<td>92</td>
<td>(5C)</td>
<td>8</td>
<td>ADSRSSID</td>
<td>Subsystem identifier.</td>
</tr>
</tbody>
</table>

Table 9-25. Format of the Symptom Record (at offset ADSRDBO in ADSR) (section 3)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSRDBO</td>
<td>variable</td>
<td></td>
<td>ADSRDBST</td>
<td>Primary symptom string.</td>
</tr>
</tbody>
</table>

Table 9-26. Format of the symptom record (at offset ADSRROSA in ADSR) (section 4)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSRROSA</td>
<td>variable</td>
<td></td>
<td>ADSRROSD</td>
<td>Secondary symptom string.</td>
</tr>
</tbody>
</table>

Table 9-27. Format of the symptom Record (at offset ADSRRONA in ADSR) (section 5)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Size (bytes)</th>
<th>alignment (bits)</th>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADSRRONA</td>
<td>variable</td>
<td></td>
<td>ADSRRST</td>
<td>Free format data.</td>
</tr>
</tbody>
</table>
Error Recording
Chapter 10. SVC dump title directory

This directory lists the titles of SVC dumps. The directory has the following topics:

- **System-Defined SVC dumps with titles**
  This topic lists, in alphanumeric order, the titles of SVC dumps produced by system components and provides diagnostic information about the dumps.

- **SVC dumps without titles** on page 10-108
  This topic provides diagnostic information for SVC dumps without titles.

### System-Defined SVC dumps with titles

This topic lists, in alphanumeric order, the titles of SVC dumps and provides diagnostic information for the modules that initiate an SVC dump.

#### Titles

The system-defined SVC dump titles follow.

**ABDUMP ERROR, COMPON=ABDUMP, COMPID=SCDMP, ISSUER=IEAVTABD2.**

**Component:** Dumping Services - ABDUMP (5752-SCDMP)

**Issuing module:** IEAVTABD

**Explanation:**
An error occurred during RTM processing of a SYSABEND, SYSMDUMP, or SYSUDUMP ABEND dump. The error occurred when:

- ABDUMP attempted to set up dump processing
- SNAP or SVC dump processing encountered an error while taking the dump

The areas dumped are LSQA, TRT, LPA, GRSQ, and subpools 230 and 250.

**Problem determination:**
Determine the failing CSECT name and the error condition from RTM2WA and the SDWA, if available.

**ABEND IN IEAVTGLB**

**Component:** SLIP - PER Activation/Deactivation (5752-SCSLP)

**Issuing module:** IEAVTGLB

**Explanation:**
An error occurred when the SLIP processor attempted to activate or deactivate PER in the system.

The areas dumped are PSA, SQA, and SUM. The summary dump contains information relevant to the error.

**Associated problem data:** Message IEA415I.

**ABEND IN IEAVTJBN**

**Component:** SLIP - PER Activation/Deactivation (5752-SCSLP)

**Issuing module:** IEAVTJBN
Explanation: An error occurred when the SLIP processor attempted to determine if PER should be active for a new address space, started task, logon, mount, or job.

The areas dumped are PSA, SQA, and SUM. The summary dump contains information relevant to the error.

Associated problem data: Message IEA422I.

**ABEND IN IEAVTLCL**

Component: SLIP - PER Activation/Deactivation (5752-SCSLP)

Issuing module: IEAVTLCL

Explanation: An error occurred when the SLIP processor was attempting to activate or deactivate PER in an address space.

The areas dumped are PSA, SQA, LSQA, and SUM. The summary dump contains information relevant to the error.

Associated problem data: Message IEA415I.

**ABEND IN SMF INTERVAL PROCESSING - ROUTINE IEEMB836**

JOBNAME=xxxxxxxx

Component: System management facility (SMF) (5752-SC100)

Issuing module: IEEMB836 - FRR

Explanation: An abend occurred during SMF interval processing. In the dump title, xxxxxxxx indicates the name of the affected job.

The areas dumped are SQA, ALLPSA, NUC, LSQA, RGN, LPA, TRT, SWA, and SUM.

Problem determination: The SDWACSCT field in the SDWA contains the name of the module in control at the time of the error.

**ABEND IN SMF INTERVAL PROCESSING - ROUTINE IFAEASI**

JOBNAME=xxxxxxxx

Component: System management facility (SMF) (5752-SC100)

Issuing module: IFAEASI - FRR

Explanation: An abend occurred during SMF interval processing for the early address spaces that do not go through full function start. In the dump title, xxxxxxxx indicates the name of the affected job.

The areas dumped are SQA, ALLPSA, NUC, LSQA, RGN, LPA, TRT, SWA, and SUM.

**ABEND chhh AT hhhhhhhh (nnnnnn) + X'nnnn' cc- -cc**

Component: JES2 (5752-SC1BH)

Issuing module: HASPTERM or HASPRAS
**Explanation:** An abend occurred during JES2 processing. In the dump title, the variables are:

- chhh: ABEND code
- hhhhhhh: Failing module name
- nnnnnn: Entry point address
- X’nnnn’: Offset of the failing instruction
- cc- -cc: Brief description of the ABEND code and the JES2 release level

ABEND codes that start with S are system completion codes, and those that start with $ are JES2 codes.

The areas dumped are PSA, NUC, RGN, TRT, SQA, CSA, LPA, and SWA.

**Associated problem data:** System completion codes (see [z/OS MVS System Codes](https://publib.boulder.ibm.com/infocenter/mvs/v2r12/topic/com.ibm.mvs/bmvsr21_tz021005.htm)) and JES2 codes (see message $HASP095 in [z/OS JES2 Messages](https://publib.boulder.ibm.com/infocenter/ijes2/v2r12/topic/com.ibm.jes2/bmjes2m1_tz021005.htm)).

**ABEND=hhh, COMPON=CONVERTER, COMPID=SC1B9, ISSUER=IEFNB9CR**

**Component:** Converter (5752-SC1B9)

**Issuing module:** IEFNB9CR - Converter recovery routine

**Explanation:** IEFNB9CR was entered due to an expected error (0B0 abend or program check) during converter processing.

The areas dumped are LSQA, RGN, LPA, and SWA.

**ABEND=hhh, COMPON=INTERPRETER, COMPID=SC1B9, ISSUER=IEFNB9IR**

**Component:** Interpreter (5752-SC1B9)

**Issuing module:** IEFNB9IR - Interpreter recovery routine

**Explanation:** IEFNB9IR was entered due to an expected error (0B0 abend or program check) during interpreter processing.

The areas dumped are LSQA, RGN, LPA, and SWA.

**ABEND=hhh, REASON=nnnn, MODULE=IEAVSPDM, COMPON=RECONFIGURATION - SPDM, COMPID=SC1CZ, ISSUER=IEAVSPDM**

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEAVSPDM

**Explanation:** An abend occurred in module IEAVSPDM during either:

- System initialization processing (at IPL time).
- Processing by IEAVSPDM of the post by the machine check handler of the service processor damage ECB. In this case, an MSSF machine check interruption occurred and the MSSF (or processor controller) is no longer functioning.
ABEND=40D, RC=xx, COMPON=RTM2, COMPID=SCRTM, ISSUER=IEAVTRT2, MEMTERM - UNRECOVERABLE ABEND FAILURE

Component: Recovery termination manager (RTM) - RTM2 Processing (5752-SCRTM)

Issuing module: IEAVTRT2

Diagnosis Information: z/OS MVS System Codes

Explanation: An unrecoverable error occurred during RTM2 processing. IEAVTRT2 completes processing, sets the current task tree nondispachable, and ends the failing address space.

The areas dumped are ALLPSA, LSQA, NUC, SQA, and TRT.

Associated problem data: The most recent RTM2WA addressed by the TCB contains the most pertinent information. However, if an RTM2WA does not exist, not enough storage was available in the LSQA or SQA.

ABP:IDA121A2 - ABEND FROM ABP FRR

Component: Block processor (5665-28419)

Issuing module: IDA121A2 - FRR

Explanation: An abnormal end occurred during VSAM block processing. A VSAM request was being processed in the actual block processor (ABP), initiating I/O, when the error occurred.

The FRR routine in IDA121A2 requests an SVC dump. The areas dumped are PSA, NUC, RGN, TRT, CSA, and SQA.

Associated problem data: Register 3 points to the IOMB for the VSAM request being processed.

ABP:IDA121A3 - ABEND FROM NORMAL END FRR

Component: Block processor (5665-28419)

Issuing module: IDA121A3 - FRR

Explanation: An abnormal end occurred while IDA121A3 was processing a VSAM request. I/O for the VSAM request had completed normally when the error occurred.

RTM passes control to the FRR in IDA121A3 (at entry point IDA121F3), which requests an SVC dump. The areas dumped are PSA, NUC, RGN, TRT, CSA, and SQA.

Associated problem data: Register 3 points to the IOMB for the VSAM request.

ABP:IDA121A4 - ABEND FROM ABNORMAL END FRR

Component: Block processor (5665-28419)

Issuing module: IDA121A4 - FRR
**Explanation:** An abnormal end occurred while IDA121A4 was processing a VSAM request. I/O for a VSAM request had completed abnormally when the error occurred.

RTM passes control to the FRR in IDA121A4 (at entry point IDA121F4), which requests an SVC dump. The areas dumped are PSA, NUC, RGN, TRT, CSA, and SQA.

**Associated problem data:** Register 3 points to the IOMB for the VSAM request.

**ABP:IGC121 - ABEND FROM SIOD FRR**

**Component:** Block processor (5665-28419)

**Issuing module:** IGC121 - FRR

**Explanation:** An abnormal end occurred while IGC121 was processing a VSAM request. The I/O manager was processing a VSAM request when the error occurred.

RTM passes control to the FRR in IDA121 (at entry point IDA121F1), which requests an SVC dump. The areas dumped are PSA, NUC, RGN, TRT, CSA, and SQA.

**Associated problem data:** Register 3 points to the IOMB for the VSAM request.

**AHL007I GTF TERMINATING ON ERROR CONDITION**

**Component:** Generalized trace facility (GTF) (5752-SC111)

**Explanation:** An error occurred during GTF initialization.

An ESTAE routine requests a retry action which requests an SVC dump, writes message AHL016I, and frees storage and other resources that were allocated to GTF. GTF ends its processing. The areas dumped are RGN, SQA, and MCHEAD control block.

**Associated problem data:** All control blocks allocated to GTF are dumped.

**CHECKPOINT RESTART FAILURE, ABEND=hhh, COMPON=SCHR-RESTART, COMPID=SC1B3, ISSUER=IEFB609**

**Component:** Scheduler restart (5752-SC1B3)

**Issuing module:** IEFX609

**Explanation:** An abend occurred during scheduler checkpoint restart processing. Restart processing ends.

The areas dumped are LPA, LSQA, NUC, RGN, SQA, SUM, SWA, and TRT.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains footprints to indicate the processing path.
**SVC Dump Titles**

**COMMAND EXIT xxxxxxxx ABENDED, COMPON=MASTER, COMPID=SC1B8, ISSUER=IEECV6CX, ABEND=yyy, RSN=UNKNOWN**

**Component:** Console Services (5752-SC1CK)

**Issuing module:** IEECV6CX

**Explanation:** An error occurred while processing the command installation exit routine. The areas dumped are CSA, SQA, TRT, SUM, NUC, RGN, and GRSQ.

In the dump title, the variables are:

- xxxxxxxx
  Name of the exit routine.
- yyy
  ABEND code.

**COMMON AUTHORIZATION CHECK ROUTINE ERROR, ABEND=hhh, COMPON=SCHR-CMF, COMPID=BB131, ISSUER=IEFCMAUT**

**Component:** Scheduler (5752-SC1B6)

**Issuing module:** IECMAUT

**Explanation:** An abend occurred during authorization checking.

ESTAE routine SETESTAE in IECMAUT sets up the recovery environment. If no previous abend occurred, recovery routine RECOVERY in IECMAUT requests a retry. If there was a previous abend, the recovery routine issues a SETRP to indicate that RTM should percolate the error to the next level of recovery.

**COMPON=APPC, COMPID=5752SCACB, ISSUER=x, MODULE=x , ABEND=(,REASON=)**

**Component:** APPC/MVS (5752SCACB)

**Issuing module:** ATBMIRE, ATBCTCLN

**Explanation:** An error occurred during APPC/MVS processing.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=COMMTASK, COMPID=5752xxxxx, ISSUER=iiiiiiiiii, MODULE=cccccccccc, ABEND=aaa, REASON=rrrrrrrr**

**Component:** Comm Task (5752-SC1CK) or Master Scheduler Commands (5752-SC1B8)

**Issuing module:** IEAM1REC

**Explanation:** An error occurred during communications task processing.

In the dump title, the variables are:

- xxxxx is either SC1CK or SC1B8
SVC Dump Titles

- iiiiiii is IEAM1EST (if an ESTAE was in effect) or IEAM1FRR (if an FRR was in effect)
- cccccc is the CSECT in control at the time of the error
- aaa is the ABEND code
- rrrrrrr is the ABEND reason code

The areas dumped are COUPLE, CSA, LSQA, NOALLPSA, NUC, RGN, SQA, SUMDUMP, SWA, TRT, and XESDATA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data. The dump also includes Comm Task component trace data.

COMPON=CNZ, COMPID=SC1CK, ISSUER=CNZX1MPU, LOST SECURITY DATA FOR CONSOLE consname FROM SYSTEM sysname

Component: Console Services (5752-SC1CK)

Issuing module: CNZX1MPU

Explanation: An error occurred within a Console Services module. The dump includes Console Services control blocks and traces. In the dump title, the variables are:

consname
- the name of the console whose security data was lost.

sysname
- the name of the system that sent the security data.

COMPON=MMS, COMPID=5752xxxxx, ABEND=aaa, MODULE=cccccccc, RPLP=rrrrrrrr, text

Component: MMS (5752-SCMMS)

Issuing module: CNLXRECV

Explanation: An error occurred during MVS Message Service (MMS). In the dump title, the variables are:

- xxxxx is SCMMS
- aaa is the ABEND code
- cccccccc is the CSECT in control at the time of the error
- rrrrrrrr is the RPL address
- text is the location or function that failed
The areas dumped are specific MMS control blocks.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRD, DATA IN VIRTUAL GENERAL ESTAE RECOVERY FAILURE**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVDEST - ESTAE

**Explanation:** An error occurred during data-in-virtual general ESTAE recovery processing.

The areas dumped are SUM, LSQA, and SQA.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) includes the DRA.

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRG, DATA IN VIRTUAL GENERAL FRR RECOVERY FAILURE**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVRGFRR - FRR

**Explanation:** An error occurred during data-in-virtual general FRR recovery processing.

The areas dumped are SUM, LSQA, SQA, and NUC.

**Associated problem data:** The SDWA variable recording area (SDWA) includes the DRA.

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRK, TRACE TABLE, SEQUENCE NUMBER = xxxxxxxxxx**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVRKTR - Trace

**Explanation:** The data-in-virtual trace table was filled during data-in-virtual processing. In the dump title, sequence number xxxxxxxxxx indicates the number of times that the first entry in the trace table was used. The sequence number starts at zero and is increased by one each time the trace table fills and wraps around. When a new table replaces the trace table, the sequence number starts again at zero.

The dumped area is SUM.

**Associated problem data:** The dump includes the following information in the summary dump:
- DIB
- DIBX
• Data-in-virtual component trace table control area (CTC)
• Data-in-virtual trace table

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRM, WITH INVALID DRA**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVRM - FRR

**Explanation:** An error occurred during data-in-virtual disabled processing. The DRA is damaged.

The areas dumped are SUM, LSQA, SQA, and NUC.

**Associated problem data:** The dump includes the following information in the summary dump:
• DIB
• DIBX at the time of the error
• Data-in-virtual component trace table control area (CTC), if applicable
• Data-in-virtual trace table, if applicable
• Data-in-virtual CPU-related work/save area
• LSQA used by data-in-virtual, if applicable

Also, the dump includes the 4K SQA buffer in description-length-data format, if applicable. The CVTSDBF field in the CVT contains the address of the buffer.

The SDWA variable recording area (SDWA) includes time-of-error information.

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRM, WITH VALID DRA**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVRM - FRR

**Explanation:** An error occurred during data-in-virtual disabled processing.

The areas that are dumped are SUM, LSQA, SQA, and NUC.

**Associated problem data:** The dump includes the following information in the summary dump:
• DIB
• Refreshed DIBX
• Data-in-virtual component trace table control area (CTC), if applicable
• Data-in-virtual trace table, if applicable
• Data-in-virtual CPU-related work/save area
• LSQA used by data-in-virtual, if applicable
Also, the dump includes the 4K SQA buffer in description-length-data format. If applicable, the buffer will contain the DIBX at the time of the error and any queue error information. The CVTSDBF field in the CVT contains the address of the buffer.

The SDWA variable recording area (SDWA) includes the symptom strings and time-of-error information.

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRR, WITH INVALID DRA**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVRRDMP - ESTAE

**Explanation:** An error occurred during data-in-virtual enabled processing. The DRA is damaged.

The areas dumped are SUM, LSQA, and SQA.

**Associated problem data:** The dump includes the following information in the summary dump:
- DIB
- DIBX at the time of the error
- DRA

Also, the dump includes the 4K SQA buffer in description-length-data format, if applicable. The CVTSDBF field in the CVT contains the address of the buffer.

The SDWA variable recording area (SDWA) includes the time-of-error information.

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=DATA IN VIRTUAL, COMPID=SCDIV, ISSUER=ITVRR, WITH VALID DRA**

**Component:** Data-in-virtual (5752-SCDIV)

**Issuing module:** ITVRRDMP - ESTAE

**Explanation:** An error occurred during data-in-virtual enabled processing.

The areas dumped are SUM, LSQA, and SQA.

**Associated problem data:** The dump includes the following information in the summary dump:
- DIB
- Refreshed DIBX
- DRA
Also, the dump includes the 4K SQA buffer in description-length-data format. If applicable, the buffer will contain the DIBX at the time of the error and any queue error information. The CVTSDBF field in the CVT contains the address of the buffer.

The SDWA variable recording area (SDWA) includes the symptom strings and time-of-error information.

**Problem determination:** Use the IPCS DIVDATA and STATUS FAILDATA subcommands to format information related to data-in-virtual.

**COMP=GTF-BUFFERING ROUTINE, COMPID=SC111, ISSUER=AHLSBUF**

**Component:** GTF (5752-SC111)

**Issuing module:** AHLSBUF

**Explanation:** An error has occurred while moving the GTF global trace buffer to a page in the GTF address space. The failing address space is dumped. The error is percolated to the FRR for the active data gathering routine. The FRR in the router routine (AHLMCER) disables and terminates GTF.

**Associated problem data:** A software record is written to the logrec data set.

**COMP=IOS READ COUPLE DATASET, COMPID=SCIC3, ISSUER=IOSVCDSR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVCDSR

**Explanation:** An error occurred while IOS was attempting to read the IOS record from the couple data set. ESTAE routine CDSRESTA issues the SDUMP macro.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMP=IOS UPDATE COUPLE DATASET, COMPID=SCIC3, ISSUER=IOSVCDSU**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVCDSU

**Explanation:** An error occurred while IOS was attempting to update the IOS record in the couple data set. ESTAE routine CDSUESTA issues the SDUMP macro.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMP=IOS IDENTIFY SYSTEM WITH RESERVE, COMPID=SCIC3, ISSUER=IOSVISWR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVISWR
SVC Dump Titles

**Explanation:** An error occurred while IOS was attempting to identify the system holding a device reserve in order to issue message IOS431I. ESTAE routine ISWRESTA issues the SDUMP macro.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSCFCHP, ABEND=xxx[, RSN=yyyyyyyy]**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSCFCHP

**Explanation:** The IOS channel path reconfiguration routine's ESTAE received control because of an expected or unexpected error.

The contents are ALLNUC, SUM, LSQA, SQA, ALLPSA, LPA, TRT.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPID=SC1CJ, COMPON=CONTENTS SUPERVISOR, ISSUER=CSVFRR, DUMP PRIOR TO QUEUE VERIFICATION**

**Component:** Contents supervisor (5752-SC1CJ)

**Issuing module:** CSVFRR

**Explanation:** An error occurred during processing by the contents supervisor. The error is probably a user error because errors that occur during the validation of user-specified parameter lists result in abend codes 206.

The FRR routine CSVFRR issues the SDUMP prior to performing queue validation for the load list (LLE queue) and the job pack area (CDE and CDX) queues for the failing task, all of which reside in the LSQA. The areas dumped are SUM, TRT, LSQA, and SQA.

Note that if this dump title is received, there is most likely an LSQA shortage in the address space in which the error occurred.

**Associated problem data:** The queue verify routine records errors in the SDWA variable recording area (SDWAVRA). The errors were detected in the LLE queue or the CDE queue. The error recording fields contain the EBCDIC labels “LLS ERROR”, “JPQ ERROR”, and “JPQ CDX ERROR”. The labels are followed by “NONE” if no errors were detected.

While the contents supervisor is active, register 5 points to the contents supervisor SVRB, except when the recovery module CSVFRR is in control, or when the contents supervisor calls other services.

The extended save area RBEXSAVE in the SVRB contains data that is specific to the contents supervisor and includes the name of the requested module, pointers to the CDEs and other resources, and various flags.
COMPID=SC1CJ, COMPON=CONTENTS SUPERVISOR, ISSUER=CSVFRR2, FAILURE DURING FIRST LEVEL FRR

Component: Contents supervisor (5752-SC1CJ)

Issuing module: CSVFRR (CSVFRR2 routine)

Explanation: During recovery processing, an error occurred while the contents supervisor was attempting to perform queue validation as a result of a previous error.

This error caused the second level FRR, CSVFRR2, to gain control. The areas dumped are SUM, TRT, LSQA, SQA, and NUC.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the FRR parameter list that was initialized by CSVFRR before the queue validation began. The parameter list is preceded by the EBCDIC header “CSVFRR ABEND, CSVFRR DATA IS: QVPL, SDWA, QVCSAREA, TCB, ASCB, NSI” and contains the following:
- Address of the queue verification parameter list (QVPL) that is used by the queue verify routine
- Address of the SDWA
- Address of the 304-byte FRR work area for CSVFRR
- Address of the TCB (PSATOLD)
- Address of the ASCB (PSAAOLD)
- Return address for the FRR

COMPID=SC1CJ, COMPON=CONTENTS SUPERVISOR, ISSUER=CSVFRR2, FAILURE DURING QUEUE VERIFICATION

Component: Contents supervisor (5752-SC1CJ)

Issuing module: CSVFRR (CSVFRR2 routine)

Explanation: During recovery processing, an error occurred while the contents supervisor was attempting to perform queue validation as a result of a previous error.

This error caused the second level FRR, CSVFRR2, to gain control. The areas dumped are SUM, TRT, LSQA, SQA, and NUC.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the FRR parameter list that was initialized by CSVFRR before the queue validation began. The parameter list is preceded by the EBCDIC header “CSVFRR ABEND, CSVFRR DATA IS: QVPL, SDWA, QVCSAREA, TCB, ASCB, NSI” and contains the following:
- Address of the queue verification parameter list (QVPL) that is used by the queue verify routine
- Address of the SDWA
- Address of the 200-byte FRR work area for CSVFRR
- Address of the TCB (PSATOLD)
- Address of the ASCB (PSAAOLD)
- Return address for the FRR
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**COMPID=SC1CJ, COMPON=CONTENTS SUPERVISOR, ISSUER=CSVFRR, SCC-NNNNNNN IN FMODNAME+NNNN.**

**Component:** Contents supervisor (5752-SC1CJ)

**Issuing module:** CSVFRR

**Explanation:** An error occurred during processing by the contents supervisor. The error is probably a system error because errors that occur during the validation of user-specified parameter lists result in abend codes 206.

There are 2 forms of the dump title.

For both forms:

- **SCC** = System Completion Code (e.g. 0C4)
- **NNNNNNNN** = Reason code for the SCC

In the dump title for failures within the nucleus:

- **FMODNAME** = Failing Nucleus module name
- **NNNN** = Offset of failure

Since CSVFRR primarily covers nucleus resident SVC code, if the failure occurs in a non-nucleus routine, it probably indicates a wild branch was taken.

The FRR routine CSVFRR issues the SDUMP prior to performing queue validation for the load list (LLE queue) and the job pack area (CDE and CDX) queues for the failing task, all of which reside in the LSQA. The areas dumped are SUM, TRT, LSQA, and SQA.

**Associated problem data:** The queue verify routine records errors in the SDWA variable recording area (SDWAVRA). The errors were detected in the LLE queue or the CDE queue. The error recording fields contain the EBCDIC labels “LLS ERROR”, “JPQ ERROR”, and “JPQ CDX ERROR”. The labels are followed by “NONE” if no errors were detected.

While the contents supervisor is active, register 5 points to the contents supervisor SVRB, except when the recovery module CSVFRR is in control, or when the contents supervisor calls other services.

The extended save area RBEXSAVE in the SVRB contains data that is specific to the contents supervisor and includes the name of the requested module, pointers to the CDEs and other resources, and various flags.

**COMPID=SC1CJ, COMPON=CONTENTS SUPERVISOR, ISSUER=CSVFRR, SCC-NNNNNNN IN NON-NUCLEUS ROUTINE.**

**Component:** Contents supervisor (5752-SC1CJ)

**Issuing module:** CSVFRR

**Explanation:** An error occurred during processing by the contents supervisor. The error is probably a system error because errors that occur during the validation of user-specified parameter lists result in abend codes 206.

There are 2 forms of the dump title.

For both forms:
In the dump title for failures within the nucleus:
FMODNAME = Failing Nucleus module name
NNNN = Offset of failure

Since CSVFRR primarily covers nucleus resident SVC code, if the failure occurs in
a non-nucleus routine, it probably indicates a wild branch was taken.

The FRR routine CSVFRR issues the SDUMP prior to performing queue validation
for the load list (LLE queue) and the job pack area (CDE and CDX) queues for the
failing task, all of which reside in the LSQA. The areas dumped are SUM, TRT,
LSQA, and SQA.

Associated problem data: The queue verify routine records errors in the SDWA
variable recording area (SDWAVRA). The errors were detected in the LLE queue or
the CDE queue. The error recording fields contain the EBCDIC labels "LLS
ERROR", "JPQ ERROR", and "JPQ CDX ERROR". The labels are followed by
"NONE" if no errors were detected.

While the contents supervisor is active, register 5 points to the contents supervisor
SVRB, except when the recovery module CSVFRR is in control, or when the
contents supervisor calls other services.

The extended save area RBEXSAVE in the SVRB contains data that is specific to the
contents supervisor and includes the name of the requested module, pointers to
the CDEs and other resources, and various flags.

**COMPID=SC1CK,ISSUER=IEAVNLK ERROR DURING B/E NOLOCK WTO(R) PROCESSING**

Component: Communications task (5752-SC1CK)

Issuing module: IEAVNLK

Explanation: An error occurred during branch entry WTO/WTOR no locks
processing. The areas dumped are LSQA, NUC, SQA, SUM, and TRT.

**COMPID=SC1CK,ISSUER=IEAVBWTO ERROR DURING B/E WTO(R)/DOM PROCESSING**

Component: Communications task (5752-SC1CK)

Issuing module: IEAVBWTO

Explanation: An error occurred during branch entry and NIP WTO/WTOR and
DOM processing. The areas dumped are LSQA, NUC, SQA, SUM, and TRT.

**COMPID=SC1CK,ISSUER=IEAVC600 ERROR DURING SYSTEM CONSOLE OPERATOR INPUT PROCESSING**

Component: Communications task (5752-SC1CK)

Issuing module: IEAVC600

Explanation: An error occurred during the input processing of System Console
operator. The areas dumped are LSQA, NUC, SQA, SUM, and TRT.
SVC Dump Titles

COMPID=SC1CK,ISSUER=IEAVC602 ERROR DURING SYSTEM CONSOLE PRIORITY INPUT PROCESSING

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVC602

**Explanation:** An error occurred during the input processing of System Console operator. The areas dumped are LSQA, NUC, SQA, SUM, and TRT.

COMPID=SC1CK,ISSUER=IEAVG603 INVALID GEPL ERROR

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVG603

**Explanation:** An error occurred while IEAVG603 was processing a Group Exit Parameter List (GEPL). The areas dumped are CSA, LSQA, SQA, TRT, SUM, NUC, RGN, LPA, IO, ALLPSA, COUPLE, and XESDATA. The dump contains the Console's and XCF's address spaces.

COMPID=SC1CK,ISSUER=IEAVG613 ERROR FREEING ACEE

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVG613

**Explanation:** An error occurred while IEAVG613 was attempting to free storage. The areas dumped are CSA, LSQA, SQA, TRT, SUM, NUC, RGN, LPA, IO, and ALLPSA.

COMPID=SCICK,ISSUER=IEAVG719 ERROR DURING WTSC PROCESSING

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVG719

**Explanation:** An error occurred during Write To System Console (WTSC) processing. The area dumped is NUC.

COMPID=SC1CZ, MODULE IEECB927 FAILED, ABEND(hhh)

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEECB927

**Explanation:** An abend occurred in the command processor for a CONFIG (CF) operator command.

**Associated problem data:** The SDWA contains the command and the main parameter area (RDPMPARM) for the module.

COMPID=SC1CZ, MODULE IEEVCONF FAILED, ABEND(xxx)

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEEVCONF
Explanation:  An abend occurred during CONFIG (CF) operator command processing. A retry attempt is made to continue the next request. Processing for the current request ends.

Associated problem data:  The SDWA contains the retry point index and main parameter area (RDPMPARM) for the module.

**COMPID=SC1CZ, MODULE IEEVRDPM FAILED, ABEND(xxx)**

Component:  Reconfiguration (5752-SC1CZ)

Issuing module:  IEEVRDPM

Explanation:  An abend occurred while IEEVRDPM was trying to read a CONFIGxx parmlib member as a result of the DISPLAY M=CONFIG(xx) or CONFIG MEMBER(xx) operator command.

Associated problem data:  The SDWA contains the main parameter area (RDPMPARM) for the module.

**COMPID=SC1CZ, MODULE IEEVRSCN FAILED, ABEND(xxx)**

Component:  Reconfiguration (5752-SC1CZ)

Issuing module:  IEEVRSCN

Explanation:  An abend occurred while IEEVRSCN was trying to run a configuration display during a CONFIG (CF) ON/OFF operator command.

Associated problem data:  The SDWA contains the command and the main parameter area (RDPMPARM) for the module.

**COMPID=5752-SCDMP, COMPON=ABDUMP, ISSUER=IEAVADMN, ERROR DURING ABDUMP MONITOR PROCESSING**

Component:  Dumping Services - ABDUMP (5752-SCDMP)

Issuing module:  IEAVADMN

Explanation:  An error occurred during RTM processing of a SYSABEND, SYSMDUMP, SYSUDUMP, or SNAP dump request. The error occurred while ABDUMP processing was trying to mark tasks dispatchable or non-dispatchable and establish monitoring of ABDUMP I/O activity.

The areas dumped are LSQA, LPA, TRT, IO and SUBPOOL (239).

Problem determination:  Obtain the module information (AMBLIST) for IEAVADMN (IEANUC0x) CSECT and check the LOGREC data set for other software error records related to IEAVADMN. Depending on the error, subpool 239 and LSQA are where ABDUMP internal data structures exist.

**COMPID=5752-SCDMP, COMPON=ABDUMP, ISSUER=IEAVTABD, ABDUMP SERIALIZATION DEADLOCK AVOIDED FOR jobname**

Component:  Recovery termination manager (RTM) - ABDUMP (5752-SCDMP)

Issuing module:  IEAVTABD
SVC Dump Titles

Explanation: During processing which would have resulted in a SYSABEND, SYSMDUMP or SYSUDUMP dump request, ABDUMP determined that it should not take the dump because a critical resource (QName: SYSZTIOT or SYSIEA01) is held by another task. The environment is such that the other task may never release the resource. ABDUMP generates this SVC dump instead for the stated jobname.

The SVC dump options used are RGN, LPA, TRT, GRSQ and SUBPOOLS 230 and 253.

Problem determination: To begin the analysis of the potential hang condition use the IPCS VERBEXIT GRSTRACE command against the dump. Search for the MAJOR names SYSZTIOT and SYSIEA01. The resource which ABDUMP detected the possible deadlock situation for will have multiple tasks (TCBs) listed for the same MINOR name.

The information needed to debug the user ABEND will also be available within the dump. However, note that the dump will contain sensitive installation data since fetch protected storage is included in an SVC dump.

COMPID=5752-SCDMP, ISSUER=IEAVTDSV (IN LINKLIB), FAILURE IN DUMPSRV ADDRESS SPACE

Component: Dumping services - SDUMP (5752-SCDMP)

Issuing module: IEEVTDSV

Explanation: An error occurred during processing in the job step task of the DUMPSRV address space. The problem may have occurred during initialization of the DUMPSRV address space or during post exit processing for an SVC dump or a SYSMDUMP ABEND dump.

The areas dumped are SUM, TRT, LSQA, subpools 231 and 0, and the GRSQ data, if an enqueue error occurred.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains:
- The ESTAE parameter area
- The DSVCB control block

Problem determination: Obtain the summary dump. Check the DSVCB to determine the state of the address space.

COMPID=5752-SCDMP, ISSUER=IEECB910 - DISPLAY DUMP COMMAND PROCESSOR

Component: Dumping services - SDUMP (5752-SCDMP)

Issuing module: IEECB910

Explanation: An error occurred during processing of the DISPLAY DUMP operator command.

The areas dumped are SUM, TRT, LSQA, subpools 245 and 0, and a storage list containing the command input buffer. Module IEECB910 allows duplicate dumps to be suppressed by dump analysis and elimination (DAE) by specifying the VRADAE key.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains:
- The ESTAE parameter area
- The DISPLAY DUMP command from the CSCB

Problem determination: Obtain the summary dump. Check the DISPLAY DUMP command to determine the type of processing requested.

COMPID=5752-SCDMP, ISSUER=IEECB926 - DUMPDS PROCESSOR

Component: Dumping services - SDUMP (5752-SCDMP)

Issuing module: IEECB926

Explanation: An error occurred while processing the dump data sets for a DUMPDS operator command in the DUMPSRV address space. The error also may have occurred while initializing the dump data set queue (IHASDDSQ).

The areas dumped are SUM, TRT, LSQA, subpools 245 and 15, and a storage list containing the DSVCB, the DSPA (DUMPDS parameter area), and the DSPAOUT area pointed to by the DSPA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains:
- The ESTAE parameter area
- The DSPA (IHADSPA)

Problem determination: Obtain the summary dump. Check the DSPA to determine which DUMPDS command was requested. Check the logrec entry for this dump. If the SDWARRL field contains ESTATASK, then the problem probably occurred during initialization of the DUMPSRV address space. If the field contains ESTADDS, then the error occurred during DUMPDS command processing.

COMPID=5752-SCDMP, ISSUER=IEECB923 - DUMPDS COMMAND FAILED

Component: Dumping services - SDUMP (5752-SCDMP)

Issuing module: IEECB923

Explanation: An error occurred during processing of a DUMPDS operator command.

The areas dumped are SUM, TRT, LSQA, subpool 245, and a storage list containing the DSPA (DUMPDS parameter area). Module IEECB923 allows duplicate dumps to be suppressed by dump analysis and elimination (DAE) by specifying the VRADAЕ key.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains:
- The ESTAE parameter area
- The DSPA (IHADSPA)
- The command input buffer for the DUMPDS command.

Problem determination: Obtain the summary dump. Check the DSPA to determine which DUMPDS command was issued.
**SVC Dump Titles**

**COMPID=SCRTM, COMPON=RTM2, ISSUER=IEAVTRTE, RECURSIVE ERROR REQUIRING JOBSTEP TERMINATION**

**Component:** Recovery termination manager (RTM) (5752-SCRTM)

**Issuing module:** IEAVTRTE

**Explanation:** Recovery termination manager processing received an unexpected error condition that it could not recover from in a subtask of a jobstep task. The associated jobstep task will be terminated.

**System Programmer Response:** Examine the dump to determine what caused RTM to be recursively entered and correct that problem.

**COMPID=5752-SC143, ISSUER=ADYPSTD, FAILURE IN THE DUMP ANALYSIS AND ELIMINATION POST DUMP EXIT**

**Component:** Dump analysis and elimination (DAE) (5752-SC143)

**Issuing module:** ADYPSTD

**Explanation:** An abend occurred during ADYPSTD processing. A retry is performed when possible. All resources are cleaned up if the ESTAE routine percolates the error.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains the ESTAE parameter list, the SDUMP exit parameter list (SDEPL), and the DAE predump/postdump parameter list (DSPD).

**COMPID=5752-SC143, ISSUER=ADYSETP, FAILURE IN DAE SET PROCESSING**

**Component:** Dump analysis and elimination (DAE) (5752-SC143)

**Issuing module:** ADYSETP

**Explanation:** An abend occurred during ADYSETP, ADYPARS, or ADYMSG processing. A retry is performed when possible. The GETMAIN area for the temporary transaction queue is freed if the ESTAE routine percolates the error.

ADYSETP allows duplicate dumps to be suppressed by DAE by specifying the VRADAE key.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains the ESTAE parameter list, the name of the parmlib member at the time of the error, and the DAE key to specify dump suppression.

**COMPID=5752-SC143, ISSUER=ADYTRNS, FAILURE IN THE TRANSACTION PROCESSOR FOR DAE**

**Component:** Dump analysis and elimination (DAE) (5752-SC143)

**Issuing module:** ADYTRNS

**Explanation:** An abend occurred during ADYTRNS, ADYIO, or ADYMSG processing. A retry is performed when possible. All resources are cleaned up if the ESTAE routine percolates the error.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains the ESTAE parameter list, and the first 200 bytes of the current DAE transaction.

**COMPON=ASE-ASECRE, COMPID=SCASE, ISSUER=ASCRE DOSDUMP**

Component: Address space services (5752-SCASE)
Issuing module: ASECRE
Explanation: An abend occurred during ASECRE processing. The module percolates the error.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRCMP01**

Component: Auxiliary storage management (ASM) (5752-SC1CW)
Issuing module: ILRCMP01
Explanation: An error occurred while ASM was processing I/O completion. This error is not a record-only abnormal end.

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRDRV01**

Component: Auxiliary storage management (ASM) (5752-SC1CW)
Issuing module: ILRDRV01
Explanation: An error occurred while ASM was performing I/O front-end processing.

The following are dumped as part of SUMLIST:
- ASMVT
- Any checkpointed IORB/IOSB/SRB/SRB strings
- Any checkpointed PCCWs

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRFRS01**

Component: Auxiliary storage management (ASM) (5752-SC1CW)
Issuing module: ILRFRS01
Explanation: An error occurred while ASM was freeing slots or swap sets.

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRGOS01**

Component: Auxiliary storage management (ASM) (5752-SC1CW)
Issuing module: ILRGOS01
Explanation: An error occurred in the ASM group operations starter for VIO. This error is not a record-only abnormal end.
**SVC Dump Titles**

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRIOFRR**

**Component:** Auxiliary storage management (ASM) (5752-SC1CW)

**Issuing module:** ILRIOFRR

**Explanation:** An error occurred in an ASM routine that uses ILRIOFRR as its recovery routine. This error is not a record-only abnormal end.

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRSRB01**

**Component:** Auxiliary storage management (ASM) (5752-SC1CW)

**Issuing module:** ILRSRB01

**Explanation:** An error occurred in the ASM SRB controller. This error is not a record-only abnormal end.

**COMPON=ASM, COMPID=SC1CW, ISSUER=ILRTMI01**

**Component:** Auxiliary storage management (ASM) (5752-SC1CW)

**Issuing module:** ILRTMI01

**Explanation:** An error occurred in one of the following ASM routines:
- Task mode initialization routine (ILRTMI00)
- Task mode processor routine (ILRTMRLG)

This error is not a record-only abnormal end.

**COMPON=AVM, COMPID=SCAVM, ISSUER=modname(s), descriptive name**

**Component:** Availability manager (AVM) (5752-SCAVM)

**Explanation:** Availability manager recovery routines intercepted an abend in the availability manager. Retry may or may not be attempted.

The areas dumped are all protect key 3 storage in CSA subpools 227, 231, and 241. If the private area of the failing routine's address space is accessible, the dump will contain key 3 storage from private area subpools 230 and 251.

**COMPON=CMND-ESTAE, COMPID=SC1B8, ISSUER=IEECB860**

**FAILURE IN COMMAND xxxx**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEECB860

**Explanation:** An error occurred in the command processor while processing command xxxx; the command name can be up to 16 characters long.

The areas dumped are PSA, ALLNUC, LSQA, RGN, LPA, TRT, CSA, and SQA.
SVC Dump Titles

**COMPON=CNZ, COMPID=SC1CK, ISSUER=CNZMIREC, MODULE=mmmmmmmm+oooooooo, ABEND=S0xxx, REASON=yyyyyyyy**

**Component:** Console Services (5752-SC1CK)

**Issuing module:** CNZMIREC

**Explanation:** An error occurred within a Console Services module. The dump includes Console Services control blocks and traces. In the dump title, the variables are:
- mmmmmmmm 8 character module name which encountered the error.
- oooooooo offset within the module where the error occurred. ???????? if it could not be determined.
- xxx system abend code
- yyyyyyyy reason code

**COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVG621, ERROR DURING DOM SCANNER PROCESSING, PLIST=xxxxxxxx**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVG621

**Explanation:** An error occurred during the scanner processing of DOM Delayed Issue queue.

The areas dumped are SUM, PSA, and SQA.

In the dump title, the variables are:
- xxxxxxxx Address of the SUMLIST parameter list

**COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVG710, ERROR DURING CPF PROCESSING, PLIST=xxxxxxxx**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVG710

**Explanation:** An error occurred during MCS Command Prefix Facility (CPF) processing.

The areas dumped are SUM and PSA.

In the dump title, the variables are:
- xxxxxxxx Address of the CPF parameter list

**COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVM605, SYSTEM CONSOLE OUTPUT TASK RECOVERY DUMP**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVM605
SVC Dump Titles

Explanation: An error occurred during System Console output processing.

The areas dumped are CSA, NUC, RGN, SQA, SUM, and TRT.

COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVM613
CTAS DELAYED SVC PROCESSING ERROR, PLIST=xxxxxxxxx

Component: Communications task (5752-SC1CK)

Issuing module: IEAVM613

Explanation: An error occurred during Delayed SVC processing.

The areas dumped are SUM and PSA.

In the dump title, the variables are:

xxxxxxx  Address of the SUMLIST parameter list

COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVMFRR-
xxxxx, COMM TASK DUMP

Component: Communications task (5752-SC1CK)

Issuing module: IEAVMFRD

Explanation: An error occurred in Communications task while the task was running in a non-cross memory mode environment.

The areas dumped are CSA, RGN, SQA, TRT, SUM, GRSQ, NUC, COUPLE, and ALLPSA. The dump contains the Console's address spaces and data spaces when appropriate.

In the dump title, the variables are:

xxxxx  Type of recovery (ESTAE, ESTAEX, or FRR)

COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVN700,
FAILURE IN COMM TASK ADDRESS SPACE CREATE ROUTINE

Component: Communications task (5752-SC1CK)

Issuing module: IEAVN700

Explanation: An error occurred while IEAVN700 was creating the communications task address space.

The areas dumped are ALLPSA, RGN, LSQA, SQA, and SUM. SUM contains the trace table, registers, and storage near the register values at the time of the error.

COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVN701,
FAILURE IN COMM TASK ADDRESS SPACE INITIALIZATION

Component: Communications task (5752-SC1CK)

Issuing module: IEAVN701
**Explanation:** An error occurred while IEAVN701 was initializing the communications task address space.

The areas dumped are ALLPSA, NUC, RGN, LSQA, SQA, CSA, TRT, and SUM. SUM contains the trace table, registers, and storage near the register values at the time of the error.

**COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVR601, OPSSI RECOVERY DUMP**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVR601

**Explanation:** An error occurred during sysplex recovery processing.

The areas dumped are COUPLE, NUC, CSA, RGN, SUM, SQA, TRT, GRSQ, and ALLPSA. The dump contains the address space of where IEAVR601 was running.

**COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEAVSTAA, FAILURE IN COMMUNICATIONS TASK**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVSTAA

**Explanation:** IEAVSTAA is entered when both:

- An error occurred during communications task processing
- Recovery processing by ESTAE or FRR routines in the communications task was unsuccessful

The areas dumped are ALLNUC, SUM, LSQA, RGN, LPA, SWA, ALLPSA, and TRT.

**COMPON=COMMTASK, COMPID=SC1CK, ISSUER=IEECB920, ERROR DURING CMDAUTH PROCESSING, PLIST=xxxxxxxx**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEECB920

**Explanation:** An error occurred during CMDAUTH processing.

The areas dumped are SUM and PSA.

In the dump title, the variables are:

xxxxxxxx

Address of the SUMLIST parameter list

**COMPON=COMMTASK=SC1CK, ABEND=xxx, ISSUER=IEAVMFRR-yyyyy, MODULE=zxxxxxxxx, hint**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVMFRD
**Explanation:** An error occurred in Communications task while IEAVMFRD was running in a cross memory mode environment.

The areas dumped are CSA, RGN, SQA, TRT, SUM, GRSQ, NUC, COUPLE, and ALLPSA. The dump contains the Console's address spaces and data spaces when appropriate.

In the dump title, the variables are:

- **xxx** ABEND code
- **yyyy** Type of recovery (ESTAE, ESTAEX, or FRR)
- **zzzzzzzz** Name of the module that was in control when the error occurred
- **hint** Additional information about the error

**COMPON=COMPONENT TRACE, COMPID=SCTRC, ISSUER=ITTRREC**

**Component:** Component trace (5752-SCTRC)

**Issuing module:** ITTRREC

**Explanation:** An abend occurred during component trace processing.

The areas dumped are LSQA, SQA, and TRT.

**COMPON=CONSOLE SERVICES COMPID=SC1CK ISSUER=IEEVDCRR**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEEVDCCR

**Explanation:** An error occurred during Disabled Console communications processing.

The areas dumped are ALLPSA, SQA, SUM, and IO. The dump contains the address space of where IEEVDCCR was running.

**COMPON=CONSOLE=SC1CK, ABEND=xxx, ISSUER=IEAVMFRR, FAILURE IN RECOVERY EXIT**

**Component:** Communications task (5752-SC1CK)

**Issuing module:** IEAVMFRR

**Explanation:** An error occurred during Console's common recovery processing.

The areas dumped are NUC, CSA, RGN, SQA, SWA, TRT, SUM, and GRSQ. The dump contains the address space of where IEAVMFRR was running.

In the dump title, the variables are:

- **xxx** ABEND code
SVC Dump Titles

COMPON=DDR, COMPID=BB1CS, ISSUER=IGFDE1

Component: Dynamic device reconfiguration (DDR) (5752-BB1CS)

Issuing module: IGFDE1

Explanation: An error occurred during DDR processing.

The areas dumped are SQA, PSA, and TRT. Generally, register 10 points to the DDRCOM control block (mapped by IHADDR).

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the DERPLIST and exit data, if any.

COMPON=DEVSERV PATHS COMMAND, ISSUER=IGUDSP02 or IGUDSP03 COMPID=28463

Component: DEVSERV (5665-28463)

Issuing module: IGUDSP02 or IGUDSP03

Explanation: During DEVSERV command processing, either an abend occurred or a dump was requested.

The areas dumped are PSA, NUC, RGN, LPA, TRT, SQA, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=DIDOCS-D U,ALLOC PROC, COMPID=SC1C4, ISSUER=IEE24110-DUESTAE

Component: DIDOCS (5752-SC1C4)

Issuing module: IEE24110 - ESTAE

Explanation: An error occurred during processing of the DISPLAY U,ALLOC operator command. Any storage areas obtained are freed. The ESTAE routine percolates to IEECB860.

For both the master and the allocation address space, the areas dumped are LPA, TRT, and SUM.

COMPON=EXCP-STORAGE MANAGER, COMPID=SC1C6, ISSUER=IECVEXSM, IECVSMFR, error

Component: EXCP (5752-SC1C6)

Issuing module: IECVEXSM

Explanation: An error occurred while the EXCP storage manager was processing a caller's request. In the dump title, error identifies the type of error as:

- GETMAIN FAILURE
- PROGRAM ERROR
- ABEND=C0D

The areas dumped are NUC, SQA, SUM, and TRT.
Associated problem data: The SDWA variable recording area (SDAVRA) contains diagnostic data.

**COMPON=GRS-COMMAND-PROC, COMPID=SCSDS, ISSUER=ISGBCEST**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGBCEST

Explanation: An error occurred while a ring processing module was processing. The dump includes global resource serialization control blocks and trace table.

Associated problem data: The SDWA variable recording area (SDAVRA) contains diagnostic data.

**COMPON=GRS-COMMAND-PROC, COMPID=SCSDS, ISSUER=ISGCESTA**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGCESTA

Explanation: An error occurred in a command processing module in the global resource serialization address space. The dump includes global resource serialization control blocks and trace table.

Associated problem data: The SDWA variable recording area (SDAVRA) contains diagnostic data.

**COMPON=GRS-COMMAND-PROC, COMPID=SCSDS, ISSUER=ISGCPREST**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGCPREST

Explanation: An error occurred in a resource name list (RNL) change module in the Master address space.

Associated problem data: The SDWA variable recording area (SDAVRA) contains diagnostic data.

**COMPON=GRS-COMMAND-PROC, COMPID=SCSDS, ISSUER=ISGCREST**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGCREST

Explanation: An error occurred in a RNL change module in the global resource serialization address space. The dump includes global resource serialization control blocks and trace table.

Associated problem data: The SDWA variable recording area (SDAVRA) contains diagnostic data.
**COMPON=GRS-COMMANDS, COMPID=SCSDS, ISSUER=ISGCRET0, POST OF GVTCECB FAILED**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGCRET0

**Explanation:** An error occurred while a global resource serialization module was attempting to cross memory post the command ECB being used by ISGCMDR.

ISGCMDR was waiting for a command request or a message request.

The areas dumped are PSA, SQA, and LSQA of the global resource serialization address space, and the GVT.

**COMPON=GRS-COMMANDS, COMPID=SCSDS, ISSUER=ISGCRET1, POST OF ECB OF COMMAND REQUESTOR FAILED**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGCRET1

**Explanation:** An error occurred while ISGCMDR (command router) was attempting to cross memory post the ECB. The ECB was being used by a command requester to wait for a command request to be processed by ISGCMDR.

The areas dumped are PSA, SQA, and LSQA of the command requester's address space, and the command requester's ECB.

**Problem determination:** Either the ECB address provided on the cross memory post is in error, or the RB address in the ECB is in error.

**COMPON=GRS-CTC-DRIVER, COMPID=SCSDS, ISSUER=ISGJRCV**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGJRCV

**Explanation:** An error occurred while ISGJDI (CTC driver DIE) was processing.

The FRR ISGJRCV (for ISGJDI) uses a branch entry to request the dump.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains additional diagnostic information.

**COMPON=GRS-CTC DRIVER ENF EXITS, COMPID=SCSDS, ISSUER=ISGJENF0**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGJENF0 - ESTAE

**Explanation:** An error occurred while the event notification facility exits routine (ISGJENF0) was processing. The ESTAE routine ISGJENFR (in ISGJENF0) requests an SVC dump.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains additional diagnostic information.

**COMPON=GRS - CTRACE START/STOP, ISSUER=ISGTSSMF, COMPID=SCSDS**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGTSSMF

Explanation: An error occurred while stopping global resource serialization tracing. The dump includes global resource serialization control blocks and trace table.

**COMPON=GRS - CTRACE START/STOP, ISSUER=ISGTSSMT, COMPID=SCSDS**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGTSSMT

Explanation: An error occurred while processing in the global resource serialization CTRACE start/stop exit. The dump includes global resource serialization control blocks and trace table.

**COMPON=GRS-QUEUE SCANNING SERVICES, COMPID=SCSDS, ISSUER=ISGQSCNR**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGQSCNR - FRR

Explanation: An error occurred while the queue scanning service (ISGQSCAN) was processing. The FRR routine ISGQSCNR requests an SVC dump.

**COMPON=GRS RING/COMMAND, COMPID=SCSDS, ISSUER=ISGBERCV**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGBERCV - ESTAE

Explanation: An error occurred while the ring processing command interface routine (ISGBCI) was processing. ESTAE routine ISGBERCV requests an SVC dump. If the basic control blocks are valid, a summary dump is requested that includes the GVT, SQA, and the private area for ring processing. An asynchronous dump of the current address space is always included in the dump request.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the following:

- Address of ISGREPL (input parameter list to ISGBERCV)
- The ISGREPL
- Address of ISGRSC (input parameter list to ISGBCI)
COMPON=GRS-RING-PROCESSING, COMPID=SCSDS, ISSUER=ISGBERCV

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGBERCV - ESTAE

Explanation: An error occurred while a ring processing routine was processing. ESTAE routine ISGBERCV requests an SVC dump. If the basic control blocks are valid, a summary dump is requested that includes the GVT, SQA, and the private area for ring processing. An asynchronous dump of the current address space is always included in the dump request.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains additional diagnostic information.

COMPON=GRS-RING-PROC, COMPID=SCSDS, ISSUER=ISGBFRCV

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGBFRCV - FRR

Explanation: An error occurred while the RSA send/receive routines (ISGBSR or ISGBSM) were processing. The FRR ISGBFRCV uses a branch entry to request the SVC dump. If the basic control blocks are valid, a summary dump is requested that includes the GVT, SQA, and the private area for ring processing. An asynchronous dump of the current address space is always included in the dump request.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains additional diagnostic information.

COMPON=GRS-RNLC-PROC, COMPID=SCSDS, ISSUER=ISGGDSYR

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGGDSYR

Explanation: An error occurred in a RNL change module in the global resource serialization address space. The dump includes global resource serialization control blocks.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

COMPON=GRS-RNLC-PROC, COMPID=SCSDS, ISSUER=ISGRNLUF

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGRNLUF

Explanation: An error occurred in RNL change processing. The dump includes global resource serialization control blocks.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=GRS-SIG-MONITOR, COMPID=SCSDS, ISSUER=ISGXFRRX**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGXFRRX

Explanation: An error occurred in a global resource serialization XCF exit. The dump includes global resource serialization control blocks.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGDSNRV**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGDSNAP

Explanation: An error occurred while the snap dump exit (ISGDSNAP) was processing. ESTAE routine ISGDSNRV (in ISGDSNAP) requests an SVC dump.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGGFRR0**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGGFRR0 - FRR

Explanation: An error occurred while processing requests. The FRR ISGGFRR0 uses the branch entry to SVC dump. A summary dump is requested that includes the GVT and GVTX control blocks. An asynchronous dump of the current address space is also included in the dump request.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGGQSRV**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGGQSRV

Explanation: An error occurred in Queue Merge processing. The dump includes global resource serialization control blocks and trace table.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGGQWBR**

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGGQWBR

Explanation: An error occurred in global request processing. The dump includes global resource serialization control blocks and trace table.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGNGRSP**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGCRCV

**Explanation:** An error occurred in global resource serialization initialization processing. The dump includes global resource serialization control blocks and trace table.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGNWMSI**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGCRCV

**Explanation:** An error occurred in global resource serialization initialization processing. The dump includes global resource serialization control blocks and trace table.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGSMIFR**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGSMI

**Explanation:** One of the following occurred:
- A program check while ISGSMI, ISGSALC, or ISGSDAL was processing
- An abend while ISGSDAL was processing.

The FRR routine ISGSMIFR (in ISGSMI) uses a branch entry to queue the dump again. The areas dumped are PSA, SQA, and GRSQ. The dump also contains a summary dump.

**COMPON=GRS, COMPID=SCSDS, ISSUER=ISGREC,**
**MODULE=mmmmmmmmm, EP=eeeeeeee, ABEND=S0xxx,**
**REASON=YYYYYYYY**

**Component:** Global resource serialization (5752-SCSDS)

**Issuing module:** ISGREC

**Explanation:** An error occurred a global resource serialization module. The dump includes global resource serialization control blocks and trace tables. In the dump title, the variables are:

**mmmmmmmm**

8 character module name which encountered the error

**eeeeeeee**

entry point name with the module
**SVC Dump Titles**

xxx system abend code

yyyyyyyy reason code, if applicable

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains additional diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IECVPST, PSTFRRTN**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IECVPST

**Explanation:** The IOS post status FRR received control because of a program check. The error might have occurred in IECVPST or in an exit (such as an ABEND or PCI). The areas dumped are ALLPSA, SQA, LSQA, SUMDUMP, TRT, and NUC.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSCONSL- MISSING INTERRUPT HANDLER ROUTINE**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSCONSL

**Explanation:** An error occurred while IOS was processing one of the following:
- The SETIOS MIH operator command
- The SET IOS=xx operator command
- The DISPLAY IOS,MIH operator command

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSCPARZ- MISSING INTERRUPT HANDLER ROUTINE**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSCPARZ

**Explanation:** An error occurred while IOS was processing one of the following:
- An IECIOSxx parmlib member at NIP time
- The SETIOS MIH operator command
- The SET IOS=xx operator command
- The DISPLAY IOS,MIH operator command

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSPURGA, IOSPGRVR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSPURGA

**Explanation:** An error occurred in purge or prevention mainline processing. Recovery routine IOSPGRVR requests an SVC dump. The areas dumped are dynamic work area for purge, PSA, SQA, TRT, and SUMDUMP.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains UCB information, if the UCB lock was held at the time of error.
COMPON=IOS, COMPID=SC1C3, ISSUER=IOSRDBOX, BOXFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSRDBOX

Explanation: An error occurred while a device was being boxed. The areas dumped are SQA, PSA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSRHDET

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSRHDET

Explanation: An error occurred while IOS was checking for a hot I/O condition. Routine HDETFRR issues requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSRIHP, MIHPFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSRIHP

Explanation: An error occurred during processing in the missing interruption handler. Routine MIHPFRR issues requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSRIHR, MIHRFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSRIHR

Explanation: An error occurred during processing in the missing interruption handler. Routine MIHRFRR issues requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

SVC Dump Titles

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSRIHI-MISSING INTERRUPT HANDLER ROUTINE

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSRIHI

Explanation: An error occurred during initialization or processing in one of the following missing interruption handler modules. The ESTAE MIHISTAE routine requests an SVC dump.
**SVC Dump Titles**

**Associated problem data:** The SDWA field SDWAMODN contains:
- IOSRMIHT if the dump was written during nucleus initialization (NIP)
- IOSCPARZ if the dump was written during processing of a SETIOS or SET IOS=xx operator command

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSRMIHT-MISSING INTERRUPT HANDLER ROUTINE**

*Component:* Input/output supervisor (IOS) (5752-SC1C3)

*Issuing module:* IOSRMIHT

*Explanation:* An error occurred during initialization or processing in one of the following missing interruption handler modules. The identified ESTAE routine requests an SVC dump.

**MIH Module** | **ESTAE Routine**
---|---
IOSRMIHL | MIHLESTA
IOSRMIHM | MIHMESTA
IOSRMIHT | MIHTESTA

**Associated problem data:** The SDWA names the MIH module in the SDWAMODN field and the ESTAE routine in the SDWARRL field.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVHSCH, HSCHFRR**

*Component:* Input/output supervisor (IOS) (5752-SC1C3)

*Issuing module:* IOSVHSCH

*Explanation:* An error occurred during HSCH (halt) or CSCH (clear) subchannel processing. The areas dumped are SQA, PSA, TRT, and SUM.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVIPID, VIPIDFRR**

*Component:* Input/output supervisor (IOS) (5752-SC1C3)

*Issuing module:* IOSVIPID

*Explanation:* An error occurred while IOS was processing a caller’s request to obtain or release an I/O prevention identifier. The areas dumped are NUC, SQA, ALLPSA, TRT, and SUMDUMP.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVIRBA, IRBAFRR**

*Component:* Input/output supervisor (IOS) (5752-SC1C3)

*Issuing module:* IOSVIRBA

*Explanation:* An error occurred while subchannel status, probably signaled by an I/O interruption, was being processed. Routine IRBAFRR requests an SVC dump.
The address space dumped is the address space associated with the I/O request being processed. This address space might not match the current ASID in the associated logrec entry.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVIRBD, IRBDFRR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVIRBD

**Explanation:** An error occurred during IRB device status processing. The areas dumped are NUC, SQA, ALLPSA, TRT, and SUMDUMP.

The address space dumped is the address space associated with the I/O request being processed. This address space might not match the current ASID in the associated logrec entry.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVIRBH, IRBHFRR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVIRBH

**Explanation:** An error occurred during IRB halt (HSCH) or clear (CSCH) status processing. The areas dumped are NUC, SQA, ALLPSA, TRT, and SUMDUMP.

The address space dumped is the address space associated with the I/O request being processed. This address space might not match the current ASID in the associated logrec entry.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVIRBN, IRBNFRR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVIRBN

**Explanation:** An error occurred during IRB N-bit or deferred CC3 processing. The areas dumped are NUC, SQA, ALLPSA, TRT, and SUMDUMP.

The address space dumped is the address space associated with the I/O request being processed. This address space might not match the current ASID in the associated logrec entry.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic information.
COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVIRBU, UNSOLFRR
Component:  Input/output supervisor (IOS) (5752-SC1C3)
Issuing module:  IOSVIRBU
Explanation:  An error occurred while unsolicited subchannel status, probably signaled by an I/O interruption, was being processed. Routine UNSOLFRR requests an SVC dump.

The address space dumped is the address space associated with the I/O request being processed. This address space might not match the current ASID in the associated logrec entry.

Associated problem data:  The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVLEVL
Component:  Input/output supervisor (IOS) (5752-SC1C3)
Issuing module:  IOSVLEVL
Explanation:  An error occurred while IOS was managing the serialization (LEVEL) for a UCB. Routine LVLFRR requests an SVC dump.

Associated problem data:  The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVMSCH, IOSMSCHF, ERROR DURING MODIFY SUBCHANNEL INIT
Component:  Input/output supervisor (IOS) (5752-SC1C3)
Issuing module:  IOSVMSCH
Explanation:  An error occurred during modify subchannel (MSCH) initialization. The areas dumped are SQA, PSA, TRT, and SUM.

Associated problem data:  The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVMSQ, IOSMSCQF
Component:  Input/output supervisor (IOS) (5752-SC1C3)
Issuing module:  IOSVMSQ
Explanation:  An error occurred during modify subchannel (MSCH) queue processing. The areas dumped are SQA, PSA, TRT, and SUM.

Associated problem data:  The SDWA variable recording area (SDWAVRA) contains diagnostic information.
COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVPRVT, VPRVTFR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVPRVT

Explanation: An error occurred while IOS was processing a caller's request to perform I/O prevention. The areas dumped are NUC, SQA, ALLPSA, TRT, and SUMDUMP.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVRSUM-RESUME SERVICE ROUTINE

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVRSUM

Explanation: An error occurred while the resume service routine (IOSVRSUM) was processing. Routine RSUMFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information, including the UCB and IOSB.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVSLIH, SLIHFR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSLIH

Explanation: An error occurred while the IOS second level interruption handler (SLIH) was processing. The areas dumped are SQA, PSA, TRT, and SUM.

The address space dumped is the address space associated with the I/O request being processed. This address space might not match the current ASID in the associated logrec entry.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVSSCH, IOSSSCHF

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSSCH

Explanation: An error occurred during start subchannel (SSCH) processing. The areas dumped are SQA, PSA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.
COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVSSCQ, SSCQFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSSCQ

Explanation: An error occurred while routine IOSVSSCQ was processing. Routine SSCQFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVSTSC, STSCFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSTSC

Explanation: An error occurred during IOSVSTSC (IOS store subchannel routine) processing. FRR routine STSCFRR requests an SVC dump. The areas dumped are SQA, ALLPSA, SUMDUMP, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information, including the 24-byte FRR work area, and IOSB and UCB fields.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVSTSQ, STSQFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSTSQ

Explanation: An error occurred during IOSVSTSQ (STSCH queue routine) processing. FRR routine STSQFRR requests an SVC dump. The areas dumped are SQA, ALLPSA, SUMDUMP, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information, including the 24-byte FRR work area, and the IOSB and UCB.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVSWAP, SWAPFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSWAP

Explanation: An error occurred while IOS was doing a swap between UCBs. Routine SWAPFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information, including the from-UCB and to-UCB data.

COMPON=IOS, COMPID=SC1C3, ISSUER=IOSVVARY

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVVARY
Explanation: An error occurred while a path to a device was being varied online or offline. Routine VARYFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

**COMPON=IOS-DASD VOLUME VERIFICATION, COMPID=SC1C3, ISSUER=IOSVDAVV**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVDAVV

Explanation: An error occurred while IOS was attempting to verify the volume label for a DASD device. Routine DAVVFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-DYNAMIC PATHING, COMPID=SC1C3, ISSUER=IECVDPTH**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IECVDPTH

Explanation: An error occurred during IECVDPTH (dynamic path) processing. ESTAE routine DPTHESTA requests an SVC dump. The areas dumped are SQA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-DYNAMIC PATHING, COMPID=SC1C3, ISSUER=IECVDPTH**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IECVDPTH

Explanation: An error occurred during IECVDPTH (dynamic path) processing. FRR routine DPTHFRR requests an SVC dump. The areas dumped are SQA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-DYNAMIC PATHING DRIVER, COMPID=SC1C3, ISSUER=IOSVDPDR**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVDPDR

Explanation: An error occurred during IOSVDPDR (dynamic path driver routine) processing. FRR routine DPDRFRR requests an SVC dump. The areas dumped are SQA, TRT, and SUM.
The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-DYNAMIC PATHING INIT, COMPID=SC1C3, ISSUER=IECVIOSI**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IECVIOSI

**Explanation:** An error occurred during IECVIOSI (IOS initialization) processing. ESTAE routine IOSIRECV requests an SVC dump. The module work area is dumped.

The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-IOQ STORAGE MANAGER, COMPID=SC1C3, ISSUER=IOSVIOQM, IOSVQFRR, error**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSVIOQM

**Explanation:** An error occurred while the IOQ storage manager was processing a caller's request. In the dump title, *error* identifies the type of error as:

- GETMAIN FAILURE
- PROGRAM ERROR
- ABEND=C0D

The areas dumped are NUC, SQA, SUM, and TRT.

The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-IOS CLEAR DEVICE SUBCHANNEL ROUTINE, COMPID=SC1C3, ISSUER=IOSRCDEV, CDEVFRR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSRCDEV

**Explanation:** An error occurred while IOS was attempting to clear a subchannel. FRR routine CDEVFRR requests an SVC dump.

The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-IOS FORCE DEVICE ROUTINE, COMPID=SC1C3, ISSUER=IOSRFDEV, FDEVFRR**

**Component:** Input/output supervisor (IOS) (5752-SC1C3)

**Issuing module:** IOSRFDEV

**Explanation:** An error occurred while IOS was attempting to force a device offline. FRR routine FDEVFRR requests an SVC dump.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-IOS STORAGE MANAGER, COMPID=SC1C3, ISSUER=IOSVSMGR, IOSVSMFR, error**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSMGR

Explanation: An error (GETMAIN FAILURE, PROGRAM ERROR, or ABEND=C0D) occurred while the IOS storage manager was processing a caller's request. The areas dumped are NUC, SQA, TRT, and SUMDUMP.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-PATH VALIDATION, COMPID=SC1C3, ISSUER=IECVIOPM, PMSKESTE**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IECVIOPM

Explanation: An error occurred during IECVIOPM (I/O path mask update routine) processing. The areas dumped are NUC, SQA, LSQA, TRT, and PSA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-RESTART SUPPORT, COMPID=SC1C3, ISSUER=IOSVRSTS, RSTSFRR**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVRSTS

Explanation: An error occurred while IOS was processing a restart request. FRR routine RSTSFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS (SC1C3), STAND-ALONE I/O RTN, ISSUER=IOSRSAIO(SAIOFRR)**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSRSAIO

Explanation: An error occurred while IOS was attempting to initiate a stand-alone I/O operation. FRR routine SAIOFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.
SVC Dump Titles

COMPON=IOS-SHARED UP SERVICE, COMPID=SC1C3, ISSUER=IOSVSHUP

Component: Input/output supervisor (IOS) (5752-SC1C3)
Issuing module: IOSVSHUP

Explanation: An error occurred while IOSVSHUP was processing. The FRR routine SHUPFRR requests an SVC dump. The areas dumped are SQA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

COMPON=IOS (SC1C3), STAND-ALONE I/O RTN, ISSUER=IOSRSUBC(SAIOFRR)

Component: Input/output supervisor (IOS) (5752-SC1C3)
Issuing module: IOSRSAIO

Explanation: An error occurred while IOS was attempting to set or reset the stand-alone I/O interruption subclass for a subchannel. FRR routine SAIOFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

COMPON=IOS-SIMULATED INTERRUPT, COMPID=SC1C3, ISSUER=IECVGENA

Component: Input/output supervisor (IOS) (5752-SC1C3)
Issuing module: IECVGENA

Explanation: An error occurred while the IECVGENA module was simulating an interruption. FRR routine GENAFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

COMPON=IOS-STORE/MODIFY SUBCHANNEL CANCEL ROUTINE, COMPID=SCIC3, ISSUER=IOSVCNXL

Component: Input/output supervisor (IOS) (5752-SC1C3)
Issuing module: IOSVCNXL

Explanation: An error occurred while IOS was attempting to cancel a store subchannel or modify subchannel request.

COMPON=IOS-SUBCHANNEL LOGOUT, COMPID=SC1C3, ISSUER=IOSRSLH, SLHFRR

Component: Input/output supervisor (IOS) (5752-SC1C3)
Issuing module: IOSRSLH
Explanation: An error occurred while IOS was processing a subchannel log out. FRR routine SLHFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-SUBCHANNEL REDRIVE, COMPID=SC1C3, ISSUER=IOSVSCHR**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVSCHR

Explanation: An error occurred during subchannel redrive processing. The areas dumped are SQA, PSA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-UCBFLG FUNCTION, COMPID=SC1C3, ISSUER=IECVGENA**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IECVGENA

Explanation: An error occurred while IECVGENA was modifying a flag in the UCB. FRR routine GENAFRR requests an SVC dump.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-UNCONDITIONAL RESERVE, COMPID=SC1C3, ISSUER=IOSVURDT**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVURDT

Explanation: An error occurred while IOSVURDT, IECVDURP, or IOSVURSV (unconditional reserve back-end routines) was processing. The areas dumped are SQA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**COMPON=IOS-UNCONDITIONAL RESERVE, COMPID=SC1C3, ISSUER=IOSVURVL**

Component: Input/output supervisor (IOS) (5752-SC1C3)

Issuing module: IOSVURVL

Explanation: An error occurred during IOSVURVL (unconditional reserve front-end routine) processing. The areas dumped are SQA, TRT, and SUM.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.
COMPON=JES2-SSI, COMPID=SC1BH, ISSUER=HASCLINK
RECOVERY

Component: JES2 - Subsystem interface (5752-SC1BH)

Issuing module: HASCLINK - ESTAE

Explanation: An abend occurred during a subsystem interface (SSI) request to the JES2 subsystem.

The task attempts recovery. If the task cannot percolate the error, the task returns to the SSI caller with a return code of 16 in register 15. The SSI caller assumes that the JES2 subsystem did not satisfy the SSI request.

The dump is written for the address space that issued the SSI request. The areas dumped are ALLPSA, CSA, LPA, LSQA, and RGN. The component section of the dump contains:
- The name of the SSI routine that abended
- The associated JES2 module name
- The offset of the failing instruction into the JES2 module

Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information.

See [z/OS MVS System Codes](#) for an explanation of the abend code.

COMPON=JES3 I/O TERMINATION ROUTINE COMPID=SC1BA,
ISSUER=IATDMFR(FRXDSRTN)

Component: JES3 (5752-SC1BA)

Issuing module: IATDMFR

Diagnostic Information: [z/OS JES3 Diagnosis](#)

Explanation: An abend occurred in module IATDMIT when entered at entry point IATDMITT. The module was attempting to access the JCT data space in order to put data in the data space or to retrieve data from the data space.

Associated problem data: The abend and dump are accompanied by message IAT1804.

The SDWA variable recording area (SDWAVRA) contains the IAT1804 message.

COMPON=JES3 JCT READ SRB ROUTINE COMPID=SC1BA,
ISSUER=IATGRJX(JXSRBFRR)

Component: JES3 (5752-SC1BA)

Issuing module: IATGRJX

Diagnostic Information: [z/OS JES3 Diagnosis](#)

Explanation: An abend occurred in module IATGRJX when entered at entry point JXRFDSRB. The module was attempting to copy a JCT that is not in real storage from the JCT data space to a JSAM buffer.
SVC Dump Titles

**COMPON=JES3 SUBSYS COMMUNIC, COMPID=SC1BA, ISSUER=IATSSRE(SSREFRR)**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATSSRE

**Explanation:** An error occurred during read end processing of subsystem communication. Recovery routine SSREFRR requests an SVC dump.

**COMPON=JES3 SUBSYS COMMUNIC, COMPID=SC1BA, ISSUER=IATSSXM(SXMFRR)**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATSSXM

**Explanation:** An error occurred during cross memory processing of subsystem communication. Recovery routine SXMFRR requests an SVC dump.

**COMPON=JSS-REC, COMPID=SC1B8, ISSUER=IEESB670, JOB SCHEDULING SUBROUTINE RECOVERY EXIT ROUTINE**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEESB670

**Explanation:** The recovery exit routine IEESB670 schedules a retry of the job scheduling subroutine (IEESB605). If an SDWA is provided, IEESB670 requests an SVC dump. The areas dumped are SQA, PSA, LSQA, RGN, LPA, TRT, CSA, and NUC.

**COMPON=MSTR-BASE, COMPID=SC1B8, ISSUER=IEEVIPL ERROR IN MASTER SCHEDULER INITIALIZATION**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEEVIPL - Master scheduler base initialization

**Explanation:** During error recovery processing, an SVC dump is requested for one of the following:
- STAE processing was unsuccessful
- A program check occurred
- The system restart key was pressed
- Control was returned because system initialization ended.

The areas dumped are PSA, LSQA, RGN, LPA, TRT, CSA, ALLNUC, and SQA.

**COMPON=MSTR-REGION, COMPID=SC1B8, ISSUER=IEEMB860, MASTER SCHEDULER REGION INITIALIZATION DUMP**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEEMB860 - Master scheduler region initialization

**Explanation:** Either ESTAE or recovery setup failed. The error occurs if the LOAD macro (SVC 8) was unsuccessful, or master scheduler initialization failed. The areas dumped are PSA, ALLNUC, LSQA, RGN, LPA, TRT, CSA, and SQA.
**SVC Dump Titles**

**COMPON=MSTR-WAIT, COMPID=SC1B8, ISSUER=IEEVWAIT, reason**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEEVWAIT

**Explanation:** An error occurred during command processing. The reason field is one of the following:
- BAD ESTAE RETURN CODE
- ERROR IN MASTER ADDR SPACE
- ERROR IN CONSOLE ADDR SPACE
- IEEVWAIT RESTART FAILED IN CONSOLE ADDR SPACE

IEEVWAIT requests an SVC dump for all but percolation and machine check entries. The areas dumped are PSA, NUC, LSQA, RGN, LPA, TRT, CSA, GRSQ, and SQA.

**COMPON=MS CMNDS, COMPID=SC1B8, ISSUER=IEECB890, REQUESTED BY CMDS.**

**Component:** Master Scheduler (SC1B8)

**Issuing module:** IEECB890 - CMDS command processor

**Explanation:** A CMDS DUMP command was issued and IEECB890 took a dump of Master's and Console's address space.

**Associated problem data:** Since commands are started in Master's or Console's address space, the dump will contain both of these address spaces. Note that some commands may spawn from Master's to other address spaces and the dump will not include those address spaces.

**COMPON=M S CMNDS, COMPID=SC1B8, ISSUER=IEE5203D, FAILURE IN CSCB CHAIN REBUILD/RECOVERY PROCESSING**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEE5203D

**Explanation:** An error occurred during CSCB Chain Rebuild recovery processing.

The areas dumped are SUM, SQA, CSA, ALLPSA, LSQA, LPA, TRT, and GRSQ.

**COMPON=M S CMNDS, COMPID=SC1B8, ISSUER=IEEMB881, FAILURE IN SYSTEM ADDR SPACE CREATE ROUTINE**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEEMB881 - System address space create routine

**Explanation:** An error occurred, after master scheduler initialization, while IEEMB881 was attempting to start a system address space. Routine EAESTAE requests an SVC dump. The areas dumped are SQA, ALLPSA, SUMDUMP, LSQA, LPA, TRT, GRSQ, and the master scheduler ASCB.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains:
SVC Dump Titles

- Return and reason codes
- Footprints
- Input attribute list
- Name of the initialization routine specified by the caller
- Start parameters specified by the caller
- Code and data registers
- Pointers to the CSCB, ASCB, JSCB, TCB, and BASEA

**COMPON=MS CMNDS, COMPID=SC1B8, ISSUER=IEEMB883, FAILURE IN SYSTEM ADDR SPACE INIT WAIT/POST ROUTINE**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEEMB883 - System address space initialization WAIT/POST routine

**Explanation:** An error occurred, after master scheduler initialization, during WAIT/POST processing. Routine WPESTAE requests an SVC dump. The areas dumped are SQA, ALLPSA, LSQA, LPA, and TRT.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains:
- Return and reason codes
- Input event code
- Footprints
- Code and data registers
- Pointer to TCB in error
- Pointers to the CSCB, ASCB, JSCB, and BASEA

**COMPON=MS CMNDS, COMPID=SC1B8, ISSUER=IEEMB887, GENERALIZED PARSER-EXIT ABENDED, ABEND=xxx, RSN=UNKNOWN**

**Component:** Master Scheduler (SC1B8)

**Issuing module:** IEEMB887 - Generalized parser

**Explanation:** An error occurred in one of the following situations:
- Module IEEMB887
- An exit routine that was called by IEEMB887.

Recovery routine PRSESTAE issued a summary SVC dump with the following areas included:
- IEEMB887
- Data area for IEEMB887
- SCL (parameter list for IEEMB887)
- First parse description
- Current parse description
- Input being processed

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains:
- ENABLING DAE
- If the ROUT exit routine abended, exit routine address with the address of the keyword used to call the routine
- If I/O exit abended, exit routine address
- Footprints
SVC Dump Titles

- Base registers
- Data register
- Address of SCL
- Address of current parse description
- Current value of input record pointer

**COMPON=MS CMNDS, COMPID=SC1B8, ISSUER=IEEMB887, GENERALIZED PARSER, ABEND=xxx, RSN=xxxxxxxxXUNKNOWN**

**Component:** Master Scheduler (SC1B8)

**Issuing module:** IEEMB887 - Generalized parser

**Explanation:** An error occurred in one of the following:
- Module IEEMB887
- An exit routine that was called by IEEMB887.

Recovery routine PRSESTAE issued a summary SVC dump with the following areas included:
- IEEMB887
- Data area for IEEMB887
- SCL (parameter list for IEEMB887)
- First parse description
- Current parse description
- Input being processed

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains:
- ENABLING DAE
- If the ROUT exit routine abended, exit routine address with the address of the keyword used to call the routine
- If I/O exit abended, exit routine address
- Footprints
- Base registers
- Data register
- Address of SCL
- Address of current parse description
- Current value of input record pointer

**COMPON=NIP, COMPID=SC1C9, ISSUER=IEAVTEDS, TIMED EVENT DATA SERVICE**

**Component:** NIP (5752-SC1C9)

**Issuing module:** IEAVTEDS

**Explanation:** An error has occurred while processing an IEATDS REGISTER or RECORD request. The FRR routine in IEAVTEDS issued the SDUMP macro. The areas dumped are SQA, CSA, RGN, LSQA, TRT, and SUMDUMP.

**Associated problem data:** A software record is written to the logrec data set and includes:
- SDWAMODN - IEANUC01 (load module)
- SDWACSECT - IEAVTEDS (csect)
- SDWAREXN - IEAVTEDS (recovery csect)
COMPON=OLTEP-INITIALIZATION

**Component:** On-line test executive program (OLTEP) (5752-SC106)

**Issuing module:** IFDOLT00 - STAERT ESTAE routine

**Explanation:** OLTEP requests this dump when an error is encountered during OLTEP initialization and OLTEP processing.

The areas dumped are ALLPSA, NUC, RGN, SQA, and TRT.

**Associated problem data:** OLTEP places in the SDWA the OLTEP DIE data area and codes associated with the dump.

COMPON=PROGRAM-MANAGER-LNKLIST-LOOKASIDE,
COMPID=SC1CJ, ISSUER=CSVLLCES-CSVLLCRE

**Component:** Contents Supervisor (5752-SC1CJ)

**Issuing module:** CSVLLCRE - issued by ESTAE CSVLLCES

**Explanation:** An abend (other than code 222, 322, or 522) occurred while (1) LNKLIST lookaside (LLA) was building or refreshing the LLA directory, or (2) the LLA directory was being searched and the caller of LLA determined that LLA caused the error. The caller terminates LLA with a 312 abend code.

Up to six dump ranges are dumped and include:
- The LLA control block in the nucleus pointed to by CVTLLCB.
- The oldest hash table and its overflow area.
- The replacement hash table and its overflow area.
- The temporary table of PDS directory entries (INFOTAB).
- The LNKLIST table (LLT) pointed to by CVTLLTA.
- The LPALST table (LPAT) pointed to by CVTEPLPS.

**Associated problem data:** Except for operator cancel abends (codes 222 and 122), a software record is written to the logrec data set.

Variable SDWAPTR in module CSVLLCRE contains the address of the SDWA. The fields in the SDWA filled in are: SDWAMODN, SDWACSCST, SDWAREXN, SDWASC, SDWAMLVL, SDWARRL, and SDWACID.

The variable area in the SDWA (SDWAVRA) contains CSVLLCRE's processing status footprints (field FPCRE in CSVLLCRE), and data from the LLCB (field FPCES in CSVLLCRE).

Field CVTLLCB points to the LLA control block (LLCB) in nucleus module CSVLLCB1. LLCBASCB contains the address of the ASCB of the current LLA address space. The LLCB contains processing status flags and LLA-related data.

Field FOOTPRTS in CSVLLCRE contains footprints indicating the processing status and the resources that were owned by CSVLLCRE at the time of the error.
**COMPON=REAL STORAGE MANAGEMENT, COMPID=SC1CR, ISSUER=IARQFDMP, REQUESTOR=IARRRCV**

**Component:** Real storage manager (5752-SC1CR)

**Issuing module:** IARQFDMP

**Explanation:** An abend occurred during RSM processing. The areas dumped are LSQA, SQA, and TRT.

**COMPON=REAL STORAGE MANAGEMENT, COMPID=SC1CR, ISSUER=IARQKT2D, PURPOSE=COMPONENT TRACE, COMP=RSM**

**Component:** Real storage manager (5752-SC1CR)

**Issuing module:** IARQKT2D

**Explanation:** RSM requested an SVC dump to dump the component trace tables. Component trace initiated this dump because an operator had earlier requested component tracing with the command: TRACE CT,ON,COMP=RSM. The areas dumped are the component trace tables, SQA, and TRT.

**COMPON=REAL STORAGE MANAGEMENT, COMPID=SC1CR, ISSUER=IARQNFRR**

**Component:** Real storage manager (5752-SC1CR)

**Issuing module:** IARQNFRR

**Explanation:** An abend occurred during RSM processing of a TRACE CT operator command. The areas dumped are LSQA, SQA, and TRT.

**COMPON=RECONFIGURATION- DISPLAY M, COMPID=SC1CZ**

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEEMPDM

**Explanation:** An abend occurred during DISPLAY M processing. The main work area of the command processor is dumped.

**COMPON=RECONFIG-CF CPU, COMPID=SC1CZ, ISSUER=IEERDUMP**

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEEVCPR

**Explanation:** An error (ABEND=xxx) occurred during CONFIG CPU processing. The areas dumped are PSA, SQA, TRT, LPA, LSQA, and the dynamic area for module IEEVCPR.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains:
- Label of the last retry point passed in IEEVCPR (See note)
- Reason code for the ABEND (REG15CDE)
- Caller’s input to IEEVCPR (INPARMS)
IEEVCPR has 21 labels that are used for returns after an ABEND. As each retry point is passed, the label name is saved so you can determine the section of code that was in control when the error occurred.

**COMPON=RECONFIG, COMPID=SC1CZ, ISSUER=IEEVCHPF**

Component: Reconfiguration (5752-SC1CZ)

Issuing module: IEEVCHPF

Explanation: An abend occurred during reconfiguration processing of a force channel path offline request. The areas dumped are the FRR tracking area, the main work area for module IEEVCHPF, and, if there is a work area, the parameters passed to the MSSF.

**COMPON=RECONFIG, COMPID=SC1CZ, ISSUER=IEEVIOSD**

Component: Reconfiguration (5752-SC1CZ)

Issuing module: IEEVIOSD

Explanation: An abend occurred during I/O processing. The areas dumped are the FRR tracking area, the pointer to the main work area for module IEEVCHPF, and, if there is a work area, the parameters passed to or received from the MSSF.

**COMPON=RECONFIG, COMPID=SC1CZ, ISSUER=IEEVSTEE**

Component: Reconfiguration (5752-SC1CZ)

Issuing module: IEEVSTEE - ESTAE

Explanation: An abend occurred during CONFIG STOR reconfiguration processing for a storage element request. The error occurred in module IEEVSTEL (storage element reconfiguration) or module IEEVSTFA (storage element alternate reconfiguration). The areas dumped are the MSSF data (for an offline request, both offline command INFO and OFFLINE command data are included; for an online request, only the ONLINE command data is included), the storage address increment (SAI) array, NUC, LSQA, SQA, TRT, and PSA.

**COMPON=RECONFIG, COMPID=SC1CZ, ISSUER=IEEVSTPE, IEEVSTGP FAILED**

Component: Reconfiguration (5752-SC1CZ)

Issuing module: IEEVSTPE - ESTAE

Explanation: An abend occurred during reconfiguration processing of a CONFIG STOR physical request in module IEEVSTGP. The areas dumped are the MSSF data, the storage address increment (SAI) array, NUC, LSQA, SQA, TRT, and PSA.
**COMPON=RECONFIG(SC1CZ), MODULE=IEEVPTH (VARY PATH) FAILED, ABEND(xxx)**

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEEVPTH

**Explanation:** An abend occurred during VARY PATH command processing. The areas dumped are the command image buffer (CHBUF), the current VARY request block (if any), and the main work area of module IEEVPTH.

**COMPON=RECONFIG(SC1CZ), MODULE=IEEVPTH: FAILED, ABEND(xxx)**

**Component:** Reconfiguration (5752-SC1CZ)

**Issuing module:** IEEVPTH

**Explanation:** An abend occurred during VARY PATH reconfiguration processing. The areas dumped are the main work area for module IEEVPTH, the first request block in the chain passed to IEEVPTH, the current request block (if any) that represents the path being processed, and, if there is a current request block, the device number and the channel path identifier for the path.

**COMPON=RMF, COMPID=27404, ISSUER=ERBCNFGC, I/O CONFIG.TAB. CREATE**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBCNFGC

**Explanation:** An abend occurred while the RMF Monitor I I/O configuration table create module (ERBCNFGC) was processing. ERBCNFGC is called by ERBMFMFC during RMF initialization. The ESTAE recovery routine CNFGABND requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, ICHT, and IODNT.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBCNFGF, I/O CONFIG.TAB. BUILD**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBCNFGF

**Explanation:** An abend occurred while the RMF Monitor I I/O configuration table build module (ERBCNFGF) was processing. ERBCNFGF is called by ERBMFMFC during RMF initialization. The ESTAE recovery routine CNFGABND requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, ICHT, IODNT, and LCUT.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and pointers to the
STGST, IOCHT, IODNT, and LCUT. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBCNFGG, I/O CONFIG.TAB. CREATE**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBCNFGG

**Explanation:** An abend occurred while the RMF Monitor I I/O configuration table build for 4381 processors (module ERBCNFGG) was processing. ERBCNFGG is called by ERBMFMFC during RMF initialization. The internal ESTAE recovery routine CNFGGESA requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, IOCHT, and IODNT.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and pointers to the STGST, IOCHT, IODNT, LCUT, HSARB, SCHIB, and IOSB. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFDEA, RMF MON.I CONTROL**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFDEA - ESTAE

**Explanation:** An error occurred during RMF processing. The data control ESTAE routine ERBMFDEA requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, IOCHT, STMMV, RMCT, CMCT, CPMT, ICHPT, RCE, RMPT, CMB, and ICSC. The entries in the RMF storage resource table (STSGT) are also specified depending on whether there is sufficient space in the LIST pool.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and the problem control table (ERBMFPCT). The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFEAR, RMF LISTEN EXITS**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFEAR

**Explanation:** An abend occurred while the RMF Monitor I event arrival routine (ERBMFEAR) was processing. ERBMFEAR receives control when a change occurs for device state, reconfiguration (DDR) activity, CMB data state, channel facility recovery, and channel path state. The internal ESTAE recovery routine ERBLXERV requests an SVC dump. The areas dumped are SQA, LSQA, TRT, PSA, and SUMDUMP.
SVC Dump Titles

Associated problem data: The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

COMPON=RMF, COMPID=27404, ISSUER=ERBMFEVT, RMF MON.I SAMPLER

Component: Resource measurement facility (RMF) (5665-27404)

Issuing module: ERBMFEVT

Explanation: An abend occurred while the RMF Monitor I MFROUTER service module (ERBMFEVT) was processing. ERBMFEVT receives control as a timer DIE from the timer second level interruption handler. Control is passed consecutively to the list of event measurement gathering routines associated with the MFROUTER. The internal FRR recovery routine EVFRR recovers from errors occurring in the MFROUTER service module or in any of the RMF samplers. Routine EVSFRR requests an SVC dump. The areas dumped are SQA, CSA, TRT, PSA, RGN, and SUMDUMP.

Associated problem data: The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information, the FRR parameter area, STMMV entry, and lock names. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

COMPON=RMF, COMPID=27404, ISSUER=ERBMFFUR, RMF MON.I CONTROL

Component: Resource measurement facility (RMF) (5665-27404)

Issuing module: ERBMFFUR

Explanation: An error occurred during RMF processing. The FRR lock release failure recovery routine ERBMFFUR requests an SVC dump. The areas dumped are SQA, TRT, PSA, RGN, and SUMDUMP.

Associated problem data: The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information, the address of the failing routine, timer queue element, and RMF TQE from the timer supervisor work area. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

COMPON=RMF, COMPID=27404, ISSUER=ERBMFIDX, RMF MSCH COMPLETION

Component: Resource measurement facility (RMF) (5665-27404)

Issuing module: ERBMFIDX

Explanation: An abend occurred while the asynchronous MSCH (modify subchannel) completion module (ERBMFIDX) was processing. ERBMFIDX is scheduled as an SRB routine upon completion of an asynchronous MSCH request. The internal FRR recovery routine ERBMFIDF requests an SVC dump. The areas dumped are SQA, LSQA, TRT, PSA, and SUMDUMP.
**SVC Dump Titles**

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFIQA, RMF I/O QUEUING**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFIQA

**Explanation:** An abend occurred while the start/stop hardware measurements for I/O queuing for 4381 processors (ERBMFIQA) was processing. The internal ESTAE recovery routine ERBIQERV requests an SVC dump. The areas dumped are SQA, LSQA, TRT, PSA, and SUMDUMP.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and pointers to the STGST, IOCHT, IODNT, LCUT, and HSARB. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFMFC, RMF SESSION CONTROL**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFMFC

**Explanation:** An abend occurred while the measurement facility control module (ERBMFMFC) was processing. The internal ESTAE recovery routine ABNDEXIT requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, GSTC3, IOCHT, and IODNT.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information, the ACT control block, and ESTAE parameter area. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFMLN, ERROR RMF MON I INIT**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFMLN

**Explanation:** An error occurred during RMF processing. ERBMFMLN, the ESTAE for ERBMFIZZ, receives control after any error that occurs after issuing the MFSTART SVC. ERBMFMLN is the highest level ESTAE error recovery routine for the RMF Monitor I session. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST and IOCHT.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information, the PCT control
block, session name, and ESTAE parameter area. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFPVS, RMF VSTOR PVT SAMPLER**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFPVS

**Explanation:** An abend occurred while the virtual storage private area sampling module (ERBMFPVS) was processing. ERBMFPVS receives control from ERBMFEVS via an SRB schedule at the end of each cycle. The internal FRR recovery routine PVSFRR requests an SVC dump. The areas dumped are TRT, PSA, RGN, and SUMDUMP. The SUMLIST option specifies the EDTVS, virtual storage private data tables, and the SRB.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information, the FRR parameter area, pointers to the EDTVS, and current job sampler block. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFRES, MEMTERM RESOURCE MANAGER**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFRES

**Explanation:** An abend occurred while the RMF memory termination resource manager (ERBMFRES) was processing. The internal ESTAE recovery routine RESESTAE requests an SVC dump. The areas dumped are RGN, SQA, TRT, PSA, and SUMDUMP.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFSDE, RMF MON.I CONTROL**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFSDE - ESTAE

**Explanation:** An error occurred during RMF processing. The MFSTART ESTAE routine ERBMFSDE requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, IOCHT, STMMV, RMCT, CMCT, CPMT, ICHPT, RCE, RMPT, CMB, and ICSC. The entries in the RMF storage resource table (STGST) are also specified depending on whether there is sufficient space in the LIST pool.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.
**SVC Dump Titles**

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFTMA, RMF MON.I TERMINATION**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFTMA

**Explanation:** An abend occurred while the RMF termination mainline module (ERBMFTMA) was processing. ERBMFTMA receives control from either ERBMFSDE (abnormal end) or IGX00007 (normal end). The internal ESTAE recovery routine ERBMFTXR requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, and SUMDUMP. The LIST option specifies the STGST, IOCHT, STMMV, RMCT, CMCT, CPMT, ICHPT, RCE, RMPT, CMB, and ICSC. The entries in the RMF storage resource table (STSGT) are also specified depending on whether there is sufficient space in the LIST pool.

**Associated problem data:** The RMF control block STGST (pointed to by field CVMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERBMFTRM, RMF MON.I TERMINATION**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFTRM

**Explanation:** An abend occurred while the RMF general resource release module (ERBMFTRM) was processing. ERBMFTRM receives control from ERBMFTMA. The internal ESTAE recovery routine ERBMFTRM requests an SVC dump. The areas dumped are SQA, LSQA, SWA, TRT, PSA, and SUMDUMP.

**Associated problem data:** The RMF control block STGST (pointed to by field CVMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERB3GEEH, RMF ENQ EVENT HANDLER**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERB3GEEH

**Explanation:** An abend occurred while the Monitor III data gatherer enqueue event handler module (ERB3GEEH) was processing. ERB3GEEH receives control from ERB3GLUE. ERB3GLUE is invoked when enqueue contention in the system changes. The internal FRR recovery routine GEEFHRR requests an SVC dump. The areas dumped are TRT and SUMDUMP. The SUMLIST option specifies the ERB3GEEH module work area and the enqueue event table entries.

**Associated problem data:** The RMF control block STGST (pointed to by field CVMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and pointers to the STGST and GSTC3. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.
SVC Dump Titles

**COMPON=RMF, COMPID=27404, ISSUER=ERB3GESAA, MONIII GATHERER CANCEL FAILING CSECT NAME cccccccc**

Component: Resource measurement facility (RMF) (5665-27404)

Issuing module: ERB3GESAA - ESTAE

Explanation: An error occurred during RMF Monitor III data gathering. cccccccc is an 8-character CSECT name. The MONITOR III gatherer ESTAE routine ERB3GESAA requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, SQA, and SUMDUMP. The LIST option specifies the STGST, GSTC3, and WSHG3.

Associated problem data: The SDWA contains the module slot of the failing module, the current stack entry of the RETG3, and pointers to the STGST, GSTC3, GGDG3, WSHG3, and RETG3. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERB3GESAA, MONIII GATHERER RECURSION FAILING CSECT NAME cccccccc**

Component: Resource measurement facility (RMF) (5665-27404)

Issuing module: ERB3GESAA - ESTAE

Explanation: An error occurred during RMF Monitor III data gathering. cccccccc is an 8-character CSECT name. The MONITOR III gatherer ESTAE routine ERB3GESAA requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, SQA, and SUMDUMP. The LIST option specifies the STGST, GSTC3, and WSHG3.

Associated problem data: The SDWA contains the module slot of the failing module, the current stack entry of the RETG3, and pointers to the STGST, GSTC3, GGDG3, WSHG3, and RETG3. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERB3GESAA, FAILURE MONIII GATHERER FAILING CSECT NAME cccccccc**

Component: Resource measurement facility (RMF) (5665-27404)

Issuing module: ERB3GESAA - ESTAE

Explanation: An error occurred during RMF Monitor III data gathering. cccccccc is an 8-character CSECT name. The MONITOR III gatherer ESTAE routine ERB3GESAA requests an SVC dump. The areas dumped are LSQA, SWA, TRT, PSA, SQA, and SUMDUMP. The LIST option specifies the STGST, GSTC3, and WSHG3.

Associated problem data: The SDWA contains the module slot of the failing module, the current stack entry of the RETG3, and pointers to the STGST, GSTC3, GGDG3, WSHG3, and RETG3. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.
**COMPON=RMF, COMPID=27404, ISSUER=ERB3GXMV, TSO RMFWDM**

**COMPON=RMF, COMPID=27404, ISSUER=ERB3GXMV, sid SESSION**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERB3GXMV - ESTAE

**Explanation:** An abend occurred while the RMF Monitor III gatherer cross memory move module (ERB3GXMV) was processing. A TSO/E session or local session (where sid is the session-id) was active.

ERB3GXFR requested an SVC dump for one of the following:
- When requested by a Monitor III reporter module
- When requested by the internal FRR recovery routine itself

If the dump is requested by a reporter module, a SUMDUMP, all local areas, and the wrap-around buffers are dumped. If the dump is issued from the recovery routine, a SUMDUMP and all local areas except the wrap-around buffers are dumped.

**Associated problem data:** If the dump is requested by a reporter module, SDWA and VRA information is not available; the wrap-around buffer area contains the set of samples that caused the problem in the reporter module.

The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF, COMPID=27404, ISSUER=ERB3RMFC, M3 LOCAL SESSION INIT**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERB3RMFC

**Explanation:** An abend occurred while the Monitor III reporter local session initialization module (ERB3RMFC) was processing. ERB3RMFC receives control from ERB3CREP. The internal ESTAE recovery routine RMFCABND requests an SVC dump. The areas dumped are RGN, TRT, PSA, and SUMDUMP.

**Associated problem data:** The RMF control block STGST (pointed to by field CVTMFCCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and pointers to the STGST and GSTC3. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=RMF-ENQ EVENT HANDLER, COMPID=27404, ISSUER=ERBMFEEQ**

**Component:** Resource measurement facility (RMF) (5665-27404)

**Issuing module:** ERBMFEEQ

**Explanation:** An abend occurred while the RMF Monitor I ENQ event handler (ERBMFEEQ) was processing. ERBMFEEQ receives control when an increase or decrease in enqueue contention occurs. Recovery routine ERBMFFRQ requests an
SVC Dump Titles

SVC dump. The areas dumped are TRT and SUMDUMP. The SUMLIST option specifies the ERBMFEEQ module work area and the ENQ data collection area (ERBEQEDT and ERBEQRES).

Associated problem data: The RMF control block STGST (pointed to by field CVTMFCTL in the CVT) and the trace table are helpful in determining the cause of the error. The SDWAVRA contains module trace information and pointers to the module work area and ERBEQEDT. The failing CSECT name and the error condition can be determined from RTM2WA and SDWA.

**COMPON=SAM, COMPID=27405, ISSUER=AMSACT, ERROR IN SAM TERMINATION EXIT**

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSACT

Explanation: The AMSCOL collector module was tracking an application program that ended. While doing the end processing, the AMSACT module abnormally ended.

Associated problem data: The failing CSECT name and the error condition can be determined from the RTM2WA and SDWA. If you cannot determine the cause of the problem from the dump provided, perform the diagnostic procedures in z/OS Problem Management.

**COMPON=SAM, COMPID=27405, ISSUER=AMSACT, ERROR IN SAM USER AMSACU EXIT**

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSACT

Explanation: The AMSCOL collector module was tracking an application program that ended. While doing the end processing, the AMSACT module called an AMSACU installation exit. During running of AMSACU, an abnormal end occurred that was not covered by a user ESTAE routine.

Associated problem data: The failing CSECT name and the error condition can be determined from the RTM2WA and SDWA. If you cannot determine the cause of the problem from the dump provided, try coding an ESTAE exit for AMSACU to capture the error.

**COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, ABEND**

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSCOL

Explanation: The AMSCOL collector module (or one of its subtasks) abnormally ended. AMSACT automatically restarts the collector for the first occurrence of the ABEND.

Associated problem data: The abend code may explain the cause of the problem. If not, perform the diagnostic procedures in z/OS Problem Management.
COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, AMSCFREE
OVERLAID - RECOVERED

Component:  Resource measurement facility (RMF) SAM (5665-27405)

Issuing module:  AMSCOL

Explanation:  The AMSCOL collector module detected that the AMSCFREE pointer in the AMSCNTL control block (in the ECSA) was overlaid with some other data. AMSCOL corrects the value of the pointer and continues processing.

Associated problem data:  Because the SVC dump was taken before AMSCOL corrected the data, the overlaying data appears in the dump. Therefore, examine the dump data to determine the program that caused the overlay.

COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, AMSCNTL
HEADER OVERLAID - RECOVERED

Component:  Resource measurement facility (RMF) SAM (5665-27405)

Issuing module:  AMSCOL

Explanation:  The AMSCOL collector module detected that the header information for its AMSCNTL control block (in the ECSA) was overlaid with some other data. AMSCOL corrects the header information and continues processing.

Associated problem data:  Because the SVC dump was taken before AMSCOL corrected the data, the overlaying data appears in the dump. Therefore, examine the dump data to determine the program that caused the overlay.

COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, AMSCPREV
OVERLAID - RECOVERED

Component:  Resource measurement facility (RMF) SAM (5665-27405)

Issuing module:  AMSCOL

Explanation:  The AMSCOL collector module detected that the AMSCPREV pointer in the AMSCNTL control block (in the ECSA) was overlaid with some other data. AMSCOL corrects the value of the pointer value and continues processing.

Associated problem data:  Because the SVC dump was taken before AMSCOL corrected the data, the overlaying data appears in the dump. Therefore, examine the dump data to determine the program that caused the overlay.

COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, BAD
ADDRESS IN AMSCNTL - RECOVERED

Component:  Resource measurement facility (RMF) SAM (5665-27405)

Issuing module:  AMSCOL

Explanation:  The AMSCOL collector module was posted by either AMSUJI or AMSACT, indicating that there was data to be passed. However, the pointer in the AMSCNTL control block (in the ECSA) did not point to a valid AMSP data block. AMSCOL ignores the data and continues processing.
Associated problem data: The problem could be due to one or more of the following conditions:

- An overlay of the pointer to the AMSP data block
- An overlay of the AMSP data block
- An internal error in AMSUJI, AMSACT, or AMSCOL

If an overlay occurred, examine the data to determine the program that caused the overlay.

**COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, POINTER OVERLAID IN AMSCNTL RECOVERED**

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSCOL

Explanation: The AMSCOL collector module was posted by either AMSUJI or AMSACT, indicating that there was data to be passed. However, the AMSCPREV pointer in the AMSCNTL control block did not point to a valid field. AMSCOL corrects the value of the pointer and continues processing, but no data is passed.

Associated problem data: Because the SVC dump was taken before AMSCOL corrected the data, the overlaying data appears in the dump. The overlay of data could have been caused by an internal error within AMSUJI, AMSACT, or AMSCOL, or by another program overlaying the correct data. Examine the dump data to determine the program that caused the overlay.

**COMPON=SAM, COMPID=27405, ISSUER=AMSCOL, WDS RECORD MISMATCH - RECOVERED**

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSCOL

Explanation: The AMSCOL collector module was tracking an application program that ended. When the AMSDISK subtask attempted to update the work data set (WDS), it found that the WDS record did not match the record in storage.

Associated problem data: The WDS cannot be shared between systems. If it was not being shared, it is most probable that an internal error occurred in AMSCOL. Perform the diagnostic procedures in z/OS Problem Management.

**COMPON=SAM, COMPID=27405, ISSUER=AMSUJI, ERROR IN SAM INITIATION EXIT**

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSUJI

Explanation: An error occurred in the SAM job initiation module.

Associated problem data: The failing CSECT name and the error condition can be determined from the RTM2WA and SDWA. If you cannot determine the cause of the problem from the dump provided, perform the diagnostic procedures in z/OS Problem Management.
COMPON=SAM, COMPID=27405, ISSUER=AMSUJI, ERROR IN SAM USER AMSUJU EXIT

Component: Resource measurement facility (RMF) SAM (5665-27405)

Issuing module: AMSUJI

Explanation: An application program was initiated and control passed from AMSUJI to the AMSUJU installation exit. During processing of AMSACU, an abnormal end occurred that was not covered by a user ESTAE routine.

Associated problem data: The failing CSECT name and the error condition can be determined from the RTM2WA and SDWA. If you cannot determine the cause of the problem from the dump provided, try coding an ESTAE exit for AMSUJU to capture the error.

COMPON=SDUMP, COMPID=SCDMP, ISSUER=IEAVTSEP, FAILURE IN POST DUMP EXIT PROCESSOR

Component: Dumping services - SNAP (5752-SCDMP)

Issuing module: IEAVTSEP

Explanation: An error occurred while processing post dump exits in the DUMPSRV address space. The areas dumped are SUM, TRT, LSQA, CSA, NOSQA, and subpools 231 and 0.

Associated problem data: Obtain the summary dump. The SDWAVRA contains the following:
- The ESTAE parameter area
- The list of post dump exits
- Field DSVEXPRC of the DSVCB

COMPON=SMF INITIALIZATION, ISSUER=IEEMB827, COMPID=SC100

Component: System management facilities (SMF) (5752-SC100)

Issuing module: IEEMB827

Explanation: An error occurred during SMF address space initialization. The areas dumped are PSA, NUC, RGN, SQA, and SUMDUMP.

COMPON=SMF, ISSUER=IEEMB829, COMPID=SC100, CLOSE FAILURE ‘data set name’

Component: System management facilities (SMF) (5752-SC100)

Issuing module: IEEMB829

Explanation: An error occurred while IEEMB829 was closing an SMF data set. IEEMB829 issues message IEE950I to describe the error, removes the data set from the queue of active SMF data sets, and requests the dump with this title. The title gives the name of the data set being closed.

The areas dumped are ALLPSA, CSA, LPA, LSQA, NUC, RGN, SQA, SUMDUMP, and TRT.
To diagnose the problem, obtain the pointer in the SMCAFRDS field of the SMF control area (SMCA). Use this pointer to look at the SMF RDS chain to determine the state of the SMF data sets when the close failed. Also, look in the trace table.

**COMPON=SMF, COMPID=SC100, ISSUER=IEFSMFIE, IEFTB721**

**Component:** System Management Facilities (SC100)

**Issuing module:** IEFSMFIE, IEFTB721

**Explanation:** An error occurred while SMF was processing a call installation exit. The dump header information contains the module in control at the time of the error. If the module in control identified in the header information is one of the following, then the routine associated with the exit caused the failure:

- AMSUJI
- AMSACTRT
- IEFACRTT
- IEFUJI
- IEFUSI

The areas dumped are NUC, PSA, RGN, CSA, SQA, LPA, TRT

**COMPON=SMF, COMPID=SC100, ISSUER=IFAJAC01**

**Component:** System Management Facilities (5752-SC100)

**Issuing module:** IFAJAC01

**Explanation:** An error occurred while SMF was processing a job accounting request in a cross memory environment.

The areas dumped are PSA, NUC, RGN, LPA, TRT, SQA, SUMDUMP

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains footprints to indicate the processing path.

**COMPON=STC-REC, COMPID=SC1B8, ISSUER=IEESB665, STARTED TASK CONTROL RECOVERY EXIT ROUTINE**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEESB665

**Explanation:** The recovery exit routine IEESB665 scheduled a retry for STC in the event of an error (if information was available for a retry). If an SDWA is provided, IEESB665 requests an SVC dump. The areas dumped are SQA, PSA, LSQA, RGN, LPA, TRT, CSA, and NUC.

**COMPON=SSI, COMPID=5752SC1B6, ISSUER=IEFJSaaa, MODULE=IEFJbbbb, ABEND=xxxxx, REASON=yyyyyyyy**

**Component:** Subsystem Interface (5752-SC1B6)

**Issuing module:** IEFJSSARR, IEFJSFRRB, IEFJSPCE, IEFJRASP, IEFJSRE1, or other modules may appear for errors in SSI services other than routing function requests.
**Explanation:** The dump title indicates an SSI routine is the failing CSECT, even when the error occurred in a subsystem function.

**Associated problem data:** The VRA data will contain the SSCVT, SSOB, and SSIB of the failing subsystem. For further diagnostic information, refer to [z/OS MVS Using the Subsystem Interface](https://publib.boulder.ibm.com/infocenter/systems/virtualization/en/index.jsp?topic=/com.ibm.zos.v1r12.doc/tmusingss.html), section titled "Troubleshooting Errors in Your Subsystem".

**COMPON=SUPCNTL-WEB RECOVERY, COMPID=SC1C5, ISSUER=mmm**

**Component:** Supervisor Control (5752-SC1C5)

**Issuing module:** IEAVEGR - Global Recovery

**Explanation:** An unusual situation was detected during supervisor processing, the global recovery routine was invoked, and the global recovery routine detected a faulty structure. The areas dumped are TRT, SUM, WSACEGR, and the pseudo SDWA.

**mmm** is the module which invoked IEAVEGR:
- IEASTFRR
- IEAVCWTM
- IEAVEAC0
- IEAVECH0
- IEAVEDSR
- IEAVEDS0
- IEAVEEE0
- IEAVEGR
- IEAVENTE
- IEAVEPDR
- IEAVERAR
- IEAVERLR
- IEAVERPN
- IEAVERRT
- IEAVETCL
- IEAVMPWQ
- IEAVPMC2
- IEAVSCHA
- IEAVSCHD
- IEAVSRBF
- IEAVSRBQ
- IEAVSRBR
- IEAVSRBS
- IEAVWPM
- IEAVWUQA
- IEAVWUQD

**Associated problem data:** Diagnostic data is recorded in the following fields of WSACEGR as is appropriate:
- Queue verifier data is recorded in QV_OutputDataArea.
- Other data is recorded in RecordArea. Refer to IEAVEGR for a description of the keys which identify the data.
COMPON=SUPCNTL - MEMORY REQUEST, COMPID=SC1C5, ISSUER=IEAVEMRQ, UNEXPECTED ABEND

Component: Supervisor Control (5752-SC1C5)

Issuing module: IEAVEMRQ - Memory Request

Explanation: An error has occurred during memory request processing in IEAVEMRQ while the dispatcher lock was not held. The ESTAE routine in IEAVEMRQ issues the SDUMP macro. The areas dumped are NUC, LPA, TRT, ALLPSA, and SQA.

Associated problem data: A software record is written to the logrec data set and includes:
- SDWAMODN - IEAVEMRQ (module in error)
- SDWACSECT - IEAVEMRQ (CSECT in error)
- SDWAREXN - MRQESTAE (recovery routine)

COMPON=SUPCNTL - MEMORY REQUEST, COMPID=SC1C5, ISSUER=IEAVEMRQ, UNEXPECTED ERROR WITH DISP LOCK

Component: Supervisor Control (5752-SC1C5)

Issuing module: IEAVEMRQ - Memory Request

Explanation: An error has occurred during memory request processing in IEAVEMRQ while the dispatcher lock was held. The ESTAE routine in IEAVEMRQ issues the SDUMP macro. The areas dumped are NUC, LPA, TRT, ALLPSA, and SQA.

Associated problem data: A software record is written to the logrec data set and includes:
- SDWAMODN - IEAVEMRQ (module in error)
- SDWACSECT - IEAVEMRQ (CSECT in error)
- SDWAREXN - MRQESTAE (recovery routine)

COMPON=SUPRCNTL, COMPID=SC1C5, ISSUER=IEAVESAR, UNEXPECTED ERROR OR RECURSION

Component: Supervisor control (5752-SC1C5)

Issuing module: IEAVESAR - supervisor analysis router

Explanation: An error occurred during processing by the supervisor analysis router IEAVESAR or one of the analysis routines called by the router.

The areas dumped are NUC, PSA, SQA, and SUM.

Associated problem data: The SDWA variable recording area contains a copy of the FRR parameter area, which includes:
- The caller of the supervisor analysis router
- The routine in control at the time of the error

See label FRRPRM in module IEAVESAR for a detailed description of the FRR parameter area.
COMPON=SUPERVISOR CONTROL - MEMORY CREATE, 
COMPID=SC1C5, ISSUER=IEAVEMCR

Component: Supervisor Control (5752-SC1C5)

Issuing module: IEAVEMCR - Memory Create

Explanation: An error has occurred during memory create processing in IEAVEMCR. The ESTAE routine in IEAVEMCR issues the SDUMP macro. The areas dumped are NUC, LPA, TRT, ALLPSA, and SQA.

Associated problem data: A software record is written to the logrec data set and includes:
SDWAMODN - IEAVEMCR (module in error)
SDWACSCT - IEAVEMCR (CSECT in error)
SDWAREXN - MCRESTAE (recovery routine)

COMPON=SUPERVISOR CONTROL - MEMORY DELETE, 
COMPID=SC1C5, ISSUER=IEAVEMDL

Component: Supervisor Control (5752-SC1C5)

Issuing module: IEAVEMDL - Memory Delete

Explanation: An error has occurred during memory delete processing in IEAVEMDL. The ESTAE routine in IEAVEMDL issues the SDUMP macro. The areas dumped are NUC, LPA, TRT, ALLPSA, and SQA.

Associated problem data: A software record is written to the logrec data set and includes:
SDWAMODN - IEAVEMDL (module in error)
SDWACSCT - IEAVEMDL (CSECT in error)
SDWAREXN - MDLESTAE (recovery routine)

COMPON=SVC34, COMPID=SC1B8, ISSUER=IEE5103D, FAILURE IN SVC34/COMMAND xxxx

Component: Master scheduler commands (5752-SC1B8)

Issuing module: IEE5103D - STAE

Explanation: The SVC 34 STAE routine IEE5103D requested an SVC dump for one of the following reasons:
- A system error
- A program check occurred
- The system restart key was pressed.

The areas dumped are PSA, NUC, LSQA, RGN, LPA, TRT, CSA, and SQA.

COMPON=SYMREC, COMPID=SCASR, ISSUER=ASRSERVR, LOGIC ERROR IN SYMREC SERVICE

Component: Symptom record (5752-SCASR)

Issuing module: ASRSERVR - FRR entry point in ASRSERVP
Explanation: An abend occurred during the processing of a symptom record request. The FRR routine ASRSERVR requests an SVC dump. The areas dumped are SUMDUMP and SUMLIST.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains a required dump analysis and elimination (DAE) symptom identified by key X'E1'. The data associated with this key is the one-byte hexadecimal footprint, which indicates where the error occurred in ASRSERVP. The footprint is an index into a table that defines the symbolic name of the footprint. The cross-reference listing in module ASRSERVP indicates where the symbolic name is used.

The SUMLIST data is the input symptom record and the dynamic area or work area allocated for symptom record processing. A text description precedes the dumped SUMLIST data.

**COMPON=SYSLOG, COMPID=SC1B8, ISSUER=IEEMB804, SYSTEM LOG SVC DUMP**

**Component:** Command Processing (5752-SC1B8)

**Issuing module:** IEEMB804

**Explanation:** An error occurred during Write To Log (WTL) processing. The area dumped is LSQA.

**COMPON=SYSLOG-INIT, COMPID=SC1B8, ISSUER=IEEMB803, SYSTEM LOG INITIALIZATION**

**Component:** Master scheduler commands (5752-SC1B8)

**Issuing module:** IEEMB803

**Explanation:** An error occurred during IEEMB803 (system log initialization/writer) processing. The areas dumped are PSA, NUC, LSQA, and subpool 231.

**COMPON=SYSTEM TRACE - A.S. CREATE, COMPID=SC142, ISSUER=IEAVETAC**

**Component:** System trace (5752-SC142)

**Issuing module:** IEAVETAC

**Explanation:** An error occurred during IEAVETAC processing while creating the trace address space. Routine ETACRECV requests an SVC dump. The areas dumped are SUM, ALLPSA, SQA, LSQA, NUC, TRT, and GRSQ.

**COMPON=SYSTEM TRACE - A.S. INIT, COMPID=SC142, ISSUER=IEAVETAI**

**Component:** System trace (5752-SC142)

**Issuing module:** IEAVETAI

**Explanation:** An error occurred during IEAVETAI processing while initializing the trace address space. Routine ETAICRECV requests an SVC dump. The areas dumped are SUM, ALLPSA, SQA, LSQA, NUC, TRT, and GRSQ.
**COMPON=SYSTEM TRACE-FORMATTER, COMPID=SC142, ISSUER=IEAVETFC**

**Component:** System trace (5752-SC142)

**Issuing module:** IEAVETFC

**Explanation:** An error occurred during IEAVETAC processing while formatting the system trace table for a SNAP request. Module IEAVETFC requests an SVC dump. The areas dumped are:
- The trace table snapshot copy header (TTCH) that is being formatted
- The dynamic work area of module IEAVETFC that contains the TFWA and the BY-TIME and DEVICES tables
- SUMDUMP, TRT, and LSQA

**Associated problem data:** The SDWA contains the following:
- The address of the caller of the IEAVETFC.
- The address and length of the TFWA.
- The TFWAFP footprint field, which contains flags and trace footprints designed to help screen duplicate problems.
- The significant part of the BY-TIME table. The entries in this table indicate where the formatter is in the data for each processor.

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**COMPON=SYSTEM TRACE - xxxxxxxxxx, COMPID=SC142, ISSUER=IEAVETRR**

**Component:** System trace (5752-SC142)

**Issuing module:** IEAVETRR

**Explanation:** An error occurred during IEAVETRR processing while performing a system trace service. Field xxxxxxxxxx in the title indicates one of the following services that was in control:
- ALTRTRC
- SUSPEND/R/P
- SNAPTRC
- COPYTRC
- ASIDTRC
- VERFYTRC

Module IEAVETRR requests an SVC dump. If the SNAPTRC service was in control, the areas dumped are ALLPSA, SQA, NOSUMDUMP, and LSQA for the home, primary and secondary address spaces at the time of the error. If any other service was in control, the areas dumped are ALLPSA, SQA, SUMDUMP, TRT, and LSQA for the home, primary and secondary address spaces at the time of the error.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) includes the following, if available:
- FRR parameter area; see TRFP for the mapping
- Module footprint word; see the mapping of TRRVMFPA in the particular module
- Return address of the invoker
- Variable module data; see the mapping of TRRVRCMD in the particular module
COMPON=TASK MANAGEMENT - ATTACH, COMPID=SC1CL, ISSUER=IEAVEED0
Component: Task Management (SC1CL)
Issuing module: IEAVECH0
Explanation: An error occurred during ATTACH processing.
Additional areas dumped are SQA, LSQA, and TRT.

COMPON=TASK MANAGEMENT - DETACH, COMPID=SC1CL, ISSUER=IEAVEED0
Component: Task Management (SC1CL)
Issuing module: IEAVECH0
Explanation: An error occurred during DETACH processing.
Additional areas dumped are SQA, LSQA, and TRT.

COMPON=TASK MANAGEMENT - STATUS, COMPID=SC1CL, ISSUER=IEAVEED0
Component: Task Management (SC1CL)
Issuing module: IEAVECH0
Explanation: An error occurred during STATUS processing.
Additional areas dumped are SQA, LSQA, and TRT.

COMPON=VSM, COMPID=SC1CH, ISSUER=IGVGCAS, ABEND=xxx
Component: Virtual storage management (VSM) (5752-SC1CH)
Issuing module: IGVGCAS - FRR
Explanation: Abend xxx occurred during memory create processing in IGVGCAS. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, and TRT.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16 and 200.

COMPON=VSM, COMPID=SC1CH, ISSUER=IGVGRRGN, ABEND=xxx
Component: Virtual storage management (VSM) (5752-SC1CH)
Issuing module: IGVGRRGN - ESTAE
Explanation: Abend xxx occurred during get real region processing. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, and TRT.
Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in key 16.
COMPON=VSM, COMPID=SC1CH, ISSUER=IGVGVRGN, ABEND=xxx

Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVGVRGN - ESTAE

Explanation: Abend xxx occurred during get virtual region processing. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in key 16.

COMPON=VSM, COMPID=SC1CH, ISSUER=IGVRVSM

Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVRVSM - FRR

Explanation: An error occurred during GETMAIN or FREEMAIN processing. The abend code can be found in field SDWACMPC. While attempting to recover from this error, module IGVRVSM encountered an uncorrectable error in a major VSM control block (such as VSWK or GDA). Module IGVRVSM forces percolation of the abend.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16, 206, 211, 215, 216, 218, 219, 222, and 223.

COMPON=VSM, COMPID=SC1CH, ISSUER=IGVQSPET, ABEND=xxx

Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVSTSKT - FRR

Explanation: Abend xxx occurred during task end processing in IGVSTSKT. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16, 200, 201, and 202.

COMPON=VSM, COMPID=SC1CH, ISSUER=IGVSTSKI, ABEND=xxx

Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVSTSKI - FRR

Explanation: Abend xxx occurred during attach processing in IGVSTSKI. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16 and 33.
Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVRCP - FRR

Explanation: Abend xxx occurred during CPOOL processing. The areas dumped are ALLPSA, NUC, SQA, SUMDUMP, and TRT. If the cell pool being processed when the error occurred resides in a local subpool, then the areas dumped include the LSQA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16, 17, 18, 32, and 33.

COMPON=VSM-GETMAIN, COMPID=SC1CH, ISSUER=IGVSRTN, ABEND=xxx

COMPON=VSM-FREEMAIN, COMPID=SC1CH, ISSUER=IGVSRTN, ABEND=xxx

Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVRSRTN - FRR

Explanation: An abend xxx occurred during GETMAIN or FREEMAIN processing. The areas dumped are ALLPSA, NUC, SUMDUMP, and TRT. The areas dumped using the LIST option are the VSM work area (VSWK), the global cell pools, the global data area (GDA), the VSM table module (IGVSTBL), and the address space control block (ASCB).

If a local subpool was being processed when the error occurred, the areas dumped include the LSQA and, using the LIST option, the local data area (LDA) and the task control block (TCB).

Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16 and 200 through 235.

COMPON=VSM-IGVFVIRT, COMPID=SC1CH, ISSUER=IGVFVIRT, ABEND=xxx

Component: Virtual storage management (VSM) (5752-SC1CH)

Issuing module: IGVFVIRT - FRR

Explanation: Abend xxx occurred during CSA deferred release processing in IGVFVIRT. The areas dumped ALLPSA, NUC, SQA, SUMDUMP, and TRT.
 Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16, 215, and 218.

**COMPON=VSM-STORE, COMPID=SC1CH, ISSUER=IGVRSTOR**

**Component:** Virtual storage management (VSM) (5752-SC1CH)

**Issuing module:** IGVRSTOR - FRR

**Explanation:** An error occurred while VSM was attempting to satisfy a request made by a STORAGE macro. The areas dumped are LSQA, NUC, SQA, SUMDUMP, and TRT.

 Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in key 218.

**COMPON=VSM-VSMLIST, COMPID=SC1CH, ISSUER=IGVSLIST, ABEND=xxx**

**Component:** Virtual storage management (VSM) (5752-SC1CH)

**Issuing module:** IGVSLIST - FRR

**Explanation:** An abend xxx occurred during VSMLIST processing. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, TRT, and the caller’s work area.

 Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in keys 16 and 40.

**COMPON=VSM-VSMLOC, COMPID=SC1CH, ISSUER=IGVLOCP, ABEND=xxx**

**Component:** Virtual storage management (VSM) (5752-SC1CH)

**Issuing module:** IGVLOCP - FRR

**Explanation:** Abend xxx occurred during VSMLOC processing. The areas dumped are ALLPSA, LSQA, NUC, SQA, SUMDUMP, and TRT.

 Associated problem data: The SDWA variable recording area (SDWAVRA) contains information in key 16.

**COMPON=XCF, COMPID=5752SCXCF, ISSUER=x, ABEND=,REASON=)**

**Component:** Cross system coupling facility (XCF) (5742SCXCF)

**Issuing module:** IXCM2REC

**Explanation:** An error occurred during XCF processing.

 Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic data.
**COMPON=WLM, COMPID=5752SCWLM, ISSUER=x, ABEND=(,REASON=)**

**Component:** Workload manager (WLM)

**Issuing module:** IWMM2REC

**Explanation:** An error occurred during WLM processing.

**Associated problem data:** The SDWA variable recording area (SDWAVRA) contains diagnostic data.

**DUMP BY/(OF) MODULE xxxxxxxx**

**Component:** Generalized trace facility (GTF) (5752-SC111)

**Issuing module:** AHLWTO

**Explanation:** Entry point AHLDMPMD in AHLWTO provides a dumping service for the GTF FGBRs (filter, gather, and build routines). xxxxxxxx indicates the FGBR affected: AHLTSLIP, AHLTSLSYS, AHLTUSR, AHLTSLIO, AHLTSLVC, AHLTSLPID, AHLTSLYL, AHLTTEXT, AHLTFOR, or AHLTXXSYS. The GTF control blocks dumped are MCHEAD, MCRWSA, MCAWSA, MCCE, MCQE, and GTFPCT. The SQA, SDWA, and the failing FGBR module are also dumped.

**Associated problem data:** Message AHL118I is issued. For additional information, see message AHL118I in [z/OS MVS System Messages, Vol 1 (ABA-AOM)].

**Problem determination:** The error is probably a page fault that occurred when the FGBR referenced a data area that should be fixed but was not.

**DUMP OF AHLREADR**

**Component:** Generalized trace facility (GTF) (5752-SC111)

**Issuing module:** AHLREADR

**Explanation:** An error occurred while AHLREADR was attempting to pass GTF buffers to SDUMP or SNAP for inclusion in an outstanding dump request. The dump taken by AHLREADR includes a dump of itself plus a dump of the failing address space. The AHLREAD macro request is cleaned up, which includes posting the original requester, releasing locks, dequeuing on the MC (monitor call) control blocks, and releasing allocated storage.

**DUMP OF GTF MODULE AHLWTASK**

**Component:** GTF (5752-SC111)

**Issuing module:** AHLWTASK

**Explanation:** An error has occurred when the system was trying to issue either message AHL118I or AHL119I. The areas dumped are the SDUMP buffer, failing module, and failing address space.

**Associated problem data:** Message AHL119I is issued. The SDUMP buffer contains message AHL118I (which would have been issued if the error had not occurred), the SRB that did not complete, and the SDWA.
DUMP OF JES2 CHECKPOINT DATA. SYSTEM=id, $ERROR CODE=code

Component: JES2 (5752-SC1BH)
Issuing module: HASPCKPT
Explanation: JES2 detected a major error during I/O processing to the checkpoint data set. Fields in the dump title are:
   id - system ID on which the error was detected
   code - JES2 abend code

The JES2 actual checkpoint master record, job queue, and JOT storage are dumped.

Associated problem data: For additional information on JES2 error codes, see message $HASP095 in z/OS JES2 Messages.

ENF ABEND ERRORMOD=IEFENFFX

Component: Scheduler services (5752-BB131)
Issuing module: IEFENFFX
Explanation: An abend occurred while IEFENFFX (ENF request router routine) was processing an event notification request. The areas dumped are NUC and SQA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the ESTAE or FRR parameter list and footprint bits that indicate the processing path of IEFENFFX.

ENF ABEND ERRORMOD=IEFENFNM

Component: Scheduler services (5752-BB131)
Issuing module: IEFENFNM
Explanation: An abend occurred while IEFENFNM (ENF mainline routine) was processing an event notification request. The areas dumped are NUC, RGN, CSA, and SQA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the ESTAE or FRR parameter list and footprint bits that indicate the processing path of IEFENFNM.

ENF LISTEN EXIT ERROR, ISSUER=IEFENFNM, ESTABLISHER=jjjj, rrrr, eeee, EXIT=aaaa, nnnn

Component: Event Notification Facility (ENF) (5752-BB131)
Issuing module: IEFENFNM
Explanation: An error occurred while a listen exit was in control.

Fields in the dump title are:
jjjj
   Home jobname at the time of the ENFREQ ACTION=LISTEN
ERROR DURING SNAP, COMPON=SNAP, COMPID=SCDMP, ISSUER=IEAVAD01

Component: Dumping Services - SNAP (5752-SCDMP)

Issuing module: IEAVAD01 - ESTAE

Explanation: An error occurred during SNAP dump processing when SNAP was attempting to take a dump for the user. An I/O error or erroneous control block field can cause this error. The areas dumped are LPA, SQA, TRT, GRSQ, and subpools 250 and 253.

Associated problem data: The LOGDATA in the dump includes the failing CSECT name that identifies the formatter in control at the time of the error.

ERROR IN AHLSETEV

Component: Generalized trace facility (GTF) (5752-SC111)

Issuing module: AHLSETEV

Explanation: A program check occurred when referencing the MC (monitor call) tables that are built during GTF initialization by the SETEVENT macro. GTF applications end and acquired resources are freed. Message AHL132I is issued. The area dumped is SQA, which contains the MC tables.

Problem determination: Validate the MC tables, which are located in the SQA. For additional information, see message AHL132I in z/OS MVS System Messages, Vol 1 (ABA-AOM).

ERROR IN IATSIDMO FOR SYSOUT DATA SET

Component: JES3 (5752-SC1BA)

Issuing module: IATDMFR - FRR

Explanation: An error occurred while module IATSIDM (USAM subsystem interface routine) was attempting to open a SYSOUT data set. The FRR routine IATDMFR requests an SVC dump. IATDMFR returns to IATSIDM via the retry address (RETADDR parameter) on the SETRP macro. IATSIDM ends the job with a 1FB system abend code. The areas dumped are SQA, CSA, and LPA.

Associated problem data: For a description of the 1FB abend code, see z/OS MVS System Codes.
ERROR IN INITIATOR, ABEND=, COMPON=INIT, COMPID=SC1B6, ISSUER=IEFIB620

Component: Initiator (5752-SC1B6)

Issuing module: IEFIB620 - ESTAE

Explanation: During initiator processing, the ESTAE exit routine IEFIB620 requests an SVC dump for one of the following:

- A system error
- A program check occurred
- The system restart key is pressed.

The areas dumped are RGN, LPA, TRT, ALLPSA, SWA, LSQA, and ALLNUC.

ERROR IN MASTER SUBSYSTEM BROADCAST FUNCTION, ABEND=aaa, SUBSYSTEM NAME=bbbb, FUNCTION CODE=ccc

Component: Initiator - Subsystem Interface (5752-SC1B6)

Issuing module: IEFJRASP

Explanation: An abend occurred while IEFJRASP was routing a subsystem interface request to all active subsystems, via the subsystem interface. The areas dumped are NUC, CSA, LPA, TRT, and LSQA. In the dump title, the variable areas are:

aaa The hexadecimal number of the system completion code.
bbbb The four character subsystem name.
ccc The subsystem interface (SSI) function code.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the following:

- Footprint bits that indicate the processing path of IEFJRASP
- The subsystem options block (SSOB) and subsystem identification block (SSIB), if these are available.
- The subsystem communication vector table (SSCVT) and subsystem vector table (SSVT) addresses.

ERROR IN MODULE AHLMCER

Component: Generalized trace facility (GTF) (5752-SC111)

Issuing module: AHLMCER

Explanation: An error occurred during GTF processing when AHLMCER attempted to route the MC (monitor call) interruption to its affiliated FGBR (filter, gather, and build routine). The FRR routine (AHLMCFRR) requests the dump prior to attempting retry. The MCRWSA and SDWA are moved into the SDUMP buffer. AHLMCER is included in the dump as part of the storage dumped. GTF ends. The areas dumped are SQA, SDUMP buffer, failing module, and failing address space.

Problem determination: This error is usually an inability to pass control to an FGBR because of changes to the FGBR in SYS1.LPALIB. Field MCREID in the MCRWSA contains the event identifier of the HOOK that GTF was processing.

Associated problem data: Message AHL007I is issued.
ERROR IN QMNGRIO PROCESSING, COMPON=SNAP, COMPID=SCDMP, ISSUER=IEAVAD01

Component: Dumping Services - SNAP (5752-SCDMP)
Issuing module: IEAVAD01 - ESTAE

Explanation: An error occurred during SNAP dump processing when the QMNGRIO macro attempted to read the JFCB in order to obtain an output line and the page capacity. The areas dumped are LPA, SWA, SQA, TRT, and subpools 250 and 253.

Problem determination: The JFCB might be in error.

ERROR IN SUBSYSTEM SERVICE RTN, COMPON=INIT-SSI, COMPID=SC1B6, ISSUER=IEFJSBLD, ABEND=hhh

Component: Initiator - Subsystem interface (5752-SC1B6)
Issuing module: IEFJSBLD

Explanation: An abend (hhh) occurred while IEFJSBLD was either building an SSCVT, SSVT, SHAS, or SAST, or was preparing to link to the initialization routine for the subsystem. The areas dumped are ALLPSA, LSQA, RGN, CSA, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the input parameter list and footprint bits that indicate the processing path of IEFJSBLD.

ERROR IN SUBSYSTEM INITIALIZATION, COMPON=INIT-SSI, COMPID=SC1B6, ISSUER=IEFJSIN2, ABEND=hhh

Component: Initiator - Subsystem interface (5752-SC1B6)
Issuing module: IEFJSIN2

Explanation: An abend (hhh) occurred during initialization processing of the subsystems. The error occurred in IEFJSIN2 or in service routines IEEMB878 or IEEMB882. The areas dumped are ALLPSA, LSQA, RGN, and TRT.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the footprint bits that indicate the processing path of IEFJSIN2.

EVENT NOTIFICATION FACILITY ERROR, ABEND=xxx, COMPON=SCHR-ENF, COMPID=BB131, ISSUER=IEFENFWT

Component: Scheduler services (5752-BB131)
Issuing module: IEFENFWT

Explanation: An abend occurred while IEFENFWT (ENF wait routine) was processing. The areas dumped are NUC, CSA, SQA, and RGN.
FAILURE DURING SNAP RECOVERY, COMPON=SNAP, COMPID=SCDMP, ISSUER=IEAVAD01

Component:  Dumping Services - SNAP (5752-SCDMP)
Issuing module:  IEAVAD01 - ESTAE
Explanation:  An error occurred while the SNAP dump ESTAE routine was attempting to cleanup after an error occurred during SNAP mainline processing. No further cleanup is attempted. The areas dumped are LPA, SQA, TRT, GRSQ, and subpools 250 and 253.
Problem determination:  The SNAP storage buffers are probably incorrect. Use the previous RTM2WA to identify the error that occurred during SNAP mainline processing. The SNAP mainline error might have affected this error.

FIOD:IDA019S2 - ABEND FROM FIOD FRR
Component:  VSAM - Record management (5665-28418)
Issuing module:  IDA019S2 - FRR
Explanation:  An abnormal end occurred during VSAM record management processing. The FRR routine IDA019S2 (at entry point IDAF19S2) requests an SVC dump macro. The areas dumped are PSA, NUC, RGN, TRT, CSA, and SQA.
Problem determination:  A VSAM ICIP (improved control interval processing) request was running in supervisor state or SRB mode and encountered a program check while the I/O manager was processing the request. Register 3 points to the IOMB for the request.

GTF TERMINATING ON ERROR CONDITION
Component:  Generalized trace facility (GTF) (5752-SC111)
Explanation:  An error occurred during GTF initialization before the initialization was successfully completed. The retry routine AHLTERM2 requests an SVC dump. GTF ends. The areas dumped are RGN, LPA, SQA, and MCHEAD control block.

HASPDUMP SUBSYS=ssss vvvvvvvv MODULE=mmmmmmmm CODE=cccc
Component:  JES2 (5752-SC1BH)
Issuing module:  HASPTERM or HASPRAS
Explanation:  An error occurred during JES2 processing. In the dump title, the variable areas are:

| ssss | The subsystem identification, normally JES2, obtained from the TIOT |
| vvvvvvvv | The JES2 version identification |
| mmmmmmm | The name of the primary JES2 load module, normally HASJES20 |
| cccc | The system completion code, Shhh (such as S0C1) or JES2 catastrophic error code, $ccc (such as $K01) |
Associated problem data: The SDWA variable recording area (SDWAVRA) contains diagnostic information. See the JES2 LGRR mapping macro in module HASPDOC for a description of SDWAVRA information.

See message $HASP095 in z/OS JES2 Messages for an explanation of JES2 error codes, and see z/OS MVS System Codes for an explanation of system codes.

**IATSIJS JSESEXIT**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATSIJS

**Explanation:** An abend occurred during IATSIJS (job processing subsystem interface) processing. The ESTAE routine established by IATSIJS receives control to examine the function control table (FCT) active at failure to determine which function or DSP failed. The areas dumped are PSA, NUC, SQA, RGN, LPA, TRT, and CSA.

**IATSNLS - ESTAE EXIT**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATSNLS

**Explanation:** A subtask was ended because an abend occurred in one of the following:
- OPNDST processing
- CLSDST exit
- CLSDST error exit
- SETLOGON exit
- SIMLOGON exit
- LOGON IRB
- TPEND processing
- LOSTERM exit
- RESPONSE IRB exit
- DFSAY exit
- OPEN or CLOSE processing (in which case, no retry is attempted).

IATSNLS requested an SVC dump. The areas dumped are SQA, ALLPSA, NUC, LSQA, RGN, LPA, TRT, and CSA.

**IATSSCM READ-END FAILURE**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATSSCM

**Explanation:** An error occurred during IATSSCM (subsystem communication scheduler) read-end processing. The areas dumped are PSA, NUC, RGN, LPA, TRT, CSA, and SQA.

**IAT1081 ERROR IN IATDMKT - IATYISR POSSIBLY LOST**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATDMFR - FRR
**SVC Dump Titles**

**Explanation:** A software or hardware error occurred and caused the JES3 channel end routine (IATDMDKT) to abnormally end. The FRR routine IATDMFR was not able to recover from the error. Either the input/output service block (IOSB) or service request block (SRB) in IATYISR might be erroneous. The areas dumped are SQA, LPA, and CSA.

**Associated problem data:** Message IAT1801 is issued. For a description of message IAT1801, see [z/OS JES3 Messages](#).

IAT3702 dspname (ddd) ABENDED/FAILED ABEND code/DMxxx - JES3 FAILURE NO.nnn

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATABN0

**Explanation:** A DSP abended or failed. In the dump title, the variable fields are:
- **dspname** The failing DSP
- **dddd** The device number, if available.
- **code** The system abend code
- **xxx** The DM type
- **nnn** The unique JES3 fail soft identifier

Message IAT3702 is issued. IATABN0 (online format driver) requests an SVC dump. The areas dumped are PSA, NUC, SQA, LSQA, RGN, LPA, TRT, and CSA.

**Associated problem data:** For additional information, see the abend codes in [z/OS MVS System Codes](#), DM codes in [z/OS JES3 Diagnosis](#) and message IAT3702 in [z/OS JES3 Messages](#).

IAT4830 IATIISB MASTER TASK ABEND

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATIISB

**Explanation:** An abend occurred during IATIISB (interpreter master subtask) processing. The areas dumped are NUC, PSA, RGN, LPA, TRT, and CSA.

**Problem determination:** Check the SYSMSG data set for error indications.

IAT4831 IATIIST SUBTASK ABEND

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATIIST (IATYICT work area)

**Explanation:** An abend occurred while an interpreter subtask was processing. Message IAT4211 is issued. IATIIST requests an SVC dump. The areas dumped are SQA, PSA, NUC, RGN, LPA, TRT, and CSA.

**ICHIRST00 - RACF SVCS, ABEND CODE=sss-rrr, SVC=sname, USER=user, GROUP=gname, EXIT=rname**

**Component:** Resource Access Control Facility (RACF) (5752-XXH00)

**Issuing module:** ICHRST00 - ESTAE
SVC Dump Titles

Explanation: An abend occurred during processing of:
- A RACF SVC
- The GENLIST or RACLIST operand of the SETROPTS command

In the dump title, the variable fields are:
- **sss**: System completion code for an abend
- **sname**: The RACF routine handling the SVC and issuing the ABEND
- **user**: If interactive, the RACF userid of the user encountering the problem; if batch, the job encountering the problem
- **gname**: If interactive, the RACF group of the user encountering the problem; if batch, the step encountering the problem
- **rname**: Name of the CSECT that probably caused the problem

The task ended. The areas dumped are CSA, LPA, PSA, RGN, SQA, and TRT.


Problem determination: Do the following steps:
1. Identify the CSECT named in the dump title (EXIT=rname) as one of the following:
   - An IBM-supplied routine.
2. See the message ICH409I, if issued, with the same ABEND code and reason code as the dump title for the following problem data:
   - The RACF macro or SETROPTS command option being processed: GENLIST or RACLIST.
   - An indication whether RACF was performing parameter validation or other processing.

**ICHRST00 - RACF SVCS, ABEND CODE=sss-rrr, SVC=sname, USER=user, GROUP=gname, EXIT=rname**

Component: Resource Access Control Facility (RACF) (5752-XXH00)

Issuing module: ICHRST00 - ESTAE

Explanation: An abend occurred during processing of one of the RACF SVCs or during processing of the GENLIST or RACLIST operand of the SETROPTS command.

The task ended. The areas dumped are PSA, RGN, LPA, TRT, CSA, and SQA.

In the dump title, the variable fields are:
- **sss**: System completion code for an abend
Problem determination: Do the following steps:
1. Find the routine named in EXIT in the dump title:
   - If it is an installation-written exit routine, it probably caused the error. See z/OS Security Server RACF System Programmer’s Guide for a description of the RACF exits. Diagnose the exit routine, using standard diagnosis methods to analyze the problem.
   - If it is an IBM-supplied routine, do the following steps.
2. See message ICH409I in z/OS Security Server RACF Messages and Codes with the same ABEND and reason codes as in the dump title, for the following:
   - RACF macro and SETROPTS command option (GENLIST or RACLIST) that was being processed
   - Whether parameter validation or other processing was being done
3. See z/OS Security Server RACF Messages and Codes for an explanation of the abend code and reason code.

ICTMCS01, CRYPTOGRAPHY INITIALIZATION

Component: Programmed Cryptographic Facility (5752-XY500)

Issuing module: ICTMCS01 - ESTAE

Explanation: An abend occurred during initialization of the Programmed Cryptographic Facility. The areas dumped are PSA, NUC, LSQA, RGN, LPA, TRT, CSA, SWA, and SQA.

ICTMKG00, KEY GENERATOR PROGRAM

Component: Programmed Cryptographic Facility (5752-XY500)

Issuing module: ICTMKG00 - ESTAE

Explanation: An abend occurred during key generator program processing in ICTMKG00. The areas dumped are PSA, NUC, LSQA, RGN, TRT, CSA, and SQA.

ICTMKG01 HANDLE SYSIN MODULE

Component: Programmed Cryptographic Facility (5752-XY500)

Issuing module: ICTMKG01 - ESTAE

Explanation: An abend occurred during key generator control statement processing in ICTMKG01. The areas dumped are PSA, NUC, LSQA, RGN, TRT, CSA, and SQA.
**SVC Dump Titles**

**ICTMKM01, START CRYPTOGRAPHY COMMAND**

- **Component:** Programmed Cryptographic Facility (5752-XY500)
- **Issuing module:** ICTMKM01 - ESTAE
- **Explanation:** An abend occurred during start cryptography command processing in ICTMKM01. The areas dumped are PSA, NUC, LSQA, RGN, LPA, TRT, CSA, SWA, and SQA.

**ICTMKM04 - KEY MANAGER**

- **Component:** Programmed Cryptographic Facility (5752-XY500)
- **Issuing module:** ICTMKM04 - FESTAE
- **Explanation:** An abend occurred during GENKEY or RETKEY macro processing in ICTMKM04. The areas dumped are PSA, NUC, LSQA, RGN, LPA, TRT, CSA, SWA, and SQA.

- **Associated problem data:** Message ICT022I is issued to console ID 0 and identifies the requested function and abend code.

**ICTMSM07 - ICTMSM07 - CIPHER DUMP**

- **Component:** Programmed Cryptographic Facility (5752-XY500)
- **Issuing module:** ICTMSM07 - FESTAE or FRR
- **Explanation:** An abend occurred during processing of a request to encipher or decipher data (CIPHER macro) in ICTMSM07. If the CIPHER macro was branch-entered, an FRR was established and a branch entry to SVC dump processing was used. The areas dumped are NUC, LSQA, RGN, LPA, TRT, CSA, SWA, ALLPSA, and SQA.

**ICTMSM07 - ICTMSM08 TRNSKEY DUMP**

- **Component:** Programmed Cryptographic Facility (5752-XY500)
- **Issuing module:** ICTMSM07 - FESTAE
- **Explanation:** An abend occurred during the processing of the translate key (TRNSKEY macro) function. The areas dumped are NUC, LSQA, RGN, LPA, TRT, CSA, SWA, ALLPSA, and SQA.

**ICTMSM07 - ICTMSM09 EMK DUMP**

- **Component:** Programmed Cryptographic Facility (5752-XY500)
- **Issuing module:** ICTMSM09 - FESTAE
- **Explanation:** An abend occurred during the processing of the encipher under master key (EMK macro) function. The areas dumped are NUC, LSQA, RGN, LPA, TRT, CSA, SWA, ALLPSA, and SQA.
SVC Dump Titles

IDA019SB:IDA121F7 - ABEND FROM BUILD IDACPA

Component: VSAM - Record Management (DF105)
Issuing module: IDA019SB - FRR

Explanation: An abnormal end occurred during VSAM record management processing. The FRR in IDA019SB requests an SVC dump. This FRR allows end processing to continue. The areas dumped are PSA, NUC, RGN, TRT, CSA, and SQA.

Problem determination: A channel program was being constructed for a VSAM global shared resources (GSR) request. Register 3 points to the IOMB for the request.

IEC251I, VSAM GSR FORCE DLVRP DUMP DATA

Component: VSAM - CLOSE processing (DF106)
Issuing module: IDA0200T

Explanation: VSAM was closing the last data set opened against the resource pool, and the ASCB originating the pool had already ended. A force delete of the pool was done to release resources and storages.

This is an informational dump. It indicates that a FORCE DLVRP was done to free storage used by a GSR (global shared resources) pool, with an attempt to dump control blocks to the SYS1.DUMP data set.

Associated problem data: VSAM issues message IEC251I. For additional information, see IEC251I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IEC999I IFG0RR0A, IFG0RR0F, jobn, stepn, WORKAREA=addr

Component: Open/Close/EOV (DF107)
Issuing module: IFG0RR0F - ESTAE

Explanation: An error occurred during open, close, or EOV processing. In the dump title, the variable fields are:

jobn The name of the affected job; from the TIOT, if available
stepn The name of the affected step; from the TIOT, if available
addr The address of the task recovery routine (TRR) work area

The areas dumped are NUC and RGN.

Associated problem data: Message IEC999I is issued. For additional information, see IEC999I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IEC999I IFG0RR0A, errmod, jobn, stepn, WORKAREA=addr

Component: Open/Close/EOV (DF107)
Issuing module: IFG0RR0A - ESTAE

Explanation: An error occurred during open, close, EOV, or DADSM processing.
In the dump title, the variable fields are:
errmod The name of the module in error
SVC Dump Titles

jobn  The name of the affected job; from the TIOT, if available
stepn The name of the affected step; from the TIOT, if available
addr  The address of the task recovery routine (TRR) work area

The area dumped is RGN.

Associated problem data: Message IEC999I is issued. For additional information, see IEC999I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IEC999I IFG0RR0A, errmod, jobn, stepn, WORKAREA=addr

Component: Open/Close/EOV (DF107)
Issuing module: IFG0RR0E - ESTAE
Explanation: An error occurred during open, close, EOV, or DADSM processing. In the dump title, the variable fields are:
errmod  The name of the module in error
jobn    The name of the affected job; from the TIOT, if available
stepn   The name of the affected step; from the TIOT, if available
addr    The address of the task recovery routine (TRR) work area

The areas dumped are NUC and RGN.

Associated problem data: Message IEC999I is issued. For additional information, see IEC999I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IEC999I IFG0TC0A, subrout, jobn, stepn, DEB ADDR=addr
IEC999I IFG0TC4A, subrout, jobn, stepn, DEB ADDR=addr
IEC999I IFG0TC5A, subrout, jobn, stepn, DEB ADDR=addr

Component: Open/Close/EOV (DF107)
Issuing module: IFG0TC0A (Task Close) or IFG0TC4A (ESTAE)
Explanation: An error occurred during task close processing. If the abend occurs in one of the subroutines called by task close, the task close ESTAE routine IFG0TC4A requests an SVC dump. If the error occurs during mainline task close processing, IFG0TC0A requests an SVC dump. More than one SVC dump may be issued when errors are encountered in the called subroutines. In the dump title, the variable fields are:
subrout The failing subroutine
jobn    The name of the affected job; from the TIOT, if available
stepn   The name of the affected step; from the TIOT, if available
addr    The address of the associated DEB

The areas dumped are NUC, RGN, CSA, and SQA.

Associated problem data: Message IEC999I is issued. For additional information, see IEC999I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IEECB906 SLIP ESTAE DUMP

Component: SLIP Command (5752-SCSLP)
Issuing module: IEECB906 - ESTAE
Explanation: An error occurred during SLIP or DISPLAY SLIP command processing.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the ESTAE parameter list.

**IEECB914 SLIP TSO COMM RTN ESTAE DUMP**

Component: SLIP TSO communication (5752-SCSLP)

Issuing module: IEECB914

Explanation: An error occurred while a SLIP command was being entered from a TSO terminal. The area dumped is SQA.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the ESTAE parameter list and a copy of the SLIP TSO element (STE) associated with the SLIP command.

**IEEMPS03 - DUMP OF MAIN WORKAREA**

Component: Reconfiguration (5752-SC1CZ)

Issuing module: IEEMPS03

Explanation: An abend occurred during QUIESCE command processing. The main work area for IEEMPS03 is dumped.

**IEEVLDWT ERROR**

Component: Reconfiguration (5752-SC1CZ)

Issuing module: IEEVLWDT

Explanation: An error occurred during IEEVLWDT (load-wait) processing. The FRR routine in IEEVLWDT requests an SVC dump.

Associated problem data: The SDWAVRA field in the SDWA contains the FRR parameter list.

**IGCT0018, jobn, stepn**

Component: Sequential access method (SAM) (5665-28414)

Issuing module: IGCT0018 - ESTAE

Explanation: During SVC 18 (BLDL or FIND) processing, the ESTAE routine IGCT0018 requests an SVC dump for one of the following:

- An abend occurred
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:

jobn  The name of the affected job
stepn  The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.
SVC Dump Titles

**Associated problem data:** Message IEC909I is issued. See IEC909I in [z/OS MVS System Messages, Vol 7 (IEB-IEE)].

**IGCT002D, jobn, stepn**

**Component:** Sequential access method (SAM) (5665-28414)

**Issuing module:** IGCT002D - ESTAE

**Explanation:** During SVC 24 (DEVTYPE) processing, the ESTAE routine IGCT002D requests an SVC dump for one of the following:
- An abend occurred
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
- **jobn** The name of the affected job
- **stepn** The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

**Associated problem data:** Message IEC912I is issued. See IEC912I in [z/OS MVS System Messages, Vol 7 (IEB-IEE)].

**IGCT002E, jobn, stepn**

**Component:** Sequential access method (SAM) (5665-28414)

**Issuing module:** IGCT002E - ESTAE

**Explanation:** During SVC 25 (track balance/overflow) processing, the ESTAE routine IGCT002E requests an SVC dump for one of the following:
- An abend occurred
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
- **jobn** The name of the affected job
- **stepn** The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

**Associated problem data:** Message IEC915I is issued. See IEC915I in [z/OS MVS System Messages, Vol 7 (IEB-IEE)].

**IGCT0021, jobn, stepn**

**Component:** Sequential access method (SAM) (5665-28414)

**Issuing module:** IGCT0021 - ESTAE

**Explanation:** During SVC 21 (STOW) processing, the ESTAE routine IGCT0021 requests an SVC dump for one of the following:
- An abend occurred
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
The areas dumped are PSA, NUC, SQA, and RGN.

**Associated problem data:** Message IEC911I is issued. See IEC911I in [z/OS MVS System Messages, Vol 7 (IEB-IEE)].

**IGCT005C, jobn, stepn**

**Component:** DAM (5665-28416)

**Issuing module:** IGCT005C - ESTAE

**Explanation:** During SVC 53 (exclusive control) processing, the ESTAE routine IGCT005C requests an SVC dump for one of the following:
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
- jobn The name of the affected job
- stepn The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

**Associated problem data:** Message IEC903I is issued. See IEC903I in [z/OS MVS System Messages, Vol 7 (IEB-IEE)].

**IGCT005G, jobn, stepn**

**Component:** DAM (5665-28416)

**Issuing module:** IGCT005G - ESTAE

**Explanation:** During SVC 57 (FREEDBUF) processing, the ESTAE routine IGCT005G requests an SVC dump for one of the following:
- An error other than a program check occurred in the cleanup routine
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
- jobn The name of the affected job
- stepn The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

**Associated problem data:** Message IEC905I is issued. See IEC905I in [z/OS MVS System Messages, Vol 7 (IEB-IEE)].

**IGCT006H, jobn, stepn, procstepn, 744**

**Component:** Sequential access method (SAM) (5665-28414)

**Issuing module:** IGCT006H - ESTAE

**Explanation:** During SVC 68 (SYNADAF/SYNADRLS) processing, the ESTAE routine IGCT006H requests an SVC dump for one of the following:
- An abend occurred
SVC Dump Titles

- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
jobn  The name of the affected job
stepn The name of the affected step
procdump The name of the affected procedure step

The areas dumped are PSA, NUC, SQA, and RGN.

Associated problem data: Message IEC906I is issued. See IEC906I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IGCT0069, jobn, stepn

Component: Sequential access method (SAM) (5665-28414)

Issuing module: IGCT0069 - ESTAE

Explanation: During SVC 69 (BSP) processing, the ESTAE routine IGCT0069 requests an SVC dump for one of the following:
- An abend occurred
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
jobn  The name of the affected job
stepn The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

Associated problem data: Message IEC917I is issued. See IEC917I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IGCT010E, jobn, stepn

Component: Sequential access method (SAM) (5665-28414)

Issuing module: IGCT010E - ESTAE

Explanation: During SVC 105 (IMGLIB) processing, the ESTAE routine IGCT010E requests an SVC dump for one of the following:
- An abend occurred
- A previous error recovery routine failed
- A system error occurred

In the dump title, the variable fields are:
jobn  The name of the affected job
stepn The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

Associated problem data: Message IEC920I is issued. See IEC920I in z/OS MVS System Messages, Vol 7 (IEB-IEE).
IGCT105C jobn, stepn

Component: DAM (5665-28416)

Issuing module: IGCT105C - ESTAE

Explanation: During SVC 53 (exclusive control) processing, the ESTAE routine IGCT105C requests an SVC dump for one of the following:
- An abend occurred
- An error other than a program check occurred in the cleanup routine for the first-level ESTAE routine.

In the dump title, the variable fields are:
jobn  The name of the affected job
stepn  The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

Associated problem data: Message IEC903I is issued. See IEC903I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IGCT1081, jobn, stepn

Component: Sequential access method (SAM) (5665-28414)

Issuing module: IGCT1081 - ESTAE

Explanation: During SVC 81 (SETPRT) processing, the ESTAE routine IGCT1081 requests an SVC dump for one of the following:
- The DEB is not valid
- The FCB image is not valid
- A system error occurred

In the dump title, the variable fields are:
jobn  The name of the affected job
stepn  The name of the affected step

The areas dumped are PSA, NUC, SQA, and RGN.

Associated problem data: Message IEC918I is issued, if the ESTAE routine was not entered directly from the recovery termination manager (RTM). See IEC903I in z/OS MVS System Messages, Vol 7 (IEB-IEE).

IGC0002F CATALOG CONTROLLER 3

Component: Catalog controller 3 (5695-DF105)

Issuing module: IGC0002F - ESTAE

Explanation: During SVC 26 (CATALOG/INDEX/LOCATE) processing, the catalog controller ESTAE routine IGC0002F requests an SVC dump if any OCx abend occurs. The ESTAE routine frees storage resources so they are not lost to the system. The areas dumped are PSA, LSQA, and RGN.
IKJEFLGM REQUEST

Component: TSO scheduler

Issuing module: IKJEFLGM - LOGON message module

Explanation: An error occurred during LOGON processing. An SVC dump is requested if one of the following messages is issued:
IKJ56451 An installation-exit error occurred
IKJ56452 A system error occurred
IKJ600I An I/O, OBTAIN, or OPEN error occurred
IKJ603I An installation-exit abend occurred
IKJ608I A TSO service routine error occurred

The areas dumped are NUC, RGN, SQA, and LPA if TSO dump is requested.

Associated problem data: Refer to messages IKJ600I, IKJ603I, and IKJ608I in z/OS MVS System Messages, Vol 9 (IGF-IWM)

IKTLTERM - I/O ERROR

Component: TSO/VTAM

Issuing module: IKTLTERM

Explanation: TSO/VTAM issued an abend due to an unrecoverable I/O error. The installation requested the SVC dump by specifying the RPL sense code for the I/O error via the RCFBDUMP keyword in the TSOKEYxx parmlib member.

Excessive line or hardware errors might be occurring.

IOS - IECVERPL ERROR

Component: Input output supervisor

Issuing module: IECVERPL

Explanation: An error occurred while either IECVERPL was in control or an ERP that does not have a recovery routine was in control. The areas dumped are PSA, SQA, LSQA, and TRT.

ISAM INTRFC, OPEN, IDA0192I, IDAICIA1, **AUDIT NOT STARTED**
ISAM INTRFC, OPEN, IDA0192I, IDAICIA1, **IDA0192I IN CONTROL**
ISAM INTRFC, CLOSE, IDA0200S, IDAICIA1, **AUDIT UNAVAILABLE**
ISAM INTRFC, CLOSE, IDA0200S, IDAICIA1, **IDAIIPM1 IN CONTROL**
ISAM INTRFC, CLOSE, IDA0200S, IDAICIA1, **IDA0200S IN CONTROL**

Component: VSAM - ISAM-interface

Issuing module: IDAICIA1 - ESTAE
**Explanation:** An error occurred during the opening or closing of a DCB via the ISAM interface. Module IDAICIA1 (ISAM-interface data-set management recovery routine) requests an SVC dump macro. One of the five titles appears, depending on the error and on whether open or close was in control at the time of error.

Depending on the error, some or all of the following areas are dumped:
- The dump list itself
- The DCB
- The protected copy of the DCB
- The OPEN/CLOSE work area
- The recovery work area
- IICB
- ACB
- EXLST
- Buffers
- Message area

**ISSUER=IEFAB4ED, ERRCSECT=csect, COMPID=5752-SC1B4, COM Pon=DEVICE ALLOCATION-sss...sss**

**Component:** Allocation (5752-SC1B4)

**Issuing module:** IEFAB4ED - Allocation common ESTAE exit

**Explanation:** In the dump title, the variable fields are:

- `csect` Name of the failing CSECT.
  
  If the name of the failing CSECT is not available, csect contains *SEE VRA*. In addition, a message is put in the VRA that states: “THE CSECT IN THE SDWACSCT FIELD IS THE FIRST CSECT IN THE FAILING SUBCOMPONENT, NOT NECESSARILY THE FAILING CSECT”.

- `sss...sss` Name of the component routine.

  The names of the component routines and of the first CSECT in each routine are:

  - IEFAB4F5 Alloc catalog control
  - IEFAB4I0 Alloc initialization
  - IEFAB4E5 Alloc resource manager
  - IEEAB401 Alloc/unalloc put rtn
  - IEFAB421 Common allocation
  - IEFAB4A0 Common unallocation
  - IEFGB4DC Data set reserve/release
  - IEFDB400 Dynamic allocation
  - IEFAB4EC Group lock/unlock
  - IEFAB451 JFCB housekeeping
  - IEFBB401 Job step allocation
  - IEFBB410 Job step unallocation
  - IEFAB4F4 Unalloc catalog control
  - IEFAB493 Volume mount and verify

An error occurred during allocation processing. The ESTAE routine IEFAB4ED performs general recovery processing and requests an SVC dump (if no SDWA exists). If an SDWA exists, additional checks on the error are made. An SVC dump is then requested if the error is not a user error and one of the following occurred:
A program check
The restart key was pressed
A dump was not previously taken
An abend occurred and there was no percolation or if there was percolation, it was via FRR recovery processing.

The areas dumped are LPA, ALLPSA, SQA, TRT, SUM, SWA, and LSQA. Key control blocks used by allocation are included in the summary list in the SVC dump.

**ISSUER=IEFAB4E6, ERRCSECT=csect, COMPID=5752-SC1B4, COMPON=DEVICE ALLOCATION-sss...sss**

Component:  Allocation (5752-SC1B4)
Issuing module:  IEFAB4E6 - Recovery routine
Explanation:  In the dump title, the variable fields are:

- **csect**  
  Name of the failing CSECT.

- **sss...sss**  
  Name of the component routine.

The csect and sss...sss fields are described in the dump titled “ISSUER=IEFAB4ED,...”.

An error occurred during allocation processing. The areas dumped are LPA, ALLPSA, SQA, TRT, SUM, and LSQA.

If the error occurred during processing related to the allocation address space (ALLOCAS), message IEF100I is issued, the allocation address space might be ended, and allocation processing continues. For other errors, all units allocated to the failing address space are unallocated and the job is abnormally ended.

**Associated problem data:** If the recovery routine was entered due to system completion code 05C, register 0 contains a reason code. See [z/OS MVS System Codes](https://www.ibm.com/support/docview.aspx?rs=458&uid=swg21384231) for an explanation of system code 05C and reason codes. If the recovery routine was entered due to an error related to allocation address space processing, message IEF100I is also issued. See [z/OS MVS System Messages, Vol 8 (IEF-JGD)](https://www.ibm.com/support/docview.aspx?rs=458&uid=swg21384282) for an explanation of message IEF100I.

**ISSUER=IEFAB4GA, ERRCSECT=csect, COMPID=5752-SC1B4, COMPON=DEVICE ALLOCATION-sss...sss**

Component:  Allocation (5752-SC1B4)
Issuing module:  IEFAB4GA - DDR/swap allocation interface routine
Explanation:  In the dump title, the variable fields are:

- **csect**  
  Name of the failing CSECT.

- **sss...sss**  
  Name of the component routine.
The csect and sss...sss fields are described in the dump titled “ISSUER=IEFAB4ED,...”.

An error occurred while allocation was scanning the UCB pointer list. IEFAB4GA requests an SVC dump macro if a dump was not previously taken. A retry is done to exit IEFAB4GA normally. The areas dumped are LPA, ALLPSA, SQA, TRT, SUM, and LSQA.

Associated problem data: See [z/OS MVS System Codes](https://www.ibm.com/support/pages/05c) for an explanation of system code 05C, which is related to this dump.

**ISSUER=IEFAB4SF, ERRCSECT=csect, COMPID=5752-SC1B4, COMPON=DEVICE ALLOCATION-sss...sss**

Component: Allocation (5752-SC1B4)

Issuing module: IEFAB4SF - Allocation spool file processor

Explanation: In the dump title, the variable fields are:

- **csect**: Name of the failing CSECT.
- **sss...sss**: Name of the component routine.

The csect and sss...sss fields are described in the dump titled “ISSUER=IEFAB4ED,...”.

An error occurred while allocation was processing a request to segment a SYSOUT data set. IEFAB4SF requests an SVC dump macro if a dump was not previously taken. The areas dumped are LPA, ALLPSA, SQA, TRT, SUM, and LSQA.

**ISSUER=IEFDB440, ERRCSECT=csect, COMPID=5752-SC1B4, COMPON=DEVICE ALLOCATION-sss...sss**

Component: Allocation (5752-SC1B4)

Issuing module: IEFDB440 - Unit allocation/unallocation service

Explanation: In the dump title, the variable fields are:

- **csect**: Name of the failing CSECT.
- **sss...sss**: Name of the component routine.

The csect and sss...sss fields are described in the dump titled “ISSUER=IEFAB4ED,...”.

An error occurred during allocation processing and RTM passed control to routine ESTAERTN in module IEFDB440. ESTAERTN requests an SVC dump macro if a dump was not previously taken. The areas dumped are LPA, ALLPSA, SQA, TRT, SUM, SWA, and LSQA. Control is returned to RTM.
SVC Dump Titles

**ISTAPCES - ACF/VTAM PSS ESTAE ROUTINE**

**Component:** ACF/VTAM (5665-28001)

**Issuing module:** ISTAPCES - PSS ESTAE

**Explanation:** An abend occurred while an ACF/VTAM task was processing and an ACF/VTAM IRB was active. The areas dumped are SQA, NUC, RGN, LPA, TRT, ALLPSA, and CSA.

**Associated problem data:** For a description of the CRA fields recorded in the SDWA, see [z/OS Communications Server: SNA Data Areas Volume 2](#).

**ISTAPCFR - ACF/VTAM PSS FUNCTIONAL RECOVERY**

**Component:** ACF/VTAM (5665-28001)

**Issuing module:** ISTAPCFR - PSS FRR

**Explanation:** An abend occurred while ACF/VTAM was processing and running under an SRB. The areas dumped are ALLPSA, CSA, NUC, SQA, TRT, LPA, and RGN.

**Associated problem data:** For a description of the CRA fields recorded in the SDWA, see [z/OS Communications Server: SNA Data Areas Volume 2](#).

**ISTAPCMT - ACF/VTAM ABEND IN MEMORY TERMINATION**

**Component:** ACF/VTAM (5665-28001)

**Issuing module:** ISTAPCMT

**Explanation:** An abend occurred while the ACF/VTAM memory termination resource manager was processing. ACF/VTAM attempts minimal cleanup so that ACF/VTAM can be restarted. However, CSA storage might not be usable until the next IPL. The areas dumped are SQA, NUC, RGN, LPA, LSQA, TRT, ALLPSA, and CSA.

**Associated problem data:** For a description of the CRA fields recorded in the SDWA, see [z/OS Communications Server: SNA Data Areas Volume 2](#).

**ISTATM00 - ACF/VTAM TERMINATION TASK INIT|TERM|ESTAE**

**Component:** ACF/VTAM (5665-28001)

**Issuing module:** ISTATM00 - ESTAE

**Explanation:** An abend occurred while the ACF/VTAM end task was processing. The ESTAE routine ISTATM00 requests an SVC dump macro for abends that occur during ACF/VTAM processing (but not for abends that occur during application processing). The areas dumped are SQA, LSQA, TRT, ALLPSA, CSA, and RGN.

**Associated problem data:** For a description of the CRA fields recorded in the SDWA, see [z/OS Communications Server: SNA Data Areas Volume 2](#).
ISTINCST - ACF/VTAM STAE EXIT AND RECOVERY

Component: ACF/VTAM (5665-28001)
Issuing module: ISTINCST - ESTAE

Explanation: An abend occurred while the ACF/VTAM job step task was processing. The areas dumped are SQA, NUC, RGN, LPA, TRT, ALLPSA, and CSA.

ISTORMMG - ACF/VTAM FRR DUMP

Component: ACF/VTAM (5665-28001)
Issuing module: ISTORMMG

Explanation: An abend occurred while ISTORMMG was running in SRB mode. ISTORMMG frees CSA storage and recovery is attempted by zeroing the CSA to-be-freed queue (ATCORTBF). The areas dumped are SQA, NUC, RGN, LPA, ALLPSA, and CSA.

Associated problem data: For a description of the CRA fields recorded in the SDWA, see z/OS Communications Server: SNA Data Areas Volume 1.

JES2 FSI ERROR. CODE=cde RC=rc (text)

Component: JES2 (5752-SC1BH)
Issuing module: HASPFSSM

Explanation: A catastrophic error occurred in the JES2 functional subsystem interface (FSI) support routines (HASPFSSM). JES2 issued a $ERROR macro. HASPFSSM was operating in a functional subsystem (FSS) address space. JES2 ended the FSS address space.

The HASPFSSM error routine FSMCATER requested an SVC dump. The areas dumped are ALLPSA, RGN, TRT, SQA, CSA, LPA, SWA, and LSQA.

This dump is associated with JES2 message $HASP750 and system abend code 02C.

Associated problem data: See message $HASP750 in z/OS JES2 Messages and abend code 02C in z/OS MVS System Codes for information on this error.

JES3 LOCATE SUBTASK ABEND

Component: JES3 (5752-SC1BA)
Issuing module: IATLVLC

Explanation: An abend occurred during IATLVLC (locate subtask) processing. The ESTAE routine established by IATLVLC is given control to examine the function control table (FCT) active at the time of failure to determine which function or DSP failed. The areas dumped are SQA, CSA, PSA, RGN, LPA, and TRT.
SVC Dump Titles

**JES3 SNA FRR IATSNDF**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATSNDF - FRR

**Explanation:** An SVC dump is written each time the FRR routine (IATSNDF) is entered. This FRR routine handles abends that occur during SNA RJP processing under an SRB. Therefore, control of dumping depends on the recursion control of the FRR preventing more than two retry failures. (A dump is taken for every retry failure.) The areas dumped are SQA, ALLPSA, NUC, LSQA, RGN, TRT, CSA, and LPA.

**Associated problem data:** The SDWA contains LCB data, if available.

**JOB=jobname hh:mm:ss yy.ddd DUMP BY IGG0CLA9 - VSAM CATALOG MANAGEMENT**

**Component:** VSAM - Catalog Management (5665-28418)

**Issuing module:** IGG0CLA9 - ESTAE

**Explanation:** An abend occurred during catalog management processing. The ESTAE routine IGG0CLA9 requests an SVC dump, frees storage resources, and backs-out partially defined catalog entries in the VSAM catalogs. Message IEC338I is also issued if a validity check failed on a user field parameter list (FPL) or a catalog parameter list (CPL).

**Associated problem data:** The SDWA variable recording area (SDWAVRA) includes:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0(0)</td>
<td>8</td>
<td>Contains the characters IGG0CLA9</td>
</tr>
<tr>
<td>8(8)</td>
<td>3</td>
<td>Entry point address of IGG0CLA9</td>
</tr>
<tr>
<td>11(B)</td>
<td>8</td>
<td>Name of the last routine called</td>
</tr>
<tr>
<td>19(13)</td>
<td>3</td>
<td>Entry point address of the last routine called</td>
</tr>
<tr>
<td>22(16)</td>
<td>8</td>
<td>Name of the calling routine</td>
</tr>
<tr>
<td>30(1E)</td>
<td>3</td>
<td>Entry point address of the calling routine</td>
</tr>
<tr>
<td>33(21)</td>
<td>4</td>
<td>Contains the characters CPL=</td>
</tr>
<tr>
<td>37(25)</td>
<td>28</td>
<td>CPL for the user</td>
</tr>
</tbody>
</table>

**LOGREC FAILURE, COMPON=LOGREC, COMPID=SCOBR, ISSUER=xxxxxxxx, ABEND=ccc, REAS=rrrrrrrr**

**Component:** System Environmental Recording (Logrec) (5752-SCOBR)

**Issuing module:** Module identified in ISSUER

**Explanation:** An abend or logical error was encountered in the system environmental recording (logrec) component in the specified module.

**ccc**

The system completion code. If ccc is not X'14C', then no reason code is provided.

**rrrrrrrr**

The reason code associated with the X'14C' abend. For an explanation, see the X'14C' abend in [z/OS MVS System Codes](#).
For IFBSMFNT:
The system may not have established the DSNLOGREC name/token, so the name of the logrec data set cannot be retrieved using IEANTRT.

For any other module:
A routine in logrec encountered an error, forcing an abend.

The areas dumped are PSA, RGN, LPA, TRT, CSA, ALLNUC, and SQA, along with a dump summary.

Associated problem data: The SDWA variable recording area (SDWAVRA) includes footprints from the module. The VRA also contains return codes from external processing and pointers used by the routine.

**RACF INITIALIZATION FAILURE**

**Component:** Resource Access Control Facility (RACF) (5752-XXH00)

**Issuing module:** ICHSEC02 - ESTAE

**Explanation:** An abend occurred during RACF initialization processing.

The areas dumped are CSA, NUC, RGN, and SQA.

Associated problem data: RACF issues messages ICH505A and, if an RVARY command failed, ICH529I. See [z/OS Security Server RACF Messages and Codes](#) for these messages.

**Problem determination:** Do the following:
1. See message ICH505A for the ABEND code associated with the dump.
2. If an RVARY command failed, see message ICH529I to find out if allocation or deallocation of the RACF data base failed.

**RCT DUMPING LSQA**

**Component:** Region control task (5752-SC1CU)

**Issuing module:** IEAVAR00 - ESTAE

**Explanation:** The ESTAE routine in IEAVAR00 requested an SVC dump when a previous error recovery routine could not diagnose the error in one of the following situations:
- The RCT RB was in control
- An error occurred in the previous recovery exit
- An RCT FRR routine requested the dump
- Retry recursion occurred.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains error flags and RCT flags. Additional footprints and data are available in the RCTD of the dumped storage.

**RECORD PERMANENT ERROR, COMP=RTM, COMPID=SCRTM, ISSUER=IEAVTRET**

**Component:** Recovery termination manager (RTM) - RECORD macro (5752-SCRTM)
SVC Dump Titles

Issuing module: IEAVTRET - ESTAE

Explanation: One of the following occurred:

- An operation exception (abend 0C1) occurred while IEAVTRET (RECORD macro processing) was in control.
- A second error occurred while RTM was processing a temporary error type.

RTM turns off the recording function and issues message IEA896I to state that the recording function is not active. RTM issues a return code of 20 following RECORD macro requests.

The areas dumped are LPA, NUC, PSA, SQA, and SUM.

RECORD TEMPORARY ERROR, COMP=RTM, COMPID=SCRTM, ISSUER=IEAVTRET

Component: Recovery termination manager (RTM) - RECORD macro (5752-SCRTM)

Issuing module: IEAVTRET

Explanation: A protection exception (abend 0C4) or privileged operation (abend 0C2) occurred while:

- IEAVTRET (RECORD macro processing) was in control and the RCB buffer was not being manipulated by the requesting routine,
- The recording task (IEAVTRET) was in control and the error was not an operation exception (abend 0C1).

This abend is not a permanent error type.

The areas dumped are LPA, NUC, PSA, SQA, and SUM.

REQUESTOR=xxxxxxxx, ISSUER=ISGCRCV, COMPID=SCSDS, COMPON=GRS

Component: Global resource serialization (5752-SCSDS)

Issuing module: ISGCRCV - ESTAE

Explanation: An error occurred while a command processing module was processing. In the dump title, the variable field xxxxxxxx indicates the failing module.

The ESTAE module ISGCRCV requests an SVC dump. The areas dumped include the current address space, global resource serialization control blocks, and the trace table.

RESOURCE MANAGER

Component: Initiator (5752-SC1B6)

Issuing module: IEFISEXR - ESTAE

Explanation: A program check or a restart interruption occurred in the initiator or a subsystem interface resource manager. The ESTAE routine IEFISEXR requests an SVC dump. The areas dumped are SQA, PSA, LSQA, RGN, LPA, TRT, CSA, and NUC.
**RESTART INTERRUPT IN CONVERTER**

Component: Converter (5752-SC1B9)

Issuing module: IEFNB9CR - Converter recovery routine

Explanation: A restart interruption occurred during converter processing. The ESTAE routine IEFNB9CR requests an SVC dump. The areas dumped are LSQA, SWA, RGN, and LPA.

**RESTART INTERRUPT IN INTERPRETER**

Component: Interpreter (5752-SC1B9)

Issuing module: IEFNB9IR - Interpreter recovery routine

Explanation: A restart interruption occurred during interpreter processing. The recovery routine IEFBN9IR requests an SVC dump. The areas dumped are LSQA, SWA, RGN, and NUC.

**SLIP DUMP ID=xxxx**

Component: Recovery termination manager - SLIP processor (5752-SCSLP)

Explanation: A SLIP trap matched; the action specified on the trap definition is ACTION=SVCD or ACTION=SYNCSVCD. In response, the system requested an SVC dump. The areas dumped are defaulted or specified in the parameters on the SLIP command. In the dump title, ID=xxxx is the SLIP trap identifier.

This dump was requested and does not represent a problem.

**SMF ABEND, ERRMOD=IFAPCWTR, RECVMOD=IFAPCWTR**

Component: System management facilities (SMF) (5752-SC100)

Issuing module: IFAPCWTR - FRR

Explanation: An abend occurred while moving SMF records from the user area into buffers in the SMF address space. The areas dumped are PSA, NUC, RGN, LPA, SQA, and SUMDUMP.

**SMF ABEND, ERRMOD=xxxxxxxx, RECVMOD=IEEMB830**

Component: System management facilities (SMF) (5752-SC100)

Issuing module: IEEMB830

Explanation: An abend occurred during SMF record processing. If xxxxxxxxx is IEFU83 or IEFU84, the error occurred during processing by the installation exit. Otherwise, xxxxxxxxx is IEEMB830. The areas dumped are PSA, NUC, RGN, SQA, and SUMDUMP.

**SMF ABENDED, ERRMOD=IEEMB834, RECVMOD=IEEMB834**

Component: System management facilities (SMF) (5752-SC100)

Issuing module: IEEMB834 - FRR
Explanation: An abend occurred during the SRB mode processing that writes to the SMF recording data set. The areas dumped are PSA, NUC, RGN, LPA, SQA, and SUMDUMP.

Associated problem data: The FRR parameter area contains footprints and is mapped by the structure FRRPARM in the IHAFRRS control block.

**SMF TIMER - IEEMB839**

Component: System management facilities (SMF) (5752-SC100)

Issuing module: IEEMB839 - FRR

Explanation: An error occurred in the SMF timer module while the dispatcher lock was held. The areas dumped are PSA, NUC, RGN, SQA, LPA, TRT, and SUMDUMP.

**SRM - IRARMSRV 55F ABEND DURING XMPOST**

Component: System resources manager (SRM) (5752-SC1CX)

Issuing module: IRARMSRV

Explanation: An error occurred during the cross-address-space post function. The post was requested by module IRARMDEV to notify the issuer of a REQSWAP or TRANSWAP that the swap is complete or that the address space became not swappable before the swap could be initiated. The address space being posted is ended with a 55F completion code. The areas dumped are PSA, SQA, and TRT.

Associated problem data: The ASCB and OUCB for the ending address space are copied into the SDUMP buffer pointed to be CVTSDBF. The buffer fields are mapped by SDMPBUFF in module IRARMSRV.

**SRM RECOVERY ENTERED, COMPON=SRM, COMPID=SC1CX, ISSUER=IRARMERR**

Component: System resources manager (SRM) (5752-SC1CX)

Issuing module: IRARMERR - FRR

Explanation: An error occurred during SRM processing. Depending on the error, retry of the failing function is attempted or the error is percolated. The current address space is dumped.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the abending module name, module level, entry point address, recovery routine name, and the 6-word recovery parameter area (RRPA).

**SSICS ABEND 6FB**

Component: JES3 (5752-SC1BA)

Issuing module: IATSSCM

Explanation: A system error occurred while IATSSCM (subsystem communication scheduler) was processing in an address space other than the JES3 address space. Abend 6FB is issued. The areas dumped are PSA, RGN, LPA, TRT, CSA, NUC, and SQA.
SSICS ESTAE-IATSSCM

Component: JES3 (5752-SC1BA)
Issuing module: IATSSCM

Explanation: IATSSCM (subsystem communication scheduler) was not able to reduce the system impact caused by communication failures for the second time. JES3 is put in the IATSSCM quiesce condition. The areas dumped are PSA, RGN, LPA, TRT, CSA, NUC, and SQA.

STORAGE DUMP TAKEN AT ENTRY TO IEEMB812 ESTAE EXIT

Component: System resources manager (SRM) (5752-SC1CX)
Issuing module: IEEMB812 - SRM SET Processor

Explanation: An error occurred during SRM processing of a SET command. The new tables are freed and the old controls remain in effect. The SET command is retried. If the error recurs, IEEMB812 percolates the error.

STORAGE DUMP TAKEN AT ENTRY TO IRARMERR

Component: System resources manager (SRM) (5752-SC1CX)
Issuing module: IRARMERR - FRR

Explanation: An error occurred during SRM processing. Depending on the error, retry of the failing function is attempted or the error is percolated. The current address space is dumped.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains a message that gives an offset into the data module IRARMCNS. This offset is the location of the control block for the SRM routine in control when the error occurred.

STORCSR DUMP, COMPID = SC1CK, ISSUER = IEAVG720

Component: Communications task (5752-SC1CK)
Issuing module: IEAVG720

Explanation: An error occurred while IEAVG720 was performing Cell Pool services. The areas dumped are CSA, LPA, LSQA, NUC, PSA, RGN, SQA, SUM, and TRT.

SWA CREATE

Component: Scheduler work area (SWA) manager (5752-SC1B5)
Issuing module: IEFIB645

Explanation: A program check or a restart interruption occurred during interpreter, restart, warm start, or SWA create processing. The recovery routine IEFIB645 requests an SVC dump. The areas dumped are SQA, PSA, LSQA, RGN, LPA, TRT, CSA, and NUC.
TCAS DUMP

Component: TSO/VTAM (5665-28002)

Issuing module: IKTCAS52

Explanation: TCAS (terminal control address space) ended because of one of the following:
- The operator requested end through the STOP command
- A program check occurred

The dump was taken as a result of the operator responding DUMP to message IKT012D.

TIMER FRR DUMP

Component: Timer supervisor (5752-SC1CV)

Explanation: An error occurred during timer supervision processing. The areas dumped are PSA, NUC, SQA, TRT, and LSQA for the current address space.

Associated problem data: The SDWA variable recording area (SDWAVRA) contains the data area TFRRPARM. TFRRPARM contains indicators that tell the type of processing taking place and the locks held at the time of the error, as well as the results of the TQE validation process.

TSO OUTPUT CP ESTAE

Component: TSO scheduler (5752-SC1T4)

Issuing module: IKJCT460 - ESTAE

Explanation: An abend error or a DETACH with STAE occurred during TSO command processing. The ESTAE exit routine IKJCT460 receives control from the supervisor and requests an SVC dump macro for:
- x0A abends (except 80A)
- All other abends except for a DETACH with STAE, the abends B37, D37, E37, 913, 622, and 222.

The areas dumped are RGN, NUC, SQA, and LPA.

TSO SDUMP FROM IKJEFT05 - THE TMP ESTAE ROUTINE

Component: TSO scheduler (5665-28502)

Issuing module: IKJEFT05

Explanation: The TMP ESTAE exit routine, IKJEFT05, requests an SVC dump macro on the first occurrence of an error in a TMP module. The areas dumped are NUC, LSQA, RGN, TRT, and SQA.

TSOLOGON ESTAE

Component: TSO scheduler (5752-SC1T4)

Issuing module: IKJEFLS - ESTAE
**SVC Dump Titles**

**Explaination:** A program check or PSW restart interruption occurred during TSO logon initialization or scheduling. The ESTAE routine IKJEFLS requests an SVC dump. The areas dumped are RGN, NUC, SQA, and LPA.

**TSOLOGON ESTAI**

**Component:** TSO scheduler (5752-SC1T4)

**Issuing module:** IKJEFLGB - ESTAI for the prompter

**Explanation:** During logon processing, the ESTAI routine IKJEFLGB requested an SVC dump for one of the following:
- A program check
- A PSW restart condition
- An abend in IKJEFLD (logon pre-prompt exit)

The areas dumped are RGN, NUC, SQA, and LPA.

**Associated problem data:** If a SDWA exists:
- Register 1 contains the address of the STAE work area.
- Register 14 contains the return address.

If a SDWA does not exist:
- Register 1 contains the abend code.
- Register 2 contains a pointer to the LWA.
- Register 14 contains the return address.

**VSAM CHECKPOINT (IDA0xxxx) or VSAM RESTART (IDA0xxxx)**

**MACHINE CHECK**

**VSAM CHECKPOINT (IDA0xxxx) or VSAM RESTART (IDA0xxxx)**

**PROGRAM CHECK LOCATION=xxxxxx**

**VSAM CHECKPOINT (IDA0xxxx) or VSAM RESTART (IDA0xxxx)**

**RESTART KEY DEPRESSED**

**VSAM CHECKPOINT (IDA0xxxx) or VSAM RESTART (IDA0xxxx)**

**PAGING ERROR**

**VSAM CHECKPOINT (IDA0xxxx) or VSAM RESTART (IDA0xxxx)**

**ABEND Sxxx, Uxxxx, REGISTER 15=xxxxxxxx**

**Component:** VSAM - Checkpoint/restart (5665-28418)

**Issuing module:** IDACKRA1 - ESTAE

**Explanation:** An error occurred during VSAM checkpoint or restart processing. The ESTAE routine requests an SVC dump. The title on the dump depends on the type of error and whether checkpoint or restart was in control at the time of error. The areas dumped are SQA, LPA, and the user region.

**variable title - supplied by the system operator**

**Component:** Dumping services - SDUMP, SNAP/ABDUMP(5752-SCDMP)

**Issuing module:** IEECB866 - Console dump
SVC Dump Titles

**Explanation:** The system operator issued a DUMP command and specified the title of the SVC dump on the command.

**variable title - supplied by the system operator**

**Component:** JES2 (5752-SC1BH)

**Issuing module:** HASPTERM or HASPRAS

**Explanation:** The system operator entered an SVC dump title in response to message $HASP098. This title overrides the default dump title. The areas dumped are PSA, NUC, RGN, TRT, SQA, CSA, LPA, and SWA.

**Associated problem data:** For information on the error, see messages $HASP098 and $HASP095 in [z/OS JES2 Messages](#).

---

SVC dumps without titles

This topic provides diagnostic information for SVC dumps without titles.

**Untitled SVC dumps**

Untitled SVC dump descriptions follow.

**no title**

**Issuing module:** IGG0CLCB - ESTAE

**Explanation:** An abend occurred during the processing of a GENERIC LOCATE request for a CVOL. All storage resources are freed and the CVOL processor SDUMP routine requests an SVC dump. The area dumped is the LPA.

**no title**

**Component:** IOS (5752-SC1C3)

**Issuing module:** IGC0001F

**Explanation:** An error occurred while IGC0001F was processing and holding a lock.

**no title**

**Component:** JES3 (5752-SC1BA)

**Issuing module:** IATIII (IATIIIW work area)

**Explanation:** An abend occurred during interpreter/initiator (IATIII) processing. The ESTAE routine established by IATIII is given control to examine the function control table (FCT) active at the time of failure to determine which function or DSP failed. The areas dumped are PSA, RGN, LPA, TRT, and CSA.

**Associated problem data:** Register 9 points to a work area containing formatted messages.
Part 2. Component Reference
Chapter 11. Introduction to component reference

The component reference section describes the diagnostic information and tools available for IBM MVS components. The information covered in each topic varies depending on what diagnostic information or tools are available for a particular component. However, nearly all topics describe the component output formatted from SVC, stand-alone, or SYSMDUMP dumps by the interactive problem control system (IPCS).

This introduction includes:
- "Using IPCS to format component dump data" containing basic information about using IPCS.
- "Summary of dump and trace information for components" containing a summary of dump commands.

Using IPCS to format component dump data

To format component dump data, do the following:
- Obtain an SVC dump, stand-alone dump, or SYSMDUMP dump that includes the component address space and any related data spaces.
- Use Table 11-1 to select the IPCS subcommand for a component.
- Format the dump with IPCS to produce diagnostic reports about a component as follows:
  1. Start an IPCS session.
  2. Do one of the following:
     - Select the COMMAND option on the IPCS Primary Option Menu panel. Enter the subcommand for the desired component on the IPCS Subcommand Entry panel. See Table 11-1 on page 11-2 for the subcommand for MVS components.
     - Select the ANALYSIS option on the IPCS Primary Option Menu panel. Select the COMPONENT option on the IPCS Analysis of Dump Contents panel. Enter an S next to the component you want on the IPCS Dump Component Data Analysis panel.

References
- See z/OS MVS IPCS Commands for the syntax of the IPCS subcommands.
- See z/OS MVS IPCS User’s Guide for an explanation of how to use the ANALYSIS COMPONENT option of the IPCS dialog.

Summary of dump and trace information for components

For each MVS component, Table 11-1 on page 11-2 shows:
- The suggested IPCS subcommand for formatting dump output for each component
- Whether IBM has provided a component trace.

Use this table as a quick reference to find the recommended IPCS dump subcommands for a specific component. If you need more information about formatting component dump data, see the individual topics in this section.
Component tracing

For component trace information about components, look in the third column of
the table to see whether IBM has provided tracing for the component you are
interested in. If IBM has provided tracing, the table contains the trace name for
that component. See component trace in z/OS MVS Diagnosis: Tools and Service Aids
for information about requesting and formatting the component trace.

<table>
<thead>
<tr>
<th>Component</th>
<th>IPCS Dump Command</th>
<th>Component Trace Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocation/ Unallocation</td>
<td>• ANALYZE RESOURCE subcommand&lt;br&gt;Lists jobs holding or waiting for device groups. See page 12-2&lt;br&gt;• VERBEXIT ALCWAIT subcommand&lt;br&gt;Lists jobs waiting for devices. See page 12-2&lt;br&gt;• LISTEDT HEADER subcommand&lt;br&gt;Information from the eligible devices table (EDT) control block. See page 12-3</td>
<td>None</td>
</tr>
<tr>
<td>APPC</td>
<td>• APPCDATA subcommand APPC/MVS component data. See page 13-1&lt;br&gt;• ASCHDATA subcommand APPC/MVS transaction scheduler data. See page 13-2</td>
<td>SYSAPPC</td>
</tr>
<tr>
<td>ASM</td>
<td>• ASMCHECK subcommand Displays status of ASM at the time of the dump. See page 14-1&lt;br&gt;• VERBEXIT ASMDATA subcommand Displays ASM control blocks. See page 14-2</td>
<td>None</td>
</tr>
<tr>
<td>COMMTASK</td>
<td>COMCHECK MCSINFO subcommand. See page 15-3</td>
<td>None</td>
</tr>
<tr>
<td>Contents Supervision</td>
<td>None</td>
<td>SYSLLA</td>
</tr>
<tr>
<td>LLA subcomponent</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>DIV</td>
<td>DIVDATA SUMMARY CURRENT ERROR subcommand. See page 16-4</td>
<td>None</td>
</tr>
<tr>
<td>DLF</td>
<td>DLFDATA SUMMARY CURRENT subcommand. See page 28-17</td>
<td>SYSVLF</td>
</tr>
<tr>
<td>GRS</td>
<td>VERBEXIT GRSTRACE subcommand displays information about the GRS component. See page 17-2</td>
<td>SYSGRS</td>
</tr>
<tr>
<td>IOS</td>
<td>IOSCHECK ACTVUCBS subcommand. See page 18-1</td>
<td>None</td>
</tr>
<tr>
<td>MMS</td>
<td>VERBEXIT MMSDATA subcommand. See page 19-1</td>
<td>None</td>
</tr>
<tr>
<td>z/OS UNIX</td>
<td>CBSTAT Subcommand. See page 20-3&lt;br&gt;OMVSDATA Subcommand. See page 20-4</td>
<td></td>
</tr>
<tr>
<td>RSM</td>
<td>RSMDATA SUMMARY subcommand. See page 21-1</td>
<td>SYRSRM</td>
</tr>
<tr>
<td>RTM</td>
<td>SUMMARY FORMAT subcommand. See page 22-1</td>
<td>None</td>
</tr>
<tr>
<td>SRM</td>
<td>VERBEXIT SRMDATA subcommand. See page 23-1</td>
<td>None</td>
</tr>
<tr>
<td>SSI</td>
<td>SSIDATA subcommand. See page 25-1</td>
<td>None</td>
</tr>
<tr>
<td>VLF</td>
<td>VLFDATA SUMMARY subcommand. See page 28-1</td>
<td>SYSVLF</td>
</tr>
<tr>
<td>VSM</td>
<td>VERBEXIT VSMCDATA GLOBAL CURRENT ERROR subcommand. See page 29-1</td>
<td>None</td>
</tr>
<tr>
<td>WLM</td>
<td>WLMDATA Subcommand. See page 26-1</td>
<td>SYSWLM</td>
</tr>
<tr>
<td>XCF</td>
<td>COUPLE subcommand. See page 27-8</td>
<td>SYSXCF</td>
</tr>
</tbody>
</table>
Component reference

Table 11-1. Summary of dump and trace information available for components (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>IPCS Dump Command</th>
<th>Component Trace Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>XES</td>
<td>XESDATA subcommand. See page 27-36</td>
<td>SYSXES</td>
</tr>
<tr>
<td></td>
<td>STRDATA subcommand See page 27-36</td>
<td></td>
</tr>
</tbody>
</table>
Component reference
Chapter 12. Allocation/Unallocation

This topic contains the following diagnosis information for the allocation/unallocation component:
- "Eligible Devices Table (EDT)."
- "Formatting allocation/unallocation dump data."

**Eligible Devices Table (EDT)**

The system can use two terms to describe an EDT:
- **Primary EDT** — an EDT that processes all current and new allocation requests.
- **Secondary EDT** — an EDT that processes all allocation requests issued before a dynamic configuration change.

Usually the system uses one EDT to process allocation requests. During a dynamic configuration change, however, the system must use two EDTs to handle the change in the configuration. The secondary EDT handles allocation requests from the old configuration, and the primary EDT processes requests from the new configuration.

When the system has just one EDT, it is known as the primary EDT. The EDT created at IPL, for example, is initially described as the primary EDT.

When you request the first dynamic configuration change after IPL, the system activates a new EDT for the new configuration. The new EDT handles allocation requests from the new configuration, so the system labels the new EDT as the primary EDT. We now refer to the EDT created at IPL as the secondary EDT because it is processing requests from the old configuration.

The secondary EDT receives no new allocation requests. The system removes it when it finishes processing the allocation requests issued before the dynamic configuration change. The system then runs with just one EDT — the primary EDT — until the next dynamic configuration change.

As you diagnose problems with the allocation component, be aware that a dynamic configuration adds a second EDT to the system and alters information in the original EDT.

**Formatting allocation/unallocation dump data**

IPCS provides three subcommands to obtain diagnostic reports about allocation and unallocation.
- The ANALYZE subcommand with the keyword RESOURCE lists the jobs holding device groups and the jobs waiting for device groups.
- The VERBEXIT ALCWAIT subcommand looks at devices instead of device groups, listing jobs that are waiting for devices.
- The LISTEDT subcommand displays information from the EDT.

/z/OS MVS IPCS Commands gives the syntax for both subcommands and z/OS MVS IPCS User's Guide explains how to use the ALCWAIT and LISTEDT component analysis options of the IPCS dialog.
ANALYZE RESOURCE subcommand output

The ANALYZE RESOURCE report identifies each resource, or device group, that is experiencing contention. Under each resource, it lists the jobs that hold the device group and the jobs requiring, or waiting for, the device group. For example, in the following output, Job S1400 is holding resource #0001 (device group 001B), while jobs S1401 and S1402 are waiting for it:

CONTENTION REPORT BY RESOURCE NAME

RESOURCE .#0001:
  NAME=Device Group 001B

RESOURCE #0001 IS HELD BY:
  JOBNAME=S1400     ASID=0013   TCB=009FA490
  DATA=(ALC) ASSOCIATED WITH 3800,SYSPR

RESOURCE #0001 IS REQUIRED BY:
  JOBNAME=S1401     ASID=0014   TCB=009FA490
  DATA=(ALC) ASSOCIATED WITH 3800,SYSPR,SONORA

ANALYZE RESOURCE XREF subcommand output

If you add the XREF keyword to ANALYZE RESOURCE, IPCS would add the following information to the previous report:

- For each job that holds a device group, the report lists all other device groups that job holds.
- For each job waiting for a device group, the report lists all other device groups that job holds.

VERBEXIT ALCWAIT subcommand output

Specifying VERBEXIT ALCWAIT gives a report that lists the jobs waiting for a device, in the following format:
The following fields appear in this report:

**jjjjjjjj**  
The job name.

**nnnn**  
The address space identifier (ASID).

**uuuuuuuu**  
The unit name associated with a device.

**Note:** When the EDT is not available in a dump, the report does not show any unit names.

---

**Example: VERBEXIT ALCWAIT Output**

The following example shows that job TEST in address space 012D is waiting for devices associated with units 3480, T3480, 3400-9, and SYS3480R:

```
* * * * SUMMARY OF JOB(S) WAITING FOR DEVICES * * * *

JOB jjjjjjjj ASID nnnn WAITING FOR DEVICE(S) ASSOCIATED WITH
uuuuuuuu, uuuuuuuu, ...

JOB jjjjjjjj ASID nnnn WAITING FOR DEVICE(S) ASSOCIATED WITH
uuuuuuuu, uuuuuuuu, ...

JOB jjjjjjjj ASID nnnn WAITING FOR DEVICE(S) ASSOCIATED WITH
uuuuuuuu, uuuuuuuu, ...
```

---

**LISTEDT subcommand output**

When you specify LISTEDT with no parameters, IPCS produces a header report about the primary EDT. 

---

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The report lists the offset of each subtable of the EDT. Each section can be formatted separately with a different LISTEDT keyword.

**LISTEDT SECONDARY subcommand output**

Use LISTEDT SECONDARY to process the secondary EDT. "Eligible Devices Table (EDT)" on page 12-1 describes the secondary EDT. The report will have the same format as the previous report.
Chapter 13. APPC/MVS

This topic contains information about formatting APPC/MVS data and APPC/MVS transaction scheduler data for diagnosis.

Formatting APPC dump data

The IPCS APPCDATA and ASCHDATA subcommands format dump information to help diagnose problems with APPC/MVS or the APPC/MVS transaction scheduler (ASCH). The information from the dumps is displayed as a report.

For information about using IPCS and the syntax of the IPCS APPCDATA and ASCHDATA, see "z/OS MVS IPCS Commands".

APPCDATA subcommand

The IPCS APPCDATA subcommand formats dump information within the APPC component. To request a particular report, specify the report type and a level of detail as parameters after the APPCDATA subcommand. If you do not specify parameters, you see a summary of all reports. For information about using IPCS and the syntax of the IPCS APPCDATA subcommand, see "z/OS MVS IPCS Commands".

You can request the following report types:

<table>
<thead>
<tr>
<th>Report</th>
<th>Report Displays</th>
<th>Explanation on page</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS</td>
<td>The overall status of the APPC component.</td>
<td>13-2</td>
</tr>
<tr>
<td>CONFIGURATION</td>
<td>The configuration of local logical units (LUs) in terms of their connections to partner LUs.</td>
<td>13-3</td>
</tr>
<tr>
<td>CONVERSATIONS</td>
<td>Each local transaction program (TP) and its conversations for a particular address space or all address spaces. If no address space identifier (ASID) is specified, information for every address space with a TP is displayed.</td>
<td>13-8</td>
</tr>
<tr>
<td>SERVERDATA</td>
<td>Information about APPC/MVS servers and allocate queues.</td>
<td>13-15</td>
</tr>
<tr>
<td>FMH5MANAGER</td>
<td>The number of TP FMH-5 attach requests that are waiting to be processed and information about the ones currently being processed.</td>
<td>13-29</td>
</tr>
<tr>
<td>CTRACE</td>
<td>The status of component trace for APPC, trace options, and other trace-related information.</td>
<td>13-31</td>
</tr>
</tbody>
</table>

Each report comes in three levels of detail. If you do not request a level of detail, you see a summary of the report. You can request the following report levels:

<table>
<thead>
<tr>
<th>Report level</th>
<th>Displays</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
<td>Summary information for the report type. If you do not request a level of detail, you will see the summary level of the report.</td>
</tr>
<tr>
<td>DETAIL</td>
<td>Detailed information about from a specific report type.</td>
</tr>
</tbody>
</table>
### Report level: Displays:

**EXCEPTION**
Inconsistencies detected in a specific report type. When there are no inconsistencies, the message “No exceptions detected” is displayed. Exception reports contain:
- A message containing a reason code
- A hexadecimal dump of damaged areas from the dump

IBM might request this information for diagnosis.

### ASCHDATA subcommand

The IPCS ASCHDATA subcommand formats dump information to help diagnose problems within the APPC/MVS transaction scheduler.

To obtain information about a specific scheduler class, specify the class name in parentheses following the class operand on the ASCHDATA subcommand. If you do not specify a class name, the report displays information about all classes.

You can request the following report levels:

<table>
<thead>
<tr>
<th>Report level:</th>
<th>Displays:</th>
<th>Explanation on page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
<td>Summary information about a scheduler class or classes.</td>
<td>13-33</td>
</tr>
<tr>
<td>DETAIL</td>
<td>Detailed information about a specific scheduler class or about all scheduler classes.</td>
<td>13-36</td>
</tr>
</tbody>
</table>
| EXCEPTION     | Inconsistencies detected for the ASCHDATA report. When there are no inconsistencies, the message “No exceptions detected” is displayed. Exception reports contain:  
  - A message containing a reason code  
  - A hexadecimal dump of damaged areas from the dump. |                     |

IBM might request this information for diagnosis.

### APPCDATA STATUS subcommand output

The APPCDATA STATUS subcommand displays the status of the APPC address space as a message. The APPCDATA STATUS SUMMARY and DETAIL reports are identical. An example of the APPCDATA STATUS DETAIL follows:

**Detail Report for STATUS**

The APPC/MVS component was **ACTIVE**

Information displayed in this report includes:

- **Status Message**
  The message that displays the status of the APPC address space at the time of the dump. The status message is one of the following:
  - **STARTUP**
    The APPC address space was being initialized at the time of the dump.
ACTIVE
At the time of the dump, the APPC address space was fully initialized and capable of processing transactions.

NOT ACTIVE
At the time of the dump, the APPC address space was unable to process transactions.

TERMINATION/RESTART
The system ended the APPC address space because of a critical error. At the time of the dump, the APPC address space was in the process of restarting.

TERMINATION/NORESTART
The system ended the APPC address space. The APPC address space did not attempt to restart itself.

CANCELLED
The system ended the APPC address space because of an operator CANCEL command.

MEMORY TERMINATION
The system ended the APPC address space and its memory in response to either an operator FORCE command or a critical error.

UNKNOWN
At the time of the dump, the status of the APPC address space could not be determined.

APPCDATA CONFIGURATION subcommand output
The APPCDATA CONFIGURATION subcommand displays the configuration of local LUs in terms of their connections to partner LUs.

CONFIGURATION SUMMARY report
The CONFIGURATION SUMMARY report displays the configuration of each local LU at the time of the dump. Topics displayed for each local LU include:
• Local LU name
• Status of the local LU
• Local LU resource manager name and token
• VTAM generic resource name
• Number of partners
• Number of partner/mode pairs
• Number of units of recovery (URs)
• Total expressions of interest

An example of the APPCDATA CONFIGURATION SUMMARY report follows:
Local LU Name

The name of an LU on your system through which a local TP communicates. An LU is a system interface to a SNA network. The LUs for partner TPs are called partner LUs.

Sessions, which allow program-to-program communication, are established between a local LU and partner LUs.

Status

The status of the local LU is one of the following:

Pending

The local LU was waiting to be connected to the Virtual Telecommunications Access Method (VTAM) network. Possible reasons for the wait are as follows:

- The LU name entered after the ACBNAME operand in the APPCPMxx parmlib member did not exactly match the LU name defined to VTAM in SYS1.VTAMLST.
- An APPC definition statement for the LU name was not in SYS1.VTAMLST.
- VTAM was not active.
- The transaction scheduler associated with the LU was not active.
Pending Active
The local LU was about to become active. (In the output from the DISPLAY APPC, LU command, this status is included under PENDING LUs.)

Active
The local LU was connected to the VTAM network.

In termination
The local LU was being disconnected from the VTAM network.

Pending Outbound Only
The local LU was about to become outbound only. (In the output from the DISPLAY APPC, LU command, this status is included under PENDING LUs.)

Outbound only
The local LU was only capable of processing outbound TPs.

Unknown
The local LU configuration was not known.

Local LU Resource Manager Name
The name of the local LU, as it is known to RRS. If the VTAM APPL definition statement for this LU defines it as capable of processing protected conversations, APPC/MVS supplies this resource manager name when registering the LU with RRS. If the LU is not defined as capable of processing protected conversations, the report displays *NONE*.

Local LU Resource Manager Token
The token of the local LU, as it is known to RRS. If the VTAM APPL definition statement for this LU defines it as capable of processing protected conversations, and APPC/MVS successfully registers the LU, RRS returns this token for the LU to use. If the LU is not defined as capable of processing protected conversations, the report displays *NONE*.

Generic Resource Name
The VTAM generic resource name associated with the LU. The generic resource name identifies a group of LUs that provide the same function. This name is specified on the GRNAME parameter of the LUADD statement in an APPCPMxx parmlib member. If a generic resource name has not been specified in parmlib, the report displays *NONE*.

Number of Partners
The number of partner LUs with which the local LU established sessions.

A local LU can establish sessions with one or more partner LUs. Partners can be on the same system or on remote systems.

Number of Partner/Mode Pairs
A logon mode establishes the session characteristics between a local LU and a partner LU. Each logon mode establishes a specific type of session. The unique combination of partner LU and logon mode defines a partner/mode pair.

A local LU and its partner can have more than one logon mode. For example, when one partner of a local LU has two logon modes, there are two partner/mode pairs. When the local LU has another partner with three logon modes, there is a total of five partner/mode pairs for the local LU.

Number of URs
The number of units of recovery in which the LU has expressed interest with RRS. A unit of recovery represents part of a TP’s processing for a protected
conversation. Expressing interest in a unit of recovery enables the LU to process Commit and Backout calls from TPs that allocate protected conversations.

**Total Expressions of Interest**

The total number of expressions of interest that the LU has made with RRS.

**CONFIGURATION DETAIL report**

The CONFIGURATION DETAIL report displays the configuration of each local LU at the time of the dump. Information displayed for each local LU duplicates the CONFIGURATION SUMMARY report. In addition, the report lists the following topics for each partner LU:

- Partner LU name
- Number of LOGON modes
- Logon mode name
- URIDs and expressions of interest for each UR
- Diagnostic information

An example of the APPCDATA CONFIGURATION DETAIL report follows:
Partner LU Name

The name of the partner LU. An LU is a system interface to a SNA network. An LU on your system through which a local TP communicates is a local LU. The LUs for partner TPs are partner LUs.

Detail Report for CONFIGURATION
-----------------------------------
Diag001: 7F618F8000000014 1
Diag002: 7F6C9F8000000010 1

Local LU name: Z0A6AP01 Status: Active
Local LU Resource Manager Name : *NONE*
Local LU Resource Manager Token: *NONE*
Generic Resource Name: MVSLU
Diag003: 7F618F8000000014 2
Diag004: 7F61DF8000000013 3
Number of partners: 0
Number of URs: 0

Local LU name: Z0A6AP02 Status: Active
Local LU Resource Manager Name : *NONE*
Local LU Resource Manager Token: *NONE*
Generic Resource Name: *NONE*
Diag003: 7F618F8000000014 5
Diag004: 7F61DF8000000013 18
Number of partners: 0
Number of URs: 0

Local LU name: Z0A6AP03 Status: Active
Local LU Resource Manager Name : ATB.USIBMZ0.Z0A6AP03.IBM
Local LU Resource Manager Token: 01000001020DC00000000003000000001
Generic Resource Name: MVSLU
Diag003: 7F618F8000000014 3
Diag004: 7F61DF8000000013 6
Number of partners: 0
Number of URs: 0

Local LU name: Z0A6AP04 Status: Active
Local LU Resource Manager Name : ATB.USIBMZ0.Z0A6AP04.IBM
Local LU Resource Manager Token: 01000001020DC00000000002000000001
Generic Resource Name: *NONE*
Diag003: 7F618F8000000014 4
Diag004: 7F61DF8000000013 9
Number of partners: 2
Partner LU name: USIBMZ0.Z0A4AP03
Diag005 : 7F61DF8000000013 21
Number of modes: 1
Logon mode name: TRANPAR

Partner LU name: USIBMZ0.Z0A6AP04
Diag005 : 7F61DF8000000013 15
Number of modes: 1
Logon mode name: TRANPAR

Number of URs: 3
URID: AD49C273EEFC0000000000000401020000
Expressions of Interest: 2
URID: AD49C3827EEFC2800000000000501020000
Expressions of Interest: 1
URID: AD49C38A7EEFC50000000000601020000
Expressions of Interest: 1

Partner LU Name

The name of the partner LU. An LU is a system interface to a SNA network. An LU on your system through which a local TP communicates is a local LU. The LUs for partner TPs are partner LUs.
Sessions, which allow program-to-program communication, are established between a local LU and partner LUs. A partner LU can be on the same system as the local LU or on a remote system.

The partner LU name might be a network-qualified LU name; that is, the combined network ID and network LU name (two 1-8 byte Type A character strings, concatenated by a period: network_ID.network_LU_name). The partner LU name is network-qualified if the network ID is known; if not, only the network LU name appears in the report.

**Number of Logon modes**

The number of logon modes. A logon mode establishes the session characteristics between a local LU and a partner LU. Each logon mode establishes a specific type of session. A local LU and its partner can have more than one logon mode.

Logon modes are defined in the VTAM log mode table.

**Logon Mode Name**

A logon mode establishes the session characteristics between a local LU and a partner LU. Each logon mode name represents specific characteristics for a session.

Logon mode names are defined in the VTAM log mode table.

**URID**

The identifier for a unit of recovery.

**Expressions of Interest**

The number of expressions of interest that the LU has made with RRS for the unit of recovery identified by the URID.

**Diagxxx**

Diagnostic information for IBM use only.

**APPCDATA CONVERSATIONS subcommand output**

The APPCDATA CONVERSATIONS subcommand displays information about the conversations for each local TP. Conversations can exist between a local TP and one or more partner TPs. Before a conversation can be allocated, a session must be established between a local LU and a partner LU.

To limit this report to the conversations in a single address space, specify the address space identifier (ASID) as one to four hexadecimal digits within parentheses immediately following the APPCDATA CONVERSATIONS subcommand. If you do not specify an ASID, the report displays information about conversations in all address spaces.

**CONVERSATIONS SUMMARY report**

For each TP in an address space, the CONVERSATIONS SUMMARY report displays the following topics:

- Address Space ID
- Scheduler name
- TP name
- TP ID
- LU name
- Work unit ID
- Number of conversations

An example of the APPCDATA CONVERSATIONS SUMMARY report follows:
### Summary Report for CONVERSATIONS

**Address space ID (ASID): '0022'X**
- Scheduler name: ASCH
- TP name: TBDRIVER
- TP_ID: 0618691000000017
- LU name: Z0A6AP04
- Work Unit ID: A0000003
- Number of conversations: 2

**Address space ID (ASID): '0023'X**
- Scheduler name: ASCH
- TP name: APOLLO
- TP_ID: 06186D300000001A
- LU name: Z0A6AP04
- Work Unit ID: A0000005
- Number of conversations: 1

**Address space ID (ASID): '0025'X**
- Scheduler name: N/A
- TP name: *UNKNOWN*
- TP_ID: 06186BD000000019
- LU name: Z0A6AP04
- Work Unit ID: N/A
- Number of conversations: 1

**Address space ID (ASID): '0026'X**
- Scheduler name: N/A
- TP name: *UNKNOWN*
- TP_ID: 06186E900000001B
- LU name: Z0A6AP04
- Work Unit ID: N/A
- Number of conversations: 1

**Address space ID (ASID): '0027'X**
- Scheduler name: N/A
- TP name: TRACYB
- TP_ID: 06186FF000000023
- LU name: Z0A6AP02
- Work Unit ID: N/A
- Number of conversations: 0

**Address space ID (ASID): '0028'X**
- Scheduler name: N/A
- TP name: *UNKNOWN*
- TP_ID: 0618715000000024
- LU name: Z0A6AP04
- Work Unit ID: N/A
- Number of conversations: 0

### Address Space ID

Information about the conversations for TPs in a particular address space follows the **Address Space ID** heading. The ASID is displayed as four hexadecimal digits after this heading.

When the report displays information about conversations for TPs in all address spaces, the ASIDs appear in increasing numeric order.
Scheduler Name

The scheduler name is the name of the transaction scheduler that received and scheduled the work for the transaction program. If the scheduler was the APPC/MVS transaction scheduler, ASCH appears in this field. If a different scheduler was involved, a name representing that scheduler appears.

When no TPs are running in an address space, N/A appears under the scheduler name.

TP Name

A TP is part of a distributed application that communicates with another program, also a TP. The communication between TPs is called a conversation. Conversations are started by a TP that issues an allocate call.

A TP can converse with more than one other TP. The TP whose point-of-view is being considered is called the local TP. A TP with which the local TP is conversing is called a partner TP. The partner TP can be on the same system as the local TP, or on a remote system.

The name of the TP that starts a conversation is usually not known, because the allocate call specifies only the name of the TP to be attached. When a local TP starts all conversations, its name is not available and this report displays *UNKNOWN*. If a partner TP starts a conversation with the local TP, the local TP name becomes available from the allocate call and is displayed in this report.

TP_ID

A TP_ID is a token that identifies a specific TP instance. A TP instance is created for an inbound conversation or by a request to allocate an outbound conversation from something other than a TP. A TP instance differs from a TP in that the TP is a program using communication functions and a TP instance is the actual processing of those functions in MVS.

LU Name

An LU is a system interface to a SNA network. An LU on your system through which a local TP communicates is a local LU. LUs for partner TPs are partner LUs.

Sessions, which allow program-to-program communication, are established between a local LU and partner LUs.

Work Unit ID

A work unit ID is an identifier for a TP that is assigned by the scheduler. This ID will appear on externals of the scheduler, such as a console display, to identify the work unit associated with this TP instance.

If no work unit ID was used for the conversation, this value will be N/A.

Number of Conversations

A TP can converse with one or more partner TPs. There is no limit to the number of conversations other than the limit imposed by the number of available sessions.

CONVERSATIONS DETAIL report

For each TP in an address space, the CONVERSATIONS DETAIL report duplicates the summary report. In addition, the report displays the following topics for each conversation:

- Conversation ID
- Conversation correlator
- Partner TP name
- Attach user ID
- Conversation type
- Sync level
- Unit of recovery identifier (URID)
- Logical unit of work identifier (LUWID)
- Resource manager name
- Attached by partner TP
- Allocated to partner LU
- LOGON mode
- Current state
- Time of day

An example of the APPCDATA CONVERSATIONS DETAIL report follows:

```
Detail Report for CONVERSATIONS
-------------------------------
Address space ID (ASID): '0022'X
Scheduler name: ASCH

TP name: TBDRIVER
TP_ID: 061B69000000017
LU name: Z0A6AP04
Work Unit ID: A0000003

Conversation ID: 0618F3F800000018 Correlator: 0618F3F800000018
Attach user ID: DBUTLER
Conversation type: BASIC Sync level: SYNCPT
URID : AD49C2737EEFC000000000401020000
LUWID: USIBMZ0.Z0A4AP03 C26D566FB104 0001
Resource Manager Name : ATB.USIBMZ0.Z0A6AP04.IBM
Attached by Partner LU: USIBMZ0.Z0A4AP03 Logon mode: TRANPAR
Current state: SYNCPT DEALLOCATE

Conversation ID: 0618F3F800000018 Correlator: 0618F3F800000018
Attach user ID: DBUTLER
Conversation type: BASIC Sync level: NONE
URID : N/A
LUWID: N/A
Resource Manager Name : N/A
Attached by Partner LU: USIBMZ0.Z0A6AP04 Logon mode: TRANPAR
Current state: RECEIVE
Waiting for data TOD: 08/08/1996 18:19:57.410602

Address space ID (ASID): '0023'X
Scheduler name: ASCH

TP name: APOLLO
TP_ID: 061B6D00000001A
LU name: Z0A6AP04
Work Unit ID: A0000005

Conversation ID: 061905980000001C Correlator: 0000000000000000
Attach user ID: DBUTLER
Conversation type: BASIC Sync level: NONE
URID : N/A
LUWID: N/A
Resource Manager Name : N/A
Attached by Partner LU: USIBMZ0.Z0A6AP04 Logon mode: TRANPAR
Current state: RECEIVE
Waiting for data TOD: 08/08/1996 18:19:57.410602
```
Information displayed in this report includes:

**Conversation ID**

The conversation ID is an identifier that is supplied and maintained by the system. It is sometimes called a resource ID. When a TP successfully allocates a conversation, the system returns a conversation ID that uniquely identifies that conversation. Transaction programs specify that ID whenever they issue a call to each other.
Conversation Correlator
A conversation correlator is used to help restore protected resources to a consistent state following the failure of an LU, session, or conversation.

The conversation correlator is supplied and maintained by the LU. If no conversation correlator was used, this value will be zeros.

Partner TP Name
The name of the partner TP. A partner TP is a program with which another TP, called a local TP, has a conversation. A TP whose point-of-view is being considered is the local TP. The TP with which the local TP is conversing is called a partner TP. The partner TP can be on the same system as the local TP, or on a remote system. The name of the TP that starts a conversation is usually not known because the allocate call specifies only the name of the TP to be attached. When the local TP starts a conversation with a partner TP, the partner TP name is known and is displayed in this report. When a partner TP starts the conversation, its name is not known and *UNKNOWN* is displayed in this report.

Attach User ID
The attach user ID is the userid that was passed to the partner LU to indicate where an attached TP was running. If the conversation was started by the local TP, the userid displayed is the ID under which the partner TP was running. If the conversation was started by the partner TP, the user ID displayed is the ID under which the local TP was running.

Conversation Type
A TP can carry on two types of conversations:

Mapped
A conversation that allows the exchange of arbitrary data records. A mapped conversation call conceals from the application program the logical-record data-stream format required in a basic conversation.

Basic
A conversation that contains logical records that include 2-byte fields (LL). The LLs specify the amount of data to follow before the next LL.

Basic conversations are generally used by LU service programs that provide user services.

When the conversation type is not known, *UNKNOWN* is displayed.

Sync Level
Sync level is the level of synchronization between programs in a distributed transaction. APPC/MVS supports the following levels of synchronization:

None
There is no synchronization of activities in a distributed transaction.

Confirm
Allows a TP to use the confirm call to synchronize activities with a partner TP.

Syncpt
Allows a TP to perform sync point processing on this conversation. The TP and its partner can issue Commit and Backout calls, and recognize returned parameter values relating to resource recovery processing.

When the sync level is not known, *UNKNOWN* is displayed.
**URID**
The identifier for a unit of recovery. A unit of recovery represents part of a TP's processing for a protected conversation. If the conversation is not a protected conversation, the report displays N/A for this field.

**LUWID**
A logical unit of work ID is an identifier for the processing a program performs from one sync point to the next. If the conversation is not a protected conversation, the report displays N/A for this field.

**Resource Manager Name**
The name of the local LU, as it is known to RRS. If the LU is capable of processing protected conversations, APPC/MVS supplies this resource manager name when registering the LU with RRS. If the LU is not defined as capable of processing protected conversations, the report displays N/A for this field.

**Attached by Partner LU**
The name of the partner LU where the conversation originated. Conversations can be attached by the partner LU or allocated to the partner LU, depending on where a conversation originates.

When a conversation was attached by a partner LU, the partner TP started the conversation and issued the allocate call to the local TP.

The partner LU name might be a network-qualified LU name; that is, the combined network ID and network LU name (two 1-8 byte Type A character strings, concatenated by a period: `network_ID.network_LU_name`). The partner LU name is network-qualified if the network ID is known; if not, only the network LU name appears in the report.

**Allocated to Partner LU**
The name of the partner LU where the conversation was received is displayed in this field. Conversations can be attached by the partner LU or allocated to the partner LU, depending on where a conversation originates. When a conversation was allocated to a partner LU, the local TP started the conversation and issued the allocate call to the partner TP.

The partner LU name might be a network-qualified LU name; that is, the combined network ID and network LU name (two 1-8 byte Type A character strings, concatenated by a period: `network_ID.network_LU_name`). The partner LU name is network-qualified if the network ID is known; if not, only the network LU name appears in the report.

**Logon Mode**
A logon mode defines a particular set of session characteristics for the conversation. The characteristics include the class of service to be used on the conversation and the synchronization level.

Logon modes are defined by a system administrator for each partner LU with which the local LU communicates. There can be more than one logon mode defined for a single partner LU.

**Current State**
The current state is the state of the conversation at the time the dump was taken. Possible states are:
- Reset
- Initialize
- Send
- Receive
- Send pending
For certain states, a message might also appear. Possible messages are:
- Waiting for data
- Waiting for confirm
- Data available to be received.

**TOD (Time of Day)**

The TOD field is displayed when the TP was in a wait state at the time of the dump. The time displayed is the time the program began the wait. A TP can be in a wait state after it requests data or after it issues a CONFIRM call.

The TOD field displays the date and time in the format mm/dd/yyyy hour:minutes:seconds:microseconds.

**APPCDATA SERVERDATA subcommand output**

The APPCDATA SERVERDATA subcommand displays information about allocate queues and APPC/MVS servers.

An APPC/MVS server is an address space that has requested that certain inbound allocate requests be directed to it, rather than to a transaction scheduler. When a server receives an allocate request, a conversation takes place between it and the TP that issued the allocate request. Typically, the TP requires that some function be performed on its behalf by the server. The server processes, or serves, the TP's request by performing the requested function. Depending on how it is designed, a server may serve multiple allocate requests concurrently.

An installation can have any number of servers. In addition, an installation can choose to have one or more transaction schedulers active.

APPC/MVS servers select a subset of inbound allocate requests through a process called registering. Servers register for allocate requests that bear a specific combination of TP name and the name of the LU that was targeted by the allocate request. Servers can further limit their selection of requests by specifying certain “filters”: user ID, security profile, and partner LU.

APPC/MVS monitors inbound allocate requests for those for which a server has registered. APPC/MVS places such allocate requests on structures called allocate queues. Servers can retrieve allocate requests from allocate queues for later processing as needed. A server can register any number of times, each time specifying a different combination of selection criteria (TP name/local LU name, plus filters). APPC/MVS creates a separate allocate queue for each unique registration.

**SERVERDATA SUMMARY report**

The SERVERDATA SUMMARY report displays the following information for each allocate queue:

- TP name
- Local LU name
In the SERVERDATA SUMMARY report, information about each APPC/MVS
server follows the information for allocate queues. For each server, the
SERVERDATA SUMMARY report displays the following information (listed by
server address space):

- Address space ID
- Whether the server has an outstanding Get_Event call
- Number of events
- Number of allocate queues

The following example of the APPCDATA SERVERDATA SUMMARY report shows
three allocate queues, each of which is being served by the same server.
Information about each allocate queue begins with the name of the TP associated
with the particular allocate queue. In this example, each of the three allocate
queues is associated with a different TP name (TOM001, TOM002, and TOM003).

Information about the server (address space ID 0041) follows the information about
the allocate queues.

For a description of each field in the APPCDATA SERVERDATA SUMMARY
report, see the section that follows the example.
Each field in the APPCDATA SERVERDATA SUMMARY report is described in the section that follows.

**TP Name**

This value is the name of the TP associated with the allocate queue.

An APPC/MVS server specified this TP name when it registered to serve certain allocate requests entering the system (through the Register_For_Allocates service). The server also specified the TP's local LU, and, optionally, the user ID, profile, and partner LU associated with such allocate requests.

If the system cannot determine the TP name, *UNKNOWN* is displayed.

**Local LU Name**

The local LU name is the name of the LU at which the TP specified by TP name resides.

An APPC/MVS server specified this LU name when it registered to serve certain allocate requests entering the system (through the
Register For Allocates service). The server also specified the TP name, and, optionally, the user ID, profile, and partner LU associated with such allocate requests.

If the system cannot determine the local LU name, *UNKNOWN* is displayed.

**User ID**
This value is the user ID associated with the allocate queue.

If a blank value was specified for the user ID when the server registered for inbound allocate requests, an asterisk (*) is displayed.

**Profile**
This value is the security profile (for example, a RACF group name) associated with the allocate queue.

If a blank value was specified for the profile when the server registered for inbound allocate requests, an asterisk (*) is displayed.

**Partner LU Name**
This value is the name of the LU at which the client TP resides. The partner LU is the LU through which the allocate request flowed when it entered the network.

The partner LU name might be a network-qualified LU name; that is, the combined network ID and network LU name (two 1-8 byte Type A character strings, concatenated by a period: network_ID.network_LU_name). The partner LU name is network-qualified if the network ID is known; if not, only the network LU name appears in the report.

If a blank value was specified for the partner LU name when the server registered for inbound allocate requests, an asterisk (*) is displayed.

**Queue Token**
APPC/MVS creates an allocate queue for each unique combination of filter attributes specified when the server registered for inbound allocate requests. When APPC/MVS creates an allocate queue, it returns an allocate queue token to the server.

The allocate queue token uniquely identifies the allocate queue. The server uses the allocate queue token to identify a specific allocate queue on subsequent calls to APPC/MVS allocate queue services.

**Current Servers**
This number is the number of servers that are currently serving a particular allocate queue.

More than one server can serve the same allocate queue. If multiple servers specify the same set of filter attributes when registering for inbound allocate requests, the servers will share the same allocate queue (and allocate queue token).

Conversely, a server can serve more than one allocate queue. If a server specifies more than one unique set of inbound allocate requests when it registers, the server will serve each allocate queue that results.

For example, if there is one server on the system, and it is serving two allocate queues, this report lists one current server for each allocate queue.

**Current Allocates**
APPC/MVS places inbound allocate requests for servers in structures called allocate queues. Servers can retrieve allocate requests from the allocate queues (through the Receive_Allocate service).
The number of current allocates in an allocate queue reflects the number of allocate requests that have not yet been received by a server.

There is no limit on the number of allocate requests an allocate queue can contain.

**Total Allocates**

This number is the total number of inbound allocate requests that have been added to a particular allocate queue since it was created. This number reflects the number of allocate requests that currently reside on the allocate queue, plus the number of allocates that previously resided on the queue and were subsequently removed by a server (through the Receive_Allocate service).

**Pending Receive Allocates**

This is the number of pending Receive_Allocate requests that one or more servers of a specific allocate queue have issued.

When a server attempts to receive an allocate request from an empty allocate queue (and the server has specified that its Receive_Allocate request is allowed to wait), the Receive_Allocate request is considered to be pending until it completes.

**Keep Time**

An APPC/MVS server can optionally specify a “keep time” for any allocate queue it serves. Keep time is the number of seconds an allocate queue is maintained by APPC/MVS in the absence of registered servers for the allocate queue. Specifically, keep time would apply when the last server of the allocate queue unregisters.

When keep time is in effect, APPC/MVS allows the allocate queue to continue to grow as new inbound allocate requests for a server enter the system. If a server does not resume serving the allocate queue within the specified keep time, APPC/MVS purges the allocate queue.

If no keep time has been specified for an allocate queue, APPC/MVS purges the queue immediately after the last server of the queue unregisters.

**Time Created**

The date and time when the allocate queue was created.

The date and time are displayed in the format mm/dd/yyyy hour:minutes:seconds:microseconds.

If the system cannot determine the time at which the allocate queue was created, *UNKNOWN* is displayed.

**Time of Last Receive**

The date and time when a server most recently received an allocate request from the allocate queue (through the Receive_Allocate service).

The date and time are displayed in the format mm/dd/yyyy hour:minutes:seconds:microseconds.

If no allocate requests have been received from the allocate queue, *NONE* is displayed.

**Time of Last Unregister**

This is the date and time when the last server to serve the allocate queue unregistered (leaving no servers registered for the queue). If a keep time was specified for the allocate queue, APPC/MVS maintains the queue from the time of the last unregister until the keep time expires, or until another server resumes serving the queue. If no keep time was specified, this field is not set.
The date and time are displayed in the format mm/dd/yyyy
hour:minutes:seconds:milliseconds.

If one or more servers are registered for the allocate queue, *NONE* is displayed.

**Address Space ID**
Information about a particular APPC/MVS server begins with the address space ID (ASID), which uniquely identifies the server's address space. The ASID is displayed as four hexadecimal digits.

**Outstanding Get_Event**
An APPC/MVS server can receive notification of certain events related to a specific allocate queue for which the server is currently registered. The server requests notification of such events through the Set_Allocate_Queue_Notification service.

When the specified event occurs, APPC/MVS places an element that represents the event on a structure known as an event queue. The server can retrieve events from its event queue through the Get_Event service.

A server can specify whether to have the Get_Event service wait if there are no elements on its event queue. When the event occurs, the Get_Event call returns to the server.

An outstanding Get_Event call is one that has not yet returned to the server.

**Number of Events**
An APPC/MVS server can receive notification of certain events related to a specific allocate queue for which the server is currently registered. The server requests notification of such events through the Set_Allocate_Queue_Notification service.

When the specified event occurs, APPC/MVS places an element that represents the event on a structure known as an event queue. The server can retrieve events from its event queue through the Get_Event service.

The number of events reflects the number of event elements currently contained in the server's event queue. There is no limit on the number of event elements an event queue can contain.

**Number of Allocate Queues**
APPC/MVS places the inbound allocate requests for which a server has registered on a structure called an allocate queue.

APPC/MVS creates an allocate queue for each unique combination of filter attributes specified when the server registered for inbound allocate requests (through the Register_For_Allocates service).

The number of allocate queues is the number of allocate queues for which a particular server is currently registered. There is no limit on the number of allocate queues for which a server can be registered.

**SERVERDATA DETAIL report**
The SERVERDATA DETAIL report duplicates the summary report. In addition, the report displays the following information:

- Register time
- Time of last receive issued
- Time of last receive returned
- Total allocates received
- Conversation ID
- Access method conversation ID
In the following example of the APPC/DETAILED report, three allocate queues are being served by five servers. Information for each allocate queue is displayed first, followed by information about each server (listed by address space ID).

Note that each allocate queue is distinguished by the combination of values displayed for the following keywords: TP name, Local LU name, User ID, Profile, and Partner LU name. Allocate queues are also uniquely identified by an allocate queue token.

Near the end of the report, there is information about each server. Servers are identified by address space ID.

In the following example, you can determine that three server address spaces (ASIDs 0025, 0024, and 0023) serve the same allocate queue because each server holds the same allocate queue token.
Detail Report for SERVERDATA

ALLOCATE QUEUES

TP name: TOM001
Local LU name: M05AP003
User ID: * Profile: * Partner LU name: *
Queue token: 02D2787000000001
Current servers: 2 Current allocates: 1
Total allocates: 1 Pending receive allocates: 0
Keep time: 0
Time created: 04/12/1996 15:06:41.106149
Time of last receive: *NONE*
Time of last unregister: *NONE*

SERVERS

Address space ID (ASID): 0017
Register time: 04/12/1996 15:06:59.39960
Time of last receive issued: *NONE*
Time of last receive returned: *NONE*
Total allocates received: 0

Address space ID (ASID): 0012
Register time: 04/12/1996 15:06:41.106149
Time of last receive issued: *NONE*
Time of last receive returned: *NONE*
Total allocates received: 0

PENDING RECEIVE ALLOCATES

No pending receive allocates for this allocate queue

CURRENT ALLOCATES

Conversation ID: 03E2489000000002
Access Method Conversation ID: 65086256
Conversation type: BASIC Conversation correlator: 00000000
Mode name: TRANPAR Partner LU name: MCNI2L.M05AP003
Sync level: NONE User ID: Profile:
Time queued: 04/12/1996 15:22:04.323001
ACB address: 00000000

ALLOCATE QUEUES

TP name: TOM001
Local LU name: M05AP004
User ID: * Profile: * Partner LU name: *
Queue token: 02D27970000000002
Current servers: 3 Current allocates: 1
Total allocates: 1 Pending receive allocates: 0
Keep time: 0
Time created: 04/12/1996 15:06:41.106149
Time of last receive: *NONE*
Time of last unregister: *NONE*
SERVERS

Address space ID (ASID): 0025
Register time: 04/12/1996 15:15:01.602451
Time of last receive issued: *NONE*
Time of last receive returned: *NONE*
Total allocates received: 0

Address space ID (ASID): 0024
Register time: 04/12/1996 15:13:16.619798
Time of last receive issued: *NONE*
Time of last receive returned: *NONE*
Total allocates received: 0

Address space ID (ASID): 0023
Register time: 04/12/1996 15:10:40.197114
Time of last receive issued: *NONE*
Time of last receive returned: *NONE*
Total allocates received: 0

PENDING RECEIVE ALLOCATES

No pending receive allocates for this allocate queue

CURRENT ALLOCATES

Conversation ID: 03E2518800000004
Access Method Conversation ID: 65086364
Conversation type: BASIC Conversation correlator: 00000000
Mode name: TRANPAR Partner LU name: MCLNT2L.M05AP003
Sync level: NONE User ID: Profile:
Time queued: 04/12/1996 15:30:13.586332
ACB address: 00000000

ALLOCATE QUEUES

TP name: TOM002
Local LU name: M05AP004
User ID: * Profile: * Partner LU name: *
Queue token: 02D27A7000000003
Current servers: 1 Current allocates: 0
Total allocates: 0 Pending receive allocates: 1
Keep time: 0
Time created: 04/12/1996 15:17:44.724485
Time of last receive: *NONE*
Time of last unregister: *NONE*
APP/MVS

SERVERS

Address space ID (ASID): 0026
Register time: 04/12/1996 15:17:44.724485
Time of last receive issued: *NONE*
Time of last receive returned: *NONE*
Total allocates received: 0

PENDING RECEIVE ALLOCATES

Address space ID (ASID): 0026

CURRENT ALLOCATES

No current allocates on this allocate queue

SERVERS

Address space ID (ASID): 0026 Outstanding GET_EVENT: NO

EVENTS

Event: MAX
Event object: 02D27A7000000003
Event qualifier: 1

QUEUE TOKEN ELEMENTS

Allocate queue token: 02D27A7000000003
Minimum one-time event threshold: *NONE*
Maximum one-time event threshold: 25
Minimum continuous event threshold: 1
Maximum continuous event threshold: *NONE*

Address space ID (ASID): 0025 Outstanding GET_EVENT: NO

EVENTS

No events found for this server.

QUEUE TOKEN ELEMENTS

Allocate queue token: 02D2797000000002
Minimum one-time event threshold: *NONE*
Maximum one-time event threshold: *NONE*
Minimum continuous event threshold: *NONE*
Maximum continuous event threshold: *NONE*
Information displayed in this report includes:

**Register time**

Register time is the date and time at which the server successfully registered for the allocate queue (through the Register_For_Allocates service). If the allocate queue did not already exist when the server registered, APPC/MVS created the allocate queue at this time.

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**APP/MVS**

Address space ID (ASID): 0024

EVENTS

No events found for this server.

QUEUE TOKEN ELEMENTS

Allocate queue token: 02D2797000000002
Minimum one-time event threshold: *NONE*
Maximum one-time event threshold: *NONE*
Minimum continuous event threshold: *NONE*
Maximum continuous event threshold: *NONE*

Address space ID (ASID): 0023

EVENTS

No events found for this server.

QUEUE TOKEN ELEMENTS

Allocate queue token: 02D2797000000002
Minimum one-time event threshold: *NONE*
Maximum one-time event threshold: *NONE*
Minimum continuous event threshold: *NONE*
Maximum continuous event threshold: *NONE*

Address space ID (ASID): 0017

EVENTS

No events found for this server.

QUEUE TOKEN ELEMENTS

Allocate queue token: 02D2787000000001
Minimum one-time event threshold: *NONE*
Maximum one-time event threshold: *NONE*
Minimum continuous event threshold: *NONE*
Maximum continuous event threshold: *NONE*

Address space ID (ASID): 0012

EVENTS

No events found for this server.

QUEUE TOKEN ELEMENTS

Allocate queue token: 02D2787000000001
Minimum one-time event threshold: *NONE*
Maximum one-time event threshold: *NONE*
Minimum continuous event threshold: *NONE*
Maximum continuous event threshold: *NONE*
The date and time are displayed in the format mm/dd/yyyy
hour:minutes:seconds:microseconds.

If the system cannot determine the register time, *UNKNOWN* is displayed.

**Time of Last Receive Issued**
The date and time at which the server last issued the Receive_Allocate service.
The date and time are displayed in the format mm/dd/yyyy
hour:minutes:seconds:microseconds.

If the server has not yet issued the Receive_Allocate service, *NONE* is displayed.

**Time of Last Receive Returned**
The date and time at which the Receive_Allocate service last completed. The call to the Receive_Allocate service might or might not have been successful.
The date and time are displayed in the format mm/dd/yyyy
hour:minutes:seconds:microseconds.

If no call to the Receive_Allocate service has yet completed, *NONE* is displayed.

**Total Allocates Received**
This number is the total number of allocate requests the server has received since the time it registered.

If the server had previously stopped serving the allocate queue, and later resumed service, the number of total allocates received does not reflect the server’s activity prior to the time it resumed service.

**Conversation ID**
The conversation ID is an identifier that the system supplies and maintains. It is sometimes called a resource ID. When a server successfully receives an allocate request from an allocate queue, the system returns a conversation ID to the server. The conversation ID uniquely identifies that conversation. Servers specify the conversation ID on later calls to APPC/MVS services.

**Access Method Conversation ID**
The access method conversation ID is an identifier that the system supplies and maintains.

For conversations that are running LU=REMOTE, the access method conversation ID is the VTAM conversation ID. Otherwise, this value represents APPC-defined data.

**Conversation Type**
APPC/MVS applications can carry on two types of conversations:

**Mapped**
A conversation that allows the exchange of arbitrary data records. A mapped conversation call conceals from the application program the logical-record data-stream format required in a basic conversation.

**Basic**
A conversation that contains logical records. Each record includes a 2-byte field (LL) that specifies the amount of data to follow before the next LL.

Basic conversations are generally used by LU service programs that provide user services.

When the conversation type is not known, *UNKNOWN* is displayed.
Conversation Correlator
A conversation correlator is used to help restore protected resources to a consistent state following the failure of an LU, session, or conversation.

The conversation correlator is supplied and maintained by the LU. If no conversation correlator was used, this value will be zeroes.

Mode Name
The name of the logon mode that defines a particular set of session characteristics for the conversation. The characteristics include the class of service to be used on the conversation and the synchronization level.

Logon modes are defined by a system administrator for each partner LU with which the local LU communicates. There can be more than one logon mode defined for a single partner LU.

Sync Level
Sync level is the level of synchronization between programs in a distributed transaction. APPC/MVS supports the following levels of synchronization:

None
There is no synchronization of activities in a distributed transaction.

Confirm
Allows a TP to use the confirm call to synchronize activities with a partner TP.

Syncpt
Allows a TP to perform sync point processing on this conversation. The TP and its partner can issue Commit and Backout calls, and recognize returned parameter values relating to resource recovery processing.

When the sync level is not known, *UNKNOWN* is displayed.

Time Queued
Time queued is the date and time at which APPC/MVS placed a particular inbound allocate request on the allocate queue.

The date and time are displayed in the format mm/dd/yyyy hour:minutes:seconds:microseconds.

When the system cannot determine the time an allocate was queued, *UNKNOWN* is displayed.

Address of the Access Method Control Block (ACB)
APPC/MVS uses the access method control block (ACB) to identify the particular LU from which a server is receiving inbound allocate requests.

When the ACB is not known, this field shows ‘00000000’ (all zeroes).

Event
A server can request to be notified in the event an allocate queue for which it is registered reaches a user-specified minimum or maximum number (threshold) of allocate requests. When the specified event occurs, APPC/MVS notifies the server by placing an element that represents the event on the server's event queue. The server requests such notification through the Set_Allocate_Queue_Notification service.

MIN or MAX is displayed to indicate whether the server requested to be notified of a minimum or maximum threshold being reached.
The number of allocate requests specified for the threshold is the value displayed for Event Qualifier, which follows the EVENT heading in the report. If the server has not requested to be notified of an event, the EVENT field is not displayed.

**Event object**
A server can request to be notified of events that are related to any of the allocate queues for which it is registered. The server requests such notification through the Set_Allocate_Queue_Notification service.

When the server requests notification of an event, it specifies which allocate queue APPC/MVS is to monitor by supplying the allocate queue token associated with the particular allocate queue. The server received the allocate queue token when it registered for the allocate queue. The allocate queue token is called an event object when it is used for event notification.

In this report, event notification for a particular allocate queue can be determined by locating the allocate queue token under the QUEUE TOKEN ELEMENTS heading that matches the event object.

**Event qualifier**
A server can request to be notified in the event an allocate queue for which it is registered reaches a user-specified minimum or maximum number (threshold) of allocate requests. The server requests such notification through the Set_Allocate_Queue_Notification service.

When it requests notification of an event, the server specifies a specific numeric value for the minimum or maximum threshold. This value is the event qualifier.

For example, a server would specify an event qualifier value of 25 as part of requesting to be notified when the allocate queue reaches a maximum threshold of 25 allocate requests.

**Minimum One-time Event Threshold**
When a server requests notification of an event, it can specify a minimum one-time event threshold. Here, APPC/MVS notifies the server (through the server's event queue) the first time the allocate queue decreases to the specified number of allocate requests. After the event occurs, APPC/MVS stops monitoring for it.

If the allocate queue is already less than the specified minimum threshold when the server requests notification, APPC/MVS notifies the server immediately.

If the server has not requested to be notified of an event, *NONE* is displayed.

**Maximum One-time Event Threshold**
When a server requests notification of an event, it can specify a maximum one-time event threshold. Here, APPC/MVS notifies the server (through the server's event queue) the first time the allocate queue increases to a specified number of allocate requests. After the event occurs, APPC/MVS stops monitoring for it.

If the allocate queue is already greater than the specified maximum threshold when the server requests notification, APPC/MVS notifies the server immediately.

If the server has not requested to be notified of an event, *NONE* is displayed.
Minimum Continuous Event Threshold
When the server requests notification of an event, it can specify a minimum continuous event threshold. Here, APPC/MVS notifies the server (through the server's event queue) every time the allocate queue decreases to the specified number of allocate requests. Once the event occurs, APPC/MVS does not notify the server again until the allocate queue increases above the number and then decreases to it again. APPC/MVS continues to monitor for the event until the server cancels its notification request, or stops serving the allocate queue, or APPC/MVS is ended.

If the allocate queue is already less than the specified minimum threshold when the server requests notification, APPC/MVS notifies the server immediately. If the server has not requested to be notified of an event, *NONE* is displayed.

Maximum Continuous Event Threshold
When the server requests notification of an event, it can specify a maximum continuous event threshold. Here, APPC/MVS notifies the server (through the server's event queue) every time the allocate queue increases to the specified number of allocate requests. Once the event occurs, APPC/MVS does not notify the server again until the allocate queue decreases below the number and then increases to it again. APPC/MVS continues to monitor for the event until the server cancels its notification request, or stops serving the allocate queue, or APPC/MVS is ended.

If the allocate queue is already greater than the specified maximum threshold when the server requests notification, APPC/MVS notifies the server immediately. If the server has not requested to be notified of an event, *NONE* is displayed.

**APPCDATA FMH5MANAGER subcommand output**
The APPC/DETA FMH5MANAGER subcommand formats information about FMH-5 attach requests. The FMH-5 manager processes incoming allocate calls from transaction programs. The allocate calls become FMH-5 attach requests.

**FMH5MANAGER SUMMARY report**
The summary report for FMH5 manager includes the following topics:
- FMH-5 attach requests outstanding
- FMH-5 attach requests being processed

**FMH-5 Requests Outstanding**
The number of FMH-5 requests outstanding is the number of requests that were waiting to be received at the time of the dump.

An FMH-5 attach request is submitted every time a TP issues an allocate call to initiate a conversation with another TP.

**FMH-5 Requests Being Processed**
Before a conversation can be established between TPs, an FMH-5 attach request must be processed. Processing includes checking that proper security information is present and valid, and ensuring that only supported features are requested.

When no FMH-5 attach requests were being processed at the time of the dump, you see a message that states no requests were being processed.

**FMH5MANAGER DETAIL report**
The detail report for the FMH-5 manager duplicates everything in the summary report. Also, the report lists, for both active and outstanding FMH-5 requests, the
LU names and the total number of requests they received. For each LU name, the requests are then broken down into the number of requests originating from a specific partner LU name. If the request was being processed and dump data is available, the report displays the data.

The topics include:
- Local LU name
- Partner LU name
- Number of FMH-5 requests not yet received
- FMH-5 request data

An example of the APPCDATA FMH5MANAGER DETAIL report follows:

```
Detail Report for FMH-5 MANAGER
----------------------------------
FMH-5 requests outstanding
Local LU name: M04AP001 Total requests for this local LU: 5
   Partner LU name: M04AP001 Number of requests: 5

FMH-5 requests being processed
Local LU name: M04AP001 Total requests for this local LU: 6
   Partner LU name: M04AP001 Number of requests: 6
   FMH-5 Request data
      120502FF 0003D000 0007D4E3 D9C1D5E2 | ......}...MTRANS |
      E700 | X. |
   FMH-5 Request data
      120502FF 0003D000 0007D4E3 D9C1D5E2 | ......}...MTRANS |
      E700 | X. |
   FMH-5 Request data
      120502FF 0003D000 0007D4E3 D9C1D5E2 | ......}...MTRANS |
      E700 | X. |
   FMH-5 Request data
      120502FF 0003D000 0007D4E3 D9C1D5E2 | ......}...MTRANS |
      E700 | X. |
   FMH-5 Request data
      120502FF 0003D000 0007D4E3 D9C1D5E2 | ......}...MTRANS |
      E700 | X. |
```

Information displayed in this report includes:

**Local LU Name**

An LU is a system interface to a SNA network. A local LU is an LU on your system through which a local TP communicates. The LUs for partner TPs are called partner LUs.

Sessions, which allow program-to-program communication, are established between a local LU and partner LUs. After sessions are established, each local LU can receive incoming FMH-5 attach requests. The attach requests are allocate calls from TPs that are seeking to start conversations with TPs defined to the local LU.

**Partner LU Name**

An LU is a system interface to a SNA network. An LU on your system, through which a local TP communicates, is a local LU. The LUs for partner TPs are partner LUs.
Sessions, which allow program-to-program communication, are established between a local LU and partner LUs. A partner LU can be on the same system as the local LU, or on a remote system.

After sessions are established, LUs can send and receive FMH-5 attach requests. The attach requests are allocate calls from TPs that are seeking to start conversations with TPs defined to LUs on your system.

The partner LU name might be a network-qualified LU name; that is, the combined network ID and network LU name (two 1-8 byte Type A character strings, concatenated by a period: network_ID.network_LU_name). The partner LU name is network-qualified if the network ID is known; if not, only the network LU name appears in the report.

**Number of FMH-5 Requests Not Yet Received**
Before an FMH-5 attach request can be processed, it must be received. Once a request is received, it is available as dump data.

When one or more FMH-5 requests are in the process of being received, this heading appears in the report. Otherwise, this heading does not appear.

**FMH-5 Request Data**
After an FMH-5 request is received, it is available as dump data, which is displayed under this heading.

### APPCDATA CTRACE subcommand output

The APPCDATA CTRACE subcommand formats information about the status of APPC component tracing at the time of the dump.

For information about formatting APPC component trace output, see the component trace chapter of *z/OS MVS Diagnosis: Tools and Service Aids*.

### CTRACE SUMMARY report

The summary report for the APPCDATA CTRACE subcommand includes the following topics:

- APPC component trace status
- Most recent trace options
- Most recent User ID filters
- Most recent ASID filters
- Most recent jobname filters

#### Component Trace Status

The status of APPC component trace can be either on or off. If the status is ON, the TRACE CT,ON,COMP=SYSAPPC command was entered to turn tracing on, and the trace results were placed into a dump data set. You can format the dump data set and display an APPCDATA CTRACE report.

If the status is OFF, either tracing was not turned on or tracing was turned off before the dump was taken. If tracing was turned off, there might be residual trace results in the dump data set, which appear in the report.

#### Most Recent Trace Options

When the TRACE CT command is entered, trace options for a particular component can be specified. These trace options can be set up as parameters in a parmlib member whose name is specified after the PARM keyword, or an operator can list the options with a REPLY command.

If no trace options were specified, N/A appears in the report under the trace options heading.
Most Recent User ID Filters
To limit the amount of information traced, an operator can specify the userids whose transactions are to be traced. An operator can list up to nine IDs after the USERID option of the TRACE CT,ON,COMP=SYSAPPC command.

If no userids were specified as filters, N/A appears in the report under this heading. This is not necessarily an error.

Most Recent ASID Filters
To limit the amount of information traced, an operator can specify the address space IDs whose transactions are to be traced. An operator can list up to 16 ASIDs after the ASID option of the TRACE CT,ON,COMP=SYSAPPC command.

If no ASIDs were specified as filters, N/A appears in the report under this heading.

Most Recent Jobname Filters
To limit the amount of information traced, an operator can specify the job name whose transactions are to be traced. An operator can list up to 16 job names after the JOBNAME option of the TRACE CT,ON,COMP=SYSAPPC command.

If no job names were specified as filters, N/A appears in the report under this heading.

CTRAZE DETAIL report
The report for the CTRACE DETAIL subcommand duplicates everything in the summary report and adds the following:
- Most recent controlling console ID
- CART for routing messages
- Trace table information

An example of the APPCDATA CTRACE DETAIL report follows:

Detail Report for CTRACE
------------------------
APPC/MVS Component trace status: OFF
Most recent controlling console ID: 00000001
CART for routing messages: 0000000000000000
Most recent trace options:
GLOBAL  ABNORMAL
Most recent user ID filters: N/A
Most recent ASID filters: N/A
Most recent jobname filters: N/A
Trace table information
Trace table size: 512K
DATA1: ATBCTDSP
DATA2: 8000060100000006
DATA3: 01010020
DATA4: 00001000
Information displayed in this report includes:

**Most Recent Controlling Console ID**

The console identifier where APPC component trace was most recently started or stopped appears after this heading. If no console identifier is available, **N/A** appears after this heading.

The APPC component trace can be started and stopped by an operator. To start APPC component trace, the operator enters the `TRACE CT,ON,COMP=SYSAPPC` command, and to stop it, the operator enters the `TRACE CT,OFF,COMP=SYSAPPC` command.

**CART for Routing Messages**

If a command and response token (CART) was passed to APPC component trace, it appears under this heading. If no CART was passed, **N/A** appears under this heading.

A CART allows a system command to be associated with a response.

**Trace Table Information**

The trace table contains internal information from the APPC component trace. The trace table size is displayed as four decimal digits that represent kilobytes of data. The remaining data is internal information for IBM use.

**ASCHDATA SUMMARY subcommand output**

The ASCHDATA SUMMARY report displays information about a specific scheduler class or about all scheduler classes.

For each scheduler class, the ASCHDATA summary report displays the following topics:

- Status of Scheduler
- Subsystem Name
- Default Class
- Generic Initiators
- Class
- Status of Class
- Maximum Number of Initiators
- Minimum Number of Initiators
- Expected Response Time
- Message Limit
- Jobs Waiting for Execution
- Total Active Initiators
- Total Active Waiting MULTI_TRANS Initiators
- Total Idle Initiators

**Status of Scheduler**

The status of the APPC/MVS transaction scheduler address space, ASCH, at the time of the dump was one of the following:

**STARTUP**

The ASCH address space was being initialized at the time of the dump.

**ACTIVE**

At the time of the dump, the ASCH address space was fully initialized and capable of processing transactions.

**NOT ACTIVE**

At the time of the dump, the ASCH address space was unable to process transactions.
**TERMINATION/RESTART**
The system ended the ASCH address space because of a critical error. At the time of the dump, the ASCH address space was in the process of restarting itself.

**TERMINATION/NORESTART**
The system ended the ASCH address space in response to one of the following:
- The operator entered a CANCEL command
- The operator entered a FORCE command
- A critical error

The ASCH address space did not attempt to restart itself.

**UNKNOWN**
At the time of the dump, the status of the ASCH address space could not be determined.

**Subsystem Name**
The subsystem to which all newly created APPC transaction initiators are assigned. If neither JES2 nor JES3 is required to run APPC transaction initiators, the subsystem name is either MSTR or the contents of parmlib member IEFSSNxx.

**Default Class**
The default class is the scheduling class assigned to TPs when no class is specified in the TP profile. The default class is named in the OPTIONS statement of an ASCHPMxx parmlib member.

**Generic Initiators**
Generic initiators are APPC initiators that temporarily are not associated with any class because there is a lack of APPC work requests.

This field appears only when generic initiators exist.

**Class**
The scheduler class. A scheduler class determines the processing characteristics for a job. Processing characteristics include the expected response time and the number of initiators for the class.

Classes are defined in the ASCHPMxx parmlib member. Each class has a class name, maximum number of initiators, minimum number of initiators, and expected response time goal.

The class in which a job will run is specified in the TP profile. The class name from the TP profile must match a class name defined in an ASCHPMxx parmlib member.

**Status of Class**
The status of an APPC/MVS transaction scheduler class at the time of a dump is one of the following:

- **Active**
  The scheduler class was processing jobs.

- **In termination**
  The scheduler class was ending.

- **Unknown**
  The status of the scheduler class could not be determined.

**Maximum Number of Initiators**
The maximum number of initiators is the highest number of initiators allowed
The number of initiators available to process jobs, together with the expected response time, determines how quickly work is processed.

The minimum number of initiators is the number that must be available at all times for the class. If the maximum and minimum numbers of initiators are too high for the amount of processing required, initiators stand idle. If the numbers of initiators are too low for the amount of processing required, excessive paging results and work is delayed.

The maximum number of initiators for a class is specified in the ASCHPMxx parmlib member.

**Minimum Number of Initiators**

The minimum number of initiators is the number that must be available at all times for the class. If the maximum and minimum numbers of initiators are too high for the amount of processing required, initiators stand idle. If the numbers of initiators are too low for the amount of processing required, excessive paging results and work is delayed.

The minimum number of initiators for a class is specified in the ASCHPMxx parmlib member.

**Expected Response Time**

The expected response time for a class is the maximum amount of time it should take to process each job. The response time, in addition to the maximum and minimum number of initiators, determines how quickly jobs are processed.

Response time appears in hours:minutes:seconds.microseconds format.

The expected response time for a class is specified in the ASCHPMxx parmlib member.

**Message Limit**

Message limit is the maximum size of the job log for TPs in a particular class of initiators. The size is displayed as the number of 133-byte messages the job log can contain for this class.

The message limit for a class is specified in the ASCHPMxx parmlib member.

**Total Number of Jobs Waiting for Execution**

The total number of jobs waiting for execution is the number of jobs on the APPC/MVS transaction scheduler queue waiting for a free initiator.

**Total Number of Active Initiators**

Active initiators are the initiators processing jobs. The total number of active initiators cannot exceed the maximum number of initiators specified for the class in the ASCHPMxx parmlib member.

**Total Number of Active Waiting MULTI_TRANS Initiators**

Active waiting MULTI_TRANS initiators are initiators that are waiting for multi_trans work for this class.

When a TP is scheduled as MULTI_TRANS, an environment is created to obtain multiple calls for the TP. Resources remain available and the TP remains initialized for all requests. If there are no requests to run the TP, the MULTI_TRANS initiator will wait for a period of time. Eventually if no work
comes in, resources are cleaned up and the TP ends. The initiator then becomes available to run any type of work for this class.

**Total Number of Idle Initiators**

Idle initiators are the initiators available to process any type of work for this class. If initiators for a class remain idle, eventually the total number of initiators for the class will decrease, but the total number of initiators will never drop below the minimum number of initiators specified for the class.

**ASCHDATA DETAIL subcommand output**

The ASCHDATA DETAIL report displays information about a specific scheduler class or about all scheduler classes.

An example of the ASCHDATA DETAIL report follows:

```
Detail Report for ASCH SCHEDULER
-----------------------------
Status of ASCH SCHEDULER: ACTIVE
ASCH SCHEDULER subsystem name: MSTR
ASCH SCHEDULER default class: A

Class: A Status of class: ACTIVE
Maximum number of initiators: 10
Minimum number of initiators: 5
Expected response time: 00:00:51.000000
Message limit: 20
Total number of jobs waiting for execution: 0
Total number of active initiators: 2

Address space ID (ASID): '0016'X
TP start time: 10/14/1996 17:44:44.426817
TP name: TPMAINP
Current job ID: A0000006
Local LU name: M09AP001
Partner LU name: M09AP001
User ID from FMH5: IBMUSER

Address space ID (ASID): '0018'X
TP start time: 10/14/1996 17:34:41.448941
TP name: TPMAINP
Current job ID: A0000003
Local LU name: M09AP001
Partner LU name: M09AP001
User ID from FMH5: IBMUSER

Total number of active waiting MULTI_TRANS initiators: 2

Address space ID (ASID): '0017'X
TP name: TPSM1NM

Address space ID (ASID): '0019'X
TP name: TPSM1NM

Total number of idle initiators: 1
Address space ID (ASID): '001A'X
```

The report for the ASCHDATA DETAIL subcommand duplicates everything in the summary report plus the following:
• Job ID
• Local LU Name
• Partner LU Name
• TP Name
• User ID from FMH5
• Time Job Started Wait
• Address Space ID
• TP Start Time
• Current Job ID

Job ID
The job ID is the identifier of a job processing on the APPC/MVS transaction scheduler queue. Additional information about the job follows the job identifier, such as the local LU name associated with the job, the TP name of the TP that came as an inbound FMH-5 attach request, and the time the job began to wait on the scheduler queue.

Local LU Name
An LU is a system interface to a SNA network. A local LU is an LU on your system through which a local TP communicates. The LUs for partner TPs are called partner LUs.

Sessions, which allow program-to-program communication, are established between a local LU and partner LUs.

Partner LU Name
An LU is a system interface to a SNA network. An LU on your system, through which a local TP communicates, is a local LU. The LUs for partner TPs are partner LUs.

Sessions, which allow program-to-program communication, are established between a local LU and partner LUs. A partner LU can be on the same system as the local LU or on a remote system.

The partner LU name might be a network-qualified LU name; that is, the combined network ID and network LU name (two 1-8 byte Type A character strings, concatenated by a period: network_ID.network_LU_name). The partner LU name is network-qualified if the network ID is known; if not, only the network LU name appears in the report.

TP Name
A TP is part of a cooperative application that communicates with another part, which is also a TP. The communication between TPs is started by an allocate callable service that becomes an FMH-5 attach request. When the scheduler receives an FMH-5 attach request, it gives the request a job ID and puts it on a queue for the appropriate class.

The names of the TPs that are associated with inbound FMH-5 attach requests are the names that appear in this report.

User ID from FMH5
The user ID from FMH5 is the ID that was passed into MVS/APPC with the allocate request. The ID is associated with the security environment in which the TP will run.

Time Job Started Wait
The time the job started to wait is the time that the job was put on the APPC scheduler queue. The date and time are displayed in the format mm/dd/yyyy hour:minutes:seconds:microseconds.
APP/MVS

Address Space ID
The address space ID is the 4 digit hexadecimal identifier of the address space for an initiator. The identifier is expressed as four hexadecimal digits.

At the time of the dump, the initiator could have been active on a particular job or could have completed a job and be idle.

TP Start Time
The TP start time is the time the job started for the TP. The date and time are displayed in the format mm/dd/yyyy hour:minutes:seconds:microseconds.

Current Job ID
The current job ID is the identifier for a job that was running at the time the dump was taken.
Chapter 14. Auxiliary Storage Manager (ASM)

This topic contains information about formatting auxiliary storage manager (ASM) dump data. For example, ASM dump data will display any outstanding page requests at the time of the dump.

Formatting ASM dump data

IPCS provides two functions to obtain ASM diagnosis data from a dump. The ASMCHECK subcommand describes the status of ASM at the time of the dump. The VERBEXIT ASMDATA subcommand formats the contents of ASM control blocks. [z/OS MVS IPCS Commands] gives the syntax for the ASMCHECK and ASMDATA subcommands and [z/OS MVS IPCS User's Guide] explains how to choose the options in the IPCS dialog.

ASMCHECK subcommand output

Use these reports to check the status of I/O requests in the system. If the number of I/O requests received is greater than the number of I/O requests completed by 10 or more, you may have a hardware problem. In the example, the numbers are close enough that no hardware errors are indicated.

If you think you might have a hardware problem, examine the status of the paging device and check the logrec data set for hardware errors.

The following report is an example of ASMCHECK subcommand output if storage-class memory (SCM) is used for paging:

```
ASM10000I ASMVX AT 0263A0B8
ASM10007I 17923 4K SCM I/O REQUESTS RECEIVED, 17923 COMPLETED
ASM10008I 16211 4K SCM WRITE REQUESTS RECEIVED, 16211 COMPLETED
ASM10010I 6 1M SCM WRITE REQUESTS RECEIVED, 6 COMPLETED
ASM10001I PART AT 024C1A10
ASM10002I PARTE AT 024C1A60: PAGE DATA SET 0 IS ON UNIT 02E6
ASM10002I PARTE AT 024C1AC0: PAGE DATA SET 1 IS ON UNIT 02E7
ASM10011I PARTE AT 0247ACCC: STORAGE-CLASS MEMORY
```

The following information appears in the report if storage-class memory (SCM) is used for paging:

<table>
<thead>
<tr>
<th>I/O REQUESTS RECEIVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textbf{nnnn} I/O REQUESTS RECEIVED</td>
</tr>
<tr>
<td>The number of I/O requests received by ASM.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NON-SWAP WRITE I/O REQUESTS RECEIVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textbf{nnnn} NON-SWAP WRITE I/O REQUESTS RECEIVED</td>
</tr>
<tr>
<td>The number of non-swap write I/O requests received by ASM.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O REQUESTS COMPLETED BY ASM</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textbf{nnnn} I/O REQUESTS COMPLETED BY ASM</td>
</tr>
<tr>
<td>The number of I/O requests completed by ASM. If this number is less than the</td>
</tr>
</tbody>
</table>
number of requests received, then either ASM or IOS was processing an I/O request at the time of the dump. This request can be found in one of the three following places:
- In ASM waiting for PCCWs.
- In IOS waiting for I/O completion.
- In error retry waiting for redrive (errors on writes only).

**ASMVX AT aaaaaaaaa**
The address of the ASM extension table (ASMVX).

**nnnnn nnnnK|M SCM I/O|WRITE REQUESTS RECEIVED nnnnn COMPLETED**
The number, size, and type of SCM requests received and completed.

**PART AT aaaaaaaaa**
The address of the paging activity reference table (PART).

**PARTE AT aaaaaaaaa**
The address of the paging activity reference table entry (PARTE).

The following report is an example of ASMCHECK subcommand output if storage-class memory (SCM) is not used for paging:

```
ASMVT AT 00FCFC10
4190 I/O REQUESTS RECEIVED, 4189 I/O REQUESTS COMPLETED BY ASM
PART AT 01C54470
PAGE DATA SET 0 IS ON UNIT E31
PAGE DATA SET 1 IS ON UNIT E31
I/O REQUEST ACTIVE FOR ABOVE DATA SET
IOSB FOR ABOVE HAD ABNORMAL IOSCOD VALUE X'51'
PAGE DATA SET 3 IS ON UNIT 450
PAGE DATA SET 4 IS ON UNIT 230
```

The following information appears in the report if storage-class memory (SCM) is not used for paging:

**ASMVT AT aaaaaaaaa**
The address of the ASM vector table (ASMVT).

**nnnnn I/O REQUESTS RECEIVED**
The number of I/O requests received by ASM.

**nnnnn I/O REQUESTS COMPLETED BY ASM**
The number of I/O requests completed by ASM. If this number is less than the number of requests received, then either ASM or IOS was processing an I/O request at the time of the dump. This request can be found in one of the three following places:
- In ASM waiting for PCCWs.
- In IOS waiting for I/O completion.
- In error retry waiting for redrive (errors on writes only).

**PART AT aaaaaaaaa**
The address of the paging activity reference table (PART).

**PAGE DATA SET n IS ON UNIT ddd**
The location of each paging device. Request status and additional information is also displayed, if applicable.

**VERBEXIT ASMDATA subcommand output**
You can generate the following reports with the VERBEXIT ASMDATA subcommand:
FULL Report

Produces a full report of ASM control blocks. FULL is the default and it overrides any other specified options.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASMHD</td>
<td>Header</td>
</tr>
<tr>
<td>ASMVT</td>
<td>Vector table</td>
</tr>
<tr>
<td>DEIB</td>
<td>Data extent information block</td>
</tr>
<tr>
<td>IORB</td>
<td>I/O request block</td>
</tr>
<tr>
<td>IOSB</td>
<td>I/O supervisor block</td>
</tr>
<tr>
<td>LGVT</td>
<td>Logical group vector table</td>
</tr>
<tr>
<td>PART</td>
<td>Paging activity reference table</td>
</tr>
<tr>
<td>PAT</td>
<td>Paging allocation table</td>
</tr>
<tr>
<td>PCCW</td>
<td>Paging channel command work area</td>
</tr>
<tr>
<td>PCT</td>
<td>Performance characteristics table</td>
</tr>
<tr>
<td>SRB</td>
<td>Service request block</td>
</tr>
</tbody>
</table>

SUMMARY Report

SUMMARY produces a summary report of the paging-related control blocks:

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASMVT</td>
<td>Vector table</td>
</tr>
<tr>
<td>DEIB</td>
<td>Data extent information block</td>
</tr>
<tr>
<td>IORB</td>
<td>I/O request block</td>
</tr>
<tr>
<td>IOSB</td>
<td>I/O supervisor block</td>
</tr>
<tr>
<td>PART</td>
<td>Paging activity reference table</td>
</tr>
<tr>
<td>PAT</td>
<td>Paging allocation table</td>
</tr>
<tr>
<td>PCCW</td>
<td>Paging channel command work area</td>
</tr>
<tr>
<td>PCT</td>
<td>Performance characteristics table</td>
</tr>
<tr>
<td>SRB</td>
<td>Service request block</td>
</tr>
</tbody>
</table>

VIO Report

VIO produces a summary report of the virtual I/O related control blocks:

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASMHD</td>
<td>Header</td>
</tr>
<tr>
<td>ASMVT</td>
<td>Vector table</td>
</tr>
<tr>
<td>LGVT</td>
<td>Logical group vector table</td>
</tr>
</tbody>
</table>

Chapter 15. Communications task (COMMTASK)

Communications task (COMMTASK) provides diagnostic data in dumps. This topic contains the following diagnosis information for COMMTASK:

- “COMMTASK diagnosis methods.”
- “Formatting COMMTASK dump data” on page 15-3.

For basic information about COMMTASK, see z/OS MVS Planning: Operations.

Tip: "Communication tasks" are referred to as "Console services" in some context.

COMMTASK diagnosis methods

COMMTASK provides several diagnostic functions to view the following information in dumps:

- Messages in the wait state message area.
- Branch entry messages on the delayed message queue.
- Message suppressed during nucleus initialization program (NIP) processing.

You can view messages in the wait state message area with the following IPCS functions:

- The STATUS WORKSHEET subcommand or option 2.3 (WORKSHEET) of the IPCS dialog gives central processor information. One section of this report provides the formatted wait state message area. The following is an example of formatted wait state message area for an X'A2B' wait state as it appears in the IPCS report:

  Wait State Message Issued at 08:40:10 on Day 255 of 1989:
  IGF912W EXTENDED STORAGE FAILURE, RE-IPL THE SYSTEM

- The CBFORMAT WSMA subcommand formats the wait state message area and produces a report similar to the preceding example.

You can view branch entry messages on the delayed message queue with another IPCS function. The VERBEXIT MTRACE subcommand or the MTRACE selection in option 2.6 (COMPONENT) of the IPCS dialog produces a report that contains the following sections:
Communications task

***NIP MESSAGES ON THE DELAYED ISSUE QUEUE***

<table>
<thead>
<tr>
<th>WQE ADDRESS</th>
<th>DATE</th>
<th>TIME</th>
<th>MESSAGE TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>01FE4560</td>
<td>89187</td>
<td>08:40:10</td>
<td>THIS IS THE 1ST NIP TIME SVC 35</td>
</tr>
<tr>
<td>01FE5060</td>
<td>89187</td>
<td>08:42:10</td>
<td>THIS IS THE 2ND NIP TIME SVC 35</td>
</tr>
<tr>
<td>01FE6060</td>
<td>89187</td>
<td>08:43:10</td>
<td>THIS IS THE 3RD NIP TIME SVC 35</td>
</tr>
<tr>
<td>01FE7060</td>
<td>89187</td>
<td>09:44:10</td>
<td>THIS IS CONTROL LINE OF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MULTI-LINE NIP TIME SVC 35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THIS IS 1ST DATA LINE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THIS IS 2ND DATA LINE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THIS IS THE DATA END LINE</td>
</tr>
<tr>
<td>01FEA060</td>
<td>89187</td>
<td>10:48:10</td>
<td>THIS IS A NIP TIME ACTION MESSAGE</td>
</tr>
</tbody>
</table>

***BRANCH ENTRY MESSAGES ON THE DELAYED ISSUE QUEUE***

<table>
<thead>
<tr>
<th>WQE ADDRESS</th>
<th>DATE</th>
<th>TIME</th>
<th>MESSAGE TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>01FE8560</td>
<td>89187</td>
<td>09:50:10</td>
<td>THIS IS THE 1ST BE WTO</td>
</tr>
<tr>
<td>01FE9060</td>
<td>89187</td>
<td>09:52:10</td>
<td>THIS IS THE 2ND BE WTO</td>
</tr>
<tr>
<td>01FEA060</td>
<td>89187</td>
<td>09:53:10</td>
<td>THIS IS THE 3RD BE WTO</td>
</tr>
<tr>
<td>01FEB060</td>
<td>89187</td>
<td>09:54:10</td>
<td>THIS IS CONTROL LINE OF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MULTI-LINE BE WTO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THIS IS 1ST DATA LINE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THIS IS 2ND DATA LINE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>THIS IS THE DATA END LINE</td>
</tr>
<tr>
<td>01FEA060</td>
<td>89187</td>
<td>09:58:10</td>
<td>THIS IS A BE WTO ACTION MESSAGE</td>
</tr>
</tbody>
</table>

Messages that are suppressed during NIP processing will be found either on the delayed message queue, as shown in the MTRACE output example, or in the system log.

**Diagnosing a gap on the delayed issue queue**

You may find a situation where there is a gap in the branch entry messages on the delayed issue queue. This gap occurs when the system was unable to find space to queue branch entry messages for delayed issue. When this happens, the system issues two messages with the following information:

1. At the time the error occurs, the system queues a delayed issue message indicating that some messages might be lost.
2. When the situation is normal again, the system issues another delayed issue message that gives the following information:
   - The number of messages that could not be queued for delayed issue, and therefore were not logged.
   - How many of those messages were action/WTORs.
   - How many of those messages would have been displayed on the delayed issue, and therefore were never displayed.
   - How many of those messages were action/WTORs.
   
Both messages appear in the hardcopy log only.

**Note:** Because the delayed message buffer can be expanded dynamically, the system will rarely run out of space to queue messages for delayed issue. But when the system does run out of space, the following conditions could cause it:

- Callers have issued branch-entry WTO/R/DOM repeatedly, and they have been in a condition which prevents expansion of the buffer (cannot do branch-entry GETMAIN). Additionally, COMMTASK has not been dispatched to issue and free the messages from the buffer.
Callers have issued branch-entry WTO/R/DOM repeatedly, and COMMTASK has not been dispatched. The buffer has been expanded to the limits of the extended system queue area (ESQA).

Callers have issued branch-entry WTO/R/DOM repeatedly, and the delayed message task (a subtask of COMMTASK) has become permanently inactive as a result of recursive abends. The buffer has been expanded to the limits of ESQA.

Formatting COMMTASK dump data

The IPCS COMCHECK subcommand formats the contents of specific COMMTASK control blocks and related diagnostic information. z/OS MVS IPCS Commands gives the syntax for the COMCHECK subcommand and explains how to use the COMCHECK option of the IPCS dialog.

The COMCHECK subcommand produces the following reports from the COMMTASK information in a dump:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays:</th>
<th>Explanation on page:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATABLKS</td>
<td>Information that IBM might request for problem determination.</td>
<td>15-3</td>
</tr>
<tr>
<td>LISTNAMES</td>
<td>Lists the console names defined to the specified keyname.</td>
<td>15-3</td>
</tr>
<tr>
<td>MCSINFO</td>
<td>Information about message queueing and console management.</td>
<td>15-4</td>
</tr>
<tr>
<td>NAME or ID</td>
<td>Formats a multiple console support (MCS), SMCS or extended MCS console for the specified console name or identifier.</td>
<td>15-5</td>
</tr>
<tr>
<td>NAMELIST</td>
<td>Lists all console names defined within a sysplex at the time of the dump.</td>
<td>15-8</td>
</tr>
<tr>
<td>RDCM</td>
<td>Status of device independent display operator console support (DIDOCS) resident display control modules (RDCM).</td>
<td>15-9</td>
</tr>
<tr>
<td>SBC</td>
<td>Information about the delayed issue queue.</td>
<td>15-11</td>
</tr>
<tr>
<td>SYSCONS</td>
<td>Status of the system console.</td>
<td>15-13</td>
</tr>
<tr>
<td>SYSPLEX</td>
<td>Information that IBM might request for problem determination.</td>
<td>15-20 15-24</td>
</tr>
<tr>
<td>TDCM</td>
<td>Status of DIDOCS pageable display control modules (TDCM).</td>
<td>15-25</td>
</tr>
<tr>
<td>UCM</td>
<td>Summary of the unit control module (UCM) base, prefix, and extension.</td>
<td>15-27</td>
</tr>
<tr>
<td>UCMEN</td>
<td>Status of MCS or SMCS consoles.</td>
<td>15-32</td>
</tr>
<tr>
<td>UPDATES</td>
<td>Information that IBM might request for problem determination.</td>
<td>15-38</td>
</tr>
</tbody>
</table>

The following pages show sample output for each keyword of the COMCHECK subcommand and describes the information contained in each report.

COMCHECK DATABLKS subcommand output

The COMCHECK DATABLKS subcommand displays information that IBM might request for problem determination.

COMCHECK LISTNAMES subcommand output

The COMCHECK LISTNAMES subcommand lists the console names defined to a specified 1- to 8-character keyname.
The following is an example of a COMCHECK LISTNAMES report:

<table>
<thead>
<tr>
<th>Communication task analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Console names defined to key MCS</td>
</tr>
<tr>
<td>EXTMC51</td>
</tr>
<tr>
<td>EXTMC52</td>
</tr>
</tbody>
</table>

The following field appears in the report:

**Console names defined to key** keyname

A list of console names defined to a specified keyname.

**COMCHECK MCSINFO subcommand output**

The COMCHECK MCSINFO subcommand displays the following:

- Number of queued messages
- Limit of write-to-operator messages (MLIM)
- Number of unprocessed messages by console
- Outstanding write-to-operator with reply (WTOR) messages

The following is an example of a COMCHECK MCSINFO report:

<table>
<thead>
<tr>
<th>Communication task console analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEA31001I Number of messages queued (UCMWQR) is 3. Limit (UCMWQLM) is 1,500</td>
</tr>
<tr>
<td>IEA31002I 3 major WQEs chained from UCM</td>
</tr>
<tr>
<td>IEA31003I UCMSTS status flag byte is 'X'60' for following console</td>
</tr>
<tr>
<td>IEA31004I 0 WQEs found for console C3E0SY1</td>
</tr>
<tr>
<td>IEA31005I Operator reply 01 was outstanding</td>
</tr>
<tr>
<td>17.57.33 SY52B JES2 +01 $HASPA26 SPECIFY OPTIONS - JES2 SP 2.2.0</td>
</tr>
<tr>
<td>IEA31013I Configuration mode currently in: DISTRIBUTED</td>
</tr>
<tr>
<td>IEA31014I Migration information - Current Migration Instance: 3</td>
</tr>
<tr>
<td>IEA31015I Migration information - Start Time: 15:13:18</td>
</tr>
<tr>
<td>IEA31016I Migration information - End Time: 15:13:19</td>
</tr>
<tr>
<td>IEA31017I Migration information - End Date: 2006314</td>
</tr>
</tbody>
</table>

The following fields appear in the report:

**Message IEA31001I**

The number of messages that are queued and the maximum number of messages that can be queued.

**Message IEA31002I**

The number of write-to-operator queue elements (WQE) that are chained from the unit control module (UCM).

**Message IEA31003I**

The unit control module entry (UCME) has a nonzero UCMSTS status byte value. For a description of the status byte value, see z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/).

**Message IEA31004I**

The number of WQEs for this console.

**Message IEA31005I**

Indicates that an operator reply (ORE) was outstanding.

**Message IEA31013I**

Indicates the console services mode of the system when the dump was taken.
Communications task

Message IEA31014I
Indicates the number of times the system has been migrated.

Message IEA31015I
Indicates the start time of the last migration.

Message IEA31016I
Indicates the end time of the last migration.

Message IEA31017I
Indicates the date of the last successful migration.

Message IEA31018I
Indicates that the sysplex is in a migration.

The remaining messages in the report are variable. See z/OS MVS Dump Output Messages for the appropriate replies to these messages.

COMCHECK NAME or ID subcommand output

The COMCHECK NAME and COMCHECK ID subcommands give information about an MCS, SMCS, subsystem console, or extended MCS console at the time of the dump. Use COMCHECK NAME when you specify the console’s 2- to 8-character symbolic name. Use COMCHECK ID when you specify the console’s 4-byte identifier assigned for the system. For information specific to a console, use the COMCHECK UCME subcommand.

The following is an example of a COMCHECK NAME( nnmnnn ) or COMCHECK ID( iiiiiii ) report:

<table>
<thead>
<tr>
<th>COMMUNICATION TASK ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTENDED CONSOLE INFORMATION</td>
</tr>
</tbody>
</table>

OPERATOR DATA
NAME: CONSI01
CONSOLE ID: 02000001
TERMINAL: LOCAL320
KEY: NONE
SYSTEM NAME: SYSA
NUMBER OF MESSAGES QUEUED: N/A

OPERATOR ATTRIBUTES
STATUS: ACTIVE
AUTHORITY: INFO
MESSAGE FORMAT: MESSAGE
MESSAGE TYPE: NONE
MESSAGE LEVEL: WTOR
IMMEDIATE ACTION
CRITICAL EVENTUAL ACTION
EVENTUAL ACTION
INFORMATIONAL
BROADCAST
QUEUING FLAG: NONE
DOM FLAG: NORMAL
CMDSYS: SYSCONS1
RECEIVES AUTO MESSAGES: NO
RECEIVES HARDCOPY MESSAGES: NO
RECEIVES INTIDS MESSAGES: YES
RECEIVES UNKNIDS MESSAGES: YES
ALERT PERCENTAGE: 100
RESUME PERCENTAGE: 70
CONSOLE STATUS AREA ALET: 0102001B
CONSOLE STATUS AREA ADDRESS: 000014A0
ROUTING CODES: NONE
MSCOPE LIST: *ALL
In this example, CONSID1 is the name and X'02000001' is the console identifier of the extended MCS console. Either COMCHECK NAME(CONSID1) or COMCHECK ID(02000001) is the correct syntax used to obtain this report.

The following fields appear in the report:

**NAME**
The name of the specific console. (In the example, this is the extended MCS console name.) If no name was specified, the console identifier appears in this field.

**CONSOLE ID**
A 4-byte identifier the system assigns to the console.

**TERMINAL**
The terminal name associated with this console.

**KEY**
The 1- to 8-character keyname that identifies the messages that the system requests.

**SYSTEM NAME**
The name of the system to which this console is defined.

**NUMBER OF MESSAGES QUEUED**
The number of messages retained for later viewing.

**STATUS**
One of the following states:
- **ACTIVE** The console is currently active.
- **INACTIVE** The console is currently inactive.
- **DEFINED** The device is currently defined. This status applies to subsystem consoles only.

**AUTHORITY**
The command group assigned to the console, as follows:
- **INFO** Informational commands.
- **SYS** System control commands.
- **I/O** Input/output (I/O) control commands.
- **CONS** Console control commands.
- **MASTER** Master authority commands.
- **ALL** All commands.

**MESSAGE FORMAT**
The format of the message when it is displayed on this console, as follows:
- **TIMESTAMP** A time stamp, in the format hh.mm.ss.
- **JOBNAME/JOBID** The name or ID of the job issuing the message.
- **SYSTYPE** The name of the system issuing the message.
- **NOSYSJB** All information except the system and job names.
- **MESSAGE** Only the message text is displayed.
MESSAGE TYPE
Indicates the type of information that is continually displayed at this console, as follows:

JOBNAMENAME The job name or job identifier when the job starts and ends.
STATUS Displays data set names and volume serial numbers when they are free; with dispositions of keep, catalog, and uncatalog.
SESSION Displays the user identifier for each time sharing terminal when a Time Sharing Option Extensions (TSO/E) session starts and ends.
TIME Displays the time along with the job name and session; the time is displayed in hh:mm:ss format.
NONE Displays none of the above information.

MESSAGE LEVEL
Lists the message level options specified in the CONSOLxx parmlib member or in the CONTROL command, as follows:

WTOR Console displays write to operator (WTOR) messages.
IMMEDIATE ACTION Console displays immediate action messages.
CRITICAL EVENTUAL ACTION Console displays critical eventual action messages.
EVENTUAL ACTION Console displays eventual action messages.
INFORMATIONAL Console displays informational messages.
BROADCAST Console displays broadcast messages.
NONE Console displays only messages specifically directed to the console and command responses.

QUEUING FLAG
The type of message delivery specified at console initialization, which is one of the following values:

FIFO Messages are delivered from the message data space on a first in, first out basis.
SEARCH Messages are delivered from the message data space based on search criteria specified in the MCSOPER macro.
NONE No messages are placed into, or delivered from, the message data space.

DOM FLAG
The delete operator message (DOM) disposition of this console, which is one of the following values:

NORMAL The console receives DOMs only for messages that have been received and placed in its message data space.
ALL The console receives all DOMs in the system.
NONE The console receives no DOMs.

CMDSYS The name of the system that runs the commands entered from this console.
Communications task

RECEIVES AUTO MESSAGES
Indicates whether this console receives automatable messages. The response is either YES or NO.

RECEIVES HARDCOPY MESSAGES
Indicates whether this console receives hardcopy messages. The response is either YES or NO.

RECEIVES INTIDS MESSAGES
Indicates whether this console receives INTIDS messages. The response is either YES or NO.

RECEIVES UNKNIDS MESSAGES
Indicates whether this console receives UNKNIDS messages. The response is either YES or NO.

ALERT PERCENTAGE
The percentage of the message buffer that, when full, indicates a buffer shortage.

RESUME PERCENTAGE
The percentage of the message buffer that, when full, allows message processing to resume after a buffer shortage.

CONSOLE STATUS AREA ALET
The console status area access list entry table. It is used with the console status area address to look at the console status area's data structure.

CONSOLE STATUS AREA ADDRESS
The address of the console status area for this console.

ROUTING CODES
The set of routing codes for messages displayed at this console.

MSCOPE LIST
A list of the names of systems from which this console is receiving messages.

COMCHECK NAMELIST subcommand output
The COMCHECK NAMELIST subcommand gives a list of all console names defined within a Sysplex at the time of the dump. For specific information about a console name listed, use the COMCHECK NAME subcommand.

The following output is an example of the COMCHECK NAMELIST report:

<table>
<thead>
<tr>
<th>CONSOLE TASK ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>CONS01</td>
</tr>
<tr>
<td>CONS02</td>
</tr>
<tr>
<td>CONS03</td>
</tr>
<tr>
<td>CONS04</td>
</tr>
<tr>
<td>EMCS101</td>
</tr>
<tr>
<td>EMCS102</td>
</tr>
<tr>
<td>MCSIY1</td>
</tr>
<tr>
<td>MCSIY2</td>
</tr>
<tr>
<td>SMCSI2</td>
</tr>
<tr>
<td>SS1</td>
</tr>
</tbody>
</table>
In this example, CONS01 is the name of an active MCS console on SY1, and CONS03 is the name of an inactive MCS console.

The following fields appear in the report:

**CONSOLE NAME**
A 2- through 8-character name either defined in the CONSOLxx parmlib member during system initialization, or activated during normal processing. This column lists all console names throughout the sysplex.

**CONSOLE TYPE**
Indicates the type of console. Possible values include:
- **MCS** Indicates that this is an MCS console.
- **EMCS** Indicates that this is an extended MCS console.
- **SMCS** Indicates that this is an SMCS console.

**SUBSYSTEM**
Indicates that this is a subsystem console.

**SYSCONS**
Indicates that this is a system console.

**ACTIVE ON SYSTEM**
The name of the system on which the console is active when the dump is taken. This column is blank if the console name is not active.

**COMCHECK RDCM subcommand output**
The COMCHECK RDCM subcommand formats device independent display operator console support (DIDOCS) resident display control modules (RDCMs).

To obtain the status for a RDCM, you must first find the address of its associated control block. Use COMCHECK RDCM(LIST) to find the addresses of all RDCMs in the dump. Choose an address from the list and use COMCHECK RDCM(address) to format the RDCM at that address.

If you want to view the status of all RDCMs in the dump, use COMCHECK RDCM(ALL).

The following is an example of a COMCHECK RDCM(address) report:

<table>
<thead>
<tr>
<th>COMMUNICATION TASK ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDCM INFORMATION</td>
</tr>
<tr>
<td>CONSOLE ID: 0000000E</td>
</tr>
<tr>
<td>RDCM ADDRESS: 00580C18</td>
</tr>
<tr>
<td>CONSOLE NAME: CON0A0</td>
</tr>
<tr>
<td>CONSOLE TYPE: MCS</td>
</tr>
<tr>
<td>PFK KEYS ARE OPERATIONAL: YES</td>
</tr>
<tr>
<td>PFK BUFFER ADDRESS: 005823E8</td>
</tr>
<tr>
<td>LENGTH OF PFK BUFFER: 3096</td>
</tr>
<tr>
<td>PREVIOUS CONSOLE USE WAS: FULL I/O CAPABILITY</td>
</tr>
<tr>
<td>STATUS DISPLAY CONSOLE: YES</td>
</tr>
<tr>
<td>NUMBER OF LINES IN MESSAGE AREA: 28</td>
</tr>
</tbody>
</table>

In this example, X'00580C18' is the address of the RDCM. COMCHECK RDCM(00580C18) is the correct syntax used to obtain this report.
The following fields appear in the report:

**CONSOLE ID**
A 4-byte identifier that the system assigns to the console at system initialization.

**RDCM ADDRESS**
The address of the resident display control module (RDCM) that is being formatted.

**CONSOLE NAME**
A 2- through 8-character name defined in the CONSOLxx parmlib member at system initialization. If no name was specified, the console identifier appears in this field.

**CONSOLE TYPE**
Indicates the type of console. Possible values include:
- **MCS** Indicates that this is an MCS console.
- **SMCS** Indicates that this is an SMCS console.

**PFK KEYS ARE OPERATIONAL**
One of the following:
- **YES** PF keys are operational for this console. They are defined in the program function key (PFK) tables in the PFKTABxx parmlib member.
- **NO** PF keys are not operational for this console. The PF keys are not operational when a console is closed, or when a PFK table is not defined and the system cannot obtain the default PFK table.

**PFK BUFFER ADDRESS**
The address of the buffer containing the PFK table.

**LENGTH OF PFK BUFFER**
The length of the buffer containing the PFK table.

**PREVIOUS CONSOLE USE WAS**
The console operating mode in effect prior to a change in operating mode. It is one of the following:
- **FULL I/O CAPABILITY** The console can receive input, display output, accept commands, and receive status displays and messages.
- **STATUS DISPLAY ONLY** The console cannot accept commands; the system uses the screen to receive status displays.
- **MESSAGE STREAM ONLY** The console cannot accept commands; the system uses the screen to present general messages.

If no change in operating mode occurred, this field contains the mode specified at initialization.

**STATUS DISPLAY CONSOLE:**
One of the following:
- **YES** The console has status display mode capability. The system can use the screen to receive status displays.
- **NO** The console cannot be put into status display mode.
NUMBER OF LINES IN MESSAGE AREA
The size of the message area for this console.

COMCHECK SBC subcommand output
The COMCHECK SBC option formats information from the supplemental branch entry console (SBC) control block.

The SBC contains information about the delayed issue queue. The queue contains messages and delete operator message (DOM) requests issued by system initialization and branch-entry WTO/WTOR/DOM processing in programs that run when a Supervisor Call (SVC) instruction cannot be issued or require the request to be handled synchronously. The system issues requests on the delayed issue queue as SVC requests.

The following is an example of a COMCHECK SBC report:

<table>
<thead>
<tr>
<th>Communication Task Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch-Entry and NIP WTO/WTOR/DOM Information</td>
</tr>
<tr>
<td>Delayed issue queue broken:</td>
</tr>
<tr>
<td>Delayed issue queue full:</td>
</tr>
<tr>
<td>Delayed issue task is processing delayed issue queue:</td>
</tr>
<tr>
<td>Delayed issue SRB can be scheduled:</td>
</tr>
<tr>
<td>NIP WTO/WTOR/DOM processing active:</td>
</tr>
<tr>
<td>Number of action/WTOR messages not logged:</td>
</tr>
<tr>
<td>Total number of messages not logged:</td>
</tr>
<tr>
<td>Total number of synchronous messages not displayed:</td>
</tr>
<tr>
<td>Number of NIP messages on the delayed issue queue:</td>
</tr>
<tr>
<td>Total number of messages on the delayed issue queue:</td>
</tr>
<tr>
<td>Number of NIP DOM requests on the delayed issue queue:</td>
</tr>
<tr>
<td>Total number of DOM requests on the delayed issue queue:</td>
</tr>
<tr>
<td>Informational messages suppressed during NIP:</td>
</tr>
<tr>
<td>Number of informational messages suppressed during NIP:</td>
</tr>
<tr>
<td>Total number of BWJE requests on the delayed issue queue:</td>
</tr>
</tbody>
</table>

The following field appears in the report:

**DELAYED ISSUE QUEUE BROKEN**
One of the following:

YES    The delayed issue queue is valid.

NO     The delayed issue queue is not valid.

**DELAYED ISSUE QUEUE FULL**
One of the following:

YES    The delayed issue queue is full. The delayed issue task can free up space on the queue during normal processing, or a different program can obtain space for additional entries. If the condition persists, the queue may not be valid.

NO     The delayed issue queue is not full.

**DELAYED ISSUE TASK IS PROCESSING DELAYED ISSUE QUEUE**
One of the following:

YES    The delayed issue task is actively processing entries on the delayed issue queue.

NO     The delayed issue task is not actively processing entries on the delayed issue queue.
Communications task

**DELAYED ISSUE SRB CAN BE SCHEDULED**
One of the following:

- **YES**  
  The service request block (SRB) routine for the delayed issue task is initialized and can be scheduled.

- **NO**  
  The routine has not been initialized or has abended.

**NIP WTO/WTOR/DOM PROCESSING ACTIVE**
One of the following:

- **YES**  
  The system initialization service that processes WTO, WTOR and DOM requests is active.

- **NO**  
  The system initialization WTO/WTOR/DOM service is not active. One of the following occurred:
    - The dump was taken early in system initialization, before the service was initialized.
    - The dump was taken after COMMTASK started handling WTO, WTOR, and DOM requests.

**NUMBER OF ACTION/WTOR MESSAGES NOT LOGGED**
The number of:
- WTO messages requiring operator action
- WTOR messages that could not be logged on SYSLOG, because the system was unable to add the message to the delayed issue queue

**TOTAL NUMBER OF MESSAGES NOT LOGGED**
The total number of WTO and WTOR messages not logged on SYSLOG. The system was unable to log the messages because they could not be added to the delayed issue queue.

**TOTAL NUMBER OF SYNCHRONOUS MESSAGES NOT DISPLAYED**
The total number of synchronous WTO and WTOR messages not displayed. They were not displayed because WTO/WTOR processing was unable to display them on a console with master authority.

**NUMBER OF NIP MESSAGES ON THE DELAYED ISSUE QUEUE**
The number of messages on the delayed issue queue that were issued during system initialization.

**TOTAL NUMBER OF MESSAGES ON THE DELAYED ISSUE QUEUE**
The total number of messages on the delayed issue queue.

**NUMBER OF NIP DOM REQUESTS ON THE DELAYED ISSUE QUEUE**
The number of DOM requests on the delayed issue queue that were made during system initialization.

**TOTAL NUMBER OF DOM REQUESTS ON THE DELAYED ISSUE QUEUE**
The total number of DOM requests on the delayed issue queue.

**INFORMATIONAL MESSAGES SUPPRESSED DURING NIP**
One of the following:

- **YES**  
  Informational messages are suppressed during system initialization. The system sends the messages to SYSLOG.

- **NO**  
  Informational messages are not suppressed during system initialization. The system displays the messages on the console.
NUMBER OF INFORMATIONAL MESSAGES SUPPRESSED DURING NIP
The total number of informational messages suppressed during system initialization. If informational messages are not suppressed during NIP processing, this field contains zero.

TOTAL NUMBER OF BWJE REQUESTS ON THE DELAYED ISSUE QUEUE
The number of job-end requests on the delayed issue queue.

COMCHECK SYSCONS subcommand output
The COMCHECK SYSCONS subcommand gives information on the status of the system console.

The following is an example of a report generated when the COMCHECK SYSCONS subcommand is entered:
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME</td>
<td>SYSCONS1</td>
</tr>
<tr>
<td>CONSOLE ID</td>
<td>01000001</td>
</tr>
<tr>
<td>TERMINAL</td>
<td>SY1</td>
</tr>
<tr>
<td>KEY</td>
<td>SYSCONS</td>
</tr>
<tr>
<td>SYSTEM NAME</td>
<td>SY1</td>
</tr>
<tr>
<td>NUMBER OF MESSAGES QUEUED</td>
<td>0</td>
</tr>
<tr>
<td>STATUS</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>AUTHORITY</td>
<td>MASTER</td>
</tr>
<tr>
<td>MESSAGE FORMAT</td>
<td>MESSAGE</td>
</tr>
<tr>
<td>MESSAGE TYPE</td>
<td>NONE</td>
</tr>
<tr>
<td>MESSAGE LEVEL</td>
<td>WTOR</td>
</tr>
<tr>
<td>IMMEDIATE ACTION</td>
<td></td>
</tr>
<tr>
<td>CRITICAL EVENTUAL ACTION</td>
<td></td>
</tr>
<tr>
<td>EVENTUAL ACTION</td>
<td></td>
</tr>
<tr>
<td>INFORMATIONAL</td>
<td></td>
</tr>
<tr>
<td>QUEUING FLAG</td>
<td>FIFO</td>
</tr>
<tr>
<td>DOM FLAG</td>
<td>NORMAL</td>
</tr>
<tr>
<td>CMDSYS</td>
<td>SY1</td>
</tr>
<tr>
<td>PROBLEM DETERMINATION MODE</td>
<td>YES</td>
</tr>
<tr>
<td>RECEIVES AUTO MESSAGES</td>
<td>NO</td>
</tr>
<tr>
<td>RECEIVES HARDCOPY MESSAGES</td>
<td>NO</td>
</tr>
<tr>
<td>RECEIVES UNKNIDS MESSAGES</td>
<td>NO</td>
</tr>
<tr>
<td>ALERT PERCENTAGE</td>
<td>80</td>
</tr>
<tr>
<td>RESUME PERCENTAGE</td>
<td>30</td>
</tr>
<tr>
<td>CONSOLE STATUS AREA ALET</td>
<td>01FF0000</td>
</tr>
<tr>
<td>CONSOLE STATUS AREA ADDRESS</td>
<td>00002000</td>
</tr>
<tr>
<td>ROUTING CODES</td>
<td>NONE</td>
</tr>
<tr>
<td>MSCOE LIST</td>
<td>*ALL</td>
</tr>
<tr>
<td>CONSOLE NAME</td>
<td>SYSCONS1</td>
</tr>
<tr>
<td>CONSOLE ID</td>
<td>01000001</td>
</tr>
<tr>
<td>SYSTEM CONSOLE ACTIVE</td>
<td>YES</td>
</tr>
<tr>
<td>PROBLEM DETERMINATION MODE CHANGE IN PROGRESS</td>
<td>NO</td>
</tr>
<tr>
<td>SYSTEM CONSOLE RECEIVING ONLY SYNCHRONOUS MESSAGES</td>
<td>YES</td>
</tr>
<tr>
<td>ABEND OCCURRED IN SYSTEM CONSOLE DOM LIST</td>
<td>NO</td>
</tr>
<tr>
<td>SYSTEM CONSOLE DOM LIST VALID</td>
<td>YES</td>
</tr>
<tr>
<td>NUMBER OF MESSAGES HELD ON SYSTEM CONSOLE DOM LIST</td>
<td>0</td>
</tr>
<tr>
<td>OPERATOR INPUT LISTENER EXIT TOKEN</td>
<td>02FF0888</td>
</tr>
<tr>
<td>PRIORITY OPERATOR INPUT LISTENER EXIT TOKEN</td>
<td>02FF0850</td>
</tr>
<tr>
<td>MACHINE CHECK LISTENER EXIT TOKEN</td>
<td>02FF0608</td>
</tr>
<tr>
<td>STATE CHANGE OUTPUT LISTENER EXIT TOKEN</td>
<td>02FF06A0</td>
</tr>
<tr>
<td>OUTPUT TASK ECB</td>
<td>809FF910</td>
</tr>
<tr>
<td>OPERATOR INPUT TASK ECB</td>
<td>809FF910</td>
</tr>
<tr>
<td>PRIORITY OPERATOR INPUT TASK ECB</td>
<td>809FF910</td>
</tr>
<tr>
<td>ALERT ECB</td>
<td>809FA510</td>
</tr>
<tr>
<td>MESSAGE ECB</td>
<td>809FA510</td>
</tr>
<tr>
<td>20 MINUTE ECB</td>
<td>809FA510</td>
</tr>
<tr>
<td>2 MINUTE ECB</td>
<td>809FA510</td>
</tr>
<tr>
<td>STATE CHANGE ECB</td>
<td>809FA510</td>
</tr>
</tbody>
</table>

The following fields appear in the report:

**NAME**
The System console name defined in the CONSOLxx parmlib member at system initialization.
CONSOLE ID
A 4-byte identifier that the system assigns to the console at system initialization.

TERMINAL
The terminal name associated with this console.

KEY
The 1- to 8-character keyname that identifies the message that the system requests.

SYSTEM NAME
The name of the system to which this console is defined.

NUMBER OF MESSAGES QUEUED
The number of messages retained for later viewing.

STATUS
One of the following:

ACTIVE
The console is currently active.

DEFINED
The device is currently inactive.

AUTHORITY
The command group assigned to the console, as follows:

INFO
Informational commands.

SYS
System control commands.

I/O
Input/output (I/O) control commands.

CONS
Console control commands.

MASTER
Master authority commands.

ALL
All commands.

MESSAGE FORMAT
The format of the message when it is displayed on this console, as follows:

TIMESTAMP
A time stamp, in the format hh:mm:ss.

JOBNAME/JOBID
The name or ID of the job issuing the message.

SYSNAME
The name of the system issuing the message.

NOSYSJB
All information except the system and job names.

MESSAGE
Only the message text is displayed.

MESSAGE TYPE
Indicates the type of information that is continually displayed at this console, as follows:

JOBNAME
The job name or job identifier when the job starts and ends.
Communications task

STATUS
Displays data set names and volume serial numbers when they are free; with dispositions of keep, catalog, and uncatalog.

SESSION
Displays the user identifier for each time sharing terminal when a Time Sharing Option Extensions (TSO/E) session starts and ends.

TIME
Displays the time along with the job name and session; the time is displayed in the hh:mm:ss format.

NONE
Displays none of the above information.

MESSAGE LEVEL
Lists the message level options specified in the CONSOLxx parmlib member or in the CONTROL command, as follows:

WTOR
Console displays write to operator (WTOR) messages.

IMMEDIATE ACTION
Console displays immediate action messages.

CRITICAL EVENTUAL ACTION
Console displays critical eventual action messages.

EVENTUAL ACTION
Console displays eventual action messages.

INFORMATIONAL
Console displays informational messages.

BROADCAST
Console displays broadcast messages.

NONE
Console displays only messages specifically directed to the console and command responses.

QUEUING FLAG
The type of message delivery specified at console initialization, which is one of the following:

FIFO Messages are delivered from the message data space on a first in, first out basis.

SEARCH Messages are delivered from the message data space based on search criteria specified in the MCSOPER macro.

NONE No messages are placed into, or delivered from, the message data space.

DOM FLAG
The delete operator message (DOM) disposition of this console, which is one of the following:

NORMAL The console receives DOMs only for messages that have been received and placed in its message data space.

ALL The console receives all DOMs in the system.
Communications task

NONE
The console receives no DOMs.

CMDSYS
The name of the system that runs the commands entered from this console.

PROBLEM DETERMINATION MODE
One of the following values:

YES The system console is in problem determination mode and can issue
MVS system commands and receive messages to assist with
diagnostics and problem determination. The operator can issue VARY
CN,DEACTIVATE to end problem determination mode for the system
console.

NO The system console is not in problem determination mode. The
operator can issue VARY CN,ACTIVATE to activate problem
determination mode for the system console.

RECEIVES AUTO MESSAGES
Indicates whether this console receives automatable messages. The response is
either YES or NO.

RECEIVES HARDCOPY MESSAGES
Indicates whether this console receives hardcopy messages. The response is
either YES or NO.

RECEIVES INTIDS MESSAGES
Indicates whether this console receives INTIDS messages. The response is
either YES or NO.

RECEIVES UNKNIDS MESSAGES
Indicate whether this console receives UNKNIDS messages. The response is
either YES or NO.

ALERT PERCENTAGE
The percentage of the message buffer that, when full, indicates a buffer
shortage.

RESUME PERCENTAGE
The percentage of the message buffer that, when full, allows message
processing to resume after a buffer shortage.

CONSOLE STATUS AREA ALET
The console status area access list entry table. It is used with the console status
area address to look at the data structure of the console status area.

CONSOLE STATUS AREA ADDRESS
The address of the console status area for this console.

ROUTING CODES
The set of routing codes for messages displayed at this console.

MSCOPE LIST
A list of the names of systems from which this console is receiving messages.

CONSOLE NAME
A 2- to 8- character name for the system console defined in the CONSOLxx
parmlib member during system initialization.

If no name was specified at initialization, this field contains the name of the
system on which the console is located. If the specified name was a duplicate
of an existing console name, this field contains SYSCNxxx, where xxx is a
unique identifier assigned by the system.
Communications task

**CONSOLE ID**
A 4-byte identifier that the system assigns to the system console at system initialization.

**SYSTEM CONSOLE ACTIVE**
One of the following values:

- **YES**  The system console is active and can be used as an extended MCS console.
- **NO**   The system console is not active. This condition is normal if the communications task is not yet initialized. If the communications task is initialized, a problem occurred while activating the system console. In this case, the system issues message IEA128I and the system console cannot be used as an extended MCS console.

**PROBLEM DETERMINATION MODE**
One of the following values:

- **YES**  The system console is in problem determination mode and can issue MVS system commands and receive messages to assist with diagnostics and problem determination. The operator can issue VARY CN,DEACTIVATE to end problem determination mode for the system console.
- **NO**   The system console is not in problem determination mode. The operator can issue VARY CN,ACTIVATE to activate problem determination mode for the system console.

**PROBLEM DETERMINATION MODE CHANGE IN PROGRESS**
One of the following:

- **YES**  The system detected that a VARY CN,ACTIVATE command to activate problem determination mode or a VARY CN,DEACTIVATE command to end problem determination mode has been issued for the system console, but the system is already processing a previous VARY CN,ACTIVATE or VARY CN,DEACTIVATE command. The system ignores the command.
- **NO**   The system is not currently processing a VARY CN,ACTIVATE or VARY CN,DEACTIVATE command for the system console.

**SYSTEM CONSOLE RECEIVING ONLY SYNCHRONOUS MESSAGES**
This field indicates whether the system console is receiving only synchronous messages or both synchronous and non-synchronous messages.

- **YES**  The system console is receiving only synchronous messages because the system console non-synchronous message processing function is not available.
- **NO**   The system console is receiving both synchronous and non-synchronous messages.

**SYSTEM CONSOLE DOM LIST PROCESSING ABENDED**
This field indicates whether delete operator message (DOM) list processing for the system console has abended. The DOM list contains elements representing messages held on the system console.

- **YES**  DOM requests are not being processed for the system console because the DOM list for the console is not valid. The system tried to repair the list. The next field in this report, SYSTEM CONSOLE DOM LIST VALID, contains NO if the repair worked (and therefore the list is valid) and YES if it did not work.
Communications task

NO  DOM requests are being processed for the system console.

SYSTEM CONSOLE DOM LIST VALID
This field indicates whether the DOM list for the system console is valid. The DOM list contains elements representing messages held on the system console.

YES  The system console DOM list is not valid. The system tried once to repair the list, but was not successful. No more DOM requests will be added to the list until the system can delete the existing list and create a new one.

NO  The system console DOM list is valid.

NUMBER OF MESSAGES HELD ON THE SYSTEM CONSOLE DOM LIST
The number of delete requests currently on the DOM list for the system console.

MACHINE CHECK LISTENER EXIT TOKEN
This field displays the address of the token for the machine check listener exit routine. This exit routine initiates processing if a machine check occurs on the system console. The token contains the address of the event notification listener element (ENFLS) that contains information about this listener exit routine.

If the address is zero, the system cannot process machine checks for the system console.

STATE CHANGE LISTENER EXIT TOKEN
This field displays the address of the token for the state change listener exit routine. This exit routine initiates processing if the state of the system console changes from available to unavailable or vice versa. The token contains the address of the event notification listener element (ENFLS) that contains information about this listener exit routine.

If the address is zero, the system cannot process state changes for the system console.

OUTPUT TASK ECB
The system posts the output task event control block (ECB) when a non-synchronous message is ready to be displayed on the system console.

INPUT TASK ECB
The system posts the input task ECB to retry processing if the unsolicited input listener exit routine fails.

ALERT ECB
The system posts the alert ECB if an error occurs in the system console queue. The system also issues message IEA125I describing the error.

MESSAGE ECB
The system posts the message ECB when a message is ready to be displayed on the system console.

20 MINUTE ECB
The system sets a 20 minute timer if the system console becomes unavailable due to a state change or machine check. If the system console becomes available within 20 minutes, the system cancels the timer. Otherwise, the system posts the 20 minute ECB so that all messages can be deleted from the system console queue.

2 MINUTE
The system sets a two minute timer if a message cannot be sent to the system console.
Communications task

console because the processor controller element (PCE) hardware buffer is full. After two minutes, the system posts the two minute ECB so that the message can be sent again.

STATE CHANGE ECB
The system posts the state change ECB if the state of the system console changes from available to unavailable or vice versa or if a machine check occurs.

This report goes on to display information that is normally displayed for an extended MCS console. “COMCHECK NAME or ID subcommand output” on page 15-5 describes these fields.

COMCHECK SYSPLEX subcommand output
The COMCHECK SYSPLEX subcommand displays the number of sysplex members and information that IBM might request for problem determination.

The following is an example of a COMCHECK SYSPLEX report:

COMMUNICATION TASK ANALYSIS
SYSPLEX MEMBER TABLE INFORMATION

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF CONTROL MEMBERS:</td>
<td>5</td>
</tr>
<tr>
<td>MAXIMUM NUMBER OF SYSPLEX MEMBER:</td>
<td>32</td>
</tr>
<tr>
<td>CURRENT NUMBER OF SYSPLEX MEMBERS:</td>
<td>2</td>
</tr>
<tr>
<td>UPDATE TASK QUEUE HEAD:</td>
<td>00000000</td>
</tr>
<tr>
<td>UPDATE TASK QUEUE TAIL:</td>
<td>00000000</td>
</tr>
<tr>
<td>UPDATE SUBTASK QUEUE HEAD:</td>
<td>7F418834</td>
</tr>
<tr>
<td>UPDATE SUBTASK QUEUE TAIL:</td>
<td>7F417F34</td>
</tr>
<tr>
<td>SEND TASK QUEUE HEAD:</td>
<td>7F511E40</td>
</tr>
<tr>
<td>SEND TASK QUEUE TAIL:</td>
<td>7F511E40</td>
</tr>
<tr>
<td>RECEIVE TASK QUEUE HEAD STREAM 1:</td>
<td>00000000</td>
</tr>
<tr>
<td>RECEIVE TASK QUEUE TAIL STREAM 1:</td>
<td>00000000</td>
</tr>
<tr>
<td>RECEIVE TASK QUEUE HEAD STREAM 15:</td>
<td>00000000</td>
</tr>
<tr>
<td>RECEIVE TASK QUEUE TAIL STREAM 15:</td>
<td>00000000</td>
</tr>
<tr>
<td>RETAINED MESSAGE UPDATE QUEUE HEAD:</td>
<td>00000000</td>
</tr>
<tr>
<td>RETAINED MESSAGE UPDATE QUEUE TAIL:</td>
<td>00000000</td>
</tr>
<tr>
<td>ADDRESS OF FIRST MESSAGE IN DOM QUEUE:</td>
<td>00000000</td>
</tr>
<tr>
<td>ADDRESS OF LAST MESSAGE IN DOM QUEUE:</td>
<td>00000000</td>
</tr>
<tr>
<td>ADDRESS OF FIRST MESSAGE IN BUILD QUEUE:</td>
<td>00000000</td>
</tr>
<tr>
<td>ADDRESS OF LAST MESSAGE IN BUILD QUEUE:</td>
<td>00000000</td>
</tr>
</tbody>
</table>

MESSAGE TRIMMING STATISTICS

SINGLE-LINE MESSAGES RECEIVED: 68,683
SINGLE-LINE MESSAGE SCANS: 401

SINGLE-LINE RECEIVE SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------------------------------
1 10/27/2003 15:49:56.643271
1 10/27/2003 15:49:59.890812
2 10/27/2003 16:00:29.948938
1 10/27/2003 16:03:47.594757
1 10/27/2003 16:03:47.819875
1 10/27/2003 16:03:47.823706
1 10/27/2003 16:03:48.888812

10 10/27/2003 16:03:49.032849
1 10/27/2003 16:03:49.040494
Communications task

<table>
<thead>
<tr>
<th>Count</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10/27/2003</td>
<td>16:03:49.742174</td>
</tr>
<tr>
<td>1</td>
<td>10/27/2003</td>
<td>16:03:49.872096</td>
</tr>
<tr>
<td>1</td>
<td>10/27/2003</td>
<td>16:03:49.873716</td>
</tr>
<tr>
<td>1</td>
<td>10/27/2003</td>
<td>16:17:11.905856</td>
</tr>
<tr>
<td>1</td>
<td>10/27/2003</td>
<td>16:46:08.182479</td>
</tr>
</tbody>
</table>

MAJOR-LINE MESSAGES RECEIVED: 2,607
MAJOR-LINE MESSAGE SCANS: 24

MAJOR-LINE RECEIVE SCAN TRACE
Number of Msgs | Local Date and Time
--------------------------------
1 10/27/2003 15:46:56.411084
1 10/27/2003 15:46:56.494370
1 10/27/2003 15:46:58.837500
1 10/27/2003 15:49:56.646267
2 10/27/2003 15:49:56.650895
2 10/27/2003 15:49:56.651743
2 10/27/2003 15:49:56.653755
8 10/27/2003 15:49:56.656046
5 10/27/2003 15:49:56.660256
2 10/27/2003 15:49:56.669761
2 10/27/2003 16:03:47.571117
2 10/27/2003 16:03:48.880373
2 10/27/2003 16:03:49.720921

MINOR-LINE MESSAGES RECEIVED: 41,052
MINOR-LINE MESSAGE SCANS: 25

MINOR-LINE RECEIVE SCAN TRACE
Number of Msgs | Local Date and Time
--------------------------------
8 10/27/2003 16:03:47.594669
2 10/27/2003 16:03:47.594758
2 10/27/2003 16:03:48.880374
2 10/27/2003 16:03:48.884505
4 10/27/2003 16:03:48.885604
2 10/27/2003 16:03:48.885995
2 10/27/2003 16:03:48.886808
2 10/27/2003 16:03:48.886866
2 10/27/2003 16:03:49.728922
2 10/27/2003 16:03:49.730191
2 10/27/2003 16:03:49.731337
2 10/27/2003 16:03:49.731396
1 10/27/2003 16:03:49.731845
2 10/27/2003 16:03:49.737957
1 10/27/2003 16:03:49.739016
2 10/27/2003 16:03:49.740438

SINGLE-LINE MSGCHAIN TRIMS: 36,137
SINGLE-LINE MSGCHAIN SCANS: 2

SINGLE-LINE MSGCHAIN SCAN TRACE
Number of Msgs | Local Date and Time
--------------------------------
8,293 10/27/2003 16:01:06.038581

MAJOR-LINE MSGCHAIN TRIMS: 7,493

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Communications task

MAJOR-LINE MSGCHAIN SCANS: 2

MAJOR-LINE MSGCHAIN SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -
1 10/27/2003 15:59:46.405843

MINOR-LINE MSGCHAIN TRIMS: 59,944
MINOR-LINE MSGCHAIN SCANS: 2

MINOR-LINE MSGCHAIN SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -
- 1,008 10/27/2003 15:59:25.030875
8 10/27/2003 15:59:46.405843

SINGLE-LINE MSGBLDQ TRIMS: 0
SINGLE-LINE MSGBLDQ SCANS: 0

SINGLE-LINE MSGBLDQ SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -
- -

MAJOR-LINE MSGBLDQ TRIMS: 0
MAJOR-LINE MSGBLDQ SCANS: 0

MAJOR-LINE MSGBLDQ SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -
- -

MINOR-LINE MSGBLDQ TRIMS: 0
MINOR-LINE MSGBLDQ SCANS: 0

MINOR-LINE MSGBLDQ SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -
- -

LATE MINOR-LINE TRIMS: 14,984
LATE MINOR-LINE SCANS: 1

LATE MINOR-LINE SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -

LOST MINOR-LINE TRIMS: 14,984
LOST MINOR-LINE SCANS: 1

LOST MINOR-LINE SCAN TRACE
Number of Msgs | Local Date and Time
---------------------------------------------
- -
The following fields appear in the report:

**MAXIMUM NUMBER OF SYSPLEX MEMBERS**
The maximum number of systems allowed in this sysplex.

**CURRENT NUMBER OF SYSPLEX MEMBERS**
The number of systems that are currently defined to this sysplex.

The remaining fields in this report give information that IBM could request for problem determination.

In the MESSAGE TRIMMING STATISTICS section, the following fields appear in the report:

**Type of message RECEIVED**
The total number of the indicated type of message received since IPL from other members of the sysplex.

**Type of message SCANS**
The total number of times since IPL that the Message Receive Subtask was dispatched to process the type of messages indicated.

**Type of message SCAN TRACE**
The trace table showing details of the most recent dispatches of the Message Receive Subtask when the indicated type of message were processed and messages were received or trimmed. Each entry contains the time the Message Receive Subtask processed the collection and the number of messages that were trimmed. Dashes indicate trace entries that have not been written.

**Type of collection TRIMS**
The total number of the type of message indicated since IPL that were discarded while being collected for processing by the Message Receive Subtask. These messages were trimmed from the collection to prevent depletion of Consoles address space private storage that might otherwise occur during periods of excessively high message arrival rates.

**Type of collection SCANS**
The total number of times since IPL that the Message Receive Subtask was dispatched to process the type of collection indicated.

**Type of collection SCAN TRACE**
The trace table showing details of the most recent dispatches of the Message Receive Subtask when the indicated type of collection of messages were received or trimmed.

**COMCHECK SYSPLEX(CNTRLMEM) subcommand output**
The COMCHECK SYSPLEX(CNTRLMEM) report displays information for each control member that IBM might request for problem determination.

The following is an example of a COMCHECK SYSPLEX(CNTRLMEM) report:
Communications task

**COMCHECK SYSPLEX(SYSEM) subcommand output**

The COMCHECK SYSPLEX(SYSEM) subcommand displays the names of systems defined to the sysplex and additional information that IBM might request for problem determination.

The following is an example of a COMCHECK SYSPLEX(SYSEM) report:

```
COMMUNICATION TASK ANALYSIS
SYSPLEX CONTROL MEMBER INFORMATION
CONTROL MEMBER NAME: SYMSC#MCS
CONTROL MEMBER TOKEN: 00000001 00020001
TIME OF LAST UPDATE TO THIS MEMBER: 18:35:00:77
LAST SYSID IN SYSPLEX: 4
SHARED DATA LEVEL OF LAST UPDATE: 212
TIME OF LAST UPDATE TO SHARED DATA: 19:19:12:17
TOKEN OF LAST SYSTEM MAKING AN UPDATE: 01000003 00020006
SERIALIZATION OF CONTROL MEMBER
  TCB ADDRESS OF ENQ HOLDER: 00000000
  ASID ADDRESS OF ENQ HOLDER: 00000000
INFORMATION FOR OUTBOUND UPDATE
  SHARED DATA LEVEL: 0
  TIME DATA QUEUED: 00:00:00:00
INFORMATION FOR INBOUND UPDATE
  SHARED DATA LEVEL: 0
  TIME DATA QUEUED: 00:00:00:00
DATA ELEMENT ADDRESS: 00000000
NUMBER OF PARTS RECEIVED: 0
NUMBER OF PARTS SENT: 0
TYPE OF PROCESS IN PROGRESS
  REFRESH: NO
  INBOUND UPDATE: NO
  OUTBOUND UPDATE: NO
  COMMIT SENT: NO

These fields display information that IBM might request for problem determination.

COMMUNICATION TASK ANALYSIS
SYSPLEX SYSTEM MEMBER INFORMATION
SYSPLEX MEMBER NAME: J80
SYSPLEX MEMBER TOKEN: 0100000C 00020006
TIME OF LAST UPDATE TO THIS MEMBER: 19:54:28:96
SYSID OF THIS MEMBER: 27
ADDRESS OF FIRST DATABLK: 7FFE3DFC
NUMBER OF TIMEOUTS: 0

SYSPLEX SYSTEM MEMBER INFORMATION
SYSPLEX MEMBER NAME: J90
SYSPLEX MEMBER TOKEN: 0200000D 00020007
TIME OF LAST UPDATE TO THIS MEMBER: 20:05:45:10
SYSID OF THIS MEMBER: 28
ADDRESS OF FIRST DATABLK: 7F497DFC
NUMBER OF TIMEOUTS: 0

The following fields appear in the report:
COMMISSIONING TASK ANALYSIS

TDPM INFORMATION

CONSOLE ID: 0000000E
CONSOLE TYPE: MCS
TDPM ADDRESS: 00580C90
CONSOLE NAME: CON0A0
CONVERSATIONAL MODE: NO
MESSAGE DELETION MODE: ROLL DELETABLE
MESSAGE ROLL TIME(SECONDS): 1
MESSAGE ROLL NUMBER(LINES): 28
MESSAGE SEGMENTATION(LINES): 28
NUMBER OF LINES IN MESSAGE AREA: 28
ADDRESS OF SCREEN IMAGE BUFFER: 00581180
ADDRESS OF OUT OF LINE SIB: 0066916C
ADDRESS OF CHANNEL PROGRAM AREA: 005810D8

In this example, X'00580C90' is the address of the TDCM. COMCHECK TDCM(00580C90) is the correct syntax used to obtain this report.

The following fields can appear in a COMCHECK TDCM report:

**CONSOLE ID**
A 4-byte identifier that the system assigns to the console at system initialization.

**CONSOLE TYPE**
Indicates the type of console. Possible values include:

- **MCS** Indicates that this is an MCS console.
- **SMCS** Indicates that this is an SMCS console.

**TDPM ADDRESS**
The address of the pageable display control module.
Communications task

CONSOLE NAME
A 2- through 8-character name defined in the CONSOLxx parmlib member at system initialization. If no name was specified, the console identifier appears in this field.

CONVERSATIONAL MODE
One of the following:

YES Conversational message deletion is in effect. The system allows you to verify a request to delete a message before deleting it from the screen.

NO Non-conversational message deletion is in effect. The system immediately deletes messages from the screen when you enter a deletion request.

MESSAGE DELETION MODE
One of the following:

AUTOMATIC The system deletes certain messages from the screen automatically whenever the message area is full and messages are waiting to be displayed.

MANUAL The system deletes messages from the screen only when you enter a deletion request. All messages waiting to be displayed remain in a queue until screen space becomes available.

ROLL Roll mode is in effect. A specified number of messages (the value of RNUM in the CONSOLxx parmlib member) roll off the screen at a specified time interval (the value of RTME in CONSOLxx).

ROLL DELETABLE The same as roll mode, except that action messages accumulate at the top of the screen.

WRAP The same as roll mode, except that new messages overlay the messages displayed at the top of the screen. An on-screen position indicator identifies the oldest and newest messages.

MESSAGE ROLL TIME (SECONDS)
The time interval between message rolls. The value in this field can be 1/4, 1/2, or any decimal number from one to 999.

MESSAGE ROLL NUMBER (LINES)
The maximum number of lines included in one message roll. The number of lines is limited to the size of the message area.

MESSAGE SEGMENTATION (LINES)
The number of lines in the message area that will be deleted when the operator issues the CONTROL E, SEG command.

NUMBER OF LINES IN MESSAGE AREA
The size of the message area for this console.

ADDRESS OF OUT OF LINE SIB
The screen image area that contains out of line information that determines the physical appearance of the out of line areas at any time.
ADDRESS OF SCREEN IMAGE BUFFER
The screen image area contains information that determines the physical appearance of the console screen at any time. The information contained in the screen image area is used to build the channel program area.

ADDRESS OF CHANNEL PROGRAM AREA
The channel program area contains the channel program for MCS consoles that, when run, will build the screen image that physically appears on the console.

The ADDRESS OF WSF AREA, ADDRESS OF SMCS INPUT AREA, and ADDRESS OF BUFFER LIST ENTRIES fields described later are displayed only when the console is an SMCS console.

ADDRESS OF WSF AREA
The area that contains write structured field (WSF) information for SMCS consoles.

ADDRESS OF SMCS INPUT AREA
The input buffer used by SMCS consoles.

ADDRESS OF BUFFER LIST ENTRIES
The area that contains buffer list entries (BLENTs) for SMCS consoles.

COMCHECK UCM subcommand output
The COMCHECK UCM subcommand gives summary control block information for the unit control module (UCM) base, prefix, and extension.

The following is an example of a COMCHECK UCM report:
Communications task

<table>
<thead>
<tr>
<th>COMMUNICATION TASK ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCM INFORMATION</td>
</tr>
</tbody>
</table>

**CONFIGURATION MODE:** DISTRIBUTED

**CURRENTLY IN TRANSITION:** NO

**ADDRESS OF FIRST ORE:** 03EC7340

**ADDRESS OF LAST ORE:** 03EC7670

**CURRENT NUMBER OF ORE:** 7

**ORE LIMIT:** 99

**WTOR SHORTAGE:** NO

**ADDRESS OF FIRST WQE:** 004E6878

**ADDRESS OF LAST WQE:** 005C83DC

**CURRENT NUMBER OF WQE:** 8

**WQE LIMIT:** 9999

**WQE SHORTAGE:** NO

**WQE STORAGE EXHAUSTED:** NO

**MESSAGES DISCARDED WHILE WQES EXHAUSTED:** 0

**DOM IDS HAVE WRAPPED:** NO

**IEAVMIXIT:** ACTIVE

**AMRF ACTIVE:** YES

**AMRF FAILED:** NO

**ADDRESS OF FIRST UCME:** 00FD63D0

**ADDRESS OF LAST UCME:** 00FD7E10

**HOLDMODE SPECIFIED:** NO

**DEFAULT LOGON SPECIFICATION:** AUTOLOG

**SYSTEM IS MEMBER OF SYSPLEX:** YES

**CURRENT SYSTEM NAME:** P01

**CURRENT SYSTEM ID:** 27

**ACTIVE PFK SUFFIX:** 00

**ACTIVE CONSOLXX SUFFIX:** 9J

**COMM TASK ASID:** 10

**COMM TASK TCB ADDRESS:** 005F9578

**IEEVWAIT RESTARTED:** NO

**HCFORMAT OF CENTURY WAS SPECIFIED:** NO

**SMCS STATUS:** ACTIVE

**SMCS APPLICATION ID:** SMCS01

**SMCS APPLICATION ID IN USE BY SYS:** SMCS01

**SMCS GENERIC ID IN USE BY SYSTEM:** *NONE*

**SMCS SYSPLEX WIDE GENERIC ID:** *NONE*

**SMCS ACB ADDRESS:** 7F4BFE98

**IEECVSM TA BADDRESS:** 006F5A60

**SMCS SETLOGON RPL ADDRESS:** 7F4BFF04

**SMCS NIB ADDRESS:** 7F4BFFBC

**SMCS END OF TASK ECB ADDRESS:** 806FDDC0

**HARDCOPY/SYSLOG ROUTING CODES:**

**ROUTING CODES:** 1-128

The following fields appear in the report:

**CONFIGURATION MODE**
One of the following modes:

**SHARED**
The console services is in shared mode.

**DISTRIBUTED**
The console services is in distributed mode. DISTRIBUTED mode is the default.

**CURRENTLY IN TRANSITION**
One of the following values:

**YES** Console services is in transition.

**No** Console services is not in transition.
**Communications task**

**ADDRESS OF FIRST ORE**
The address of the first operator reply element (ORE) in the ORE chain.

**ADDRESS OF LAST ORE**
The address of the last operator reply element (ORE) in the ORE chain.

**CURRENT NUMBER OF ORE**
The total number of OREs in the ORE chain at the time the dump was written.

**ORE LIMIT**
The maximum number of OREs in the ORE chain allowed by the system.

**WTOR SHORTAGE**
One of the following:

- YES 80 percent of the current WTOR buffer limit is full.
- NO No WTOR buffer shortage existed at the time the dump was written.

**ADDRESS OF FIRST WQE**
The address of the first write to operator queue element (WQE).

**ADDRESS OF LAST WQE**
The address of the last WQE.

**CURRENT NUMBER OF WQE**
The number of WQEs on the WQE chain at the time the dump was written.

**WQE LIMIT**
The maximum number of WQEs allowed by the system.

**WQE SHORTAGE**
One of the following:

- YES 80 percent of the current number of WQE buffers are in use. The default number of buffers is 1500.
- NO No WQE buffer shortage existed at the time the dump was written.

**WQE STORAGE EXHAUSTED**
One of the following:

- YES All of the communications task storage was in use and the system was discarding messages when the dump was written.
- NO Communications task storage was available at the time the dump was taken.

**MESSAGES DISCARDED WHILE WQES EXHAUSTED**
The number of messages that the system had discarded at the time the dump was written. Messages were discarded because all of the communications task storage was in use.

**DOM IDS HAVE WRAPPED**
One of the following:

- YES The system issued X'FFFFFF' delete operator message (DOM) identifiers. The system assigns the number 1 to the next DOM identifier.
- NO The number of DOM identifiers has not reached X'FFFFFF'.

**IEAVMEXIT**
One of the following:
### Communications task

**ACTIVE**  
IEAVMXIT is active for this system. This exit gains control whenever the system processes messages that are defined to the exit.

**INACTIVE**  
IEAVMXIT is not active for this system.

**AMRF ACTIVE**  
One of the following:
- **YES**  
The action message retention facility (AMRF) is active for this system.
- **NO**  
The AMRF is not active for this system at the time the dump was written.

**AMRF FAILED**  
One of the following:
- **YES**  
The AMRF failed.
- **NO**  
The AMRF did not fail.

**ADDRESS OF FIRST UCME**  
The address of the first unit control module entry (UCME).

**ADDRESS OF LAST UCME**  
The address of the last UCME.

**HOLDMODE SPECIFIED**  
One of the following:
- **YES**  
Hold mode is in effect. For each console, pressing the ENTER key without entering a command will suspend or resume message rolling.
- **NO**  
Hold mode is not in effect for this system.

**DEFAULT LOGON SPECIFICATION**  
The logon definition specified on the DEFAULT statement in CONSOLxx.

**SYSTEM IS MEMBER OF SYSPLEX**  
One of the following:
- **YES**  
The system to which this console is defined belongs to a set of one or more systems in a multisystem environment. Programs in the system can use cross-coupling facility (XCF) services.
- **NO**  
The system is not a member of a sysplex.

**CURRENT SYSTEM NAME**  
The name of the system defined to a sysplex.

**CURRENT SYSTEM ID**  
An identifier that XCF assigns to a sysplex member. If the system is not a member of a sysplex, and has a JES2 subsystem, the system identifier is 0.

**ACTIVE PFK SUFFIX**  
The 2-character suffix for the PFKTABxx parmlib member at the time the dump was written. This member contains the program function key (PFK) tables that have the installation definitions for PFKs. If no member was specified, NONE appears in this field.

**ACTIVE CONSOLXX SUFFIX**  
The 2-character suffix for the CONSOLxx parmlib member at the time the dump was written. It contains console statements or other parameters that, in conjunction with the members MPFLSTxx and PFKTABxx, control the following:
- Message traffic routing
Communications task

- Message deletion
- PFK definitions

**COMM TASK ASID**

The address space identifier (ASID) for the communications task (COMMTASK).

**COMM TASK TCB ADDRESS**

The address of the COMMTASK task control block (TCB).

**IEEHWAIT RESTARTED**

One of the following:

- **YES**  The system restarted the IEEHWAIT service routine.
- **NO**  The system did not restart the IEEHWAIT service routine.

**SMCS STATUS**

Indicates the status of the SMCS application. Possible values include:

- **ACTIVE**
  The SMCS application is connected to SecureWay Security Server and SMCS consoles are available for use.

- **NOT ACTIVE**
  SMCS is not active at this time. SMCS has failed and has completed termination cleanup processing.

- **INITIALIZING**
  SMCS is beginning to initialize.

- **WAITING FOR VTAM**
  SMCS is attempting to communicate with VTAM, but VTAM is not available at this time.

- **WAITING FOR SMCS APPLID ACTIVATION**
  SMCS is communicating with SecureWay Security Server, but one of the following has occurred to the APPLID that SMCS is to use:
  - The APPLID has not been activated by SecureWay Security Server.
  - The APPLID was found to be not valid APPLID, but some other SecureWay Security Server resource.

  The installation must ensure the separation of system logger logstream resources (separate catalogs and DASD). The logstream offload dataset naming convention must be included in the inclusion list as discussed in [z/OS MVS Planning: Global Resource Serialization](#).

- **SHUTTING DOWN**
  SMCS has been requested to shut down. SMCS will cleanup and wait for the SMCS APPLID to become active.

- **NOT INSTALLED**
  An APPLID was not specified in the CONSOLxx member of parmlib. SMCS consoles will not be available for use on this system.

- **SMCS TERMINATING — FAILURE**
  SMCS has failed and is attempting to clean up. SMCS may or may not restart, depending on the error.

**SMCS APPLICATION ID**

Indicates the APPLID defined for SMCS to use. If the value is different from the value for SMCS APPLICATION ID IN USE BY SYSTEM then a CONTROL
Communications task

M command was used to request the SMCS APPLID to be changed. The next time SMCS is recycled, the value in SMCS APPLICATION ID will be used.

SMCS APPLICATION ID IN USE BY SYS
Indicates the APPLID that is actually in use by SMCS.

SMCS GENERIC ID IN USE BY SYSTEM
Indicates the GENERIC resource name defined for SMCS to use. If the value is different from the value for SMCS SYSPLEX WIDE GENERIC then a CONTROL M command was used to request the SMCS GENERIC resource name to be changed. The next time SMCS is recycled, the value in SMCS SYSPLEX WIDE GENERIC resource name will be used.

SMCS SYSPLEX WIDE GENERIC
Indicates the SecureWay Security Server GENERIC resource name that SMCS is defined to use via the CONTROL M command.

SMCS ACB ADDRESS
Indicates the address of the ACB that SMCS is using to communicate with SecureWay Security Server.

IEECVSMAS TCB ADDRESS
Indicates the address of the TCB for the SMCS main routine, IEECVQSMA. This TCB resides in CONSOLE address space.

SMCS SETLOGON RPL ADDRESS
Indicates the address of the SETLOGON RPL that is used by SMCS.

SMCS NIB ADDRESS
Indicates the address of the NIB that is used by SMCS.

SMCS END OF TASK ECB ADDRESS
Indicates the address of the end of task ECB for the IEECVSMAS task.

ROUTING CODES
The routing codes of messages that are sent to the system log (SYSLOG) and hard-copy log.

COMCHECK UCME subcommand output
The COMCHECK UCME subcommand gives the status of an MCS, SMCS, or a subsystem console at the time of the dump. It formats the unit control module individual device entries (UCME).

To obtain the status for an MCS or SMCS console, you must first find the address of its associated UCME. Use COMCHECK UCME(LIST) to find the addresses of all UCMEs in the dump. Choose an address from the list and use COMCHECK UCME(address) to format the UCME at that address.

If you want to view the status of all MCS or SMCS consoles in the dump, use COMCHECK UCME(ALL).

The following is an example of a report generated with COMCHECK UCME(address):
In this example, X'00FD63D0' is the address of the UCME. COMCHECK UCME(X'00FD63D0) is the correct syntax used to obtain this report.

The following fields appear in the report:

**NAME**
The console name defined in the CONSOLxx parmlib member at system initialization. If no name was specified, the console identifier appears in this field.

**CONSOLE ID**
A 4-byte identifier that the system assigns to the console at system initialization.

**CONSOLE TYPE**
Indicates the type of console. Possible values include:

- **MCS** Indicates that this is an MCS console.
- **SMCS** Indicates that this is an SMCS console.
Communications task

**MCS/PRT**
Indicates that this is an MCS printer console.

**SUBSYSTEM**
Indicates that this is a subsystem console.

**CONSOLE LOGON SETTING**
Indicates the LOGON attribute of the console if one was specified.

**DEVICE NUMBER**
The device number for the console; it is specified in the CONSOLxx parmlib member.

**UCB ADDRESS**
The address of the unit control block (UCB), a storage area that describes the characteristics of a device to the operating system. This is only shown for MCS, MCS/PRT, and Subsystem consoles.

**UCME ADDRESS**
The address of the unit control module entry (UCME), which contains console-related information.

**CDU ADDRESS**
The address of the console definition UCME, which contains console-related information.

**SYSTEM NAME**
The name of the system on which the console was active when the dump was written.

**NUMBER OF MESSAGES QUEUED**
The number of messages waiting to be displayed on the console at the time the dump was written.

**STATUS**
One of the following:

- **ACTIVE** The device is currently active on the system.
- **INACTIVE** The device is currently inactive on the system.

**AUTHORITY**
The command group assigned to the console, as follows:

- **INFO** Informational commands.
- **SYS** System control commands.
- **I/O** Input/output (I/O) control commands.
- **CONS** Console control commands.
- **ALL** All command authority. This includes SYS, I/O, and CONS authority.
- **MASTER** Master authority commands.

**MESSAGE FORMAT**
The information that will accompany a message when it is displayed on this console, as follows:

- **TIMESTAMP** A time stamp, in the format hh:mm:ss
- **JOBNAME/JOBID** The name or identifier of the job issuing the message.
- **SYSNAME** The name of the system issuing the message.
Communications task

NOSYSJB All information except the system and job names.
MESSAGE Only the message text is displayed.

MESSAGE TYPE
Indicates the type of information that is continually displayed at this console, as follows:

JOBNAME The job name or job identifier when the job starts and ends.
STATUS Displays data set names and volume serial numbers when they are free, with dispositions of keep, catalog, and uncatalog.
SESSION Displays the user identifier for each time sharing terminal when a Time Sharing Option Extensions (TSO/E) session starts and ends.
TIME Displays the time along with the job name and session; the time is displayed in hh:mm:ss format.
NONE Displays none of the above information.

MESSAGE LEVEL
Lists the message level options specified in the CONSOLxx parmlib member or in the CONTROL command, as follows:

WTOR Console displays write to operator (WTOR) messages
IMMEDIATE ACTION Console displays immediate action messages
CRITICAL EVENTUAL ACTION Console displays critical eventual action messages
EVENTUAL ACTION Console displays eventual action messages
INFORMATIONAL Console displays informational messages
BROADCAST Console displays broadcast messages
NONE Console displays only messages specifically directed to the console and command responses.

CONSOLE USE
The mode in which the multiple console support (MCS) console is operating, which is one of the following:

FULL I/O CAPABILITY The console can receive input, display output, accept commands, and receive status displays and messages.
STATUS DISPLAY ONLY The console cannot accept commands; the system uses the screen to receive status displays.
MESSAGE STREAM ONLY The console cannot accept commands; the system uses the screen to present general messages.

CONVERSATIONAL MODE
One of the following:
Communications task

**YES**  Conversational message deletion is in effect. The system allows you to verify a request to delete a message before deleting it from the screen.

**NO**  Non-conversational message deletion is in effect. The system immediately deletes messages from the screen when you enter a deletion request.

**MESSAGE DELETION MODE**
One of the following:

**AUTOMATIC**  The system deletes certain messages from the screen automatically whenever the message area is full and messages are waiting to be displayed.

**MANUAL**  The system deletes messages from the screen when you issue a deletion request. All messages waiting to be displayed remain in a queue.

**ROLL**  Roll mode is in effect. A specified number of messages (the value of RNUM in CONSOLxx) roll off the screen at a specified time interval (the value of RTME in CONSOLxx).

**ROLL DELETABLE**  The same as roll mode, except that action messages accumulate at the top of the screen.

**WRAP**  The same as roll mode, except that new messages overlay old messages at the top of the screen when the screen is full. An on-screen separator line identifies the oldest and newest messages.

**MESSAGE ROLL TIME (SECONDS)**  The time interval between message rolls. The value in this field can be 1/4, 1/2, or any decimal number from one to 999.

**MESSAGE ROLL NUMBER (LINES)**  The maximum number of lines included in one message roll.

**MESSAGE SEGMENTATION (LINES)**  The number of lines in the message area that will be deleted when the operator enters the CONTROL E, SEG command.

**NUMBER OF ROWS ON SCREEN**  Indicates the number of rows on the screen. N/A may be displayed for an inactive console.

**NUMBER OF COLUMNS ON SCREEN**  Indicates the number of columns on the screen. N/A may be displayed for an inactive console.

**PFK SUFFIX IN PARMLIB**  The parmlib member that contains definitions for one or more program function key (PFK) tables.

**PFK TABLE NAME**  The name of the program function key (PFK) table that contains the PFK definitions assigned to this console.

**CMDSYS**  The name of the system that runs the commands entered from this console.

**DEV IN MIDDLE OF BRACKETS**  For an SMCS console, indicates that the console was in the middle of brackets. This is only displayed for SMCS consoles.
SMCS CONSOLE ALLOCATED
For an SMCS console, this indicates that the UCME was allocated by SMCS on any system in the sysplex. This is only displayed for SMCS consoles.

SMCS CONSOLE ACTIVE ON THIS SYS
For an SMCS console, this indicates that the UCME was allocated by SMCS on this system. This is only displayed for SMCS consoles.

SMCS CONSOLE LU TYPE
This is only displayed for SMCS consoles. For an SMCS console, possible values include:
- LU0  Indicates that LU 0 protocol is being used for this console.
- LU2  Indicates that LU 2 protocol is being used for this console.
- N/A  Indicates that this console is not active.

SMCS CLEAN-UP IN PROGRESS
For an SMCS console, indicates if the SMCS console was being cleaned up at the time of the dump. This is only displayed for SMCS consoles.

SMCS NIB ADDRESS
For an SMCS console, indicates the address of the NIB control block that is used for this console. This is only displayed for SMCS consoles.

SMCS LPAB ADDRESS
For an SMCS console, indicates the address of the LPAB control block for this console. This is only displayed for SMCS consoles.

SMCS SEND RPL ADDRESS
For an SMCS console, indicates the address of the SEND RPL for this console. This is only displayed for SMCS consoles.

SMCS RECEIVE RPL ADDRESS
For an SMCS console, indicates the address of the RECEIVE RPL for this console. This is only displayed for SMCS consoles.

SMCS COMMUNICATION ID
For an SMCS console, indicates the communication ID (CID) that SecureWay Security Server assigned to this console session. This is only displayed for SMCS consoles.

SMCS CLSDST RPL ADDRESS
For an SMCS console, indicates the address of the CLSDST RPL for this console. This is only displayed for SMCS consoles.

SMCS BIND PARMS
For an SMCS console, indicates the BIND data that was provided for this console. This is only displayed for SMCS consoles.

SYSTEM FOR ACTIVATION
The default system on which this console will be activated when the VARY CN,ONLINE command is issued for this console. This field appears only for MCS consoles (not for extended MCS consoles).

MISC ROUTING INFORMATION
One of the following:

NONE
Indicates that this console does not receive INTIDS or UNKNIDS messages.

RECEIVING INTIDS
Indicates that this console receives INTIDS messages.
Communications task

RECEIVING UNKNIDS
Indicates that this console receives UNKNIDS messages.

RECEIVING INTIDS AND UNKNIDS
Indicates that this console receives INTIDS and UNKNIDS messages.

ROUTING CODES
The set of routing codes for messages displayed at this console. They are specified in parmlib.

CONSOLE AREA
The portion of the console screen reserved for displaying system status messages.

The console area field contains a list of alphabetic identifiers, each representing an in-line area. The list always begins with Z, which represents the out-of-line area that is not assigned to a display area. This area is reserved for general messages. The remainder of the list consists of identifiers that the system assigns to message display areas, starting at the bottom and working in alphabetical order toward the top of the screen. For example Z, A, B, C indicates a screen with one general message (in-line) area and three out-of-line display areas.

MSCOPE LIST
A list of the names of systems from which this console is receiving messages.

COMCHECK UPDATES subcommand output
The COMCHECK UPDATES subcommand displays information that IBM might request for problem determination.
Chapter 16. Data-in-Virtual

The data-in-virtual component provides diagnostic data in dumps. This topic contains the following information for data-in-virtual:

- "Tracing data-in-virtual events."
- "Formatting data-in-virtual dump data."

Tracing data-in-virtual events

The trace for the data-in-virtual component runs whenever data-in-virtual is in control. No actions are needed to request it. The trace records are placed in buffers in the nucleus (NUC) and system queue area (SQA); data-in-virtual controls the size of the buffers.

The trace entries format the following events:

- Error events
- Data-in-virtual entry and return
- Real storage manager (RSM)/virtual data access events
- I/O driver events

You obtain the trace records in an SVC dump, stand-alone dump, or SYSMDUMP ABEND dump when the dump contains the nucleus and SQA. Format the trace with an IPCS DIVDATA subcommand, as follows:

- **DIVDATA TRACE**
  Formats trace entries selected through the ASIDLIST parameter.
- **DIVDATA FULLTRACE**
  Formats all trace entries.

Example: DIVDATA subcommand

To format 1000 of the most recent trace entries, enter the following subcommand.

```
DIVDATA FULLTRACE NEWEST(1000)
```

Formatting data-in-virtual dump data

Format an SVC dump, stand-alone dump, or SYSMDUMP with the IPCS DIVDATA subcommand to produce diagnostic reports about data-in-virtual. [MVS IPCS Commands](z/OS MVS IPCS Commands) gives the syntax of the DIVDATA subcommand and [MVS IPCS User’s Guide](z/OS MVS IPCS User’s Guide) explains how to use the DIVDATA option of the IPCS dialog.

The following table summarizes the report subcommand keywords for IPCS DIVDATA:
When to use:

<table>
<thead>
<tr>
<th>IPCS subcommand and parameter</th>
<th>DIVDATA DETAIL</th>
<th>The system issues message ITV10008I or other messages, or the keys in the SDWAVRA are 228 through 230</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIVDATA EXCEPTION</td>
<td>Incorrect output occurs</td>
<td></td>
</tr>
<tr>
<td>DIVDATA FULLTRACE</td>
<td>Output from DIVDATA EXCEPTION or SUMMARY indicates trace records were created by data-in-virtual</td>
<td></td>
</tr>
<tr>
<td>DIVDATA SUMMARY</td>
<td>A performance problem, abend, or incorrect output occurs</td>
<td></td>
</tr>
<tr>
<td>DIVDATA TRACE</td>
<td>Output from DIVDATA EXCEPTION or SUMMARY indicates trace records were created by data-in-virtual for the requested address space(s)</td>
<td></td>
</tr>
</tbody>
</table>

In a DIVDATA subcommand, specify one of the following address space selection keywords to specify processing of data-in-virtual control blocks based on their associated address spaces:
- ALL for all address spaces
- CURRENT for active address spaces of the dump
- ERROR for error address spaces
- TCBERROR for address spaces with a task error indicator
- ASIDLIST for address spaces associated with ASID(s)
- JOBLIST or JOBNAME for address spaces associated with job names

A DIVDATA subcommand without a subcommand keyword specified produces an EXCEPTION report. See “DIVDATA EXCEPTION subcommand output” on page 16-4.

**DIVDATA SUMMARY subcommand output**

The DIVDATA SUMMARY report provides information about the data-in-virtual control blocks and mapped data-in-virtual object ranges. Provide this information when reporting a data-in-virtual problem to the IBM Support Center.

Note the data-in-virtual service requested by the macro, if the dump had an active DIV macro request. Find the data-in-virtual service name under SERVICE in the DOA section at the end of the report.
Data-in-Virtual

*** *** FORMAT DUMP OF DATA-IN-VIRTUAL DATA *** ***

************************************
** DIVDATA SUMMARY REPORT **
** ************************************

DIB: 01022E28
+0000 ID....... DIB DIBX..... 011F5780 INDR..... 81022708
+000C OUTDR..... 81022858 DIEA..... 8102A658 ERRDA..... 81029F88
+0018 TRMDA..... 8102A950 PRGDA..... 8102AC38 RCB....... 81023B98
+0024 RVCB..... 810290D0 RTRC..... 8102BE18 RSV....... 81024390

DIBX: 011F5780
+0000 ID....... DIBX ZERO..... 01B09000 TOF1..... 80
+0009 TTSZ..... 20 ASID..... 0000 JBNM.....
+0014 DDNM..... GNCL..... COCL..... 0000 CHCL..... 0000
+0020 CTC...... 01B42290 TRF1..... 00 RSV...... 00000000
+0028 HUXL..... 7FFFE41F LUXL..... 7FDF1800 RSV...... 00000000
+0034 RSV...... 00000000

TRACE TABLE INFORMATION:

CTC ADDRESS = 01B42290
TABLE ADDRESS = 01A83000
TABLE SIZE = 32 (in units of 4K bytes)
NUMBER OF WRAPS = 0

TRACE SELECTION PARAMETERS:

THE FOLLOWING CLASSES OF TRACE EVENTS WERE REQUESTED:

User entry to and return from Data-In-Virtual
Error

TRACE TABLE ENTRY STATISTICS
-------------------------------------

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Met</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>User entry to and return from Data-In-Virtual</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>I/O Driver</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VDAC</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Error</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL in trace table</td>
<td>26</td>
<td>26</td>
</tr>
</tbody>
</table>
DIVDATA DETAIL subcommand output

The DIVDATA DETAIL report gives the same information as the DIVDATA SUMMARY report, plus it shows the formatted DOAs and WCBs.

DIVDATA EXCEPTION subcommand output

The DIVDATA EXCEPTION subcommand provides information about exceptional conditions with data-in-virtual processing.

Checks for programming problems for data-in-virtual

The following table summarizes problems that can result when application programs issue the DIV macro. Use the table to decide if a DIV macro problem is in the application program or in the data-in-virtual component.

See z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN for information about using the DIV macro.

<table>
<thead>
<tr>
<th>For a Problem With:</th>
<th>Check the Following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application program that needs mapped virtual</td>
<td>Specify RETAIN=YES on the DIV UNMAP request.</td>
</tr>
<tr>
<td>storage to retain values after issuing DIV macro</td>
<td>If the default RETAIN=NO option is used, the storage</td>
</tr>
<tr>
<td>UNMAP request</td>
<td>appears as if it were freshly obtained with a GETMAIN</td>
</tr>
<tr>
<td></td>
<td>and then referenced.</td>
</tr>
<tr>
<td>DDNAME and disposition used for the data object</td>
<td>If the application uses several data objects and copies</td>
</tr>
<tr>
<td>specified on a DIV macro IDENTIFY request</td>
<td>data from one object to another, ensure that DISP=OLD</td>
</tr>
<tr>
<td></td>
<td>is on the JCL DD statement that defines the linear data</td>
</tr>
<tr>
<td></td>
<td>set for any data object to be updated.</td>
</tr>
<tr>
<td>For a Problem With:</td>
<td>Check the Following:</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
</tr>
</tbody>
</table>
| The linear data set for a DIV macro IDENTIFY request (TYPE=DA) | Ensure that the linear data set is a cataloged VSAM data set and defined as LINEAR.  
To list the catalog entry for data set characteristics, use the access method services LISTC command. See z/OS DFSMS Access Method Services for Catalogs. |
| MAP, IDENTIFY, and ACCESS requests made by the same task | If the MAP request was made before an IDENTIFY and ACCESS, ensure that the ACCESS and MAP requests use the identifier (ID) returned from the IDENTIFY request. |
| Mapping the data object in a data space | Consider the following:  
• If the invoker is in supervisor state or holds the system key, ensure that the data space is owned by a task in the primary address space; otherwise, ensure that the data space is owned by the task that issues the MAP request.  
• If references to the data object resulted in an abend X'0C4', ensure that the data space remains created as long as the data object exists.  
• Ensure that the data space is not a DREF data space.  
• Ensure that the range of the data object to be mapped does not exceed the size of the data space. |
| Mapping the data object in an address space | If several tasks use the same data object, ensure that each task obtains a mapping of the data in one of the following ways:  
• With a DIV macro MAP request for virtual storage owned by the task.  
• With a DIV macro MAP request for virtual storage owned by a parent task. This way is allowed when the task using the data is running in an environment authorized by the authorized program facility (APF), has a program status word (PSW) with a system-level storage protection key (0 through 7), or a PSW in supervisor state.  
• As previously mapped virtual storage belonging to the task that issued the MAP request. |
| Page fix for mapped virtual storage not removed after DIV macro request | When a DIV macro is issued, ensure that no pages are fixed in the range of virtual storage specified on a MAP, UNMAP, SAVE, or RESET request.  
Remove any page fix before the program issues any other DIV macro requests for the mapped virtual storage and before the program ends. Implicit UNMAP requests are done at program ending. |
| Save area for the DIV macro | If a save area is missing for the DIV macro, a second invocation could fail because the storage value might have changed since the first invocation; the return address in register 14 might be incorrect. |
## Data-in-Virtual

<table>
<thead>
<tr>
<th>For a Problem With:</th>
<th>Check the Following:</th>
</tr>
</thead>
</table>
| Serializing updates to the data object | Consider the following:  
- If multiple users can concurrently update the data object, use LOCVIEW=MAP on the DIV macro and serialization protocol, ENQ/DEQ for example, external to data-in-virtual.  
- If the data object is updated, ensure that the linear data set is allocated with DISP=OLD on the JCL DD statement. |
| SHAREOPTIONS values for the virtual storage access method (VSAM) data set | If a DIV macro ACCESS request is to map the data object in a data space or address space and specifies LOCVIEW=NONE (either explicitly or by default), the recommended SHAREOPTIONS value is SHAREOPTIONS(1,3).  
Otherwise, specify a SHAREOPTIONS value that accurately reflects how the data set is shared at the installation. |
Chapter 17. Global resource serialization

This topic contains the following diagnosis information for global resource serialization:

- “Formatting global resource serialization dump data.”
- “Combining trace data from multiple systems” on page 17-17.

Formatting global resource serialization dump data

Obtain an SVC or stand-alone dump. If you suspect that the problem might involve more than one system in the global resource serialization complex, obtain a dump for each system. Make sure dumps include the global resource serialization and XCFAS address spaces and any necessary data spaces. If you suspect a problem with a user of GRS ENQ services, then SDATA=GRS should be specified on the dump. This causes GRS to collect complex-wide information related to outstanding ENQs. If you suspect a problem with GRS itself, then you should dump both the GRS and XCF address spaces. Note that dumps taken by GRS when in Star mode for GRS problems might be multi-systems.

There are several ways to use IPCS subcommands with dumps to diagnose global resource serialization problems:

- To format the dump or dumps for the diagnosis data of global resource serialization, see VERBEXIT GRSTRACE or GRSDATA in z/OS MVS IPCS Commands. See “VERBEXIT GRSTRACE subcommand output” on page 17-2 for a sample report of VERBEXIT GRSTRACE. You can find a sample GRSDATA report in z/OS MVS IPCS Commands.
- To combine trace data from multiple dumps, see “Combining trace data from multiple systems” on page 17-17.

GRSDATA and GRSTRACE reports can be used to view resources and requesters known to the local system.

The GRSDATA report uses SDATA=GRSQ records. The GRSTRACE report uses GRS internal control blocks from the GRS address space and includes diagnostic data and configuration information about GRS. Both reports support several filtering options to limit the amount of data returned. The GRSTRACE report also supports a DETAIL view.

When GRS is in STAR mode, GRSTRACE can only show requests from the local system. The GRSDATA report can be used to see information that includes global resources from other systems. The amount of data included depends on the GRSQ setting of the local system.

GRSDATA and GRSTRACE reports include GRS-managed Latch information at the bottom for all dumped address spaces with accessible Latch sets. See z/OS MVS IPCS Commands for more information on the GRSDATA and GRSTRACE commands.

The IPCS ANALYSIS,CONTENTION report produces GRS Latch and ENQ contention reports. In Star mode, the ENQ contention report does not report about Global ENQs. GRSTRACE and GRSDATA can provide information on all ENQ resources whether they are in contention or not. GRSDATA is the only report that
can process Star mode Global ENQ information. Latch contention is only provided through IPCS ANALYSIS,CONTENTION. No reporting is provided for latches that are held but not in contention.

**VERBEXIT GRSTRACE subcommand output**

The IPCS VERBEXIT GRSTRACE subcommand produces diagnostic reports about global resource serialization from dumps. [z/OS MVS IPCS Commands](#) gives the syntax of the VERBEXIT GRSTRACE subcommand and [z/OS MVS IPCS User's Guide](#) explains how to use the GRSTRACE option of the IPCS dialog.

The dump may also contain component trace data for global resource serialization and latch contention statistics. See the component trace chapter of [z/OS MVS Diagnosis: Tools and Service Aids](#) for information on how to format global resource serialization component trace data.

The VERBEXIT GRSTRACE report displays local, global, and step queues with outstanding global resource serialization requests. An asterisk next to a minor name indicates resource contention for that minor name.

* * * * * GLOBAL RESOURCE SERIALIZATION CONTROL BLOCK PRINT * * * * *

Options list:

- Report................. GRSTRACE
- Level of detail........ SUMMARY
- Requested time format.. LOCAL
- Filter(s) in use: None

* * * * * * * * * * * * * * * * * DIAGNOSTIC DATA * * * * * * * * * * *

- GVT: 00000000_00FE1000
- GVTX: 00000000_006EB000
- GQHT: 0000021_F8F00000
- SGHT: 00000000_00000000
- LQHT: 00000021_F8E00000
- STHT: 00000000_7F5B8000
- RPT: 00000000_7F5F7F40

* * * * * * * * * * * * * * * * * CONFIGURATION INFORMATION * * * * * *

- GRS Mode: RING
- Current RESMIL Value: 19
- Minimum RESMIL Value: 15
- Maximum RESMIL Value: 19
- RESMIL Self Tuning: On
- TOLINT Value: 180
- ACCELSYS Value: 99
- Synchres Setting: Yes
- Active Exits: None
- CTRACE Buffer size (K): 4096
- The EQDQ monitor is: Off
- ENQMAXA: 250000
- ENQMAXU: 16384
Global Resource Serialization

***************************************************
***************************************************
***** ***** STEP QUEUE (SHTN) CONTROL BLOCK PRINT *****
***** *****
***************************************************
***************************************************

MAJOR NAME: SPFUSER

MINOR NAME: SPFUSER
SCOPE: STEP SYSNAME: S4 STATUS: *EXCLUSIVE* /OWN
ASID: 0000002A TCB: 006F8650 JOBNAME: SPFUSER
Critical ENQ Time(s):
  Grant: 07/09/2007 13:03:16.054019

MAJOR NAME: SYSBLSDI

MINOR NAME: 0005F610 SCOPE: STEP SYSNAME: S4 STATUS: *SHARED* /OWN
ASID: 0000002A TCB: 006F8328 JOBNAME: SPFUSER
Critical ENQ Time(s):

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Global Resource Serialization

***************************************************
***************************************************
***** LOCAL QUEUE (LQHT) CONTROL BLOCK PRINT *****
***** *****
***************************************************
***************************************************

MAJOR NAME: SYSDSN

MINOR NAME: SYS1.BRODCAST
SCOPE: SYSTEM SYSNAME: S4 STATUS: *SHARED* /OWN
ASID: 00000001 TCB: 00697B0 JOBNAME: *MASTER*
Critical ENQ Time(s):
  Request: 07/09/2007 12:27:54.361651
  Grant: 07/09/2007 12:27:54.361743

MINOR NAME: SYS1.DAE
SCOPE: SYSTEM SYSNAME: S4 STATUS: *SHARED* /OWN
ASID: 00000005 TCB: 006FBB0 JOBNAME: DUMPSRV
Critical ENQ Time(s):
  Request: 07/09/2007 12:29:05.519990
  Grant: 07/09/2007 12:29:05.520012

MINOR NAME: SYS1.UADS
SCOPE: SYSTEM SYSNAME: S4 STATUS: *SHARED* /OWN
ASID: 0000002A TCB: 006FBB0 JOBNAME: SPFUSER
Critical ENQ Time(s):
  Request: 07/09/2007 13:02:37.259848
  Grant: 07/09/2007 13:02:37.345562

MAJOR NAME: SYSIEA01

* MINOR NAME: SDUMPENQ
SCOPE: SYSTEM SYSNAME: S4 STATUS: *EXCLUSIVE* /OWN
ASID: 00000005 TCB: 006FCC98 JOBNAME: DUMPSRV
Critical ENQ Time(s):
  Grant: 07/09/2007 13:35:33.770842

SCOPE: SYSTEM SYSNAME: S4 STATUS: *EXCLUSIVE* /WAIT
ASID: 00000007 TCB: 006FFD90 JOBNAME: GRS
Critical ENQ Time(s):

Global Resource Serialization
Global Resource Serialization

***************************************************
****** GLOBAL QUEUE (GQHT) CONTROL BLOCK PRINT ******
***************************************************

MAJOR NAME: SYSDSN

MINOR NAME: AFOSTER.USER.LOAD
SCOPE: SYSTEMS SYSTYPE: SYSTEM02 STATUS: *SHARED* /OWN
ASID: 00000006 TCB: 006FFB00 JOBNAME: XCFAS
Critical ENQ Time(s):
  Request: 07/09/2007 12:29:01.924808
  Some ENQ information is unavailable for this remote request

SCOPE: SYSTEMS SYSTYPE: S4 STATUS: *SHARED* /OWN
ASID: 00000006 TCB: 006FFB00 JOBNAME: XCFAS
Critical ENQ Time(s):
  Request: 07/09/2007 12:29:40.935860
  Grant: 07/09/2007 12:29:41.044668

SCOPE: SYSTEMS SYSTYPE: SYS3 STATUS: *SHARED* /OWN
ASID: 00000006 TCB: 006FFB00 JOBNAME: XCFAS
Critical ENQ Time(s):
  Some ENQ information is unavailable for this remote request

SCOPE: SYSTEMS SYSTYPE: SYSTEM02 STATUS: *SHARED* /OWN
ASID: 00000019 TCB: 006FFB00 JOBNAME: LLA
Critical ENQ Time(s):
  Request: 07/09/2007 12:29:57.821468
  Some ENQ information is unavailable for this remote request

SCOPE: SYSTEMS SYSTYPE: S4 STATUS: *SHARED* /OWN
ASID: 00000019 TCB: 006FFB00 JOBNAME: LLA
Critical ENQ Time(s):
  Request: 07/09/2007 12:30:47.855738
  Grant: 07/09/2007 12:30:47.906647

SCOPE: SYSTEMS SYSTYPE: SYS3 STATUS: *SHARED* /OWN
ASID: 00000019 TCB: 006FFB00 JOBNAME: LLA
Critical ENQ Time(s):
  Request: 07/09/2007 12:30:56.855009
  Some ENQ information is unavailable for this remote request

SCOPE: SYSTEMS SYSTYPE: A STATUS: *SHARED* /OWN
ASID: 00000006 TCB: 006FFB00 JOBNAME: XCFAS
Critical ENQ Time(s):
  Some ENQ information is unavailable for this remote request

SCOPE: SYSTEMS SYSTYPE: A STATUS: *SHARED* /OWN
ASID: 00000019 TCB: 006FFB00 JOBNAME: LLA
Critical ENQ Time(s):
  Some ENQ information is unavailable for this remote request
Global Resource Serialization

MINOR_NAME: ARTMVS.EXITS.LOADLIB
SCOPE: SYSTEMS  SYSTYPE: SYSTEM02  STATUS: +SHARED+  /OWN
ASID: 00000006  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
  Request: 07/09/2007 12:29:01.454510
Some ENQ information is unavailable for this remote request
SCOPE: SYSTEMS  SYSTYPE: S4  STATUS: +SHARED+  /OWN
ASID: 00000006  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
  Request: 07/09/2007 12:29:40.609526
Grant: 07/09/2007 12:29:40.718159
SCOPE: SYSTEMS  SYSTYPE: SY53  STATUS: +SHARED+  /OWN
ASID: 00000006  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
 Some ENQ information is unavailable for this remote request
SCOPE: SYSTEMS  SYSTYPE: SYSTEM02  STATUS: +SHARED+  /OWN
ASID: 00000019  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
Some ENQ information is unavailable for this remote request
SCOPE: SYSTEMS  SYSTYPE: S4  STATUS: +SHARED+  /OWN
ASID: 00000019  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
  Request: 07/09/2007 12:30:47.597027
Grant: 07/09/2007 12:30:47.649343
SCOPE: SYSTEMS  SYSTYPE: SY53  STATUS: +SHARED+  /OWN
ASID: 00000019  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
  Request: 07/09/2007 12:30:56.409462
Some ENQ information is unavailable for this remote request
SCOPE: SYSTEMS  SYSTYPE: A  STATUS: +SHARED+  /OWN
ASID: 00000006  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
Some ENQ information is unavailable for this remote request
SCOPE: SYSTEMS  SYSTYPE: A  STATUS: +SHARED+  /OWN
ASID: 00000019  TCB: 006FB800  JOBNAME: XCFAS
Critical ENQ Time(s):
Some ENQ information is unavailable for this remote request

The following fields might appear in the report depending on the VERBEXIT
GRSTRACE SUMMARY or DETAIL report type and GRS environment. See
individual field descriptions more for information.

**DIAGNOSTIC DATA**

**GVT**
Starting address of the global vector table (GVT)

**GVTX**
Starting address of the global vector extension (GVTX)

**GQHT**
Starting address of the global hash table (GQHT)

**SGHT**
Starting address of the system global hash table in STAR mode. (SGHT)

**LQHT**
Starting address of the local hash table (LQHT)

**STHT**
Starting address of the step queue hash table (STHT).

**RPT**
Starting address of the resource pool table (RPT)
CONFIGURATION INFORMATION

GRS Mode
GRS mode at the time of the dump. The possible values are NONE, RING, and STAR.

Current RESMIL Value
Current value of RESMIL in milliseconds. This field is only displayed in RING mode.

Minimum RESMIL Value
Minimum value of RESMIL in milliseconds. This field is only displayed in RING mode.

Maximum RESMIL Value
Maximum value of RESMIL in milliseconds. This field is only displayed in RING mode.

RESMIL Self Tuning
Setting of RESMIL self tuning. Possible values are ON or OFF. This field is only displayed in RING mode.

TOLINT Value
Value of TOLINT displayed in seconds. This field is displayed in RING mode.

ACCELSYS Value
ACCELSYS value. This field is displayed in RING mode.

Synchres setting
Setting of the synchronous reserve processing. Possible values are Yes, No, and Disabled.

Active Exits
List of the current global resource serialization installation exits. For complete installation exit information, see z/OS MVS Installation Exits. Possible values of this field include:
- NONE - There were no active exits
- ISGNQXIT - The ENQ/DEQ installation exit was active.
- ISGNQXITBATCH - The ENQ/DEQ batch installation exit was active.
- ISGNQXITQUEUED1 - The ENQ/DEQ queued installation exit was active.
- ISGNQXITFAST - The fast ENQ/DEQ installation exit was active.
- ISGENDOFLQCB - The ENQ/DEQ end of local QCB installation exit was active.
- ISGNQXITPREBATCH - The ENQ/DEQ pre batch installation exit was active.
- ISGNQXITBATCHCND - The ENQ/DEQ batch conditional installation exit was active.
- ISGCNFXTSYSTEM - The contention notification filter installation exit for system-scope resources was active.
- ISGCNFXTSYSPLEX - The contention notification filter installation exit for sysplex-scope resources was active.

GRSQ Setting
The GRSQ setting. Possible values are LOCAL, CONTENTION, or ALL. Only displayed in STAR mode.
Global Resource Serialization

CNS
System name of the Contention Notification System. Only displayed in STAR mode. A value of ‘Unavailable’ is displayed if the required information is not present in the dump.

CTRACE Buffer size (k)
Value of the CTRACE buffer size in bytes.

The ENQ/DQ monitor is
Status of the ENQ/RESERVE/DEQ monitor. Possible values are ON or OFF.

ENQMAXA
Value of the system wide ENQMAXA.

ENQMAXU
Value of the system wide ENQMAXU.

Outstanding ENQ/RESERVE breakdown sections

MAJOR NAME
The major name of a resource

MINOR NAME
The minor name of a resource (with * if resource contention exists)

RESOURCE CREATION TIME
The Resource Creation Time is the time that global resource serialization last acknowledged interest in the resource. The requester who caused the acknowledgment might have dequeued. Global resource serialization removes all knowledge of the resource when there are no interested parties. The Time is displayed in the request Time(Local | GMT | UTC) format. This field is displayed only when DETAIL is specified.

LAST MOVEWAITER TIME
The last time when this resource was affected by an ISGADMIN MOVEWAITER request. See z/OS MVS Programming: Authorized Assembler Services Guide and z/OS MVS Programming: Authorized Assembler Services Reference EDT-IXG for information specific to the ISGADMIN service. The Time is displayed in the request Time(Local | GMT | UTC) format. This field is displayed only when DETAIL is specified.

SCOPE
Scope of the resource - SYSTEM, SYSTEMS, or STEP

SYSNAME
Name of the system requesting the resource

STATUS
Type of access to resource requested - SHARED or EXCLUSIVE

ASID
Address space identifier (ASID) for address space where request was issued

TCB
The address of the task control block (TCB) requesting the resource

JOBNAME
The name of the job requesting the resource

MASID
Address space identifier (ASID) for address space where the MASID target request was issued. This field is displayed only for MASID ENQ users.
Global Resource Serialization

MTCB
The address of the task control block (TCB) targeted by the MASID ENQ request. This field is only displayed for MASID ENQ requests.

Note: A non-zero MTCB value with a zero MASID value indicates that the original ENQ request specified MASID=MTCB=, but GRS converted this request to a regular (non-MASID) ENQ.

Reserve Device
Displays the EBCDIC device number for this UCB. In GRS RING, if the request originated from a remote system message, Reserve from remote system, is displayed. If data is not available through the IOSVIEDN service, the UCB address is displayed in message, "Reserve UCB at xucbaddr unavailable."

Volser
Displays the Volser for this UCB. In GRS RING, if the request originated from a remote system, message, "Reserve from remote system" is displayed. If data is not available via the IOSVIEDN service, the UCB address is displayed in message, "Reserve UCB at xucbaddr unavailable."

Synchronous Reserve status
Displays the state of the GRS managed Reserve. This field is blank until the ENQ is owned by this requester. One of the following states can occur:

SYNCHRES COMPLETE
Either the device was already reserved by this system and GRS incremented the usage count or GRS completed the I/O necessary to reserve the device.

NOT SYNCHRES
The device was not already reserved by this system and GRS did not make any attempt to reserve the device. The system will reserve the device when I/O request by the requester is complete.

WAITING FOR SYNCHRES TO COMPLETE
The device was not already reserved by this system and GRS has started the I/O necessary to reserve the device; however, the I/O has not yet completed. The device might be reserved by another system.

INCOMPLETE REQUEST: STATE UNKNOWN
GRS has not finished determining whether to attempt a synchronous reserve for this request. The state is unknown.

Critical ENQ Times
ENQ request, contention, grant, and ISGADMIN movewaiter times. The outputs are formatted according to the Time(Local|GMT|UTC) specification. Local is the default time format.

Request - The time the ENQ request was issued. For GRS RING globals originating on a system where the current dump was not taken, it's the time the dumped system received this request. Other possible values include:

0, QEL BEING FREED - The QEL is in the act of being freed.

The following fields are presented only for requests originating on the dumped system. The requests include all local requests, all GRS=STAR global requests known to the dumped system, and GRS RING requests originating on the dumped system. For GRS RING requests originating from another system, the following message is issued:

Some ENQ information is unavailable for this remote request
Global Resource Serialization

Contention - Time that GRS detected resource contention for the overall request originating on the dumped system. The Contention field is only displayed if contention was ever detected by GRS for this particular request. Other possible values include: 0, BUT IS WAITING - Small timing window where GRS has marked the requester as waiting but GRS has not yet set the wait time.

Started I/O - Time that GRS either incremented the usage count for a RESERVE already held by this system or started the I/O to RESERVE the device because of the request.

Grant - Time that the overall request was granted access to all resources. Other possible values include: 0, BUT NOT WAITING - Small timing window where GRS has granted access to all resources in the request, but the grant time has not yet been set.

Delta Time Waiting - Amount of time that the requestor spent waiting for access to all resources. This field is set when the contention time and grant time are both non-zero. If the requestor is still waiting at the time of the dump, this field is not set.

Movewaiter - Time that a waiting request was moved by the ISGADMIN MOVEWAITER function. See z/OS MVS Programming: Authorized Assembler Services Guide and z/OS MVS Programming: Authorized Assembler Services Reference EDT-IXG for information specific to the ISGADMIN service.

OWN
This indicates that the requester is an owner of this ENQ resource. However, for synchronous RESERVE requests, the I/O for the device RESERVE might not have completed, and the requester might still be waiting.

WAIT
This indicates that the requester is a waiter for the ENQ resource. If this is a reserve request, the hardware reserve is issued after the waiter becomes the owner of the ENQ resource.

USE
This indicates that the requester is a MASID owner of the resource. That is, another requester is the owner and this MASID requester is also allowed to use the resource in the requested state.

The following fields are only displayed when DETAIL is specified:

Caller PSW
Eight-byte Program Status Word (PSW) at the time of SVC or PC interruption on entry into ENQ. Caller PSW contains the return address back to the calling ENQ/ISGENQ/RESERVE program. The PSW address combined with the ASID and requesting TCB address can help identify which program initiated this ENQ/ISGENQ/RESERVE request.

Caller TCB
Task control block (TCB) address of the ENQ/ISGENQ/RESERVE issuer, when different from the owning ENQ task. It directed ENQ where the owning task is different from the requesting task.

Request Type
The type of ENQ/ISGENQ/RESERVE linkage specified by the invoker of ENQ. Possible values are LINKAGE=ISGENQ, LINKAGE=SYSTEM, LINKAGE=SVC. For GRS RING mode, two other displays are possible: LINKAGE=SYSTEM (or ISGENQ) or Request created by queue merge processing.
Global Resource Serialization

**RNL Processing Actions**
Displays the RNL processing sequence with respect to this request. Possible values are INCL, INCL EXCL, EXCL, CON, or RNL = NO, where INCL=Promoted to SYSTEMS ENQ by RNL processing, EXCL=Demoted to SYSTEM ENQ by RNL processing, and CON=Converted to SYSTEMS ENQ without a hardware device RESERVE.

**Affected by ISGNQXIT/FAST**
This request was altered by an ISGNQXIT or ISGNQXITFAST exit routine. See [z/OS MVS Installation Exits](#) for specific information about these dynamic exit routines.

**Affected by ISGNQXITBATCH/CND**
This request was altered by an ISGNQXITBATCH or ISGNQXITBATCHCND exit routine. See [z/OS MVS Installation Exits](#) for specific information about these dynamic exit routines.

**Managed by an Alternate Serialization Product**
This request is managed outside the scope of GRS processing by an alternate serialization product.

**ISGENQ Userdata**
Displays printable hexadecimal digits and the actual EBCDIC text of the ISGENQ Userdata as specified on the ISGENQ REQUEST=OBTAIN macro invocation.

**QEL**
The address of the queue element (QEL) for the request

**QXB**
The address of the queue extent block (QXB) for the request

**QCB**
The address of the queue control block (QCB) for the request

**ECB**
The address of the event control block (ECB) as specified on an ENQ ECB= or ISGENQ WAITTYPE=ECB invocation

**SVRB**
The address of the supervisor control block (SVRB) created on entry to the SVC ENQ routine that is ENQ LINKAGE=SVC.

**Note:** The SVRB is only valid when this ENQ is actively being processed or waited on for contention resolution by GRS.

**RB**
The address of the request block (RB) that issued the ENQ LINKAGE=SYSTEM or ISGENQ request

The output from VERBEXIT GRSTRACE might also contain the following information:
Global Resource Serialization

Latch Statistics

**Latch Set Name:** LS1.XMITDAT.LATCH.SET

**Creator Jobname:** MYJOB1  
**Creator ASID:** 0024

<table>
<thead>
<tr>
<th>Latch Number</th>
<th>Fast Obtains</th>
<th>Slow Obtains</th>
<th>Ratio (slow/total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>320</td>
<td>1</td>
<td>0.03%</td>
</tr>
<tr>
<td>1</td>
<td>209,989</td>
<td>33</td>
<td>0.02%</td>
</tr>
<tr>
<td>2</td>
<td>5,330,998</td>
<td>3,294,036</td>
<td>37.33%</td>
</tr>
<tr>
<td>3</td>
<td>611,721</td>
<td>24,967</td>
<td>0.39%</td>
</tr>
<tr>
<td>4</td>
<td>211,574</td>
<td>11,987</td>
<td>0.53%</td>
</tr>
</tbody>
</table>

**Summary:** 6,564,602 3,341,024 33.73% *

Total number of latches in above latch set: 5  
Number of latches with non-zero statistics: 5

**Latch Set Name:** LS2.TRANDAT.LATCH.SET

**Creator Jobname:** MYJOB2  
**Creator ASID:** 001D

<table>
<thead>
<tr>
<th>Latch Number</th>
<th>Fast Obtains</th>
<th>Slow Obtains</th>
<th>Ratio (slow/total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4,357</td>
<td>376</td>
<td>0.79%</td>
</tr>
<tr>
<td>3</td>
<td>79,551</td>
<td>3</td>
<td>0.00%</td>
</tr>
<tr>
<td>7</td>
<td>549,933</td>
<td>36</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

**Summary:** 633,841 415 0.07%

Total number of latches in above latch set: 8  
Number of latches with non-zero statistics: 3

The formatted display of latch statistics contains the following information:

**Latch Set Name**
- The name that the latch set creator assigned to the latch set displayed in the output.

**Note:** Latch set names are unique within any given address space. See the documentation provided by the latch creator for more information about the latch set.

**Creator Jobname**
- The name of the job associated with the primary address space where the latch set was created

**ASID**
- The address space identifier (ASID) of the job that was running in the primary address space at the time the latch set was created

**Latch number**
- The number of the latch for which statistics are displayed. See the latch creator documentation as to what this latch is used for.

**Fast Obtains**
- The number of times that tasks or SRB routines called the Latch_Obtain service to obtain a latch when the latch manager granted control of the latch to the requesting task or SRB routine immediately (no contention for the latch existed at the time of the call). The system might display one of the following letters with this number:
Global Resource Serialization

G (giga) - The actual number, when rounded down to a multiple of one billion, is one billion times the number displayed.

K (kilo) - The actual number, when rounded down to a multiple of one thousand, is one thousand times the number displayed.

M (mega) - The actual number, when rounded down to a multiple of one million, is one million times the number displayed.

Slow Obtains
The number of times that tasks or SRB routines called the Latch_Obtain service to obtain a latch when the latch manager could not grant control of the latch immediately (contention for the latch existed at the time of the call). The system may display the letter G, K, or M with this number, as described under “Fast Obtains” above.

Ratio
The percentage of the total number of Latch_Obtain requests that are slow obtains.
- The system rounds the percentage ratio to the nearest hundredth of a percent.
- The value 00.00 appears in this field if the contention ratio is less than 0.005%.
- An asterisk follows the contention ratio if it exceeds 5%.
- The system does not display latches for which the number of slow obtains and the number of fast obtains are both zero.

Summary
A line that displays:
- The total number of fast and slow obtains; if either of these numbers is too large for the system to display, the summary line contains a message indicating that the data is not available
- The contention ratio for all latches in the latch set
- The total number of latches in the latch set
- The number of latches in the latch set that received at least one obtain request (the number of latches with non-zero statistics).

The system might display one of the following letters with the listed numbers:

G (giga) - The actual number, when rounded down to a multiple of one billion, is one billion times the number displayed.

K (kilo) - The actual number, when rounded down to a multiple of one thousand, is one thousand times the number displayed.

M (mega) - The actual number, when rounded down to a multiple of one million, is one million times the number displayed.

An asterisk follows the summary contention ratio if it exceeds 5%.

Note: If the counters in the display of latch statistics wrap, the statistics are not meaningful. When testing your application, you can obtain meaningful statistics by dumping the application’s address space periodically (before the latch statistics wrap).

Summary Report Example
The following output is an example of a summary report for GRSTRACE, using the command IP VERBX GRSTRACE 'SUMMARY QNAME(''TES?ENQ'')':

Chapter 17. Global resource serialization 17-13
Global Resource Serialization

MAJOR NAME: TESTENQ

* MINOR NAME: DUMMYENQ
  SCOPE: SYSTEMS SYSTYPE: S1 STATUS: *SHARED* /OWN
  ASID: 0000002C TCB: 006FF020 JOBNAME: GRSTOOL
  Critical ENQ Time(s):
  Request: 06/04/2007 15:30:05.804018
  Grant: 06/04/2007 15:30:05.834250

SCOPE: SYSTEMS SYSTYPE: S1 STATUS: *SHARED* /OWN
  ASID: 00000028 TCB: 006FF020 JOBNAME: GRSTOOL
  Critical ENQ Time(s):
  Request: 06/04/2007 15:32:18.460284
  Contention: 06/04/2007 15:32:18.484524
  Grant: 06/04/2007 15:32:34.846436
  Delta Time Waiting: 00:00:16.361911

SCOPE: SYSTEMS SYSTYPE: S2 STATUS: *EXCLUSIVE* /WAIT
  ASID: 0000002F TCB: 006FF020 JOBNAME: GRSTOOL
  Critical ENQ Time(s):
  Request: 06/04/2007 15:33:18.738913
  Some ENQ information is unavailable for this remote request

SCOPE: SYSTEMS SYSTYPE: S1 STATUS: *SHARED* /USE
  ASID: 00000029 TCB: 006FF020 JOBNAME: GRSTOOL
  MASID: 0000002C MTCB: 006FF020
  Critical ENQ Time(s):
  Request: 06/04/2007 16:03:39.740163
  Grant: 06/04/2007 16:03:39.782389

Detailed Report Example

The following output is an example of a detailed report for GRSTRACE using the command IP VERBX GRSTRACE 'DETAIL QNAME(''TES?ENQ'')':
Detailed Report for RESERVE Status

The following output is an example of a detailed report for GRSTRACE using the command `IP VERBX GRSTRACE 'DETAIL RNAME(''SPOOL1*'')' :
Global Resource Serialization

MAJOR NAME: SYSZJES2

MINOR NAME: SPOOL1SYS1_CASE1
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 00000029 TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 027E Volser: TMPPK - SYNCHRES COMPLETE
Critical ENQ Time(s):
Request: 07/21/2010 12:56:50.099689
Started I/O: 07/21/2010 12:56:50.099716
Grant: 07/21/2010 12:56:50.100263

MINOR NAME: SPOOL1SYS1_CASE2
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 0000002A TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 027E Volser: TMPPK - SYNCHRES COMPLETE
Critical ENQ Time(s):
Request: 07/21/2010 13:00:59.542883
Started I/O: 07/21/2010 13:00:59.542907
Grant: 07/21/2010 13:00:59.542909

MINOR NAME: SPOOL1SYS1_CASE3
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 0000002A TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 027E Volser: TMPPK1 - NOT SYNCHRES
Critical ENQ Time(s):
Request: 07/21/2010 13:02:03.623645
Grant: 07/21/2010 13:02:03.623672

MINOR NAME: SPOOL1SYS1_CASE4
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 00000029 TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 0182 Volser: LOWDSD - WAITING FOR SYNCHRES TO COMPLETE
Critical ENQ Time(s):
Request: 07/21/2010 12:58:26.940649
Contention: 0, BUT IS WAITING

MINOR NAME: SPOOL1SYS1_CASE6
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 0000001E TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 027E Volser: TMPPK - SYNCHRES COMPLETE
Critical ENQ Time(s):

MINOR NAME: SPOOL1SYS1_CASE5
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 0000002A TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 0182 Volser: LOWDSD - INCOMPLETE REQUEST: STATE UNKNOWN
Critical ENQ Time(s):
Request: 07/21/2010 13:55:44.087246
Contention: 0, BUT IS WAITING

MAJOR NAME: MYGLOBAL

MINOR NAME: SPOOL1SYS1_CASE5
SCOPE: SYSTEM SYSNAME: S1 STATUS: *EXCLUSIVE* /OWN
ASID: 0000002A TCB: 004E6D90 JOBNAME: GRSTOOL
Reserve Device: 0182 Volser: LOWDSD - INCOMPLETE REQUEST: STATE UNKNOWN
Critical ENQ Time(s):
Request: 07/21/2010 13:55:44.087246
Contention: 0, BUT IS WAITING
Combining trace data from multiple systems

To diagnose global resource serialization problems, it is often useful to combine the GTF and component trace data from all the systems in the complex. First, obtain trace data in dumps or data sets from each system.

References

- See z/OS MVS Diagnosis: Tools and Service Aids for more information about:
  - Requesting GTF tracing
  - Component tracing for global resource serialization.
- See z/OS MVS IPCS User’s Guide and z/OS MVS IPCS Commands for general information on the IPCS subcommands.

You can combine the data in one of the following ways:

- **Use the IPCS MERGE subcommand** to merge GTF and component trace data from multiple systems into one chronological sequence. Obtain trace data in dumps or data sets and use option 2.7 of the IPCS dialog to select the MERGE subcommand. The IPCS dialog prompts you for the dumps or trace data sets and other parameters.

- **Use the IPCS COPYTRC subcommand** to combine component trace entries from multiple external writer data sets. Use option 5.3 of the IPCS dialog to select the COPYTRC subcommand. The IPCS dialog prompts you for desired type of tracing, input dump data sets or files, output data set, and other parameters.

  You can format the COPYTRC output data set using IPCS. Use the GTFTRACE subcommand to format GTF tracing, or the CTRACE subcommand to format component trace data.
Chapter 18. Input/Output Supervisor (IOS)

The input/output supervisor (IOS) component provides diagnostic data in dumps.

Formatting IOS dump data

Format an SVC, stand-alone, or SYSDUMP dump with the IOSCHECK subcommand to produce diagnostic reports about IOS. z/OS MVS IPCS Commands gives the syntax of the IOSCHECK subcommand and describes the contents of each report. z/OS MVS IPCS User’s Guide explains how to use the IOSCHECK option of the IPCS dialog.

The UCB parameter on the IOSCHECK subcommand, for example, formats the unit control blocks (UCB) for a list of device numbers.

IOSCHECK ACTVCUBS subcommand output

The IOSCHECK ACTVCUBS report shows the UCBs with active I/O at the time of the dump. This report is helpful for looking at multiple UCBs when you suspect either a problem with a device or a hang situation. The following is an example of a report produced with the IOSCHECK ACTVCUBS subcommand:

```
* * * I O S C H E C K  D A T A  * * *

IOCM: 00FD0F28
+0000 VOICT.... 001E VOILN.... 0018 PST....... 81051C30
+0008 OMWPT.... 00FD0520 SSCQ..... 81053C00 MAP....... 81054EE0
+0014 SMFRR.... 812L70EA SCMP..... 8105507E STIO....... 00FD1990
+0020 VOID..... 00FCF610 IOSSM.... 81055188 DIRB....... 01077820
+002C PRGID.... 8128D850 CHRB..... 0188E348 ISDT....... 0188E328
+0038 SWAP..... 81056230 SHUP..... 810595B8 OMEX....... 00FD1890
+0044 ATBL..... 00FCF900 SYNSA..... 0188E200 CNT....... 01053A08
+0050 HSCH..... 0185A68F GENA..... 00FCFA00 MSCQ...... 0106C070
+005C RSVA..... 00000000 STSQ..... 81058280 TCCW....... 00FD2110
+0068 SVCF..... 81052726 VARY..... 810588B3 CNXL....... 0105D018
+0074 QCNT..... 00FF4D06 ASCB....... 00FD2C00 NSTP....... 00000000
+0080 IOWA..... 01889A9F IOWEL..... 0434 VVSMZ....... 31E0
+0088 CPFM..... 810553E6 SCP..... 0183F306 SIOQC...... 0105DE38
+0094 SDUMP..... 0188C220 HCRS..... 810388AE ZTAB...... 01077998
+00A0 SMHDR..... 0188E800 SMLG..... 81055180 SMLF...... 01055288
+00AC SMFD..... 8105532E SMMG..... 812771AC SMMF...... 81257234
+00B6 SMEG..... 8127725A SMEF..... 8127730E DPTH...... 0105E148
+00C4 LEVL..... 00FDFF30 RSUM..... 01060460 EXHDR...... 0188E0F8
+00D0 IOVTI..... 01004B10 DPSV..... 81032980 BIND....... 0106E1F0
+00DC SMFT..... 81065648 CMBS..... 81066F80 HSWAP...... 81066718
+00E8 DDRLV..... 09 RSV....... 00000000 CSTK...... 81067078
+00F0 RSV4..... 00000000 00000000 00000000 00000000 00000000
+0104 00000000 00000000 00000000 00000000 00000000
+0110 FLAGS.... F0 QSCLV..... 02 I OQR...... 01
+0113 CSSID.... 00 IQSQO..... 0188C268 FDEV...... 81067A38
+011C ACRN..... 81060990 HDTQ..... 01883758 CNXO..... 00FDFA24
+0128 IPID..... 0106C058 PRVT....... 0106D0F0 URGQ...... 0104A658
+0134 REPT..... 00000000 CTRS..... 8106E0F8 UICR....... 818838C8
+0140 AFND..... 8106FA10 SLFI..... 81074B00 IMSGA..... 0188D1A0
+014C MIHQ..... 81075D70 MANI..... 81076838 CSMC...... 81076F10
```
Input/Output Supervisor

IOCW: 00FD0520
+0000 IOCW.... IOCW LENW.... 0044 PGCT.... 0000
+0008 SLH.... 8102AA00 HOTCT.... 00000000 MIHCA.... 0188E650
+0014 IOPTA.... 00000000 RSV.... 00 IPTC1.... 80
+0018 SSCBT.... 00010 CDT.... 0225F400 CPAT.... 0229F3E0
+0024 CUIRQ.... 00000000 SLFCT.... 00000000 FRAG2.... F2
+0028 FLAG3.... D0 RSV.... 0000 PURGQ.... 00000000
+0034 PAVE.... 01885310 IECAA.... 01885340 RSV.... 00000000
+0040 00000000

SYNC: 0188E2D0
+0000 GEN...... 00000000 PURGE.... 00000000 MGF...... 00000000
+0000 SMRQE.... 00000000 SMLGB.... 00000000 EXLGB.... 00000000
+0018 CHPR.... 00000000 HOTIO.... 00000000 IOPRV.... 00000000
+0024 CDT.... 00000000 CUIRQ.... 00000000 MBIQ.... 00000000
+0030 ECB.... 00000000 CAPE.... 00000000 PAVS.... 00000000
+003C RSV.... 00000000

IODEF information:
  data set name: HCDSUP.IODFA5
  configuration ID: GENTS
  EDT ID: 00
  processor name: PR90H
  creation date: 94-02-28
  creation time: 11:14:32
  configuration description: HCDSUP IODFA5

IOS LEVEL DEFINITIONS:
  01=NORMAL
  02=QUIESCE
  03=IOMD
  04=DAVV
  05=DSTF
  06=IOPM
  07=SELFDESC
  08=DDR
  09=DYNPATH
  10=DPSVAL
  11=UNCRSV
  12=RSETEVT
  13=CHPRCVD
  14=FDEV
  15=CHRRCVD
  16=RSVD
  17=FDEV
  18-32=RSVD
Input/Output Supervisor

* * * ACTVUCBS PROCESSING * * *

SUBCHANNEL SET 0 DEVICES:

UCB AT 00F1AF80: DEVICE 00415; SUBCHANNEL 0052

UCBPRFIX: 00F1AF80
-0008 LOCK..... 00000000 IOQ...... 02375F00

UCBOB: 00F1AF80
+0000 JBNR...... 00 FL5...... 88 ID....... FF
+0003 STAT...... 84 CHAN...... 0415 FL1...... 08
+0007 FLB...... 00 NXUCB.... 00000000 WGT...... 08
+0000 NAME...... 415 TBYT1.... 30 TBYT2.... 30
+0012 DVCLS.... 20 UNTYP.... 0E FLC...... 00
+0015 EXTP...... F1AF88 VTOC..... 00010100 VOLI..... VL0415
+0022 STAB..... 10 DMCT..... 00 SQC...... 00
+0025 FL4...... A0 USER..... 0000 BASE.... 00F1ADB0
+002C NEXP..... 02100168

UCBCMXT: 00F1AF88
+0000 ETI...... 00 STI...... 00 FL6...... 09
+0003 ATI...... 40 SNSCT.... 20 FLP1...... 2A
+0006 STLI...... 00 FL7...... 08 IEXT..... 02133080
+000C CHPRM..... 00 SATI...... 00 ASID..... 0000
+0010 RSV...... 00 WTOID.... 000000 DDT...... 00FCE788
+0018 CLEXT.... 00F1AF48 DCTOF.... 0000 CSFLG.... 00
+001F RSV...... 00

UCBXPX: 02133080
+0000 RSTEM.... 00 MIHKY.... 0D MIHTI.... 80
+0003 HOTIO.... 40 IOQF..... 02375F00 IOQL..... 02375400

SUBCHANNEL-IDENTIFICATION:
+000C CSS ID 00
+0000 IID/SSID 01
+000E NUMBER 0052
+0010 PMCSI.... 289C BI...... 0105 LPM...... F0
+0015 RSV...... 00 LPUM...... 80 PIM...... F0
+0018 CHPID.... 60708090 00000000 LEVEL.... 01
+0021 IOSFI.... 08 IOTKY.... 00 MIHFG.... 00
+0024 LVMSK.... 00000001

ACTUAL UCB COMMON SEGMENT ADDRESS 00F1AF80
DEVICE IS DYNAMIC
BASE UCB OF A PARALLEL ACCESS VOLUME
BASE UCB HAS BOUND ALIAS UCB 0041F AT ADDRESS 02100368
Input/Output Supervisor

IQ: 02375F00
+0000 ID....... IOQ_CHAIN.... 02375400 IOSB..... 00FCDE2C
+000C START..... 8103F300 FLA...... 90 PRFXO.... 00
+0012 PRI...... FF TYPE..... 00 AIOQ..... 00000000
+0018 UCB..... 00F1AFBO ASID..... 0017 CSSPR.... 00
+001F RSV...... 00 EPTR..... 023767C0
+0024 DDTWT.... 00000000 00000000 00000000 00000000 00000000
+0038 00000000 00000000 00000000 00000000 00000000
+004C 00000000 00000000 00000000 00000000 00000000
+0050 00000000 00000000 00000000 00000000 00000000
+005C 00000000 00000000 00000000 00000000 00000000
+0060 00000000 00000000 00000000 00000000 00000000
+0068 00000000 00000000 00000000 00000000 00000000
+006C 00000000 00000000 00000000 00000000 00000000
+0070 00000000 00000000 00000000 00000000 00000000
+0074 00000000 00000000 00000000 00000000 00000000
+0078 00000000 00000000 00000000 00000000 00000000
+007C DDTW2.... 00000000

IQE: 023767C0
+0000 EID...... IOQE_SMGFP.... 02375F80 SMGBP.... 02375E80
+000C SMGSQ..... 0188C2EC SMGFQ.... 00000000 SMRV1.... 0000
+0016 SMRV2.... 00 SMGAL.... 3C IOTCT.... 0010
+001A MIHCT.... 0010 MIHSF.... 00 RSV...... 000000
+0020 ENCLV..... 00000000 00000000 00000000 00000000 00000000

IOSB: 00FCDE2C
+0000 FLA...... 00 FLB...... 00 FLC...... 00
+0003 PROC..... 00 DVRID.... 00 FLD...... 01
+0006 ASID..... 0017 PGAD..... 87F00948 PKEY...... 01
+000C COD...... 7F OPT...... 10 OPT2.... 00
+0010 UCB..... 00F1AFB0 CCWAD.... 00000000 DSTAT.... 00
+0019 SSTAT.... 00 CSWRC.... 0000 SRB...... 00FCDE00
+0020 USE...... 07F01AF0 IOPID.... 00000000 SCHC..... 0000
+002A SNS...... 0000 IPIB.... 00000000 PCHN..... 00000000
+0034 ERP...... 00000000 PCI..... 00000000 NRM..... 87F0099E
+0040 ABN...... 87F009BA DIE..... 87F00A74 RST..... 0A3E3DD8
+004C VST...... 07F01DD8 DSID..... 00000000 LEVEL.... 00
+0058 GMMSK.... 00 DCTI..... 0000 FMSK..... 00
+005C RSV...... 00000000 CTC...... 00000000 SKM...... 00
+005E SKBB..... 0000 SKCC.... 0000 SKH1..... 00
+0064 SKH2.... 00 SKR...... 00 XID..... IOSB
+007A XLEN..... 0030 XFLG1..... 00 XFLG2..... 00
+007E XSSXA.... 00000000 XIOBE.... 00000000 XRCOD.... 00
+007F XTIME.... 00 XASPR..... 0000 XIOFX.... 00000000
+008A XIOD...... 00000000 XMSC.... 00000000 00000000
+0090 XBASE.... 00000000 XRSVF.... 00000000 00000000
IOQ: 02375400
+0000 ID........ IOQ CHAIN.... 00000000 IOSB..... 00FCC22C
+000C START..... 8103F300 FLA....... 90 PRFXO.... 00
+0012 PRI........ FF TYPE..... 00 AIQQ..... 00000000
+0018 UCB........ 00F1AFB0 ASID..... 001E CSSPR..... 00
+001F RSV...... 00 EPTR..... 023763A0
+0024 DDWT..... 00000000 00000000 00000000 00000000 00000000
+0038 00000000 00000000 00000000 00000000 00000000
+004C 00000000 00000000 00000000 00000000 00000000
+0060 DDTWA.... 00000000 00000000 00000000 00000000 00000000
+006C 00000000 00000000 00000000 00000000 00000000
+0074 00000000 00000000 00000000 00000000 00000000
+007C 00000000 00000000 00000000 00000000 00000000

IOQE: 023763A0
+0000 EID...... IOQE SMGFP.... 02375480 SMGBP.... 02375380
+000C SMGQ.... 0188C2EC SMGFQ.... 00000000 SMRV1.... 0000
+0016 SMRV2.... 00 SMGAL.... 3C IOTCT.... 0010
+001A MIHCT.... 0010 MIHSF.... 00 RSV...... 000000
+0020 ENCLV.... 00000000 00000000 ORBUA.... 02100368

IOSB: 00FCC22C
+0000 FLA....... 00 FLB....... 00 FLC....... 00
+0003 PROCI...... 00 DVRID.... 00 FLD....... 01
+0006 ASID..... 001E PGAD..... 87 F00948 PKEY..... 01
+0016 SMRV2.... 00 SMGAL.... 3C IOTCT.... 0010
+0018 UCB...... 00F1AFB0 CCWAD.... 00000000 DSTAT.... 00
+0019 STAT...... 00 CSWRC.... 0000 SRB...... 00FCC200
+0020 USE...... 07F01AF0 IOPID.... 00000000 SCHC.... 0000
+002A SNSS.... 0000 IPIB..... 00000000 PCHN..... 00000000
+0034 ERPC.... 00000000 PCI..... 00000000 NRN...... 87F0099E
+0040 ABN...... 87F009BA DIE..... 87F00A74 RST...... 0A3F7D8
+004C VST...... 07F010DB DSID.... 00000000 LEVEL.... 00
+0055 GPMSK.... 00 DCTI..... 0000 FMSK..... 00
+0059 CKEY...... 00 MDB...... 00 MD...... 00
+005C RSV...... 00000000 CTC..... 00000000 SKM..... 00
+0065 SKBB.... 0000 SKCC.... 0000 SKH1.... 00
+006A SKHH.... 00 SKR...... 00 XID...... 10SB
+0070 XLEN..... 0030 XFLG1.... 00 XFLG2.... 00
+0074 XSSX.... 00000000 XIDB.... 00000000 XRCD.... 00
+007D XTIME.... 00 XASPR.... 0000 XIOX.... 00000000
+0084 XIOD.... 00000000 XMSC.... 00000000 00000000
+0095 XBASE.... 00000000 XRSVF.... 00000000 00000000

UCB AT 02100368: DEVICE 0041F; SUBCHANNEL 0084
UCBPRFIX: 02100360
-0008 LOCK..... 00000000 IOQ..... 02375400

UCBOB: 02100368
+0000 JBNR..... 00 FL5....... 88 ID....... FF
+0003 STAT...... 04 CHAN...... 041F FL1...... 08
+0007 FLB....... 00 MXUCB.... 00000000 WGT...... 08
+0000 NAME..... 41F TBY1.... 30 TBY2.... 10
+0012 DVCLS.... 20 UNTP... 0E FLC....... 00
+0015 EXT....... 100341 VTOC.... 00000000 VOLI.... 00000000 0000
+0022 STA0..... 00 OMTFAL.... 00 SQC..... 00
+0025 FL4....... 10 USER..... 0000 BASE..... 00F1ADB0
+002C NEXP..... 02100168

Chapter 18. Input/Output Supervisor (IOS) 18-5
Input/Output Supervisor

UCBCMXT: 02100340
+0000 ETI..... 00 STI..... 00 FL6...... 09
+0003 ATI..... 00 SNSCT.... 18 FLP1..... 2A
+0006 STL1..... 00 FL7...... 08 IEXT..... 0213760
+000C CHPRM..... 00 SATI..... 00 ASID..... 0000
+0010 RSV...... 00 WTOID.... 00000000 DDT...... 00FCE7B8
+0018 CLEXT..... 00F1AF48 DCTOF.... 0000 CSFLG.... 00
+001F RSV...... 00

UCBXPX: 02133760
+0000 RSTEM.... 00 MIHKY.... 04 MIHTI.... 00
+0003 HOTIO.... 40 IOQF..... 00000000 IOQL..... 00000000

SUBCHANNEL-IDENTIFICATION:
+000C CSS ID 00
+000D IID/SSID 01
+000E NUMBER 0804
+0010 PMCW1.... 289C MBI...... 010F LPM...... F0
+0015 RSV...... 00 LPUM..... 80 PIM...... F0
+0018 CHPID.... 00000000 LEVEL.... 01
+0021 IOSF1.... 08 IOTKY.... 00 MIHFG.... 00
+0024 LVMSK.... 00000000

ACTUAL UCB COMMON SEGMENT ADDRESS 02100368
DEVICE IS DYNAMIC
BOUND PAV-ALIAS UCB
BASE UCB 00415 IS AT ADDRESS 00F1AFB0

ACTVUCBS SUMMARY:
COUNT OF CONTROL BLOCKS CHECKED
CONTROL BLOCK COUNT
---------------------
UCB 3589
TAPE 253
COMM 231
DASD 1019
DISP 901
UREC 65
CHAR 0
CTC 1040
IOQ 2
IOSB 2

UCBCMXT: 00F11C98
+0000 ETI..... 00 STI..... 00 FL6...... 09
+0003 ATI..... 40 SNSCT.... 20 FLP1..... A2
+0006 STL1..... 00 FL7...... 40 IEXT..... 02310968
+000C CHPRM..... 00 SATI..... 00 ASID..... 00B4
+0010 RSV...... 00 WTOID.... 00000000 DDT...... 00FC2BC
+0018 CLEXT..... 00F11CEB DCTOF.... 0000 RSV...... 0000

UCBXPX: 02310968
+0000 RSTEM.... 00 MIHKY.... 04 MIHTI.... 01
+0003 HOTIO.... 40 IOQF..... 0000F62F00 IOQL..... 0000F62F00
+000C SIDA..... 0001 SCHNO.... 0121 PMCW1.... 189C
+0012 MBI...... 0118 LPM...... 00 RSV...... 00
+0016 LPUM..... 80 PIM...... C0 CHPID.... 36B6FFFF
+001C FFFFFFFF LEVEL.... 01 IOSF1.... 08
+0022 IOTKY.... 00 MIHFG.... 00 LVMSK.... 00000001

Device is installation-static
Input/Output Supervisor

IOQ: 00F62F00
+0000 ID....... IOQ  CHAIN.... 00000000 IOSB.... 07C6CC80
+000C START.... 8102B300  FLA....... 80  RESV1.... 00
+0012 PRI....... FF  TYPE....... 00  AIOQ.... 00000000
+0018 UCB....... 00F11CC0  ASID.... 0001  MIHSF.... 00
+001F RSV....... 00  SMGFQ.... 00000000  SMRV1.... 0000
+0026 SMRV2.... 00  SMGAL.... 3C  IOTCT.... 0000
+002A MIHCT.... 0000  RSV....... 00000000  DDTWA.... 00000000
+0034 00000000 00000000 00000000 00000000 00000000
+003C 00000000 00000000 00000000 00000000 00000000
+0048 00000000 00000000 00000000 00000000 00000000
+0050 00000000 00000000 00000000 00000000 00000000
+005C 00000000 00000000 00000000 00000000 00000000
+0060 RSV....... 00000000  SMGFP.... 00F62F80  SMGBP.... 00F62E00
+0064 00000000 00000000 00000000 00000000 00000000
+0068 00000000 00000000 00000000 00000000 00000000
+006C 00000000 00000000 00000000 00000000 00000000
+0070 RSV....... 00000000  SMGFP.... 00F62F80  SMGBP.... 00F62E00
+0074 00000000 00000000 00000000 00000000 00000000

IOSB: 07C6CC80
+0000 FLA....... C0  FLB....... A0  FLC....... 00
+0003 PROC..... 00  DVRID.... 0E  FLD....... 20
+0006 ASID..... 0001  PGAD.... 8133B7F8  PKEY.... 05
+000D COD....... 7F  OPT....... 10  OPT2..... 80
+0010 UCB....... 00F11CC0  CCWAD.... 32D0B560
+0019 SSTAT..... 00  CSWRC.... 1000  SRB....... 07C6CCF0
+0020 USE....... 07C6CC00  IOPID.... 00000000  SCHC..... 4029
+002A SNS....... 0000  IPID.... 00000000  PCHN.... 00000000
+0034 ERN....... 00000000  PCI.... 8133B980  NRM.... 8133C36
+0040 ABN...... 8133C564  DIE.... 8133BFC0  RST.... 32D0B558
+0044 VST....... 07C3E55B  DSID.... 00000000  LEVEL.... 01
+0055 GMPSK.... 00  DCT1.... 0001  FMSK.... 00
+0059 CKEY....... 00  MDM.... 00  MDM.... 00
+005C RSV....... 00000000  CTC....... 00000000  SKM.... 00
+0065 S888.... 0000  SKCC.... 020D  SKH1.... 00
+006A S8H2.... 03  SKR.... 0B

UCB AT 00F2E178:  DEVICE 0080A; SUBCHANNEL 0698

UCBPRFIX: 00F2E170
-0000 LOCK..... 00000000  IOQ..... 00F63280

UCBOB: 00F2E178
+0000 JBNR..... 00  FL5....... 08  ID....... 00
+0003 STAT..... 8C  CHAN..... 0080A  FL1.... 08
+0007 FLB....... 00  NXUCB.... 00F2E1F8  WGT....... 00
+0000 NAME..... 080A  TBYT1.... 30  TBYT2.... 30
+0012 DCVLS.... 20  UNTYP.... 0F  FLC.... 08
+0015 EXT ...... F2E150  VT0C.... 001E0100  V0L1.... 001E0100
+0022 STAB...... 50  DMCT..... 00  SQC....... 00
+0025 FL4....... 00  USER.... 0001
Input/Output Supervisor

UCBCMXT: 00F2E150
+0000 ETI...... 00 STI...... 00 FL6...... 09
+0003 ATI...... 40 SNSCT...... 20 FLP1...... A2
+0006 STL1...... 00 FL7...... 40 IEXT...... 02325FC8
+000C CHPRM...... 00 SATI...... 00 ASID...... 00B4
+0010 RSV...... 00 WTORID...... 000000 DDT...... 00FCD2BC
+0018 CLEXT...... 00F2E1A0 DCTOF...... 0000 RSV...... 0000

UCBXPX: 02325FC8
+0000 RSTEM...... 00 MIHKY...... 04 MIHTI...... 01
+0003 HOTIO...... 40 IQQF...... 00F63280 IQQL...... 00F63280
+000C SIDA...... 0001 SCHNO...... 069B PMCW1...... 189C
+0012 MIBI...... 0467 LPM...... C0 RSV...... 00
+0016 LPUM...... 40 PIM...... C0 CHPID...... 1EBCCFFF
+001C FFFFFFFF LEVEL...... 01 IOSF1...... 08
+0022 IOTKY...... 00 MIHFG...... 00 LVMSK...... 00000001

Device is installation-static

IOQ: 00F63280
+0000 ID....... IOQ CHAIN...... 00000000 IOSB...... 07C56C80
+000C START...... 8102B300 FLA...... 80 RESV1...... 00
+0012 PRI...... FF TYPE...... 00 ASID...... 0001 PGAD...... 8133B7F8 PKEY...... 05
+0018 UCB...... 00F2E178 ASID...... 0001 MIHSF...... 00
+001F RSV...... 00 SMGFQ...... 00000000 SMRV1...... 0000
+0026 SMRV2...... 00 SMGAL...... 3C IOTCT...... 0000
+0034 MIICT...... 0000 RSV...... 00000000 DDTWA...... 00000000
+0048 00000000 00000000 00000000 00000000 00000000 00000000
+005C 00000000 00000000 00000000 00000000 00000000 00000000
+0064 00000000 00000000 00000000 00000000 00000000 00000000
+0070 RSV...... 00000000 SMGF...... 00F63300 SMGBP...... 00F63F80
+007C SMGSQ...... 01467450

IOSB: 07C56C80
+0000 FLA...... C0 FLB...... A0 FLC...... 00
+0003 PROC...... 00 DVRID...... 0E FLD...... 20
+0006 ASID...... 0001 PGAD...... 8133B7F8 PKEY...... 05
+000D COD...... 7F OPT...... 10 OPT2...... 80
+0010 UCB...... 00F2E178 CCWAD...... 33698260 DSTAT...... 00
+0019 SSTAT...... 00 CSWRC...... 0000 SRB...... 07C56C00
+0020 USE...... 07C56C00 IOPID...... 00000000 SCHC...... 4029
+002A SNS...... 0000 IPIB...... 00000000 PCHN...... 00000000
+0034 ERP...... 00000000 PCI...... 8133B89B NRM...... 8133C356
+0040 ABN...... 8133C564 DIE...... 8133BFC0 RST...... 33698258
+0048 VST...... 07C6258 DSID...... 00000000 LEVEL...... 01
+0055 GPMK...... 00 DCTI...... 0000 FMSK...... 88
+0059 CKEY...... 08 MDB...... 00 MDM...... 00
+005C RSV...... 00000000 CTC...... 00000000 SKM...... 00
+0065 SKBB...... 0000 SKCC...... 02A0 SKH1...... 00
+006A SKH2...... 0C SKR...... 04
ACTVUCBS SUMMARY:

Count of control blocks checked

<table>
<thead>
<tr>
<th>Control block</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCB</td>
<td>2192</td>
</tr>
<tr>
<td>TAPE</td>
<td>47</td>
</tr>
<tr>
<td>COMM</td>
<td>5</td>
</tr>
<tr>
<td>DASD</td>
<td>1918</td>
</tr>
<tr>
<td>DISP</td>
<td>32</td>
</tr>
<tr>
<td>UREC</td>
<td>14</td>
</tr>
<tr>
<td>CHAR</td>
<td>0</td>
</tr>
<tr>
<td>CTC</td>
<td>176</td>
</tr>
<tr>
<td>IOQ</td>
<td>2</td>
</tr>
<tr>
<td>IOS8</td>
<td>2</td>
</tr>
</tbody>
</table>

Messages issued: 0

***IOSCHECK COMPLETE***
Chapter 19. MVS Message Service (MMS)

The MVS message service (MMS) provides MMS diagnostic data in dumps.

Formatting MMS dump data

Format the MMS dump to obtain MMS diagnostic data as follows:
1. Start an IPCS session.
2. Do one of the following:
   a. Select the COMMAND option on the IPCS Primary Option Menu panel. Enter the VERBEXIT MMSDATA subcommand on the IPCS Subcommand Entry panel.
   b. Select the ANALYSIS option on the IPCS Primary Option Menu panel. Select the COMPONENT option on the IPCS Analysis of Dump Contents panel. Enter S next to MMSDATA on the IPCS Dump Component Data Analysis panel.

Use the IPCS VERBEXIT MMSDATA subcommand to display data from the dump in the form of the MVS Message Service Diagnostic Report. The VERBEXIT MMSDATA subcommand has no parameters.
MVS Message Service

VERBEXIT MMSDATA subcommand output

COMPON=MMS,COMPID=SCMMS,ABEND=0C1,MODULE=CNLUXLAT,RPLP=00000C60,CNLUXLAT FAILS - UNEXPECTED ERROR 1

VERBEXIT MMSDATA OUTPUT

MVS Message Service Diagnostic Report

Status at the Time of Error

CNL009701 Internal control block error 019 - refer to IBM

The default output language used by MMS: ENU
The MVS message service was available
The input (base) language used by MMS: ENU

Message File Control Information

Number of languages referencing this message file: 0001
Data set name of run-time message file: SYS1.ENURMF
DD name of run-time message file: SYS00001
Data-in-virtual ID of run-time message file:

FFFD0328 00000000

Number of languages referencing this message file: 0001
Data set name of run-time message file: SYS1.ESPRMF
DD name of run-time message file: SYS00002
Data-in-virtual ID of run-time message file:

FFFD180 00000000

Number of languages referencing this message file: 0001
Data set name of run-time message file: SYS1.FRBRMF
DD name of run-time message file: SYS00003
Data-in-virtual ID of run-time message file:

FFFD0958 00000000

Number of languages referencing this message file: 0001
Data set name of run-time message file: SYS1.CHTRMF
DD name of run-time message file: SYS00004
Data-in-virtual ID of run-time message file:

FFFD07B0 00000000

The CRB cell pool structure is all valid
The general cell pool structures are all valid

Parmlib Information

Configuration information for this parmlib environment is contained in the SYS1.PARMLIB member: MMSLST00
Refresh date for this parmlib environment: 0090094F
Refresh time for this parmlib environment: 19053591
Size of this parmlib environment: 00000A08

Language Availability Information for this Parmlib
MVS Message Service Diagnostic Report Overview

A complete report contains the following sections:
- Status at the Time of Error
- Message File Control Information
- Operator Command Information
- Parmlib Information
- Language Availability Information for this Parmlib
- Installation Exit Information
- Failing Function Information

If MMS data is not valid, error messages appear in the report and the report might include only some of these sections.

Error messages: The following error messages can appear in the report:
- Bad acronym found in control block
This message appears in the **Diagnostic Data** section of the report. Hexadecimal data follows this message. Message CNL00970I accompanies this message to identify the control block in error.

- **CNL00970I Internal control block error nnn - refer to IBM**
  
  This message may appear anywhere in the report. See [z/OS MVS Dump Output Messages](#) for more information.

- **VERBEXIT MMSDATA processing completed with internal errors**
  
  If an unknown return code is received from an IPCS exit service, this message concludes the report. If this message appears, the failure of the IPCS exit probably caused the other error messages in the report.

Provide the hexadecimal output in the **Diagnostic Data** section and any error message(s) to the IBM Support Center.

**Variable data in the report:** Data in the **Failing Function Information** section varies, depending on which MMS function failed. Diagnostic information associated with the failing function appears in this section.

A description of each section of the report follows.

**Status at the time of error**

This section contains the following information about the status of MMS at the time of the failure:

- The failing function in MMS, as follows:

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>INVOKED BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language query</td>
<td>QRYLANG macro</td>
</tr>
<tr>
<td>Message translate</td>
<td>TRANMSG macro</td>
</tr>
<tr>
<td>Start MMS</td>
<td>SET MMS=xx command or the INIT MMS(xx) statement of the CONSOLxx parmlib member</td>
</tr>
<tr>
<td>Refresh MMS</td>
<td>SET MMS=xx command</td>
</tr>
<tr>
<td>Stop MMS</td>
<td>SET MMS=NO command</td>
</tr>
<tr>
<td>Display MMS status</td>
<td>DISPLAY MMS command</td>
</tr>
</tbody>
</table>

If the failing function cannot be identified, the report shows MMS as the failing function.

- The system completion code and reason code of the failure. For an explanation of these codes, see [z/OS MVS System Codes](#).

- The name of the failing module.
  - If the module prefix is CNL, the failing module is in MMS.
  - If the module prefix is not CNL, see the module prefix table in "Relating a module prefix to component and product" on page 1-2 to determine which component failed. If the module prefix is not in the table, the failing module is an installation-provided program. Continue diagnosis with that program.

- The failing module diagnostic string. Provide this information if you report the problem to the IBM Support Center.

- The default output language used by MMS.

- A statement indicating that MMS was available.

- The input (base) language used by MMS.
**Message file control information**
This section contains information about the runtime message files that you should provide if you report a problem to the IBM Support Center.

**Operator command information**
This section shows the successful operator commands in the order they were entered.

If an operator command failed and caused the abnormal end of MMS, the **Status at the Time of Error** section states which command failed.

The operator commands used for message processing are:

- **SET MMS=xx**
  Starts or refreshes MMS, where xx indicates the MMSLSTxx parmlib member containing the parameters to be used by MMS

- **SET MMS=NO**
  Stops MMS

- **DISPLAY MMS**
  Displays MMS status as a report on the console

IPCS checks the structure of cell pools associated with MMS processing and reports on the structure.

**Parmlib information**
This section contains configuration information for the parmlib environment as follows:

- The CNLcccxx parmlib member that contains the information specified by your installation for an available language. Check this member to ensure that it contains correct information.

- The refresh date for this parmlib environment (yyddd) in packed decimal. Check this field for data that is not valid.

- The refresh time for this parmlib environment (hhmmss) in packed decimal. Check this field for data that is not valid.

- The size of the parmlib member, in hexadecimal bytes.

**Language availability information for this parmlib**
This section contains information about the languages into which MMS can translate messages.

For each available language, this section contains:

- The language code.

- The configuration member name associated with the language.

- The language data set name. This data set is the runtime message file.

- Alternate names for this language, in hexadecimal and EBCDIC. The EBCDIC version of the name should be the actual language name. For example, if the language code is JPN, this field should read Japanese.

**Installation exit information**
This section contains information about the exits established by your installation.

MMS provides a pre-processing installation exit and a post-processing installation exit.
MVS Message Service

This section contains the following information for each exit:

- The name of the exit.
- The address of the exit.
- The error count for the exit, or a statement saying that no errors were detected. If the error count for the exit is 1, the exit failed once. This flag was set so that the exit will not be invoked again. If the error count is 1, this does not mean that the current failure is caused by the exit, but that this exit failed in a previous abend.
- The length of the installation exit load module.

For an explanation of MMS installation exits or return codes and reason codes returned from the installation exits, see the z/OS MVS Installation Exits manual.

Failing function information

This section appears in the report if one of the following functions caused the failure:

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>INVOKED BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language query</td>
<td>QRYLANG macro</td>
</tr>
<tr>
<td>Message translate</td>
<td>TRANMSG macro</td>
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<tr>
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</tr>
<tr>
<td>Refresh MMS</td>
<td>SET MMS=xx command</td>
</tr>
<tr>
<td>Stop MMS</td>
<td>SET MMS=NO command</td>
</tr>
<tr>
<td>Display MMS status</td>
<td>DISPLAY MMS command</td>
</tr>
</tbody>
</table>

The first sentence in the Status at the Time of Error section indicates which function failed, along with the system completion code and reason code. If the system cannot identify the MMS function that caused the failure, the first sentence states that MMS abnormally ended, and includes the system completion code and reason code. Diagnostic information for the failing function appears in the Failing Function Information section.

If the failing function was invoked by a macro, see z/OS MVS Programming, Assembler Services Reference ABE-HSP to check the macro for correct syntax and parameters.

If the failing function was invoked by a command, see z/OS MVS System Commands to check the command for correct syntax and parameters.

If the syntax and parameters for the failing command or macro are correct, provide the diagnostic data in this section to the IBM Support Center when you report the problem.
Chapter 20. z/OS UNIX System Services

This topic contains the following diagnosis information for z/OS UNIX System Services (z/OS UNIX). z/OS UNIX provides the base control program support.

- “Getting the right z/OS UNIX data in a dump.”
- “Formatting z/OS UNIX dump data” on page 20-3.
- “z/OS UNIX CBSTAT subcommand” on page 20-3.
- “OMVS DATA subcommand” on page 20-4.
- “Problem diagnosis for shared file system” on page 20-33.
- “Understanding z/OS UNIX System Services latch contention” on page 20-39

Getting the right z/OS UNIX data in a dump

If you have a loop, hang, or wait condition in a z/OS UNIX process and need a dump for diagnosis, the following sections describe how to get the right z/OS UNIX data in a dump:

- “Obtaining address space and data space identifiers” to use in obtaining a z/OS UNIX dump.
- “Allocating a sufficient dump data set size” on page 20-2.
- “Using the dump command to dump z/OS UNIX data” on page 20-2.

Obtaining address space and data space identifiers

You will need to dump the following areas to get complete z/OS UNIX data in a dump:

- The kernel address space
- The kernel data space for kernel data
- Any other kernel data spaces that may be associated with the problem
- Any colony address spaces and associated data spaces that may be associated with the problem.
- Any process address spaces that may be associated with the problem
- Appropriate storage data areas containing system control blocks and other information

Use the following DISPLAY commands to find the correct areas to dump:

- Display system activity to find the kernel address space and its associated data spaces.
  
  display a,omvs

  The display output shows the kernel address space identifier (ASID) as “A=n.nn”, where “n.nn” is the hexadecimal ASID value.

  The display output shows the data space names associated with the kernel address space as “DSPNAME=BPX.....” or “DSPNAME=SYS.....”. The system uses these data spaces as follows:
  
  BPXSMBITS—for shared memory, memory map, and large message queue buffers. BPXSMBITS should be dumped when you dump BPXD data spaces for these components.
  
  BPXDQxxx—for message queues (where xxx can be the number 1 through 9)
  
  BPXDSxxx—for shared memory
  
  BPXDOxxx—for outboard communications server (OCS)
  
  BPXDMxxx—for memory map
BPXFSCDS—for couple data set (CDS)
SYSZBPX1—for kernel data (including CTRACE buffers)
SYSZBPX2—for file system data
SYSZBPX3—for pipes
SYSIGWB1—for byte-range locking
SYSGFU01—for DFSMS file system
SYSZBPXC—for Converged INET sockets
SYSZBPXL—for local INET sockets
SYSZBPXU—for AF_UNIX sockets

The kernel data space, SYSZBPX1, is always needed. You should dump other
data spaces if there is reason to believe that they contain data that could be
useful in analyzing the problem.

- To display system activity to find the colony address spaces and their associated
data spaces, use:
  D A,name
  name is the name specified in the ASNAME parameter of the FILESYSTYPE
  statement in BPXPRMxx.
  The display output shows the colony address space identifier (ASID) as
  “A=nnnn”, where “nnnn” is the hexadecimal ASID value.
  The display output shows the data space names associated with the colony
  address space as “DSPNAME=SYS.....”.
- To display status to see the process information for address spaces or file system
  information.
  D OMVS,A=ALL
  The display output shows all of the active processes, their ASIDs, process IDs,
  parent process IDs, and states. Use this information to find the ASIDs for the
  processes to be included in the dump request.
- To display global resource serialization information to see possible latch
  contention.
  D GRS,C
  This display may show latch contention, which could be the cause of the
  problem. You should dump the address space of the process holding the latch. If
  the latch is a file system latch, dump the file system data space SYSZBPX2 also.
  You may want to repeat the command several times to see if any contention
  shown in one display is relieved.

For more details on these DISPLAY commands, see [z/OS MVS System Commands](#).

**Allocating a sufficient dump data set size**

Because you are dumping multiple address spaces, multiple data spaces, and
multiple storage data areas, you may need a much larger dump data set defined
than is normally used for system dumps of a single address space. You should
preallocate a very large SYS1.DUMPnn data set. For more information on
SYS1.DUMPnn data sets, see the DUMPDS command in [z/OS MVS System
Commands](#).

**Using the dump command to dump z/OS UNIX data**

Enter the following command to start the dump:

```
DUMP COMM=('Descriptive name for this OMVS dump')
```

You can specify up to 100 characters for the name of the dump.
The system responds and gives you a prompt ID to which you reply, specifying the data to be included in the dump. If you specify the CONT option, the system prompts you for more input.

In the following examples, \textit{rn} is the REPLY number to the prompt.

- Enter the first reply:
  \begin{verbatim}
  R \textit{rn},SDATA=(CSA,SQA,RGN,TRT,GRSQ),CONT
  \end{verbatim}
  These data areas contain system control blocks and data areas that are generally necessary for investigating \textit{z/OS UNIX} problems.

- Enter the next reply:
  \begin{verbatim}
  R \textit{rn},ASID=(1B,2A,47,52),CONT
  \end{verbatim}
  In this example, X'1B' is the OMVS address space. The other address spaces specified are those believed to be part of the problem. You can specify up to 15 ASIDs.

- Enter the last reply:
  \begin{verbatim}
  R \textit{rn},DSPNAME=(1B.SYSZBPX1,1B.SYSZBPX2),END
  \end{verbatim}
  This example specifies two data spaces:
  
  - The kernel data space, which is always needed because it contains kernel data and CTRACE data
  
  - The file system data space, which is useful if the hang condition appears to be due to a file system latch, for example.

  Note that the kernel address space must be associated with the data space name; in this case, by specifying ASID X'1B'.

For more information on the DUMP command, particularly on specifying a large number of operands, see \textit{z/OS MVS System Commands}.

**Reviewing dump completion information**

After the dump completes, you will receive an IEA911E message indicating whether the dump was complete or partial. If it is partial, check the SDRSN value. If insufficient disk space is the reason for the problem, delete the dump, allocate a larger dump data set, and request the dump again.

For more details on message IEA911E, see \textit{z/OS MVS System Messages, Vol 6 (GOS-IEA)}.

**Formatting z/OS UNIX dump data**

Format an SVC or stand-alone dump with the IPCS OMVS DATA or CBSTAT subcommand to produce diagnostic reports about \textit{z/OS UNIX}. The \textit{z/OS MVS IPCS Commands} gives the syntax of the OMVS DATA subcommand and \textit{z/OS MVS IPCS User's Guide} explains how to use the OMVS DATA option of the IPCS dialog.

The dump may also contain component trace data for \textit{z/OS UNIX}. The component trace chapter in \textit{z/OS MVS Diagnosis: Tools and Service Aids} explains how to format this trace data.

**z/OS UNIX CBSTAT subcommand**

\textit{z/OS UNIX} provides a CBSTAT exit routine to provide control block status information. The CBSTAT exit routine displays control block status information at the ASCB or TCB level. The CBSTAT exit routine is invoked when a user enters the IPCS CBSTAT subcommand with a keyword of STRUCTURE(ASCB) or
**ASCB level**

At the address space level, the CBSTAT exit displays one or more of the following messages:
- Address space contains residual z/OS UNIX data
- Forking was used to create this address space for user *userid*
- Address space is being debugged using PTRACE

**TCB level**

At the task level, the CBSTAT exit will display one or more of the following messages:
- Waiting on events: <list of events>
- Task is waiting on an internal z/OS UNIX event: *event*
- Task is processing a callable service to z/OS UNIX <mod name>
- Task is processing a callable service to z/OS UNIX using a code that is undefined.
- Task is processing a z/OS UNIX callable service that is not valid
- Initial pthread_create task is waiting for the last thread to end
- Pthread_create is in progress
- Task is waiting for a pthread_create request
- Task is waiting to complete pthread_cancel processing
- Task is scheduled for termination
- Task was created by pthread_create

**CBSTAT subcommand output**

The following is an example of output from the CBSTAT subcommand.

```
STATUS FOR STRUCTURE(TCB) at 008EF788 ASID(X'001E')
BPXG2006I Task is processing a SYSCALL to z/OS UNIX BPX1PTJ
BPXG2014I Task was created by pthread_create
```

**OMVSDATA subcommand**

The IPCS OMVSDATA subcommand formats dump information about z/OS UNIX. To request a particular report, specify the report type, a level of detail, and if desired, a filtering keyword. If you do not specify parameters, you will see the process summary report.

OMVSDATA divides the information about z/OS UNIX into six reports. Each report corresponds to the following OMVSDATA keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNICATIONS</td>
<td>Information about pseudo terminal user connections and OCS remote terminal connections.</td>
<td>20-8</td>
</tr>
<tr>
<td>FILE</td>
<td>Information about each z/OS UNIX file system type and its mounted file systems.</td>
<td>20-15</td>
</tr>
</tbody>
</table>
### Keyword Report Displays Location

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPC</td>
<td>Information about interprocess communication activity for shared memory, message queues and semaphores.</td>
<td>20-21</td>
</tr>
<tr>
<td>NETSTAT</td>
<td>Information about High Speed Access Services (HSAS). The NETSTAT report type has six subtypes: SOCKETS (the default), ROUTE, INTERFACE, PERFORMANCE, STATISTICS, and MEMORY.</td>
<td>20-26</td>
</tr>
<tr>
<td>PROCESS</td>
<td>Information about kernel processes.</td>
<td>20-26</td>
</tr>
<tr>
<td>STORAGE</td>
<td>Information about the storage manager cell pools.</td>
<td>20-32</td>
</tr>
</tbody>
</table>

**PROCESS** is the default.

For each report type, you can select one or more of the following levels:

- **SUMMARY**  Displays summary information for each requested report type. **SUMMARY** is the default if no level is specified.
- **EXCEPTION** Displays diagnostic information for error or exceptional conditions for each requested report type.
- **DETAIL** Displays detailed information for each requested report type.

For each report, you can select one or more of the following filtering keywords to limit the amount of data in the report:

- **ASIDLIST(asidlist)** Requests that information be provided for the asids specified in asidlist. ASIDLIST(asidlist) can be specified either as a single ASID or as a range of ASIDs. When a range is specified, the two ASIDs (first and last in the range) must be separated by a colon. The ASID can range from 1 through 65,535. An ASID can be expressed using the notation X’nnn’, F ‘nnn’, or B’nnn’. An unqualified number is assumed to be fixed. The alias is ASID.

- **USERLIST(userlist)** Requests that information displayed be restricted to that associated with the userids specified in userlist. The contents of userlist may contain one or more userids, separated by commas. USERLIST (userlist) can be specified as a 1-to-8-character name. The alias is USER.

- **PROCESSID** For the NETSTAT Sockets and NETSTAT Detail report types only. Requests that information be provided for a single PID. PROCESSID may contain up to 8 hexadecimal characters.

### OMVSDATA report header

The OMVSDATA header information prefixes all the reports provided by the OMVSDATA command. It appears regardless of the OMVSDATA options that are selected.

The selected OMVSDATA options are displayed, followed by system information pertinent to all reports.
Report(s): PROCESS
Level(s): SUMMARY
Filter(s): NONE

Kernel status: Active
Kernel address space name: OMVS
Kernel address space ID: X'0014'
Kernel stoken: 0000005000000002

Startup options
Parmlib member: BPXPRMTS
CTRACE parmlib member: CTIBPXTS
Maximum processes on system: 256
Maximum users on system: 32
Maximum processes per user id: 16
Maximum thread tasks per process: 50
Maximum threads per process: 200
Maximum allocated files per process: 1,000
Maximum pseudo-terminal sessions: 256

Stack Information
Stack Address: 02FCEF28 in ASID X'0014'
Stack End Address: 02FD8F28
Stack Data: 00000000 00000000 00000000 00000000
Stack Entry 0
Stack Entry Address: 02FCF028
Previous Entry Address: 00000000
Next Entry Address: 02FCFA90
Entry Point ID: 0F08
Csect: BPXJCPC at 01CD0000
Entry Point: BPXJCPC at 01CD0000
Footprints: 3244

General Purpose Registers:
0-3 02FCF690 00000000 00000000 82DBDDF8
4-7 02DBD038 00F4AD00 7FFFC900 00F4AD00
8-11 02FCEF2E 00000000 01CD1FFE 01CD0FFF
12-15 01CD0000 02FCF028 81CD132E 82F38638

Access Registers:
0-3 00000000 00000000 00000000 00000000
4-7 00000002 00000000 00000002 00000000
8-11 00000000 00000000 00000000 00000000
12-15 00000000 00000000 00000000 00000001
Stack Entry 1

Stack Entry Address: 02FCFA90
Previous Entry Address: 02FCF02B
Next Entry Address: 02FD03F0
Entry Point ID: 0000
Csect: BPXNSKIL at 02F38638
Entry Point: BPXNSKIL at 02F38638
Footprints: E000

General Purpose Registers:

0-3 02FCFB88 02FCF02B 02FCF02B 02FCF02B
4-7 02FCF988 02FCF988 02FCF988 02FCF988
8-11 00000164 00000164 00000164 00000164
12-15 00000000 00000000 00000000 00000000

Access Registers:

0-3 00000000 00000000 00000000 00000000
4-7 00000000 0101001C 00000000 00000000
8-11 0101001C 00000002 00000000 00000002
12-15 00000000 00000000 00000000 00000000

Stack Entry 2

* Active *

Stack Entry Address: 02FD03F0
Previous Entry Address: 02FCFA90
Next Entry Address: 02FD0A20
Entry Point ID: 0904
Csect: BPXMPICE at 01CD3C28
Entry Point: BPXMIPCE at 01CD3C28
Footprints: 0000

General Purpose Registers:

0-3 00000FC 01CD55AC 08FEB0C6 0B080000
4-7 02F9A2B8 05FD4ED8 02FD0DF8 7F0EFACC
8-11 7F0EF938 02F9A2B8 000000C0 02F9A2B8
12-15 00000000 02FD0780 01CD4C27 01CD3C28

Access Registers:

0-3 00000000 00000000 00000000 00000000
4-7 00000000 00000000 00000000 00000000
8-11 00000000 00000000 00000000 00000000
12-15 00000000 00000000 00000000 00000000

Fields displayed in this report include:

Report(s)

The type or types of OMVS DATA reports selected. The selected reports and/or defaults are displayed. Each selected report type will be processed at each of the selected levels of detail. The report type can be any one or more of the following:

COMMUNICATIONS
FILE
IPC
NETSTAT
PROCESS
STORAGE
Level(s) of Detail
The level of the selected OMVSDATA reports. The report level can be any one or more of the following:
- SUMMARY
- EXCEPTION
- DETAIL

The selected levels of detail and defaults are displayed.

Filter(s)
The selected levels of filtering are displayed. If no filtering was specified, NONE is displayed. The filters can be any one or more of the following:
- ASIDLIST
- USERLIST
- PROCESSID (for NETSTAT only)

Kernel Status
The current state of the kernel. The possible states are:
- Not active
- Not active and terminating
- Active
- Active and processing /etc/init startup

Kernel Address Space Name
The name of the kernel address space. This is the procedure name used to start the kernel.

Kernel Address Space ASID
The ASID of the kernel address space.

Kernel Stoken
The address space stoken of the kernel address space.

Startup Options
The options specified when the kernel address space was started. The options displayed are:
- The parmlib member used to start the kernel address space
- The CTRACE parmlib member
- The maximum processes on system
- The maximum users on system
- The maximum processes per user ID
- The maximum threads per process
- The maximum thread tasks per process
- The maximum allocated files per process
- The maximum pseudo-terminal sessions

Stack Information
IBM might request this information for problem determination. This information is displayed when the dump is taken by the system.

OMVSDATA COMMUNICATIONS SUMMARY subcommand output
This report displays information about pseudo terminal user connections and OCS remote terminal connections.

Fields displayed in the pseudo terminal section of the report include:
Dev Minor
  The device minor number assigned to the terminal file.

State
  The open or closed status of the master and subordinate pseudo terminals.

FG PGID
  The foreground process group ID.

Session ID
  The session ID of the controlling terminal.

Slv Opn Cnt
  The number of opens for the subordinate file.

Input Queue Size
  The number of characters on the input queue.

Output Queue Size
  The number of characters on the output queue.

Mst Rd
  The number of master read requests in progress.

Mst Wrt
  The number of master write requests in progress.

Mst Drn
  The number of master drain requests in progress.

Mst Sel
  The number of master select requests in progress.

Slv Rd
  The number of subordinate read requests in progress.

Slv Wrt
  The number of subordinate write requests in progress.

Slv Drn
  The number of subordinate drain requests in progress.

Slv Sel
  The number of subordinate select requests in progress.

If the OCS is active, then additional fields in the report include:

TBM Host Name
  The name of the terminal buffer manager (TBM) connection.

TBM Flags
  IBM may request this information for diagnostic purposes.

Dev Minor
  The device minor number of the terminal file.

State
  The open or closed status of the remote terminal.

FG PGID
  The foreground process group ID.

Session ID
  The session ID of the controlling terminal.
**Reply/Wait Queue Size**
The number of *syscall* requests that have been sent to the OCS, and are waiting for a reply.

**Background Read/Write Queue Size**
The number of *syscalls* that have issued a background read or write and are stopped, waiting to be placed in the foreground.

**Select Queue Size**
The number of selects in progress.

---

**OMVSDATA COMMUNICATIONS EXCEPTION subcommand output**
This report displays exception information about the pseudo terminal internal control blocks. IBM might request this information for problem determination.

**OMVSDATA COMMUNICATIONS DETAIL subcommand output**
This report displays information about pseudo terminal user connections and OCS remote terminals.

Fields displayed in the pseudo terminal section of the report include:

**Pseudo Terminal Main Token**
The main token for the pseudo terminal support. IBM might request this token.

**Dev Minor**
The device minor number assigned to the terminal file.

**Connection Token**
A token associated with this connection. IBM might request this token.

**State**
The open or closed status of the master and subordinate pseudo terminals.

**Foreground PGID**
The foreground process group ID.

**Line Discipline**
Active line discipline number.

**Session ID**
The session ID of the controlling terminal.

**Slave File Token**
A unique identifier associated with the subordinate character-special file; or identifies the controlling terminal.

**Slave Open Count**
The number of opens for the subordinate file.

**Input Queue**
The number of bytes in the input queue. The threshold information that follows applies to the input queue.

**Threshold**
Input queue threshold information. Included are the lower threshold, upper threshold, and whether the upper threshold has been reached. Once the upper threshold has been reached, the "reached" indicator remains on until the lower threshold is reached. If the upper threshold has been reached, subsequent master writes are blocked or rejected until the lower threshold is reached.
Output Queue
The number of bytes in the output queue. The threshold information that follows applies to the output queue.

Threshold
Output queue threshold information. Included are the lower threshold, upper threshold, and whether the upper threshold has been reached. Once the upper threshold has been reached, the "reached" indicator remains on until the lower threshold is reached. If the upper threshold has been reached, subsequent subordinate writes are blocked or rejected until the lower threshold is reached.

Pending Packet Flags
Packet flags that have not yet been reported to a master read. If the connection is not in packet or extended packet mode, these flags should be zero.

Non-canonical Data Available
An indicator whether non-canonical data is available. Unless the connection is in non-canonical mode (ICANON off) or 3270 Passthru mode (PTU3270 on), this indicator should be "NO". Note that, in non-canonical mode, data can be available with an empty input queue if MIN=0 and TIME=0.

Non-canonical TIME Timer Active
An indicator whether a timer is active for non-canonical reads. The timer is used when in non-canonical mode (ICANON off) and TIME is greater than zero.

xxDSY Timer Active
An indicator whether a timer is active for delays after certain special characters have been read from the master pseudoterminal. These delays are used when delays are requested by setting the xxDSY fields in the termios, and OFILL is off.

Canonical Lines
The number of canonical lines on the input queue.

Slave Closed with HUPCL Set
YES indicates the HUPCL flag was set on when the final subordinate close occurred.

Inoperative
YES indicates that the PTY connection is unusable due to a catastrophic failure.

Termios Flags
The flags for control, input, local, and output.

Special Characters (c_cc array)
The special characters used for interrupt, quit, erase, line kill, end-of-file, end-of-line, start, stop, suspend, and the MIN and TIME values used in non-canonical mode.

Code Page Support Not Activated
A message indicating that the code page change notification (CPCN) capability was never activated for the connection. If CPCN has been activated for the connection, termcp information (below) will be presented instead.

Termcp
The termcp structure used for code page support. The next three fields show the data from the termcp.

Flags
The flags from the termcp.
**Source Code Page**
The source code page name. The name is a character string delimited with a NUL character (X'00').

**Target Code Page**
The target code page name. The name is a character string delimited with a NUL character (X'00').

**Winsize**
The `winsize` structure. The next four fields show the data from the `winsize`. If all four fields are zero, the master application probably never initialized the `winsize` structure.

**Ws_row**
The number of rows in the window.

**Ws_col**
The number of columns in the window.

**Ws_xpixel**
The width of the window in pixels.

**Ws_ypixel**
The height of the window in pixels.

The following information is presented for each request on the master read, write and drain queues and for each subordinate read, write, and drain queue.

**Request**
A heading line identifying the request. A token associated with this request is also shown.

**Token**
Unique identifier of this request.

**Userid**
The login name of the user making the request.

**Process ID**
The identifier assigned to the process.

**Bytes to Process**
Total number of bytes to process.

**PGID**
The process group identifier.

**Bytes Processed**
Number of characters processed on the current write.

**SID**
The session identifier.

**ASID**
The address space identifier.

**Scheduled**
Yes indicates that the request has been posted ready.

**TOSTOP in Effect**
Yes indicates that a background write for this session is stopped.

**I/O Control Command**
The control command in effect for this request.
The following information is presented for each request on the master and subordinate select queues.

**Request Token**
The unique identifier of this request.

**Criteria**
Select Criteria, as follows:

- **Read**
  YES indicates that a select for Read criteria was requested.

- **Write**
  YES indicates that a select for Write criteria was requested.

- **Xcept**
  YES indicates that a select for Exception criteria was requested.

- **Posted**
  YES indicates that one or more criteria have been satisfied and that the waiting process was posted.

If the OCS is active, then additional fields in the report include:

**OCS Token**
IBM may request this information for diagnostic purposes.

**TBM Daemon Status (one of the following lines is displayed)**
TBM Daemon is not currently ATTACHed.
TBM Daemon is creating the accept socket.
TBM Daemon is binding the accept socket.
TBM Daemon is creating the connection request queue.
TBM Daemon is in accept wait.
TBM Daemon is shutting down.
TBM Daemon is in timer wait.
TBM Daemon is creating tasks for a new connection.

**Last Issued Configuration Command**
Information about the last `ocsconfig` command that was issued.

**Audit Trail Information**
IBM may request this information for diagnostic purposes.

**TBM Host Name**
The name of the terminal buffer manager connection.

**Terminal Buffer Manager Token**
IBM may request this information for diagnostic purposes.

**TBM Flags**
IBM may request this information for diagnostic purposes.

**TBM Status (one of the following lines is displayed)**
TBM is connected.
TBM is configured.
TBM is not configured.

**Port Number**
The INET port address.
**INET Address**
The INET address or NETID.

The following information is presented for each configured terminal device:

**Dev Minor**
The device minor number assigned to the terminal file.

**Token**
IBM may request this information for diagnostic purposes.

**Foreground PGID**
The foreground process group ID.

**Session ID**
The session ID of the controlling terminal.

**Open Count**
The number of `open()` requests processed.

**Syscall Count**
The number of `syscalls` sent to OCS for this device.

**Pending Syscall Count**
The number of `syscalls` sent to OCS for this device that are still pending, that is, in reply-wait.

**MVS File Name**
The z/OS UNIX terminal device name.

**OCS File Name**
The OCS terminal device name.

**User Login Name**
The name of the user that logged in to this device.

**UID**
The user ID of the user that logged in to this device.

**Termios Flags**
The flags for control, input, local, and output.

The following information is presented for each request on the select queue:

**Criteria**
Select Criteria, as follows:

**Read**
YES indicates that a select for Read criteria was requested.

**Write**
YES indicates that a select for Write criteria was requested.

**Xcept**
YES indicates that a select for Exception criteria was requested.

**Asynchronous Request Information**
IBM may request this information for diagnostic purposes.

The following information is presented for each request on the reply/wait queue and the background read/write queue:

**Request Token**
IBM may request this information for diagnostic purposes.
Process ID
The identifier assigned to the process.

Thread ID
The identifier assigned to the thread.

Sequence Number
The identifier assigned to this syscall request.

OMVS DATA FILE SUMMARY subcommand output
This report displays information about each z/OS UNIX file system type and its mounted file systems.

File System Type Specific Information

Type
IBM supplies the following types of PFSs:

BPXFCSIN
The character special file system

BPXFPINT
The FIFO file system

BPXFTCLN
The z/OS UNIX file system

BPXFTSYN
The z/OS UNIX file system

Status
Status of the file system, which is Active or Failed/Waiting Restart. Inactive file system types are not displayed.

Token
IBM may request this information for diagnostic purposes.

PathConf Data

Pipe_Buf
Maximum number of bytes that can be written atomically when writing to a pipe. This value applies only if the file system type is BPXFPINT.

Posix_Chown_restricted?
Y Use of the chown() function is restricted for all files of this file system type.

N Use of chown() is not restricted.

The POSIX standard fully describes _POSIX_CHOWN_RESTRICTED.

Max_canon
Maximum number of bytes in an input line from a workstation. This field is only displayed if the file system type is BPXFCSIN.

Colony Address Space Information

Address Space Name
Name specified on the ASNAME argument of the FILESYSTYPE statement in the BPXPRMxx parmlib member.

Token
IBM may request this information for diagnostic purposes.
Extension
IBM may request this information for diagnostic purposes.

Restart Token
IBM may request this information for diagnostic purposes.

Message QID
IBM may request this information for diagnostic purposes.

Recovery Token
IBM may request this information for diagnostic purposes.

Colony Status (as many lines as apply are displayed)
- Colony initialization in progress.
- Colony initialization failed.
- Colony is marked for termination.
- A PFS in this colony requested thread support.
- The colony has been posted to terminate.
- Thread support has been built for this colony.

Number of PFSs in this Colony
Maximum number of PFSs which may start in this colony. This number matches the number of FILESYSTYPE statements in the BPXPRMxx parmlib member on which the address space name specified by the ASNAME matches the preceding address space name.

Started Colony File Systems
Type
- Name specified on the TYPE argument of the FILESYSTYPE statement in the BPXPRMxx parmlib member.

Token
IBM may request this information for diagnostic purposes.

Extension
IBM may request this information for diagnostic purposes.

Restart (option set by the PFS in the byte addressed by pfsi_restart)
- Prompt the operator.
- Automatic restart.
- No restart.
- Bring down the LFS and the kernel.
- Restart the colony and prompt the operator for the PFS.
- Restart the colony and PFS.
- Bring down the colony but do not restart the PFS.

PFS status I (as many lines as apply are displayed)
PFS initialization in progress.
PFS has been started.
PFS initialization failed.
PFS is dead.
The colony has been posted to terminate.
Colony PFS initialization has completed.

**PFS status II (as many lines as apply are displayed).**
The PFS will run alone in this colony.
The PFS will use colony thread support.
The PFS is written in C.
The PFS supports DATOFF moves for page read operations.

**Mounted File System Specific Information**

**Mounted File System Name**
Name specified on the FILESYSTEM argument of the `mount()` system call, TSO/E MOUNT command or the MOUNT statement in the BPXPRMxx parmlib member.

**Mount Point**

**PathName (at time of MOUNT)**
Name specified on the PATH argument of the `mount()` system call, or on the MOUNTPOINT parameter of either the TSO/E MOUNT command or the MOUNT statement in the BPXPRMxx parmlib member. If the pathname is greater than 64 characters, it is preceded by a plus sign to indicate truncation.

**File Serial Number**
The file ID of the mount point. This value will match `st_ino` returned from `stat()` for the mount point.

**Device Number**
The unique ID for this mounted file system. For files in this file system, this value will match the `st_dev` returned from `stat()`.

**DD Name**
The ddname corresponding to the MVS data set name that contains the mounted file system. This name is either specified on the DDNAME parameter of the MOUNT statement in the BPXPRMxx parmlib member or is returned by the system when the mount for the file system is complete.

**Token**
IBM may request this information for diagnostic purposes.

**Number of Active Files for this Mounted File System**
Number of files that are either open or recently referenced.

**Number of Files Pending Inactive**
Number of pending inactive files that are no longer being referenced and whose meta data is about to be removed from the in-storage cache.

**PathConf Data**
The following 4 fields apply only if the file system type is not an IBM reserved type, which have names starting with the characters BPX.

**Link_max**
Maximum value of a file's link count.

**Name_max**
Maximum number of bytes in a filename. The number is not a string length; it excludes the terminating null.

**Posix_No_trunc?**
If the value is Y, pathname components longer than NAME_MAX
generate an error. If N, only the first NAME_MAX bytes are used. Valid values are Y for yes and N for no.

**Posix_Chown_restricted?**
- If the value is Y, the use of the chown() function is restricted for files in this mounted file system. A value of N indicates the use of chown() is not restricted. Valid values are Y for yes and N for no. The POSIX standard fully describes _POSIX_CHOWN_RESTRICTED.

**File System was Mounted Read-Only**
- Displayed when applicable. If the file system was mounted Read-Write, no message is displayed.

**type Unmount is in Progress**
- If an unmount is in progress, this line is displayed and type indicates the type of unmount. The possible values for type are:
  - Drain
  - Force
  - Immediate
  - Normal
  - Reset

**This File System has been Quiesced**
- Displayed when the file system has been quiesced.

**This is the System Root File System**
- Displayed when applicable.

**Root File Serial Number**
- If this is not the system root file system, this line displays the file serial number for the root of the mounted file system.

**Max_input**
- Minimum number of bytes for which space will be available in a workstation input queue; therefore, the maximum number of bytes a portable application may require to be typed as input before reading them. This field is only displayed if the file system type is BPXFCSIN.

**_Posix_VDisable**
- This character value can be used to disable workstation special characters. This field is only displayed if the file system type is BPXFCSIN.

**OMVSDATA FILE EXCEPTION subcommand output**
- This report displays exception information about the z/OS UNIX internal file system control blocks. IBM might request this information for problem determination.

**OMVSDATA FILE DETAIL subcommand output**
- This report displays information for each active file in the system. An active file is one that is either open or recently referenced. Each file is uniquely identified by the first two fields. These fields can be used to correlate the information in this report with the file system information in the PROCESS DETAIL REPORT and the FILE SUMMARY REPORT.

**File Serial Number**
- A file ID that is unique within a file system. This value will match st_ino returned from stat() for files in this file system.
Device Number
The unique ID for this mounted file system. For files in this file system, this value will match the st_dev returned from stat().

Device Major Number
Major number for this file. This field is only displayed if it is a character special file.

Device Minor Number
Minor number for this file. This field is only displayed if it is a character special file.

File Status
Status of the file, which is Active or Pending Inactive. Inactive files are not displayed. A pending inactive file is one that is no longer being referred to and whose meta data is about to be removed from the in-storage cache.

Token
IBM may request this information for diagnostic purposes.

File Type
One of the following is displayed:

- **DIR**
  - Directory file

- **CHARSPEC**
  - Character special file

- **REGFILE**
  - Regular file

- **FIFO**
  - Pipe or FIFO special file

- **SYMLINK**
  - Symbolic link

- **UNKNOWN**
  - Unrecognized file type

File System Type
IBM supplies the following types of PFSs:

- **BPXFCSIN**
  - For character special file systems

- **BPXFINT**
  - For FIFO file systems

- **BPXFTCLN**
  - The z/OS UNIX file system

- **BPXFTSYN**
  - The z/OS UNIX file system

Total Number of Opens for this File
The total number of outstanding opens for this file.

Number of Processes that Use this File as Working Directory
The number of processes that are currently using this file as a working directory.

Name of File System Mounted Here
Name specified on the file system argument of the mount() function or the
This File is the System Root
Displayed when applicable.

If the Common INET file system is active, then additional fields in the report include:

**Common INET Token**
IBM may request this information for diagnostic purposes.

**Pre-Router Work Head**
IBM may request this information for diagnostic purposes.

**Event Token**
IBM may request this information for diagnostic purposes.

**Pre-Router Status (one of the following is displayed):**
- Pre-Router is up.
- Pre-Router is down.

**Transport Driver Status Array**
IBM may request this information for diagnostic purposes.

The following information is presented for each routing table entry:

**Entry Token**
IBM may request this information for diagnostic purposes.

**Next Entry**
IBM may request this information for diagnostic purposes.

**Network Destination Mask**
The specified network mask for the destination address.

**Hop Count Metric**
In a gateway, an indication that the next string represents the number of bridges through which a frame passes on the way to its destination host or network.

**Destination IP Address**
Destination IP address for this route entry.

**Route Status**
The status for this route.

**Gateway IP Address**
The gateway IP address for the first hop.

**Network Status**
Indicates that this route may need special handling. IBM may request this information for diagnostic purposes.

**Interface IP Address**
The interface IP address used to send the route.

**Next Hop IP Address**
IBM may request this information for diagnostic purposes.

**TD Index**
Index of the transport driver for this route.
OMVSDATA IPC SUMMARY subcommand output

This report displays summary information about z/OS UNIX interprocess communication services. The report includes the following sections:

- **Mem Map Files.** Fields displayed in the mem map files section of the IPC summary report includes summary information on mem mapped files. IBM might request this information for problem determination.

- **Message Queues.** Fields displayed in the message queues section of the IPC summary report include:
  
  - **Key**
    - The key of the message queue.
  
  - **ID**
    - The ID of the message queue.
  
  - **Msgsnd Waiters**
    - The number of processes in a msgsnd wait on the message queue.
  
  - **Msgrcv Waiters**
    - The number of processes in a msgrcv wait on the message queue.
  
  - **Last Msgsnd PID**
    - The Process ID of the last process that completed a msgsnd on the message queue.
  
  - **Last Msgrcv PID**
    - The Process ID of the last process that completed a msgrcv on the message queue.
  
  - **Bytes on Queue**
    - The number of bytes on the message queue.
  
  - **Messages on Queue**
    - The number of messages on the message queue.

- **Semaphores.** Fields displayed in the semaphores section of the IPC summary report include:
  
  - **Key**
    - The key of the semaphore.
  
  - **ID**
    - The ID of the semaphore.
  
  - **Semaphore Number**
    - The number of semaphores in the semaphore set.
  
  - **Waiters**
    - The number of processes in a wait on the semaphore.
  
  - **Last PID**
    - The Process ID of the last process that completed an operation on the semaphore.
  
  - **Processes with Adjustments**
    - The number of processes that contain adjustments for the semaphore.

- **Shared Memory.** Fields displayed in the shared memory section of the IPC summary report include:
  
  - **Key**
    - The key of the shared memory segment.
  
  - **ID**
    - The ID of the shared memory segment.
  
  - **Size**
    - The size of the shared memory segment.
**Creators PID**
The Process ID of the process that created the shared memory segment.

**Last Operation PID**
The Process ID of the process that performed the last operation on the shared memory segment.

**Last shmat Time**
The time of the last shmat operation for this shared memory segment.

**OMVSDATA IPC EXCEPTION subcommand output**
This report displays exception information about z/OS UNIX interprocess communication services. IBM might request this information for problem determination.

**OMVSDATA IPC DETAIL subcommand output**
This report displays detail information about z/OS UNIX interprocess communication services. The report includes the following sections:

- **Mem Map Files.** Fields displayed in the mem map files section of the IPC detail report give detailed information mem mapped files. IBM might request this information for problem determination.

- **Message Queues.** Fields displayed in the message queues section of the IPC detail report include:
  - **Key**
    - The key of the message queue.
  - **ID**
    - The ID of the message queue.
  - **Owner UID**
    - The UID of the process that owns the message queue.
  - **Owner GID**
    - The GID of the process that owns the message queue.
  - **Creator UID**
    - The UID of the process that created the message queue.
  - **Creator GID**
    - The GID of the process that created the message queue.
  - **Mode**
    - The mode of the message queue.
  - **Last Msgsnd Time**
    - The time of the last completed msgsnd on the message queue.
  - **Last Msgrcv Time**
    - The time of the last completed msgrcv on the message queue.
  - **Last Msgget/Msgctl Time**
    - The time of the either the last msgget or msgctl on the message queue.
  - **Messages Allowed**
    - The number of messages allowed on the message queue.
  - **Bytes Allowed**
    - The number of bytes allowed on the message queue.
  - **Messages on Queue**
    - The number of messages on the message queue.
**Bytes on Queue**
- The number of bytes on the message queue.

**Last Msgsnd PID**
- The Process ID of the last process that completed a msgsnd on the message queue.

**Msgsnd Waiters**
- The number of processes in a msgsnd wait on the message queue.

**Last Msgrecv PID**
- The Process ID of the last process that completed a msgrcv on the message queue.

**Msgrcv Waiters**
- The number of processes in a msgrcv wait on the message queue.

**Waiters**
- Detailed information about the processes in either a msgsnd or msgrcv wait on the message queue.

**History**
- Historical information about the msgsnd and msgrcv operations on the message queue.

**Messages on Queue**
- Detailed information about the messages on the message queue.

- **Semaphores.** Fields displayed in the semaphores section of the IPC detail report include:
  - **Key**
    - The key of the semaphore.
  - **ID**
    - The ID of the semaphore.
  - **Owner UID**
    - The UID of the process that owns the semaphore.
  - **Owner GID**
    - The GID of the process that owns the semaphore.
  - **Creator UID**
    - The UID of the process that created the semaphore.
  - **Creator GID**
    - The GID of the process that created the semaphore.
  - **Mode**
    - The mode of the semaphore.
  - **Last Semop Time**
    - The time of the last completed semop.
  - **Last Semct1 Time**
    - The time of the last completed semct1.
  - **Number of Semaphores in Set**
    - The number of semaphores in the semaphore set.
  - **Waiters**
    - Detailed information about the processes in a semaphore wait on the semaphore.
Adjustments
Detailed information about the processes with adjustments on the semaphore.

- **Shared Memory**. Fields displayed in the shared memory section of the IPC detail report include:
  - **Key**
    - The key of the shared memory segment.
  - **ID**
    - The ID of the shared memory segment.
  - **Owner UID**
    - The UID of the process that owns the shared memory segment.
  - **Owner GID**
    - The GID of the process that owns the shared memory segment.
  - **Creator UID**
    - The UID of the process that created the shared memory segment.
  - **Creator GID**
    - The GID of the process that created the shared memory segment.
  - **Mode**
    - The mode of the shared memory segment.
  - **Last shmat Time**
    - The time of the last shmat operation.
  - **Last shmdt Time**
    - The time of the last shmdt operation.
  - **Last shmctl Time**
    - The time of the last shmctl operation.
  - **Creators PID**
    - The Process ID of the process that created the shared memory segment.
  - **Last Operation PID**
    - The Process ID of the process that performed the last operation on the shared memory segment.

Shared memory attaches
Detailed information about the shared memory attaches on the shared memory segment.

**OMVSDATA NETSTAT SUMMARY subcommand output**
This report is displayed when you specify OMVSDATA NETSTAT SOCKETS. It is similar to the HSAS onetstat default display, and displays active sockets information. In addition to internal diagnostic information, fields displayed in this report include:

- **PID**
  - A unique identifier that represents a process.
- **Local@**
  - The port and IP address of the active socket.
- **Remote@**
  - The port and IP address of the remote if a connection is established.
- **TState**
  - The state of the connection for TCP.
OMVS DATA NETSTAT EXCEPTION subcommand output
This report displays exception information about HSAS for all reports. It reports information about storage that is not available in the dump, and attempts to detect internal errors. IBM might request this information for problem determination.

OMVS DATA NETSTAT DETAIL subcommand output
This report displays internal diagnostic information about processes waiting for TCP/IP HSAS services.

OMVS DATA NETSTAT ROUTE subcommand output
This report is similar to the HSAS routing table display (oenetstat-r). The routing table display format indicates the available routes and their status. In addition to internal diagnostic information, the following fields are displayed:

- **Subnetmask**
  Destination subnetmask of the route.
- **DestAddr**
  IP address of the destination host or network.
- **FirstHop**
  The gateway address of the outgoing interface.
- **DgramSnt**
  A count of packets sent using this route.
- **DUnReach**
  The number of destinations found unreachable.

OMVS DATA NETSTAT INTERFACE subcommand output
This report is similar to the HSAS statistics display (oenetstat-i). In addition to internal diagnostic information, the following fields are displayed:

- **Name**
  Interface name.
- **IP Address**
  IP address of the interface.
- **Subnetmask**
  Subnetmask of the interface.
- **Dest_IP@**
  IP address of the interface destination.
- **MTU**
  Maximum transmission unit (mtu) size.
- **Ipackets**
  Number of incoming packets received.
- **Opackets**
  Number of outgoing packets received.
- **State**
  Interface state.
- **IErrors**
  Number of incoming packets in error.
**OMVS DATA NETSTAT PERFORMANCE Subcommand Output**

This report is similar to the HSAS oonetstat performance display (oenetstat-w), and displays performance statistics for each interface. This is internal diagnostic information for HSAS.

**OMVS DATA NETSTAT STATISTICS subcommand output**

This report is similar to the HSAS statistics display (oenetstat-s), and displays protocol usage statistical data. The values are stored internally in fullword or doubleword fields, depending on their intended usage. Note that wrapping of the values is possible, although this should be an uncommon event in most normal situations. Detaching an interface resets the statistical counts for that interface to 0.

Statistics are displayed for IP, ICMP, UDP, and TCP protocols for each interface. Accumulated statistics totals for all interfaces are also displayed.

**OMVS DATA NETSTAT MEMORY subcommand output**

This report is similar to the HSAS memory display (oenetstat-m), and displays memory-related statistics. In addition to internal diagnostic information, the following fields are displayed:

- **WrBufMax**
  Current maximum I/O write buffers.

- **RdBufCur**
  Current I/O read buffers in use.

- **WrBufHi**
  High water mark for I/O write buffers.

- **WrBufCur**
  Current I/O write buffers in use.

- **RdBufHi**
  High water mark for I/O read buffers.

- **RdCurMax**
  Current maximum I/O read buffers.

**OMVS DATA PROCESS SUMMARY subcommand output**

This report displays summary information about z/OS UNIX processes. A dash (-) in any field indicates that the information is not available.

Fields displayed in the process summary report include:

- **Process ID**
  A unique identifier representing a process.

- **Userid**
  Identifier for the user associated with the process.
Asid
Address space identifier of the process. Specify the kernel ASID to display kernel worker tasks.

Parent PID
Process ID of the parent of the process.

Process Group ID
Process ID of the leader of the process group in which the process is a member.

Session ID
Process ID of the leader of the session in which the process is a member.

Status
Status of the process. Status can be Stopped, Zombie, LZombie, or a dash (-) for Active.

OMVSDATA PROCESS EXCEPTION subcommand output
This report displays exception information about z/OS UNIX internal process control blocks. IBM might request this information for problem determination.

OMVSDATA PROCESS DETAIL subcommand output
This report displays detailed information about the z/OS UNIX process(es).

Process Header

Process ID
A unique identifier representing a process.

Status
The status of the process. Status can be Stopped, Zombie, or Active.

Last exec() Program Name
The fully-qualified pathname of the last program run by the process with an exec().

ID Data

Userid
A string that is used to identify the user associated with the process.

Asid
Address space identifier of the process. Specify the kernel ASID to display kernel worker tasks.

Parent PID
Process ID of the process's parent.

Ptrace Parent PID
Process ID of the debugger process.

Process Group ID
Process ID of the leader of a process group in which the process is a member.

Session ID
Process ID of the leader of the session in which the process is a member.

Real UID
The real user ID of the process.
Real GID
The real group ID of the process.

Effective UID
The effective user ID of the process.

Effective GID
The effective group ID of the process.

Saved Set UID
The saved set user ID of the process.

Saved Set GID
The saved set group ID of the process.

Foreground PGID
The process ID of the foreground process group.

Process Group Member IDs
The process IDs of the members of the process group.

Session Member IDs
The process IDs of the members of the session.

Children IDs
The process IDs of all active child processes forked by the process.

Debug IDs
The process IDs of all processes that are being debugged by the process.

Limits

RLIMIT_CORE hard
The hard limit for the RLIMIT_CORE resource.

RLIMIT_CORE soft
The soft limit for the RLIMIT_CORE resource.

RLIMIT_CPU hard
The hard limit for the RLIMIT_CPU resource.

RLIMIT_CPU soft
The soft limit for the RLIMIT_CPU resource.

RLIMIT_AS hard
The hard limit for the RLIMIT_AS resource.

RLIMIT_AS soft
The soft limit for the RLIMIT_AS resource.

Process Pthread Data

Thread ID of Initial Pthread_create Thread (IPT)
Thread ID of the first thread to issue pthread_create.

IPT is Waiting for the Last Thread Task to End
All pthread_created tasks for this process must be terminated before the
IPT may be terminated. The IPT will be terminated when the last thread
task has ended.

Pthread_create in Progress
At least one pthread_create is in progress for this process.

Thread Init Routine Address
Address of the initialization routine.
Number of MVS Tasks
Number of tasks that have been pthread_created. This does not include any pthread_create requests that are currently being processed.

Number of Undetached Terminated Threads
Number of threads that have been terminated but not yet detached.

Signal Data (Process Level)

Signals Currently Pending
Names of all the signals that have been generated for this process but have not yet been delivered.

Signal
Signal name defined via sigaction().

Sa_Action
Action defined for this signal.

Sa_Flags
Flags defined for this signal.

Sa_Mask
Blocking mask defined for this signal.

Shared memory attaches
Shared memory attachment information for this process.

Semaphore Adjustments
Semaphore Adjustment information for this process.

Memory Map Files
Memory Map File information for this process.

File System Data

Working Directory Name (at time of last chdir())
The name of the working directory. If the name is greater than 64 characters, it is preceded by a plus sign to indicate truncation.

Working Directory File Serial Number
File serial number for the file being used as the working directory.

Working Directing Device Number
Unique ID for the file system containing the working directory file.

Number of Open Files for this Process
Number of open file descriptors for this process.

Token
IBM may request this information for diagnostic purposes.

FD File descriptor.

PathName
Pathname of opened file at time of open(). If the pathname is greater than 64 characters, it is preceded by a plus sign to indicate truncation.

File Serial Number
File serial number of opened file. This value matches st_ino returned from stat().

Device Number
Unique ID for this file system.
Device Major Number
Major number for this file. This field is displayed only if it is a character special file.

Device Minor Number
Minor number for this file. This field is displayed only if it is a character special file.

Open Flags
Flags specified when the file was opened. This field is mapped by the BPXYOPNF mapping macro.

Tokens
IBM may request this information for diagnostic purposes.

File Type
File type of opened file. One of the following values will be displayed:

- **DIR**
  - Directory file

- **CHARSPEC**
  - Character special file

- **REGFILE**
  - Regular file

- **FIFO**
  - Pipe or FIFO special file

- **SYMLINK**
  - Symbolic link

- **UNKNOWN**
  - File type not valid

File Cursor
Offset in the file of the next read or write operation.

Number of File Descriptors Sharing this Open
Number of file descriptors sharing this open.

This File was Opened Using opendir()
Displayed when applicable.

This File will be Closed on Exec
Displayed when applicable.

This File will be Closed on fork()
Displayed when applicable.

A Byte Range Lock Request is in Progress for this File
Displayed when applicable. Byte range locks are advisory locks.

Thread Information is Displayed Under Three Headings: thread data, signalling data, and serialization data.

Thread Data (Active Threads)

- **Thread ID**
  - Thread ID for this thread.

- **TCB Address**
  - The address of the task control block (TCB) associated with this thread.
**Pthread_create in Progress**

pthread_create is currently in progress for this thread. No TCB is associated with this thread yet.

**In Kernel Call**

This thread is currently processing a Kernel call. The name of the system call module is supplied with this message.

**Program Name**

The information about the program the thread is currently running, in the format returned by the IPCS WHERE service.

**Interruptibility State**

Interruptibility state of the thread. The valid states are: Disabled, Controlled, or Asynchronous.

**Thread Task is Waiting to Complete pthread_cancel Processing**

A pthread_cancel was issued for this thread task.

**This Thread Issued pthread_join for Thread ID**

This thread issued a pthread_join request for the thread identified by the thread ID displayed with this message.

**Pthread_join Issued for this Thread by Thread ID**

A pthread_join was issued for this thread by the thread which owns the thread ID supplied with this message.

**Thread Attributes**

The thread attributes as supplied by the pthread_create system call. The following values may be displayed: undetached, detached, medium, heavy, and pthread_created.

**Exec System Call in Progress**

An Exec system call is currently being processed. This process contains no thread data.

**Next Active Thread is not Available**

IPCS was unable to retrieve the next thread from the dump.

**Thread Data (inactive threads)**

Thread data for threads that have been terminated but have not yet been detached.

**Thread ID**

Thread ID for this thread.

**Exit Status**

Thread exit status.

**Signal Data (Thread Level)**

**Signals Currently Pending**

Names of all the signals that have been generated for this thread but have not yet been delivered.

**Signals Currently Blocked**

Names of all the signals for this thread that have been blocked from being delivered.

**In Sigwait for the Following Signals**

This thread is waiting for the following asynchronous signals.

**Signal Setup Data**

The data passed to the kernel by the mvssigsetup system call.


**Signal Interrupt Routine**
Signal interrupt routine supplied on the `mvssigsetup` system call.

**User Data**
User data supplied on the `mvssigsetup` system call.

**Delivery PSW Key**
Signal delivery key. The signal will be delivered only if the signal delivery key is equal to the current PSW key.

**Mask 1**
Signal mask (DefaultOverridesignal_set)

**Mask 2**
Signal mask (DefaultTerminateSignal_set)

**RB Sequence Number**
The sequence number of the RB currently running on the thread.

**Serialization Data**

**Stop In Progress**
Displayed when applicable.

**Waiting on Events**
Names of the events being waited on.

**Waiting on Internal Event**
IBM may request this information for diagnostic purposes.

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**OMVSDATA STORAGE SUMMARY subcommand output**

This report displays summary information about the z/OS UNIX storage manager cell pools. The report includes the following subreports:

- **Common Storage and DataSpace Resident Cell Pools.** Displays summary information about cell pools that are either in common storage or that reside in a dataspace.

- **Private Storage Resident Cell Pools.** Displays summary information about cell pools that reside in the z/OS UNIX address space.

Fields displayed in the storage manager subreports include:

**Cell Pool Name**
Name assigned to this cell pool by the create cell pool requester.

**Active Extents**
Number of cell pool extents that are active. Cells are either in use or available for use.

**Inact Extents**
Number of cell pool extents that are not currently active. Cells are not available for use.

**Expand Extents**
Number of cell pool extents that have been allocated beyond the original.

**Minimum Extents**
Number of extents initially allocated and which must stay active.

**Cells Per Extent**
Number of cells contained in an extent.

**Cell Size**
Size, in bytes, of a cell.
OMVSDATA STORAGE EXCEPTION subcommand output

This report displays exception information about the z/OS UNIX manager cell pool internal control blocks. IBM might request this information for problem determination.

OMVSDATA STORAGE DETAIL subcommand output

This report displays detailed information about the z/OS UNIX storage manager cell pools. This report is generated from the callable cell pool services control block format routine. It includes information about cell and extent allocation.

Problem diagnosis for shared file system

If you are using zFS and need to determine the file system owner, see the topic on zFS ownership versus z/OS UNIX ownership of file systems in z/OS Distributed File Service zSeries File System Administration.

This section provides additional diagnosis and repair procedures to use when there appears to be a problem relating to the z/OS UNIX System Services function for shared file system. The types of problems that this section addresses relate to file system availability on one or more systems in a parallel sysplex environment where the root cause of the problem is probably in shared file system processing, rather than, for example, a hardware failure or configuration problem. The two goals of the procedures described here are:

1. To prevent a sysplex-wide restart by either correcting the problem or limiting the scope of the restart to a single system or a subset of systems
2. To provide enough information about the problem to enable the IBM Support Center to identify and resolve the root cause of the problem as expediently as possible

This section includes example recovery scenarios for the following problems:

1. One or more file systems are mounted in the shared file system but are not accessible (locally mounted) on all systems in the sysplex.
2. A file system appears to be mounted in the shared file system but is not accessible on any system in the sysplex. The file system cannot be mounted or unmounted from any system.
3. A file system appears to be delayed in an UNMOUNT state.
4. Mounting, unmounting, or quiescing of file systems on one or more systems seems to be hung.
5. File system initialization on a restarting system is delayed indefinitely. The delayed system issues message BPXF076I.
6. For whatever reason, you need to reinitialize the file system on all systems without performing a sysplex-wide IPL. (You can perform this reinitialization without any system outage.)

The diagnostic and repair procedures use the following system commands:

• D OMVS,F displays the file system state on any single system in the sysplex. This command displays file system information from the perspective of the system on which the command runs. In a sysplex environment, the file system state may not be consistent on all systems, which is an unusual condition for an active file system.
**Scenario 1: File system not accessible by all systems**

A file system in the ACTIVE state is not accessible by all systems. Normally, a file system in the ACTIVE state is locally mounted and accessible on each system in the sysplex. If a file system is not in the ACTIVE state, such as the UNOWNED state, the file system might not be mounted on all systems in the sysplex. When a file system becomes ACTIVE, the file system is mounted on all systems.

**Indicators**

- **D OMVS,F** output on the file system server (owner) system indicates that the file system state is ACTIVE, but **D OMVS,F** output on one or more (non-owner) systems indicates that the file system is not mounted on that system. (That is, there is no display output for the file system.)
- **MODIFY BPXOINIT,FILESYS=DISPLAY,FILESYSTEM=file system name** output indicates that the file system is mounted and ACTIVE on the file system server system, but **MODIFY BPXOINIT,FILESYS=DISPLAY,GLOBAL** does not show any systems associated with a shared file system serialization category.

**Corrective action**

Try the following procedures in the listed sequence until all systems can access the file system. After each procedure, use the **D OMVS,F** system command to check the file system status.

- **Procedure 1**: Issue the **MODIFY BPXOINIT,FILESYS=RESYNC** system command on any system.
- **Procedure 2**: Issue the **MODIFY BPXOINIT,FILESYS=FIX** system command. Resolve any problems that FIX processing identifies. If FIX processing unmounts the file system, mount the file system again.
- **Procedure 3**: Issue the TSO **UNMOUNT** command (or equivalent shell /usr/sbin/unmount command) to unmount the file system. If the UNMOUNT fails, even when you specify the FORCE parameter, continue with the next recovery procedure. Otherwise, after the command unmounts the file system, mount the file system again.
- **Procedure 4**: Issue the **MODIFY BPXOINIT,FILESYS=UNMOUNT,FILESYSTEM=file system name** system command to unmount the file system. Once the unmount completes, mount the file system again.
Scenario 2: Cannot mount, unmount, or access a "mounted" file system

The file system does not appear to exist in the shared file system. Any attempt to mount the file system, however, fails with EINVAL (X'79'), JrIsMounted (X'055B005B'), and any attempt to unmount the file system fails with EINVAL (X'79'), JrFilesysNotThere (X'0588002E').

Indicators

- D OMVS,F output on all systems indicates that the file system is not mounted, but MODIFY BPXOINIT,FILESYS=DISPLAY,FILESYSTEM=file system name output indicates that the file system exists in the shared file system. (The state of the file system is not significant.)
- MODIFY BPXOINIT,FILESYS=DISPLAY,GLOBAL does not show any systems associated with a shared file system serialization category.

Corrective action

Issue the MODIFY BPXOINIT,FILESYS=UNMOUNT,FILESYSTEM=file system name system command to unmount the file system. Once the unmount completes, mount the file system again.

Scenario 3: Unmount processing delayed

The system accepts the unmount command for a shared file system, but the system does not complete the command. The file system might be unmounted on some of the systems in the sysplex and mounted on other systems, but it is mounted on the server (owner) system. Here, the root cause of the problem is a latch deadlock or latch contention on one or more systems in the sysplex. This procedure describes how to detect this condition; to fix the condition, you will need to restart any system involved in the error.

Indicators

- D OMVS,F output on the file system server (owner) system indicates that the file system is in a NORMAL UNMOUNT (or equivalent UNMOUNT) state.
- MODIFY BPXOINIT,FILESYS=DISPLAY,GLOBAL output lists the file system server system in the SYSTEMS PERFORMING UNMOUNT serialization category, and the MODIFY command indicates no other categories of serialization. If the MODIFY command does indicate other serialization categories, see "Scenario 4: Mount, unmount, or quiesce processing seems to be delayed" on page 20-36.

Corrective action

1. Take an SVC dump of all systems in the sysplex. Include the OMVS address space and all OMVS data spaces in the dump. See "Getting the right z/OS UNIX data in a dump" on page 20-1 to determine what DUMP parameters to use. To initiate the dump on all systems, use the REMOTE=(SYSLIST=(system1,system2,...),SDATA,DSPNAME) parameter. For more information on the DUMP system command, see z/OS MVS System Commands.

Note that FIX processing performed in the next step also initiates an SVC dump, but the dump includes different data, capturing critical global file system resources.

Retain all dumps in case you need to provide them to the IBM Service Center for analysis.
2. Issue the **MODIFY BPXOINIT,FILESYS=FIX** system command. The system should return message BPXF049; it lists the systems that are causing unmount processing delay. Message BPXF042I also appears for each system that has contention for the file system MOUNT latch. Contention for the MOUNT latch delays high-level functions, such as mount and unmount processing. Finally, message BPXF057I appears for each file system that has latch contention.

3. On each system for which FIX has reported latch contention, issue the **D GRS,LATCH,C** system command to determine if latch contention still exists on the system. If latch contention still exists, restart the system. After partition recovery has completed on the restarted system, repeat Step 3 on the next identified system.

4. If unmount processing delay continues, return to Step 2, then repeat step 3 for any systems identified as having possible latch contention. Repeat Step 2 and Step 3 to verify that no latch contention exists.

5. If unmount processing delay continues, and FIX, in message BPXF049I, identified systems that owe responses, restart the identified systems.

6. If FIX does not identify any other systems as owing responses, then issue the **MODIFY BPXOINIT,FILESYS=UNMOUNT,FILESYSTEM=** file system name system command to unmount the file system.

**Scenario 4: Mount, unmount, or quiesce processing seems to be delayed**

Mount, unmount, or quiesce processing is delayed on one or more systems in the sysplex. The root cause of the delay is a file system serialization problem, involving either:

- A GRS latch in the file system latch set (SYS.BPX.A000.FSLIT.FILESYS.LSN)
- The serialization data that is maintained in the type BPXMCDS couple data set.

**Indicators**

One or more of the following:

- Users or applications hung when attempting to access an automount file system.
- Users or applications hung when attempting to mount, unmount, move, or quiesce a file system.
- **D OMVS,F** output on the file system server (owner) system indicates that one or more file systems are in a persistent NORMAL UNMOUNT (or equivalent UNMOUNT) state.
- **MODIFY BPXOINIT,FILESYS=DISPLAY,GLOBAL** output (in message BPXF041I) indicates that one or more systems are persistently performing a serialized event, as indicated by one of the following serialization categories:

  - SYSTEM PERFORMING INITIALIZATION
  - SYSTEM PERFORMING MOVE
  - SYSTEM PERFORMING QUIESCE
  - SYSTEMS PERFORMING UNMOUNT
  - SYSTEMS PERFORMING MOUNT RESYNC
  - SYSTEMS PERFORMING LOCAL FILE SYSTEM RECOVERY
  - SYSTEMS PERFORMING FILE SYSTEM TAKEOVER RECOVERY
  - SYSTEMS RECOVERING UNOWNED FILE SYSTEMS
  - SYSTEMS PERFORMING REPAIR UNMOUNT
Corrective action

1. Take an SVC dump of all systems in the sysplex. Include the OMVS address space and all OMVS data spaces in the dump. See “Getting the right z/OS UNIX data in a dump” on page 20-1 to determine what DUMP parameters to use. To initiate the dump on all systems, use the REMOTE=(SYSLIST=(system1,system2,...),SDATA,DSPNAME) parameter. For more information on the DUMP system command, see [z/OS MVS System Commands](#).

   Note that FIX processing performed in the next step also initiates an SVC dump, but the dump includes different data, capturing critical global file system resources.

   Retain all dumps in case you need to provide them to the IBM Service Center for analysis.

2. Issue the MODIFY BPXOINIT,FILESYS=FIX system command. In response:
   a. The system issues message BPXF049I for each file system that is delayed during unmount or quiesce processing. The message also lists the systems that are causing the delay.
   b. The system issues message BPXF042I for each system that has contention for the file system MOUNT latch. Contention for the MOUNT latch delays high-level functions, such as mount and unmount processing.
   c. The system issues message BPXF057I for each file system that has latch contention. The message identifies the file system and the system where the latch contention is occurring.
   d. The system issues hardcopy message BPXF048I for each correction it makes to the file system global data structures (in the type BPXMCDS couple data set).

3. On each system for which FIX has identified latch contention, issue the D GRS,LATCH,C system command to determine if latch contention still exists on the system. If contention still exists, restart the system. Repeat this step on the next identified system.

4. For delayed QUIESCE or UNMOUNT processing, as identified by message BPXF049I, issue the MODIFY BPXOINIT,FILESYS=FIX system command again. Repeat Step 3 for any systems identified as having possible latch contention. Repeat Step 4 to verify that no latch contention exists.

5. If QUIESCE or UNMOUNT processing delay continues and FIX identified systems as owing responses (via message BPXF049I), restart the identified systems.

Scenario 5: File system initialization is delayed

File system initialization, which occurs when a system is being restarted, has been delayed indefinitely. The system issues message BPXF076I to indicate the delay. The delay occurs for one of the following reasons:

- File system processing in the sysplex is serialized on some event, such as unmount processing.
- The file system recovery from the previous instance of this system either failed or is delayed.

Indicators

- Message BPXF076I is issued from the initializing system.
- MODIFY BPXOINIT, FILESYS=DISPLAY,GLOBAL output indicates one of the following:
- The status for the initializing system indicates an error exists, and the recommended action is FIX.
- One or more systems are persistently performing a serialized event, as indicated by one of the following serialization categories:
  SYSTEM PERFORMING INITIALIZATION
  SYSTEM PERFORMING MOVE
  SYSTEM PERFORMING QUIESCE
  SYSTEMS PERFORMING UNMOUNT
  SYSTEMS PERFORMING MOUNT RESYNC
  SYSTEMS PERFORMING LOCAL FILE SYSTEM RECOVERY
  SYSTEMS PERFORMING FILE SYSTEM TAKEOVER RECOVERY
  SYSTEMS RECOVERING UNOWNED FILE SYSTEMS
  SYSTEMS PERFORMING REPAIR UNMOUNT

**Corrective action**

1. Take an SVC dump of all systems in the sysplex. Include the OMVS address space and all OMVS data spaces in the dump. See "Getting the right z/OS UNIX data in a dump" on page 20-1 to determine what **DUMP** parameters to use. To initiate the dump on all systems, use the **REMOTE=(SYSLIST=(system1,system2,...),SDATA,DSPNAME)** parameter. For more information on the **DUMP** system command, see **z/OS MVS System Commands**.

   Note that FIX processing performed in the next step also initiates an SVC dump, but the dump includes different data, capturing critical global file system resources.

   Retain all dumps in case you need to provide them to the IBM Service Center for analysis.

2. If the **MODIFY BPXOINIT, FILESYS=DISPLAY,GLOBAL** output indicates a recommended action of FIX, issue the **MODIFY BPXOINIT,FILESYS=FIX** system command. In response, the system should issue message BPXF052I, indicating that the system has an inconsistent XCF representation. FIX starts z/OS UNIX System Services partition cleanup processing for the named system. This processing should clear the original delay condition.

3. If the **MODIFY BPXOINIT, FILESYS=DISPLAY,GLOBAL** output indicates that another serialized file system activity is in progress, use the time stamp in the output to determine if the serialized category of processing has been ongoing for a significant period of time. To determine if there is a problem, issue the **MODIFY BPXOINIT, FILESYS=FIX** system command, then follow the corrective procedures described in "Scenario 4: Mount, unmount, or quiesce processing seems to be delayed" on page 20-36.

**Scenario 6: Dynamically reinitialize the file system**

Use the following procedure to reinitialize the file system in the sysplex without restarting any system. The procedure completely unmounts the file system; a new hierarchy is established based on the MOUNT statements in the BPXPRMxx parmlib members used by each system during initialization.

Presumably, this procedure is part of an "emergency recovery" procedure. Before reinitializing the file system, stop all z/OS UNIX System Service applications, if possible, and tell all z/OS UNIX System Services login users to log out. Otherwise, applications and users will terminate abnormally.
Procedure

1. To minimize the amount of error processing that occurs during the disruptive unmount of the file system, stop all applications and login users of z/OS UNIX System Services.

2. Issue the `MODIFY BPXOINIT,FILESYS=FIX` system command to diagnose and repair existing file system problems.

3. Issue the `MODIFY BPXOINIT,FILESYS=UNMOUNTALL` system command to unmount the complete file system hierarchy.

4. Issue the `MODIFY BPXOINIT,FILESYS=REINIT` system command to reinitialize the file system hierarchy.

5. Restart applications and allow users to login again.

Understanding z/OS UNIX System Services latch contention

This section is designed to help you understand the global resource serialization latches that the z/OS UNIX System Services logical file system (LFS) uses to provide serialization for file systems.

We also provide a procedure to help you diagnose and resolve mount latch contention and file system latch contention in this section. See Procedure: Diagnosing and resolving latch contention on page 20-40.

The z/OS UNIX System Services LFS uses three levels of global resource serialization latches to provide serialization for file systems:

- **Mount latch**: The mount latch provides serialization for operations involving the LFS and is the latch number two in the SYS.BPX.A000.FSLIT.FILES.LSN latch set. The mount latch is obtained exclusively:
  - When a file system is mounted or unmounted.
  - In a sysplex configuration, for operations such as file system moves, lost system recovery, system initialization, and reading from or writing to a couple data set.

Obtaining the mount latch exclusively ensures that only one of these activities is going on at the same time.

Use the `DISPLAY GRS,LATCH,CONTENTION` command to look for mount latch contention.

- **File system latch**: There is a latch for each file system mounted. These latches are within the SYS.BPX.A000.FSLIT.FILES.LSN latch set. The file system latch is:
  - Obtained exclusively every time that file system is unmounted, synchronized, exported or unexported by the server message block (SMB) server, moved or recovered within a sysplex.
  - Obtained in shared mode for the duration of any operation within the file system, such as reads from or writes to a file. This prevents the file system from being unmounted or moved, for example, while there is an operation in progress on a file within the file system.

Use the `DISPLAY GRS,LATCH,CONTENTION` command to look for file system latch contention.

- **File latch**: There is file latch associated with each active file or directory. A file latch can be obtained in either exclusive or shared mode, depending on the operation involved. For example, the file latch for a directory would be obtained in shared mode to read a name from the directory. But it would be obtained exclusively to write a name to the directory during a file create operation.
File latches are not used with the z/OS File System (zFS) physical file system because the zFS has its own file level serialization mechanisms. File latches are used with shared file system, TFS, pipes, character special, and NFS client physical file systems.

File latches are in a special group of latches with names in the form of SYS.BPX.A000.FSLIT.LSN.nn, where nn is a hexadecimal number.

Use the DISPLAY GRS,LATCH,CONTENTION command to look for file latch contention.

In addition to these three levels, the LFS also uses a quiesce latch, which is assigned to any file system that is:

- Quiesced by the BPX1QSE callable service, which is used by HSM and other utilities to backup or dump file systems.
- For sysplex operations that operate against the file system as a whole, such as moving and recovering.

When a file system is quiesced, normal operations are suspended, and threads wait suspended for the file system's quiesce latch. The system may hold the quiesce latch for longer than the duration of a system call. Note that HSM does not use the quiesce latch for zFS file systems.

Use the DISPLAY OMVS,FILE command to look for quiesce latch contention on your system.

**Diagnosing latch contention:** You will know that you have a case of latch contention by symptoms such as the following:

- One or more systems issue message **BPXM056E** z/OS UNIX SYSTEM SERVICES LATCH CONTENTION DETECTED
- z/OS UNIX System Services users are hung
- z/OS UNIX System Services itself seems to be hung

In general, the key to resolving latch contention lies in finding the latch holder. There are two kinds of z/OS UNIX System Services tasks that can hold a latch, potentially causing contention:

- **User programs:** When a user program invokes a file operation, the system obtains the file system latch and possibly the file latch, and holds the latches for the duration of the operation.
- **z/OS UNIX System services (OMVS task):** z/OS UNIX System Services may hold the mount latch or a file system latch for more extended periods of time for operations such as system recovery and file system moves.

**Procedure: Diagnosing and resolving latch contention**

The following topics help you diagnosis and resolve the latch contention problem:

1. "View latch contention activity output" on page 20-41
2. "Analyze the mount latch contention" on page 20-41
3. "Analyze the file system latch contention" on page 20-42
4. "Analyze the file latch contention" on page 20-43
5. "Analyze the output for outstanding sysplex messages" on page 20-44
6. "Analyze the output for other waiting threads" on page 20-44
7. "Resolve latch contention within the PFS" on page 20-46
8. "Terminate or cancel the latch holder" on page 20-47
View latch contention activity output
To identify the source of the latch contention and format the contention activity output, take the following steps:

1. If your suspected contention situation involves a system hang, take an SVC dump on all systems in the sysplex before you do anything else. If you have to contact the IBM Support Center, you might be asked to provide this information. See the SVC dump topic in z/OS MVS Diagnosis: Tools and Service Aids.

2. To verify that your problem is really latch contention, issue DISPLAY GRS,LATCH,CONTENTION on each system to see if message ISG343I displays any latches in contention.

3. If ISG343I does display latches in contention, issue command DISPLAY OMVS,WAITERS. Read the DISPLAY OMVS,WAITERS output displayed in message BPXO063I for latch contention activity information. The message BPXO063 can provide the following output tables: MOUNT LATCH ACTIVIY, OUTSTANDING CROSS SYSTEM MESSAGES, RECEIVED SYSTEM MESSAGES, FILE SYSTEM LATCH ACTIVITY, and OTHER WAITING THREADS.

4. If you see MOUNT LATCH ACTIVITY displayed in the message BPXO063I, you have mount latch contention. See "Analyze the mount latch contention" for more diagnosis information.

5. If you see FILE SYSTEM LATCH ACTIVITY displayed in the message, you have file system latch contention. See "Analyze the file system latch contention" on page 20-42 for more diagnosis information.

6. If you see FILE LATCH ACTIVITY displayed in the message, you have file system latch contention. See "Analyze the file latch contention" on page 20-43 for more diagnosis information.

Analyze the mount latch contention
The MOUNT LATCH ACTIVITY table shows what user or product is holding the mount latch and what users are waiting for the latch. For example:

```
SY1 D OMVS,W
SY1 BPXO063I 12.39.07 DISPLAY OMVS 426
OMVS 000E ACTIVE OMVS=(QY)
MOUNT LATCH ACTIVITY:
  USER ASID TCB REASON AGE
  HOLDER:
  OMVS 000E 008E9828 Inact Cycle 00.01.18
  IS DOING: XPFS VfsInactCall / XSYS Message To: SY2
  FILE SYSTEM: filesystemname.HFS
  WAITER(S):
  OMVS 000E 008097C8 FileSys Quiesce 00.00.05
  OMVS 000E 008E9858 FileSys Sync 00.01.10
```

The key to resolving mount latch contention is in the HOLDER: and IS DOING: fields highlighted in the example output above:

- The HOLDER: field tells you what program is holding the mount latch.
- The IS DOING: field tells you where, in what element or product, the program holding the mount latch is running, and what the program is doing. IS DOING is displayed as IS DOING: activity / [pfs_qualifier]:

  activity
  Description of what the holding task is doing, activity is displayed as one of the following:
  - A wait, such as a latch wait, indicating that the latch holder is waiting for another latch.
- The type of physical file system (PFS) and the operation that the task was called to do, such as READ, WRITE, MOUNT, or FSYNCH.

**pfs_qualifier**

If the activity field shows a PFS, the pfs_qualifier field shows what the PFS is doing. For example, pfs_qualifier might show:

- Running - The thread is probably in a PFS wait that cannot be detected by DISPLAY OMVS. In rare cases, the thread might be looping in the PFS. Go to “Resolve latch contention within the PFS” on page 20-46 for further diagnosis steps.
- Osj Wait - The thread is in a standard wait from within the PFS. Go to step “Resolve latch contention within the PFS” on page 20-46 for further diagnosis steps.
- XSYS Message to: sysname - The operation causing the wait is happening on another system in the sysplex indicated by sysname. Go to “Analyze the output for outstanding sysplex messages” on page 20-44 for further diagnosis steps.

**Analyze the file system latch contention**

The FILE SYSTEM LATCH ACTIVITY table shows what user or product is holding the file system latch and what users are waiting for the latch. For example:

**FILE SYSTEM LATCH ACTIVITY:**

<table>
<thead>
<tr>
<th>USER</th>
<th>ASID</th>
<th>TCB</th>
<th>SHR/EXCL</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Latch 432 FILE SYSTEM: THE.FILESYS.NAME**
  - **HOLDER(S):**
    - User10 0044 00880460 SHR 00:12:08
      - **IS DOING:** NFS ReadCall
        - **FILE:** somefilename
      - User11 0045 00880460 SHR 00:15:58
        - **IS DOING:** NFS ReadCall
          - **FILE:** somefilename
    - **WAITER(S):**
      - OMVS 000E 008E9B58 EXCL 00.01.10

- **Latch 678 FILE SYSTEM: ANOTHER.FILESYS.NAME**
  - **HOLDER(S):**
    - OMVS 000E 00820420 EXCL 00:12:08
      - **IS DOING:** ZFS SyncCall / Osj_Wait
    - **WAITER(S):**
      - User12 0022 008D97C8 SHR 00.00.05
      - User15 0072 008E9B58 SHR 00.01.10

The key to resolving file system latch contention is in the **HOLDER:** and **IS DOING:** fields highlighted in the example output above:

- **The HOLDER:** field tells you what program is holding the file system latch.
- **The IS DOING:** field tells you where, in what element or product, the program holding the file system latch is running, and what the program is doing. First, we'll decode field **IS DOING**. **IS DOING** is displayed as **IS DOING: activity / [pfs_qualifier]:**

  **activity**
  
  Description of what the holding task is doing. activity is displayed as either:
  - A wait, such as a file system latch wait, indicating that the latch holder is waiting for another latch.
  - The type of physical file system (PFS) and the operation that the task was called to do, such as READ, WRITE, MOUNT, or FSYNCH.
If the `activity` field shows a PFS, the `pfs_qualifier` field shows what the PFS is doing. For example, `pfs_qualifier` might show:

- **Running** - The thread is probably in a PFS wait that cannot be detected by `DISPLAY OMVS`. In rare cases, the thread might be looping in the PFS. Go to "Resolve latch contention within the PFS" on page 20-46 for further diagnosis steps.

- **Osi Wait** - The thread is in a standard wait from within the PFS. Go to step "Resolve latch contention within the PFS" on page 20-46 for further diagnosis steps.

- **XSYS Message to: sysname** - The operation causing the wait is happening on another system in the sysplex indicated by `sysname`. Go to "Analyze the output for outstanding sysplex messages" on page 20-44 for further diagnosis steps.

### Analyze the file latch contention

The `FILE LATCH ACTIVITY` table shows what user or product is holding the file latch and what users are waiting for the latch. For example:

<table>
<thead>
<tr>
<th>USER</th>
<th>ASID</th>
<th>TCB</th>
<th>SHR/EXCL</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FILE LATCH ACTIVITY:**

**FILE: myfile**

**FILE SYSTEM: ZOS112.ETC.ZFS**

**HOLDER(S):**

- **TCO 0026 008E6090** EXCL 00.00.56
- **TIME:** 2010/10/08 16.21.36
- **IS DOING:** ZFS MKDirCall

**WAITER(S):**

- **TCO 0027 008E6090** SHR 00.06.51
- **TIME:** 2010/10/08 16.21.38

The key to resolving file latch contention is in the **HOLDER:** and **IS DOING:** fields highlighted in the example output above:

- The **HOLDER:** field tells you what program is holding the file latch.
- The **IS DOING:** field tells you where, in what element or product, the program holding the file latch is running, and what the program is doing. First, we'll decode field **IS DOING.** **IS DOING** is displayed as IS DOING: `activity / [pfs_qualifier]`:

  - `activity`: Description of what the holding task is doing. `activity` is displayed as either:
    - A wait, such as a file Latch Wait, indicating that the latch holder is waiting for another latch.
    - The type of physical file system (PFS) and the operation that the task was called to do, such as READ, WRITE, MOUNT, or FSYNCH

- **pfs_qualifier**: If the `activity` field shows a PFS, the `pfs_qualifier` field shows what the PFS is doing. For example, `pfs_qualifier` might show:

  - **Running** - The thread is probably in a PFS wait that cannot be detected by `DISPLAY OMVS`. In rare cases, the thread might be looping in the PFS. Go to "Resolve latch contention within the PFS" on page 20-46 for further diagnosis steps.
- Osj wait - The thread is in a standard wait from within the PFS. Go to step "Resolve latch contention within the PFS" on page 20-46 for further diagnosis steps.

- XSYS Message to: sysname - The operation causing the wait is happening on another system in the sysplex indicated by sysname. Go to "Analyze the output for outstanding sysplex messages" for further diagnosis steps.

### Analyze the output for outstanding sysplex messages

If the pfs_qualifier field displayed in the MOUNT LATCH ACTIVITY, FILE SYSTEM LATCH ACTIVITY, or FILE LATCH ACTIVITY table shows XSYS Message to: sysname, the operation causing the wait is happening on another system in the sysplex indicated by sysname. Do the following steps:

#### 1. The information displayed under the OUTSTANDING CROSS SYSTEM MESSAGES: heading in message BPXO063I shows more information about the message sent to the other system. You can identify the message sent by the task holding the latch by the matching ASID and TCB values from the holding task and the task under the OUTSTANDING CROSS SYSTEM MESSAGES: heading. Note and retain the TCB and ASID value of the message for the next step in this procedure:

<table>
<thead>
<tr>
<th>Sent Sysplex Messages:</th>
<th>Received Sysplex Messages:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USER</strong></td>
<td><strong>ASID</strong></td>
</tr>
<tr>
<td>MEGA</td>
<td>0025</td>
</tr>
<tr>
<td>TCO</td>
<td>0026</td>
</tr>
<tr>
<td>OMVS</td>
<td>000E</td>
</tr>
</tbody>
</table>

If pipes are used, the output from sysplex messages might not have a corresponding sent sysplex messages. The system that received the request replied to the user so that resources are released and continued processing. On the sender side, once the reply has been received, the task goes into an OSI wait where it will wait to be posted. Because this is a pipes task, the waiter is not shown in the other waiters table, which makes it difficult to correlate between the systems that received the message and the system where it originated. In these cases, the ReqID will be blank. In that situation, using the SPECIAL filtering option (D OMVS,W,S) might result in the corresponding waiter.

#### 2. On the remote system where the message is sent, issue D OMVS,WAITERS and look in the RECEIVED SYSPLEX MESSAGES section for a message with the matching TCB and ASID. The ASID and TCB fields should also match those of the sending thread. Use the value of the IS DOING: field on the remote system to continue contention analysis and resolve the contention.

### Analyze the output for other waiting threads

The threads that are waiting but not involved in any mount latch or file latch contention are listed last in the message BPXO063I under the OTHER WAITING THREADS heading. In case of resolving latch contention, it might be helpful to know why these threads are waiting and how to release them from the wait status. For example:

<table>
<thead>
<tr>
<th>Other Waiting Threads:</th>
<th>PID</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER01</td>
<td>0021</td>
<td>00090870</td>
</tr>
</tbody>
</table>

**IS DOING:** NFS readdir / Running

**FILE:** nfsdirname (33,5432)
The **IS DOING** field as highlighted in the example above tells what the waiting task (USER) is doing at the time of display. In addition to the waiting type discussed in previous sections, other possible types include:

**File Share Wait**

The thread is suspended during the open() of a file because the NFS server has placed a share reservation on the file. Issue the `MODIFY mvsnfs,listlock=` command to show the share reservation that NFS server has on the file, and the `MODIFY mvsnfs,release=` to break the reservations if necessary. For more information on the commands, see the [z/OS Network File System Guide and Reference](z/OS Network File System Guide and Reference).

**BRLM Wait**

The thread is waiting to obtain a byte range lock on a file. Take the following steps for diagnosis:

1. Issue the `DISPLAY OMVS,A=ALL` command to get the PID or PIDs corresponding to the address space ID of the thread.
2. Issue the `DISPLAY OMVS,PID=www,BRL` command to show the threads in the byte-range lock wait. (In this case, the PID obtained in step 1 for the waiting process is www.) The BRLWAIT line in the message shows the PID of the process that is blocking this waiting process from obtaining the lock.
3. If the blocking process also appears in other part of the waiters display, continue the diagnosis procedure there.
4. If the blocking process resides on another system within the sysplex, use the system name in the BRLWAIT line and continue the diagnosis procedure there.
5. On the system where the blocking process resides, issue the `DISPLAY OMVS,PID=bbb,BRL` command to show the name of the program or command that is running. (In this case, the PID obtained in step 2 for the blocking process is bbb.)
   
   Note that the blocking process might not be hung, or at least not hung for z/OS UNIX Services reasons. Programs can obtain byte range locks and hold them indefinitely.
6. If the blocking process is the NFS server, the command shown is GFSAMAIN. In this case the lock was obtained by some NFS client. You can use `MODIFY mvsnfs,listlock=` and `MODIFY mvsnfs,release=` commands to solve the problem.

**Quiesce Wait**

A file system has been quiesced by the BPX1QSE callable service because some backup products are reading the underlying data sets. You can do the following steps to find more information about the file system in problem:
z/OS UNIX

- Issue the DISPLAY OMVS,FILE command to show the job name and PID of the process that has used BPXIQSE. And if a file system is quiesced too long, the message BPXF034I THE FOLLOWING FILE SYSTEM HAS BEEN QUIESCED FOR MORE THAN 10 MINUTES: filesystem is issued.
- A file system can be quiesced while it is being moved or recovered.
  - In a shared file system configuration, issue the MODIFY BPXOINIT,FILESYS=d,exception and MODIFY BPXOINIT,FILESYS=d,FILESYSTEM=filesystemname to show more information of the file systems in moved or recovery state.
  - In either a single system or a shared file system configuration, issue the DISPLAY OMVS,f,exception command.
- You can forcibly unquiesce a quiesced file system through the File_system menu in the Ishell dialog under ISPF.

zFS xxxxx/ OSI Wait
The thread waiting within the zFS file system has been quiesced by the zfsadm quiesce shell command, or by a backup product that is reading underlying data sets. Use the zfsadm aggrinfo shell command to show the state of zFS aggregate. Use the DISPLAY OMVS,FILE command to find the aggregate name if it is not the same with the file system name.

File Latch Wait
The thread is waiting for a file latch. The latch number is shown and you can also use the DISPLAY GRS,LATCH,CONTENTION command for the holders. File latches are usually obtained just before it goes into the PFS that supports the file, so the holders information might also be shown in other parts of the waiters display if they are hung up in the PFS.

See "Problem diagnosis for shared file system" on page 20-33 for more information on analysis in a shared file system configuration. Also see the MODIFY BPXOINIT,FILESYS=DISPLAY command in z/OS MVS System Commands for information related to discussions here.

Resolve latch contention within the PFS
If the pfs_qualifier field displayed in the MOUNT LATCH ACTIVITY or FILE SYSTEM LATCH ACTIVITY table shows either Running or OsI Wait, do the following steps depending on the type of file system in question:

For a zFS file system, do the following:
1. Issue the DISPLAY ZFS,QUERY,THREADS to get details about the state of threads within zFS.
2. Issue modify zfs,hangbreak to have zFS to post any requests in zFS that are waiting, with a failure. This can allow the hang condition to be broken and resolved.
3. Issue the modify zfs,query,threads command to determine if one or more requester threads remain in the same wait over several queries.
4. If you cannot successfully break or resolve the hang, go to "Terminate or cancel the latch holder" on page 20-47

See z/OS Distributed File Service zSeries File System Administration

For an NFS client, most problems relate to the socket sessions that NFS has with its servers. Do the following:
1. Issue the `DISPLAY OMVS,FILE` command to show the MOUNT PARM= value specified when the file system was mounted. This value contains the name of the remote server and the remote directory path name for the file system where the file is.

2. Find out whether the delay is in the remote server or the NFS client. To find out, issue the `DISPLAY TCPIP,,NETSTAT,CONN` command to display the state of the socket sessions between NFS and the remote server (which is always port number 2049). If the output shows that there are no socket sessions between the NFS client and the remote server, either the remote system or the remote server might be down. However, note that NFS does not always have persistent socket sessions for its servers, so the absence of sessions may just mean that socket sessions are not needed at this exact time.

If the remote system or server is down and the file system was hard mounted, NFS will try to establish contact indefinitely. In that case, you might have to unmount the file system to free up the users.

You can also use the shell ping command to check for connectivity to the remote system. Use display commands on to the remote server's system to see why the server is not responding. If the remote system is also a z/OS system, you can diagnose the latch contention on the remote system starting with step 1 on page 20-41.

For the DFS Glue module, IOEGLUE, the wait usually means that the file system is exported by the SMB or DFS server and that the file being accessed is being shared with some remote client. Issue the `DISPLAY OMVS,A=ALL` command to display the SERVER= line that can help to find the address space and process id of the server involved. See z/OS Distributed File Service SMB Administration for diagnosing SMB problems like hangs.

If you can not free the latch holder with these methods, you might need to force the process to terminate, or cancel the latch holder. See “Terminate or cancel the latch holder” for more instructions.

**Terminate or cancel the latch holder**

If you were not able to resolve the latch contention using methods in “Resolve latch contention within the PFS” on page 20-46 and the contention persists, you may need to terminate or cancel the latch holder. The options are listed in order of possible disruption to the system:

To terminate the task holding the latch, do the following steps:

1. Issue a `MODIFY BPXOINIT,RECOVER=LATCHES` console command to resolve the contention. This command can take several minutes to resolve the latch contention, but if the system cannot resolve the latch contention within a reasonable time interval, the system eventually displays action message BPXM057E. If necessary, see that message for further action.

   Note that if successful, the `MODIFY BPXOINIT,RECOVER=LATCHES` command causes the abend of user tasks or non-critical system tasks that hold latches, generates one or more address space dumps, and can result in the termination of an entire process. Refer to z/OS MVS System Commands before issuing this command.

2. Issue command `MODIFY BPXOINIT,FORCE=pid[,tid]` to terminate individual threads in a process. In the command, `pid` is the decimal form of the process id to be terminated and `tid` is the hexadecimal form of the thread id to be terminated. See Controlling z/OS UNIX System Services (z/OS UNIX) in z/OS MVS System Commands.
3. Cancel the latch holder.
4. Log off or force off the latch holder.
5. Use the STOP command to stop the product address space. For example, stop the colony address space that an NFS file system is running in.
6. If absolutely necessary, cancel the product address space. For example:
   - Cancel the colony address space that an NFS file system is running in.
   - If you think zFS is in an infinite loop, cancel zFS.

See also “Problem diagnosis for shared file system” on page 20-33.

Sometimes it might be helpful to know about other waiting threads, even if these threads are not holders or waiters of any latch contention. See “Analyze the output for other waiting threads” on page 20-44 for more information.

If you cannot resolve the mount latch contention after using this procedure, search problem reporting data bases for a fix. If no fix exists, contact the IBM Support Center and supply the SVC dumps if appropriate.

**z/OS UNIX System Services latch identities**

This section describes the latch identity strings for z/OS UNIX System Services latches that can be displayed by using the D GRS,ANALYZE,LATCH command.

z/OS UNIX System Services uses GRS latches to serialize resources and operations. GRS console commands display information about the identities of the latches, waiters, blockers and so on. For more information, see z/OS MVS System Commands.

The following example is the output of the D GRS,ANALYZE,LATCH,WAITER command. In this example, the latch set name (LSETNAME) is SYS.BPX.A000.FSLIT.FILESYS.LSN, the latch identity string (LATCHID) is FS: HOST12.AJAX.DIRECTORY, and the latch number is “20”.

```
SY2 D GRS,ANALYZE,LATCH,WAITER
SY2 ISG374I 16.15.24 GRS ANALYSIS 734
LONG WAITER ANALYSIS: ENTIRE SYSTEM
----- LONG WAITER #1
WAITTIME JOBNAME E/S CASID LSETNAME/LATCHID
00:01:01 TC0  *E* 000E SYS.BPX.A000.FSLIT.FILESYS.LSN
20:FS: HOST12.AJAX.DIRECTORY
```

In the output of the D GRS,ANALYZE,LATCH command, the latch identity strings (LATCHID) are displayed along with the latch number and latch set name. The following table lists the latch identity strings for the latches used by z/OS UNIX System Services.

<table>
<thead>
<tr>
<th>Latch Identity String (LATCHID)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical File System</td>
<td>This latch is used to serialize PFS termination and restart.</td>
</tr>
<tr>
<td>MOUNT</td>
<td>This latch is used by the file system to serialize operations such as file system mount, unmount, move, and automount and others.</td>
</tr>
<tr>
<td>PIPE Global</td>
<td>This latch is used when the system is traversing or modifying structures that are related to PIPES.</td>
</tr>
</tbody>
</table>
Table 20-1. Latch identity strings for the latches used by z/OS UNIX System Services (continued)

<table>
<thead>
<tr>
<th>Latch Identity String (LATCHID)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSI Sleep and Wakeup</td>
<td>This latch is used when the system is traversing or modifying structures that are related to the osi_sleep() and osi_wakeup() services.</td>
</tr>
<tr>
<td>Byte Range Lock Manager</td>
<td>This latch is used when the system is traversing or modifying structures that are related to the byte range lock management.</td>
</tr>
<tr>
<td>Global</td>
<td>This latch is used when the system is traversing or modifying structures that are related to the byte range lock management.</td>
</tr>
<tr>
<td>Register File Interest Global</td>
<td>This latch is used when the system is traversing or modifying structures that are dealing with files, for which an interest has been registered through w_ioctl().</td>
</tr>
<tr>
<td>Mount/Move Failure Data Block</td>
<td>This latch is used when the system is traversing or modifying structures that are related to the data when the system is reporting a mount or move failure.</td>
</tr>
<tr>
<td>FS: &lt;fs name&gt;</td>
<td>If the LSETNAME is SYS.BPX.A000.FSLIT.FILESYS.LSN, the latch is used to serialize operations on the file system named in the latch identity string. If the LSETNAME is SYS.BPX.A000.FSLIT.QUIESCES.LSN, the latch is used to quiesce the file system named in the latch identity string.</td>
</tr>
<tr>
<td>NW: &lt;domain_name&gt;</td>
<td>This latch is used for operations on the local or network socket domain whose name is shown in the latch identity string.</td>
</tr>
<tr>
<td>Automount Global</td>
<td>This latch is used to serialize pfsctl() calls during automount processing.</td>
</tr>
<tr>
<td>AM: &lt;fs name&gt;</td>
<td>This latch is used for any automount operations on the file system named in the latch identity string.</td>
</tr>
<tr>
<td>LFS Process ID=&lt;pid in decimal&gt;</td>
<td>This latch is used to serialize searches and updates to the file system structures associated with the process whose PID is shown in the latch identity string.</td>
</tr>
<tr>
<td>Name=&lt;resource name&gt;, Dev=&lt;devno# in decimal&gt;, Ino=&lt;inode# in decimal&gt;</td>
<td>This latch is used for operations on a file system resource such as file, directory and FIFO. The resource name, device number and inode number are listed in the latch identity string. The resource name will be truncated to the first 15 characters if it has more than 16 characters. Note that the &lt;resource name&gt; can be a dot (.) which indicates the current directory in a relative path name or a dot dot (..) which indicates the parent directory in a relative path name.</td>
</tr>
<tr>
<td>Dev=&lt;devno# in decimal&gt;, Ino=&lt;inode# in decimal&gt;</td>
<td>This latch is used for operations on a file system resource such as file, directory and FIFO. The name of the resource is not available, but the device number and inode number are listed in the latch identity string.</td>
</tr>
<tr>
<td>MessageQ ID=&lt;msg-ID in decimal&gt;</td>
<td>This latch is used when the system is traversing or modifying structures related to the message queue whose identifier is shown in the latch identity string.</td>
</tr>
<tr>
<td>Shared Memory ID=&lt;shm-ID in decimal&gt;</td>
<td>This latch is used when the system is traversing or modifying structures related to the shared memory segment whose identifier is shown in the latch identity string.</td>
</tr>
<tr>
<td>Semaphore ID=&lt;sem-ID in decimal&gt;</td>
<td>This latch is used when the system is traversing or modifying structures related to the semaphore whose identifier is shown in the latch identity string.</td>
</tr>
</tbody>
</table>
### Table 20-1. Latch identity strings for the latches used by z/OS UNIX System Services (continued)

<table>
<thead>
<tr>
<th>Latch Identity String (LATCHID)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process ID=&lt;pid in decimal&gt;</td>
<td>If the LSETNAME is SYS.BPX.AP00.PRTB1.PPRA.LSN, the latch is used when the system is traversing or modifying structures related to managing the process whose PID is shown in the latch identity string. If the LSETNAME is SYS.BPX.AP00.PRTB1.SIGNALS.LSN, the latch is used when the system is traversing or modifying structures related to signal processing for the process whose PID is shown in the latch identity string.</td>
</tr>
<tr>
<td>MessageQ Global</td>
<td>This latch is used to search and add elements to the message queue mechanism.</td>
</tr>
<tr>
<td>Shared Memory Global</td>
<td>This latch is used to search and add elements to the shared memory mechanism.</td>
</tr>
<tr>
<td>Semaphore Global</td>
<td>This latch is used to search and add elements to the semaphore mechanism.</td>
</tr>
<tr>
<td>Process Global</td>
<td>This latch is used for process management operations that are not limited to a single process.</td>
</tr>
</tbody>
</table>
Chapter 21. Real Storage Manager (RSM)

This topic contains information on formatting real storage manager (RSM) dump data for diagnosis.

Formatting RSM dump data

An SVC, stand-alone, or SYSMDUMP dump for RSM contains diagnostic data.

Format the diagnostic data using the IPCS RSMDATA subcommand. RSMDATA produces diagnostic reports that are helpful for analyzing storage shortages and investigating address spaces for real frame usage.

gives the syntax of the RSMDATA subcommand and explains how to use the RSMDATA option of the IPCS dialog.

The following table summarizes the RSMDATA reports available:

<table>
<thead>
<tr>
<th>RSMDATA Subcommand Parameter</th>
<th>Report</th>
<th>Report Contains:</th>
<th>Example Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRSpace</td>
<td>RSM address space report</td>
<td>Summary of central storage use for each address space.</td>
<td>21-2</td>
</tr>
<tr>
<td>DIVMAP</td>
<td>DIV mapped range report</td>
<td>Information about ranges of pages mapped by data-in-virtual.</td>
<td>21-7</td>
</tr>
<tr>
<td>DSPACE</td>
<td>Data space report</td>
<td>Information about data spaces.</td>
<td>21-8</td>
</tr>
<tr>
<td>EXCEPTION</td>
<td>RSM diagnostics/ exception report</td>
<td>Information about incorrect RSM data areas.</td>
<td>21-10</td>
</tr>
<tr>
<td>EXECUTION</td>
<td>RSM execution status report</td>
<td>Information that IBM may need for diagnosis.</td>
<td>21-11</td>
</tr>
<tr>
<td>HIGHVIRTUAL</td>
<td>RSM high virtual page report</td>
<td>Information about virtual pages above 2 gigabytes in the system, including page owner, location, status, and summary of memory objects.</td>
<td>21-12</td>
</tr>
<tr>
<td>HVCOMMON</td>
<td>RSM high virtual common report</td>
<td>Information about allocated high virtual common storage, including owner, location, size, and status.</td>
<td>21-16</td>
</tr>
<tr>
<td>HVSHRDATA</td>
<td>RSM high virtual shared</td>
<td>Information about how high virtual storage is being data report shared through the use of the IARV64 macro.</td>
<td>21-17</td>
</tr>
<tr>
<td>REALFRAME</td>
<td>RSM real storage frame report</td>
<td>Information about real frames in the system, including the status, location, and current (or most recent) owner of each real frame.</td>
<td>21-19</td>
</tr>
</tbody>
</table>
## Real Storage Manager

<table>
<thead>
<tr>
<th>RSMDATA Subcommand Parameter</th>
<th>Report</th>
<th>Report Contains:</th>
<th>Example Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSMREQ</td>
<td>RSM requests report</td>
<td>Information about the status of asynchronous requests, including the requester, the RSM function fulfilling the request, the status of the request, and the requested pages for each request.</td>
<td>21-25</td>
</tr>
<tr>
<td>SHRDATA</td>
<td>Shared data report</td>
<td>Information about how storage is being shared through the use of the IARVSEVR macro.</td>
<td>21-29</td>
</tr>
<tr>
<td>SUBSPACE</td>
<td>Subspace report</td>
<td>Information about subspaces</td>
<td>21-32</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>RSM summary report</td>
<td>Information on central storage usage on a system-wide basis and information about any unusual RSM conditions.</td>
<td>21-33</td>
</tr>
<tr>
<td>VIRTPAGE</td>
<td>RSM virtual page report</td>
<td>Information about virtual pages in the system, including page owner, location, and status.</td>
<td>21-35</td>
</tr>
</tbody>
</table>

The RSM summary report is the **default option** for the RSMDATA subcommand.

Examples of RSMDATA reports follow. In a report, a question mark (?) indicates that the RSMDATA subcommand could not obtain information for the field. A dash (–) indicates that the information does not apply to the field.

### RSMDATA ADDRSPACE subcommand output

The RSM address space report provides information on the status of selected address spaces. The report summarizes central storage use for each address space. This data is sorted by address space identifier (ASID).

The numbers in the top section of the report are hexadecimal. The totals at the bottom of the report are decimal.
The following example is the RSM short address space report (RSMDATA ADDRSP SHORT ALL). The report summarizes some central storage use for each address space. The short version of the report does not scan through the queues, but depends only on count values.
The fields in the diagnostic data for both reports are:

**JOBNAME**
- The name of the job associated with the address space.

**ASID**
- The address space identifier (ASID) of the job.

**STATUS**
- The state of the address space:
  - CREATE: Creation in progress
  - LSWAP: Logically swapped
  - NONSWAP: Non-swappable
  - RESWPIP: In real swap in progress
  - SWAUX: Swapped to auxiliary storage
  - SWAUXIP: Swap to auxiliary storage in progress
  - SWIN: Swapped in (currently in central storage)
  - SWINIP: Swap-in in progress
  - TERM: Abend in progress

**TOT R**
- The total number of real frames in use by the address space. For swapped-out address spaces, which have a status of SWAUX, SWEXP, or SWINIP, this column represents the total working set of the address space.

**PRF R**
- The number of preferred real frames in use by the address space.
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| BR | The number of real frames below 16 megabytes in use by the address space. |
| AR | The number of real frames above 16 megabytes but below 2 gigabytes in use by the address space. |
| DBL | The number of double-frame pairs in use by the address space. For swapped-out address spaces, which have a status of SWAUX, SWEXP, or SWINIP, this column represents the number of double-frame pairs required by this address space when it is swapped in. |
| QD | The number of quad groups in use by the address space. For swapped-out address spaces that have a status of SWAUX or SWINIP, this column represents the number of quad-frame groups required by this address space when it is swapped in. |
| DSP R | The number of real frames in use for data spaces owned by the address space. For a z/Architecture dump, this includes real frames used for hiperspaces. |
| TOT F | The total number of real frames containing fixed pages that are in use by the address space. |
| BF | The number of real frames below 16 megabytes containing fixed pages and in use by the address space. |
| AF | The number of fixed frames above 16 megabytes but below 2 gigabytes in use by the address space. |
| PRF F | The number of preferred real frames containing fixed pages that are in use by the address space. |
| TOT SHAR | The total number of shared pages for this address space that were established through the IARVSERV macro, not including pages in shared segments. |
| TOT SH V | The total number of shared pages that are addressable in central storage for this address space, not including pages in shared segments. |
| TOT HV SHAR | The total number of high virtual shared segments for this address space that were shared through the IARV64 SHAREMEMOBJ macro option. |
| X | An indication of cross memory RSM requests: |
| Y | Address space has cross memory RSM requests pending. |
| N | Address space has no pending cross memory RSM requests. |

For more information about the request(s), see the RSM requests report.

| P | The preferred storage usage rules for the address space: |
| Dash (−) | Private area pages may be placed in non-preferred storage. |
| L | Local system queue area (LSQA) and long-term fixes must be placed in preferred storage. |
| S | Short-term fixes must be placed in preferred storage. |
LS  LSQA and short and long-term fixes must be placed in preferred storage.

DG  Diagnostic data useful to IBM.

**Totals for this address space report (in decimal):**

These totals are located at the end of the report.

The total number, in decimal, is recorded for the selected address spaces that are in the following states: CREATE, LSWAP, NONSWAP, SWAUX, SWAUXIP, SWEXP, SWEXPPIP, SWIN, SWINIP, or TERM. These states are described for the STATUS field on page 21-4. A dash (–) indicates that address spaces for that STATUS were not selected for the report.

The total number, in decimal, of address spaces evaluated is recorded in the TOTAL field.

The total number, in decimal, is recorded for frames from the selected address spaces that are in the following states:

- BF
- BR
- DBL
- DSP EXP
- DSP R
- PRF F
- PRF R
- PRF REQ
- RESWPIP
- TOT EXP
- TOT F
- TOT R
- TOT SHAR
- TOT SH V
- TOT HV SHAR

The fields not listed below are described previously.

- **TOT R**  Total number of real frames for all selected address spaces. The total does not include spaces whose status is SWAUX, SWEXP, or SWINIP.

- **DBL**  Total number of double frames needed by all address spaces. The total includes frames whose status is SWAUX, SWEXP, or SWINIP.

- **PRF REQ**  Total number of fixed frames from the selected address spaces that must be preferred frames.

  The number includes the fixed frames that:
  - Require short or long-term fixes in preferred storage. These frames are indicated by an S or an L in column P.
  - Are non-swappable.

  The number does not include frames that were fixed when only preferred frames were available.

- **TOT SHAR**  Total number of shared data pages for all selected address spaces.

- **TOT SH V**  Total number of shared data pages that are valid in storage for all selected address spaces.
**RSMDATA DIVMAP subcommand output**

The RSMDATA DIVMAP subcommand provides an RSM data-in-virtual mapped range report. This report gives information about ranges of pages mapped by data-in-virtual.

The mapped pages are sorted by ASID. For each ASID, the mapped pages are grouped with the pages for the address space first, followed by the pages for each data space. Within each group, the pages are in no particular order.

**DIV MAPPED RANGE REPORT**

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>ASID</th>
<th>DSPNAME</th>
<th>START AD</th>
<th>NUM BLCK</th>
<th>HS OBJ</th>
<th>HS START</th>
<th>STATUS</th>
<th>PF</th>
<th>E</th>
<th>DG</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALLJOB</td>
<td>0023</td>
<td>-</td>
<td>01530000</td>
<td>00000705</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>2056780</td>
</tr>
<tr>
<td>SMALLJOB</td>
<td>0023</td>
<td>MYDSP</td>
<td>04035000</td>
<td>00068394</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>2055660</td>
</tr>
<tr>
<td>THRASHER</td>
<td>0042</td>
<td>DSP3</td>
<td>002EF000</td>
<td>00000030</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>2056760</td>
</tr>
<tr>
<td>THRASHER</td>
<td>0042</td>
<td>DSP22</td>
<td>002FF000</td>
<td>00000034</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>20567A0</td>
</tr>
<tr>
<td>THRASHER</td>
<td>0042</td>
<td>DSP1</td>
<td>002DF000</td>
<td>00000054</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>20557C0</td>
</tr>
<tr>
<td>THRASHER</td>
<td>0042</td>
<td>-</td>
<td>0100F000</td>
<td>000005F3</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>2145600</td>
</tr>
<tr>
<td>JOB1</td>
<td>009E</td>
<td>OLDDSP</td>
<td>34C33000</td>
<td>00000396</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>20346C0</td>
</tr>
<tr>
<td>BIGJOB</td>
<td>0099</td>
<td>-</td>
<td>00233000</td>
<td>00000E20</td>
<td>MYHSP01</td>
<td>00080000</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>20CA3E0</td>
</tr>
<tr>
<td>BIGJOB</td>
<td>0099</td>
<td>-</td>
<td>0045F000</td>
<td>000A4144</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>21039A0</td>
</tr>
<tr>
<td>MEDTSO</td>
<td>0099</td>
<td>-</td>
<td>00432000</td>
<td>00004175</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>2100020</td>
</tr>
<tr>
<td>BADJOB</td>
<td>00A2</td>
<td>-</td>
<td>02345000</td>
<td>00000548</td>
<td>-</td>
<td>-</td>
<td>MAPPED</td>
<td>00</td>
<td>N</td>
<td>2034A0</td>
</tr>
</tbody>
</table>

Totals for this DIV mapped range report (in decimal):

<table>
<thead>
<tr>
<th></th>
<th>MAPRPIP</th>
<th>UNMAPRPIP</th>
<th>SAVEIP</th>
<th>RESETIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAPRPIP</td>
<td>2</td>
<td>1</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>MAPPED</td>
<td>1,667</td>
<td>1,685</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The fields in the diagnostic data are as follows:

**JOBNAME**
Name of the job that owns the mapped range of pages.

**ASID**
Address space identifier of the address space that owns the mapped range of pages.

**DSPNAME**
Name of the data space that contains the mapped range of pages or dash (–) for address space ranges.

**START AD**
The address of the start of the mapped range.

**NUM BLCK**
The number, in hexadecimal, of blocks in the mapped range. A block is 4096 bytes or one page.
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**HS OBJ**
The name of the Hiperspace™, if the address space range is mapped to a Hiperspace. Dash (–) for data-in-virtual objects that are not Hiperspaces.

**HS START**
The starting address in the Hiperspace of the mapped page range, if the range is mapped to a Hiperspace. Dash (–) for data-in-virtual objects that are not Hiperspaces.

**STATUS**
Any operations currently in progress on the range:
- MAPIP DIV MAP request is in progress
- MAPRPIP DIV MAP reprime request is in progress
- UNMAPIP DIV UNMAP request is in progress
- SAVEIP DIV SAVE request is in progress
- RESETIP DIV RESET request is in progress
- MAPPED DIV MAP request has completed and no other DIV macro function is in progress

**PF** Page fault count, in hexadecimal.

**E** An indication of an error in the mapped range:
- Y Error
- N No error

**DG** Diagnostic data useful to IBM.

**Totals for this DIV mapped range report (in decimal):**
These totals appear at the end of the report.

**MAPIP**
**MAPRPIP**
**UNMAPIP**
**SAVEIP**
**RESETIP**
**MAPPED**
The total number, in decimal, of pages in mapped ranges that are in the indicated state. The state is given in the STATUS field.

**TOTAL**
The total number, in decimal, of pages in mapped ranges evaluated in the report.

**RSMDATA DSPACE subcommand output**
The RSMDATA DSPACE subcommand provides an RSM data space report. This report gives information about data spaces.

The data spaces are sorted by ASID. The data spaces for an address space are listed in no particular order.
The fields in the diagnostic data are as follows:

**JOBNAME**
- The name of the job.

**ASID**
- Address space identifier.

**DSPNAME**
- Data space name.

**OWNG TCB**
- Owning task’s TCB address.

**CUR B**
- Current number, in hexadecimal, of blocks in the data space. A block is 4096 bytes or one page.

**MAX B**
- Maximum number, in hexadecimal, of blocks to which the data space can be expanded. A block is 4096 bytes or one page.

**K**
- Storage protection key.

**T**
- Type of data space:
  - B: Basic data space
  - H: Hiperspace
  - M: Basic data space containing shared segments

**S**
- Scope of reference:
  - S: Accessible from only the owning address space
  - A: Accessible from all address spaces
  - C: Common data space
  - Dash (-): Not applicable

**R**
- Reference type:
  - D: Disabled references allowed
  - E: Enabled references only
  - Dash (-): Not applicable

**F**
- Indication of fetch protection:

---

### DATA SPACE REPORT

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>ASID</th>
<th>DSPNAME</th>
<th>OWNG TCB</th>
<th>CUR B</th>
<th>MAX B</th>
<th>T</th>
<th>S</th>
<th>R</th>
<th>TOT EXP</th>
<th>DG</th>
<th>DG</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>DSP01</td>
<td>007E5465</td>
<td>00000000</td>
<td>00000001</td>
<td>B</td>
<td>C</td>
<td>E</td>
<td>Y</td>
<td>00025</td>
<td>00000040</td>
</tr>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>DSP02</td>
<td>007E5465</td>
<td>00000000</td>
<td>00000001</td>
<td>B</td>
<td>A</td>
<td>E</td>
<td>Y</td>
<td>0001C</td>
<td>00000005</td>
</tr>
<tr>
<td>RASP</td>
<td>0003</td>
<td>SYSDS000</td>
<td>007C4000</td>
<td>00000000</td>
<td>00000000</td>
<td>H</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>0001E</td>
<td>00000201</td>
</tr>
<tr>
<td>TRACER</td>
<td>0003</td>
<td>TRDSP</td>
<td>007E5465</td>
<td>00000000</td>
<td>00000000</td>
<td>B</td>
<td>C</td>
<td>E</td>
<td>Y</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>DUMPSRV</td>
<td>0005</td>
<td>DUMP01</td>
<td>007E5692</td>
<td>007F0000</td>
<td>007F0000</td>
<td>B</td>
<td>S</td>
<td>E</td>
<td>Y</td>
<td>00000000</td>
<td>00000045</td>
</tr>
<tr>
<td>CONSOLES</td>
<td>0007</td>
<td>DSP01</td>
<td>007F0200</td>
<td>00000000</td>
<td>00000000</td>
<td>B</td>
<td>S</td>
<td>D</td>
<td>Y</td>
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Totals for this data space report (in decimal):

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<tbody>
<tr>
<td>22</td>
<td>4</td>
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</table>
Real Storage Manager

Y Fetch protected
N Not fetch protected

TOT R
Total number, in hexadecimal, of real frames in use by the data space.

DG Diagnostic data useful to IBM.

Totals for this data space report (in decimal):
These totals appear at the end of the report.

SINGLE
The total number, in decimal, of data spaces accessible from only the owning
address space.

ALL
The total number, in decimal, of data spaces accessible from all address spaces.

COMMON
The total number, in decimal, of common data spaces.

DREF
The total number, in decimal, of data spaces for which disabled references are
allowed.

EREF
The total number, in decimal, of data spaces for which only enabled references
are allowed.

BASIC
The total number, in decimal, of basic data spaces.

HIPERSP
The total number, in decimal, of data spaces being used as Hiperspaces.

TOTAL
The total number, in decimal, of data spaces evaluated in the report.

RSMDATA EXCEPTION subcommand output

The RSM diagnostics/exception report verifies RSM global data structures and
provides information about incorrect data areas. For one of the following
subcommands, the report also verifies local data structures for the specific address
spaces:

RSMDATA EXCEPTION JOBNAME(cccccccc)
RSMDATA EXCEPTION JOBLIST(cccccccc[,cccccccc]...)
RSMDATA EXCEPTION ASIDLIST(hhhh[,hhhh]...)

For an RSMDATA EXCEPTION DATASPACE subcommand, the report includes
information about data spaces.

Problems in RSM data structures are identified by messages IAR81002I, IAR81003I,
and IAR81004I. If IAR81003I or IAR81004I is issued, RSMDATA dumps the affected
area. See z/OS MVS Dump Output Messages for more information about these
messages.

The following output shows the first parts of an RSM diagnostics/exception report.
The RSM execution status report contains information that IBM may need for diagnosis.

**RSMDATA EXECUTION subcommand output**

The RSM execution status report contains information that IBM may need for diagnosis.
Real Storage Manager

RSMDATA HIGHVIRTUAL subcommand output

The RSM high virtual page report provides information about virtual pages above 2 gigabytes in the system, including page owner, location, and status. It also includes a summary of the memory objects.

The total number of pages in each page state are displayed for each job name at the end of the report. The report is sorted by the ASID of the job name and, within each ASID, by virtual page address. The memory objects are summarized after the detailed page report and before the totals, and they are sorted by the starting virtual page address.

The numbers in the top section of the report are hexadecimal. The totals at the bottom of the report are decimal.
The fields in the diagnostic data are as follows:

**JOBNAME**
The job name of the page owner.

**Note:** When the virtual page is high virtual common, HVCOMM appears instead of the job name.

**PAGE**
The virtual address for the page.

**G** An indication of whether the page has been GETSTORed
- Y The page is GETSTORed.
- N The page is not GETSTORed.
- S The page is shared by this address space.

**K** The storage protect key for the page.

**F** An indication of whether the page is protected:
- Y The page is fetch-protected.
- N The page is not fetch-protected.

---

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>PAGE</th>
<th>G</th>
<th>K</th>
<th>F</th>
<th>PL</th>
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---

The fields in the diagnostic data are as follows:

**JOBNAME**
The job name of the page owner.

**Note:** When the virtual page is high virtual common, HVCOMM appears instead of the job name.

**PAGE**
The virtual address for the page.

**G** An indication of whether the page has been GETSTORed
- Y The page is GETSTORed.
- N The page is not GETSTORed.
- S The page is shared by this address space.

**K** The storage protect key for the page.

**F** An indication of whether the page is protected:
- Y The page is fetch-protected.
- N The page is not fetch-protected.
Real Storage Manager

P An indication of how the page is protected:
   Y The page is page-protected.
   N The page is not page-protected.

L An indication of whether the page is locked:
   Y The page is locked
   N The page is not locked

STAT
   The status of the page. Swap states apply only to working set pages.
   DASD Page resides on a paging data set.
   FREF First reference state. The page was never referenced or it was
   released by a DETACH request.
   FRFM First reference state. The 1M page was never referenced or it
   was released by a DETACH request.
   GUARD Page resides in the guarded area of the memory object.
   HIDE Page is hidden.
   REAL Page resides in real storage. It is either valid or has output
   paging I/O in progress.
   RL_M 1 MB page resides in a real frame. It is either valid or has
   output paging I/O in progress.
   RL2G 2 GB page resides in a real frame.
   SCM Page resides on storage-class memory (SCM).
   SCMM 1M page resides on storage-class memory (SCM).
   SIAI Swap-in from auxiliary storage in progress.
   SOAI Swap-out to auxiliary storage in progress.
   SWAX Page was swapped to auxiliary storage.

T DAT translation status:
   V Page is valid.
   P Page is not valid.
   S Page resides in an invalid segment.
   3 Page resides in an invalid region third.
   2 Page resides in an invalid region second.
   1 Page resides in an invalid region first.
   N DAT structures are not built for this page.
   A Page resides in an invalid space (swapped out).
   U Page is unavailable due to a hardware or software error or is in a
   transitional state.

R LOC
   The current, or most recent, real frame number of the page. To obtain the real
   address of the frame, add three zeros to the right of the frame number.

LOC
   The current, or most recent, location of the page. The character to the right of
   the location indicates the storage type.
   r Real storage
   p Paging data set
   f storage-class memory (SCM)
   A question mark (?) indicates that the storage type cannot be determined.

PAGE I/O
   The type of paging I/O (if any) current for the page. A dash (-) indicates that
   I/O is not active. See PAGE I/O on page 21-22 for the list of functions.

FIX
   The fix count for the page.
**DG** Diagnostic data useful to IBM.

**START VSA**
The beginning (lowest) virtual storage address for a memory object. This includes guard pages, therefore if GUARDLOC is specified as LOW this VSA may represent a guard page.

**END VSA**
The last (highest) virtual storage address for a memory object. This includes guard pages, therefore if GUARDLOC is specified as HIGH this VSA may represent a guard page.

**S** An indication of the shared attribute:
- N The memory object is not shared.
- L The memory object is shared with a local scope.
- G The memory object is shared with a global scope.

**K** The storage protect key for the pages in the memory object.

**F** An indication of how the memory object is protected:
- Y The pages in the memory object are fetch-protected
- N The pages in the memory object are not fetch-protected

**C** An indication of the control value of the memory object. The control value indicates whether the memory object should be eligible for certain other services. A dash (−) indicates that this field is not applicable such as for shared memory objects.
- A Memory object is authorized and other requests such as PAGEFIX can be performed on memory object pages.
- U Memory object is unauthorized and other requests such as PAGEFIX cannot be performed on memory object pages.

**M** An indication as to whether the memory object should be included in an SVC dump when region is requested.
- Y The virtual storage in the memory object should be captured when SDATA=RGN is specified on the SVC dump request.
- N The virtual storage of the memory object is not included in the dump when SDATA=RGN is specified on the SVC dump request if not specifically requested.

**CREATE TIME**
The time when the memory object was created via GETSTOR or GETSHARED.

**REQUESTOR**
The return address of the requester of the memory object. For a shared memory object, this is the requester of the GETSHARED request.

**RQAS**
The address space identifier of the requester of the memory object.

**USER TOKEN**
The user token associated with a high virtual memory object. For shared memory objects, this is the user token for the most recent SHAREMEMOBJ request. A dash (−) indicates that no user token was specified.

**SHR MEM**
The number of interests the address space has in a memory object (SHAREMEMOBJ requests still active). A dash (−) indicates that no user token was specified.
Real Storage Manager

**RESERVED**
Indicates the number of segments in hex that is reserved for optimization. A dash (-) indicates that this field is not applicable.

**Totals for job cccccccc ASID hhhh (in decimal):**
These totals are located at the end of each job name.

The total number, in decimal, is recorded for the virtual pages from each job name in the following page states: DASD, FREF, REAL, GUARD, SCM, SIAI, SOAI, RL_M, FRFM, SCMM, RL2G or SWAX. These states are described for the STAT field. Swap states apply to working set pages only.

**RSMDATA HVCOMMON subcommand output**
The RSM high virtual common report provides information about the common virtual storage allocated in the system above 2 gigabytes. This includes the owner, location, size, and status.

**Note:** Dumps taken on systems at levels prior to V1R13 might not contain useful information.

The fields in the report are as follows:

**COMMON ADDRESS RANGE**
The hexadecimal virtual address range for high common area on this system.

**START VSA**
The beginning (lowest) virtual storage address for a memory object.

**END VSA**
The last (highest) virtual storage address for a memory object.

**SIZE**
The size of the memory object in megabytes.

**ST**
The status of the job that created the common memory object:
- AC The job is still active.
- OG The owner is gone; the creating job has purged.

**T**
The type of owner of the memory object.
J or S  J is job and S is system.

K  An indication of which key is protecting the memory object.

F  An indication of how memory object is protected.
   Y  The pages in the memory object are fetch-protected.
   N  The pages in the memory object are not fetch-protected.

L  An indication of the type of pages used to back the memory object.
   Y  Large pages back the memory object.
   N  Large pages do not back the memory object.

JOBNAME
   The name of job that created the memory object.

CREATE TIME
   The date and time when the memory object was created.

REQUESTOR
   The return address of the requester of the memory object.

RQAS
   The requestor address space identifier (ASID) of the memory object.

UNOWNED TIME
   The date and time the job that created the memory object ended.

DG  Diagnostic data that is useful to IBM

RSMDATA HVSHRDATA subcommand output

The RSM high virtual shared data report provides information about memory objects that are shared by the system. The report will also contain information about segments or regions that are shared including the view from each address space or the global view depending on the changeaccess scope of the memory object.

The report is sorted by memory object virtual addresses. The first line for each memory object contains information about the GETSHARE invoker, followed by a list of address spaces currently sharing that memory object. If the memory object is shared with a global scope, the view for the segments and regions will follow the list of address spaces.

The numbers in the top section of the report are hexadecimal. The totals at the bottom of the report are decimal.
The fields in the diagnostic data are as follows:

**SHARED ADDRESS RANGE**

The range of virtual addresses to be used for shared memory objects.

**S** An indication of the shared scope attribute:

- **L** The memory object is shared with a local scope.
- **G** The memory object is shared with a global scope.

**START VSA**

The beginning (lowest) virtual storage address for a memory object, when the first line of a memory object, or the beginning of a range of segments with a particular view.

**END VSA**

The last (highest) virtual storage address for a memory object, when the first line of a memory object, or the end of a range of segments with a particular view.

**ST** An indication as to whether sharing is being done at the segment level or region level:

- **S** The memory object is being shared at the segment level.
- **R** The memory object is being shared at the region level.

**K** The storage protect key for the pages in the memory object.

**F** An indication of how the memory object is protected:

- **Y** The pages in the memory object are fetch-protected.
- **N** The pages in the memory object are not fetch-protected.

**VT** An indication of the view type of pages within the range:

- **SW** Shared-write access.
- **RO** Read-only access.
- **HD** Data is hidden.

**JOBNAME**

Name of jobs that are sharing the memory object.

**ASID**

The identifier of the address spaces (ASIDs) sharing the memory object.
CREATE TIME
The time when the memory object was created using IARV64 GETSHARED.

REQUESTOR
The return address of the requester of the memory object (IARV64 GETSHARED) request.

RQAS
The address space identifier of the requester of the memory object.

USER TOKEN
The user token associated with the shared memory object (passed on the IARV64 GETSHARED request).

DG Diagnostic data useful to IBM

RSMDATA REALFRAME subcommand output
The RSM real frame report provides information about real frames in central storage. The report displays information about each frame's status, location, and current, or most recent owner.

For an RSMDATA REALFRAME subcommand, the report is sorted by the ASID of the current (or most recent) owner of the frame. For an RSMDATA REALFRAME ALL subcommand, the report is sorted by frame number.

The numbers in the top section of the report are hexadecimal. The totals at the bottom of the report are decimal.
The fields in the diagnostic data are as follows:

R FRM  The real frame number. To obtain the real address of the frame, add three zeros to the right of the frame number.

STATUS  The status of the real frame:

ALLOC  Allocated.

ALLOCSM  Frame is backing a page that is part of a shared segment.

ALLOCVR  Allocated to a V=R job that is running or waiting for additional frames.

AVAIL  Available.

OFFINT  Offline intercepted. When freed from its current owner, the frame will be taken offline. This status overrides any pending interceptions for a V=R job.

OFFINTPL  Offline intercepted, but the frame is in use by a job that is polluting the V=R area with a long-term resident page.

OFFINTVR  Offline intercepted, but the frame is allocated to a V=R job.

OFFLINE  Offline.

POLLUTE  The frame is part of the V=R area, but is allocated to a long-term resident that is not a V=R page.
VRINT V=R intercepted. When freed from its current owner, the frame will be assigned to a waiting V=R job.

ALLOC1M Allocated 1M frame.

AVAIL1M Available 1M frame.

JOBNAME One of the following:
- The name of the current frame owner.
- The name of the most recent frame owner, when the STATUS is AVAIL or OFFLINE.

DATOFF A permanently resident frame that contains a portion of the DAT-off nucleus.

FIXCOMM A frame that backs a page from the system queue area (SQA) or the fixed common service area (CSA).

FLPA A frame that backs a permanently resident common area page that contains a portion of the fixed link pack area.

HSA A permanently resident frame that contains a portion of the hardware system area.

HVCOMN A frame that backs a page from high virtual common.

HVSHARED An indication that the data in the central storage frame is shared through the IARV64 macro.

PAGECOMM A frame that backs a page from a pageable common area subpool (including common area disabled reference subpools), the pageable link pack area (PLPA), or the modified link pack area (MLPA).

PERMCOMM A frame that backs a permanently resident common area page.

RONUC A frame that backs a permanently resident common area page that contains a portion of the read-only nucleus.

RSBUFFER A frame that is reserved for use as a central storage buffer for SVC dump processing.

RWNUC A frame that backs a permanently resident common area page that contains a portion of the read-write nucleus.

SADMP A frame that was claimed by stand-alone dump on an SADMP IPL previous to the one that created this dump.

*SHARED* An indication that the data in the central storage frame is shared through the IARVSERV macro.

SQARESRV A frame that is reserved for potential SQA usage.

ASID The address space identifier (ASID) of the current frame owner or, if the STATUS is AVAIL or OFFLINE, the most recent frame owner. A dash (–) indicates that the frame is in the common area or the high virtual shared area.

DSP NAME The name of the data space that contains the page. A dash (–) indicates that the page is not within a data space.

PAGE ID The virtual address of the current, or most recent, page residing in the real
frame. The page ID is the shared page token, if *SHARED* appears in the JOBNAME column. (The shared page token appears in the Shared Data Report in the SH TOKEN column.)

`v` after the entry indicates that the page is a virtual input/output (VIO) page and the entry contains a VIO token that represents the individual page within the VIO data set. A VIO page is not always marked with a `v`.

d after the entry indicates that the frame is backing a high virtual DAT structure (region table, segment table, page table). When the frame is backing a high virtual DAT structure, the PAGE ID contains the lowest VSA for which the table provides translation.

**P** An indication of the storage area for the frame:
- Y The frame is in the preferred area
- N The frame is in the non-preferred area

In general, this indicator is relevant only when the RSU system parameter, which defines the number of reconfigurable storage units, is non-zero.

**E** An indication of an error, if any, that occurred on the frame:
- N No errors occurred
- C One or more correctable hardware errors occurred
- U One or more uncorrectable hardware errors occurred
- S A software error occurred

**D** An indication of the frame use:
- Y The frame is intended for use in a double-frame pair. (Only for ESA/390 dumps)
- N The frame is not intended for use in a double-frame pair nor intended for use in a quad-frame group for z/Architecture dumps.
- Q The frame is intended for use as part of a quad-frame group for z/Architecture dumps.
- D The frame is intended for use as part of a double-frame pair for z/Architecture dumps.

The frame may not be currently in use as a double-frame pair or quad-frame group.

**R** An indication of the page backed by the frame:
- E The frame backs an enabled reference page
- D The frame backs a disabled reference page

**PAGE I/O**

The name of the function that initiated the active I/O for the frame. A dash (–) indicates that I/O is not active for the frame.

- ASPCREAT Address space create
- CHGKEY Change key service (CHANGKEY macro)
- COPYSERV COPYSERV function.
- COPYSRVH High virtual copy service
- COUNTS RSM event and resource count service
- DFSTEAL Double frame steal
- DIVACCUN DIV ACCESS and DIV UNACCESS services
- DIVMAP Data-in-virtual MAP service
- DIVMAPLV Data-in-virtual MAP service with LOCVIEW = MAP processor
- DIVRES Data-in-virtual RESET service
- DIVRESLV Data-in-virtual RESET service with LOCVIEW = MAP processor
- DIVRTR Data-in-virtual router
DIVSAVE  Data-in-virtual SAVE service
DIVSLIST  DIV SAVELIST
DIVUNMAP  Data-in-virtual UNMAP service
DSPCONV  Data space convert services
DSPCREAT  Data space create
DSPDELET  Data space delete
DSPDRFOF  Data space define DREF off
DSPDRFON  Data space define DREF on
DSPSRTRD  Data space services router (DSPSERV macro) for disabled callers
DSPEXIST  Data space extend service
DSPIOOF  Data space define I/O off
DSPIOON  Data space define I/O on
DSPLIMIT  Data space limit services
DSPLOAD  Data space load
DSPOUT  Data space out
DSPREL  Data space release
DSPSRTR  Data space services router (DSPSERV macro)
DUMPSERV  Dump services
FLTADPAG  Address space disabled page fault
FLTAESEG  Address space enabled segment fault
FLTAHSEG  Address space segment faults for address above the 2 gigabytes bar
FLTAREGN  Address space region faults
FLTATYPE  Address space type faults
FLTDDIS  Data space disabled fault
FLTDEN  Data space enabled fault
FLTEPROT  Enabled protection fault
FREEFRAM  Free frame service
GENDEFER  General defer processor (handles requests waiting for frames to become available)
GENIOCMP  General I/O completion (handles paging I/O completion)
GENTERM  General abend (handles clean-up for RB, task, or address space abend)
GLRUSTL  Global LRU steal
HSPCACHE  Hiperspace cache services, that is, the HSPSERV macro with a CREAD or CWRITE parameter
HSPSCROL  Hiperspace scroll services, that is, the HSPSERV macro with an SREAD or SWRITE parameter
MACHCHK  Storage machine check handler
NIP  RSM system initialization routines
PER  Program event recording support
PGANY  Page any
PGFIX  Page fix
PGFREE  Page free
PGLOAD  Page load
PGOUT  Page out
PGPROT  PGSER PROTECT service
PGREL  Page release
PGSRTTR  Paging services router (PGSER macro)
PGUNPROT  PGSER UNPROTECT service
QFSTEAL  Quad frame steal
REALSWAP  In-real swap
### Real Storage Manager

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECONFIG</td>
<td>Real storage reconfiguration processing</td>
</tr>
<tr>
<td>RECOVERY</td>
<td>RSM recovery</td>
</tr>
<tr>
<td>RECREC</td>
<td>Recovery for RSM recovery</td>
</tr>
<tr>
<td>REFINST</td>
<td>REFPAT install</td>
</tr>
<tr>
<td>REFPAT</td>
<td>REFPAT router</td>
</tr>
<tr>
<td>REFREM</td>
<td>REFPAT remove</td>
</tr>
<tr>
<td>RPBPMGT</td>
<td>RSM request buffer management</td>
</tr>
<tr>
<td>RSMPIN</td>
<td>RSMPIN services</td>
</tr>
<tr>
<td>SRMEXIT</td>
<td>SRM exit call</td>
</tr>
<tr>
<td>SSPASSIG</td>
<td>Subspace assign</td>
</tr>
<tr>
<td>SSPCONV</td>
<td>Subspace convert</td>
</tr>
<tr>
<td>SSPCREAT</td>
<td>Subspace create</td>
</tr>
<tr>
<td>SSPDELETE</td>
<td>Subspace delete</td>
</tr>
<tr>
<td>SSPIDENT</td>
<td>Subspace identify</td>
</tr>
<tr>
<td>SSPSRTR</td>
<td>Subspace router</td>
</tr>
<tr>
<td>SSPUNAS</td>
<td>Subspace unassign</td>
</tr>
<tr>
<td>SSPUNID</td>
<td>Subspace unidentify</td>
</tr>
<tr>
<td>SWAPIN</td>
<td>Swap in</td>
</tr>
<tr>
<td>SWAPOUT</td>
<td>Swap out</td>
</tr>
<tr>
<td>TRACE</td>
<td>RSM component trace service</td>
</tr>
<tr>
<td>UIC</td>
<td>Unreferenced interval count (UIC) update or steal</td>
</tr>
<tr>
<td>UMCP</td>
<td>Free CPU related frames</td>
</tr>
<tr>
<td>V6CHACC</td>
<td>IARV64 CHANGEACCESS service</td>
</tr>
<tr>
<td>V6CHGURD</td>
<td>IARV64 CHANGEGUARD service</td>
</tr>
<tr>
<td>V6DETACH</td>
<td>IARV64 DETACH service</td>
</tr>
<tr>
<td>V6DISCAR</td>
<td>IARV64 DISCARDATA service</td>
</tr>
<tr>
<td>V6GETSHR</td>
<td>IARV64 GETSHARES service</td>
</tr>
<tr>
<td>V6GETSTR</td>
<td>IARV64 GETSTOR service</td>
</tr>
<tr>
<td>V6LIST</td>
<td>IARV64 LIST service</td>
</tr>
<tr>
<td>V6PAGFIX</td>
<td>IARV64 PAGEFIX service</td>
</tr>
<tr>
<td>V6PAGIN</td>
<td>IARV64 PAGEUNFIX service</td>
</tr>
<tr>
<td>V6PAGOUT</td>
<td>IARV64 PAGEOUT service</td>
</tr>
<tr>
<td>V6PAGUNF</td>
<td>IARV64 PAGEUNFIX service</td>
</tr>
<tr>
<td>V6ROUTR</td>
<td>IARV64 service router</td>
</tr>
<tr>
<td>V6SHMOMB</td>
<td>IARV64 SHARMEMOBJ service</td>
</tr>
<tr>
<td>VFETCH</td>
<td>Virtual fetch services</td>
</tr>
<tr>
<td>VIO</td>
<td>VIO services</td>
</tr>
<tr>
<td>VR</td>
<td>V=R services</td>
</tr>
<tr>
<td>VSMFRMN</td>
<td>FREEMAIN processing</td>
</tr>
<tr>
<td>VSMGMTN</td>
<td>GETMAIN processing</td>
</tr>
<tr>
<td>VSCGHACC</td>
<td>IARVSERV CHANGEACCESS service</td>
</tr>
<tr>
<td>VSROUTR</td>
<td>IARVSERV router</td>
</tr>
<tr>
<td>VSSHARE</td>
<td>IARVSERV SHARE service</td>
</tr>
<tr>
<td>VSUNSHARE</td>
<td>IARVSERV UNSHARE service</td>
</tr>
<tr>
<td>WAITSER</td>
<td>RSM wait services</td>
</tr>
<tr>
<td>XFINDPAGE</td>
<td>Find page information service</td>
</tr>
<tr>
<td>XMPOST</td>
<td>RSM cross memory POST service</td>
</tr>
</tbody>
</table>

**UI** The unreferenced interval count (UIC) for the page residing in the frame. The higher the UIC, the longer the page has been unreferenced.

**FIX**

The fix count for the page residing in the frame. An i at the end of the entry indicates that the page is implicitly fixed. Examples of implicitly fixed pages are permanently assigned pages and pages residing in fixed subpools.

**DG** Diagnostic data useful to IBM.
Totals for this real frame report (in decimal):
  These totals are located at the end of the report.

The total number, in decimal, is recorded for the real frames that are in the following states: ALLOC, ALLOC1M, ALLOCVR, AVAIL, AVAIL1M, DIAG127, DIAG227, OFFLINE, OFFINT, OFFINTVR, OFFINTPL, POLLUTE, or VRINT. These states are described in the STATUS field. A dash (–) indicates that real frames for that STATUS were not selected for the report.

Note: When frames allocated to shared segments (ALLOCSM) are included in the report, their total number will be included in the ALLOC total.

The total number, in decimal, of frames evaluated in the report is recorded in the TOTAL field.

RSMDATA RSMREQ subcommand output

The RSM requests report provides information about the status of asynchronous requests. An asynchronous request is any request for which RSM has suspended the requesting work unit. In general, synchronous requests do not appear in this report.

For each request, the report identifies the requester, identifies the RSM function fulfilling the request, lists the status of the request, and identifies the requested pages.

To determine the type and amount of asynchronous RSM activity in the system or for a particular job, look at the following:

- Active requests are listed at the beginning of the report. The requests are sorted by address space identifier (ASID) and the work unit of the requester.
- Next, the report repeats any active cross memory requests. These are requests for storage that is not in the requester's private area nor in a data space owned by the requester. Cross memory requests are sorted by the ASID of the owner of the requested page.
- Following the cross memory requests, the report lists any residual requests. These are requests that are not currently active. Residual requests are sorted by the order of activity, with the most recently active first.
- At the end of each active, cross memory, or residual requests list, the report has totals, in decimal, of requested pages in each state (or STATUS).

The numbers for each active, cross memory, or residual request in the report are hexadecimal.
# RSM Requests Report

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>ASID</th>
<th>TCB/SRB</th>
<th>FUNCTION</th>
<th>STATUS</th>
<th>OWNING JOB</th>
<th>ONAS</th>
<th>DSP NAME</th>
<th>PAGE ID</th>
<th>COUNT</th>
<th>R</th>
<th>FRM</th>
<th>DG</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>MASTER</em> 0001</td>
<td>t006E6D78</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
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<td>000000001</td>
<td>00003614</td>
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<td></td>
</tr>
<tr>
<td><em>MASTER</em> 0001</td>
<td>t006E7B66</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
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<td>0000000_02618000</td>
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<td>00003530</td>
<td>021816CC</td>
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<td></td>
</tr>
<tr>
<td><em>MASTER</em> 0001</td>
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<td>PGFIX</td>
<td>COMPLETE</td>
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<tr>
<td><em>MASTER</em> 0001</td>
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<td>PAGECOMM</td>
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<td>0000000_00B95000</td>
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<td>021816DC</td>
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<tr>
<td><em>MASTER</em> 0001</td>
<td>t00FC1E90</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
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<td>0218159C</td>
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<td></td>
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<tr>
<td>TRACE 0004</td>
<td>t006FFBF8</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>TRACE</td>
<td>0004</td>
<td>-</td>
<td>0000000_02620500</td>
<td>000000001</td>
<td>00005644</td>
<td>7FF002C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRS 0007</td>
<td>t006FFBF8</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>GRS</td>
<td>0007</td>
<td>-</td>
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<td>0000130F</td>
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<tr>
<td>GRS 0007</td>
<td>t006FFBF8</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>GRS</td>
<td>0007</td>
<td>-</td>
<td>0000000_02623000</td>
<td>000000001</td>
<td>00001312</td>
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<tr>
<td>VTAM 0018</td>
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<td>COMPLETE</td>
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<td>0018</td>
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<tr>
<td>VTAM 0018</td>
<td>t006EC9A8</td>
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<td>COMPLETE</td>
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<td></td>
</tr>
<tr>
<td>TBBOTH 001C</td>
<td>t006EC4C0</td>
<td>FLTAHPAG</td>
<td>PGREAD</td>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
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<td>000000001</td>
<td>00002719</td>
<td>020D05E0</td>
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<td></td>
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<tr>
<td>TBBOTH 001C</td>
<td>t006EC4C0</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>TBBOTH</td>
<td>001C</td>
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</tr>
<tr>
<td>IBMUSER 001D</td>
<td>t006DF3B8</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>IBMUSER</td>
<td>001D</td>
<td>-</td>
<td>0000000_00B9C000</td>
<td>000000001</td>
<td>00001754</td>
<td>7FF006F8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBMUSER 001D</td>
<td>t006DF3B8</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>IBMUSER</td>
<td>001D</td>
<td>-</td>
<td>0000000_00B9C000</td>
<td>000000001</td>
<td>00001754</td>
<td>7FF006F8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Totals for active RSM requests in this report (in decimal):

<table>
<thead>
<tr>
<th>PGREAD</th>
<th>PGWRITE</th>
<th>FRAMEAA</th>
<th>FRAMEAB</th>
<th>FRAMEPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FRAMEPH</th>
<th>FRAMEAH</th>
<th>QUADFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FRAMEPB</th>
<th>DBLFRAME</th>
<th>INPROGR</th>
<th>COMPLETE</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>248</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IOFAIL</th>
<th>XMFAIL</th>
<th>FAIL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>249</td>
</tr>
</tbody>
</table>
The fields in the diagnostic data are as follows:

**JOBNAME**
The name of the task or the service request block (SRB) that initiated the request.

**ASID**
The address space identifier (ASID) of the task or the SRB that initiated the request.

**TCB/SRB**
The address of the TCB (prefix t) or SRB (prefix s) that initiated the request.

**FUNCTION**
The RSM function that initiated the request. See PAGE I/O on page 21-22 for the list of functions.

**STATUS**
The current state of the request. Multiple entries can appear for some multiple page requests.

- **PGREAD** Waiting for a page to be read in from a data set.
- **PGWRITE** Waiting for a page to be written to a data set.
- **FRAMEAA** Waiting for any type of real frame below 2 gigabytes.
- **FRAMEAB** Waiting for a real frame that resides below 16 megabytes.

---

**Real Storage Manager**

Active cross-memory requests, re-sorted by owning address space:

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>ASID</th>
<th>TCB/SRB</th>
<th>FUNCTION</th>
<th>STATUS</th>
<th>OWNG JOB</th>
<th>ONAS</th>
<th>DSP NAME</th>
<th>PAGE ID</th>
<th>COUNT</th>
<th>R FRM</th>
<th>DG</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>t006E6D7B</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_03B2C000</td>
<td>00000001</td>
<td>0003614</td>
<td>0218153C</td>
</tr>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>t006E7B60</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_02618000</td>
<td>00000001</td>
<td>0003530</td>
<td>021816CC</td>
</tr>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>t006E7B60</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_02616000</td>
<td>00000001</td>
<td>0003542</td>
<td>0218168C</td>
</tr>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>t00FC1E90</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_08950000</td>
<td>00000001</td>
<td>0000012</td>
<td>0218160C</td>
</tr>
<tr>
<td><em>MASTER</em></td>
<td>0001</td>
<td>t00FC1E90</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_05821000</td>
<td>00000001</td>
<td>00005B8</td>
<td>0218159C</td>
</tr>
<tr>
<td>VTAM</td>
<td>0018</td>
<td>t006EC9A8</td>
<td>PGFIX</td>
<td>COMPLETE</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_04413000</td>
<td>00000001</td>
<td>00001A0</td>
<td>0218168C</td>
</tr>
</tbody>
</table>

Residual requests, sorted with most recently active first:

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>ASID</th>
<th>TCB/SRB</th>
<th>FUNCTION</th>
<th>STATUS</th>
<th>OWNG JOB</th>
<th>ONAS</th>
<th>DSP NAME</th>
<th>PAGE ID</th>
<th>COUNT</th>
<th>R FRM</th>
<th>DG</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBBOTH</td>
<td>001C</td>
<td>t006EC4C0</td>
<td>FLTAHPAG</td>
<td>PGREAD</td>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>00000001_01000000</td>
<td>00000001</td>
<td>0001777</td>
<td>020DAE00</td>
</tr>
<tr>
<td>J273</td>
<td>0014</td>
<td>s006EAA6B</td>
<td>PGFIX</td>
<td>INPROGR</td>
<td>J273</td>
<td>0014</td>
<td>-</td>
<td>00000001</td>
<td>00000001</td>
<td>00027D0</td>
<td>020DBA60</td>
</tr>
<tr>
<td>J273</td>
<td>0014</td>
<td>s006EAA6B</td>
<td>PGFIX</td>
<td>INPROGR</td>
<td>J273</td>
<td>0014</td>
<td>-</td>
<td>00000001</td>
<td>00000001</td>
<td>022545C</td>
<td>020DAE00</td>
</tr>
<tr>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>PGOUT</td>
<td>PGWRITE</td>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>00000000_06207000</td>
<td>00000001</td>
<td>000027D0</td>
<td>020DBA60</td>
</tr>
<tr>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>PGOUT</td>
<td>PGWRITE</td>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>00000000_06206000</td>
<td>00000001</td>
<td>000027D0</td>
<td>020DBA30</td>
</tr>
<tr>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>PGOUT</td>
<td>PGWRITE</td>
<td>TBBOTH</td>
<td>001C</td>
<td>-</td>
<td>00000000_06205000</td>
<td>00000001</td>
<td>000027C1</td>
<td>02258310</td>
</tr>
<tr>
<td>IBMUSER</td>
<td>001D</td>
<td>t006F0F00</td>
<td>FLTAEPAG</td>
<td>PGREAD</td>
<td>PAGECOMM</td>
<td>-</td>
<td>-</td>
<td>00000000_04758000</td>
<td>00000001</td>
<td>00003F13</td>
<td>020DB8B0</td>
</tr>
</tbody>
</table>

Totals for residual RSM requests in this report (in decimal):

<table>
<thead>
<tr>
<th>PGREAD</th>
<th>PGWRITE</th>
<th>FRAMEAA</th>
<th>FRAMEAB</th>
<th>FRAMEPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FRAMEPH</th>
<th>FRAMEAH</th>
<th>QUADFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FRAMEPB</th>
<th>DBLFRAME</th>
<th>INPROGR</th>
<th>COMPLETE</th>
<th>CANCEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IOFAIL</th>
<th>XMFAIL</th>
<th>FAIL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>37</td>
</tr>
</tbody>
</table>
Real Storage Manager

FRAMEPA  Waiting for a real frame that resides in the preferred area.
FRAMEPB  Waiting for a real frame that resides in the preferred area below 16 megabytes.
DBLFRAME Waiting for a real frame pair.
INPROGR Request in progress.
COMPLETE Waiting for a PGSER FREE request. COMPLETE applies only to completed, non-fast path PGSER FIX requests.
CANCEL The request was cancelled, probably because of an address space abend or data space deletion.
IOFAIL The I/O initiated by the request failed.
XMFAIL The request failed because of a cross memory access error.
FAIL The request failed for an unknown reason.
FRAMEAH Waiting for any type of real frame. (Only for z/Architecture dumps)
FRAMEPH Waiting for any real frame that resides in the preferred area. (Only for z/Architecture dumps)
FRAMEQD Waiting for a quad-frame group. (Only for z/Architecture dumps)

OWNG JOB
The name of the job that owns the requested page(s) or PAGECOMM for pageable common area pages (including common area disabled reference pages), the pageable link pack area (PLPA), or the modified link pack area (MLPA). If OWNG JOB does not match JOBNAME, the request is a cross memory request.

*SHARED* appears instead of the job name when the RSM request data is shared through the IARVSERV macro.

HVSHARED appears instead of the job name when the RSM request data is high virtual shared through the IARV64 macro.

HVCOMM appears instead of the job name when the RSM request data is high virtual common.

ONAS
The ASID of the address space owning the requested page(s). A dash (–) indicates that the requested pages are in the common area, are shared pages, or are high virtual shared pages.

DSP NAME
The name of the data space that contains the requested page(s). A dash (–) indicates that the requested pages do not reside in a data space.

PAGE ID
The virtual starting address of the first or only requested page. A dash (–) indicates that the request is not related to a specific virtual address.

The page ID is the shared page token if *SHARED* appears in the OWNG JOB column. (The shared page token appears the Shared Data Report in the SH TOKEN column.)

COUNT
The number of requested pages that are still waiting for frames to become
available or for I/O to complete. For a FIX request in which the STATUS is COMPLETE, COUNT is the number of times the requester fixed the requested page.

**R FRM**
The real frame number associated with the request. A dash (–) appears if there is no specific frame related to the request.

**DG** Diagnostic data useful to IBM.

**Totals for active RSM requests in this report (in decimal):**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals for residual RSM requests in this report (in decimal):**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These totals are located at the end of each active or residual requests list in the report.

The total number, in decimal, is recorded for the RSM requests that are in the following states: CANCEL, COMPLETE, DBLFRAME, FAIL, FRAMEAA, FRAMEAB, FRAMEPA, FRAMEPB, INPROGR, IOFAIL, PGREAD, PGWRITE, or XMFAIL. These states are described for the STATUS field on page 21-27. A dash (–) indicates that requests for that STATUS were not selected for the report.

The total number, in decimal, of requests evaluated in the report is recorded in the TOTAL field.

### RSMDATA SHRDATA subcommand output

The RSMDATA SHRDATA subcommand provides an RSM shared data report. The report provides information about how virtual pages are shared through the use of the IARSERV macro.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals (in decimal):**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 21-3. Example output from the RSM shared data report

The fields displayed in this report are:
**Real Storage Manager**

**SH TOKEN**
The token that represents the sharing page.

**K**
The storage protect key for the sharing page.

**GP**
Indicates how the page is protected. A summary for the sharing group.
- **UW** Unique write access
- **–** Not protected

**R**
Indicates the type of reference allowed.
- **E** An enabled reference is allowed.
- **D** A disabled reference is allowed.

**V**
Indicates whether the page is part of a data-in-virtual object.
- **Y** The page is part of a data-in-virtual object.
- **N** The page is not part of a data-in-virtual object.

**P**
Indicates whether the sharing page should be fixed in preferred storage.
- **Y** The sharing page should be fixed in a frame from the preferred area.
- **N** The sharing page does not need to be fixed in a frame from the preferred area.

**B**
Indicates whether the sharing page should be fixed in real storage below 16 megabytes.
- **Y** The sharing page should be fixed with a frame that resides below 16 megabytes.
- **N** The sharing page can be fixed with any type of frame.
- **B** The sharing page should be fixed with a frame that resides below 16 megabytes. (Only for z/Architecture dumps)
- **A** The sharing page should be fixed with a frame that resides below 2 gigabytes. (Only for z/Architecture dumps)

**STAT**
Indicates the status of the page.
- **DASD** Page resides on a paging data set.
- **DSN** The sharing page resides on a data set containing the data-in-virtual object.
- **FREF** The page is in the first reference state. That is, the page was never referenced, or it was released through the use of the DSPSERV or PGSER macro.
- **REAL** The sharing page resides in a real frame. The page is either valid or it has output paging I/O in progress.
- **SCM** Page resides on storage-class memory (SCM).

**R LOC**
Indicates the current, or most recent, real frame number of the sharing page. To obtain the real address of the frame, add three zeros to the right of the frame number.

**LOC**
The current, or most recent, location of the sharing page. The character to the right of the location indicates the storage type.
- **r** Real storage.
- **p** Paging data set.
- **f** Storage-class memory (SCM).
- **h** Data set that contains a data-in-virtual object.
A question mark (?) indicates that the system cannot determine the storage type.

**LOC2**
Indicates the current, or most recent, secondary address of the sharing page.
The character to the right of the location indicates the storage type:
r Real storage.
p Paging data set. (The secondary address might be meaningless).
h Data set that contains a data-in-virtual object.
A question mark (?) indicates that the system cannot determine the storage type.

**PAGE I/O**
The type of paging I/O (if any) that is current for the page. A dash (–) indicates that I/O is not active. See PAGE I/O output in the RSMDATA REALFRAME report.

**VT**
Indicates the type of view for this sharing page.
RO Read-only access
SW Shared-write access
TW Target-write access
UW Unique-write access.
? Unknown type of view.

**O**
Indicates whether this sharing page is the source or target.
Y The page is the source.
N The page is the target.

**L**
Indicates whether this sharing page is for a private area LSQA page.
Y The view is for a private area LSQA page.
N The view is not part of LSQA.

**Note:** SQA can be further differentiated from LSQA by the JOBNAME and ASID values. The SQA page has a JOBNAME of PERMCOMM or FIXCOMM and its ASID would be “not applicable” (–). The LSQA has a JOBNAME of the address space name and its ASID is a valid value for an address space identifier.

**F**
Indicates whether this sharing page is fixed in real (Y) or not (N).

**D**
Indicates whether this sharing page is a disabled reference page (Y) or not (N).

**JOBNAME**
The job name of the sharing page owner or one of the following:
FIXCOMM Fixed common area page.
PAGECOMM Page in a pageable common area subpool (including disabled reference subpools), PLPA, or MLPA.
PERMCOMM Permanently resident common area page.

**ASID**
The address space identifier (ASID) of the owner of the shared data page. For a data space, this ASID represents the address space that owns the data space.

**DSP NAME**
The name of the data space that contains the sharing page. A dash (–) indicates that the page is not within a data space.

**PAGE**
The virtual address, in hexadecimal, of the sharing page.
Real Storage Manager

**DG** IBM internal diagnostic information. No customer interpretation is intended.

**Totals (in decimal):**

These totals are located at the end of the report.

The total number, in decimal, is recorded for each sharing group in the following page states: DASD, DSN, FREF, REAL and SCM. These states are described for the STAT field.

The DREF, DIV, and TOTAL fields are attribute totals and do not indicate page status:

- **AUX** The total pages in auxiliary storage.
- **DREF** The total disabled reference (DREF) pages for the job.
- **DIV** The total data-in-virtual pages for the job.
- **TOTAL** The total number of sharing groups that met the RSMDATA subcommand selection criteria.

**RSMDATA SUBSPACE subcommand output**

The RSMDATA SUBSPACE subcommand provides an RSM subspace report. The subspaces are sorted by ASID. The subspaces for an address space are listed by the lower limit of the subspace virtual storage address.

```
R S M   S U B S P A C E   R E P O R T

<table>
<thead>
<tr>
<th>JOBNAME</th>
<th>ASID</th>
<th>SSP NAME</th>
<th>OWNG TCB</th>
<th>STOKEN</th>
<th>DG</th>
<th>DG</th>
<th>DG</th>
<th>DG</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERV0001</td>
<td>0041</td>
<td>SSP00001</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
<td>70000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>SERV0001</td>
<td>0041</td>
<td>SSP00002</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
<td>70000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>SERV0001</td>
<td>0041</td>
<td>SSP00003</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
<td>70000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
</tbody>
</table>

```

The fields in the diagnostic data are as follows:

**JOBNAME**

The name of the job.

**ASID**

Address space identifier.

**SSP NAME**

Subspace name.

**OWNG TCB**

Owning task’s TCB address.
STOKEN
   Subspace token. This token is the value returned by the IARSUBSP CREATE
   service when the subspace was created.

START
   Lower limit address of the subspace range.

END
   Upper limit address of the subspace range.

STATUS
   Status of the range of address space storage. Status is one of the following:
   GLOBAL  The storage can be referenced by all subspaces within this
          address space.
   ASSIGN  The storage is assigned to the subspace indicated by SSP
          NAME.
   UNASSIGN The storage is not assigned to any subspace.

DG   IBM internal diagnostic information. This section of the report contains data
      that is useful to IBM.

Number of subspaces: nn,nnn
   Number of subspaces in the report.

RSMDATA SUMMARY subcommand output

The RSM summary report provides information on central storage usage on a
system-wide basis. The report also displays information about any unusual RSM
conditions. Because some report sections appear only when certain conditions
exist, all the described sections may not appear in your report.
### RSM SUMMARY REPORT

<table>
<thead>
<tr>
<th></th>
<th>Tot real</th>
<th>Prf real</th>
<th>Below</th>
<th>Prf B</th>
<th>Above</th>
<th>Prf A</th>
<th>Db1 real</th>
<th>Qd real</th>
</tr>
</thead>
<tbody>
<tr>
<td>In configuration</td>
<td>524,288</td>
<td>442,298</td>
<td>4,096</td>
<td>4,026</td>
<td>258,048</td>
<td></td>
<td>258,048</td>
<td></td>
</tr>
<tr>
<td>Available for allocation</td>
<td>512,663</td>
<td>426,286</td>
<td>4,093</td>
<td>4,023</td>
<td>255,142</td>
<td>255,142</td>
<td>4</td>
<td>16,377</td>
</tr>
<tr>
<td>Allocated</td>
<td>101,798</td>
<td>101,083</td>
<td>178</td>
<td>123</td>
<td>5,942</td>
<td>5,942</td>
<td>0</td>
<td>165</td>
</tr>
<tr>
<td>Percent usage</td>
<td>19</td>
<td>23</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Common fixed frames</td>
<td>4,122</td>
<td>4,120</td>
<td>20</td>
<td>20</td>
<td>2,458</td>
<td>2,458</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Percent of available</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total fixed frames</td>
<td>10,790</td>
<td>-</td>
<td>30</td>
<td>-</td>
<td>4,099</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Percent of available</td>
<td>2</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

IAR809001 Real storage information may be incomplete or incorrect. Storage not in dump.

**V=R Region:**
- First frame number X'00006'
- Last frame number X'0004B'
- Size (in frames) 70

Total disabled reference (DREF) pages in real: 3,162

---

The top section of the report displays the usage statistics, in decimal, for the following types of frames:
- **Tot real**: The total number of real frames
- **Below**: Real storage frames below 16 megabytes
- **Prf real**: Preferred real frames
- **Prf B**: Preferred real frames below 16 megabytes (Only for z/Architecture dumps)
- **Above**: Real storage frames above 16 megabytes, but below 2 gigabytes (Only for z/Architecture dumps)
Prf A  Preferred real frames above 16 megabytes, but below 2 gigabytes
(Only for z/Architecture dumps)

Dbl real  Double frame pairs

Qd Real  Quad frame groups (Only for z/Architecture dumps)

V=R Region:
If there is a V=R region, the second section of the report lists the number, in
hexadecimal, of the first and last real frames in the V=R region. It also lists the
total number of frames in the V=R region, in decimal. If there is no V=R
region, a message appears.

Total disabled reference (DREF) pages in real:
The next section of the report displays the total number, in decimal, of disabled
reference (DREF) pages in central storage.

Number of shared data pages:
The next section of the report displays the total number, in decimal, of shared
pages in real (fixed or pageable) and auxiliary (DASD and SCM) storage.

Number of fixed 1 MB-pages:
The next section of the report displays the total number, in decimal, of fixed 1
MB-pages in real storage.

Number of pageable 1 MB-pages:
The next section of the report displays the total number, in decimal of 1
MB-pages in real storage (fixed or pageable).

Number of 64-bit common memory pages:
The next section of the report displays the total number, in decimal, of high
virtual common pages backed in real, fixed, DREF and auxiliary storage
(DASD and SCM).

Some RSM requests are suspended waiting for unavailable real frames:
If any RSM requests are suspended because they are waiting for frames, the
number of requests waiting for each type of frame appears, in decimal.

IARnnnnns messages
Messages appear for any unusual conditions. See z/OS MVS Dump Output
Messages for message explanations.

IBM internal diagnostic information:
The last section of the report contains diagnostic data useful to IBM.

RSMDATA VIRTPAGE subcommand output
The RSM virtual page report provides information about virtual pages in the
system, including page owner, location, and status. If you specify RSMDATA
VIRTPAGE DATASPACE, the report includes information about data spaces.

The total number of pages in each page state is displayed for each job name at the
end of the report. The report is sorted by the ASID of the job name and, within
each ASID, by virtual page address.

The numbers in the top section of the report are hexadecimal. The totals at the
bottom of the report are decimal.
The columns and fields in the diagnostic data are as follows:

**JOBNAME**
The job name of the page owner or one of the following:

- **COMMON**: Non-permanently resident common area page (either PAGECOMM or FIXCOMM)
- **FIXCOMM**: Page in the system queue area (SQA) or the fixed common service area (CSA)
- **FLPA**: Page in the fixed link pack area
- **PAGECOMM**: Page in a pageable common area subpool (including common area disabled reference subpools), the pageable link pack area (PLPA), or the modified link pack area (MLPA)
- **PERMCOMM**: Permanently resident common area page
- **RONUC**: Page in the read-only nucleus
Real Storage Manager

RWNUC Page in the read-write nucleus

DSP NAME
The name of the data space that contains the page. A dash (–) indicates that the page is not within a data space.

PAGE
The virtual address for the page.

G An indication of the page assignment:
Y The page is GETMAIN-assigned
N The page is not GETMAIN-assigned

K The storage protect key for the page.

F An indication of page protection:
Y The page is fetch-protected
N The page is not fetch-protected

R An indication of the type of reference allowed:
E An enabled reference is allowed
D A disabled reference is allowed

P An indication of how the page is protected:
Y The page is page-protected
N The page is not page-protected

D An indication of whether the page is part of a data-in-virtual object:
Y The page is part of a data-in-virtual object
N The page is not part of a data-in-virtual object

B An indication of whether the page is part of a reference pattern block:
Y The page is part of a reference pattern block
N The page is not part of a reference pattern block

L An indication of whether the page is locked:
Y The page locked
N The page is not locked

STAT
The status of the page. Swap states apply only to working set pages.

I DASD Page resides on a paging data set.
I DSN Page resides on a data set containing the data-in-virtual object.
I FREF First reference state. The page was never referenced, or it was released by the DSPSERV or PGSER macro.
I FRFM First reference state. The 1M page was never referenced or it was released by the DSPSERV or PGSER macro.
I HIDE Page is hidden.
I REAL Page resides in real storage. It is either valid or has output paging I/O in progress.
I RL_M 1M page resides in real storage. It is either valid or has output paging I/O in progress.
I SCM Page resides in storage-class memory (SCM).
I SCMM 1M page resides in storage-class memory (SCM).
I SIAI Swap-in from auxiliary storage in progress.
SOAI  Swap-out to auxiliary storage in progress.
SWAX  Page was swapped to auxiliary storage.
VIO   Page resides on a VIO data set.

T DAT translation status:
  V  Page is valid.
  P  Page is not valid.
  S  Page resides in an invalid segment.
  A  Page resides in an invalid space.
  U  Page is unavailable due to a hardware or software error or is in a transitional state.

R LOC  The current, or most recent, real frame number of the page. To obtain the real address of the frame, add three zeros to the right of the frame number.

LOC  The current, or most recent, location of the page. The character to the right of the location indicates the storage type.
  r  Real storage
  p  Paging data set
  f  storage-class memory (SCM)
  v  First half of a VIO logical page ID. (Second half appears in the LOC2 column.)
  h  Data set that contains a data-in-virtual object
  A question mark (?) indicates that the storage type cannot be determined.

LOC2  The current, or most recent, secondary address of the page. The character to the right of the location indicates the storage type.
  r  Real storage.
  p  Paging data set (This field may contain meaningless residual information)
  f  storage-class memory (SCM)
  t  Shared page token
  v  Second half of a VIO logical page ID. (First half appears in the LOC column.) An asterisk (*) indicates that the VIO logical page ID could not fit in this column.
  A question mark (?) indicates that the storage type cannot be determined.

PAGE I/O  The type of paging I/O (if any) current for the page. A dash (–) indicates that I/O is not active. See PAGE I/O on page 21-22 for the list of functions.

FIX  The fix count for the page. An i at the end of the entry indicates that the page is implicitly fixed. Examples of implicitly fixed pages are permanently assigned pages and pages residing in fixed subpools.

DG  Diagnostic data useful to IBM.

Totals (in decimal) for job cccccccc ASID hhhh:
  These totals are found at the end of each job name.
The total number, in decimal, is recorded for the virtual pages from each job name in the following page states: DASD, DSN, FREF, FRFM, REAL, RL_M, SCM, SCMM, SIAI, SIEI, SMEG, SOAI, SOEI, SWAX, SWEX, SWMG, or VIO. These states are described for the STAT field on page "VIRTUAL STAT" on page 21-37. Swap states apply to working set pages only. The DREF and DIV fields are attribute totals and do not indicate page status.
Real Storage Manager
Chapter 22. Recovery Termination Manager (RTM)

The recovery termination manager (RTM) provides RTM diagnostic data in dumps and in the logrec data set. This topic contains the following information for RTM:

- “Dumping RTM Data.”
- “Formatting RTM Dump Data.”
- “VRA Data for RTM-Related Problems” on page 22-2.
- “Logrec Data for RTM2 Recursive Errors” on page 22-2.
- “Logrec and Dump Data for a Problem During SLIP Processing” on page 22-3.
- “FRR Stacks” on page 22-4.
- “Extended Error Descriptor (EED)” on page 22-6.
- “RTM2 work area (RTM2WA)” on page 22-7.

Dumping RTM Data

To dump RTM control blocks in a SNAP dump, issue the SNAP macro with SDATA=ERR or SDATA=SUM. See z/OS MVS Programming: Assembler Services Reference ABE-HSP for information on the SNAP macro.

Formatting RTM Dump Data

To format RTM control blocks in an SVC dump or a stand-alone dump, enter the IPCS SUMMARY FORMAT subcommand. The control blocks are all TCB-related, and are formatted only when they are associated with the TCB. The formatted control blocks are:

- FRRS (functional recovery routine stack) - points to the RT1W and is formatted with the current TCB if the local lock is held.
- IHSA (interrupt handler save area) - has the normal FRR stack saved within it and is formatted with the TCB pointed to by the IHSA, if the address space was interrupted or suspended while the TCB was holding the local lock.
- RTM2WA (RTM2 work area) - formatted if the TCB pointer to it is not zero.
- ESA (extended save area of the SVRB) bit summary - formatted only if the RTM2WA formatted successfully and the related SVRB could be located.
- SDWA (system diagnostic work area) - formats the registers at the time of error only if the ESA formatted successfully and the SDWA could be located.
- EED (extended error descriptor block) - formatted if the TCB or RT1W pointer to it is not zero.
- SCB (STAE control block) - formatted for abend tasks only. It is formatted under SNAP/ABEND whenever the TCB pointer to it is not zero.
- XSB (extended status block) - formatted if the XSB pointer in the IHSA is not zero.
- STKE (stack element) - formatted if the STKE pointer in the XSB is not zero.

See z/OS MVS IPCS Commands for examples of the SUMMARY FORMAT subcommand output.
VRA Data for RTM-Related Problems

RTM supplies problem data in the variable recording area (VRA) in the system diagnostic work area (SDWA) as follows:

**ARR POSSIBLY SKIPPED. PC NUMBER/ASID INVALID**
An ARR is skipped due to a Program Call (PC) instruction that is not valid. In this case, the VRA also contains the name of logical store element (LSE) mapping followed by LSE state data not found in the SDWA.

**ARR SKIPPED DUE TO INVALID ENVIRONMENT**
An associated recovery routine (ARR) is skipped due to an environment that is not valid. In this case, the VRA also contains the following:
- Name of logical store element (LSE) mapping followed by LSE state data not found in the SDWA
- Name of entry table entry (ETE) mapping followed by the contents of the ETE

**ERROR IN DYNAMIC RESOURCE MANAGER - NO RETRY**
Retry was not allowed.

**REQUEST MADE TO MEMTERM ASCBNOMT=1 ADDRESS SPACE. ASCB ADDR, ASID, R14 FOLLOWS.**
Abnormal end (MEMTERM) was requested for an address space that cannot be ended. The VRA also contains the following:
- RTM component identifier
- Address of the address space control block (ASCB)
- Address space identifier (ASID)
- Register 14 of the requestor

SDWASC contains the CSECT name of the caller, if RTM could determine the caller's name.

Logrec Data for RTM2 Recursive Errors

RTM2 writes a symptom record to the logrec data set for most instances of recursion in RTM2. The record includes:
- Component identifier
- Release level
- Name of the failing CSECT
- Name of the failing load module
- Name of this CSECT
- Offset into the failing CSECT
- System abend code
- Reason code
- The displacement and the register (program status word (PSW) - register)
- RTM recursion flags
- Registers at time of error
- Program status word (PSW) at time of error
- Exit handler flags
- Recursion indicators
- CSECT names and offsets associated with RTM2's recursion handler addresses

Reference

See "z/OS MVS Diagnosis: Tools and Service Aids" for information about analyzing logrec error records.
Logrec and Dump Data for a Problem During SLIP Processing

SLIP writes the following diagnostic information in the logrec data set and in the dump:

- The ESTAE parameter list, mapped by IEEZB906
- The SLIP header (SHDR) data area

SLIP recovery requests a summary dump, which usually contains:

- The functional recovery routine (FRR) parameter list, mapped by IHASLFP. Bits in the AUDITWRD portion of the FRR parameter list indicate what portion of SLIP encountered the problem.

Note: The logrec data set error record also contains the FRR parameter list. The system also writes more information about the error in the logrec data set.

- The SHDR data area.
- The SLIP control element (SCE)/SCE variable area (SCVA) data areas being processed at the time of the problem.
- The SLIP parameter list, mapped by IHASLPl.
- The SLIP work areas.
- The SLIP register save area.
- The SCE/SCVA data areas representing the enabled non-IGNORE PER trap, if they exist.

PER Activation/Deactivation Recovery

In general, if a problem is encountered at any point in the program event recording (PER) activation/deactivation process, these modules try to deactivate PER completely and record the following diagnostic information:

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Diagnostic Information Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEAVTGLB</td>
<td>The system writes a logrec data set error record. The system writes a summary dump, which contains the following:</td>
</tr>
<tr>
<td></td>
<td>The FRR parameter list, mapped by FRRWA in module IEAVTGLB.</td>
</tr>
<tr>
<td></td>
<td>The logrec data set also contains the FRR parameter list.</td>
</tr>
<tr>
<td></td>
<td>The communication vector table (CVT) data area.</td>
</tr>
<tr>
<td></td>
<td>The SHDR data area.</td>
</tr>
<tr>
<td></td>
<td>The SCE/SCVA data areas for the non-IGNORE PER trap.</td>
</tr>
<tr>
<td></td>
<td>The model prefixed storage area (PSA) data area.</td>
</tr>
<tr>
<td></td>
<td>The physical configuration communication area vector table (PCCAVT) data area.</td>
</tr>
<tr>
<td></td>
<td>The ASCB being processed by IEAVTGLB.</td>
</tr>
<tr>
<td></td>
<td>The name of the job running in the address space being processed by IEAVTGLB.</td>
</tr>
<tr>
<td></td>
<td>The physical configuration communication area (PCCA) data area.</td>
</tr>
<tr>
<td></td>
<td>The PER control registers: 9, 10, and 11.</td>
</tr>
<tr>
<td></td>
<td>The system issues message IEA414I and requests percolation if IEAVTGLB encounters a recursive problem.</td>
</tr>
</tbody>
</table>
### Module Name

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Diagnostic Information Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEAVTJBN</td>
<td>The system:</td>
</tr>
<tr>
<td></td>
<td>- Writes a logrec data set error record.</td>
</tr>
<tr>
<td></td>
<td>- Writes a dump.</td>
</tr>
<tr>
<td></td>
<td>- Issues message IEA422I to indicate that the status of PER in the system is uncertain.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IEAVTLCL</th>
<th>The system writes a logrec data set error record. The system writes a summary dump, which contains all, or some, of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- The FRR parameter list, mapped by FRRPARMS in module IEAVTLCL.</td>
</tr>
<tr>
<td></td>
<td>- The CVT data area.</td>
</tr>
<tr>
<td></td>
<td>- The SHDR data area.</td>
</tr>
<tr>
<td></td>
<td>- The SCE/SCVA data areas for the non-IGNORE PER trap.</td>
</tr>
<tr>
<td></td>
<td>- The ASCB for the address space in which IEAVTLCL was running when the error occurred.</td>
</tr>
<tr>
<td></td>
<td>- The name of the job in the address space.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IEAVTPVT</th>
<th>The system writes a logrec data set error record. The system writes a summary dump, which contains all, or some of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- The FRR parameter list mapped by structure WORK24.</td>
</tr>
<tr>
<td></td>
<td>- The CVT data area.</td>
</tr>
<tr>
<td></td>
<td>- The SHDR data area.</td>
</tr>
<tr>
<td></td>
<td>- The SCE/SCVA data areas.</td>
</tr>
<tr>
<td></td>
<td>- The PCCA data area.</td>
</tr>
<tr>
<td></td>
<td>- The PER control registers: 9, 10, and 11.</td>
</tr>
<tr>
<td></td>
<td>The system issues message IEE414I and requests percolation.</td>
</tr>
</tbody>
</table>

### FRR Stacks

The FRR (functional recovery routines) stacks are often useful for understanding the latest processes on the processors. They are mapped by the FRRS control block and consist of a header and 16 20 byte FRR entries which are added and deleted dynamically as processing occurs. There is always one set of FRR stacks per processor.

Look for the pointer to the current FRR stack at PSA +X'380' (PSACSTK). This will tell you where to find the FRR that was current at the time an error occurred.

The current FRR stack will often also be the normal FRR stack, which is pointed to by PSA +X'C00' (PSASTAK). This type of FRR is used by programs running in SRB or task mode and is usually the most useful type of stack for diagnosis. You should only, however, rely on the current recovery stack entry. Do not use FRR stacks to get information about the exact flow of processing. For example, in the following scenario:

- Module A gains control and establishes recovery
- Module A passes control to module B
- Module B establishes recovery, performs its function, deletes recovery
- Module C establishes recovery and subsequently encounters an error.

The FRR stack will contain entries for module A’s and C’s recovery routines. But there is no indication from the FRR stack that B was ever involved in the process although it might have contributed to or even caused the error. You can gain insight into the process but will not see the exact flow. See Table 22-1 on page 22-5 for useful fields in an FRR stack header and Table 22-2 on page 22-6 for useful fields in the FRR entries.
## References
See *z/OS MVS Data Areas* in *z/OS Internet Library* at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/) for a description of the FRRs and PSA.

## FRR Stack Header
The table below shows useful fields in the FRR stack header:

*Table 22-1. Useful fields in an FRR Stack Header*

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Offset into FRR Stack</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRRSEMP</td>
<td>+X'0'</td>
<td>Address indicating an empty stack</td>
</tr>
<tr>
<td>FRRSLAST</td>
<td>+X'04'</td>
<td>Address of the last entry in the stack</td>
</tr>
<tr>
<td>FRRSELEN</td>
<td>+X'08'</td>
<td>Length of each FRR entry in the stack. This field contains a constant value of X'00000020'</td>
</tr>
<tr>
<td>FRRSCURR</td>
<td>+X'0C'</td>
<td>Address of current FRR entry. If this entry is equal to FRRSEMP at offset X'0' then the FRR stack is empty.</td>
</tr>
<tr>
<td>FRRSRTMW</td>
<td>+X'28'</td>
<td>Indicates whether RTM1 is active on the processor associated with this FRR. A non-zero value indicates that this FRR stack contains valid, current data. The error type is found at offset +2 into this field:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X'01' - program check</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X'02' - restart key</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X'03' - SVC error. An SVC was issued while in locked, disabled, or SRB mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X'04' - DAT error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X'05' - machine check</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• X'06' - STERM reentry</td>
</tr>
<tr>
<td>FRRSRTMA</td>
<td>+X'38'</td>
<td>Pointer to the RT1WA control block. Useful fields in the RT1WA control block include:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RT1WRTCA (RT1WA +X'2C') - Pointer to the SDWA control block currently in use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RT1WEED (RT1WA +X'30') - Pointer to the EED control blocks acquired.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RT1WMODE (RT1WA +X'34') - Contains the mode at the time of entry to RTM1. The mode is one of the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'80' - supervisor control mode (PSASUPER≠0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'40' - physically disabled mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'20' - global spin lock held</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'10' - global suspend lock held</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'08' - local lock held</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'04' - Type 1 SVC mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'02' - SRB mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– X'01' - unlocked task mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RT1WSRMD (RT1WA +X'35') - Contains the current system mode.</td>
</tr>
<tr>
<td>FRRSENTS</td>
<td>+X'58'</td>
<td>Beginning for FRR stack entries.</td>
</tr>
</tbody>
</table>
Recovery Termination Manager

FRR Entries

The table below shows useful fields in the FRR stack entries:

Table 22-2. Useful fields in an FRR Stack Entry

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Offset into FRR Entry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRRSFRRA</td>
<td>+X'0'</td>
<td>Address of the FRR recovery routine that will gain control if an error occurs.</td>
</tr>
<tr>
<td>FRRSFLGS</td>
<td>X'4'</td>
<td>Contains flags used for RTM processing as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- X'80' - This FRR is currently in control.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- X'40' - Indicates that the FRR entry represents a nested FRR.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- X'08' - This FRR is not allowed to retry.</td>
</tr>
<tr>
<td>FRRSPARM</td>
<td>X'08'</td>
<td>A 24 byte FRR parameter area used to pass information from the mainline function associated with this FRR to recovery.</td>
</tr>
</tbody>
</table>

Extended Error Descriptor (EED)

The extended error descriptor (EED) passes error information between RTM1 and RTM2 and also between successive schedules of RTM1. The EED is pointed to by:

- RT1WEED (RT1W +X'3C')
- TCBRTM12 (TCB+X'104')
- RTM2 SVRB +X'7C' The EED pointed to by RTM's SVRB is not always valid, because RTM2 releases it early in its processing.

The EED is described in z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/). Important EED fields are:

**EEDFWRDP (EED+0)**

Either the pointer to the next EED on the chain, or zero

**EEDID (EED+4)**

Description of contents of the rest of the EED:

- BYTE 0
  - 1 - register and PSW information EED
  - 2 - dump parameters EED
  - 3 - machine check handler EED
  - 4 - reserved
  - 5 - dump storage range EED
  - 6 - subpool list EED
  - 7 - original error data EED (includes errorid)

**For a software EED**

**EEDREGS (EED+X'C')**

Registers 0-15 at the time of the error

**EEDPSW (EED+X'4C')**

PSW/instruction length code (ILC)/translation exception address (TEA) at the time of the error

**EEDXM (EED+X'5C')**

Control registers 3 and 4 at the time of the error.
RTM2 work area (RTM2WA)

The system creates one RTM work area (RTM2WA) for each error which occurs. They are formatted from oldest to newest created. RTM2 uses the RTM2WA to control abend processing. Registers, PSW, abend code, etc. at the time of the error are recorded in the RTM2WA. This area is often useful for debugging and is pointed to by:
- TCBRTWA (TCB +X'E0')
- RTM2 SVRB +X'80'

The RTM2WA is described in z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkser/] This work area can be found through TCB+XE0' (TCBRTWA), or RTM2 SVRB+X'80'.

The RTM2WA can be formatted using the IPCS SUMMARY FORMAT ERROR subcommand.
Chapter 23. System Resources Manager (SRM)

This topic contains the following diagnosis information for the system resources manager (SRM):
• “Formatting SRM dump data.”
• “VRA data for SRM related problems” on page 23-12.

Formatting SRM dump data

Format an SVC, stand-alone, or SYSMDUMP dump with the VERBEXIT SRMDATA subcommand to produce diagnostic reports about SRM. z/OS MVS IPCS Commands gives the syntax of the VERBEXIT SRMDATA subcommand and z/OS MVS IPCS User’s Guide explains how to use the SRMDATA option of the IPCS dialog.

VERBEXIT SRMDATA subcommand output

The report is divided into the following sections:
• A header
• System indicators
• Service class
• Resource group
• OUCB wait queue
• OUCB logically swapped wait queue
• OUCB out queue
• OUCB in queue
• Enclaves

The following sections show examples of each section of a VERBEXIT SRMDATA report.

Header

*** FORMATTED SRM DATA ***

PARMLIB MEMBERS IN EFFECT TABLE ADDRESSES

IPS=N/A WMST 021BE508
OPT=IEAOPTBT RMCT 015BE540

ACTIVE POLICY INFORMATION

SERVICE POLICY: VICO1  11/13/1996 15:45:22  *BYPASS*
SERVICE DEFINITION: COEFFS  06/07/1996 15:28:52  IBMUSER

Header Key:
IPS=ccccccccc Name of IEAIPSxx parmlib member.
OPT=ccccccccc Name of IEAOPTxx parmlib member.

See z/OS MVS Initialization and Tuning Reference for information about the IEAOPTxx parmlib member.
System Resources Manager

WMST hhhhhhh
Address of the SRM workload manager specifications table.

RMCT hhhhhhh
Address of the SRM parameter table.

System indicators

*** SYSTEM INDICATORS ***

RMCT 015BE540
  +7C (TOD) 0104796C - TIMESTAMP OF LAST SRM INVOCATION (MILLISECOND UNITS)
  +94 (MFA) WORKLOAD REPORTING ACTIVE
  +94 (WLM) SYSTEM IS OPERATING IN GOAL MODE
# Service class

## For a velocity goal:

### *** SERVICE CLASSES ***

<table>
<thead>
<tr>
<th>SERVICE CLASS</th>
<th>SCLTOKEN</th>
<th>PERIOD</th>
<th>PERTOKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>BESTEVER</td>
<td>021BE924</td>
<td>01</td>
<td>021BE96C</td>
</tr>
</tbody>
</table>

- **Velocity Goal**: 
  - LOCAL PI: 00001770
  - PLEX PI: 00001770
  - SLICE_DP: 00F5
- **Expanded Storage Access Policy Information**
  - PROT_CNT: 0000
  - LRU_CNT: 0000
  - SP_AVAL: 0000
  - V10_LRU: 0000
  - V10_SPA: 0000
- **Delay and State Samples Information**
  - GENERAL: 0000
  - XMEM: 0000
  - XMEMOUCB: 0000
- **MPL Related Information**
  - CMPL: 0000
  - MPLI: 0000
  - MPLO: 0000
  - INCU: 0000
  - NSW: 0000
  - OUTU: 0000
  - RUA: 0000
  - LASA: 0000
  - ASCT: 0000
  - ASAV: 0000
  - LRUA: 0000

## For a response time goal:

### SERVICE CLASS = CICUSER

<table>
<thead>
<tr>
<th>SCLTOKEN</th>
<th>PERIOD</th>
<th>PERTOKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>021C1024</td>
<td>01</td>
<td>021C106C</td>
</tr>
</tbody>
</table>

- **Response Time Goal**: 
  - LOCAL PI: 00000000
  - PLEX PI: 00000000
  - SLICE_DP: 00F7
- **Expanded Storage Access Policy Information**
  - ACC_POL: 02
  - VIO_POL: 02
  - HSP_POL: 02
  - SWAP_POL: 02
- **Delay and State Samples Information**
  - GENERAL: 0000
  - XMEM: 0000
  - XMEMOUCB: 0000
- **MPL Related Information**
  - CMPL: 0000
  - MPLI: 0000
  - MPLO: 0000
  - INCU: 0000
  - NSW: 0000
  - OUTU: 0000
  - RUA: 0000
  - LASA: 0000
  - ASCT: 0000
  - ASAV: 0000
  - LRUA: 0000
Service Class Key:

**SERVICE CLASS** pppppppp  Name of service class

‘CICS/IMS REGIONS SERVING THIS SERVICE CLASS WILL BE TREATED AS “STORAGE CRITICAL=YES.”’

Flag denoting that this service class has been assigned long-term storage protection. See the “Storage Protection” section of the “Workload Management Participants” chapter in **z/OS MVS Planning: Workload Management**.

‘SERVICE CLASS IS CPU CRITICAL.’

Flag denoting that this service class has been assigned long-term CPU protection. See the “CPU Protection” section of the “Workload Management Participants” chapter in **z/OS MVS Planning: Workload Management**.

**PERIOD** xx  Period number within service class

For velocity goal only:

**VELOCITY GOAL**  Period has a velocity goal

**VEL_GOAL** xxxxxxx  Value of velocity goal

For response time goal only:

**SHORT RESPONSE TIME GOAL**  Period has a short response time goal

**AVG_GOAL** xxxxxxx  Value of response time goal

**DURATION** xxxxxxx  Duration of service class period

**IMP_LVL** xxxx  Importance level of service class period
LOCAL_PI  Performance Index of the service class period on
the local system

PLEX_PI  Performance Index of service class period across
the sysplex

EXPANDED STORAGE ACCESS POLICY INFORMATION
Fields that describe what type of access address
spaces in this service class period have to
expanded storage

DELAY AND STATE SAMPLE INFORMATION

GENERAL
General execution state samples for the
service class period. The values in order are:
• Idle Samples
• Unknown Samples
• CPU Using Samples
• DASD Using Samples
• CPU Delay Samples
• Private Area Paging Samples
• Common Area Paging Samples
• VIO Samples
• Scroll Hyperspace Delay Samples
• Cache Hyperspace Delay Samples
• Swap Delay Samples
• MPL Delay Samples
• CPU Cap Delay Samples
• Shared Storage Delay Samples
• DASD I/O Delay Samples
• WLM Queue Delay Samples
• Enclave Private Area Paging Delay
Samples
• Enclave VIO Paging Delay Samples
• Enclave Hiperspace Paging Delay
Samples
• Enclave MPL Delay Samples
• Enclave Swap Delay Samples
• Cross Memory Other Delay Samples
• Buffer Pool Other Delay Samples

XMEM
Cross memory delay samples for the
service class period. Each entry is a count
of paging delay samples for work in the
service class period accumulated in cross
memory mode in a specific address space.
The oucb address of that address space is
given in the corresponding field in
XMEMOUCB

MPL RELATED INFORMATION
Fields that described the MPL management of
address spaces in the service class period.
System Resources Manager

Resource group

RESOURCE GROUP = HIGHPRTY
RGPTOKEN = 02205574
MIN_SR... 00001388  MAX_SR... 000F423F  LOCAL_SR.. 00000000  PLEX_SR.. 00000000  CAPSLICE.. 0000
FLAGS1... 80

OUCB queues

The following examples are representative. The actual output may contain other fields or control blocks.

OUCB Wait and Logically Swapped Wait Queues:
OUCB Wait and LS Wait Queues Key:

**JOB cccccccc**  The name of the job associated with the address space.

---

**Chapter 23. System Resources Manager (SRM)**

---

**System Resources Manager**

---

**OUCB Wait and LS Wait Queues Key:**
ASID hhhhhhhh The address space identifier (ASID) of the job.

OUCB hhhhhhhh LS WAIT QUEUE The address of the OUCB.

+10 (LSW) xxxxxxxxxx The swap transition flag (only for OUCBs on the LS WAIT QUEUE).

+11 (sfl) The swapout continuation flag.

+1F (PGP) PERIOD = pp The period number.

+29 (SRC) SWAP OUT REASON: xxxxxxxxxx The swapout reason code

‘ADDRESS SPACE IS AN ENCLAVE(S) OWNER’
Flag denoting that this address space owns one or more enclaves.

‘ADDRESS SPACE IS CURRENTLY CPU PROTECTED’
Flag denoting that this address space has been assigned long-term CPU protection. See the “CPU Protection” section of the “Workload Management Participants” chapter in z/OS MVS Planning:

‘ADDRESS SPACE IS ASSIGNED STORAGE PROTECTION’
Flag denoting that this address space has been assigned long-term storage protection. See the “Storage Protection” section of the “Workload Management Participants” chapter in z/OS MVS Planning: Workload Management

‘ADDRESS SPACE IS CURRENTLY STORAGE PROTECTED’
Flag denoting that this address space, which has been assigned long-term storage protection (see flag above), is in fact currently storage protected.

‘ADDRESS SPACE IS EXEMPT FROM BEING TRANSACTION SERVER’
Flag denoting that this address space has been exempted from management as a transaction server. See the “Exemption from Transaction Server Management” section of the “Workload Management Participants” chapter in z/OS MVS Planning: Workload Management

OUCB Out and In Queues:
System Resources Manager

Chapter 23. System Resources Manager (SRM)
System Resources Manager

OUCB Out and In Queues Key:

**JOB cccccccc**  The name of the job associated with the address space.

**ASID hhhhhhhh**  The address space identifier (ASID) of the job.

**OUCB hhhhhhh IN QUEUE**  The address of the OUCB.

**+11 (sfl) xxxxxxxx**  The swapout continuation flag.
System Resources Manager

Enclaves

ENCLAVE ADDRESS = 01CA0F18
SERVICE CLASS = MEDIUM
RESOURCE GROUP = NONE
PERIOD NUMBER = 1

ENCLAVE IS LOGICALLY DELETED
ENCLAVE IS INDEPENDENT

OWNING ADDRESS SPACE INFORMATION

JOBNAME = GMDECQRY
ASCBPTR = 00F89A00
OUCBPTR = 02074B80

ARRIVAL TIME : 05/17/1999 20:13:26

VER...... 01   FLAGS...... 4800   NDP...... 0   NEXT...... 01CA1318
PREV...... 01CA1718   TOKEN...... 00000024   00000006
ID...... 8002   DSPN...... 00   DSPC...... 00   00000006
ONE...... 02074EB4   OPE...... 02074EB4   WQLK...... 00000000   DP...... 00000006
FLAG2...... 000000   FNHB...... 01C8C1F0   CAPQ...... 00000000   TSCT...... 0002
ASMTMT...... 00233C53   ECT...... 00233C53   PERST...... 00233C53   SA...... 00000000
PP...... 00000000   EMSBFIRS. 01CCFC00   EMSBLAST. 01CCFC00
CPUT...... 00000000   PGMNAME...... 00000000   NEXT...... 01CA1318

ENCB Sampling Related Fields

WSCI...... 0016   WRCI...... 0000   SXM1...... 00000000   SXM2...... 00000000   SXMX...... 00000000
SCTE...... 01ED3CC4   SPTE...... 01ECEDCC   PGPERIOD...... 01   RESETSC...... 0000   WAIT...... 00000000
UTIMEBSM...... 00000000   WTIMESBM...... 00000000   DISC...... 00000000   ENCB...... 00000000

ENCB Samples Array Section

IS....... 00000000   OUS....... 00000000   CU....... 00000000   DASDIOUS...... 00000000
APPDP...... 00000000   APCD...... 00000000   AVD...... 00000000   ASHD...... 00000000
ASND...... 00000000   MD....... 00000000   DASDIOY...... 00000000   DASDIUS...... 00000000
WLMQUDY...... 00000000   ENCLPVT...... 00000000   ENCLVOP...... 00000000   ENCLVSP...... 00000000
ENCLMPLD...... 00000000   ENCLSWPD...... 00000000   ENCLPVTP...... 00000000
ENCLVIOP...... 00000000   ENCLHSPP...... 00000000   ENCLMPLD...... 00000000

ENCB Report Samples Array Section

RQCT...... 00000000   CAP....... 00000000   SMPC...... 00000000   NODASDIO...... 00000000
CAM....... 00000000   CAMD....... 00000000   APU....... 00000000   FQD....... 00000000

RSOSNAME. RSOS

ENCB Classification Related Fields

TRXNAME...... USERID....   TRXCLASS.   NETID...... LURNAME....   LURNAME....
PLAN......   PACKAGE......   CONNECT.   CONNECT.   SOURCEU.
CORRELAT.   PROCEDUR......   SOURCEU.
COLLECTN.   01   COLLECTN.   SOURCEU.
SUBAS...   .00000000   SUBAS...   .00000000   SUBAS...   .00000000
FUNCTION...... FUNC_001   SUBNAME...... WLJEGK44   SCHENDEL.   01   SUBCOLN.
SROCLASS...... SYSOHER...... NULLSTORE. 170880000   PROCESSL. 01

EHE 025961A8
 Enqueue Hold Element in Context Queue

ERF ...... 02575F98   Enqueue Hold Element in Context Queue
Name...... EOE   ElemTkn...... 02000000   025961A8
FwDPTR...... 02575F98   BwDPTR...... 025AABF4
Time...... B612F0000   043C0A09   Subsys...... ENQ4M   Subsys...... WLJEGK44
SubsysRq...... 025961A8   SubsysRq...... 025961A8
EOE ...... 02575F98
 Enclave Registration Element in Context Queue
Name...... EOE   ElemTkn...... 0100000C   02575F98
FwDPTR...... 025AABF4   BwDPTR...... 025961A8
OwnerAST...... 00000060   00000000   Time...... 00785DAB
Subsys...... MOST   Subsys...... WLJEGK44   EToken...... 0000000A   0000000A
OUCBPTR...... 025B2800   CallL1R4...... 065F2800   CalL1ASD...... 0018
SubsysRq...... NO_SUBSYSREQUEST   ASID...... 00000000   00000000
VRA data for SRM related problems

When either of the SRM functional recovery routines (FRR) is entered, the FRR fills in the system diagnostic work area (SDWA) fields before scheduling an SVC dump. In some cases, the FRR changes the abend code or reason code after the dump is scheduled and before the logrec record is written; this action makes the abend code in the logrec record different from the code in the dump.

The FRR places problem determination data into the SDWA variable recording area (SDWAVRA) in key-length-data format using standard keys.

The following fields provide important information:

<table>
<thead>
<tr>
<th>Key</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRAETF</td>
<td>The entry point address of either the SRM routine that was in control at the time of the error or, if a subroutine was in control, the routine that called the subroutine.</td>
</tr>
<tr>
<td>VRARRP</td>
<td>A copy of the recovery routine parameter area (RRPA). The RRPA contains status information used on exit from SRM and during SRM recovery processing. The low-order byte in the first word of the RRPA contains the SYSEVENT code for the original entry to SRM.</td>
</tr>
<tr>
<td>VRAFP</td>
<td>A copy of the RRPA (as in field VRARRP) but with several entries cleared because they can be different for different invocations of the same function. The VRAFP is the footprint area SRM uses to recognize duplicate problems.</td>
</tr>
<tr>
<td>VRALBL</td>
<td>The name of the routine that failed.</td>
</tr>
<tr>
<td>VRAOA</td>
<td>The original abend code. The FRR might have changed the code.</td>
</tr>
<tr>
<td>VRAAID</td>
<td>The address space identifier (ASID) of the address space for which SRM was invoked.</td>
</tr>
<tr>
<td>VRACA</td>
<td>The caller's address, if the SYSEVENT was branch-entered.</td>
</tr>
</tbody>
</table>

See z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/os/zos/bkserv](http://www.ibm.com/systems/z/os/zos/bkserv) for VRAMAP, which describes the VRA keys, and for the IRARRPA mapping macro, which maps the RRPA.
Chapter 24. System logger

This topic contains the following diagnosis information for system logger:

- “Correcting common problems”
- “Logger JCL procedures” on page 24-2
- “Resolving system logger allocation errors” on page 24-6
- “Resolving z/OS IBM zAware log stream client errors” on page 24-7
- “Setting up SYSLOGR component trace” on page 24-12
- “Collecting documentation for system logger” on page 24-12
- “Interpreting IXCMIAPU output” on page 24-15
- “Analyzing component trace” on page 24-25
- “Restarting the system logger address space” on page 24-25
- “System logger latch conventions” on page 24-26
- “Associating latch contention with a logger TCB or WEB” on page 24-28
- “LOGGER subcommand output” on page 24-29
- “Relevant MVS system commands” on page 24-33
- “Relevant IPCS commands” on page 24-34

Correcting common problems

Some problems that occur in the system logger can be fixed with relatively simple adjustments to data set sizes or logger policy parameters. The following is a list of common problems that can be remedied by the user:

- If log stream data is missing or inaccessible, or new log stream offload data sets are being allocated before the old ones are filled, it may be that the Virtual Storage Access Method (VSAM) SHAREOPTIONS (3,3) was not specified when the data set was allocated (the default for SHAREOPTIONS is 1,3).
- If log stream data is deleted unexpectedly, or is retained too long, check AUTODELETE and RETPD in the LOGR policy to verify that the correct values have been specified.
- Offload problems may be caused by improper sizing of the log stream offload data sets (LS_SIZE). Small data sets may result in too many offload data sets, which can cause directory problems.
- Incorrect sizing of the staging data set (STG_SIZE) may cause offloads to occur too frequently.
- Message IXG251I with reason code 805 can mean that IXGLOGR is not marked as TRUSTED to the security product, preventing data sets from being allocated. If this is true, update the attribute and stop and restart the IXGLOGR address space to have the new authority take effect. See “Restarting the system logger address space” on page 24-25 for information on getting the IXGLOGR address space restarted.
- Message IXG002E with return code 8 and reason code 823 can indicate that the LSR, LSTRR or DSEXTENT values in the logger policy are not sufficient.
- Incorrect sizing of a list structure or by having too many log streams in a list structure can cause errors. You might be able to avoid this problem by using the System z Coupling Facility Structure Sizer Tool (CFSizer). The CFSizer simplifies the task of estimating the amount of storage required by the coupling facility.
System logger

structures used in your installation. The CFSizer asks questions about your existing configuration, and then use the answers you give to build customized jobs that you can run to create various structures as well as the LOGR couple data set, and OPERLOG and LOGREC log streams. Find the CFSizer tool:
http://www.ibm.com/systems/support/z/cfsizer/

- Using IDCAMS REPRO to copy log stream offload data sets can result in errors indicated by messages IDC3302I, IDC3350I such as the following:

  REPRO INFILE(SYS00014) -
  OUTFILE(SYS00015)
  IDC3302I ACTION ERROR ON MTSYSL.CICSAAU3.USAUAAU3.DFHLOG.A0000010
  IDC3350I 10014,15173874,00000000B000,D,AXR000,USZCZT0T,STEP1,6
  6D7,6A,SY000014,66- OP,INCR,. LENGTH ,00000020000B0C,VSAM
  IDC3302I ACTION ERROR ON MTSYSL.CICSAAU3.USAUAAU3.A0010074.T5173829
  IDC33511 ** VSAM I/O RETURN CODE IS 28 - RPLFDBWD = X'2908001C'
  IDC31467I MAXIMUM ERROR LIMIT REACHED.
  IDC0005I NUMBER OF RECORDS PROCESSED WAS 36
  IDC30031 FUNCTION TERMINATED. CONDITION CODE IS 12

If you receive this error, see the topic Managing logger log stream data sets for the subtopic on “Copying log stream offload data sets” in z/OS MVS Setting Up a Sysplex.

Logger JCL procedures

Logger provides a JCL procedure in SYS1.PROCLIB and sample JCL procedures in SYS1.SAMPLIB to aid an installation in managing the logger address space and their log stream resources. These JCL procedures can do the following:

- Aid in restarting logger
- Affect the validity of a log stream’s log data
- Cause movement of data from primary storage (e.g., CF structure) to DASD
- Remove a log stream definition from the LOGR inventory
- Provide SMF88 subtype 1 reports

JCL procedure in SYS1.PROCLIB

IXGLOGRS - Start the IXGLOGR server address space

Function:
This JCL procedure will attempt to start the IXGLOGR (logger server) address space.

Use:
This procedure can be used by an operator to request that the logger server address space, IXGLOGR, be restarted after the address space has already terminated.

Syntax:
s ixglogrs

Parameters:
Not applicable

Output:
A new instance of the IXGLOGR address space will attempt to be started.

Requires:
Access to SYS1.PROCLIB from submitting userid.
Sample JCL procedures and functions in SYS1.SAMPLIB

The following procedures should only be used when it is necessary to take an installation action on the log stream. See the documentation by the subsystem or application that makes use of this log stream to understand any interaction or expectations before running any of these procedures.

**IXGCONLS** - Connect, wait (WTOR) and disconnect a log stream.

**IXGOFLDS** - Initiate an offload for a log stream.

**IXGDELAB** - Delete all blocks for a log stream.

**IXGDLLS** - Delete a log stream from LOGR CDS.

**IXGRPT1** - PL/I compile, link/edit and go sample for formatting SMF88 subtype 1 records.

**IXGRPT1J** - Sample job produce an SMF88 report using a pre-compiled version of IXGRPT1.

For details on IXGRPT1 and IXGRPT1J, the Logger SMF88 subtype 1 reporting SYS1.SAMPLIB members, see [z/OS MVS System Management Facilities (SMF)](https://www.ibm.com/servers/z/os/zos/mvs/smfort.html). 

**IXGCONLS – Connect, wait (WTOR) and disconnect a log stream**

**Function:**
This sample JCL procedure will invoke a program to connect to the input log stream, issue a WTOR, and disconnect from the log stream after receiving the message reply.

**Use:**
This procedure can be used by a system programmer to request that a log stream connection be established and maintained until the WTOR reply is given (as an alternative to writing a program to perform the connection).

To allow this program to maintain the log stream connection for the desired period of time, use the TIME= specification on the EXEC statement.

**Syntax:**
```
s ixgconls,logstrm=log_stream_name
```

**Parameters:**
- `log_stream_name`
  Name of the log stream to be connected.

**Output:**
When the procedure completes successfully, the following actions will happen:
- Message IXG273I will be issued to the console indicating that the log stream was connected.
- Message IXG227E will be issued to the console indicating that the log stream will remain connected until a reply is provided.
**System logger**

- Message IXG273I will be issued to the console indicating that the log stream was disconnected.

When the procedure does not complete successfully, the following action will happen:
- Message IXG274I will be issued to the console indicating which function failed and listing the return and reason code.

**Note:** Logger may also issue other messages to indicate whether the request was successful or not.

**Requires:**
Access to procedure library used by the installation from submitting userid. Assuming Security Authority Facility (SAF) is available and CLASS(LOGSTRM) is defined to SAF, READ access to the RESOURCE(log_stream_name) CLASS(LOGSTRM) is required by the owning userid to allow the program invoked by the procedure to connect to the log stream with READ authority.

**References:**

**IXGOFLDS – Initiate an offload for a log stream**

**Function:**
This sample JCL procedure will initiate an offload for all log blocks to DASD (secondary storage) for a defined log stream.

**Use:**
This procedure can be used by an operator to request data be off-loaded from primary storage (e.g. CF structure) to secondary storage (DASD).

**Syntax:**
s ixgoflds,logstrm=log_stream_name

**Parameters:**
- log_stream_name
  
  Name of the log stream for the log blocks to be off-loaded.

**Output:**
When the procedure completes successfully, all the log blocks in the log stream will be off-loaded to DASD and message IXG273I will be issued to the console. When the procedure fails, message IXG274I will be issued to the console stating which function failed and listing the return and reason code.

**Note:** Logger may also issue other messages to indicate whether the request was successful or not.

**Requires:**
Access to procedure library used by the installation from submitting userid. Assuming Security Authority Facility (SAF) is available and CLASS(LOGSTRM) is defined to SAF, UPDATE access to the RESOURCE(log_stream_name) CLASS(LOGSTRM) is required by the owning userid to allow the program invoked by the procedure to connect to the log stream with WRITE authority.
IXGDELAB – Delete all blocks for a log stream

Function:
This sample JCL procedure will request that all the log blocks in a defined log stream be marked logically deleted.

Use:
This procedure can be used by an operator to delete all active log blocks in a log stream. Instead of writing a job to perform the logger connect and delete log block requests, the operator can start this procedure from the console.

Syntax:
s ixgdelab,logstrm=log_stream_name

Parameters:
- log_stream_name
  Name of the existing log stream which will have all its log blocks marked logically deleted.

Output:
When the procedure completes successfully, all the log blocks in the log stream will be logically deleted and message IXG273I will be issued to the console. When the procedure fails, message IXG274I will be issued to the console stating which function failed and listing the return and reason code.

Note: Logger may also issue other messages to indicate whether the request was successful or not.

Requires:
Access to procedure library used by the installation from submitting userid. Assuming Security Authority Facility (SAF) is available and CLASS(LOGSTRM) is defined to SAF, UPDATE access to the RESOURCE(log_stream_name) CLASS(LOGSTRM) is required by the owning userid to allow the program invoked by the procedure to connect to the log stream with WRITE authority.

References:
See z/OS MVS Programming: Authorized Assembler Services Reference EDT-IXG for more information on IXGCONN and IXGOFFLD. You can also search the IXGCON mapping macro in z/OS MVS Data Areas in z/OS Internet Library at [http://www.ibm.com/systems/z/z/os/zos/bkserv/] for a return and reason code, and take the suggested action.

IXGDELLS – Delete a log stream from LOGR CDS

Function:
This sample JCL procedure will delete a defined log stream from the LOGR couple data set (CDS).

Use:
This procedure is used by an operator to delete a defined log stream.
Instead of writing a job to perform the logger inventory request, the operator can start this procedure from the console.

**Syntax:**

```
s ixgdells,logstrm=log_stream_name
```

**Parameters:**

- `log_stream_name`
  
  Name of the log stream to be deleted.

**Output:**

When the procedure completes successfully, the log stream will be deleted from the logger inventory and message IXG273I will be issued to the console. When the procedure fails, message IXG274I will be issued to the console stating which function failed and listing the return and reason code.

**Note:** Logger may also issue other messages to indicate whether the request was successful or not.

**Requires:**

Access to procedure library used by the installation from submitting userid. Assuming Security Authority Facility (SAF) is available and CLASS(LOGSTRM) is defined to SAF, ALTER access to the RESOURCE(log_stream_name) CLASS(LOGSTRM) is required by the owning userid to allow the program invoked by the procedure to request the log stream be deleted from the logger inventory.

**References:**

See [z/OS MVS Programming: Authorized Assembler Services Reference](http://www.ibm.com) for more information on IXGINVNT. You can also search the IXGCON mapping macro in [z/OS MVS Data Areas in z/OS Internet Library](http://www.ibm.com/systems/z/os/zos/bkserv/) for a return and reason code, and take the suggested action.

---

**Resolving system logger allocation errors**

IXGLOGR allocation error messages related to system logger offload or staging data sets will be prefixed with IXG251I. These types of IXG251I prefixed messages provide the information necessary to resolve allocation failure.

The following is an example of a IXG251I prefixed error message:

```
IXG251I IXG25693I DATA SET ILOGR.CICSTS13.CICSVR.DFHLGLOG.A0000000 NOT
ALLOATED+
IXG251I IXG257103I CATALOG ERROR WHILE DEFINING VSAM DATA SET ILOGR.CICSTS13.CICSVR.DFHLGLOG.A0000000
IXG251I RETURN CODE 56 REASON CODE 6 IGDCLF
IXG251I THE MODULE THAT DETECTED THE ERROR IS IGDVTSC
IXG251I SMS MODULE TRACE BACK - VTSU VTSC VTSD VTSEC VTSCR SIRT
IXG251I SYMPTOM RECORD CREATED, PROBLEM ID IS IGD00007
IXG251I IGD17219I UNABLE TO CONTINUE DEFINE OF DATA SET ILOGR.CICSTS13.CICSVR.DFHLGLOG.A0000000
IXG250E LOGR POLICY PROCESSING ENDED WITH RETCODE=0000008 RSNCODE=00000805
IXG250I LOGR POLICY PROCESSING ENCOUNTERED AN UNEXPECTED ERROR.
DIAGNOSIS INFORMATION: 00000000 000042CF 0107001B 00000000
```

**Note:** If you take the second word of the Diagnosis Information and convert it from hex to decimal, you will get the IGD message suffix. In this case, X’42CF is 17103 decimal. Searching the Syslog for Message IGD17103I will allow you to find more information related to this problem.

Some common reasons for allocation failure are:
1. IXGLOGR address space does not have TRUSTED authority.
   - The allocation failure can be resolved by updating the IXGLOGR address space to have TRUSTED authority. For new authority to take effect, the IXGLOGR address space must be stopped and restarted. See “Restarting the system logger address space” on page 24-25 for information on stopping and restarting the IXGLOGR address space.

2. There is not enough space on DASD to allocate the data set.
   - In this case, free up space or allow SMS to use more volumes.

3. The error message indicates the data set is not in the catalog or the catalog cannot be accessed.
   The problem could be caused by one of the following:
   - The data set was manually deleted.
     - Prevent users from manually deleting system logger offload or staging data sets.
   - There is a catalog problem.
     - The catalog problem must be resolved
   - The share options of the data set are not 3,3.
     - Update the SHAREOPTIONS to 3,3 (the default for SHAREOPTIONS is 1,3) using IDCAMS, and update the DATACLASS associated with the log stream to prevent future problems.
   - Two or more sysplexes are trying to allocate the same staging data set at the same time.
     - Use different log stream names on the different sysplexes, or do not share the catalog across the sysplexes.
   - Two or more sysplexes allocating to the same named staging data set, one after the other, may result in system logger’s failure to recover data for one or both of the sysplexes involved.
     - Use different log stream names on the different sysplexes, or do not share the catalog across the sysplexes.

Example
If SYSA in PLEXA did not delete the staging data set when the last disconnect occurred, then SYSA needs to have the staging data set available when it reconnects to the log stream to offload data. However, if SYSB in PLEXB tries to connect to a log stream which requires a staging data set with the same name as the staging data set left behind by SYSA, SYSB will delete the existing data set and create a new one. So, when SYSA reconnects later, recovery for the log stream will fail.

For a complete list of IXG messages, see z/OS MVS System Messages, Vol 10 (IXC-IZP).

Resolving z/OS IBM zAware log stream client errors

When an error occurs with z/OS Advanced Workload Analysis Reporter (IBM zAware log) stream client processing, system logger messages IXG371E, IXG372I, and IXG384I will indicate the type of problem encountered. System logger messages IXG371E and IXG384I are helpful in identifying the general nature of the problem, and message IXG372I contains useful details on the type of socket...
communications problem logger experienced. Additionally, ABEND conditions may also occur for related types of failures, and the most common ones are listed below.

The first step if an error occurs in this area should always be to double check the system logger status and ZAI SERVER AND PORT specifications via commands 'D LOGGER,ST,ZAI' and/or 'D LOGGER,IXGCNF,ZAI' and ensure the values are as intended.

For more details on the z/OS IBM zAware log stream client see Preparing for z/OS IBM zAware log stream client usage in z/OS MVS Setting Up a Sysplex. See IBM System z Advanced Workload Analysis Reporter (IBM zAware) Guide for information concerning the IBM zAware server.

**IXGLOGR address space not having OMVS authorization**

*IXG371E reason text OMVS SEGMENT FAILURE FOR IXGLOGR*  
ABEND EC6 reason C008 and/or message ICH408I

System logger message:  
*IXG371E ZAI LOGSTREAM CLIENT MANAGER UNAVAILABLE*  
REASON: OMVS SEGMENT FAILURE FOR IXGLOGR,

or z/OS UNIX System Services callable service related ABEND condition EC6 reason code C008 indicates that the ABEND occurred because the calling process cannot be dubbed.

For this condition, view the log around the time that particular incident and look for an ICH408I message:  
ICH408I USER(IXGLOGR ) GROUP(TASKS ) NAME(SYS PROGRAMMER ) 288  
CL(PROCESS )  
OMVS SEGMENT NOT DEFINED

The above conditions indicate the IXGLOGR address space does not have the appropriate security permission for z/OS UNIX System Services. The user security profile is either missing, incomplete, or the OMVS segment is not defined for the user. The z/OS UNIX System Services segment is only for TCP/IP connectivity. UID(0) or superuser ability can be used but are not required. For example, in RACF issue the following command or set of commands:  
ADDUSER IXGLOGR OMVS(UIDDxxx) HOME(’/’)

or

ADDGROUP IXGGRP OMVS(GIDDyyyy)  
ADDUSER IXGLOGR DFLTGRP(IXGGRP) OMVS(UIDDxxx) HOME(’/tmp’) PROGRAM(’/bin/false’) NOPASSWORD

where xxx is a unique user ID and yyyy is a unique group ID.

**TCP/IP, OMVS, Resolver, VTAM address space being available**

ERRNO=2 ERRNOJR=78801000  
ERRNO=70 ERRNOJR=12CA00B6

When required services are not yet available for socket communications, some of the common reasons are revealed in system logger messages IXG371E and IXG372I.

*IXG371E ZAI LOGSTREAM CLIENT MANAGER UNAVAILBLE REASON:*
OMVS NOT INITIALIZED OR IS UNAVAILABLE.
OMVS has not been initialized or z/OS UNIX System Services is not available.

OMVS BPX-SERVICE ERROR.
An error was encountered on a BPX-service request.

IXG372I LOGSTREAM CLIENT MANAGER ERROR FOR item logstream:

FUNCTION=BPX1GAI ERRNO=00000002 ERRNOJR=78801000
Logger BPX1GAI request to determine the location (getaddrinfo) for the ZAI SERVER value could not be satisfied since the 'Resolver' is not available.
Ensure the Resolver is started.

FUNCTION=BPX1SOC ERRNO=0000070 ERRNOJR=12CA00B6
Logger BPX1SOC request to create a socket to the IBM zAware server could not be satisfied since the physical file system (PFS) was not available.

The z/OS Communications Server environment must be available, that is, the z/OS UNIX System Services (OMVS) and resolver address spaces, VTAM address space and appropriate TCP/IP address space have been started. Also the necessary TCP/IP (network) definitions provided for the server location need to be determined in order for logger to establish a (socket) connection to the IBM zAware server. See z/OS Communications Server: IP Configuration Guide and z/OS UNIX System Services Planning for additional details for establishing the desired environment.

Verify that the OMVS, Resolver, VTAM, and TCP/IP address spaces have completed initialization. Look for the following messages:
EZ9291I RESOLVER INITIALIZATION COMPLETE
BPXI004I OMVS INITIALIZATION COMPLETE
IST020I VTAM INITIALIZATION COMPLETE FOR level

IBM zAware server location

Several error conditions to the IBM zAware server location can occur for a z/OS IBM zAware log stream client.

Check the IBM zAware server level and location to be certain it is installed and running on the PR/SM logical partition (LPAR) where expected. Ensure the IXGCNFxx parmlib member ZAI SERVER and PORT information correctly identifies the IBM zAware server location.

Confirm that the communication is allowed (such as sockets connections being allowed over any firewall, and the appropriate routers in the path support the IP format address type).

Resolving hostname issues (ERRNO=1 ERRNOJR=78AE1004)
https://www-304.ibm.com/support/docview.wss?uid=isg1III14515

The following steps should be taken to determine why a "hostname cannot be resolved" type or problem has occurred:

Note: Although you might find the hostname through PING or NSLOOKUP commands, you might not be able to find it through the resolver. Take the following steps to determine why a "hostname" cannot be resolved.
1. To determine the host name returned for the IBM zAware server location, issue the following command on the logical partition where the IBM zAware server runs:

```
hostname -g
```

to determine the host name returned for the IBM zAware server location.
If this is the host name you expect, then skip the remainder of this section and go to the next step.
The TCPIP started task determines its host name when it is started by calling a service to retrieve the value of the stack’s TCPIP.DATA HOSTNAME statement.
The z/OS UNIX search order is used to find the stack’s TCPIP.DATA statements. The host name is determined in the following order:

a. If the found TCPIP.DATA contains a valid HOSTNAME statement, its value is returned.
b. If there is no valid HOSTNAME statement, the VMCF node name with which VMCF was started is returned.
c. If VMCF was not active when the stack was started, the CVTSNAME value (this is the SYSNAME=value in IEASYSxx that was IPLed) is returned.

If the host name came from TCPIP.DATA, it is in the message case it was specified on the HOSTNAME statement. For VMCF or CVTSNAME the name is uppercase. If you cannot determine why TCPIP has the wrong name, add a SYSTCPTT DD to the TCPIP proc and restart TCPIP. This will enable resolver tracing of TCPIP. When you fix the host name issue, TCPIP will have to be recycled to pick up this change.

2. If the host name is correct and it does not resolve to a valid IP address, do the following:

```
host hostname
```

from where z/OS system logger runs and make sure the `hostname` resolves properly.
If you get an error that the host is unknown, (for example: EZZ8342I junk: Unknown host), check to see if the hostname has been added to the DNS.
If the hostname has been added to the DNS and the name still does not resolve to an IP address, then enable a resolver trace for the OMVS session and issue the host command again:

```
Export RESOLVER_TRACE= stdout
host host-name
```

If you make any changes to the DNS or local host file, you need to refresh the resolver.

3. If the ip address does not resolve to a fully qualified domain name, use the following command to verify that a fully qualified domain name is returned and it is the fully qualified domain name expected for the z/OS IBM zAware log stream client:

```
host <ip_address>
```

where `<ip_address>` is the IP address the host command returned in prior steps.

Ensure that this resolves to the expected `hostname`. 
Note: If you make any changes to the DNS or local host file, you need to refresh the resolver.

Resolving firewall/routing issues (ERRNO=450 ERRNOJR=74947206)
The z/OS IBM zAware log stream client can receive socket connection "time out" type error conditions that stem from security settings on the IBM zAware server logical partition. Do the following:

1. Verify the network configuration of the IBM zAware server logical partition (for example, one or more of the IP addresses, the port that makes use of 'ifconfig', 'netstat -an', and so forth).
2. Verify that the _BPXK_SETIBMOPT_TRANSPORT environment variable is not set on the z/OS system. The 'env' command will show the environment variable setting.
3. Verify that routing was set up properly using 'ping', 'ftp' or 'traceroute'. From the IBM zAware server logical partition, ping the z/OS image intended as the z/OS IBM zAware log stream client system. The command 'D TCPIP, {procname},ROUTE' shows the routing table of the z/OS system.
4. If the connection is successful from the IBM zAware server logical partition to the z/OS IBM zAware monitored client system, but the reverse direction fails, check the security setting on the IBM zAware server logical partition.

Notes:
1. The TCPDUMP tool is useful to determine where the communication attempt fails. Start the TCPDUMP tool first on the IBM zAware server logical partition. You might want to specify the '-i' option to filter out the content: 'tcpdump -i interfacename'.
2. Try to connect from the z/OS IBM zAware log stream client system to the IBM zAware server logical partition: 'ftp ipaddress portnumber'.
3. Check to determine if the SYN packets have arrived for the connection request and if there are any SYN/ACK response packets. If a SYN/ACK response packet does not exist, check the security setting on the IBM zAware server logical partition.

IPv6 format address issues (ERRNO=45A ERRNOJR=112B0000)
If all the routers in the path of a socket between the z/OS IBM zAware log stream client and IBM zAware server do not support IPv6 format addresses, system logger is not able to use an IPv6 address to communicate with the IBM zAware server. Check the details in system logger message IXG372I to determine if something similar to the following occurs:

```
FUNCTION=BPX1SOC ERRNO=0000045A ERRNOJR=112B0000
```

Ensure that all the routers in the path of the socket connection support IPv6 format addresses or provide an IPv4 format address on the system logger ZAI SERVER specification for the IBM zAware server location.

IBM zAware server available and ready to receive z/OS data for analytics
See IBM System z Advanced Workload Analysis Reporter (IBM zAware) Guide for more information on how to verify the IBM zAware server availability and overall state.
System logger

Setting up SYSLOGR component trace

A component trace provides data about events that occur within the component. You will typically use component trace while recreating a problem. The trace data is intended for the IBM Support Center, which can use the trace to diagnose problems in the component.

For system logger the trace parmlib member should be used so that the trace is always active after an IPL. To set up a component trace for system logger:

1. Create a CTnLOGxx parmlib member on each system in the sysplex. You should give the CTnLOGxx parmlib member the same name on each system. It is recommended that you create the member to trace everything except STORAGE and INVENTORY. As of z/OS V1.4 with OA07611 applied, the default CTILOG00 member is shipped with the following recommended setup:

   TRACEOPTS ON
   BUFSIZE(16M)
   OPTIONS('CONNECT,LOGSTRM,DATASET,SERIAL,MISC,LOCBUFF,RECOVERY')

   Rule: To reduce the likelihood of losing data in a wrapped buffer, it is recommended that the BUFSIZE not be lowered below 16 MB.

2. Start the trace with the following command:

   Route *ALL,TRACE CT,ON,COMP=SYSLOGR,PARM=CTnLOGxx

3. Display the SYSLOGR trace status to verify that it has been set correctly:

   Route *ALL,D TRACE,COMP=SYSLOGR

   The SYSLOGR status should be ON, and the OPTIONS should match the options you specified in the CTnLOGxx parmlib member.

See the component trace chapter of z/OS MVS Diagnosis: Tools and Service Aids for information about requesting and formatting the component trace.

Collecting documentation for system logger

Depending on the problem, the following seven methods may be used to collect the documentation needed to diagnose a system logger problem. For assistance in interpreting this documentation, contact the IBM Support Center.

1. Obtain a dump of system logger and associated jobs. Use the following example to set up your dump command:

   DUMP COMM=(your dump title)
   r vv,STRLIST=(STRTNAME=structure_name,LOCKENTRIES,ACC=NOLIM, LISTNUM=ALL,ENTRYDATA=SERIALIZE,ADJUNCT=CAPTURE)),CONT
   r ww,JOBNAME=(IXGLOGR,IXFAS,hung_job),CONT
   r xx,DSPPNAME=('XCFAS'.' IXGLOGR'.'),CONT
   r zz,SDATA=(COUPLE,ALLNUC,LPA,LSQA,PSA,GTN,SOA,TRT,CSA,URQ,GRQ,XESDATA),CONT
   r yy,REMOTE=(SYSLST=*('XCFAS','IXGLOGR'),DSPPNAME,SDATA),END

   Notes:
   • STRLIST is only necessary when you need to browse the data in the coupling facility structure.
   • JOBNAME should always include IXGLOGR, but you might also include other address space identifiers (XCFAS and hung_job in this example), depending on the situation.
   • DSPNAME should always include 'IXGLOGR'.*, which includes both SYSIXG0x (local buffers), and SYSLOGR0 (trace data)
   • SDATA should always include the same parameters as shown in the example above.
   • REMOTE is only necessary when offload problems occur.
2. Use the D LOGGER command to display the following information:
   - IXGLOGR address space status.
   - Log stream, structure, and connection information.
   - Sysplex status for log streams.
   - Specifics for DASDONLY log streams.
3. Set a SLIP trap. The following is an example of a SLIP trap set to capture instances of message DFHLG077x:
   
   ```
   SL SET,IF,L=(IGC0003E,0),A=SVCD,
   DATA=(1R?+4,EQ,CAC6CBD3,+8,EQ,C7F0F7FF),
   STRLIST=(STRNAME=structure_name,LOCKENTRIES,ACC=NOLIM,
   (LISTNUM=ALL,ENTRYDATA=SERIALIZE,ADMUNCT=CAPTURE)),
   JOBLIST=(IXGLOGR,XCFAS),
   DSPNAME=('XCFAS'.*,'IXGLOGR'.*),
   SDATA=(COUPLE,ALLNUC,LSQA,RGN,SAQA,RGN,CSA,GRSQ,XESDATA),
   REMOTE=(DSPNAME,SDATA,JOBLIST),END
   ```
   
   See the SLIP command chapter of [z/OS MVS Diagnosis: Tools and Service Aids](https://www.ibm.com) for more information about setting a SLIP trap.
4. Use ADRDSSU to print the current (highest generation) offload data set for a log stream:
   
   ```
   //ADRDSSU JOB MSGLEVEL=(1,1),NOTIFY=&SYSUID
   //**----------------------------------------------------------*/
   //** Print the current offload data set */
   //**----------------------------------------------------------*/
   //**
   //STEP1 EXEC PGM=ADRDSSU,REGION=4M
   //SYSPRINT DD SYSOUT=* */
   //SYSPRINT DD SYSOUT=*
   PRINT INDYNAM(SEC001) -
   DS(hlq.xxxx.A00000yyy)
   /*
   Use IDCAMS to print all other log stream offload data sets:
   ```
   //IDCAMS2 JOB MSGLEVEL=(1,1),NOTIFY=&SYSUID
   //**----------------------------------------------------------*/
   //** RUN PRINT against system logger DASD log stream data set */
   //**----------------------------------------------------------*/
   //**
   //IDCAMS3 EXEC PGM=IDCAMS
   //SYSPRINT DD SYSOUT=H */
   //SYSPRINT DD SYSOUT=H
   PRINT INDATASET('hlq.xxxx.A00000yyy')
   /*
   Notes:
   - `hlq` is IXGLOGR by default, unless HLQ(`hlq`) is specified when the log stream is defined
   - `xxxx` is the defined log stream name
   - `A000000000` is the generation number LLQ created by system logger
5. Obtain VSAM linear offload data set characteristics. You can use the following sample JCL to look at the characteristics of the data set you are dumping.

   ```
   //IDCMS2 JOB MSGLEVEL=(1,1),NOTIFY=&SYSUID
   //PRINTIT EXEC PGM=IDCAMS
   //SYSPRINT DD SYSOUT=H */
   //SYSPRINT DD SYSOUT=H
   PRINT INDATASET('hlq.xxxx.A000000000')
   /*
   This job will
   - display all alias names specified in the master catalog, along with the associated user catalog for each high level qualifier
   - display all alias names defined in a specified catalog
   - display the contents of a user catalog and the volume on which it resides
System logger

- display all information related to data sets with a particular high level qualifier.

See [z/OS DFSMS Access Method Services for Catalogs](#) for information about how to interpret the output produced by this job.

6. Obtain a LOGR inventory detail list. Use this sample job to format the contents of the system logger couple data set.

   //LISTUTL1 JOB MSGLEVEL=(1,1),NOTIFY=SYSUID,MSGCLASS=A
   //STEP1 EXEC PGM=IXCMIAPU
   //SYSPRINT DD SYSOUT=
   //SYSIN DD *
   DATA TYPE(LOGR) REPORT(YES)
   LIST LOGSTREAM NAME(CICSA.TEST.DFHLOG) DETAIL(YES)
   LIST STRUCTURE NAME(DFHLOG_CICSA) DETAIL(YES)
   LIST LOGSTREAM NAME(SYSPLEX.*) DETAIL(YES)
   LIST STRUCTURE NAME(OPER*) DETAIL(YES)

   You can use an asterisk (*) in place of the log stream name and structure name to list all log streams and structures.

   The output of this report will contain the characteristics of the log stream, the connection information, and a list of the offload data sets.

   LOGSTREAM NAME(SYSPLEX,OPERLOG) STRUCTNAME(LIST14) LS_DATACLAS(VSAMLS)
   LS_MGMTCLAS() LS_STORCLAS(STANDARD) HLQ(HHLQ) MODEL(NO) LS_SIZE()
   STG_MGMTCLAS() STG_STORCLAS(STANDARD) STG_DATACLAS() STG_SIZE()
   LOGOFFLOAD(50) HIGHOFFLOAD(50) STG_DUPLNX(NO) DuplexMode()
   RMNAME() DESCRIPTION() RETPD(3) AUTODELETE(YES)
   DASDONLY(NO) DIAG(NO)

   LOG STREAM ATTRIBUTES:
   User Data:
   0000000000000000000000000000000000000000000000000000000000000000
   0000000000000000000000000000000000000000000000000000000000000000

   LOG STREAM CONNECTION INFO:
   SYSTEMS CONNECTED: 0

   LOG STREAM DATA SET INFO:
   DATA SET NAMES IN USE: HHLQ.SYSPLEX.OPERLOG.

   Ext. <SEQ#> Lowest Blockid Highest GMT Highest Local
   ----- -------- -------------- ----------- --------------
   +00001 A0000000 0000000000000000

   NUMBER OF DATA SETS IN LOG STREAM: 1

   POSSIBLE ORPHANED LOG STREAM DATA SETS:
   NUMBER OF POSSIBLE ORPHANED LOG STREAM DATA SETS: 0

   STRUCTURE NAME(LIST14) LOGSNUM(10)
   MAXBUFSIZE(65532) AVGBUFSIZE(32766)
   EFFECTIVE AVERAGE BUFFER SIZE(32766)

   LOGSTREAM NAME	 CONNECTION
   ------------------------
   SYSPLEX.OPERLOG	 NO

   LOGSTREAMS CURRENTLY DEFINED TO THIS STRUCTURE(1)

7. If you suspect that the logger couple data set is corrupted, dump the logger couple data set using the job that follows:

   //DUMPCDS JOB MSGLEVEL=(1,1),NOTIFY=SYSUID
   //**************************************************************************
   //** RUN ADRDSSU to dump off the LOGR Couple Dataset */
   //**************************************************************************
   //STEP1 EXEC PGM=ADRDSSU,REGION=4M
   //SYSPRINT DD SYSOUT=
   //DD1 DD DISP=SHR,VOL=SER=xxxxxx,UNIT=3380
   //SYSIN DD *
   PRINT DATASET(logr.couple.dataset) INDDNAME(DD1) TOL(ENQF)
   /*
Interpreting IXCMIAPI output

The following example is a complete LOGR inventory list followed by individual field descriptions and output explanations. The output of this report will contain the characteristics of the log stream, the connection information, and a list of the offload data sets. You can use an asterisk (*) in place of the log stream name and structure name to list all log streams and structures.

<table>
<thead>
<tr>
<th>ADMINISTRATIVE DATA UTILITY: INPUT</th>
<th>DATA TYPE = LOGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINE #</td>
<td>CONTROL CARDS</td>
</tr>
<tr>
<td>1</td>
<td>DATA TYPE(LOGR) REPORT(YES)</td>
</tr>
<tr>
<td>2</td>
<td>LIST LOGSTREAM NAME(*) DETAIL(YES)</td>
</tr>
<tr>
<td>3</td>
<td>LIST STRUCTURE NAME(*) DETAIL(YES)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADMINISTRATIVE DATA UTILITY: MESSAGES</th>
<th>DATA TYPE = LOGR</th>
</tr>
</thead>
</table>

IXG005I LOGR POLICY PROCESSING LINE# 2

LOGSTREAM NAME(USER01.STREAM.NOTUSED) STRUCTNAME() LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(IXGLOGR) MODEL(NO) LS_SIZE(0) STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0) LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(YES) DUPLEXMODE(UNCOND) RMMNAME() DESCRIPTION() RETPO(0) AUTODELETE(NO) OFFLOADRECALL(NO) ZAI(NO) ZAIDATA('NO_ZAIDATA') DASDONLY(YES) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION) MAXBUFSIZE(65532)

LOG STREAM ATTRIBUTES:

User Data:
0000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000

Time Defined: 02/25/02 17:32:22 (GMT)

LOG STREAM CONNECTION INFO:

SYSTEMS CONNECTED: 0

LOG STREAM DATA SET INFO:

DATA SET NAMES IN USE: IXGLOGR.USER01.STREAM.NOTUSED.<SEQ#>

<table>
<thead>
<tr>
<th>Ext.</th>
<th>&lt;SEQ#&gt;</th>
<th>Lowest Blockid</th>
<th>Highest GMT</th>
<th>Highest Local</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>*00001</td>
<td>A000000</td>
<td>CURRENT</td>
<td>SYSTEM_1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NUMBER OF DATA SETS IN LOG STREAM: 1

POSSIBLE ORPHANED LOG STREAM DATA SETS:

NUMBER OF POSSIBLE ORPHANED LOG STREAM DATA SETS: 0

LOGSTREAM NAME(USER01.LOSS.OF.DATA) STRUCTNAME() LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(IXGLOGR) MODEL(NO) LS_SIZE(0) STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0) LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(YES) DUPLEXMODE(UNCOND) RMMNAME() DESCRIPTION() RETPO(0) AUTODELETE(NO) OFFLOADRECALL(NO) DASDONLY(YES) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)

LOG STREAM ATTRIBUTES:

POSSIBLE LOSS OF DATA, LOW BLKID: 0000001111111111, HIGH BLKID: 0000002222222222

User Data:
0000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000

Time Defined: 02/25/02 17:32:22 (GMT)

LOG STREAM CONNECTION INFO:

SYSTEMS CONNECTED: 0
**System logger**

**LOG STREAM DATA SET INFO:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Version</th>
<th>State</th>
<th>ID</th>
<th>Active</th>
<th>Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SY1</td>
<td>B73E4F38CD23F649</td>
<td>Active</td>
<td>01</td>
<td>SY1</td>
<td></td>
</tr>
</tbody>
</table>
LOG STREAM DATA SET INFO:
STAGING DATA SET NAMES: IXGLOGR.USER01.DELETE.PENDING.<suffix>

DATA SET NAMES:
---------------------------------------------
IXGLOGR.USER01.DELETE.PENDING.SY2
IXGLOGR.USER01.DELETE.PENDING.SY3

NUMBER OF STAGING DATA SETS: 2

DATA SET NAMES IN USE: IXGLOGR.ORIGINAL.STREAM.NAME.<SEQ#>
Ext. <SEQ#> Lowest Blockid / Highest GMT / Highest Local / Status
----- -------- ---------------- ----------------- --------------- --------
**00001 A0000166 000000000F000001 02/25/02 18:48:31 DELETE PENDING
000000000F012B6C 00013BA0 SYSTEM_1
A0000167 000000000F013BA1 02/25/02 18:48:32 02/25/02 13:48:31 DELETED
000000000F0266EB 00013BA0 SYSTEM_5
000000000F027741 000000000F02E45A 02/25/02 18:48:32 02/25/02 13:48:31 CURRENT
000000000F02E45A 00007D5C SYSTEM_1

NUMBER OF DATA SETS IN LOG STREAM: 3

POSSIBLE ORPHANED LOG STREAM DATA SETS:
NUMBER OF POSSIBLE ORPHANED LOG STREAM DATA SETS: 0

LOGSTREAM NAME(USER01.FAILED.LOGSTRM) STRUCTNAME(LOGGERSTR1) LS_DATACLAS()
LS_MGMTCLAS() LS_STORCLAS() HLQ(IXGLOGR) MODEL(NO) LS_SIZE(0)
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0)
LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(NO) DUPLEXMODE()
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASDONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)

LOG STREAM ATTRIBUTES:

User Data:
0000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000

Time Defined: 02/25/02 17:32:22 (GMT)

LOG STREAM CONNECTION INFO:

SYSTEMS CONNECTED: 1

SYSTEM STRUCTURE CON CONNECTION CONNECTION
NAME VERSION ID VERSION STATE
-------- ---------------- -- ---------- ----------
SY1 B73E462D11704E4A 01 00010004 Failed

LOG STREAM DATA SET INFO:
DATA SET NAMES IN USE: IXGLOGR.USER01.FAILED.LOGSTRM.<SEQ#>

Ext. <SEQ#> Lowest Blockid / Highest GMT / Highest Local / Status
----- -------- ---------------- ----------------- --------------- --------
**00001 A0000000 0000000000000001 02/25/02 17:26:45 CURRENT
0000000000013BA7 00013CD8 SYSTEM_3

NUMBER OF DATA SETS IN LOG STREAM: 1

POSSIBLE ORPHANED LOG STREAM DATA SETS:
NUMBER OF POSSIBLE ORPHANED LOG STREAM DATA SETS: 0

STRUCTURE NAME(LOGGERSTR1) LOGSNUM(10)
MAXBUFSIZE(65532) AVGBUFSIZE(32766)
EFFECTIVE AVERAGE BUFFER SIZE(32766) GROUP(PRODUCTION)

LOGSTREAM NAME CONNECTION
-------------- ----------
USER01.FAILED.LOGSTRM YES

LOGSTREAMS CURRENTLY DEFINED TO THIS STRUCTURE(1)

LOGR Inventory Record Summary:
System logger

LOGR COUPLE DATA SET FORMAT LEVEL: HBB7705

/* Functional Items: */
/* SM Duplex(1) */

ADMINISTRATIVE DATA UTILITY: REPORT DATA TYPE = LOGR

<table>
<thead>
<tr>
<th>Type</th>
<th>Formatted</th>
<th>In-use</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSR (Log Stream)</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>LSTRR (Structure)</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

DSEXTENT (Data Set Extent) 5 0

LOGSTREAM NAME(USER.STREAM.EXAMPLE) STRUCTNAME(LOGGERSTR1) LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(NO HLQ) MODEL(NO) LS_SIZE(0)
STG_MGMTCLAS(MGMTDR) STG_STORCLAS(STORDR) STG_DATACLAS(STG2GIG) STG_SIZE(524288)
LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(NO) DUPLEXMODE()
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASONLY(NO) DIAG(NO) LOGGERDUPLEX(COND) EHLQ(IXGLOGR) GROUP(PRODUCTION)

LOGSTREAM NAME(USER01.STREAM.NOTUSED) STRUCTNAME() LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(NO HLQ) MODEL(NO) LS_SIZE(0)
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0)
LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(NO) DUPLEXMODE()
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)

LOGSTREAM NAME(USER01.ORPHAN.DATASET) STRUCTNAME(LOGGERSTR2) LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(NO HLQ) MODEL(NO) LS_SIZE(2)
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(100)
LOWOFFLOAD(20) HIGHOFFLOAD(80) STG_DUPLEX(YES) DUPLEXMODE(UNCOND)
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)
MAXBUFSIZE(65532)

LOGSTREAM NAME(USER01.FAILED.LOGSTRM) STRUCTNAME(LOGGERSTR1) LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(NO HLQ) MODEL(NO) LS_SIZE(0)
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0)
LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(NO) DUPLEXMODE()
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)

LOGSTREAM NAME(USER01.LOSS.OF.DATA) STRUCTNAME() LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(NO HLQ) MODEL(NO) LS_SIZE(0)
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0)
LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(NO) DUPLEXMODE()
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)

LOGSTREAM NAME(USER01.ORPHAN.DATASET) STRUCTNAME(LOGGERSTR2) LS_DATACLAS() LS_MGMTCLAS() LS_STORCLAS() HLQ(NO HLQ) MODEL(NO) LS_SIZE(2)
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(100)
LOWOFFLOAD(20) HIGHOFFLOAD(80) STG_DUPLEX(YES) DUPLEXMODE(UNCOND)
RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
DASONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)
MAXBUFSIZE(65532)

LOGSTREAMS CURRENTLY DEFINED TO THIS STRUCTURE(1)

STRUCTURE NAME(LOGGERSTR1) LOGSNUM(10)
MAXBUFSIZE(65532) AVGBUFSIZE(4092)
EFFECTIVE AVERAGE BUFFER SIZE(4092) GROUP(PRODUCTION)

STRUCTURE NAME(LOGGERSTR2) LOGSNUM(10)
MAXBUFSIZE(65532) AVGBUFSIZE(32766)
EFFECTIVE AVERAGE BUFFER SIZE(32766) GROUP(PRODUCTION)
The following examples and field descriptions are used to interpret the output of the LOGR inventory list.

If **REPORT(YES)**, a LOGR Summary Record with the characteristics of the log stream will be returned at the end of the detail list.

```
LINE #   CONTROL CARDS
1        DATA TYPE(LOGR) REPORT(YES)
2        LIST LOGSTREAM NAME(*) DETAIL(YES)
3        LIST STRUCTURE NAME(*) DETAIL(YES)
```

**ADMINISTRATIVE DATA UTILITY: MESSAGES**

A loss of data might indicate that all of the data did not get written out to a log stream offload data set or the structure lost data. Determine if the data is usable. If not, delete the log stream and redefine it. For additional information on loss of data return codes on IXGRWSE and IXGWRITE requests, see [z/OS MVS Programming: Authorized Assembler Services Guide](#). The following is an example of a log stream that encountered a possible loss of data:

```
LOGSTREAM NAME(USER01.LOSS.OF.DATA) STRUCTNAME() LS_DATACLAS()
  LS_MGMTCLAS() LS_STORCLAS() HLQ(IXGLOGR) MODEL(NO) LS_SIZE(0)
  STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(0)
  LOWOFFLOAD(0) HIGHOFFLOAD(80) STG_DUPLEX(YES) DUPLEXMODE(UNCOND)
  RMNAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL(NO)
  DASDONLY(YES) DIAG(NO) LOGGERDUPLEX() EHLO(NO_EHLQ)
  MAXBUFSIZE(65532)
```

**LOG STREAM ATTRIBUTES:**

```
POSSIBLE LOSS OF DATA, LOW BLKID: 000001111111111, HIGH BLKID: 000002222222222
```

The following output is the Log Stream Attribute section. The timestamp displays the time that the log stream is defined.

```
LOG STREAM ATTRIBUTES:
User Data:
  0000000000000000000000000000000000000000000000000000000000000
  0000000000000000000000000000000000000000000000000000000000000

Time Defined: 02/25/02 17:32:22 (GMT)
```

UNKNOWN appears in place of the date and time if both of the following situations occur:

- The log stream has been defined on a pre-OS/390 V1R3 release in an HBB5520 format level LOGR CDS
- The log stream had not been connected or updated since on a HBB6603 or HBB7705 format level LOGR CDS

When the HBB5520 format level LOGR CDS defined log stream is connected or updated to on a higher level CDS, the time defined represents the time of the connect or update. The format for the time defined is mm/dd/yy hh:mm:ss.

The following example is an empty data set that has not been written to. The field descriptions are as follows:

- **Ext.** is the couple data set extent number. An * in front of the number indicates the extent is in the base directory of the log stream record.
- **<SEQ#>** is the data set sequence number—that is, the low level qualifier.
- **Lowest Blockid** indicates the lowest (oldest) log block in the data set.
System logger

- **Highest GMT** indicates the highest Time Stamp of the last blockid written in the data set, expressed in GMT format.
- **Highest Local** indicates the same time as Highest GMT, express in local time format.
- **Status** indicates the state of the data set.
- **Highest Blockid** indicates the highest log block in the data set.
- **Highest RBA** indicates the relative byte address of the highest used block in the data set.
- **System Name** is the name of the system that last changed the state of the data set. The state of the data set changes when the data set is newly allocated, closed, or marked for deletion. System Name does not name the last system to write to the dataset.

```
DDATA SET NAMES IN USE: IXELOGR.USER01.STREAM.NOTUSED.<SEQ#>
```

```
Ext. <SEQ#>  Lowest Blockid / Highest GMT / Highest Local / Status
          Highest Blockid  Highest RBA   System Name
----- -------- ----------------- ----------------- ---------
      +00001  A0000000 0000000000000000 CURRENT
0000000000000000 00000000 SYSTEM_1
```

The following output is examples of data sets that have been written to. The **Status** of the data sets can be:

- **DELETE PENDING** specifies the data set is being used by another logger process. The system logger deletes the data set the next time an offload data set is allocated for that particular log stream.
- **DELETED** indicates that system logger has deleted the data set from its directory and the data set has been physically deleted.

**Note**: This status occurs when there is an older offload data set in the **DELETE PENDING** status.

- **CURRENT** is the data set currently being written to.
- **I/O Error** indicates that the system logger has received an I/O error trying to access this data set.

```
Ext. <SEQ#>  Lowest Blockid / Highest GMT / Highest Local / Status
          Highest Blockid  Highest RBA   System Name
----- -------- ----------------- ----------------- ---------
      +00001  A0000166 000000000F000001 02/25/02 18:48:31 02/25/02 13:48:31 DELETE PENDING
0000000000000000 00013BA0 SYSTEM_1
```

The system name is updated when the data set status is changed. System Name means the follows if the Status is:

- **DELETE** or **DELETE PENDING** indicates the system that deletes the data set.
- Blank or **I/O Error** indicates the system that filled in the **Lowest Blockid**, **Highest GMT**, **Highest Local**, **Highest Blockid** and **Highest RBA** for this data set.
- **CURRENT** indicates the system that defined the data set. The **System Name** might appear blank if a pre-V1R10 system defines this data set.

System Name might appear as blank if a pre-V1R10 system updated the data set status.

System logger cannot determine the **Highest Blockid** field occasionally. The situation happens when a pre-V1R10 system fills the data set and sets the **Lowest Blockid**, **Highest GMT**, **Highest Local**, and **Highest RBA**. The **Highest Blockid** is set to ****UNKNOWN**** if system logger cannot determine the block ID.
For the current offload data set, the following fields might be filled as blanks or zeroes if they are created, but not yet written to.

- Lowest Blockid
- Highest GMT
- Highest Local
- Highest Blockid
- Highest RBA

These fields might also be filled in, but appear out of date for the current offload data set, even if data has been written to them. The reason is that system logger permanently stores this information after a rebuild, disconnection, or data set switch for performance reasons.

An orphaned data set is a data set that logger does not know about in the data set directory, but has not been physically deleted. This might indicate a procedural problem. Delete an orphaned data set manually if it is not useful.

Notes:
1. If logger encounters an error scanning the catalog for orphan data sets, it will append the following message to the existing orphaned data set section:
   
   CATALOG ERROR - ORPHAN LIST MAY BE INCOMPLETE

2. One exception occurs when the next current data set shows up on the orphaned data set list. This is a timing issue. System logger has to successfully allocate the data set before it updates its directory to contain the data set. Do not manually delete the data set if this is the case.

The following is an example of an orphaned data set:

POSSIBLE ORPHANED LOG STREAM DATA SETS:

```
DATA SET NAMES:
INIXGLOGR.USER01.ORPHAN.DATASET.A0000000

NUMBER OF POSSIBLE ORPHANED LOG STREAM DATA SETS: 1
CATALOG ERROR - ORPHAN LIST MAY BE INCOMPLETE

LOGSTREAM NAME(USER01.ORPHAN.DATASET) STRUCTNAME(LOGGERSTR2) LS_DATACL
LS_MGMTCLAS() LS_STORCLAS() HLQ(INIXGLOGR) MODEL(NO) LS_SIZE(2
STG_MGMTCLAS() STG_STORCLAS() STG_DATACLAS() STG_SIZE(100)
LOWOFFLOAD(20) HIGHOFFLOAD(80) STG_DUPLEX(YES) DUPLEXMODE(UN
NAME() DESCRIPTION() RETPD(0) AUTODELETE(NO) OFFLOADRECALL
DASDONLY(NO) DIAG(NO) LOGGERDUPLEX() EHLQ(NO_EHLQ) GROUP(PRODUCTION)
```

If the CONNECTION STATE indicates Failed, there is log stream data in the coupling facility structure that has not been written to permanent storage. To recover the data, reconnect to the log stream or restart the system logger.

```
LOG STREAM CONNECTION INFO:
SYSTEMS CONNECTED: 1

SYSTEM STRUCTURE CON CONNECTION ID CON CONNECTION STATE
NAME VERSION ID VERSION ID
SY1 B73E56DD7DD7DD7DD00000000 01 00010004 Failed
```

System logger will internally request a larger buffer if it runs out of output buffer space during the list or report processing. Because system logger processes the report where it left off there could be a duplication of the last resource processed in the report output. The report will contain the following message where the error occurred:
LISTCAT (IDCAMS) messages for offload data sets

When LISTCAT is requested on a LIST LOGSTREAM request, logger includes in the report output the information that is provided by an IDCAMS "LISTCAT ENTRIES(cluster-data-set-name) ALL" command request for each offload data set shown in the report.

Summary of new output in the “LOG STREAM DATA SET INFO” report portion for each data set in the table:

<table>
<thead>
<tr>
<th>A0000001</th>
<th>line 1...</th>
</tr>
</thead>
<tbody>
<tr>
<td>listcat (all) output from IDCAMS for this data set [e]hlq.logstreamname.A0000001</td>
<td></td>
</tr>
<tr>
<td>A0000002</td>
<td>line 2...</td>
</tr>
<tr>
<td>listcat (all) output from IDCAMS for this data set [e]hlq.logstreamname.A0000002</td>
<td></td>
</tr>
</tbody>
</table>

Sample output: for a description of the IDCAMS LISTCAT output listing messages, see [z/OS DFSMS Access Method Services for Catalogs](https://www.ibm.com).
Utility error messages

If the IXCMIAPU request fails, there are cases where Logger issues messages to the System Log. Check for IXGxxx messages in both the job log and the system log to assist in problem determination. Once there is an error, logger stops reading the input unless CONTINUE is specified.

The following section contains examples of IXCMIAPU Error Messages:

1. Error messages from IXCMIAPU:

   Administrative data utility: Input
   Data type = LOGR

   Line #    Control cards
   1         DATA TYPE(LOGR) REPORT(NO)
   2         DEFINE STRUCTURE NAME(LIST02) LOGSNUM(4)
   3         AVGBUFSIZE(4096) MAXBUFSIZE(SIZE)

   Administrative data utility: Messages
   Data type = LOGR

   IXG005I LOGR POLICY PROCESSING LINE=2
   IXG013E STRUCTURE LIST02 ALREADY EXISTS
   IXG002E LOGR POLICY PROCESSING ENDED WITH RETCODE=00000008 RSNCODE=00000025
   IXG003I LOGR POLICY PROCESSING ENCOUNTERED AN UNEXPECTED ERROR.
   DIAGNOSIS INFORMATION: 00000000 00000000 050B000C 00000000

   The RETCODE and RSNCODE can be found in mapping Macro IXGCON or IXGINVNT.
System logger

The ‘DIAGNOSIS INFORMATION’ is intended for IBM Level 2 only. The line number referenced (in this case ‘2’) refers to where the Request type is located (‘DEFINE’).

2. Messages written to the SYSLOG:

   ADMINISTRATIVE DATA UTILITY: INPUT DATA TYPE = LOGR

   LINE # CONTROL CARDS
   1 DATA TYPE(LOGR) REPORT(NO)
   2 DEFINE LOGSTREAM NAME(BAD.LOG.STREAM) LOWOFFLOAD(20)
   3 DASDONLY(NO) STG_SIZE(100) LS_SIZE(24) STG_DUPLEX(YES)
   4 DASDONLY(NO) STRUCTNAME(LIST02)
   5 LS_DATACLAS(UNDEF)

   ADMINISTRATIVE DATA UTILITY: MESSAGES DATA TYPE = LOGR

   IXG005I LOGR POLICY PROCESSING LINE# 2
   IXG006E A STORAGE MANAGEMENT SUBSYSTEM (SMs) ATTRIBUTE CLASS IS UNDEFINED.
   IXG007E LOGR POLICY PROCESSING ENDED WITH RETCODE=00000000 RSNCODE=00000000
   IXG008I LOGR POLICY PROCESSING ENDED WITH AN UNEXPECTED ERROR.
   DIAGNOSIS INFORMATION: 00000004 0000F801 05030004 050B000B

   SYSLOG:

   IXG251I IXG66091 DATA SET IXGLOGR.BAD.LOG.STREAM.A0000000 NOT ALLOCATED
   IXG251I IXG01014 DATA SET ALLOCATION REQUEST FAILED - SPECIFIED DATACLAS NOTDEF DOES NOT EXIT

   -------------------------------

3. If logger encounters an error while processing any IXCMIAPU request, it terminates processing and ignores any other input.

   ADMINISTRATIVE DATA UTILITY: INPUT DATA TYPE = LOGR

   LINE # CONTROL CARDS
   1 DATA TYPE(LOGR) REPORT(NO)
   2 DEFINE LOGSTREAM NAME(BAD.LOG.STREAM) LOWOFFLOAD(20)
   3 DASDONLY(NO) LS_SIZE(20) STG_DUPLEX(NO)
   4 STRUCTNAME(LISTXX)
   5 DEFINE LOGSTREAM NAME(GOOD.LOG.STREAM) STG_SIZE(100)
   6 LOWOFFLOAD(20) DASDONLY(YES) HIGHOFFLOAD(90)
   7 MAXBUFSIZE(32768)
   8 MAXBUFSIZE(32768)

   ADMINISTRATIVE DATA UTILITY: MESSAGES DATA TYPE = LOGR

   IXG005I LOGR POLICY PROCESSING LINE# 2
   IXG004I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING LINE# 3
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR

   Ignore lines 5 to 8.

4. If CONTINUE is specified before system logger encounters an error, system logger continues to execute requests that follow the request in an error.

   ADMINISTRATIVE DATA UTILITY: INPUT DATA TYPE = LOGR

   LINE # CONTROL CARDS
   1 DATA TYPE(LOGR) REPORT(YES)
   2 CONTINUE
   3 DEFINE LOGSTREAM NAME(BAD.LOG.STREAM) LOWOFFLOAD(20)
   4 DASDONLY(NO) LS_SIZE(20) STG_DUPLEX(NO)
   5 STRUCTNAME(LISTXX)
   6 DEFINE LOGSTREAM NAME(GOOD.LOG.STREAM) STG_SIZE(100)
   7 LOWOFFLOAD(20) DASDONLY(YES) HIGHOFFLOAD(90)
   8 MAXBUFSIZE(32768)

   ADMINISTRATIVE DATA UTILITY: MESSAGES DATA TYPE = LOGR

   IXG005I LOGR POLICY PROCESSING LINE# 2
   IXG004I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
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   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR
   IXG005I LOGR POLICY PROCESSING ENDED WITHOUT ERROR

   Ignore lines 5 to 8.

5. If a syntax error is found, processing of requests stops, although CONTINUE is specified.

   ADMINISTRATIVE DATA UTILITY: INPUT DATA TYPE = LOGR

   LINE # CONTROL CARDS
   1 DATA TYPE(LOGR) REPORT(YES)
   2 CONTINUE
   3 DEFINE LOGSTREAM NAME(BAD.LOG.STREAM) LOWOFFLOAD(20)
   4 DASDONLY(YES) LS_SIZE(20) STG_DUPLEX(NO)
The request specified on line 6 is not executed.

Analyzing component trace

The output from component trace will allow you to find the module id of the failing module and to identify parameters that are passed to the module. Trace will produce output in the following format:

<table>
<thead>
<tr>
<th>System Name</th>
<th>Type of Ctrace record</th>
<th>Module identifier and location</th>
<th>TimeStamp</th>
<th>Tracing Module description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JBO</td>
<td>SERIAL</td>
<td>06050002</td>
<td>11:43:25.857844</td>
<td>WRKUN ADD AND START RQE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASCB addr</th>
<th>TCB addr</th>
<th>Job___________Name</th>
<th>Stack addr</th>
<th>Asid/#Mods</th>
<th>Module Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>00F60080</td>
<td>007DE7E0</td>
<td>C2C204E4 E2D9F540</td>
<td>27790F2B</td>
<td>01760001</td>
<td>04010000</td>
</tr>
</tbody>
</table>

Each ctrace entry is consistent up through the module ids. After that, each entry has its own format. To identify the fields:

1. Find the halfword module identifier in IXGXMT. This will identify the module name.
2. Browse the module to find the full id, which will identify the label in that module where the trace record was requested.

Formatting system logger dump data

Format an SVC or stand-alone dump with the interactive problem control system (IPCS) LOGGER subcommand to produce diagnostic reports about the system logger. \( \textit{z/OS MVS IPCS Commands} \) gives the syntax of the LOGGER subcommand.

Restarting the system logger address space

If it is necessary to restart the IXGLOGR address space to correct problems or apply maintenance, then the following procedure is recommended:

1. Take action to cause any log stream connectors (exploiters) to disconnect from their log stream(s).
   
   You can use the following commands to identify any connectors and which log streams need attention.
   
   Display LOGGER,C,JOB=*
   Display LOGGER,C,LSN=* 
   
   When there are no log stream connections remaining on the system, IXG601I message output will indicate 'NO MATCHING INFORMATION FOUND.'

2. Issue the command FORCE IXGLOGR,ARM and wait for it to complete (see message IXG67E in \( \textit{z/OS MVS System Messages, Vol 10 (IXC-JZP)} \)).

3. If this restart is to install maintenance, ensure it is applied at this point.
4. Issue the command START IXGLOGRS to restart system logger.
5. Take action to reconnect to log streams as needed.
System logger

Note: The FORCE IXGLOGR,ARM command will cause disconnects for active log stream connections on the system and log stream requests will fail until logger is restarted. Applications with log stream connections may experience outages when system logger is unavailable. Log streams will need to be reconnected when system logger is available to resume operations.

For more information on the START IXGLOGRS command, see "IXGLOGRS - Start the IXGLOGR server address space" on page 24-2. For more information on availability of the IXGLOGR address space, see z/OS MVS Setting Up a Sysplex.

System logger latch conventions

System Logger uses GRS latches to serialize different operations and control resource access. You can use commands from an MVS console to identify what logger latches are held. Use the following commands to display which latches are held by logger:

- D GRS, Latch, Jobname=IXGLOGR
- D GRS,ANALYZE,LATCH,DEPENDENCY,DETAIL
- D GRS,C,LATCH

See "Relevant MVS system commands" on page 24-33 for more details.

Logger uses three distinct types of latches: miscellaneous latches, structure or task latches, and log stream latches. The following table shows the latch set names and latch numbers of the three types of latches.

Table 24-1. Latch types

<table>
<thead>
<tr>
<th>Latch type</th>
<th>Latch set name</th>
<th>Latch number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscellaneous latches</td>
<td>'SYS.IXGLOGER_MISC'</td>
<td>8</td>
</tr>
<tr>
<td>Structure or task latches</td>
<td>'SYS.IXGLOGER_STRUCTURE_LATCH_SET'</td>
<td>1024</td>
</tr>
<tr>
<td>Log stream latches</td>
<td>'SYS.IXGLOGER_LCBIT___CTA:12345678_SLSA:1234'</td>
<td>224 per latch set name</td>
</tr>
</tbody>
</table>

Logger uses different procedures to create and manage these latches:

- Miscellaneous latches:
  - Miscellaneous latches are established when the IXGLOGR address space is initialized.
  - The latch set name contains six latch numbers.
  - Each latch number controls a different logger resource. For example, miscellaneous latch number 7 controls access to the system logger configuration (for example: IXGCNFX parmlib) settings.

- Structure or task latches:
  - Structure or task latches are established when the IXGLOGR address space is initialized.
  - The latch set name contains 1024 latch numbers.
  - There are two sets of latch numbers.
  - Each latch number corresponds to a logger connecting task and its corresponding CTA entry.

- Log stream latches:
System logger

- Log stream latches are established as needed during a log stream connection. When a log stream is associated with a logger connection task, the log is included in the first available latch set name, if any are already established under that connection task.
- Each log stream latch set name is created using the following model:
  
  SYS.IXGLOGER_LCBIT__CTA:12345678_SLSA:1234

  In the model, each log stream latch set name is uniquely identified by a combination of the CTA number and the SLSA number.
- The CTA number identifies which logger connection task holds the latch.
- The SLSA number identifies a unique latch set instance, within the CTA number, for a log stream. For structure-based log streams, there can be up to 16 latch sets per CTA number. For DASDONLY-based log streams, there can be up to two latch sets per CTA number.
- Each log stream latch set contains 224 latch numbers.
- Each log stream has seven latch subtypes.
- Each latch subtype is represented in a range of indexes within the latch set.
Logger associates a log stream name with a latch number for a log stream latch set. When you use the MVS command D GRS,ANALYZE,LATCH,DEPENDEENCY,DETAIL to show global latch contention, use the log stream names to determine the resources that are involved with the latching. The following examples show the outputs by using the D GRS,ANALYZE,LATCH,DEPENDEENCY,DETAIL command:

Sample 1: The output of ISG374I messages from the D GRS,ANALYZE,LATCH,DEPENDEENCY,DETAIL command:

  SY1 d grs,an,latch,depend,detail
  SY1 ISG374I 14.23.53 GRS ANALYSIS 460
  DEPENDENCY ANALYSIS: ENTIRE SYSTEM
  ----- LONG WAITER #1
      JOBNNAME: IXGLOGR (ASID=002B, TCB=0050DE88)
      REQUEST: EXCLUSIVE LT:7F42907800000001
      WAITING 00:01:33 FOR RESOURCE (CREATOR ASID=002B)
      SYS.IXGLOGER_LCBIT__CTA:00000003_SLSA:0001 LST:7F42BD00000000BD
      2:IXGLOGR.SOME.LOG.STREAM
      JOBNNAME: WRITE3 (ASID=0026, TCB=00503A08)
      REQUEST: SHARED LT:7F4290100000002
  ANALYSIS ENDED: THIS UNIT OF WORK IS NOT WAITING

In this example system logger (jobname IXGLOGR) is waiting to get the latch exclusive but another job (WRITE3) holds the latch shared.
- CTA number 3 identifies the third logger task of the structure connection.
- SLSA number 1 is for the second latch set within the logger connecting task 3.
- Latch number 2 is the latch number shared for the log stream named IXGLOGR.SOME.LOG.STREAM.

Sample 2: The output of ISG374I messages from the D GRS,ANALYZE,LATCH,DEPENDEENCY command:

  SY1 d grs,an,latch,depend
  SY1 ISG374I 14.23.48 GRS ANALYSIS 457
  DEPENDENCY ANALYSIS: ENTIRE SYSTEM
  ----- LONG WAITER #1
  WAITTIME JOBNAME E/S CASID LSETNAME/LATCHID
  00:01:28 IXGLOGR *E* 002B SYS.IXGLOGER_LCBIT__CTA:00000003_SLSA T
System logger

Logger recommends the detail display because the regular display truncates a portion of the latch set name.

Sample 3: The output of ISG374I messages from D GRS,ANALYZE,LATCH,DEPENDENCY,DETAIL command

SY1 d grs,an,latch,dependency,detail
SY1 ISG374I 12.55.00 GRS ANALYSIS 553
DEPENDENCY ANALYSIS: ENTIRE SYSTEM
----- LONG WAITER #1
   JOBNAMEx: IXGLOGR (ASID=0015, TCB=005DE408)
   REQUEST: EXCLUSIVE
   LT:7F33A01000000000
   WAITING 00:00:05 FOR RESOURCE (CREATOR ASID=0015)
   SYS.IXGLOGER_LCBIT___CTA:00000324_SLSA:0001 LST:7F33CD000000009D
1:IXGLOGR.DASDONLY.STREAM
   JOBNAMEx: READLOG (ASID=002A, TCB=005D7D90)
   REQUEST: SHARED
   LT:7F33B01000000000
ANALYSIS ENDED: THIS UNIT OF WORK IS NOT WAITING

In this example system logger is waiting for dasdonly log stream IXGLOGR.DASDONLY.STREAM to get exclusive control of latch 1 in latch set SYS.IXGLOGER_LCBIT___CTA:00000324_SLSA:0001 while job READLOG holds the latch shared.

**Associating latch contention with a logger TCB or WEB**

If the logger address space hangs, it might be useful to investigate what latches logger holds. To find out what local latches are being used by system logger, you can either use the D GRS, C command from an MVS console or use the IPCS command IP ANALYZE RESOURCE to format the information in a dump. A sample of a logger latch is as follows:

SYS.IXGLOGER_LCBIT_CTA:00000257_SLSA:0001 ASID=0016 Latch#=11

The CTA number identifies which structure task (IXGWITSK) holds the latch and the ASID identifies the logger (IXGLOGR) address space. The latch number indicates the type of log stream latch that is held.

To find out what processing occurred under the unit of work, follow these steps:

1. Use the IP ANALYZE RESOURCE command to determine the WEB and TCB addresses. The command will generate output in the following format:

   RESOURCE #0018: NAME=SYS.IXGLOGER_LCBIT_CTA:00000257_SLSA:0001 ASID=0016 Latch#=11

   RESOURCE #0018 IS HELD BY:
   JOBNAME=IXGLOGR ASID=0016 WEB=029E4490
   DATA=SHARED RETADDR=86102ABE
   REQID=0000005800000001

   RESOURCE #0018 IS REQUIRED BY:
   JOBNAME=IXGLOGR ASID=0016 TCB=007E8688
   DATA=EXCLUSIVE RETADDR=860BAFC6
   JOBNAME=IXGLOGR ASID=0016 TCB=007F91C8
   DATA=EXCLUSIVE RETADDR=860A70A2

   **Notes:**
   - The RETADDR identifies the latch requestor.
   - The WEB address can be located in an SSRB in the IXGLOGR address space.
The TCB address will match the PTCB in an SSRB in the IXGLOGR address space.

The REQID will match the STOKEN of an RQE.

2. Issue the command

    IP SUMMARY FORMAT REGS JOBNAME(IXGLOGR)

    to find the associated SSRB by searching for the WEB or PTCB address (note
    the linkage stack pointer (LSDP) at +C0). The following is a sample of the
    output from this command:

    LOCAL SUSPENDED SRB QUEUE
    SSRB: 030DA988

    +0000 ID....... 030DA988
    +000C CPAF....... 00000000
    +0014 EPA....... 00000000
    +0020 WEB....... 029E4598
    +0026 HLHI....... 00000000
    +0030 FPR5....... 00000000
    +0044 SAFN....... 0000
    +0054 SAFN....... 0000
    +0058 GP0R....... 00000000
    +0060 GPR2....... FFFFFFFF
    +006C GPR5....... FFFFFFFF
    +0078 GPR8....... FFFFFFFF
    +0084 GPRB....... FFFFFFFF
    +0090 GPRE....... FFFFFFFF
    +0098 CPSW....... 470C0000
    +00A0 CPRT....... 00000000
    +00A8 TIME....... 00000000
    +00B4 ORMT....... 06150B10
    +00C0 LSDP....... 023B5168

3. After locating the SSRB (suspended SRB) in the logger address space using the
    WEB or TCB address, use the following commands to format the linkage stack
    entries (LSE) and identify what processing occurred under that SRB by using
    the LSDP pointer from the SSRB:

    a. IP List LSDP-A0
    b. IP EQ LSE1 X
    c. IP CBF LSE1 STR(LSE)

    LSE: 023B5168

    GENERAL PURPOSE REGISTER VALUES
    00-03.... 25D663D4
    04-07.... 00000000
    08-11.... 25F59A50
    12-15.... 06147DA0
    16-19.... 00000317
    20-23.... 00000000
    24-27.... 00000000
    28-31.... 00000000
    32-35.... 00000000
    36-39.... 00000000
    40-43.... 00000000
    44-47.... 00000000
    48-51.... 00000000
    52-55.... 00000000
    56-59.... 00000000
    60-63.... 00000000
    64-67.... 00000000
    68-71.... 00000000
    72-75.... 00000000
    76-79.... 00000000
    80-83.... 00000000
    84-87.... 00000000
    88-91.... 00000000
    92-95.... 00000000
    96-99.... 00000000
    100-103.. 00000000
    104-107.. 00000000
    108-111.. 00000000
    112-115.. 00000000
    116-119.. 00000000
    120-123.. 00000000
    124-127.. 00000000
    128-131.. 00000000
    132-135.. 00000000
    136-139.. 00000000
    140-143.. 00000000
    144-147.. 00000000
    148-151.. 00000000
    152-155.. 00000000
    156-159.. 00000000
    160-163.. 00000000
    164-167.. 00000000
    168-171.. 00000000
    172-175.. 00000000
    176-179.. 00000000
    180-183.. 00000000
    184-187.. 00000000
    188-191.. 00000000
    192-195.. 00000000
    196-199.. 00000000
    200-203.. 00000000
    204-207.. 00000000
    208-211.. 00000000
    212-215.. 00000000
    216-219.. 00000000
    220-223.. 00000000
    224-227.. 00000000
    228-231.. 00000000
    232-235.. 00000000
    236-239.. 00000000
    240-243.. 00000000
    244-247.. 00000000
    248-251.. 00000000
    252-255.. 00000000

LOGGER subcommand output

Use the LOGGER subcommand to diagnose errors in the system logger address space. The dump must include the system logger private storage. Status is provided for:

- the state of the address space
- the coupling facility structures in use by system logger
System logger

- log streams and log stream connections
- the logger tasks (TCBs)
- queued work (RQEs)
- stack information
- logger module names and addresses

Use IPCS LOGGER in conjunction with the MVS command D LOGGER or IXCMIAPU TYPE(LOGR) DETAIL(YES) report to provide supporting diagnostic information. The IPCS LOGGER subcommand has no parameters.

The following is an example of a LOGGER report:

<table>
<thead>
<tr>
<th>System Logger Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>LOGR Couple Dataset Level: HBB6603</td>
</tr>
<tr>
<td>System Logger Asid: 0014</td>
</tr>
<tr>
<td>System Logger state information</td>
</tr>
<tr>
<td>Available</td>
</tr>
<tr>
<td>Ctrace is active</td>
</tr>
<tr>
<td>System level recovery performed</td>
</tr>
<tr>
<td>Couple Dataset available</td>
</tr>
<tr>
<td>SMS has been checked</td>
</tr>
</tbody>
</table>

Report for Generalized tasks

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>BLF01 Tcb Address 007E2B68</td>
</tr>
<tr>
<td>BLF01 Request Que 00000000</td>
</tr>
<tr>
<td>Waiting For work</td>
</tr>
<tr>
<td>WORKT Tcb Address 007E2480</td>
</tr>
<tr>
<td>WORKT Request Que 00000000</td>
</tr>
<tr>
<td>Waiting For work</td>
</tr>
<tr>
<td>FITTT Tcb Address 007E2220</td>
</tr>
<tr>
<td>FITTT Request Que 00000000</td>
</tr>
<tr>
<td>Waiting For work</td>
</tr>
<tr>
<td>AITSK Tcb Address 007E2900</td>
</tr>
<tr>
<td>AITSK Request Que 05823880</td>
</tr>
<tr>
<td>Processing work or initializing</td>
</tr>
<tr>
<td>MITSK Tcb Address 007E1E88</td>
</tr>
<tr>
<td>MITSK Request Que 00000000</td>
</tr>
<tr>
<td>Waiting For work</td>
</tr>
<tr>
<td>AJHSM Tcb Address 007E2740</td>
</tr>
<tr>
<td>AJHSM Request Que 00000000</td>
</tr>
<tr>
<td>Waiting For work</td>
</tr>
<tr>
<td>LITSK Tcb Address 007E1A60</td>
</tr>
<tr>
<td>LITSK Request Que 05824040</td>
</tr>
<tr>
<td>Processing work or initializing</td>
</tr>
<tr>
<td>LSTSK Tcb Address 007E1700</td>
</tr>
<tr>
<td>LSTSK Request Que 05823B20</td>
</tr>
<tr>
<td>Processing work or initializing</td>
</tr>
</tbody>
</table>
THE Following Requests Are Queue to ALLOC

REQUEST: 05823880
  Function. 00000004 STOKEN... 00000050 00000001 STATE.... 00000000
  ASID(X'0014')

THE Following Requests Are Queue to INVENTORY
REQUEST: 05824840
  Function. 0000002B STOKEN... 00000000 00000000 STATE.... 00000000
REQUEST: 05822E00
  Function. 00000001 STOKEN... 00000080 00000001 STATE.... 22222222
  ASID(X'0020')

THE Following Requests Are Queue to LSTSK
REQUEST: 05823B20
  Function. 00000006 STOKEN... 00000000 00000000 STATE.... 00000000

Report for Connection subtask:

CTA: 05800008
    Structure Latch 05A50CE8
    Tcb Address 007E1408
    Connection Sequence 00000001
    Failure Count 00000000
    Structure Sequence 00000000
    Initialized
    Allocated
    TaskAttached
    Associated

Register Information for Stack Entry 01 of 02

Ep Name: IXGWITSK addr: 03D17368 in Module: IXGWITSK addr: 03D17368

GENERAL PURPOSE REGISTER VALUES
  0-3  05858ABC 05A5215C 00000058 00000000
  4-7  05A51F1E 01599228 058230A0 05800000
  8-11 01599000 00000058 00000000 03D18367
  12-15 03D17368 05A52018 83D18264 83D1C810

ACCESS REGISTER VALUES
  0-3  007E2B68 00000000 00000000 00000000
  4-7  00000000 00000000 00000000 00000000
  8-11 00000000 00000000 00000000 00000000
  12-15 00000000 00000000 00000000 00000000

Register Information for Stack Entry 02 of 02

Ep Name: IXGC4DIS addr: 03D1C810 in Module: IXGC4DIS addr: 03D1C810

GENERAL PURPOSE REGISTER VALUES
  0-3  06050003 03D020768 83B08360 00000000
  4-7  05A52A0C 03D020E8 05A52AE4 05A520E4
  8-11 015A08C0 03D1F80D 03D2080C 03D1E80E
  12-15 015A28C0 00FD2330 03D1D80F 03D1C810

ACCESS REGISTER VALUES
  0-3  007E2B68 00000000 00000000 00000000
  4-7  00000000 00000000 00000000 00000000
  8-11 00000000 00000000 00000000 00000000
  12-15 00000000 00000000 00000000 00000000

EcbList: 05A50B60
  Count.... 00000002
  Ecb@..... 05800028 Ecb@..... 0582509C
System logger

ECB: 05800028
  00000000
  Is being processed
ECB: 0582509C
  40000000
  Posted
  Is being processed

Report For Structure: LIST03 Conname: IXGLOGR_SY2

STRCB: 0581C0F8
Structure Information:
  Asynchronous Write Count 0000
  Current Connect Token C9E7C3D3 D6F0F0F2 7F6D9308 00010004
  Saved rebuild Conn Token C9E7C3D3 D6F0F0F2 7F6D9308 00010004
Structure Status:
  Structure is connected
  Structure is allocated
  Structure is failure isolated
  Structure FULL
  Non-Volatile
  PreRebuild was failure Independent
  Structure is failure Independent
  Disconnect Normal
Rebuild Status:
  A rebuild is not in progress
Report for Logstream: IXJRME36.STREAM3

LCB: 05806998

DSSEQ.... A0000000
  Config2 Logstream
  Logstream Available
  DUPLEX=YES
  DUPLEXMODE=COND
  SMF Buffer available
  RMNAME specified on define
  Resource manager connected
  Structure Full
  Store In mode
Report for Logstream Connector in: ASID(X'0022')

LCCB: 0581BA78
Sequence Number 0000001B
Asynchronous Events Count 00000000
Connectors Ttoken 00000088 00000001 0000000D 007E1200

Read and Write Authorization

Report for Logstream Connector in: ASID(X'0017')

LCCB: 0581F468
Sequence Number 00000019
Asynchronous Events Count 00000000
Connectors Ttoken 0000005C 00000004 00000003 007E1B68

Report for Logstream Connector in: ASID(X'0042')

LCCB: 0581F708
Sequence Number 00000012
Asynchronous Events Count 00000000
Connectors Ttoken 00000010 00000001 00000005 007E15B8

Report for Logstream: IXJRME36.STREAM1

LCB: 05806278
DSSEQ......

Config2 Logstream
Logstream Available
DUPLEX= YES
SMF Buffer available
RMNAME specified on define
disconnect waiting for wow
Disconnect Pending
Store Thru mode

Report for LOGGER Modules:
Ep Name: IXGAIMM at address: 06119C20 Csect: IXGAIMM at address: 06119C20
Ep Name: IXGAIMM9 at address: 06119F70 Csect: IXGAIMM at address: 06119C20
Ep Name: IXGAIAFP at address: 0609BB48 Csect: IXGAIAFP at address: 0609BB48
Ep Name: IXGAIAF9 at address: 0609BCF8 Csect: IXGAIAFP at address: 0609BB48
Ep Name: IXGAIALC at address: 061221C0 Csect: IXGAIALC at address: 061221C0
Ep Name: IXGAIAL9 at address: 061225D8 Csect: IXGAIALC at address: 061221C0
Ep Name: IXGAIAUS at address: 0609CB38 Csect: IXGAIAUS at address: 0609CB38
Ep Name: IXGAIAU9 at address: 0609D3A0 Csect: IXGAIAUS at address: 0609CB38

Relevant MVS system commands

The list below provides a subset of MVS system commands that can be useful diagnostic aids when the system logger encounters a problem. For a full description of these commands, and a complete list of all MVS system commands, see z/OS MVS System Commands.

- D GRS,Latch,Jobname=IXGLOGR
to show all latches held by logger address space.
- D GRS,ANALYZE,LATCH,DEPENDENCY,JOBNAME=IXGLOGR,DETAIL
System logger

to show the dependencies of all latch sets created in the logger address space. See the “System logger latch conventions” on page 24-26 topic for a description of logger latches.

- D GRS,RES=(SYSZLOGR,*)
  to show ENQs that are held by the logger. The major name is SYSZLOGR. The minor name contains the log stream name.

- D GRS,C
  to show any latch or ENQ contention. **Tip:** The preferred method of trying to determine ENQ contention is D GRS,ANALYZE,BLOCKER and latch contention is D GRS,ANAYLZE,LATCH,BLOCKER,DETAIL.

- D GRS,RNL=A
  to show additional RNL information.

- D XCF,STR
  to display summary information about all coupling facility structures that are in the sysplex.

- D XCF,STR,STRNAME=logger_structure
  to show details of the specified logger structure.

- D XCF,COUPLE,TYPE=LOGR
  to display LOGR couple data set details.

- D TRACE,COMP=SYSLOGR
  to display the component trace status of system logger.

- D LOGGER,options

- SETLOGR FORCE
  to clean up logstream resources related to a system logger logstream when the logstream becomes unusable. Logger will attempt to release all the related resources for the logstream based on the request.

- FORCE IXGLOGR,ARM
  to take down the logger address space. Do not use CANCEL or FORCE without specifying ARM.

- START IXGLOGRS
  to bring up the system logger address space.

- D A,IXGLOGR
  to display the system logger address space.

- D LOGREC
  to display information about the logrec log stream.

- D C,HC
  to display information about the operlog log stream.

---

**Relevant IPCS commands**

The following IPCS commands can be particularly useful for displaying the information in a system logger dump. For a full description of these commands, see [z/OS MVS IPCS Commands](https://www.ibm.com/support/knowledgecenter/SSDHitm_2.2.0/com.ibm.zos.r22.sdc.doc/actual/trace traces and report procedures.ibm.zos.r22.sdc.doc/actual/trace traces and report procedures).

- IP CTRACE COMP(SYSLOGR) FULL OPTIONS(options)
to format LOGR ctrace, if the dataspace was dumped and ctrace was running.

- IP ANALYZE RESOURCE
  to identify Latch or ENQ contention.

- IP VERBX LOGDATA
  to format the logrec buffer records that were in storage when the dump was generated.

- IP LOGGER
  to format data in the system logger address space.

- IP CBF address STR(control block)
  to format and display any of the following logger control blocks:
    - IXGARTE
    - IXGBFTK
    - IXGBLK1
    - IXGDMTK
    - IXGDRCT
    - IXGINV
    - IXGLBCB
    - IXGLCB
    - IXGLCCB
    - IXGLSAB
    - IXGPCNTL
    - IXGRQE
    - IXGSTRCB

- IP CBF address STR(LSE)
  to format linkage stack entries.

- IP CBF address FORMAT(IXGIPSTK)
  to format a logger stack address. IP LOGGER uses this command internally.
System logger
Chapter 25. Subsystem Interface (SSI)

This topic contains the following diagnosis information for the subsystem interface (SSI):
- “Formatting SSI Dump Data.”

Formatting SSI Dump Data

Format the SVC or stand-alone dump with the IPCS SSIDATA subcommand to produce diagnostic reports about the SSI. [z/OS MVS IPCS Commands](#) gives the syntax of the SSIDATA subcommand.

SSIDATA subcommand output

The SSIDATA subcommand displays information about subsystems defined to the SSI, including:
- The number of subsystems defined to the SSI
- The subsystem name
- Whether the subsystem is the primary subsystem
- Whether the subsystem is dynamic
- The status of the subsystem
- Whether the subsystem accepts or rejects the SETSSI command
- The function routines that the subsystem supports

The following is an example of an SSIDATA report:
### Summary Report for SSIDATA

NUMBER OF DEFINED SUBSYSTEMS = 4  
ADDRESS OF SUBSYSTEM REQUEST ROUTER = 80B75038

**SUBSYS = XYZ (PRIMARY)**
- **DYNAMIC = YES**  
- **STATUS = ACTIVE**  
- **COMMANDS = NO**

**SUBSYSTEM DEFINITION DATA**
- **SSCVT ADDRESS = 00B25C2C**
- **USER FIELD 1 = 00B0B7D0**  
- **USER FIELD 2 = 00B0B7C0**

**SUBSYSTEM VECTOR TABLE DATA**
- **TOKEN = N/A**
- **ADDRESS = 00B0B270**
- **STATUS = ACTIVE**

**FUNCTIONS**
- 1  
- 2  
- 3  
- 4  
- 5  
- 6

---

**SUBSYS = NEW1**
- **DYNAMIC = YES**  
- **STATUS = ACTIVE**  
- **COMMANDS = YES**

**SUBSYSTEM DEFINITION DATA**
- **SSCVT ADDRESS = 00B25CE0**
- **USER FIELD 1 = 00000000**  
- **USER FIELD 2 = 00000000**

**SUBSYSTEM VECTOR TABLE DATA**
- **TOKEN = D1FE96D9**
- **ADDRESS = 04324160**
- **STATUS = INACTIVE**

**FUNCTIONS**
- 4  
- 10  
- 50  
- 7  
- 16  
- 17  
- 38  
- 39

---

**SUBSYS = ABC**
- **DYNAMIC = NO**  
- **STATUS = ACTIVE**  
- **COMMANDS = N/A**

**SUBSYSTEM DEFINITION DATA**
- **SSCVT ADDRESS = 00B25C08**
- **USER FIELD 1 = 00000000**  
- **USER FIELD 2 = 00000000**

**SUBSYSTEM VECTOR TABLE DATA**
- **TOKEN = N/A**
- **ADDRESS = 00B25A58**
- **STATUS = ACTIVE**

**FUNCTIONS**
- 4  
- 5  
- 6  
- 8  
- 9  
- 10

---

**SUBSYS = EFGH**
- **DYNAMIC = NO**  
- **STATUS = INACTIVE**  
- **COMMANDS = N/A**

**SUBSYSTEM DEFINITION DATA**
- **SSCVT ADDRESS = 00B25C74**
- **USER FIELD 1 = 00000000**  
- **USER FIELD 2 = 00000000**

---

The following fields appear in the output:

**SUBSYS**=subsysname
- The subsystem name. It is 1- to 4-characters long. The first reported subsystem is normally the primary subsystem.

**DYNAMIC=ddd**
- Indication of whether the subsystem responds to dynamic SSI service requests. To be dynamic, the subsystem must have been added using the dynamic SSI services.

- **ddd** is one of the following:
  - **YES**  
    - The subsystem responds to dynamic SSI service requests.
NO The subsystem does not respond to dynamic SSI service requests.

See [z/OS MVS Using the Subsystem Interface](/z/OS MVS Using the Subsystem Interface) for information on dynamic SSI service requests.

**STATUS**

The status of the subsystem, which is one of the following:

- **ACTIVE** The subsystem is active. It accepts function requests directed to it by the SSI.
- **INACTIVE** The subsystem is inactive. It does not accept function requests directed to it by the SSI.

**COMMANDS**

Indicates whether the subsystem accepts dynamic SSI commands. A dynamic subsystem can enable or disable all SSI commands, except the ADD command.

- **YES** The subsystem accepts SETSSI commands.
- **NO** The subsystem rejects SETSSI commands (with the exception of the add command).
- **N/A** The subsystem is not dynamic.

**USER FIELD1**

User field that contains stored information about the associated subsystem. This field corresponds to the SUBDATA1 field that is used by the IEFSSI PUT and GET macro services. If the user field is not set, it contains hexadecimal zeros.

**USER FIELD2**

User field that contains stored information about the associated subsystem. This field corresponds to the SUBDATA2 field that is used by the IEFSSI PUT and GET macro services. If the user field is not set, it contains hexadecimal zeros.

**ADDRESS**

Address of the active subsystem vector table (SSVT). If the SSVT is not active, the address is not displayed.

**FUNC**

A list of all the function codes to which the subsystem responds. The function codes are separated by blanks. If there are too many function codes in the list to fit on the line, the list is continued on the next line.

This field contains NONE if no function codes are supported by the subsystem or if the subsystem is inactive.

**SSIDATA subcommand messages**

The following messages may be issued in response to the SSIDATA subcommand:

- SSIDATA warning conditions detected
- SSIDATA processing terminated - necessary storage not in dump
- SSIDATA processing terminated - internal error
- Subsystem information incomplete - storage not in dump
- Subsystem added out of sequence - appears before the primary subsystem
- Errors found in subsystem data - possible storage overlay
Subsystem Interface
Chapter 26. Workload Manager (WLM)

This topic contains the following diagnosis information for the workload manager (WLM):

- "Requesting WLM dump data."
- "Formatting WLM dump data."
- "WLMDATA report header" on page 26-2.
- "WLMDATA status report" on page 26-4.
- "WLMDATA policy report" on page 26-20.
- "WLMDATA server manager report" on page 26-43.
- "WLMDATA scheduling environment report" on page 26-60.
- "WLMDATA Coupling Facility manager report" on page 26-70.
- "WLMDATA contention report" on page 26-87.

**Requesting WLM dump data**

Format an SVC or stand-alone dump.

**Formatting WLM dump data**

Format the SVC or stand-alone dump with the IPCS WLMDATA subcommand to produce diagnostic reports about WLM. z/OS MVS IPCS Commands gives the syntax of the WLMDATA subcommand and z/OS MVS IPCS User’s Guide explains how to use the WLMDATA option.

WLMDATA divides information about WLM into three reports. Each report corresponds to the following WLMDATA keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS</td>
<td>Information about WLM status for systems in the sysplex.</td>
<td>&quot;WLMDATA status report&quot; on page 26-4</td>
</tr>
<tr>
<td>POLICY</td>
<td>Information about the service policy</td>
<td>&quot;WLMDATA policy report&quot; on page 26-20</td>
</tr>
<tr>
<td>WORKMANAGER</td>
<td>Information about work associated with the work managers using workload management services.</td>
<td>&quot;WLMDATA WORKMANAGERr report&quot; on page 26-26</td>
</tr>
<tr>
<td>QUEUEMANAGER</td>
<td>Information about work associated with the queue managers using workload management services.</td>
<td>&quot;WLMDATA queue manager report&quot; on page 26-31</td>
</tr>
<tr>
<td>SERVERMANAGER</td>
<td>Information about work associated with the server managers using workload management services.</td>
<td>&quot;WLMDATA server manager report&quot; on page 26-43</td>
</tr>
<tr>
<td>SCHENV</td>
<td>Information about scheduling environments.</td>
<td>&quot;WLMDATA scheduling environment report&quot; on page 26-60</td>
</tr>
</tbody>
</table>
## Workload Manager

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFMANAGER</td>
<td>Information about Coupling Facility Manager processing.</td>
<td>“WLMDATA Coupling Facility manager report” on page 26-70</td>
</tr>
<tr>
<td>CONTENTION</td>
<td>Information about resource contention topology function.</td>
<td>“WLMDATA contention report” on page 26-87</td>
</tr>
</tbody>
</table>

All WLMDATA reports contain a standard header. "WLMDATA report header" describes the information contained in the header.

For each report type, you can select one or more of the following levels:

- **SUMMARY**
  Displays summary information for each requested report type. SUMMARY is the default if no level is specified.

- **EXCEPTION**
  Displays diagnostic information for error or exceptional conditions for each requested report type.

- **DETAIL**
  Displays detailed information for each requested report type.

### WLMDATA report header

The Header Report is a prefix to all other reports provided by the WLMDATA command. It appears regardless of the WLMDATA options that are selected.

The selected WLMDATA options are displayed, followed by various status pertinent to all reports.
***** WLMDATA (WORKLOAD MANAGEMENT) REPORT *****

Options selected:

Report(s).............. STATUS
POLICY
WORKMANAGER
SERVERMANAGER
QUEUEMANAGER
SCHENV
CFMANAGER
CONTENTION

Level(s) of detail..... SUMMARY

Filter(s) in use....... NONE
SYSNAME
ASID
SUBSYSTYPE
SUBSYSNAME

WLM address space ID...... X'000B'
Sysplex name.............. PLEX1
System name.............. ENTWIS1

Fields displayed in this report include:

Report(s)
One or more of the following report types:
STATUS
POLICY
WORKMANAGER
SERVERMANAGER
QUEUEMANAGER
SCHENV
CFMANAGER
CONTENTION

Level(s) of detail
The level of detail in the report. Each report type is processed at each of the
selected levels of detail. Level is one or more of the following:
SUMMARY
DETAIL
EXCEPTION

WLM address space ID
The address space identifier (ASID) of the WLM address space, displayed in
hexadecimal. This field contains the contents of the WMVTASID field.

Sysplex name
The name of the sysplex in which the system was running. This field contains
the contents of the ECVTSPLEX field.

System name
The name of the system on which the dump was taken.
WLMDATA status report

The Status Report provides an overview of information that is pertinent to sysplex processing for WLM. The Status Report information is returned when the STATUS keyword is given on the WLMDATA subcommand. Various refinements of the Status Report information can be done by specifying either SUMMARY, DETAIL or EXCEPTION. For display processing the Status Report information can be displayed in any particular order.

When selecting the Status Report further filtering of the data can occur using the following keywords:

- Sysname

Sysname provides the capability to filter the Status Reports down to a specific system name.

STATUS summary report

***** STATUS SUMMARY REPORT *****

Global WLM Sysplex Manager Information
--------------------------------------

Maximum number of systems.................... 32

WLM Function Information
------------------------

Sysplex Communications Management
Status.................................... Open

Administrative Policy Management
Status.................................... Open

Performance Data Management
Status.................................... Open

Device Clustering Management
Status.................................... Open

Server Environment Management
Status.................................... Open

Workload Balancing Management
Status.................................... Open

Scheduling Environment Management
Status.................................... Open

WLM System Information
----------------------

System....................................... DAVEB9

Status Data
WLM state.............................. Active
Mode................................... Goal
Policy name............................ POLICY2
Policy activation time................. 08/04/1996 14:29:14

System....................................... DAVEB2

Status Data
WLM state.............................. Active
Mode................................... Goal
Policy name............................ POLICY2
Policy activation time................. 08/04/1996 14:29:14
The fields in the report are listed below each subheading.

**Global WLM Sysplex Manager Information**
- The global sysplex management information section represents data that is global to all sysplex processing done by the WLM sysplex manager.

**Maximum number of systems**
- This value represents the maximum number of systems that can exist in the sysplex.

**WLM Function Information**
- The function information section represents data that is unique for a WLM subcomponent that is using the WLM sysplex manager services.

**Sysplex Communications Management**
**Administrative Policy Management**
**Performance Data Management**
**Device Clustering Management**
**Server Environment Management**
**Workload Balancing Management**
**Scheduling Environment Management**
- The status for each function is one of the following:

  **Status**
  - In the above example the parameter value for the status item is Open. The parameter value for status can be any of the following:

    **CLOSED**
    - Indicates that the function is not operational.

    **OPEN**
    - Indicates that the function has initialized and is fully operational.

    **QUIESCING**
    - Indicates that the function is OPEN, however the function has been notified to quiesce further multisystem activities.

    **QUIESCED**
    - Indicates that the function is not operational, i.e. CLOSED, due to quiescing of multisystem activities.

    **SUSPENDED**
    - Indicates that the function is not operational, i.e. CLOSED, and that the task associated with the function has been placed into a wait because the function has attempted an OPEN.

**WLM System Information**
- The system information section represents data that is unique for each system that is being handled by the WLM sysplex manager.

**System**
- The value of this field is the name of the system being displayed. Note that starting at the system name field each system name section is duplicated for every system known to WLM.

**Status Data**
- Header displayed that groups related information for a system concerning status data.

**WLM state**
- The value of this field is one of the following:
Workload Manager

**Undefined**
Indicates that no WLM state exists.

**Initializing**
Indicates that WLM is in the process of initializing; cross-system communications capability exists, however, WLM is not fully functional yet.

**Active**
Indicates that WLM has completed initialization and is fully functional, operating in the workload management mode contained in the checkpointed information associated with the member; this state also indicates that all other instances of WLM are aware of this member and using the same active service policy.

**Independent**
Indicates that WLM has completed initialization and is fully functional, operating in the workload management mode contained in the checkpointed information associated with the member; this state also indicates that this instance of WLM is not synchronized with other instances of WLM within the sysplex, either because
- There is no couple data set for WLM,
- There is no connectivity to the couple data set for WLM in use by WLM on other systems,
- There is connectivity to the couple data set for WLM, however the data set does not contain a valid active service policy record, or
- Instantiation of the active service policy failed.

**Quiescing**
Indicates that WLM is in the process of an orderly shutdown on behalf of XCF sysplex partitioning; further communication with WLM from other systems should be suspended.

**In_xsr**
Indicates that WLM is inactive, that the termination was not orderly, and that some other instance of WLM is currently performing recovery actions on behalf of this instance of WLM; while in this state, the name of the WLM instance performing cross-system recovery may be found in the checkpointed information associated with this member.

**Reset**
Indicates that WLM is inactive and that it either terminated through an orderly shutdown (previous state was QUIESCING) or that cross-system recovery actions have been completed (previous state was IN-XSR); this state indicates that no recovery latches are held by this member.

**Unknown**
Indicates that invalid state information about a given WLM instance was presented to other active WLM instances; this state indicates that state error processing has been initiated to determine the true state.

**Incorrect**
Indicates an incorrect WLM state. If this is shown, the WLM state is in error.

**Mode**
The value of this field is the WLM mode in effect.

**Goal**
Indicates that goal mode is set.
Incorrect
Indicates that the mode is incorrect.

Policy name
The name of the service policy in effect on this system. This field contains blanks if the WLM mode is not available (UNDEFINED).

Policy activation date and time
The date and time when the service policy went into effect is represented by this item. Use date and time of policy activation in MM/DD/YYYY and HH:MM:SS format.

STATUS exception report
This report displays dump output messages and a hexadecimal dump of each data area that received a validity check, failure, or warning. IBM might request this information for problem determination. Fields displayed in the report include:

reason
The reason code associated with the error. The format of the reason code is aaxxbbc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected.

Control block address
The address of the control block in error.

ASID
The address space identifier (ASID) in hexadecimal where the control block exists.

STATUS detail report
This report is explained in the following parts:
- Global WLM Sysplex Manager Information
- WLM Function Information
- WLM System Information.
Global WLM sysplex manager information

The global sysplex management information section represents data that is global to all sysplex processing done by the WLM sysplex manager. The fields in this part of the report include:

Maximum number of systems
This value represents the maximum number of systems that can exist in the sysplex.

Global Sysplex Management Flags
This header is displayed if any of the global sysplex management flags are set. The possible flags are:

- **Quiesce in progress** - Indicates that the current system's WLM member is in the process of quiescing due to XCF determining that the member should be placed into a XCF quiesce state.
- **Quiesce completed** - Indicates that the current system's WLM member has completed the quiesce process.
- **Maintenance timer set** - Indicates that the Sysplex Communications Management maintenance timer is in effect.
- **Monitor timer set** - Indicates that the Sysplex Communications Management monitor timer is in effect.

Time that this member joined the WLM group
This value represents the time that this system's WLM joined the WLM XCF group.

The time is displayed as:
- mm/dd/yyyy hh:ss
  - mm - month
  - dd - day
  - yyyy - year
  - hh - hours
  Hours presented from 01 to 24.
Cross System Recovery Data
This header is displayed if cross system recovery processing is in effect.

Cross System Recovery flags
This header is displayed if any of the cross system recovery flags are set. The possible flags are:

Cross system recovery in progress
Cross system recovery process has been started for system specified by System field below.

Cross system recovery time interval set
Cross system recovery time interval set to check for cross system recovery concerns at a later time.

Cross system recovery has issued successful ENQ for another
Cross system recovery has issued a successful ENQ for the system specified by the System field below.

System
This value indicates which system is being processed for cross system recovery.

Latches being handled
This value represents in hexadecimal the recovery latches that are being handled by WLM cross system recovery on the current system.

Policy activation in progress latch being handled
This line indicates that the policy activation in progress latch is being handled during cross system recovery processing.

WLM function information
The function information section represents data that is unique for a WLM subcomponent that is using the WLM sysplex manager services. The example shows the information displayed for the Sysplex Communication Management subcomponent, the same information is also displayed for:

- Administrative Policy Management
- Performance Data Management
- Device Clustering Management
- Server Environment Management
- Workload Balancing Management
- Scheduling Environment Management

WLM Function Information
------------------------
Sysplex Communications Management
Status.......................... Open
Time that this function had state set..... 08/04/1996 18:02:07
Message Object Anchors
First pending response object........... 00000000
Last pending response object........... 00000000
First message object................... 00000000
Last message object.................... 00000000
Message Counts
Number of messages sent.............. 27
Number of messages received.......... 0
Number of acknowledgements received.... 0
Sysplex Communications Management Status
Header displayed for the Sysplex Communications Management function in WLM.

Status
In the above example the parameter value for the status item is Open. Status can be any of the following:
- CLOSED
  Indicates that the function is not operational.
- OPEN
  Indicates that the function has initialized and is fully operational.
- QUIESCING
  Indicates that the function is OPEN, however the function has been notified to quiesce further multisystem activities.
- QUIESCED
  Indicates that the function is not operational, i.e. CLOSED, due to quiescing of multisystem activities.
- SUSPENDED
  Indicates that the function is not operational, i.e. CLOSED, and that the task associated with the function has been placed into a wait because the function has attempted an OPEN.

Time that this function had state set
This value represents the time that this function had its state set. The state that is set is represented by the Status field that precedes this line.

The time is displayed as:
- mm/dd/yyyy hh:xx:ss
  - mm - month
  - dd - day
  - yyyy - year
  - hh - hours
    Hours presented from 01 to 24.
  - xx - minutes
  - ss - seconds

Message Object Anchors
This header indicates that the following anchor fields represent pointers to message objects. The pointer fields are:

First pending response object
  Represents the pointer to the first pending response object for this function.

Last pending response object
  Represents the pointer to the last pending response object for this function.

First message object
  Represents the pointer to the first message object for this function.

Last message object
  Represents the pointer to the last message object for this function.

Message Counts
This header indicates that the following fields represent counts of messages being sent or received
Number of messages sent
Represents the number of messages sent by this function to its corresponding function on another WLM in the system.

Number of messages received
Represents the number of messages received by this function from its corresponding function on another WLM in the system.

Number of acknowledgements received
Represents the number of acknowledgement type messages received by this function from its corresponding function on another WLM in the system.

Administrative Policy Management
Header displayed for the Administrative Policy Management function in WLM.

Status
In the above example the parameter value for the status item is Open. Status can be any of the following:
• CLOSED
  Indicates that the function is not operational.
• OPEN
  Indicates that the function has initialized and is fully operational.
• QUIESCING
  Indicates that the function is OPEN, however the function has been notified to quiesce further multisystem activities.
• QUIESCED
  Indicates that the function is not operational, i.e. CLOSED, due to quiescing of multisystem activities.
• SUSPENDED
  Indicates that the function is not operational, i.e. CLOSED, and that the task associated with the function has been placed into a wait because the function has attempted an OPEN.

Time that this function had state set
This value represents the time that this function had its state set. The state that is set is represented by the Status field that precedes this line.

The time is displayed as:
• mm/dd/yyyy hh:xx:ss
  – mm - month
  – dd - day
  – yyyy - year
  – hh - hours
  Hours presented from 01 to 24.
  – xx - minutes
  – ss - seconds

Message Object Anchors
This header indicates that the following anchor fields represent pointers to message objects.

First pending response object
Represents the pointer to the first pending response object for this function.

Last pending response object
Represents the pointer to the last pending response object for this function.
First message object
Represents the pointer to the first message object for this function.

Last message object
Represents the pointer to the last message object for this function.

Message Counts
This header indicates that the following fields represent counts of messages being sent or received:

Number of messages sent
Represents the number of messages sent by this function to its corresponding function on another WLM in the system.

Number of messages received
Represents the number of messages received by this function from its corresponding function on another WLM in the system.

Number of acknowledgements received
Represents the number of acknowledgement type messages received by this function from its corresponding function on another WLM in the system.

Performance Data Management
Header displayed for the Performance Data Management function in WLM.

Status
In the above example the parameter value for the status item is Open. Status can be any of the following:

- CLOSED
  Indicates that the function is not operational.

- OPEN
  Indicates that the function has initialized and is fully operational.

- QUIESCING
  Indicates that the function is OPEN, however the function has been notified to quiesce further multisystem activities.

- QUIESCED
  Indicates that the function is not operational, i.e. CLOSED, due to quiescing of multisystem activities.

- SUSPENDED
  Indicates that the function is not operational, i.e. CLOSED, and that the task associated with the function has been placed into a wait because the function has attempted an OPEN.

Time that this function had state set
This value represents the time that this function had its state set. The state that is set is represented by the Status field that precedes this line.

The time is displayed as:

- mm/dd/yyyy hh:xx:ss
  - mm - month
  - dd - day
  - yyyy - year
  - hh - hours
    Hours presented from 01 to 24.
  - xx - minutes
  - ss - seconds
Message Object Anchors
This header indicates that the following anchor fields represent pointers to message objects.

First pending response object
Represents the pointer to the first pending response object for this function.

Last pending response object
Represents the pointer to the last pending response object for this function.

First message object
Represents the pointer to the first message object for this function.

Last message object
Represents the pointer to the last message object for this function.

Message Counts
This header indicates that the following fields represent counts of messages being sent or received:

Number of messages sent
Represents the number of messages sent by this function to its corresponding function on another WLM in the system.

Number of messages received
Represents the number of messages received by this function from its corresponding function on another WLM in the system.

Number of acknowledgements received
Represents the number of acknowledgement type messages received by this function from its corresponding function on another WLM in the system.

WLM system information
The system information section represents data that is unique for each system that is being handled by the WLM sysplex manager.
### WLM System Information

<table>
<thead>
<tr>
<th>System</th>
<th>DAVEB9</th>
</tr>
</thead>
</table>

#### System Data
- **Time of last system state change**: 08/04/1996 18:02:06
- **Time of last member communications**: 08/04/1996 18:35:06
- **System token**: 02000003
- **System state**: Active

#### System Data Flags
- System section in use
- Member section in use

#### Member Data
- **Member name**: DAVEB9
- **Member token**: 0200000300040002
- **Time of last member state change**: 08/04/1996 18:35:06
- **Member state**: Active

#### Member Data Flags
- Error encountered for member state resynchronization
- IXCTERM issued for this system as part of resynch state resynchronization processing
- Cross system recovery in progress

#### Resynchronization Action Flags
- WLM state query is required for this system
- WLM state verification is required for this system
- WLM resynch state resynchronization is required for this system

#### Resynch State Resynchronization Service Flags
- Message send processing reached retry limit
- Member information could not be resynched
- Third interval processing of pending objects occurred

#### WLM Reset Service Flags
- System reset due to system partitioning
- System reset due to initializing first time processing
- System reset due to reinitialization processing
- System reset due to cross system recovery processing

#### MVS Level
- xx

#### Service Level
- xx

#### Status Data
- **WLM state**: Active
- **Mode**: Goal

#### Cross System Recovery Information
- **Copy of state prior to recovery**: Independent
- **Name of system performing recovery**: POLICY2
- **Recovery Latches**: 0000000000000000
- **Policy name**: POLICY2
- **Policy activation time**: 08/04/1996 14:29:14

#### Communications Data
- **Message Object Anchors**
  - First pending object: 00000000
  - Last pending object: 00000000
  - First message object: 00000000
  - Last message object: 00000000

#### Message Counts
- **Number of messages sent**: 33
- **Number of messages received**: 0
- **Number of acknowledgements received**: 0
Fields in this part of the report include:

**System**
- The value of this field is the name of the system being displayed. Note that starting at the system name field each system name section is duplicated for every system known to WLM.

**System Data**
- Header displayed that groups related information for a system concerning system data.

**Time of last system state change**
- This value represents the last time that this system's WLM state changed.
  - The time is displayed as:
    - `mm/dd/yyyy hh:xx:ss`
    - `mm` - month
    - `dd` - day
    - `yyyy` - year
    - `hh` - hours
    - Hours presented from 01 to 24.
    - `xx` - minutes
    - `ss` - seconds

**Time of last member communications**
- This value represents the last time this member communicated with the system.
  - The time is displayed as:
    - `mm/dd/yyyy hh:xx:ss`
    - `mm` - month
    - `dd` - day
    - `yyyy` - year
    - `hh` - hours
    - Hours presented from 01 to 24.
    - `xx` - minutes
    - `ss` - seconds

**System token**
- This value represents the system token that is assigned to this system.

**System state**
- This value represents the current system's state for this system. The possible values for the system's state are
  - **Not defined**
    - Indicates that no information about the system exists, because either the system name is not valid or the system is not active.
  - **Active**
    - Indicates that the system is currently part of the sysplex.
  - **Inactive**
    - Indicates that the system is not currently part of the sysplex.
  - **Quiescing**
    - Indicates that XCF sysplex partitioning has been initiated to remove a system from the sysplex.
  - **Unknown**
    - Indicates that there is some doubt as to the true state of the system, and
that actions have been initiated (by Sysplex Communications Manager) to determine what the true state of the system is.

Incorrect
Indicates an incorrect system state. If this is shown, the system state is in error.

This header is displayed if any of the system data flags are set. The following lists the possible flags that can be set under the system data flags header line.

System section in use
Indicates that system section portion of the system entry is correct and in use.

Member section in use
Indicates that member section portion of the system entry is correct and in use.

Member Data
The following member information:

Member name
This value represents the member name for the current system entry. The member name is the same as the system name (as displayed by the System value above).

Member token
This value represents the member token that is assigned to this member.

Time of last member state change
This value represents the last time that this member sections state changed. The members state is represented by the Member state value that follows this line.

The time is displayed as:
- mm/dd/yyyy hh:xx:ss
  - mm - month
  - dd - day
  - yyyy - year
  - hh - hours
  Hours presented from 01 to 24.
- xx - minutes
- ss - seconds

Member state
One of the following:

Not defined
Indicates that no information about the WLM member exists because
- the member name is not valid
- the member has yet to initialize (and never has before
- the member was inactive for at least three consecutive days and its information has been deleted from XCF

Created
Indicates that the member is in a create state.

Active
Indicates that communications with the WLM member (from some other WLM member) is permitted because the Sysplex Communications Manager is functional.
Workload Manager

Quiesced
Indicates that the WLM member is inactive and that it terminated in an orderly fashion; communications with the member (via XCF) is not permitted.

Failed
Indicates that the WLM member is inactive and that it terminated abnormally; communications with the member (via XCF) is not permitted. The failure could be that of the Sysplex Communications Manager, the WLM address space, or the system upon which the member was previously active.

Incorrect
Indicates an incorrect member state. If this is shown, the member state is in error.

Member Data Flags
This header is displayed if any of the member data flags are set. The following lists the possible flags that can be set under the member data flags header line.

Error encountered for member state resynchronization
Indicates that during resynchronization processing for this member an error occurred.

IXCTERM issued for this system as part of resynch state resynchronization processing
Indicates that an XCF terminate (IXCTERM) was issued for this system as part of the process to resynchronize this system.

Cross system recovery in progress
Cross system recovery processing is currently being done for this system.

Resynchronization Action Flags
This header is displayed if any of the resynchronization action flags are set.

The following lists the possible flags that can be set under the resynchronization action flags header line.

WLM state query is required for this system
Indicates that a WLM state query (XCF IXCQUERY) must be performed for this system.

WLM state verification is required for this system
Indicates that a WLM state verification request must be sent to this system so that it can check the member information between the two systems.

WLM resynch state resynchronization is required for this system
Indicates that a WLM resynchronization must occur for this system. This causes the current system to XCF terminate (IXCTERM) this system.

Resynch State Resynchronization Service Flags
This header is displayed if any of the Resynch state resynchronization service flags are set.

The following lists the possible flags that can be set under the resynch state resynchronization service flags header line.

Message send processing reached retry limit
A message was being sent and XCF was unable to send the message and the retry limit was reached.
Member information could not be resynched
During WLM state query processing for this system it was determined that we could not synch to the information in the XCF CDS.

Third interval processing of pending objects occurred
A pending message object remained around for as long as the third interval time period.

WLM Reset Service Flags
This header is displayed if any of the WLM reset service flags are set. The flags are:

System reset due to system partitioning
System state changed to WLM reset due to XCF system partitioning.

System reset due to initializing first time processing
System state changed to WLM reset due to Sysplex Communications Manager coming up the first time.

System reset due to reinitialization processing
System state changed to WLM reset due to Sysplex Communications Manager reinitializing itself due to some failure condition.

System reset due cross system recovery processing
System state changed to WLM reset due to Sysplex Communications Manager performing cross system recovery processing.

MVS Level
Represents the MVS level.

Service Level
Represents the Service level.

Status data:
Header displayed that groups related information for a system concerning status data.

WLM state
The value of this field is one of the following:

Undefined
Indicates that no WLM state exists.

Initializing
Indicates that WLM is in the process of initializing; cross-system communications capability exists, however, WLM is not fully functional yet.

Active
Indicates that WLM has completed initialization and is fully functional, operating in the workload management mode contained in the checkpointed information associated with the member; this state also indicates that all other instances of WLM are aware of this member and using the same active service policy.

Independent
Indicates that WLM has completed initialization and is fully functional, operating in the workload management mode contained in the checkpointed information associated with the member; this state also indicates that this instance of WLM is not synchronized with other instances of WLM within the sysplex, either because
• there is no couple data set for WLM,
• there is no connectivity to the couple data set for WLM in use by WLM on other systems,
Workload Manager

- there is connectivity to the couple data set for WLM, however the data set does not contain a valid active service policy record, or
- instantiation of the active service policy failed.

**Quiescing**
Indicates that WLM is in the process of an orderly shutdown on behalf of XCF sysplex partitioning; further communication with WLM from other systems should be suspended.

**In_xsr**
Indicates that WLM is inactive, that the termination was not orderly, and that some other instance of WLM is currently performing recovery actions on behalf of this instance of WLM; while in this state, the name of the WLM instance performing cross-system recovery may be found in the checkpointed information associated with this member.

**Reset**
Indicates that WLM is inactive and that it either terminated through an orderly shutdown (previous state was QUIESCING) or that cross-system recovery actions have been completed (previous state was IN-XSR); this state indicates that no recovery latches are held by this member.

**Unknown**
Indicates that invalid state information about a given WLM instance was presented to other active WLM instances; this state indicates that state error processing has been initiated to determine the true state.

**Incorrect**
Indicates an incorrect WLM state. If this is shown, the WLM state is in error.

**Mode**
**Goal**
Indicates that goal mode is set.

**Cross System Recovery Information**
This header is displayed to show the cross system recovery information that may exist in the status data.

The following lists the information that exists under the cross system recovery information section of the status area.

**Copy of state prior to recovery**
Shows what the WLM member state was prior to the current state definition.

**Name of system performing recovery**
Shows the name of the system that is performing cross system recovery for this system if cross system recovery is occurring. If cross system recovery processing is not occurring then system name is ******** (asterisks).

**Recovery latches**
Shows what WLM recovery latches may be set for this system.

**Policy name**
The name of the service policy in effect on this system. This field contains blanks if the WLM mode is not available (UNDEFINED).

**Policy activation time**
The time when the service policy went into effect is represented by this item.
Communications data: Header displayed that groups related information for a system concerning communications data.

Message Object Anchors
This header indicates that the following anchor fields represent pointers to message objects:

First pending response object
Represents the pointer to the first pending response object for this system.

Last pending response object
Represents the pointer to the last pending response object for this system.

First message object
Represents the pointer to the first message object for this system.

Last message object
Represents the pointer to the last message object for this system.

WLMDATA policy report
This report provides information of the service policy in effect on the system when the dump was taken. See the IWMSVPOL mapping macro for more specific information about the attributes and data displayed for the service policy.

POLICY summary report

<table>
<thead>
<tr>
<th>Active Policy information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy name ................. CAPPING4</td>
</tr>
<tr>
<td>Policy description .......... VICOM1 with capping ResGrp</td>
</tr>
<tr>
<td>Time of Activation .......... 02/08/1996 08:23:14</td>
</tr>
<tr>
<td>Userid of activator ....... TSOUSER</td>
</tr>
<tr>
<td>System on which activation was initiated .. ENTWIS1</td>
</tr>
<tr>
<td>Classification Sequence number .......... 00000013</td>
</tr>
<tr>
<td>Service Definition from which policy came</td>
</tr>
<tr>
<td>Service Definition name .......... COEFFS</td>
</tr>
<tr>
<td>Service definition description .......... Service coefficients</td>
</tr>
<tr>
<td>Time of installation .......... 02/08/1996 08:12:10</td>
</tr>
<tr>
<td>Userid of installer ........ TSOUSER</td>
</tr>
<tr>
<td>System on which installation was done .... ENTWIS1</td>
</tr>
<tr>
<td>System on which installation was done .... ENTWIS1</td>
</tr>
<tr>
<td>Number of workload entries ........ 2 (incl. EWLM workloads)</td>
</tr>
<tr>
<td>Number of service class entries .......... 20 (incl. EWLM service classes)</td>
</tr>
<tr>
<td>Number of service class period entries . 22 (incl. EWLM service class periods)</td>
</tr>
<tr>
<td>Number of resource group entries .......... 4</td>
</tr>
<tr>
<td>Number of report class entries .......... 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Embedded EWLM policy information</th>
</tr>
</thead>
<tbody>
<tr>
<td>EWLM Policy name ................. Policy-With-ZOS-Attributes</td>
</tr>
<tr>
<td>EWLM Policy UUID ................. POLICY-UUID--xyz</td>
</tr>
<tr>
<td>EWLM Management Server UUID .......... DOMAIN-4711-UUID</td>
</tr>
<tr>
<td>EWLM Policy ID ................ 4</td>
</tr>
<tr>
<td>EWLM Server ID .......... 1</td>
</tr>
<tr>
<td>Number of EWLM workload entries .......... 1</td>
</tr>
<tr>
<td>Number of EWLM service class entries .... 2</td>
</tr>
<tr>
<td>Number of EWLM service class periods ...... 2</td>
</tr>
</tbody>
</table>

Policy in effect on this system matches the active policy.

No exceptional conditions were found by the POLICY SUMMARY report.
The fields in the report include:

**Policy Name**
- The value of this field is a Policy name.

**Policy description**
- Service policy description.

**Policy Timestamp**
- Time/Date of policy activation in MM/DD/YYYY HH:MM:SS format.

**Userid**
- Userid of the system operator or service administrator who activated the service policy.

**System name**
- Name of the system on which policy activation was initiated.

**Classification sequence number**
- Classification sequence number in hex.

**Service definition name**
- Name of the service definition from which the service policy was extracted.

**Description**
- Description of service definition from which the service policy was extracted.

**Service definition timestamp**
- Date/Time in MM/DD/YYYY HH:MM:SS format that the service definition was installed.

**Userid**
- Userid of the system operator or service administrator who installed the service definition.

**System name**
- Name of the system on which the service definition was installed.

**Number of workload entries**
- Number of workload entries in the workload definition section.

**Number of service class entries**
- Number of service class entries in the service class definition section.

**Number of service class period entries**
- Number of service class period entries in the service class period definition section.

**Number of resource group entries**
- Number of resource group entries in the resource group definition section.

**Number of report class entries**
- Number of report class entries in the report class definition section.

**POLICY exception report**
This report displays dump output messages and a hexadecimal dump of each data area that received a validity check, failure, or warning. IBM might request this information for problem determination. Fields displayed in the report include:

**reason**
- The reason code associated with the error. The format of the reason code is aaxxbbcc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected.
Control block address
The address of the control block in error. The control blocks reported by the Policy exception report are the SVPOLHD, SVPOLSP, SVPOLWD, SVPOLCD, SVPOLPD, SVPOLRG, and the SVPOLRD mapped by IWMSVPOL.

POLICY detail report

***** POLICY DETAIL REPORT *****

Active Policy summary
---------------------

Active Policy information
Policy name ...................... CAPPING4
Policy description ................ VICOM1 with capping ResGrp
Time of Activation ................. 02/08/1996 08:23:14
Userid of activator ................ TSOUSER
System on which activation was initiated . ENTWIS1
Classification Sequence number ........... 00000013

Service Definition from which policy came
Service Definition name ............. COEFFS
Service definition description ........ Service coefficients
Time of installation ................. 02/08/1996 08:12:10
Userid of installer .................. TSOUSER
System on which installation was done .... ENTWIS1
System on which installation was done .... ENTWIS1

Number of workload entries .............. 2
Number of service class entries ........ 20
Number of service class period entries .... 22
Number of resource group entries ........ 4
Number of report class entries .......... 0

Policy in effect on this system matches the active policy on the
The fields in the above report are as follows:

**Policy Name**
- The value of this field is a Policy name.

**Policy description:**
- Service policy description.

**Policy Timestamp**
- Time/Date of policy activation in MM/DD/YYYY HH:MM:SS format.

**Userid**
- Userid of the system operator or service administrator who activated the service policy.

**System name**
- Name of the system on which policy activation was initiated.

**Classification sequence number**
- Classification sequence number.

**Service definition name**
- Name of the service definition from which the service policy was extracted.

**Description**
- Description of service definition from which the service policy was extracted.
Workload Manager

**Service definition timestamp**
Time/Date in MM/DD/YYYY HH:MM:SS format that the service definition was installed.

**Userid**
Userid of the system operator or service administrator who installed the service definition.

**System name**
Name of the system on which the service definition was installed.

**Number of workload entries**
Number of workload entries in the workload definition section.

**Number of service class entries**
Number of service class entries in the service class definition section.

**Number of service class period entries**
Number of service class period entries in the service class period definition section.

**Number of resource group entries**
Number of resource group entries in the resource group definition section.

**Number of report class entries**
Number of report class entries in the report class definition section.

**CPU service coefficient**
EBCDIC representation of CPU service coefficient - the number by which accumulated CPU service units will be multiplied (weighted).

**I/O service coefficient**
EBCDIC representation of I/O service coefficient - the number by which accumulated I/O service units will be multiplied (weighted).

**MSO service coefficient**
EBCDIC representation of storage service coefficient - the number by which accumulated storage service units will be multiplied (weighted).

**SRB service coefficient**
EBCDIC representation of SRB service coefficient - the number by which accumulated SRB service units will be multiplied (weighted).

**I/O priority management: xxx**
Indicates if I/O delays should be included in the denominator of the execution velocity equation,

xxx can be either Yes or No.

**Workload name**
Workload name.

**Description**
Workload description.

**Number of service classes**
Number of service classes belonging to the owning workload. This number is obtained by scanning the service policy.

**Service class name**
Service class name.

**Description**
Service class description.
'Service class is CPU critical.'
Flag denoting that this service class has been assigned long-term CPU protection. See the “CPU Protection” section of the “Workload Management Participants” chapter in [z/OS MVS Planning: Workload Management](#).

'CICS/IMS regions serving this service class will be treated as "storage critical=yes."'
Flag denoting that this service class has been assigned long-term storage protection. See the “Storage Protection” section of the “Workload Management Participants” chapter in [z/OS MVS Planning: Workload Management](#).

**Number of service class periods**
Number of service class periods for this service class.

**Associated resource group name**
Name of the resource group this service class is associated with. If there is no associated resource group, this line will not appear.

**Period number**
Index of period.

**Goal percentile value**
Goal percentile value.

**Response time goal value**
Response time goal value in HH:MM:SS.nnn format.

**Execution velocity**
Execution velocity.

**Importance level**
Importance level ranging from 1 to 5 where 1 is most important.

**Duration**
Service class period duration in service units, or blanks for last period.

**Resource group name**
Resource group name.

**Description**
Resource group description.

**Minimum capacity**
This field contains the minimum capacity in unweighted CPU service units per second. This field contains the phrase “not specified” if no minimum capacity was specified.

**Maximum capacity**
This field contains the maximum capacity in unweighted CPU service units per second. This field contains the phrase “not specified” if no maximum capacity was specified.

**Report class name**
Report class name.

**Description**
Report class description.
WLMDATA WORKMANAGER report

This report provides an overview of connections from a work manager to WLM and the monitoring environments associated with each work manager. WORKMANAGER information is ordered by ASID. For more specified information about the attributes and data displayed for each work manager, see the IWMPB mapping macro.

The values displayed for each numeric field in the workmanager report are in hexadecimal unless otherwise noted.

You can filter the WORKMANAGER report by:
- ASID
- SUBSYSTYPE
- SUBSYSNAME

WORKMANAGER summary report

***** WORKMANAGER SUMMARY REPORT *****

SUMMARY OF WORK REQUEST ACTIVITIES
----------------------------------
Total number of associated address spaces.. 7
Total number of monitoring envs in system.. 10

ASID....................................... X'0005'
Total number of monitoring envs owned... 3
ASCB address............................ ffffffff
Connect token........................... gggggggg

SUMMARY OF CONNECTION SUB-REPORT
--------------------------------
Subsystem type.......................... hhhh
Connection flags
xxxxxxxxxxxxxx
Subsystem name.......................... iiiiiiii
Number of associated ASCBs.............. jjjjjjjjj
Number of associated ASCBs.............. jjjjjjjjj
Connector's TCB address............... kkkkkkk

No connection to report on

The fields in the report include:

Total number of associated address spaces
Decimal value indicates total number of address spaces associated with WLM in the system. This field represents the number of outstanding address spaces which have either created a PB (IWMMCREA) or connected to WLM (IWMCONN) at some point.

Total number of monitoring envs in system
Decimal value indicates total number of PBs in the system. This field represents the number of outstanding PBs created via IWMMCREA which are still in existence.
ASID
The value of this field is the ASID of the address space that owns the XDAT.

Total number of monitoring envs owned
Decimal value indicates total number of PBs currently owned by the address space.

ASCB address
The value of this field is the ASCB address associated with the address space.

Connect token
The value of this field is the connect token associated with the work manager who has connected to WLM. This field will be zero when there is no associated connect token.

Subsystem Type
The value of this field is the subsystem type specified on the connect service. This is the generic product identifier associated with the code which connected to WLM.

Connection flags
Specifies the connection flags. The xxxxxxxxxxxx flag is one of the following. If no flag is set, the header for the connection flags is not displayed.
- Used by SRM for system managed subsystem type
- Connection uses WLM work management services
- Connection uses WLM work queuing services
- Connection uses WLM work balancing services
- Connection uses WLM work execution services
- Connection uses WLM routing services
- Associated server is WLM started

Subsystem name
The value of this field is the subsystem name specified on the connect service. This is the identifier of the specific instance associated with the code which connected to WLM.

Number of associated ASCBs
This represents the number of address spaces associated with this subsystem which are not associated with PBs and which provide service to work running within the subsystem.

Connector's TCB address
The value of this field is the TCB address associated with the connector.

No connection to report on
There is no connection to report on for this address space.

WORKMANAGER exception report
This report displays dump output messages and a hexadecimal dump of each data area that received a validity check, failure, or warning. IBM might request this information for problem determination.
The fields in the report include:

**Total number of associated address spaces**
Decimal value indicating the total number of address spaces associated with WLM in the system. This field represents the number of outstanding address spaces which have either created a PB (IWMMCREA) or connected to WLM (IWMCNN) at some point.
Total number of monitoring envs in system
Decimal value indicating total number of PBs in the system. This field represents the number of outstanding PBs created via IWMMCREA which are still in existence.

ASID
The value of this field is the ASID of the address space that owns the XDAT.

Total number of monitoring envs owned
Decimal value indicating total number of PBs currently owned by the address space.

ASCB address
The ASCB address associated with the address space.

Connect token
The connect token associated with the work manager who has connected to WLM. This field is zero when there is no associated connect token.

Subsystem Type
The subsystem type specified on the connect service. This is the generic product identifier associated with the code which connected to WLM.

Connection flags
Specifies the connection flags. The xxxxxxxxxxxxx flag is one of the following. If no flag is set, the header for the connection flags is not displayed.
- Used by SRM for system managed subsystem type
- Connection uses WLM work management services
- Connection uses WLM work queueing services
- Connection uses WLM work balancing services
- Connection uses WLM work execution services
- Connection uses WLM routing services
- Associated server is WLM started

Subsystem name
The subsystem name specified on the connect service. This is the identifier of the specific instance associated with the code which connected to WLM.

Number of associated ASCBs
The number of address spaces associated with this subsystem which are not associated with PBs and which provide service to work running within the subsystem.

Connector's TCB address
The TCB address associated with the connector.

Connector's protect key
The key for connector.

Associated address space ASCB address
The ASCB address in the topology list. This represents an address space which is part of the subsystem servicing work which would not be visible through monitoring environments.

Monitoring token
The value of this field is the PB address in storage.

Control token
The PBDE address in storage.

Owner's TCB address
The TCB address associated with the owner of the performance block.
Subsystem Type
The subsystem type associated with the performance block. This is the generic product identifier associated with the code which obtained the PB.

Subsystem name
The subsystem name associated with the performance block. This is the identifier of the specific instance associated with the code which obtained the PB.

State of work request
The state of the work request as shown in the performance block. This field can be: FREE, ACTIVE, READY, IDLE, WAIT DISTRIBUTED, WAIT CONVERSATION, WAIT SESSION LOCALMVS, WAIT SESSION SYSPLEX, WAIT SESSION NETWORK, WAIT OTHER PRODUCT, WAIT MISCELLANEOUS, WAIT LOCK, WAIT I/O, or UNKNOWN.

Switch continuation information
The switch information about the work request in the performance block. This field can be: N/A(not switched), LOCALMVS, SYSPLEX, or NETWORK. The latter three refer to the expectation of where the continuation of the work request will be found.

Abnormal condition
One of the following:
• NONE - indicates that there exists no abnormal condition.
• SYSPLEX - indicates that abnormality affects all MVS images in sysplex.
• LOCALMVS - indicates that abnormality restricted to current MVS image.

Service class token status
One of the following:
• N/A - indicates that the service definition did not define a service class for this work request.
• NORMAL - indicates that service class token is valid.
• OLD - indicates that service class token is not associated with the current policy.
• NOT VALID - indicates that service class token is not valid.

Service class
If the service class token status is NORMAL then this is the service class name associated with the work request. Otherwise this field contains “********”.

Report class
If the service class token status is NORMAL then this field is the report class name associated with the work request. Otherwise this field contains “********”.

Protect key
The key in which the user of the monitoring environment runs.

Owner data
The value of this field is data specified by the owner/user. The format of this data is unknown to MVS.

Owner token
The value of this field is token specified by the owner/user. The format of this data is unknown to MVS.

Work request arrival time
Arrival time for work request in MM/DD/YYYY HH:MM:SS format. This field contains all asterisks if the arrival time is not available.
Work request execution start time
   Execution start time for work request in MM/DD/YYYY HH:MM:SS format.
   This field contains all asterisks if the start time is not available.

Dispatchable unit TCB
   Address of the TCB associated with the dispatchable unit serving the work
   request attributes or character string “SRB” signifying an SRB.

Dispatchable unit ASCB
   Address of the ASCB associated with the dispatchable unit serving the work
   request.

Parent monitoring token
   The token for the parent monitoring environment or ASID for parent when
   parent is an address space, which is set as a result of IWMMRELA
   FUNCTION(CONTINUE).

Parent control token
   The value of this field is token for the parent control environment, which is set
   as a result of IWMMRELA FUNCTION(CONTINUE).

Parent token ASID
   This message is issued when the parent control token is non-zero and the ASID
   of the owning address space can be obtained to display the ASID of the owner.

Dependent monitoring token
   The token for the dependent monitoring environment related to this
   environment, which is set as a result of IWMMXFER FUNCTION(CONTINUE).

Dependent control token
   The token for the dependent control environment, which is set as a result of
   IWMMXFER FUNCTION(CONTINUE).

Dependent token ASID
   This message is issued when the dependent control token is non-zero and the
   ASID of the owning address space can be obtained to display the ASID of the owner.

Userid
   The userid associated with the work request. This field contains all asterisks if
   the userid is not available.

Transaction name
   The transaction name associated with the work request. This field contains all
   asterisks if the transaction name is not available.

Transaction class
   The transaction class associated with the work request. This field contains all
   asterisks if the transaction class is not available.

Source LU name
   The source LU name associated with the work request. This field contains all
   asterisks if the source lu name is not available.

No monitoring environment to report on
   This message is issued when there is no PB to report on for this address space.

WLMDATA queue manager report
   The Queue Manager Report provides an overview of information that is pertinent to
   queue manager processing for WLM.
**Workload Manager**

The Queue Manager Report information is returned when the QUEUEMANAGER keyword is given on the WLMDATA subcommand. Various refinements of the Queue Manager Report information can be obtained by specifying either SUMMARY, DETAIL or EXCEPTION.

What follows is the display formats for the SUMMARY, DETAIL, and EXCEPTION reports. Note that for the SUMMARY or DETAIL reports the displays show all possible sections that could appear. In reality if certain information does not exist then those sections are not displayed. For example, if no queued work exists then only the global information is shown for the SUMMARY report and for the DETAIL report only information up to the queue manager information is shown.

### QUEUEMANAGER summary report

```
***** QUEUEMANAGER SUMMARY REPORT *****

Global Information
-------------------------------
Server Manager Mode......................... Goal

Work Manager Information
-------------------------------
Subsystem Type..................... DB2
Subsystem Name..................... DB2A
Work Manager State...................... Active

Application Environment Information
-----------------------------------
Application Environment Name............... PAYROLL
Application Environment State.............. Active
Application Environment Counts
Total target................................ xxxxxxxx
Total bound................................ xxxxxxxx
Number of starting servers............... xxxxxxxx
Number of connected servers.............. xxxxxxxx

Transaction Environment Information
-----------------------------------
Transaction Environment Service Class.... AQISSLOW
Transaction Environment Counts
Target.................................... xxxxxxxx
Bound.................................... xxxxxxxx
Transaction Environment Work Queue...... Empty

Work Queue Information
-----------------------------------
Work Unit User Data..... xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx

Work Queue Information
-----------------------------------
Work Unit User Data..... xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx

Application Environment Table Information
-----------------------------------------
Application Environment Name......... PAYROLL
Subsystem Type..................... DB2
Procedure Name..................... PAYROLL
```

The fields displayed in the report are listed below each subheading:
Global Information
The global environment management information section represents data that is global to all system processing done by the WLM server environment manager.

Server Manager mode
Represents the WLM mode that the server environment manager is using. A value of Goal corresponds directly with the goal mode of WLM.

Work Manager Information
The work manager section shows each work manager that is using server environment manager services in the system. Note that if no work manager information exists then this section is not shown (also applicable sections under it are not shown since they do not exist).

Subsystem type
The work manager’s WLM subsystem type.

Subsystem name
The work manager’s WLM subsystem name.

Work Manager State
The work manager’s state.
- Active
  Indicates a work manager that is connected to WLM and has not terminated.
- Inactive
  Indicates a work manager that is terminating or has terminated, and may no longer be connected to WLM.

Application Environment Information
The application environment section shows each application environment that is in use by the work manager above.

Application Environment Name
The application environment’s name.

Application Environment State
Specifies the application environment’s state.
- Available
  Indicates that the application environment is defined to WLM and that it is ready for the associated subsystem(s) to connect to it.
- Quiesced
  Indicates that the application environment was quiesced by the operator issuing the V WLM,APPLENV=xxxxx,QUIESCE command.
- Stopped
  Indicates that WLM stopped starting new servers in this application environment because WLM detected a problem with the application environment’s JCL procedure or the server code.
- Deleting
  Indicates that WLM is in the process of deleting this application environment.
- Refreshing
  Indicates that WLM is in the process of refreshing all the servers in this application environment.
- Quiescing
Indicates that WLM is in the process of quiescing all the servers in this application environment.

**Application Environment Counts**
Describes the number of server address spaces in the following categories;
- **Total target**
  Represents the total number of server address spaces requested by SRM on the local system for all transaction environments in this application environment. This is a total of all want counts in the transaction environments under this application environment.
- **Total bound**
  Represents the number of servers that WLM has bound to transaction environments in this application environment. This is a total of all have counts in the transaction environments under this application environment.
- **Total number of starting servers**
  Represents the number of servers that WLM has started, but have not yet connected to WLM.
- **Total number of connected servers**
  Represents the number of servers that have connected to WLM, but have not selected any work in this application environment.

**Transaction Environment Information**
The transaction environment section describes a unique queue of work that is known to WLM.

**Transaction Environment Service Class**
Names the external service class to which the queued work has been classified. If the transaction environment is not associated with one service class, then this field may contain ‘*******’ to indicate that the transaction environment may contain more than one service class.

**Transaction Environment Counts**
Represents the number of server address spaces in the following categories.
- **Target**
  Represents the number of servers on the local system that SRM wants bound to this transaction environment.
- **Bound**
  Represents the number of servers that WLM has bound to this transaction environment.

**Transaction Environment Work Queue**
Describes the Empty/Not Empty state of the transaction environment’s work queue.

**Work Queue Information**
The work queue section describes each unique work unit that has been inserted to WLM but not yet selected for execution.

**Work Unit User Data**
Represents the work unit as it is known by the subsystem that inserted the work.

**Application Environment Table Information**
The application environment table information section describes all the application environments known to WLM. The application environments are
Workload Manager

defined using the WLM ISPF application or through the IWMDINS(install)/IWMPACT(activate) interfaces. Note that if no application environments exist then only the header is shown.

**Application Environment name**
Names the application environment.

**Subsystem Type**
Names the subsystem type that is assigned to this application environment.

**Procedure Name**
Names the JCL procedure used for this application environment.

### QUEUEMANAGER exception report

```
***** QUEUEMANAGER EXCEPTION REPORT *****

QUEUEMANAGER RELATED EXCEPTIONS
------------------------------------

IWM0004I Validity check failure, reason aaxxbbcc, for WLM data area
at address zzzzzzzz in ASID X'gggg'.

zzzzzzzz XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0010 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0020 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0030 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0040 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |

IWM0005I Validity check warning, reason aaxxbbcc, for WLM data area
at address zzzzzzzz in ASID X'gggg'.

zzzzzzzz XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0010 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0020 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0030 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0040 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
```

The fields displayed in the report are listed below each subheading:

**Error/Warning control block record**

**reason: aaxxbbcc**
This field contains the reason code associated with the error. The format of the reason code is aaxxbbcc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected.

**Control block address: zzzzzzzz**
This field contains the address of the control block in error.

**ASID: X'gggg'**
The address space identifier (ASID) in hexadecimal of the address space where the control block exists.

### QUEUEMANAGER detail report

```
***** QUEUEMANAGER DETAIL REPORT *****

Global Information
---------------------

Application Environment Table Object........ xxxxxxxx
Server Manager Mode.......................... Goal
```
Workload Manager

Queue Manager Information
-----------------------------------------------

QEB CELL POOL ID ................................ xxxxxxxx
Last Transaction Environment Sequence Number ................................ xxxxxxxx
Last Work Unit Sequence Number ................................ xxxxxxxx
Dynamic Area CPOOL For PC Services ................................ xxxxxxxx
TCB Defined For WLM QM Initialization Task ................................ xxxxxxxx

Work Manager Information
-----------------------------------------------

Subsystem Type .................................. DB2
Subsystem Name .................................. DB2A
Work Manager State ................................ Active
Work Manager Flags ................................ xx

Work Manager Queues
First application environment .................... xxxxxxxx
Last application environment .................... xxxxxxxx
XDAT Connection .................................. xxxxxxxx

Application Environment Information
-----------------------------------------------

Application Environment Name ........ PAYROLL
Application Environment State ............... Active
Application Environment Counts
Total target .................................. xxxxxxxx
Total bound .................................. xxxxxxxx
Number of starting servers ................... xxxxxxxx
Number of connected servers ................. xxxxxxxx

Application Environment Flags ................................ xx

Application Environment Queues ............ xxxxxxxx
First server .................................. xxxxxxxx
Last server .................................. xxxxxxxx
First transaction environment ................ xxxxxxxx
Last transaction environment ................ xxxxxxxx

Transaction Environment Information
-----------------------------------------------

Transaction Environment Service Class .... AQISSLOW
Transaction Environment Counts
Target .................................. xxxxxxxx
Bound .................................. xxxxxxxx
Transaction Environment Work Queue .... Empty
Transaction Environment Flags ................................ xx

Transaction Environment Queues
First work unit ................................ xxxxxxxx
Last work unit ................................ xxxxxxxx
First suspended server ...................... xxxxxxxx
Last suspended server ...................... xxxxxxxx

Work Queue Information
-----------------------------------------------

Work Unit User Data ........................ xx
Work unit Flags ................................ xx
Work Unit Etoken ............................ xx
Work Unit Userid ............................ xx

Application Environment Table Information
-----------------------------------------------
Workload Manager

Application Environment Name........ PAYROLL
Subsystem Type...................... DB2
Procedure Name...................... PAYROLL

Limit on starting server address spaces
Single address space per sysplex

Local System Data
System State................ Available
Time Of Last State Change........ 05/10/1996 09:37:08
Name Of System Coordinating System State. ******
Local Work Unit ID............... xxxxxxxx xxxxxxxx

Server Failure Data
Number of unexpected server failures..... 00000002
Server Failure Flags
xxxxxxxxxxxxxxxxxxxxxxxx
Server Failure Times
Most Recent Failure Time............. 05/10/1996 10:52:36
...                             ... 05/10/1996 10:52:13
...                             None
...                             None
Oldest Failure Time................ None

The fields displayed in the report are listed below each subheading:

Global Information
The global environment management information section represents data that
is global to all system processing done by the WLM server environment
manager.

Application environment table object
Represents the pointer to the Application Environment Table (AET).

Server Manager mode
Represents the WLM mode that the server environment manager is using.
A value of Goal corresponds directly with the goal mode of WLM.

Queue Manager Information
The queue manager section shows global data used by the WLM queue
manager to manage the function.

QEB CELL POOL ID
The CELL POOL ID of the queue manager's work unit pool.

Last transaction environment sequence number
Represents the last sequence number assigned to a new transaction
environment.

Last work unit sequence number
Represents the last sequence number assigned to a new work unit.

Dynamic Area CPOOL ID For PC Services
Represents the id of the dynamic area used by queue manager service
routines.

TCB Defined For WLM QM Initialization Task
The TCB address of the task that initialized the queue manager function.

Work Manager Information
The work manager section shows each work manager that is using server
environment manager services in the system. Note that if no work manager
information exists then this section is not shown (also applicable sections
under it are not shown).
Workload Manager

**Subsystem Type**
The work manager's WLM subsystem type.

**Subsystem Name**
The work manager's WLM subsystem name.

**Work Manager State**
The work manager's state.
- **Active**
  Indicates a work manager that is connected to WLM and has not terminated.
- **Inactive**
  Indicates a work manager that is terminating or has terminated, and may no longer be connected to WLM.

**Work Manager Flags**
Flags representing work manager status. If none of the flags that are of interest are set then this header is not shown.
- **Operator Started**
  Indicates that the existence of this work manager was indicated to WLM by an operator command starting a server address space.
- **Queue Manager**
  Indicates that the work manager is a queue manager.
- **Router**
  Indicates that the work manager is a sysplex routing manager.

**Work Manager Queues**
The queues of objects which are anchored by the work manager.
- **First application environment**
  Represents the first application environment in use by this work manager.
- **Last application environment**
  Represents the last application environment in use by this work manager.

**XDAT Connection**
Represents the XDAT object to which the work manager is connected.

**Application Environment Information**
The application environment section shows each application environment that is in use by the work manager above.

**Application Environment Name**
The application environment's name.

**Application Environment State**
Specifies the application environment's state.
- **Available**
  Indicates that the application environment is defined to WLM and that it is ready for the associated subsystem(s) to connect to it.
- **Quiesced**
  Indicates that WLM stopped starting new servers in this application environment because the operator issued the V WLM,APPLENV=xxxxx,QUIESCE command.
- **Stopped**

z/OS V1R13.0 MVS Diagnosis: Reference
Indicates that WLM stopped starting new servers in the application environment because WLM detected a problem with the application environment's JCL procedure or the server code.

- Deleting
  Indicates that WLM is in the process of deleting this application environment.

- Refreshing
  Indicates that WLM is in the process of refreshing all the servers in this application environment.

- Quiescing
  Indicates that WLM is in the process of quiescing all the servers in this application environment.

**Application Environment Counts**
Describes the number of server address spaces in the following categories;

- Total target
  Represents the total number of server address spaces requested on the local system by SRM for all transaction environments in this application environment. This is a total of all want counts in the transaction environments under this application environment.

- Total bound
  Represents the number of servers that WLM has bound to transaction environments in this application environment. This is a total of all have counts in the transaction environments under this application environment.

- Total number of starting servers
  Represents the number of servers that WLM has started, but have not yet connected to WLM.

- Total number of connected servers
  Represents the number of servers that have connected to WLM, but have not selected any work in this application environment.

**Application Environment Flags**
Describes the flags which are set in the application environment. If none of the flags that are of interest are set then this header is not shown.

- Operator started
  Indicates that the server was started by the operator (or some process other than WLM).

- Logically deleted
  Indicates that the application environment is logically deleted.

**Application Environment Queues**
Describes the queues anchors in the application environment object.

- First server
  Describes the first server object in this application environment.

- Last server
  Describes the last server object in this application environment.

- First transaction environment
  Describes the first transaction environment object in the application environment.

- Last transaction environment
Describes the last transaction environment object in the application environment.

**Transaction Environment Information**
The transaction environment section describes a unique queue of work that is known to WLM.

**Transaction environment service class**
Names the external service class to which the queued work has been classified. If the transaction environment is not associated with one service class, then this field may contain ‘*******’ to indicate that the transaction environment may contain more than one service class.

**Transaction environment counts**
Represents the number of server address spaces in the following categories.
- Target
  Represents the number of servers on the local system that SRM wants bound to this transaction environment.
- Bound
  Represents the number of servers that WLM has bound to this transaction environment.

**Transaction Environment Work Queue**
Describes the Empty/Not Empty state of the transaction environment's work queue.

**Transaction Environment Flags**
Describes the flags which are set in the transaction environment. If none of the flags that are of interest are set then this header is not shown.
- Deleting
  Indicates that this transaction environment is being deleted.
- Service class based
  Indicates that this transaction environment is serving only one service class.

**Transaction Environment Queues**
Describes the queues anchors in the application environment object.
- First work unit
  Describes the first work unit to be executed.
- Last work unit
  Describes the last work unit to be executed.
- First suspended server
  Describes the first server object with suspended server tasks.
- Last suspended server
  Describes the last server object with suspended server tasks.

**Work Queue Information**
The work queue section describes each unique work unit that has been inserted to WLM but not yet selected for execution.

**Work Unit User Data**
Represents the work unit as it is known by the subsystem that inserted the work.
Work Unit Flags
Describes the flags which are set in the work unit. If none of the flags that are of interest are set then this header is not shown.

Userid is valid
Indicates that the work unit userid was supplied when the work unit was inserted.

Work unit EToken
A token representing the enclave token under which the work is executing.

Userid
The userid that owns the work unit.

Application Environment Table Information
The application environment table information section describes all the application environments known to WLM. The application environments are defined using the WLM ISPF application or through the IWMDINS(install)/IWMPACT(activate) interfaces. Note that if no application environments exist then only the header is shown.

Application Environment name
Names the application environment.

Subsystem Type
Names the subsystem type that is assigned to this application environment.

Procedure Name
Names the JCL procedure used for this application environment.

Start Parameters
Shows the start parameter information used by WLM when starting a server environment address space in this application environment.

Limit on starting server address spaces
A header line that indicates that one of the subsequent lines is a limit for the current application environment.

- No limit
- Single address space per system
- Single address space per sysplex

Local System Data
A header line that indicates that information indented under this line is used by the local/current system to manage the application environment.

System State
Indicates the application environment state as known by the current system.

- Available
  Indicates that the application environment is defined to WLM and that it is ready for the associated subsystem to connect to it.
- Refreshing
  Indicates that the application environment is being refreshed because the operator issued a V WLM,APPLENV=xxxxx,REFRESH command.
- Quiescing
Workload Manager

Indicates that this system has finished working on an operator issued V WLM,APPLENV=xxxxx,QUIESCE command.

- Quiesced
  Indicates that this system has finished working on an operator issued V WLM,APPLENV=xxxxx,QUIESCE command.

- Resuming
  Indicates that this system is working on an operator issued V WLM,APPLENV=xxxxx,RESUME command.

- Internally-Refreshing
  Indicates that this system is working on an internally generated refresh action.

- Internally-Stopping
  Indicates that this system is working on an internally generated stop action.

- Internally-Stopped
  Indicates that this system has finished working on an internally generated stop action.

- Deleting
  Indicates that WLM is in the process of deleting this application environment.

- Deleted
  Indicates that WLM has finished the process of deleting an application environment.

- No State
  Indicates that the application environment state does not exist.

- Unknown
  Indicates that the application environment state is not any of the above, therefore it is unknown. For this case we most likely have bad data.

Time Of Last State Change
The last time the application environment state was changed.

Name Of System Coordinating Application Environment State
Indicates which system in the sysplex is coordinating the application environment state that is shown. Coordination is required for any transitional state such as deleting/quiescing and possibly the 'no state' condition.

Note that if no system is coordinating the system state then ******** is shown.

Local Work Unit ID
The work-unit-id of the current action (if application environment state is transitional, like deleting) or the last action that was performed for this application environment.

Server Failure Data
A header line that groups data collected by Server Environment Manager relating to unexpected server terminations in this application environment. If there is no failure data to display, this entire section will be skipped by the IPCS formatter.
Number of unexpected server failures
The number of unexpected server terminations detected by Server Environment Manager on this system in this application environment

Server Failure Flags
Groups flags that are set in this section of the AET.

Internal Stop has been initiated
Indicates that Server Environment Manager has detected 5 unexpected terminations within 10 minutes of each other and that Server Environment Manager has initiated an internal-stop of the application environment.

Server Failure Times
Displays the date and time of the most recent unexpected termination to the oldest unexpected termination (maximum of 5 in the history). If the most recent and the oldest are within 10 minutes of each other then Server Environment Manager will initiate an internal-stop of the application environment.

WLMDATA server manager report

The Server Manager Report provides an overview of information that is pertinent to Server Environment Manager processing for WLM.

The Server Manager Report information is returned when the SERVERMANAGER keyword is given on the WLMDATA subcommand. Various refinements of the Server Manager Report information can be obtained by specifying either SUMMARY, DETAIL or EXCEPTION.

What follows is the display formats for the SUMMARY, DETAIL, and EXCEPTION reports. Note that for the SUMMARY or DETAIL reports the displays show all possible sections that could appear. In reality if certain information does not exist then those sections are not displayed. For example, if no servers exist then only the global information is shown and no information past this section is shown.
### SERVERMANAGER summary report

<table>
<thead>
<tr>
<th>Global Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Manager Mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Manager Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsystem Type</td>
</tr>
<tr>
<td>Subsystem Name</td>
</tr>
<tr>
<td>Work Manager State</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application Environment Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Environment Name</td>
</tr>
<tr>
<td>Application Environment State</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application Environment Counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total target</td>
</tr>
<tr>
<td>Total bound</td>
</tr>
<tr>
<td>Number of starting servers</td>
</tr>
<tr>
<td>Number of connected servers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application Environment Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
</tbody>
</table>

| Spread minimum across transaction env | YES | NO |

<table>
<thead>
<tr>
<th>Server Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server ASID</td>
</tr>
<tr>
<td>Server Jobname</td>
</tr>
<tr>
<td>Server State</td>
</tr>
<tr>
<td>Time of Last Server State Change</td>
</tr>
<tr>
<td>Server Binding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Server Address Space Counts</th>
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</thead>
<tbody>
<tr>
<td>Temporal Affinities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selected Work Table</th>
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<tbody>
<tr>
<td>Number Of Entries In Use</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selected Work Entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transaction Environment Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Environment Service Class</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transaction Environment Counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
</tr>
<tr>
<td>Bound</td>
</tr>
</tbody>
</table>

| Transaction Environment Work Queue | Empty |

<table>
<thead>
<tr>
<th>Application Environment Table Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Environment Name</td>
</tr>
<tr>
<td>Subsystem Type</td>
</tr>
<tr>
<td>Procedure Name</td>
</tr>
</tbody>
</table>
Global Information
The global environment management information section represents data that is global to all system processing done by the WLM server environment manager.

Server Manager mode
Represents the WLM mode that the server environment manager is using. A value of Goal corresponds directly with the goal mode of WLM.

Work Manager Information
The work manager section shows each work manager that is using server environment manager services in the system. Note that if no work manager information exists then this section is not shown (also applicable sections under it are not shown since they do not exist).

Subsystem Type
The work manager's WLM subsystem type.

Subsystem Name
The work manager's WLM subsystem name.

Work Manager State
The work manager's state.
• Active
  Indicates a work manager that is connected to WLM and has not terminated.
• Inactive
  Indicates a work manager that is terminating or has terminated, and may no longer be connected to WLM.

Application Environment Information
The application environment section shows each application environment that is in use by the work manager above.

Application Environment Name
The application environment's name.

Application Environment State
Specifies the application environment's state.
• Available
  Indicates that the application environment is defined to WLM and that it is ready for the associated subsystem(s) to connect to it.
• Quiesced
  Indicates that the application environment was quiesced because the operator issued the V WLM,APPLENV=xxxx,QUIESCE command.
• Stopped
  Indicates that WLM stopped starting new servers in this application environment because WLM detected a problem with the application environment's JCL procedure or the server code.
• Deleting
  Indicates that WLM is in the process of deleting this application environment.
• Refreshing
  Indicates that WLM is in the process of refreshing all the servers in this application environment.
• Quiescing
Workload Manager

Indicates that WLM is in the process of quiescing all the servers in this application environment.

Application Environment Counts
Describes the number of server address spaces in the following categories;
- Total target
  Represents the total number of server address spaces requested on the local system by SRM for all transaction environments in this application environment. This is a total of all want counts in the transaction environments under this application environment.
- Total bound
  Represents the number of servers that WLM has bound to transaction environments in this application environment. This is a total of all have counts in the transaction environments under this application environment.
- Total number of starting servers
  Represents the number of servers that WLM has started, but have not yet connected to WLM.
- Total number of connected servers
  Represents the number of servers that have connected to WLM, but have not selected any work in this application environment.

Application Environment Limits
Describes the limits existing for the application environment.
- Maximum
  Represents the maximum number of servers WLM is allowed to start for all transaction environments in this application environment.
- Minimum
  Represents the minimum number of servers which should be up and running all the time for this application environment.
- Spread minimum across transaction env
  YES - indicates that the minimum number of servers will be distributed as evenly as possible to all service classes being used to execute work requests.
  NO - indicates that the minimum number of servers will be distributed to service classes as needed in order to meet goals.

Server Information
The server information section describes a specific server that is managed by Server Environment Manager. Note that if no server information exists then this section is not shown.

Server ASID
The ASID of the server environment address space.

Server Jobname
The jobname of the server environment address space.

Server State
The current state of the server: Undefined, Starting, Initializing, Connected, Bound, Unbound, Terminating, Disconnected, A/S Termed, ASCRE Retry, or Routing Ready.

Time of last server state change
The time when the server changed into the current state.
Server Binding

The service class of the transaction environment to which the server is bound. If the server is bound to a transaction environment that is not associated with one service class, then this field will contain ‘********’ to indicate that the transaction environment may contain work classified to more than one service class. The transaction environment is considered to be non-partitioned in this case.

Server Address Space Counts

Describes further properties of the server address space.

Temporal Affinities

Represents the number of temporal affinities which exist for the server address space.

Selected Work Table Information

The selected work table section describes the work which has been selected by a server, to be executed by that server. Note that if no selected work table information exists then this section is not shown. For sysplex routing servers, there is no Selected Work Table.

Number of entries in use

Represents the number of work units currently being executed in parallel by the server. If 0 is shown then no entries are currently in use which means there are no server tasks between IWMSTBGN and IWMSTEND.

Selected work entries

Describes each slot in the table.

User data

Represents the work unit (USERDATA on IWMQINS) as it was provided to WLM by the inserting subsystem. WLM does not use this information, but it has been provided for assistance in debugging problems on the exploiting subsystem’s side of the interfaces.

Transaction Environment Information

The transaction environment section describes a unique queue of work that is known to WLM.

Transaction environment service class

Names the external service class to which the queued work has been classified. If the transaction environment is not associated with one service class, then this field may contain ‘********’ to indicate that the transaction environment may contain more than one service class.

Transaction environment counts

Represents the number of server address spaces in the following categories.

- Target
  Represents the number of servers on the local system that SRM wants bound to this transaction environment.

- Bound
  Represents the number of servers that WLM has bound to this transaction environment.

- Server Instance Target
  Represents the number of clients which route their work requests directly to this server region.
Workload Manager

Transaction environment work queue
Describes the Empty/Not Empty state of the transaction environment's work queue.

Application Environment Table Information
The application environment table information section describes all the application environments known to WLM. The application environments are defined using the WLM ISPF application or through the IWMDINS(install)/IWMPACT(activate) interfaces. Note that if no application environments exist then only the header is shown.

Application Environment name
Names the application environment.

Subsystem Type
Names the subsystem type that is assigned to this application environment.

Procedure Name
Names the JCL procedure used for this application environment.

SERVERMANAGER exception report

***** SERVERMANAGER EXCEPTION REPORT *****

SERVERMANAGER RELATED EXCEPTIONS
---------------------------------

IWM0004I Validity check failure, reason aaxxbbcc, for WLM data area at address zzzzzzzz in ASID X'gggg'.

zzzzzzzz XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0010 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0020 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0030 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0040 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |

IWM0005I Validity check warning, reason aaxxbbcc, for WLM data area at address zzzzzzzz in ASID X'gggg'.

zzzzzzzz XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0010 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0020 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0030 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |
+0040 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |

The fields displayed in the report are listed below each subheading:

Error/Warning control block record

reason: aaxxbbcc
This field contains the reason code associated with the error. The format of the reason code is aaxxbbcc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected.

Control block address: zzzzzzzz
This field contains the address of the control block in error.

ASID: X'gggg'
The address space identifier (ASID) in hexadecimal of the address space where the control block exists.
SERVERMANAGER detail report

***** SERVERMANAGER DETAIL REPORT *****

Global Information
-----------------------------------

Application Environment Table Object........ xxxxxxxx
Server Manager Mode.......................... Goal
Global Server Manager Counts
  Total Number Of Servers Starting........... xxxxxxxx
Starting Server Queues
  First starting server object............... xxxxxxxx
  Last starting server object................ xxxxxxxx

Work Manager Queues
  First active work manager object........... xxxxxxxx
  Last active work manager object............ xxxxxxxx
  First inactive work manager object......... xxxxxxxx
  Last inactive work manager object.......... xxxxxxxx
SRM Recommendations Queues
  First SRM Order............................ xxxxxxxx
  Last SRM Order............................. xxxxxxxx
  SRM Order Stack............................ xxxxxxxx

New Address Space Table
  Slot 1..................................... xxxxxxxx
  Slot 2..................................... xxxxxxxx
  Slot 3..................................... xxxxxxxx

EM CSC Information
  CSC Flags
    xxxxxxxxxxxxxxxxxxxxxxxx
  CSC Work Structure......................... xxxxxxxx
  Internal SVCAE............................. xxxxxxxx

Work Manager Information
----------------------------

Subsystem Type............................... DB2
Subsystem Name............................... DB2A
Work Manager State........................... Active
Work Manager Flags
    xxxxxxxxxxxxxxxxxxxxxxxxxxx

Work Manager Queues
  First application environment.............. xxxxxxxx
  Last application environment............... xxxxxxxx

XDAT Connection.............................. xxxxxxxx

Application Environment Information
-----------------------------------

Application Environment Name........ PAYROLL
Application Environment State.............. Available
Application Environment Counts
  Total target................................ xxxxxxxx
  Total bound................................ xxxxxxxx
  Number of starting servers................ xxxxxxxx
  Number of connected servers.............. xxxxxxxx
Application Environment Limits
  Maximum.................................. xxxxxxxx
  Minimum.................................. xxxxxxxx
  Spread minimum across transaction env.... YES|NO
Application Environment Flags
  xxxxxxxxxxxxxxxxxxxxxxxxxxx

Application Environment Queues
  First server............................. xxxxxxxx
  Last server.............................. xxxxxxxx
  First transaction environment............ xxxxxxxx
  Last transaction environment............. xxxxxxxx
### Server Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Server ASID</td>
<td>X'002F'</td>
</tr>
<tr>
<td>Server Jobname</td>
<td>PAYROLL</td>
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<tr>
<td>Server State</td>
<td>Bound</td>
</tr>
<tr>
<td>Time Of Last Server State Change</td>
<td>05/10/1996 10:52:38</td>
</tr>
<tr>
<td>Server Binding</td>
<td>AQISSLOW</td>
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<tr>
<td>Server Address Space Counts</td>
<td>xxxxxxxx</td>
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<td>Server Flags</td>
<td>xxxxxxxx</td>
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<td>Selected Work Table</td>
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<tr>
<td>Server Subqueue ID</td>
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<tr>
<td>Server Queues</td>
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<td>First server task</td>
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<td>Last server task</td>
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<tr>
<td>First suspended server task</td>
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<tr>
<td>Last suspended server task</td>
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<tr>
<td>First resuming suspended server task</td>
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<tr>
<td>Last resuming suspended server task</td>
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<tr>
<td>Number Of ASCRE Tries</td>
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</table>

### Selected Work Table

<table>
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<tr>
<th>Description</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Number Of Entries In Use</td>
<td>xxxxxxxx</td>
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<tr>
<td>Selected Work Entries</td>
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<tr>
<td>User Data</td>
<td>xxxxxxxx</td>
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<tr>
<td>Execution TCB</td>
<td>xxxxxxxx</td>
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<tr>
<td>Execution Unit Token</td>
<td>xxxxxxxx</td>
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<tr>
<td>Enclave Token</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>Userid</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>Selected from</td>
<td>$REGION$</td>
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</table>

### Server Task Information

<table>
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<tr>
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<tr>
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<tr>
<td>Server Task Suspend Sequence Number</td>
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<tr>
<td>Server Task Subqueue ID</td>
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</tr>
<tr>
<td>Server Task ECB</td>
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</tr>
<tr>
<td>Server Task Last Enclave Token</td>
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### Transaction Environment Information

<table>
<thead>
<tr>
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<th>Details</th>
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<tbody>
<tr>
<td>Transaction Environment Service Class</td>
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<tr>
<td>Transaction Environment Counts</td>
<td>xxxxxxxx</td>
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<tr>
<td>Target</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>Bound</td>
<td>xxxxxxxx</td>
</tr>
</tbody>
</table>

### Application Environment Table Information

---

**Workload Manager**
Application Environment Name........ PAYROLL
Subsystem Type............................. DB2
Procedure Name............................. PAYROLL

Start Parameters

Limit on starting server address spaces
Single address space per system

Local System Data
System State......................... Available
Time Of Last State Change.......... 05/10/1996 09:37:08
Name Of System Coordinating System State. ********
Local Work Unit ID.................... xxxxxxxx xxxxxxxx

Server Failure Data
Number of unexpected server failures..... 00000002
Server Failure Flags
xxxxxxxxxxxxxxxxxxxxxxxx
Server Failure Times
Most Recent Failure Time............. 05/10/1996 10:52:36
... .................. 05/10/1996 10:52:13
... .................. None
... .................. None
Oldest Failure Time............... None

Fields displayed in this report include:

Global Information
The global environment management information section represents data that is global to all system processing done by the WLM server environment manager.

Application environment table object
Represents the pointer to the Application Environment Table (AET).

Server Manager mode
Represents the WLM mode that the server environment manager is using. A value of Goal corresponds directly with the goal mode of WLM.

Global server manager counts
Describes global counters used by the Server Environment Manager to manage the servers and application environments.

Total number of servers starting
Represents the number of WLM started servers that are being started concurrently across all work managers known to WLM. The servers counted here are in the STARTING, INITIALIZING or ASCRE_RETRY state.

Starting Server Queues
Describes the servers that are being started by WLM. These are the same servers as those included in the starting server count.
• First starting server object
  Represents the first server object that is currently being started by WLM.
• Last starting server object
  Represents the last server object that is currently being started by WLM.

Work Manager Queues
Represents the work managers known to WLM.
• First active work manager object
  Represents the first active work manager object (which specified IWMCONN QUEUE_MANAGER=Yes) known to WLM.
Workload Manager

- Last active work manager object
  Represents the last active work manager object (which specified IWMCONN QUEUE_MANAGER=YES) known to WLM.

- First inactive work manager object
  Represents the first work manager object (which specified IWMCONN QUEUE_MANAGER=YES) known to WLM which has disconnected (IWMDISC) and is being cleaned up by the Server Environment Manager.

- Last inactive work manager object
  Represents the last work manager object (which specified IWMCONN QUEUE_MANAGER=YES) known to WLM which has disconnected (IWMDISC) and is being cleaned up by the Server Environment Manager.

SRM Recommendation Queues
Represents QMPL orders from SRM, which the Server Environment Manager has yet to act upon.

- First SRM order
  Represents the first SRM QMPL order which the Server Environment Manager has yet to act upon. to WLM.

- Last SRM order
  Represents the last SRM QMPL order which the Server Environment Manager has yet to act upon. to WLM.

- SRM order stack
  Represents a list of SRM QMPL orders that Server Environment Manager has yet to act upon. This is the list where SRM queues new QMPL orders.

New Address Space Table
Represents the list of slots containing server objects to be started by WLM. Server objects in this table should be in the STARTING (or possibly TERMINATING, but not likely) state and should also be in the Starting Server Queue.

EM CSC Information
Header that indicates information defined under this header is related to the EM cross-system coordination process.

CSC flags
Header that specifies that the flags related to the EM command processing coordinator are to be shown. If none of the flags that are of interest are set then this header is not shown.

CSC in progress
Indicates that EM command processor is currently trying to complete a command.

CSC Work structure
Represents the EM command coordinator work structure.

EM Internal SVCAE
Represents the EM command coordinator checkpoint area.

Work Manager Information
The work manager section shows each work manager that is using server
environment manager services in the system. Note that if no work manager
information exists then this section is not shown (also applicable sections
under it are not shown).

**Subsystem Type**
The work manager’s WLM subsystem type.

**Subsystem name**
The work manager’s WLM subsystem name.

**Work Manager State**
The work manager’s state.
- **Active**
  Indicates a work manager that is connected to WLM and has not
terminated.
- **Inactive**
  Indicates a work manager that is terminating or has terminated, and
  may no longer be connected to WLM.

**Work Manager Flags**
Flags representing work manager status. If none of the flags that are of
interest are set then this header is not shown.
- **Operator Started**
  Indicates that the existence of this work manager was indicated to
workload management by an operator command starting a server
address space.
- **Queue Manager**
  Indicates that the work manager is a queue manager.
- **Router**
  Indicates that the work manager is a sysplex routing manager.

**Work Manager Queues**
The queues of objects which are anchored by the work manager
- **First application environment**
  Represents the first application environment in use by this work
  manager.
- **Last application environment**
  Represents the last application environment in use by this work
  manager.

**XDAT connection**
Represents the XDAT object to which the work manager is connected.

**Application Environment Information**
The application environment section shows each application environment that
is in use by the work manager above.

**Application Environment Name**
The application environment's name.

**Application Environment State**
Specifies the application environment's state.
- **Available**
  Indicates that the application environment is defined to workload
  management and that it is ready for the associated subsystem(s) to
  connect to it.
Workload Manager

- Quiesced
  Indicates that the application environment was quiesced because the operator has issued the V WLM,APPLENV=xxxxx,QUIESCE command.
- Stopped
  Indicates that workload management has stopped starting new servers in this application environment because workload management has detected a problem with the application environment's JCL procedure or the server code.
- Deleting
  Indicates that WLM is in the process of deleting this application environment.
- Refreshing
  Indicates that WLM is in the process of refreshing all the servers in this application environment.
- Quiescing
  Indicates that WLM is in the process of quiescing all the servers in this application environment.

Application Environment Counts
Describes the number of server address spaces in the following categories;
- Total target
  Represents the total number of server address spaces requested on the local system by SRM for all transaction environments in this application environment. This is a total of all want counts in the transaction environments under this application environment.
- Total bound
  Represents the number of servers that WLM has bound to transaction environments in this application environment. This is a total of all have counts in the transaction environments under this application environment.
- Total number of starting servers
  Represents the number of servers that WLM has started, but have not yet connected to WLM.
- Total number of connected servers
  Represents the number of servers that have connected to WLM, but have not selected any work in this application environment.

Application Environment Limits
Describes the limits existing for the application environment.
- Maximum
  Represents the maximum number of servers WLM is allowed to start for all transaction environments in this application environment.
- Minimum
  Represents the minimum number of servers which should be up and running all the time for this application environment.
- Spread minimum across transaction env
  YES - indicates that the minimum number of servers will be distributed as evenly as possible to all service classes being used to execute work requests.
  NO - indicates that the minimum number of servers will be distributed to service classes as needed in order to meet goals.
Application Environment Flags
Describes the flags which are set in the application environment. If none of the flags that are of interest are set then this header is not shown.
- Operator started
  Indicates that the server was started by the operator (or some process other than WLM).
- Logically deleted
  Indicates that the application environment is logically deleted.

Application Environment Queues
Describes the queues anchors in the application environment object.
- First server
  Describes the first server object in this application environment.
- Last server
  Describes the last server object in this application environment.
- First transaction environment
  Describes the first transaction environment object in the application environment.
- Last transaction environment
  Describes the last transaction environment object in the application environment.

Server Information
The server information section describes a specific server that is managed by Server Environment Manager. Note that if no server information exists then this section is not shown.

Server ASID
The ASID of the server environment address space.

Server Jobname
The jobname of the server environment address space.

Server state
The current state of the server. Could be Undefined, Starting, Initializing, Connected, Bound, Unbound, Terminating, Disconnected, A/S Termed, or ASCRE Retry.

Time of last server state change
The time when the server changed into the current state.

Server Binding
The service class of the transaction environment to which the server is bound. If the server is bound to a transaction environment that is not associated with one service class, then this field will contain "********" to indicate that the transaction environment may contain work classified to more than one service class. The transaction environment is considered to be non-partitioned in this case.

Server Address Space Counts
Describes further properties of the server address space.

Temporal Affinities
Represents the number of temporal affinities which exist for the server address space.
Workload Manager

**Server flags**
Represents flags that are set in the server object. If none of the flags that are of interest are set then this header is not shown.

- **Work manager terminating**
  Indicates that the work manager which owns this server is terminating. Could be as a result of the work manager disconnecting from WLM or going through MEMTERM.
- **Adjustment**
  Indicates that the server is being told to terminate as the result of a downward QMPL adjustment from SRM.
- **Must terminate**
  Indicates that the server is being told to terminate and that it will not be allowed to reconnect to WLM. It must go through MEMTERM.
- **Operator started**
  Indicates that the server was started by the operator (or some process other than WLM).
- **Queuing server**
  Indicates that the server is a queuing server.
- **Routing server**
  Indicates that the server is a sysplex routing server.

**Server subqueue id**
Describes the subqueue where the server object currently resides.

- **S**
  Identifier for a SEAS on a suspended SEAS subqueue. This indicates that the server environment address space has at least one task suspended inside IWMSSEL (IWME2SEL).
- **N**
  Identifier for a SEAS on a starting SEAS subqueue ("N" for new).
- **U**
  Identifier for a SEAS not on a subqueue.

**Server queues**
Describes the queues which are anchored in this server object.

- **First server task**
  Represents the first server task object which is known to WLM.
- **Last server task**
  Represents the last server task object which is known to WLM.
- **First suspended server task**
  Represents the first server task object which is suspended inside the IWMSSEL service routine, waiting for work.
- **Last suspended server task**
  Represents the last server task object which is suspended inside the IWMSSEL service routine, waiting for work.
- **First resuming server task**
  Represents the first server task object which is about to be resumed after being suspended inside the IWMSSEL service routine, waiting for work.
- **Last resuming server task**
Workload Manager

Represents the last server task object which is about to be resumed after being suspended inside the IWMSSESEL service routine, waiting for work.

- First secondary suspended server task
  Represents the first secondary server task object for tasks suspended within IWMSSEM service for secondary work requests.

- Last secondary suspended server task
  Represents the last secondary server task object for tasks suspended within IWMSSEM service for secondary work requests.

- Number of ASCRE Tries
  Represents the number of times that WLM attempted to restart a server environment address space which failed before connecting to WLM.

Selected Work Table Information
The selected work table section describes the work which has been selected by a server, to be executed by that server. Note that if no selected work table information exists then this section is not shown. For sysplex routing servers, there is no Selected Work Table.

Number of entries in use
Represents the number of work units currently being executed in parallel by the server. If 0 is shown then no work units are currently in use which means there are no server tasks between IWMSTBGN and IWMSTEND.

Selected work entries
Describes each slot in the table.

- User data
  Represents the work unit (USERDATA on IWMQINS) as it was provided to WLM by the inserting subsystem. WLM does not use this information, but it has been provided for assistance in debugging problems on the exploiting subsystem’s side of the interfaces.

- Execution TCB
  TCB address of the task which is executing the work represented by this entry.

- Execution unit token
  A token representing a work unit.

- Enclave token
  A token representing the enclave under which the work is executing.

- Userid
  The userid that owns the work unit. When the userid is present, WLM will initialize a security environment during IWMSTBGN processing.

- Selected from
  The service class of the transaction environment that the selected work entry is associated with. If the server is bound to a transaction environment that is not associated with one service class, then this field will contain ‘********’ since the selected work entry cannot be associated with a particular service class. If the work entry is selected from a region queue, then this field will contain ‘$REGION$’ to indicate that the work entry is not associated with a service class.

Maximum number of entries
Represents the maximum number of work units that may be executed in parallel by the server.
Workload Manager

**Selected work free queue**
The head of the queue of free slots in the selected work table.

**Server Task Information**
The server task information section describes a specific task in the server address space that is known by Server Environment Manager because it has issued the IWMSSEL service at least once in its lifetime.

**Server Task TCB**
The TCB address of the server task.

**Server Task suspend token**
A token used to identify a suspend instance.

**Server Task subqueue ID**
Represents the current state of the server task, such as:
- S
  Server task is suspended.
- R
  Server task is about to be resumed.
- U
  Server task is not suspended.

**Server Task ECB**
The ECB used by WLM for batch initiators.

**Server Task Last Enclave Token**
Enclave token from the last work request selected by the server.

**Transaction Environment Information**
The transaction environment section describes a unique queue of work that is known to WLM.

**Transaction environment service class**
Names the external service class to which the queued work has been classified. If the transaction environment is not associated with one service class, then this field may contain "********" to indicate that the transaction environment may contain more than one service class.

**Transaction environment counts**
Represents the number of server address spaces in the following categories.
- Target
  Represents the number of servers on the local system that SRM wants bound to this transaction environment.
- Bound
  Represents the number of servers that WLM has bound to this transaction environment.

**Transaction environment work queue**
Describes the Empty/Not Empty state of the transaction environment’s work queue.

**Application Environment Table Information**
The application environment table information section describes all the application environments known to WLM. The application environments are defined using the WLM ISPF application or through the IWMDINS(install)/IWMPACT(activate) interfaces. Note that if no application environments exist then only the header is shown.
Application Environment name
Names the application environment.

Subsystem Type
Names the subsystem type that is assigned to this application environment.

Procedure Name
Names the JCL procedure used for this application environment.

Start Parameters
Shows the start parameter information used by WLM when starting a server environment address space in this application environment.

Limit on starting server address spaces
A header line that indicates that one of the subsequent lines is a limit for the current application environment.
- No limit
- Single address space per system
- Single address space per sysplex

Local System Data
A header line that indicates that information indented under this line is used by the local/current system to manage the application environment.

System State
Indicates the application environment state as known by the current system.
- Available
  Indicates that the application environment is defined to WLM and that it is ready for the associated subsystem to connect to it.
- Refreshing
  Indicates that the application environment is being refreshed because the operator issued a V WLM,APPLENV=xxxxx,REFRESH command.
- Quiescing
  Indicates that this system is working on an operator issued V WLM,APPLENV=xxxxx,QUIESCE command.
- Quiesced
  Indicates that this system has finished working on an operator issued V WLM,APPLENV=xxxxx,QUIESCE command.
- Resuming
  Indicates that this system is working on an operator issued V WLM,APPLENV=xxxxx,RESUME command.
- Internally-Refreshing
  Indicates that this system is working on an internally generated refresh action.
- Internally-Stopping
  Indicates that this system is working on an internally generated stop action.
- Internally-Stopped
  Indicates that this system has finished working on an internally generated stop action.
- Deleting
  Indicates that WLM is in the process of deleting this application environment.
Workload Manager

- Deleted
  Indicates that WLM has finished the process of deleting an application environment.
- No State
  Indicates that the application environment state does not exist.
- Unknown
  Indicates that the application environment state is not any of the above, therefore it is unknown. For this case we most likely have bad data.

Time Of Last State Change
The last time the application environment state was changed.

Name Of System Coordinating Application Environment State
Indicates which system in the sysplex is coordinating the application environment state that is shown. Coordination is required for any transitional state such as deleting/quiescing and possibly the 'no state' condition.

Note that if no system is coordinating the system state then ******** is shown.

Local Work Unit ID
The work-unit-id of the current action (if application environment state is transitional, like deleting) or the last action that was performed for this application environment

Server Failure Data
A header line that groups data collected by Server Environment Manager relating to unexpected server terminations in this application environment. If there is no failure data to display, this entire section will be skipped by the IPCS formatter.

Number of unexpected server failures
The number of unexpected server terminations detected by Server Environment Manager on this system in this application environment

Server Failure Flags
Groups flags that are set in this section of the AET.
- Internal Stop has been initiated
  Indicates that Server Environment Manager has detected 5 unexpected terminations within 10 minutes of each other and that Server Environment Manager has initiated an internal-stop of the application environment.

Server Failure Times
Displays the date and time of the most recent unexpected termination to the oldest unexpected termination (maximum of 5 in the history). If the most recent and the oldest are within 10 minutes of each other then Server Environment Manager will initiate an internal-stop of the application environment.

WLMDATA scheduling environment report

The Scheduling Environment Report provides an overview of information that is pertinent to scheduling environment processing for WLM.
The Scheduling Environment Report information is returned when the SCHENV keyword is given on the WLMDATA subcommand. Various refinements of the Scheduling Environment Report information can be done by specifying either SUMMARY, DETAIL or EXCEPTION.

What follows is the display formats for the SUMMARY, DETAIL, and EXCEPTION reports.

**SCHENV summary report**

```
***** SCHENV SUMMARY REPORT *****
Scheduling Environment Table Information
----------------------------------------
Scheduling Environments

Scheduling Environment Name.... CRYPTO
Description.................. CRYPTO Environment

Scheduling Environment Name.... DB2
Description.................. DB2 Environment

Resources
---------

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRYPTO</td>
<td>CRYPTO required</td>
</tr>
<tr>
<td>DB2</td>
<td>DB2 required</td>
</tr>
<tr>
<td>DB2_NOT_4</td>
<td>DB2 V4 NOT required</td>
</tr>
<tr>
<td>IMS</td>
<td>IMS required</td>
</tr>
<tr>
<td>OS390R3</td>
<td>release/version identifier</td>
</tr>
<tr>
<td>OS390R4</td>
<td>release/version identifier</td>
</tr>
</tbody>
</table>
```

Fields displayed in this report include:

**Scheduling Environment Table Information**

This line represents a header line that indicates that the following information comes from the Scheduling Environment Table (IWMSET).

If no scheduling environments and resources exist then the No Scheduling Environment Information Exists line is displayed. If the no scheduling information exists line is displayed then no further information is shown.

**Scheduling Environments**

This line represents a header line that indicates that the following information represents scheduling environments.

If no scheduling environments exist then the No Scheduling Environments Exist line is displayed.

If scheduling environments exist the following is displayed for each scheduling environment.

**Scheduling Environment Name**

Specifies the 1 - 16 character long scheduling environment name.

**Description**

Specifies the 1 - 32 character long description for the scheduling environment.
Resources
This line represents a header line that indicates that the following information represents resources.

If no resources exist then the No Resources Exist line is displayed.

If resources exist then the following is displayed. Note that each item described below is defined under the column name that is associated with the item.

Resource Name
Specifies the 1-16 character long resource name.

Description
Specifies the 1-32 character long description for the resource.

SCHENV exception report
This report displays dump output messages and a hexadecimal dump of each data area that received a validity check failure or warning. IBM might request this information for problem determination. Fields displayed in the report include:

Error/Warning control block record

reason: aaxxbbcc
This field contains the reason code associated with the error. The format of the reason code is aaxxbbcc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected.

Control block address: zzzzzzzz
This field contains the address of the control block in error. The control blocks reported by the SCHENV exception report is the SECT mapped by IWMSECT.

ASID: X'gggg'
The address space identifier (ASID) in hexadecimal where the control block exists.

SCHENV detail report

***** SCHENV DETAIL REPORT *****

Global SCHENV Manager Information
----------------------------------

Global SCHENV Manager Flags
SE Control Flag
SE Active
SE Quiesced
Action Processor Flag
Action Processor In Progress
Action Processor Allowed To Abend
Topology Processor Flag
Topology Processor In Progress
Topology Processor Allowed To Abend
Topology Processor Allowed To Send Null Topology
Timer Flag
Action Processor Timer Set
Topology Processor Timer Set
RESYNC Processor Timer Set
RESYNC Processor Flag
RESYNC Processor In Progress

Time We Did Things
Workload Manager

Topology Processor Last Time Sent...... xx/xx/xxxx xx:xx:xx
RESYNC Processor Last Time Sent........ xx/xx/xxxx xx:xx:xx
RESYNC Started Time...................... xx/xx/xxxx xx:xx:xx
Last Time IWMSEVAL Issued.............. xx/xx/xxxx xx:xx:xx
Last Time IWMSEDES Issued.............. xx/xx/xxxx xx:xx:xx
Last Time IWMSEALP Entered............. xx/xx/xxxx xx:xx:xx

SCHENV Counts
SE Task Action Processor Restart Counter..... xxxxxxxx
SE RESYNC Timer Count Retries................ xxxxxxxx
SE RESYNC Timer Count........................ xxxxxxxx
SE Allocation Sequence Number................ xxxxxxxx
SE Topology Processor Restart Counter........ xxxxxxxx

Object Anchors
Active Scheduling Environment Table (SET).... xxxxxxxx
Policy Activation SET........................ xxxxxxxx
Action Work Structure........................ xxxxxxxx
Action Processor External Stack.............. xxxxxxxx
Action Processor Internal Head............... xxxxxxxx
Action Processor Internal Tail............... xxxxxxxx
Topology Processor External Stack............ xxxxxxxx
Topology Processor Internal Head............. xxxxxxxx
Topology Processor Internal Tail............. xxxxxxxx
RESYNC System List........................... xxxxxxxx
CID Head..................................... xxxxxxxx
CID Tail..................................... xxxxxxxx

Scheduling Environment Table Information
----------------------------------------

Header Information
---------------------
Size Of Header............................... xxxxxxxx
Size Of Scheduling Environment Table......... xxxxxxxx
Header TOD Value............................. xx/xx/xxxx xx:xx:xx
Size Of System Status Area................... xxxxxxxx
Number Of Scheduling Environment Entries..... xxxxxxxx
Number Of SR Entries.......................... xxxxxxxx
Number Of Resource Entries................... xxxxxxxx
Number Of System Status Area Entries......... xxxxxxxx

Scheduling Environments
-------------------------------

Scheduling Environment Name.... CRYPTO
Description....................... CRYPTO Environment

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Required State</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRYPTO</td>
<td>ON</td>
</tr>
</tbody>
</table>

Scheduling Environment Name.... DB2
Description...................... DB2 Environment

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Required State</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2</td>
<td>ON</td>
</tr>
<tr>
<td>05390R4</td>
<td>ON</td>
</tr>
</tbody>
</table>

Resources
---------
## Workload Manager

<table>
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<tr>
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<td>release/version required</td>
</tr>
<tr>
<td>OS390R4</td>
<td>release/version required</td>
</tr>
</tbody>
</table>

### Scheduling Environments System Status Information

#### System..................... SY1

**Header Information**
- **Header TOD Value**: xx/xx/xxxx xx:xx:xx
- **Last Time Section Modified**: xx/xx/xxxx xx:xx:xx
- **Size Of Header**: xxxxxxxxx
- **Size Of System Status Area**: xxxxxxxxx
- **Number Of SES Entries**: xxxxxxxxx
- **Number Of RES Entries**: xxxxxxxxx

**Scheduling Environment**: CRYPTO
- **Index**: xxxxxxxxx
- **Status Flag**: Available
- **Control Flag**:
  - Requires Normal ENF
  - Requires Recovery ENF

**Scheduling Environment**: DB2
- **Index**: xxxxxxxxx
- **Status Flag**: Available
- **Control Flag**:
  - Requires Normal ENF
  - Requires Recovery ENF

**Resource**: CRYPTO
- **Index**: xxxxxxxxx
- **State**: xxxxx
- **Control Flag**:
  - Modification In Progress

#### System..................... SY2

**Header Information**
- **Header TOD Value**: xx/xx/xxxx xx:xx:xx
- **Last Time Section Modified**: xx/xx/xxxx xx:xx:xx
- **Size Of Header**: xxxxxxxxx
- **Size Of System Status Area**: xxxxxxxxx
- **Number Of SES Entries**: xxxxxxxxx
- **Number Of RES Entries**: xxxxxxxxx

**Scheduling Environment**: CRYPTO
- **Index**: xxxxxxxxx
- **Status Flag**: Available
- **Control Flag**:
  - Requires Normal ENF
  - Requires Recovery ENF
The following describes the items in the above report:

**Global SCHENV Manager Information**

This line represents a header line that indicates that the following information comes from the Scheduling Environment Control Table (IWMSECT).

**Global SCHENV Manager Flags**

This line represents a header line that indicates that the following information represents the global scheduling environment manager flags.

If no flags are set then *No Global SCHENV Flags Set* is displayed.

If flags exist then the appropriate Flag header and flag information is displayed. The following lists what can be displayed:

**SE Control Flag**
- SE Active — Indicates WLM SE subcomponent active
- SE Quiesced — Indicates WLM SE subcomponent quiesced

**Action Processor Flag**
- Action Processor In Progress
- Action Processor Allowed To Abend

**Topology Processor Flag**
- Topology Processor In Progress
- Topology Processor Allowed To Abend
- Topology Processor Allowed To Send Null Topology

**Timer Flag**
- Action Processor Timer Set
- Topology Processor Timer Set
- RESYNC Processor Timer Set

**RESYNC Processor Flag**
- RESYNC Processor In Progress

**Time we did things**

This line represents a header line that indicates that the following information represents times things occurred.

If no time fields have time values then *No Time Fields Set* is displayed.

If time fields are set then the appropriate time field row is displayed. The following lists what is displayed:

**Topology processor last time sent**

Identifies the last time the scheduling environment manager sent topology information to other systems in the sysplex.
Workload Manager

**RESYNC Processor Last Time Sent**
Identifies the last time the scheduling environment manager attempted to RESYNC with other systems in the sysplex.

**RESYNC Start Time**
Identifies when the scheduling environment manager started RESYNC processing.

**Last Time IWMSEVAL Issued**
Identifies when the module that handles IWMSEVAL handled a request.

**Last Time IWMSEDES Issued**
Identifies when the module that handles IWMSEDES handled a request.

**Last Time IWMSEALP Entered**
Identifies when the module that performs local processing last processed an action (F WLM,RESOURCE= or IWMSESET) against the IWMSET.

**SCHENV Counts**
This line represents a header line that indicates that the following information represents the global scheduling environment counts.

The following lists what is displayed:

**SE Task Action Processor Restart Counter**
Count represents the number of times the scheduling environment manager has restarted while the action processing function was still in control or zero.

Normally the scheduling environment manager should not fail while doing anything. If this is the case then zero should exist normally.

If a count exists then the scheduling environment manager was handling a F WLM,RESOURCE= command (this system or another) or a IWMSESET invocation. In any case a non-zero count indicates failure while handling the above mentioned work.

**SE RESYNC Timer Count Retries**
Count represents the maximum number of times the scheduling environment manager RESYNC processing is allowed to retry.

**SE RESYNC Timer Count**
Count represents the number of times the scheduling environment manager has performed RESYNC processing. Once this count reaches the SE RESYNC Timer Count Retries then the RESYNC processing is terminated.

**SE Allocation Sequence Number**
A sequence number that is incremented every time the scheduling environment table or a system area is freed. IWMSEQRY uses this to determine if storage was freed while it tried to copy it.

**SE Topology Processor Restart Counter**
Count represents the number of times the scheduling environment manager has restarted while the topology processing function was still in control or zero.

Normally the scheduling environment manager should not fail while doing anything. If this is the case then zero should exist normally.
If a count exists then the scheduling environment manager was attempting to send a topology request to another system. In any case a non-zero count indicates a failure while creating and sending a topology request to another system.

**Object Anchors**

This line represents a header line that indicates that the following information represents the global scheduling environment object anchors.

The following lists what is displayed:

- **Active Scheduling Environment Table (SET)**
  Pointer to the active scheduling environment table.

- **Policy Activation SET**
  Pointer to the scheduling environment table that exists during policy activation processing.

- **Action Work Structure**
  Pointer to the action work structure.

- **Action Processor External Stack**
  Pointer to the action processor external stack.

- **Action Processor Internal Head**
  Pointer to the beginning of the action processor internal queue.

- **Action Processor Internal Tail**
  Pointer to the end of the action processor internal queue.

- **Topology Processor External Stack**
  Pointer to the topology processor external stack.

- **Topology Processor Internal Head**
  Pointer to the beginning of the topology processor internal queue.

- **Topology Processor Internal Tail**
  Pointer to the end of the topology processor internal queue.

- **RESYNC System List**
  Pointer to the RESYNC processor’s system list.

- **CID Head**
  Pointer to the beginning of the CID queue.

- **CID Tail**
  Pointer to the end of the CID queue.

**Scheduling Environment Table Information**

This line represents a header line that indicates that the following information comes from the Scheduling Environment Table (IWMSET).

If no scheduling environments and resources exist then the No Scheduling Environment Information Exists line is displayed. If the no scheduling information exists line is displayed then no further information is shown.

**Header Information**

This line represents a header line that indicates that the following information represents header information in the IWMSET.

**Size Of Header**

Represents the size of the IWMSET header area.
Workload Manager

**Size Of Scheduling Environment Table**
Represents the size of the whole scheduling environment table (IWMSET).

**Header TOD Value**
Represents the install time stamp of a service definition.

**Size Of System Status Area**
Represents the size of a system status area.

**Number Of Scheduling Environment Entries**
Number of scheduling environments in the IWMSET.

**Number Of SR Entries**
Number of scheduling environment/resource entries in the IWMSET.

The scheduling environment/resources entries represent relationships of scheduling environments to resources. Once entry exists for each resource that is defined under a scheduling environment.

**Number Of Resource Entries**
Number of resources in the IWMSET.

**Number Of System Status Area Entries**
Number of systems that are known to scheduling environment manager.

**Scheduling Environments**
This line represents a header line that indicates that the following information represents scheduling environments.

If no scheduling environments exist then the *No Scheduling Environments Exist* line is displayed.

If scheduling environments exist the following is displayed for each scheduling environment.

**Scheduling Environment Name**
Specifies the 1-16 character long scheduling environment name.

**Description**
Specifies the 1-32 character long description for the scheduling environment.

**List of all resources defined for this scheduling environment**
This list is defined in a table that has the following items as the column definitions.

- **Resource Name**
  Name of resource for this scheduling environment.

- **Required State**
  Defines the state the resource must be in to make this scheduling environment available.

**Resources**
This line represents a header line that indicates that the following information represents resources.

If no resources exist then the *No Resources Exist* line is displayed.

If resources exist then the following is displayed. Note that each item described below is defined under the column name that is associated with the item.
**Resource Name**
Specifies the 1-16 character long resource name.

**Description**
Specifies the 1-32 character long description for the resource.

### Scheduling Environments System Status Information
This line represents a header line that indicates that the following information represents scheduling environment system status information.

For each system in the sysplex known to this system the following information is displayed.

### System
This line represents the header line that defines the system that the following information pertains too.

### Header Information
- **Header TOD Value**
  Represents the install timestamp of a service definition.
- **Last Time Section Modified**
  Represents a time stamp of when the last time an update was made to the system status area.
- **Size Of Header**
  Represents the size of the header section of the system status areas.
- **Size Of System Status Area**
  Represents the size of the whole of the system status areas.
- **Number Of SES Entries**
  Number of scheduling environments entries in the system status area.
- **Number Of RES Entries**
  Number of resource entries in the system status area.

### Scheduling Environment Information
This line represents the scheduling environment entry name that exists in the system status area.

For this scheduling environment entry the following is displayed.

- **Index**
  Represents a numeric number that identifies the scheduling environment.

- **Status Flag**
  Represents a header line that identifies flags set for this scheduling environment. The following flags exist.
  - **Available**
    Indicates that the scheduling environment is available.

- **Control Flag**
  Represents a header line that identifies control flags set for this scheduling environment. The following flags exist.
  - **Normal ENF**
    Indicates that a normal type ENF 57 must be issued.
Workload Manager

Recovery ENF
Indicates that a recovery type ENF 57 must be issued.

The above scheduling environment information is repeated for each scheduling environment that exists in the system status area.

Resource Information
This line represents the resource entry name that exists in the system status area.

For this resource entry the following is displayed.

Index
Represents a numeric number that identifies the resource.

State
Represents the state the resource is in. The state was set via the F WLM,RESOURCE= command or the IWMSESET API.

On
Indicates resource set to ON state.

Off
Indicates resource set to OFF state.

Reset
Indicates resource set to RESET state.

Control Flag
Represents a header line that identifies control flags set for this resource. The following flags exist.

Modification In Progress
Indicates that a F WLM,RESOURCE= command or IWMSESET API invocation is being performed for this resource.

The above resource information is repeated for each resource that exists in the system status area.

WLMDATA Coupling Facility manager report

The Coupling Facility manager report provides an overview of Coupling Facility Manager processing information relating to WLM.

This report is returned when the CFMANAGER keyword is given on the WLMDATA subcommand. Variations of this information can be obtained by specifying either SUMMARY, DETAIL, or EXCEPTION.

What follows are the display formats for the SUMMARY, DETAIL, or EXCEPTION reports. Note that for the SUMMARY and DETAIL reports, the displays show all possible sections that could appear. In reality, if certain information does not exist, those sections are not displayed. For example, if no multisystem enclaves exist, then only the global information is shown and no information past that section is shown.
Global CF manager information

The global coupling facility manager information section represents data that is global to all CF processing done by the Coupling Facility Manager. The following appears under this header:

**CF Manager Control Table Anchor**

Represents the address to the IWMCFCT (CFCT - Coupling Facility Control Table) table.

**Task Control Flags or No Task Control Flags Set**

Header line indicating that Task Control Flags exist or do not exist. If Task Control Flags is displayed then any of the following information may be displayed:

- **Local Mode**
  Indicates local mode designation from the IXCQUERY LOCAL(xxxx) invocation

- **Connection Made**
  Indicates that the Coupling Facility Manager has made a successful connection to a structure at least once. Once set it remains on for IPL duration.

- **VCP Allowed To Abend**
  There are some situations that require IWMC3VCP to take an abend. An example would be IWMC3VCP finding a bad CFRB. (You should never encounter a bad CFRB unless there is an internal problem.)

  When this indicator is set module IWMC3VCP is allowed to abend. Prior to IWMC3VCP taking the abend the indicator is reset and IWMC3VCP does not take those abends again. Doing this prevents IWMC3VCP from going into a recursive abend condition.

- **CST Allowed To Abend**
  There are some situations that require IWMC3CST to take an abend. An
example would be issuing IXLCONN and getting a bad parameter return code. (You should never encounter a bad parameter return code unless there is an internal problem.)

When this indicator is set module IWMC3CST is allowed to abend. Prior to IWMC3CST taking the abend the indicator is reset and IWMC3CST does not take those abends again.

**DST Allowed To Abend**

There are some situations that require IWMC3DST to take an abend. An example would be issuing IXLDISC and getting a bad parameter return code. (You should never encounter a bad parameter return code unless there is an internal problem.)

When this indicator is set module IWMC3DST is allowed to abend. Prior to IWMC3DST taking the abend the indicator is reset and IWMC3DST does not take those abends again.

**Update Processor Flags or No Update Processor Flags Set**

Header line indicating that Update Processor Flags exist or do not exist. If Update Processor Flags is displayed then any of the following information may be displayed:

**Update Processor Timer Set**

When set, indicates that a timer has been created to allow the update processor (IWMC3UDP) to get control again.

**Structure definition information**

The structure definition information section represents an entry for each WLM structure that is supported by the Coupling Facility Manager. The following appears under this header:

**Structure**

Defines the structure name. The following structure names are supported by the Coupling Facility Manager:

- **SYSZWLM_WORKUNIT** (legacy product)
- **SYSZWLM_xxxxxxxx** (z/OS Release 1 or later)

**Type**

Defines the type of structure. The type can be:

- **CACHE**
- **LIST** (legacy only)

**Connect/Disconnect Flags**

Defines connect (IXLCONN) and disconnect (IXLDISC) indicators that are used as footprints to indicate what was done by connect or disconnect processing:

- **Connected**
- **Connect Failed**
- **Disconnected**
- **Disconnect Failed**

Note that the CONTOKEN field in the structure definition of the DETAIL report defines if a structure is really connected or not. These indicators exist to show what IWMC3CST or IWMC3DST may have done during connect processing. For example, if it connected correctly and then disconnected (due to some IWMC3CST validation problem) and the disconnect failed then the Disconnect Failed indicator is set. The CONTOKEN field in the structure definition will show a CONTOKEN of zero indicating that it is disconnected.
Fields displayed in this report include:

**Error/Warning control block record**

**reason: aaxxbbcc**
This field contains the reason code associated with the error. The format of the reason code is aaxxbbcc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected. The control block identifiers and modules IDs are defined in IWMZCONS.

**Control block address: zzzzzzzz**
This field contains the address of the control block in error. The control blocks reported by the CFMANAGER exception report is the:
- CFCT mapped by IWMCFCT,
- and CFSD mapped by IWMCFSD

**ASID: X'gggg'**
The address space identifier (ASID) in hexadecimal where the control block exists.

**CFMANAGER detail report**

***** CFMANAGER DETAIL REPORT *****

Global CF Manager Information
----------------------------------

CF Manager Control Table Anchor.............. 057749D0

Task Control Flags
Local Mode
Connection Made
VCP Allowed To Abend
CST Allowed To Abend
DST Allowed To Abend
Update Processor Flags
Update Processor Timer Set

Timer Information
Workload Manager

Time Interval For System Processor............. 00004650

Counts
System Processor Restart Counter............... 00000000
Event Processor Restart Counter............... 00000001

Anchors
Structure Definition Anchor.................... 057748C8
Event Processor Anchors
Head Of External CFRB Stack.................... 01F8E850
First CFRB On Internal Work Queue............. 01DEEA50
Last CFRB On Internal Work Queue.............. 01DEEA50
System Processor Anchors
Head Of External CFRB Stack.................... 00000000
First CFRB On Internal Work Queue............. 05774A24
Last CFRB On Internal Work Queue.............. 05774A24
Multisystem Enclave Anchors
Name Table.................................... 7FFFF000

Cell Pool IDs
Dynamic Area Cell Pool ID...................... 0227AF00

Miscellaneous
Last Export Sequence Number.................... 00000001

Latches
Global Latch Set Token.......................... 7FFCAEA000000002
Entry Latch Set Token.......................... 7F72EF8000000003

Structure Definition Information
--------------------------------
Global Information
Size Of Structure Definition Header............ 002C
Size Of Whole Structure Definition............. 0108
Version........................................ 08
Number Of Structures........................... 01
Level Information............................... 08000000
Version Number................................. 08
Structure........................................ SYSZNLM_WORKUNIT
Type........................................... CACHE
Connect/Disconnect Flags
Connected
Connect Failed
Disconnected
Disconnect Failed
Connection Information
CONTOKEN............................... C9E7C3D3D6F0F3F27F6D32B000010039
Connect Version.............................. 00010039
Structure Version............................ B0107C9758459807
CONID........................................ 01
Connect Name................................. #SYS1
Control Information
CONDATA................................. 0804000000000000
Functionality Level........................... 08
Type........................................ 04
Vector Token................................. 000000000000000020000000
Vector Length............................... 00000020
DISCDATA................................. 0808000040000000
Functionality Level........................... 08
Reason....................................... 08
Specific Information.......................... 0004
Service Information
Connect Information
Connect Return Code........................... 00000010
Connect Reason Code.......................... 00000004
Workload Manager

Connect Reason/Return Code Who............. WLM
Disconnect Information
  Disconnect Return Code.............................. 00000000
  Disconnect Reason Code............................. 00000000
Structure........................................ SYSZWLM_76854381
Type........................................... CACHE
Connect/Disconnect Flags
  Connected
Connection Information
  CONTOKEN .................................... C9E7C3D3D6F0F0F27F69542800010001
  Connect Version.............................. 00010001
  Structure Version............................ B2FC12B84625BB42
  CONID........................................ 01
  Connect Name.................................. #SYS1
Control Information
  CONDATA ...................................... 0208000000000000
  Functionality Level........................ 08
  Type....................................... 08
  Vector Token............................... 022724B065B7A0010100002
  Vector Length................................ 00000020
  DISCDATA ..................................... 0000000000000000
  Functionality Level........................ 08
  Reason..................................... 00
  Specific Information....................... 0000
Service Information
  Connect Information
    Connect Return Code.......................... 00000000
    Connect Reason Code........................ 00000000
    Connect Reason/Return Code Who............. XES
  Disconnect Information
    Disconnect Return Code........................ 00000000
    Disconnect Reason Code........................ 00000000
LPAR Information
  LPAR Anchors
    CF Cache Identifier Table.................. 05F5CC18
    Head Of External CFRB Stack................ 00000000
    First CFRB On Internal Work Queue.......... 0225B20C
    Last CFRB On Internal Work Queue.......... 0225B20C
  LPAR Sizes
    LDE Structure Size......................... 00004000
    CDE Structure Size......................... 00000800
    XDE Structure Size......................... 00010000
    IWM053 DOMID................................. 00000001

Multisystem Enclaves Information

System Table Slot 01

Export Table Slot 01

Multisystem Enclave Local Data
  Queue ID...................................... C9E604E70101000001000001600
  Export Token..................................... 00000000000000000000000000000000
  Enclave Token............................... 0000000C40000007F
  Multisystem Enclave.......................... 08DBA000
  Update Version Number........................ 0000000000000000
  Exporter Queue Head......................... 08DB9F28
  Exporter Queue Tail......................... 08DBA040
  Importer Queue Head......................... 08DB9FB0
  Importer Queue Tail......................... 08DB9F80
  Flags
    Cache Entry Exists In The Cache Structure
    Undo Processing Has Started
    Import Service Successfully Updated MSE In CF

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Update Processor Currently Working On MSE
Export/Import Processing Complete
Error Reason Code from XES................. 00000000
Time This System Last Read MSE............. 02/08/1999 20:09:24
Time This System Last Wrote MSE............ 02/08/1999 20:09:24
Previous CPU Time.......................... None
Entry Number In FEAD Vector................ 00000000

Multisystem Enclave
Header Section
  Functionality Level...................... 01
  MSE Length............................... 088C
  Cache Entry Length In Bytes............. 1000
  Export Token............................ C9E6B4E70101000000100001000010001600
                                      00000000000000000000000000000000
  Originating System Name.................. SYS1
  Update Version Number................... 0000000000000000
  Control Section Offset................... 0054
  Control Section Length................... 0054
  Participant Section Offset.............. 00A8
  Participant Section Length............. 000C
  Participant Section Number............. 0020
  Classify Section Offset................. 0228
  Classify Section Length............... 0244
  FEAD Section Offset..................... 046C
  FEAD Section Length..................... 0420

Control Section
  Service.................................. 00000000
  Arrival Time............................ 02/08/1999 20:09:20
  Service Class Name..................... SYSOTHER
  Classification Token................... 36028000
  Policy Activate Time................... 12/03/1998 11:35:44
  Stoken................................... 0000005C00000006
  Jobname.................................. EIBC1C11
  Transaction Trace Token.. 00000000000000000000000000000000
                                      00000000000000000000000000000000
  Control Section Flags
  Original Enclave Is Dependent
  Owner Was Reset To New Service Class Or Quiesced
  Owner Is Reset Quiesced
  Owner Was Created With The ASCRE HIPRI Attribute
  Owner Is Or Was Privileged
  Owner Is A System Task
  Original Enclave Restarted By Policy Activation
  One Or More Local Enclaves Reached Last Period
  Original Enclave Was Reset To New Service Class Or Reset Quiesced
  Original Enclave Was Reset Quiesced

Participant Section
  Participant Entry 02
  System Token............................ 00000000
  Service................................ 00000000
  Creation Time.......................... 01A2B1A2

Classification Section
  Collection Length...................... 05
  Correlation Length..................... 03
  Procedure Name Length................ 01
  Process Name Length.................... 01
  Subsystem Type......................... BOSS
  Subsystem Name......................... WLJEIBC1
  Transaction Name....................... EIBC1C11
  Userid.................................. IBMUSER
  Transaction Class....................... BOSS1
  Connection Type......................... CTT
  Correlation Identifier..................
  Logical Unit Name......................
  Network ID................................
  Plan Name.............................. TEST
  Package Name........................... UPS
Global CF manager information
The global coupling facility manager information section represents data that is global to all CF processing done by the Coupling Facility Manager. The following appears under this header:

CF Manager Control Table Anchor
Represents the address to the IWMCFCT (CFCT - Coupling Facility Control Table) table.

Task Control Flags or No Task Control Flags Set
Header line indicating that Task Control Flags exist or do not exist. If Task Control Flags is displayed then any of the following information may be displayed:

Local Mode
Indicates local mode designation from the IXCQUERY LOCAL(xxxx) invocation

Connection Made
Indicates that the Coupling Facility Manager has made a successful connection to a structure at least once. Once set it remains on for IPL duration.

VCP Allowed To Abend
There are some situations that require IWMC3VCP to take an abend. An example would be IWMC3VCP finding a bad CFRB. (You should never encounter a bad CFRB unless there is an internal problem.)

When this indicator is set module IWMC3VCP is allowed to abend. Prior to IWMC3VCP taking the abend the indicator is reset and IWMC3VCP does not take those abends again. Doing this prevents IWMC3VCP from going into a recursive abend condition.

CST Allowed To Abend
There are some situations that require IWMC3CST to take an abend. An example would be issuing IXLCONN and getting a bad parameter return code. (You should never encounter a bad parameter return code unless there is an internal problem.)

When this indicator is set module IWMC3CST is allowed to abend. Prior to IWMC3CST taking the abend the indicator is reset and IWMC3CST does not take those abends again.

DST Allowed To Abend
There are some situations that require IWMC3DST to take an abend. An example would be issuing IXLDISC and getting a bad parameter return code. (You should never encounter a bad parameter return code unless there is an internal problem.)

When this indicator is set module IWMC3DST is allowed to abend. Prior to IWMC3DST taking the abend the indicator is reset and IWMC3DST does not take those abends again.

Update Processor Flags or No Update Processor Flags Set
Header line indicating that Update Processor Flags exist or do not exist. If Update Processor Flags is displayed then any of the following information may be displayed:
**Update Processor Timer Set**

When set, indicates that a timer has been created to allow the update processor (IWMC3UDP) to get control again.

**Timer Information**

Header line indicating that the following information represents CF timer information:

**Timer Interval For Update Processor**

The timer interval for the update processor (IWMC3UDP) in hundreds of a second.

**Counts**

Header line indicating that the following information represents CF processor counts.

**System Processor Restart Counter**

Count represents the number of times the Coupling Facility Manager has restarted while the system processing function was still in control or zero. Normally the Coupling Facility Manager should not fail while doing anything. If this is the case then zero should exist normally. If a count exists then the Coupling Facility Manager was handling some system recovery in IWMC3SYS. In any case a non-zero count indicates failure while handling system recovery.

**Event Processor Restart Counter**

Count represents the number of times the Coupling Facility Manager has restarted while the event processing function was still in control or zero. Normally the Coupling Facility Manager should not fail while doing anything. If this is the case then zero should exist normally. If a count exists then the Coupling Facility Manager was handling some event (from XES) in IWMC3EVP. In any case a non-zero count indicates failure while handling an event.

**Anchors**

This section represents anchors used by the Coupling Facility Manager:

**Structure Definition Anchor**

Represents the address to the IWMCFSD (CFSD - Coupling Facility Structures Definition) table.

**Event Processor Anchors**

Header line indicating that the following information represents event processor (IWMC3EVP) anchors:

**Head Of External CFRB Queue**

Pointer to the head of the external CFRB queue. This is where CF functions outside of the Coupling Facility Manager task put work for the event processor (IWMC3EVP).

**First CFRB On Internal Work Queue**

Pointer to the first CFRB on an internal work queue used by module IWMC3EVP.

**Last CFRB On Internal Work Queue**

Pointer to the last CFRB on an internal work queue used by module IWMC3EVP.
**System Processor Anchors**
- Header line indicating that the following information represents system processor (IWMC3SYS) anchors:
  
  **Head Of External CFRB Queue**
  - Pointer to the head of the external CFRB queue. This is where CF functions outside of the Coupling Facility Manager task put work for the system processor (IWMC3SYS).

  **First CFRB On Internal Work Queue**
  - Pointer to the first CFRB on an internal work queue used by module IWMC3SYS.

  **Last CFRB On Internal Work Queue**
  - Pointer to the last CFRB on an internal work queue used by module IWMC3SYS.

**Multisystem Enclave Anchors**
- Header line indicating that the following information represents multisystem enclave anchors:

  **Name Table**
  - Pointer to the multisystem enclave name table object.

**Cell Pool IDs**
- Header line indicating that the following information represents cell pool IDs for the Coupling Facility Manager:

  **Dynamic Area Cell Pool ID**
  - Represents the dynamic area cell pool used by the Coupling Facility Manager. For example, module IWMC3EXP (handles IWMEXPT) uses this cell pool to get a dynamic area for the module.

**Miscellaneous**
- Header line indicating that the following information represents miscellaneous that in the CFCT:

  **Last Export Sequence Number**
  - Represents the last sequence number assigned to a multisystem enclave exported by this system.

**Latches**
- Header line indicating that the following information represents CF latch data:

  **Global Latch Set Token**
  - Represents the CF global latch set token.

  **Entry Latch Set Token**
  - Represents the CF entry latch set token.

**Structure definition information**
The structure definition information section represents an entry for each WLM structure that is supported by the Coupling Facility Manager. The following appears under this header:

**Global Information**
- The global information area represents global data that is common to all structure definitions.

**Size Of Structure Definition Header**
- Size of the header area for the structure definitions (IWMCFSD header size)
**Workload Manager**

**Size Of Whole Structure Definition**
Size of the whole structure definition area (IWMCFSD) that includes the header area and each structure entry.

**Version**
Version number of the structure definition. The version is 1.

**Number Of Structures**
The number of structure entries that exist. The number is 1.

**Level Information**
A structure area (CFSD) version number that contains information defining the functionality level of the current Coupling Facility Manager support. Currently only 1 byte is used and the other 7 bytes are reserved.

**Version Number**
Represents the current Coupling Facility Manager functionality level. The level cfsd_functionality_level_jbb6609 is assigned, which is a value of 8.

**Structure**
Defines the structure name. The following structure names are supported by the Coupling Facility Manager:
- SYSZWLML_WORKUNIT (legacy products or later)
- SYSZWLML_xxxxxxxx (z/OS Release 1 or later)

**Type**
Defines the type of structure. The type can be:
- CACHE
- LIST (none exists at current levels)

**Connect/Disconnect Flags**
Defines connect (IXLCONN) and disconnect (IXLDISC) indicators that are used as footprints to indicate what was done by connect or disconnect processing:
- Connected
- Connect Failed
- Disconnected
- Disconnect Failed

Note that the CONTOKEN field in the structure definition of the DETAIL report defines if a structure is really connected or not. These indicators exist to show what IWMC3CST or IWMC3DST may have done during connect processing. For example, if it connected correctly and then disconnected (due to some IWMC3CST validation problem) and the disconnect failed then the Disconnect Failed indicator is set. The CONTOKEN field in the structure definition will show a CONTOKEN of zero indicating that it is disconnected.

**Connect Information**
Header line indicating that the following information represents connect information for a structure:

\[\text{CONTOKEN}\]
Represented the CONTOKEN value from the IXLCONN invocation. (From IXLYCONA.CONACONTOKEN.)

**Connect Version**
Represents the connect version value from the IXLCONN invocation. (From IXLYCONA.CONACONNECTIONVERSION.)

**Structure Version**
Represents the structure version value from the IXLCONN invocation. (From IXLYCONA.CONASTRUCTUREVERSION.)
CONID
Represents the CONID value from the IXLCONN invocation. (From IXLYCONA.CONACONID.)

Connect Name
Represents the connection name for the IXLCONN connection. The name starts with a '#' sign and is followed by the system name.

Control Information
Header line indicating that the following information represents control information for a structure:

CONDATA
Represents the CONDATA information that WLM supplies via the IXLCONN service. (From CFSD.cfsd_entry_condata.)

Functionality Level
Represents the functionality level portion of the CONDATA. For z/OS V1R1 or later the functionality level is cfsd_functionality_level_jbb6609 (8) which should be the same as the Version Number in the Global Information section.

Vector Token
For a CACHE structure defines the vector token.

Vector Length
For a CACHE structure defines the number of vectors that exist.

DISCDATA
Header that indicates the following information is disconnect data that is presented to all connectors when a disconnect occurs.

Functionality Level
The functionality level of the disconnector.

Reason
Identifies where in the Coupling Facility Manager the disconnect occurred:
- 4 - IWMC3CST disconnecting from RECEXIT
- 8 - IWMC3CST found an invalid structure
- 12 - IWMC3EVP disconnecting from RECEXIT
- 16 - IWMC3EVP disconnecting due to lost connectivity
- 20 - IWMC3EVP disconnecting due to structure failure
- 24 - IWMC3TSK disconnecting from RECEXIT

Specific Information
Service information that can be set for the specific disconnect. The following lists what can appear according to the REASON type (see above):
- For REASON=4 no DISCDATA service information.
- For REASON=8 contains low order 2 bytes of validation reason.
- For REASON=12 no DISCDATA service information.
- For REASON=16 contains eepfailedconnflags in first byte and eepexistingconnflags in second byte.
- For REASON=20 contains eepfailedconnflags in first byte and eepexistingconnflags in second byte.
- For REASON=24 no DISCDATA service information.
Service Information
Header line indicating that the following information represents service information concerning connection/disconnection of a structure.

Connect Information
Header line for connect service information.

Connect Return Code
Return code returned from last IXLCONN request.

Connect Reason Code
Reason code returned from last IXLCONN request.

Connect Return/Reason Code Who
This defines who set the connect return/reason codes. The value can be either WLM, XES if the values are valid or N/A for not applicable if the values have not been set.

Disconnect Information
Header line for disconnect service information.

Disconnect Return Code
Return code returned from last IXLDISC request.

Disconnect Reason Code
Reason code returned from last IXLDISC request.

LPAR Information
Header line indicating that the following information represents specific LPAR clustering information.

LPAR Anchors
Header that indicates the following information represents LPAR anchors.

CF Cache Identifier Table
Pointer to the IWMCFCT table.

Head Of External CFRB Queue
Pointer to the head of the external CFRB queue. This is where SRM places a CFRB for IWMC3LMP.

First CFRB On Internal Work Queue
Pointer to the first CFRB on an internal work queue used by module IWMC3LMP.

Last CFRB On Internal Work Queue
Pointer to the last CFRB on an internal work queue used by module IWMC3LMP.

LPAR Sizes
Header that indicates the following information represents LPAR size fields.

LDE Structure Size
Size used when readind a LDE cache entry.

CDE Structure Size
Size used when readind a CDE cache entry.

XDE Structure Size
Size used when readind a XDE cache entry.

IWM053 DOMID
DOM ID that exists if message IWM053 was issued.
Multisystem enclaves information
This header indicates that the following information shows multisystem enclave information. Note that the information is presented according to the system table and export table structure, as follows:

System Table Entries
A sysplex can be comprised of up to 32 systems (1 to 32). Multisystem enclave information is presented for each system defined in a Coupling Facility Manager system table. Each system is referred to with the header System Table Slot xx where xx is the slot in the system table for a system.

Export Table Entries
An export table is comprised of 256 slot entries (0 to 255). Multisystem enclaves are distributed across the export table slots. Each export table is referred to with the header Export Table Slot xx where xx is the slot in the export table.

For each export table slot that has a valid address the related multisystem enclaves are displayed.

Here are the specific fields that appear under the Multisystem Enclaves Information header:

System Table Slot xx
Header name that indicates that the following data represents multisystem enclaves for a particular system.

Export Table Slot xx
Header name that indicates an export table slot. Only export table slot headers are shown that have valid multisystem enclaves.

Multisystem Enclave Local Data
This header indicates that the following information is local to the z/OS system.

Queue ID
Indicates whether the element is on the queue.

Export Token
Unique identifier for the multisystem enclave in the parallel sysplex.

Enclave Token
Enclave token for the local enclave.

Multisystem Enclave
Address of the local cache entry buffer containing the multisystem enclave.

Update Version Number
Update version number copied from the multisystem enclave the last time it was successfully read from or written to the CF.

Exporter Queue Head
Exporter queue head.

Exporter Queue Tail
Exporter queue tail.

Importer Queue Head
Importer queue head.

Importer Queue Tail
Importer queue tail.
Flags
Header for CCB flags. The following list the flags that can be displayed.

Cache Entry Exists In The Cache Structure
The cache entry exists in the cache structure, i.e. its deletion hasn't been detected

Undo Processing Has Started
Undo-export or undo-import processing has started.

Import Service Successfully Updated MSE In CF
The import service successfully updated the multisystem enclave in the coupling facility to show this system is a participant.

Update Processor Currently Working On MSE
The update processor is currently working on the multisystem enclave. This flag should help us not to trip over same multisystem enclave in case of bad data. If a failure occurs during update processing while the flag is on, the multisystem enclave will not be looked at during subsequent update cycles.

Export/Import Processing Complete
The export/import processing is complete. This flag is used to examine whether export/import processing has successfully created the multisystem enclave. If update processor trips over the customs block with this flag off, it will remove the customs block and other associated structures.

Error Reason Code from XES
Error reason code from last invocation of a XES service.

Time This System Last Read MSE
Time (STCK value) that this system last read the multisystem enclave from the coupling facility. If no time exists then ‘None’ appears.

Time This System Last Wrote MSE
Time (STCK value) that this system last wrote the multisystem enclave to the coupling facility. If no time exists then ‘None’ appears.

Previous CPU Time
Previous CPU Time that was accumulated on this system for this multisystem enclave (STCK value). This will occur if a work manager does multiple sequential imports. If no time exists then ‘None’ appears.

Entry Number In FEAD Vector
Entry number where the system entry for the current system is created in the Foreign Enclave Acct Data (FEAD) vector.

Multisystem Enclave
This header indicates that the following information represents a specific multisystem enclave.

Header Section
This header indicates that the following information represents the MSE header data.

Functionality Level
The functionality level identifies incompatible changes to the entry format. A downlevel system fails an import request for a cache entry that has an uplevel functionality level. The level values for a multisystem enclave have no relationship to the level values for a service definition.

MSE Length
Actual control block length in bytes.
Cache Entry Length In Bytes
   Cache entry length in bytes — actual length rounded up to the next cache element boundary.

Export Token
   Unique identifier for the multisystem enclave in the parallel sysplex.

Originating System Name
   Originating system name.

Update Version Number
   Version number incremented each time the multisystem enclave is written to the CF. Used in a compare-and-swap fashion to prevent one system from overwriting another system's updates.

Control Section Offset
   Offset to the control section.

Control Section Length
   Length of the control section.

Participant Section Offset
   Offset to the participant section.

Participant Section Length
   Length of the participant section.

Participant Section Number
   Number of participant section entries.

Classify Section Offset
   Offset to the classification attributes section.

Classify Section Length
   Length of the classification attributes section.

FEAD Section Offset
   Offset to the foreign enclave resource data section.

FEAD Section Length
   Length of the foreign enclave resource data section.

Control Section
   This header indicates that the following information represents the MSE control data.

Service
   This is the total service of the original enclave and all foreign enclaves. It is kept as a doubleword to avoid overflow. For performance reasons it is not constantly updated. It is updated only as frequently as necessary to support period switch and inflight projections.

Arrival Time
   The original enclave’s arrival time (STCK value). If no time exists then ‘None’ appears.

Service Class Name
   The original enclave’s service class name.

Classification Token
   The original enclave’s classification token.

Policy Activate Time
   This is the originating system’s view of the time when the current WLM service policy was activated. If no time exists then ‘None’ appears.
Workload Manager

Stoken
Stoken of the address space which created the original enclave.

Jobname
Jobname of the address space which created the original enclave.

Transaction Trace Token
Transaction trace token.

Control Section Flags
Header for multisystem enclave control flags. The following list the flags that can be displayed.

Original Enclave Is Dependent
The original enclave is dependent.

Owner Was Reset To New Service Class Or Quiesced
The owner of the original enclave was reset to a new service class or quiesced — applies only if the original enclave is dependent.

Owner Is Reset Quiesced
The owner of the original enclave is reset quiesced — applies only if the original enclave is dependent.

Owner Was Created With The ASCRE HIPRI Attribute
The owner of the original enclave was created with the ASCRE HIPRI attribute, i.e. OucbxWasHiDp is on — applies only if the original enclave is dependent.

Owner Is Or Was Privileged
The owner of the original enclave is or was privileged, i.e. OucbxWasPriv is on — applies only if the original enclave is dependent.

Owner Is A System Task
The owner of the original enclave is a system task, i.e. OucbSyst is on — applies only if the original enclave is dependent.

Original Enclave Restarted By Policy Activation
The original enclave was last restarted due to a policy activation.

One or More Local Enclaves Reached Last Period
At least one of the local enclaves has reached last period.

Original Enclave Was Reset To New Service Class Or Reset Quiesced
The original enclave (of this multisystem enclave) was either reset to another service class or reset quiesced. If reset quiesced, then the message described below is also shown.

Original Enclave Was Reset Quiesced
The original enclave (of this multisystem enclave) was reset quiesced. This message is shown only in conjunction with the message described above.

Participant Section
This header indicates that the following information represents the MSE participant data.

The participant section contains information for each system that is using a multisystem enclave. It is a fixed-size array of 32 entries — the maximum number of systems in a sysplex. A system uses its XCF system number (wmvt_system_number) to index to its own entry in the array.

Only participant entries that contain information are displayed.
Participant Entry xx or No Participant Entries
This header identifies the participant entry slot number or indicates if no participant entries exist. If participant entries exist (Participant Entry xx shown) then the following is displayed.

System Token
System token of participating system. Filled in on importing systems only.

Service
Service accumulated by the enclave on this system.

Creation Time
Creation time of the local enclave in SRM format.

Classification Section
This header indicates that the following information represents the MSE classification data. The classification data represents the attributes (and possibly lengths) that can be specified via the IWMCLSFY service. See the IWMCLSFY chapter in z/OS MVS Programming: Workload Management Services for more information.

- Collection Length
- Correlation Length
- Procedure Name Length
- Process Name Length
- Subsystem Type
- Subsystem Name
- Transaction Name
- Userid
- Transaction Class
- Connection Type
- Correlation Identifier
- Logical Unit Name
- Network ID
- Plan Name
- Package Name
- Perform Value
- Subsystem Priority
- Scheduling Environment
- Subsystem Collection Name

WLMDATA contention report

The Contention Report requests information that is associated with the resource contention topology function. The resource contention topology is the workload manager's internal view of the list of resources, work units, or transactions involved with resources that have been in contention for longer than a resource manager interval. Resource managers use the IWMCNTN service to notify WLM of changes that cause WLM to maintain or update the topology.

A detailed description of the IWMCNTN macro, resource ownership models, and a description of chronic resource contention can be found in the IWMCNTN section of z/OS MVS Programming: Workload Management Services.

This report is returned when the CONTENTION keyword is given on the WLMDATA subcommand. Variations of this information can be obtained by specifying either SUMMARY, DETAIL, or EXCEPTION.
What follows are the display formats and field descriptions for the SUMMARY, DETAIL, and EXCEPTION reports.

**CONTENTION summary report**

<table>
<thead>
<tr>
<th>RSRCE</th>
<th>Scope</th>
<th>SS</th>
<th>SS</th>
<th>HT</th>
<th>WT</th>
<th>RID</th>
<th>Address</th>
<th>S/M</th>
<th>Type</th>
<th>Name</th>
<th>length</th>
</tr>
</thead>
<tbody>
<tr>
<td>7F6F123B</td>
<td>S</td>
<td>most</td>
<td>TSTCNTN</td>
<td>0002</td>
<td>0002</td>
<td>0108</td>
<td>RESOURCE_START</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Transactions with contention table

<table>
<thead>
<tr>
<th>TRXNE</th>
<th>Type</th>
<th>Index</th>
<th>Token</th>
<th>HR</th>
<th>WR</th>
<th>Address</th>
<th>A/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>7FFD7028</td>
<td>A</td>
<td>0028</td>
<td>0000000A0000000001</td>
<td>0002</td>
<td>0002</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Resources in contention

- Resource element information...
  - Resource Description
    - Scope: Single System
    - Subsystem type: most
    - Subsystem name: TSTCNTN
    - ResourceID length: 0108
  - ResourceID: RESOURCE_START

Transactions that hold this resource

- Transaction element information...
  - Transaction identifier
    - Type: Address space
    - Index: 0028
    - Token: 0000000A0000000001
- Contention element information...
  - Entity
    - Type: 01
    - AS_token: 0000000A0000000001
    - TCB_address: 006EC120
    - Etoken: 0000000000000000

Transactions that are waiting for this resource

- Transaction element information...
  - Transaction identifier
    - Type: Address space
    - Index: 0028
    - Token: 0000000A0000000001
- Contention element information...
  - Entity
    - Type: 01
    - AS_token: 0000000A0000000001
    - TCB_address: 00000000
    - Etoken: 0000000000000000
Transactions with contention

Transaction element information.......................7FFD7028
Transaction identifier
Type........Address space  Index.................0028
Token........000000A000000001

Contention element information....................7F6F1178
Entity
Type................02  AStoken...000000A000000001
TCB address...006EC120  Ttoken...0000000000000000

Transaction element information.......................7FFD7028
Transaction identifier
Type........Address space  Index.................0028
Token........000000A000000001

Contention element information....................7F6E5218
Entity
Type................02  AStoken...000000A000000001
TCB address...00000000  Ttoken...0000000000000000

Transactions with contention

Transaction element information.......................7FFD7028
Transaction identifier
Type........Address space  Index.................0028
Token........000000A000000001

Resources the transaction is holding

Resource element information.........................7F6F1238
Resource Description
Scope.........Single System
Subsytem type...most  Subsysytem name...TSTCNTN
ResourceID length...................................0108
ResourceID......RESOURCE_START
  ==>
  ==>
  ==>
  ==>
  ==>  RESOURCE_END

Contention element information....................7F6F11B8
Entity
Type...............01  AStoken...000000A000000001
TCB address...006EC120  Ttoken...0000000000000000

Resource element information.........................7F6F1238
Resource Description
Scope.........Single System
Subsytem type...most  Subsysytem name...TSTCNTN
ResourceID length...................................0108
ResourceID......RESOURCE_START
  ==>
  ==>
  ==>
  ==>  RESOURCE_END

Contention element information....................7F6F1138
Entity
Type...............01  AStoken...000000A000000001
The fields in the Contention summary report include:

**Resources in contention table**
This list identifies all resources that are represented in the resource topology by a resource element.

**RSRCE address**
Pointer to the RSRCE element of this resource.

**Scope S/M**
Indicates the scope of resource as S = Single system or M = Multi system.

**SS type**
Indicates the four character subsystem type.

**SS name**
Indicates the eight character subsystem name.

**HT**
Indicates the number of transactions that are currently holding for the transaction.

**WT**
Indicates the number of transactions that are currently waiting for this resource.

**RID length**
Represents the two byte length of the resourceID (fingerprint).
Resource ID
Represents the first 50 bytes of the resourceID (fingerprint).

Transactions with contention table
This list all resources that are represented in the resource topology by a transaction element.

TRXNE address
Pointer to the TRXNE element of this transaction.

Type A/E
Indicates if the type of transaction is A=Address Space or E=Enclave.

Index
Indicates the two byte ASID or EnclSampleIndex depending on the transaction type.

Token
Indicates the eight byte STOKEN or ETOKEN depending on the transaction type.

HR
Indicates the number of resources that are currently held by this transaction.

WR
Indicates the number of resources this transaction is currently waiting for.

CONTENTION exception report

***** CONTENTION EXCEPTION REPORT *****
CONTENTION RELATED EXCEPTIONS
-------------------------------
IWM0004I Validity check failure, reason aaxxbbcc, for WLM data area at address zzzzzzzz in ASID X'gggg'.
zzzzzzzz XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0010 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0020 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0030 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0040 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
IWM0005I Validity check warning, reason aaxxbbcc, for WLM data area at address zzzzzzzz in ASID X'gggg'.
zzzzzzzz XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0010 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0020 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0030 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ | 
+0040 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX | ................ |

This report displays dump output messages and a hexadecimal dump of each data area that received a validity check failure or warning. IBM might request this information for problem determination.

Fields displayed in the report include:

Error/Warning control block record

Reason: aaxxbbcc
This field contains the reason code associated with the error. The format of the reason code is aaxxbbcc where aa is the control block ID for the data area in error, xx is the ID of the module that detected the error, bb is not used, and cc identifies the error detected.

Control block address: zzzzzzzz
This field contains the address of the control block in error. The control blocks reported by CONTENTION exception report are:

- Resource element RSRCE mapped by class WLMRTRSC
Workload Manager

- Transaction element TRXNE mapped by class WLMRTTRX
- Contention element CNTE mapped by class WLMRTCNT

**ASID: X'gggg'**
The address space identifier (ASID) in hexadecimal where the control block exists.

**Validation and exception detail for each control block**
- RSRCE
  - Invalid element in RSRCE chain (check eye catcher, length)
  - RSRCE element without contention element
- TRXNE
  - Invalid element in TRXNE chain (check eye catcher, length)
  - TRXNE element without contention element
- CNTE
  - Invalid CNTE element chained to either RSRCE or TRXNE chain (check eye catcher, length)
  - Invalid pointer to RSRCE (check eye catcher, length)
  - Invalid pointer to TRXNE (check eye catcher, length)

**CONTENTION detail report**

***** CONTENTION DETAIL REPORT *****

Global contention information
----------------------------------

Anchors in Resource topology control table............025C6018
Resource element anchor
  First..............7F6F1238  Last..............7F6F1238
Transaction element anchor
  First..............7FFD7028  Last..............7FFD7028

Cell pool IDs
Resource element Cell Pool ID.......................7F6F1210
Transaction element Cell Pool ID....................7FFD7000
Contention element Cell Pool ID.....................7F6F1110

Resources in contention
------------------------

Resource element information.......................7F6F1238
Resource Description
  Scope...............Single System
  Subsys type......most  Subsys name...TSTCNTN
  ResourceID length.....................................0108
  ResourceID........RESOURCE_START
    =>
    =>
    =>
    =>
    =>
    => RESOURCE_END

Queue Information
  Resource element links
    Previous........025C6034  Next............025C6034
  Anchor of Holder contention elements
    First..............7F6F11B8  Last..............7F6F1138
  Anchor of Waiter contention elements
    First..............7F6F1178  Last..............7F6E5218
Workload Manager

Transactions that hold this resource

Transaction element information.....................7FFD7028
Transaction identifier
Type........Address space Index.........................0028
Token........000000A000000001
Queue Information
Transaction element links
Previous........025C6040 Next......................025C6040
Anchor of Holder contention elements
First............7F6F11BB Last....................7F6F1138
Anchor of Waiter contention elements
First............7F6F1178 Last....................7F6E5218

Contention element information....................7F6F1138
Entity
Type..............01 AStoken........000000A000000001
TCB address......006EC120 Etoken........0000000000000000
Queue Information
Contention element links
Transaction element address..................7FFD7028
Resource element address..................7F6F1238
Transaction anchored contention element queue
Previous........7F6F1138 Next..................7FFD7034
Resource anchored contention element queue
Previous........7F6F1138 Next..................7F6F1248

Transaction element information.....................7FFD7028
Transaction identifier
Type........Address space Index.........................0028
Token........000000A000000001
Queue Information
Transaction element links
Previous........025C6040 Next......................025C6040
Anchor of Holder contention elements
First............7F6F11BB Last....................7F6F1138
Anchor of Waiter contention elements
First............7F6F1178 Last....................7F6E5218

Contention element information....................7F6F1138
Entity
Type..............01 AStoken........000000A000000001
TCB address......00000000 Etoken........0000000000000000
Queue Information
Contention element links
Transaction element address..................7FFD7028
Resource element address..................7F6F1238
Transaction anchored contention element queue
Previous........7FFD7034 Next..................7F6F11BB
Resource anchored contention element queue
Previous........7F6F1248 Next..................7F6F11BB

Transactions that are waiting for this resource

Transaction element information.....................7FFD7028
Transaction identifier
Type........Address space Index.........................0028
Token........000000A000000001
Queue Information
Transaction element links
Previous........025C6040 Next......................025C6040
Anchor of Holder contention elements
First............7F6F11BB Last....................7F6F1138
Anchor of Waiter contention elements
First............7F6F1178 Last....................7F6E5218
Workload Manager

Transactions with contention

----------------------------

Contention element information..............7F6F1178
Entity
Type.....................02 AStoken...000000A000000001
TCB address...006EC120 Etoken...0000000000000000
Queue Information
Contention element links
Transaction element address.................7FFD7028
Resource element address.................7F6F1238
Transaction anchored contention element queue
Previous.....7F6E5218 Next..............7FFD7040
Resource anchored contention element queue
Previous.....7F6E5218 Next..............7F6F1254

Transaction element information..............7FFD7028
Transaction identifier
Type........Address space Index.................0028
Token........000000A000000001
Queue Information
Transaction element links
Previous.......025C6040 Next..............025C6040
Anchor of Holder contention elements
First............7F6F11B8 Last..............7F6F1138
Anchor of Waiter contention elements
First............7F6F1178 Last..............7F6E5218

Contention element information..............7F6E5218
Entity
Type.....................02 AStoken..000000A000000001
TCB address...00000000 Etoken...0000000000000000
Queue Information
Contention element links
Transaction element address.................7FFD7028
Resource element address.................7F6F1238
Transaction anchored contention element queue
Previous.....7FFD7040 Next..............7F6F1178
Resource anchored contention element queue
Previous.....7F6F1254 Next..............7F6F1178

Resources the transaction is holding

Resource element information..............7F6F1238
Resource Description
Scope...........Single System
Subsys type....most Subsys name...TSTCNTN
ResourceID length..........................0108
ResourceID....RESOURCE_START
==>
==>
==>

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Queue Information
Resource element links
   Previous........025C6034 Next.............025C6034
Anchor of Holder contention elements
   First.........7F6F11B0 Last................7F6F1138
Anchor of Waiter contention elements
   First.........7F6F1178 Last................7F6F11E8

Contention element information.................7F6F11B0
Entity
   Type.............01 ASItoken...000000A000000001
   TCB address...006EC120 Etoken....0000000000000000

Queue Information
Contention element links
   Transaction element address.................7FFD7028
   Resource element address.................7F6F1238
Transaction anchored contention element queue
   Previous........7F6F1138 Next................7FFD7034
Resource anchored contention element queue
   Previous........7F6F1138 Next................7F6F1248

Resource element information....................7F6F1238

Resource Description
Scope............Single System
Subsytem type....most Subsytem name...TSTCNTN
ResourceId length...............................0108
ResourceId........RESOURCE_START
   ===
   ===
   ===
   ===
   ===
   ===
   ===
   ===
   RESOURCE_END

Queue Information
Resource element links
   Previous........025C6034 Next.............025C6034
Anchor of Holder contention elements
   First.........7F6F11B0 Last................7F6F1138
Anchor of Waiter contention elements
   First.........7F6F1178 Last................7F6F11E8

Contention element information.................7F6F11B0
Entity
   Type.............01 ASItoken...000000A000000001
   TCB address...00000000 Etoken....0000000000000000

Queue Information
Contention element links
   Transaction element address.................7FFD7028
   Resource element address.................7F6F1238
Transaction anchored contention element queue
   Previous........7FFD7034 Next................7F6F11B0
Resource anchored contention element queue
   Previous........7F6F1248 Next................7F6F11B0

Resources the transaction is waiting for

Resource element information....................7F6F1238

Resource Description
Scope............Single System
Subsytem type....most Subsytem name...TSTCNTN
ResourceId length...............................0108
ResourceId........RESOURCE_START
   ===
   ===
   ===
   RESOURCE_END

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The fields in the Contention detail report include:

Global contention information
The Global resource contention information section shows global data used by the WLM resource contention topology function.

Anchors in resource topology control table
Represents the address of the control structure (IWMRTCT) the anchors reside in.
Resource element anchor
All active resource elements in the resource topology are chained in a double headed/threaded circular queue which is addressed via:

First/Last
Represents the address of the first/last resource element in the resource topology.

Transaction element anchor
All active transaction elements in the resource topology are chained in a double headed/threaded circular queue which is addressed via:

First/Last
Represents the address of the first/last transaction element in the resource topology.

Cell Pool Ids
Cell pool Ids of data structures used in the resource topology.

Resource element Cell Pool ID
Represents the ID of the dynamic area used for the resource elements.

Transaction element Cell Pool ID
Represents the ID of the dynamic area used for the transaction elements.

Contention element Cell pool ID
Represents the ID of the dynamic area used for the contention elements.

Resources in contention
This section and the following subsection show information about the resource in contention.

Resource element information
This section is printed for each resource listed in the resource topology.

Resource description
The following resource description:

Scope
Represents the scope of the resource. The character will be Single System or Multi System.

Subsystem type
Indicates the four character subsystem type.

Subsystem name
Indicates the eight character subsystem name.

ResourceID length
Indicates the two byte length of the fingerprint.

ResourceID
Indicates the fingerprint of the resource, up to 264 byte.

Queue information
This section shows all the links to other elements and element types.

Resource element links
This section shows the chaining pointers of the resource element.

Previous/Next
Represents the address of the next/previous element in the resource topology.
Anchor of Holder contention elements
All transactions that are holding this resource are chained in a double
headed/threaded circular queue of contention elements. This chain is
addressed via:

First/Last
Represents the first/last element in the resource topology.

Anchor of Waiter contention elements
All transactions that are waiting for this resource are chained in a double
headed/threaded circular queue of contention elements.

Transaction that holds this resource
This section and all subsections are printed for each transaction that is in
contention hold with this resource.

Transaction element information
This section shows the information of the transaction element and the
appropriate contention element.

Transaction identifier
Section describing the transaction.

Type
Represents the type of the transaction. Type can be Address space or
Enclave.

Index
Represents the two byte ASID or EncbSampindex depending on the
transaction type.

Token
Represents the eight byte STOKEN or ETOKEN depending on the
transaction type.

Queue information
This section shows all links to other elements and types.

Transaction element links
This section shows the chaining pointers of the transaction element.

Next/Previous
Represents the address of the next/previous transaction element in the
resource topology.

Anchor of Holder contention elements
All resources the transaction is holding are chained in a double
headed/threaded circular queue of contention elements.

Anchor of Waiter contention elements
All resources the transaction is waiting for are chained in a double
headed/threaded circular queue of contention elements.

Contention element information
This section shows the information stored in the contention element.

Entity
This section describes the entity of the resource topology entity.

Type
Represents the one byte Waiter/Holder information. The types: 1=Holder
or 2= Waiter.
AStoken
Indicates the eight byte address space token.

TCB address
Indicates the four byte TCB address.

EToken
Indicates the eight byte enclave token.

Queue information
This section shows all the links to other elements and types.

Contention element links
This section shows the chaining pointers to non-contention element links.

Transaction element address
Represents the address of the transaction element the contention element is chained to.

Resource element address
Represents the address of the resource element the contention element is chained to.

Transaction anchored contention element queue
This section shows the link of this contention element in the transaction anchored contention element queue.

Next/Previous
Represents the address of the next/previous contention element in the resource topology.

Resource anchored contention element queue
This section shows the link of this contention element in the resource element anchored contention element queue.

Transaction that is waiting for this resource
This section and all subsections are printed for each transaction that is in contention hold for this resource.

Transactions with contention
This section and the following subsections show information about the transactions that are holding or waiting for resources.

Resource the transaction is holding
This section lists all resources the transaction is holding.

Resource the transaction is waiting for
This section lists all resources the transaction is waiting for.
Chapter 27. Sysplex Services (XCF and XES)

This topic contains the following diagnosis information for XCF and XES, including coupling facility resource management (CFRM), sysplex failure management (SFM), and automatic restart management:
- “How to diagnose a sysplex services problem.”
- “Formatting dump data using the IPCS subcommand - COUPLE” on page 27-8.
- “Formatting dump data using the IPCS subcommand - XESDATA” on page 27-36.
- “Formatting coupling facility structure dump data using the IPCS subcommand - STRDATA” on page 27-53.

How to diagnose a sysplex services problem

This section assists you in defining your problem to an area of sysplex services. Use Table 27-1 to help you narrow down what area of sysplex services your problem is in. Table 27-2 on page 27-4 indicates what operator commands would give additional problem determination data. Table 27-3 on page 27-6 indicates what information would be needed in a dump to assist in diagnosing the problem.

All the tables have the same column names. Use the tables together to diagnose your problem.

Determining the problem area

Sysplex services cover a wide range of processes. To narrow down which process is the problem area, you need to gather all the external symptoms. These include messages, dumps and logrec information. Once you have this information, you may use the following table (and the associated notes) to help determine which problem area(s) the symptoms point to:

Table 27-1. Determining the Problem Area for Sysplex Services (XCF and XES)

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Connection Services</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note 1)</th>
<th>Coupling Facility Interface</th>
<th>Couple Dataset Services</th>
<th>CFRM</th>
<th>XCF Signalling</th>
<th>SFM</th>
<th>ARM</th>
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<tbody>
<tr>
<td>XES</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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</tbody>
</table>

MESSAGES

- from a subsystem
- from XES(IXL) to the console
- from XCF(IXC) to the console
- about a policy
- about GRS ring disruptions
- about loss of signalling connectivity
- in SYSLOG
- about couple data set switch

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### Table 27-1. Determining the Problem Area for Sysplex Services (XCF and XES) (continued)

<table>
<thead>
<tr>
<th>Problem Area→</th>
<th>Symptoms</th>
<th>Connection Services</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note 1)</th>
<th>Coupling Facility Interface</th>
<th>Couple Dataset Services</th>
<th>CFM</th>
<th>XCF Signalling</th>
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<tbody>
<tr>
<td></td>
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<td>IXLDISC</td>
<td>IXLERSP</td>
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</tbody>
</table>

#### Notes:
1. Mainline services include: IXLLIST IXLCACHE IXLFCOMP IXLVECTR IXLLOCK IXLSYNCH IXLRT IXLUSYNC.
2. Messages received from a subsystem or application describing a failing connection to the coupling facility.
3. Messages received from a subsystem or application describing the success or failure of the rebuilding of a coupling facility structure.
4. Subsystem or application is stalled during rebuild of a coupling facility structure.
5. Messages from subsystems describing failing coupling facility structure operations.
6. Messages from XES (prefixed with IXL) indicating either coupling facility failures or coupling facility path failures.
7. This ABEND is recorded in the logrec dataset for reason codes:
   - x'0C010101' - indicating an error occurred in the user's complete exit. The connector will be terminated.
   - x'0C150101' - indicating an error occurred in the user's contention exit. The connector will be terminated.
Note: XES does not take a dump if a problem occurs in a user exit.

8. Excessive spin conditions may indicate that hardware interface problems exist in XES or the coupling facility hardware.

9. System performance degradation to the coupling facility may indicate that excessive storage usage has occurred due to a backlog of requests to the coupling facility.

10. XCF messages indicating path problems on the console or in the SYSLOG. Additionally, messages will describe the action being taken against the XCF signalling path (i.e. starting, stopping, or restarting).

11. Removal of a system from the sysplex did not occur when it was expected. This may be indicated by the operator prompt for IXC102A when automatic sysplex partitioning was expected from sysplex failure management (SFM). IXC messages may indicate a failure occurred while attempting to partition a system from the sysplex using SFM.

12. Sysplex failure management (SFM) couple data set switching occurred unexpectedly - note that SFM does not cause the system to enter a wait state when both SFM couple data sets are lost.

13. A symptom record is placed in the logrec data set when:
   - The isolation of a system from the sysplex has failed. Sysplex failure management records information indicating the results of the failure isolation.
   - A system is fenced from the sysplex. Sysplex failure management records information about the system that was fenced.

14. Message IXL012I is written to the SYSLOG only. This message contains the return code and reason code for a failed invocation of the IXLCONN sysplex service macro.

15. A symptom record is placed in the logrec data set when a failed invocation of the IXLCONN sysplex services macro occurs. The symptom record includes the following data from IXLCONN:
   - IXLCONN return code
   - IXLCONN reason code
   - JOBNAME of the issuer of the IXLCONN sysplex services macro
   - ASID of the issuer of the IXLCONN sysplex services macro
   - IXLCONN parameter list
   - IXLCONN answer area mapped by IXLYCONA

   In addition, message IXL012I will be found in SYSLOG.

16. This ABEND is recorded in the logrec dataset for reason codes:
   - x'0E00D0001' - indicating that an unexpected return code was received from the user's event exit. The connector will be terminated.
   - x'0E00D0101' - indicating that an error occurred in the user's event exit. The connector will be terminated.

17. A hardware failure was encountered while the system was communicating with the coupling facility. A symptom record is placed in the logrec data set.

18. A dump received from ISSUER=IXLR1DIA with an ABEND026 and a reason code of x'0C1Cxxxx' (where xxxx may be anything) indicates that a mainline operation to the coupling facility failed. An entry is recorded in the logrec data set.
XCF and XES

19. Automatic Restart Management couple data set switching occurred unexpectedly - note that automatic restart management does not cause the system to enter a wait state when both of the ARM couple data sets are lost.

20. Automatic Restart Management will issue message IXC804I if an element was deregistered due to a failure in its event exit.

21. A symptom record is placed in the logrec data set when a cross-system restart is initiated by automatic restart management.

22. The system writes a record to the logrec data set when removal of a couple data set encounters unusual conditions.

Using operator commands to gather additional data

If the previous table left you with more than one possible problem area, use Table 27-2 to gather more data about the problem. Use the problem areas from Table 27-1 on page 27-1 to determine which operator commands may provide additional information for your problem.

Note: This data should be saved for use with service personnel.

Table 27-2. Operator Commands to Help Narrow Down a Sysplex Services Problem

<table>
<thead>
<tr>
<th>Problem Area-&gt; Operator command * V</th>
<th>Connection Services IXLCNN IXLDISC IXLEERSP</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note 1)</th>
<th>Coupling Facility Interface</th>
<th>Couple Dataset Services</th>
<th>CFM</th>
<th>XCF Signalling</th>
<th>SFM</th>
<th>ARM</th>
</tr>
</thead>
<tbody>
<tr>
<td>XCF,STR,STRNAME= (Note 3)</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>D R.L. (Note 6)</td>
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<td>X</td>
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<td>D GRS (Note 7)</td>
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<tr>
<td>D XCF,PATHIN/OUT (Note 5)</td>
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</tbody>
</table>

Subsystem Commands (Note 10)

| XCF                             | X                                           | X                   | X                           | X                           | X                       |     |                |     |     |
### Table 27-2. Operator Commands to Help Narrow Down a Sysplex Services Problem (continued)

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Operator command</th>
<th>Connection Services</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note 1)</th>
<th>Coupling Facility Interface</th>
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<th>XCF Signalling</th>
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<tbody>
<tr>
<td>*</td>
<td>V</td>
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<td>Processing</td>
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</tbody>
</table>

**Notes:**

1. Mainline Services include: IXLLIST IXLCACHE IXLFCOMP IXLVECTR IXLLOCK IXLSYNCH IXLRT IXLUSYNC.
2. D XCFSTR command will display general structure information. The operator can then determine the coupling facility structure the application is currently using.
3. D XCFSTR,STRNAME= with the structure in question relays the status of the connection. If a rebuild is in progress, the phase of the rebuild process and an indication of outstanding rebuild responses is displayed for the structure. Any connection status other than ACTIVE may indicate a problem.
   **Note:** D XCFSTR,STATUS= allows the operator to filter on a specific structure status such as ALLOCATED.
4. D CF will display the physical connectivity status to the coupling facility which may give an indication as to the nature of a problem.
5. D XCFCF will display the connectivity status of the coupling facility as it relates to the CFRM policy and ownership of the coupling facility.
6. D R,L may display outstanding IXL messages that contain information about a failed coupling facility or coupling facility path failures.
7. D GRS displays the status of the GRS Ring. An unexpected result here could indicate that XCF signalling has not properly transported messages within the sysplex for GRS.
8. D XCF,POLICY indicates the status of the policies, and when they were last updated.
9. The appropriate subsystem commands may give an indication that the environment has suffered an error related to a sysplex service.
10. This command could hang if there is a problem in CFM.
11. D R,L may display outstanding IXC messages that contain information about XCF signalling.
12. D XCF,C will display sysplex control information and information about the couple data sets. This information may indicate that events, such as a couple data set switch, is in progress.
13. D XCF,ARMSTATUS provides information about jobs and tasks registered as elements of the automatic restart manager.

---

**What data to gather for sysplex services problems**

Now that you know what area of sysplex services your problem pertains to, the next table indicates what information you will need in a dump. Some of the information pertains only to SVC dumps, and some is for either an SVC dump or a stand-alone dump.

**Note:** The couple data sets are not dumped for an SVC dump or a stand-alone dump. A separate job must be run to dump this information. See the information about ADRDSSU output in Table 27-3 on page 27-6.

Certain information is needed for every sysplex services problem, but they are included in the table for completeness. A quick guide to the areas that should always be dumped follows:

- XCFAS (XCF address space)
- All XCF data spaces
- SDATA options
  - XESDATA
  - COUPLE
  - RGN
  - CSA
  - SQA
  - NUC
  - LSQA
  - TRT

---

Chapter 27. Sysplex Services (XCF and XES) 27-5
## XCF and XES

### Table 27-3. Data to Gather for Sysplex Services Problem

<table>
<thead>
<tr>
<th>Problem Area→</th>
<th>Connection Services</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note 2)</th>
<th>Coupling Facility Interface</th>
<th>Couple Dataset Services</th>
<th>CFRM</th>
<th>XCF Signalling</th>
<th>SFM</th>
<th>ARM</th>
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</table>

Component Trace Options for comp=SYSXES
Table 27-3. Data to Gather for Sysplex Services Problem (continued)

<table>
<thead>
<tr>
<th>Problem Area-&gt;</th>
<th>Data to Gather</th>
<th>Connection Services</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note 2)</th>
<th>Coupling Facility Interface</th>
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</table>

Note[3]
Table 27-3. Data to Gather for Sysplex Services Problem (continued)

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Data to Gather</th>
<th>Connection Services</th>
<th>Rebuild Processing</th>
<th>Mainline Services (Note[2])</th>
<th>Coupling Facility Interface</th>
<th>Couple Dataset Services</th>
<th>CFM</th>
<th>XCF Signalling</th>
<th>SFM</th>
<th>ARM</th>
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</tr>
</tbody>
</table>

Notes:
1. LEGEND: X=definitely trace, M=may need to be traced, use other information to determine if this is a possible problem area.
2. Mainline Services include: IXLIST IXLCACHE IXLFCOMP IXLVECTR IXLLOCK IXLSYNC IXLRT IXLUSYNC.
3. For signalling path and connectivity problems, historical information is vital. Therefore, the system should execute using only default XCF tracing. Do NOT explicitly request the SIGNAL option for CTRACE for SYSXCF. For message traffic, message delivery and I/O, detail SIGNAL tracing is required and should be specified.
4. Use the ADRDSSU utility to dump the contents of a couple dataset. Just taking an SVC dump or stand-alone dump will not give you the contents of the couple data sets.
   The following sample JCL indicates how to invoke the ADRDSSU utility:
   ```
   //DUMP JOB MSGLEVEL=(1,1)
   //STEP1 EXEC PGM=ADRDSSU,REGION=4M
   //SYSPRINT DD SYSOUT=* 
   //DD1 DD DISP=SHR,VOL=SER=SHR001,UNIT=3380
   //SYSIN DD *
   PRINT DATASET(SYS1.PRIMARY) INDDNAME(DD1)
   ```
   See Data Facility Data Set Services Reference, SC26-4389, for more information on the ADRDSSU utility.
5. The IODF that is defined for the coupling facility hardware may assist you in determining if connectivity problems exist due to an incorrect specification under HCD.

Formatting dump data using the IPCS subcommand - COUPLE

Format the SVC or stand-alone dump with the IPCS COUPLE subcommand to produce diagnostic reports about XCF and its related subcomponents. z/OS MVS IPCS Commands gives the syntax of the COUPLE subcommand and z/OS MVS IPCS User’s Guide explains how to use the COUPLE option of the IPCS dialog.

The dump may also contain component trace data for XCF. See the component trace chapter of z/OS MVS Diagnosis: Tools and Service Aids for information on how to format this trace data.

COUPLE divides the information about XCF into several reports. Each report corresponds to the following COUPLE keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays:</th>
<th>Example on topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARM</td>
<td>Information about elements and restart groups registered with the automatic restart manager.</td>
<td>27-10</td>
</tr>
<tr>
<td>CFRM</td>
<td>Information about coupling facility resource management.</td>
<td>27-14</td>
</tr>
<tr>
<td>GROUP</td>
<td>Information about the XCF groups and members defined to the sysplex, events pending delivery to group exits, and group or member requests queued for processing.</td>
<td>27-20</td>
</tr>
<tr>
<td>SERIAL</td>
<td>Information about serialization on shared resources in the sysplex.</td>
<td>27-23</td>
</tr>
<tr>
<td>SIGNAL</td>
<td>Information about the XCF signalling services, signalling paths defined in the sysplex, and active signalling requests.</td>
<td>27-28</td>
</tr>
<tr>
<td>STORAGE</td>
<td>Information about XCF dataspace usage and storage allocation.</td>
<td>none</td>
</tr>
<tr>
<td>SYSPLEX</td>
<td>Information about status and monitoring for systems and members in the sysplex.</td>
<td>27-34</td>
</tr>
</tbody>
</table>
### Keyword Report Displays

**Keyword**
- XCFSTACK

**Report Displays:**
Information about cross-system coupling facility services. This report contains diagnostic information for IBM service personnel.

### Example on topic

none

---

All IPCS COUPLE reports begin by presenting data that is potentially applicable to all keywords specified. An example of this common header follows:

```
* * * COUPLE (CROSS-SYSTEM COUPLING FACILITY) REPORT * * *
```

- **Report(s):** ARM
- **Level(s) of detail:** DETAIL
- **Filter(s) in use:** NONE

**Address space ID:** X'0006'

**Data spaces owned:** IXCDSPMEM, IXCDSCBD, IXCDSCBE, IXCARDCB, IXCARDIO, IXCDSTKA, IXCDSTKB, IXCDSTKC, IXCDSTKD, IXCDSTKE, IXCDSTKF, IXCDSTGA, IXCDSMUS, IXCDSLK1, IXCDSL01, IXCAPID0S, IXLCFSTK, IXLCBCAD, IXCDMEX

**Sysplex name:** UTCPLXJ8

**System name:** JB0

**CTN ID:** zpet-stp-01  **Clock Status:** Active  **Timing Mode:** ETR

**Optional function status:**

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<tr>
<th>Function Name</th>
<th>Status</th>
<th>Default</th>
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</thead>
<tbody>
<tr>
<td>DUPLEXCF16</td>
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<td>DISABLED</td>
</tr>
<tr>
<td>SYSSTATDETECT</td>
<td>ENABLED</td>
<td>ENABLED</td>
</tr>
</tbody>
</table>

**COPULATE DATA SET INFORMATION**

-------------------------

**Type:** SYSPLEX (IXCLKMD)

**Primary Data Set:** SYS1.CDS00
- **Volume Serial:** CDSCDP
- **DDName:** SYS00001
- **Device Number:** 3030
- **Format Time:** 09/26/2007 15:22:23.722341 (C1417B4ED065081)

**Additional Information**

ALL TYPES OF COUPLE DATA SETS ARE SUPPORTED
GRS STAR MODE IS SUPPORTED

XCF currently has no active I/O for this data set.
Permanent error processing is inactive for this data set.
The data set is fully functional.

**Alternate Data Set:** SYS1.CDS01
- **Volume Serial:** CDSCDA
- **DDName:** SYS00008
- **Device Number:** 5C38
- **Format Time:** 09/26/2007 15:25:05.394441 (C141B8465065081)
XCF and XES

Additional Information
----------------------------
ALL TYPES OF COUPLE DATA SETS ARE SUPPORTED
GRS STAR MODE IS SUPPORTED

XCF currently has no active I/O for this data set.
Permanent error processing is inactive for this data set.
The data set is fully functional.

Type: CFRM (IXCLOFD)

... (remaining couple data sets)

Maximum number of systems allowed in the sysplex: 16
Maximum number of groups allowed in the sysplex: 200
Maximum number of members for each group: 2,047

Note: All report examples have been compressed and repetitive information has been pared down for
this document. Therefore, these examples look slightly different from the way they look on your
system.

COUPLE ARM DETAIL report

This report provides detailed information about elements that are currently defined to the sysplex.

The ARM report displays:
- the current state of each element
- pending requests

The following command was issued to produce the ARM report:
COMMAND==> COUPLE ARM DETAIL

* * * ARM DETAIL REPORT * * *

AUTOMATIC RESTART MANAGER (ARM) STATUS FOR SYSTEM: SYSTEM1

ARM Couple Data Set Accessible: Yes
ARM Policy Active: Yes Name: POLDER7

Registered Elements Pending Requests
-------------------------------------
Starting: 0 Register: 3
Available: 2 WaitPred: 0
Available-TO: 0 Ready: 0
Failed: 0 Associate: 0
Restarting: 4 De-register: 1
Recovering: 2 Element Term: 0
Unknown: 0 Policy: 0

Total Elements: 8 Total Pending: 4

ARM REGISTERED ELEMENT DATA FOR SYSTEM: SYSTEM1

27-10 z/OS V1R13.0 MVS Diagnosis: Reference
<table>
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<th>Element Name</th>
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<th>Initial System</th>
<th>Diag096</th>
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<td>DEU49E61</td>
<td>0021</td>
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<td>00016590</td>
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Chapter 27. Sysplex Services (XCF and XES) 27-11
XCF and XES

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ARM ACTIVE REQUEST DATA FOR SYSTEM: SYSTEM1

| Element Name Request Type Jobname ASID Diag097 |
|-------------------------|------|
| XCF and XES             |      |

27-12  z/OS V1R13.0 MVS Diagnosis: Reference
IXC80305I ARM DETAIL report encountered one or more validity check warnings.

* * * * END OF COUPLE (CROSS-SYSTEM COUPLING FACILITY) REPORT * * * *
COUPLE CFRM SUMMARY report

This report provides summary information about coupling facility resource management.

The CFRM report displays:
- couple data set information
- coupling facility information
- structure information

The following command was issued to produce the CFRM report:

COMMAND==> COUPLE CFRM SUMMARY

* * * CFM SUMMARY REPORT * * *

-***************************************************** System Level Information ****

Structure full monitoring controls:
  Next scheduled run time. 10/06/2005 11:08:12
  Last run time........... 10/06/2005 11:07:41
  Threshold................ 80 %
  Reclaim Threshold..... 95 %

Duplex enabled monitoring controls:
  Next scheduled run time. 10/06/2005 11:12:36
  Last run time........... 10/06/2005 10:56:52

Active policy versions:
  Primary............... 07
  Alternate............. 07
  Thread seed....................... 00003D5A
  Requests queued for processing.... Yes
  System based copy in progress..... No

LOCI Address: 02405D28 CS Word: C0000000 LossFail LORE Queue: 00000000
LOIS Address: 7EF4BF40

-***************************************************** Active Policy Information ***

Data Space Name: IXCDSLO1

Subtype  Address Length Structure Name StblNum StblSeq#
------------------------------------------------------------------
IXCLOTBL 00001020 0000652C IGWLOCK00 00000000 00000000

-***************************************************** Facility Information ********

Facilities Known To System: N64

Facility Name: FW35CF9
  Coupling Facility: 002084.IBM.02.00000006ABEC
  Partition: 9
  CPCID: 00
  CFLevel: 14
  In Active Policy: Yes
  Connected: Yes
  In Use By System: Yes
  In Cleanup: No
  Monitored by system: Yes
    Ownership: SVPLEX1 10/06/2005 09:05:56.736390
    SYID: BDB85DEA B91865F8
    MFID: 00000003
    HFST Index: 00000001 Address: 7EF4B750 Flags: A0020000

Facility Name: LPF
  Coupling Facility: 002094.IBM.02.0000000E346C
  Partition: F
  CPCID: 00
  CFLevel: 14
  LOST CDS CONN ON N64
    6 11:42:06 10/27/05

+------------------------------------------------------------------
  In Active Policy: Yes
  Connected: Yes
  In Use By System: Yes
  In Cleanup: No
  Monitored by system: Yes
    Ownership: SVPLEX1 10/06/2005 09:05:51.026949
    SYID: BDB85DE5 473059F0
    MFID: 00000001

XCF and XES

z/OS V1R13.0 MVS Diagnosis: Reference
XCF and XES

Chapter 27. Sysplex Services (XCF and XES)  27-15
XCF and XES

H-Header,
E-Entry)
Service/Function Structure Name Q Address Thread TOD
Function Specific Information

RsrConfirmSSID SYSZWLM_WORKUNIT C 0004C018 00003C0D 10/06/2005 11:07:46.560485
XloMsgBasedEvent SYSIGGCAS_ECS P 0004C808 00003C0F 10/06/2005 11:07:46.560840 N66
03001308 Ack SsidRelNotify
RsrConfirmSSID SYSIGGCAS_ECS P 0004D018 00003C11 10/06/2005 11:07:46.562254
XloMsgBasedEvent IRRXCF00_P002 P 0004D808 00003C13 10/06/2005 11:07:46.564894 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent IRRXCF00_P001 P 0004E018 00003C15 10/06/2005 11:07:46.565008 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent IRRXCF00_B001 P 0004E808 00003C17 10/06/2005 11:07:46.565078 N66
03001308 Ack SsidRelNotify
RsrConfirmSSID IRRXCF00_P001 P 0004F018 00003C19 10/06/2005 11:07:46.566436
RsrConfirmSSID IRRXCF00_B001 P 0004F808 00003C1B 10/06/2005 11:07:46.566559
RsrConfirmSSID IRRXCF00_P002 P 00050018 00003C1D 10/06/2005 11:07:46.566682
XloMsgBasedEvent IRRXCF00_B002 P 00050808 00003C1F 10/06/2005 11:07:46.566840 N66
03001308 Ack SsidRelNotify
RsrConfirmSSID IRRXCF00_B002 P 00051018 00003C21 10/06/2005 11:07:46.566994
XloMsgBasedEvent IRRXCF00_P003 P 00051808 00003C23 10/06/2005 11:07:46.567346 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent IRRXCF00_B003 P 00052018 00003C25 10/06/2005 11:07:46.567544 N66
XloMsgBasedEvent DBSVPLX1_SCA P 00053808 00003C2B 10/06/2005 11:07:46.592769 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent THRCACIMS_1 P 00054018 00003C2D 10/06/2005 11:07:46.593025 N66
XloMsgBasedEvent THRCACDB2_2 P 00054808 00003C2F 10/06/2005 11:07:46.593124 N66
XloMsgBasedEvent THRCACDB2_1 P 00055018 00003C31 10/06/2005 11:07:46.593219 N66
XloMsgBasedEvent DBSVPLX1_SCA P 00055808 00003C33 10/06/2005 11:07:46.593405 N66
RsrConfirmSSID THRCACDB2_4 P 00056808 00003C35 10/06/2005 11:07:46.593503 N66
RsrConfirmSSID THRCACDB2_5 P 00057018 00003C37 10/06/2005 11:07:46.593528
RsrConfirmSSID THRCACDB2_3 P 00057208 00003C39 10/06/2005 11:07:46.593628
XloMsgBasedEvent THRCACDB2_3 P 00057808 00003C3C 10/06/2005 11:07:46.593682
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RsrConfirmSSID THRCACDB2_5 P 00058018 00003C41 10/06/2005 11:07:46.593838
RsrConfirmSSID THRCACDB2_2 P 00058208 00003C43 10/06/2005 11:07:46.593909
XloMsgBasedEvent THRCACDB2_2 P 00058808 00003C45 10/06/2005 11:07:46.593921 N66
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XloMsgBasedEvent THRCACDB2_5 P 00059018 00003C47 10/06/2005 11:07:46.593999
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XloMsgBasedEvent THRCACDB2_2 P 0005B018 00003C59 10/06/2005 11:07:46.598267 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent THRCACDB2_3 P 0005B308 00003C5B 10/06/2005 11:07:46.598373 N66
1LOST CDS CONN ON N64
11:42:08 10/27/05

+ RsrConfirmSSID THRLSTLOG_2 P 0005D018 00003C51 10/06/2005 11:07:46.597775
XloMsgBasedEvent THRLSTLOG_2 P 0005D088 00003C53 10/06/2005 11:07:46.597866 N66
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XloMsgBasedEvent THRLSTLOG_2 P 0005E018 00003C56 10/06/2005 11:07:46.597965 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent THRLSTMQ_2 P 0005E088 00003C57 10/06/2005 11:07:46.597968 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent THRLSTMQA_1 P 0005F018 00003C59 10/06/2005 11:07:46.598267 N66
03001308 Ack SsidRelNotify
XloMsgBasedEvent THRLSTMQ_3 P 0005F088 00003C5B 10/06/2005 11:07:46.598373 N66

27-16 z/OS V1R13.0 MVS Diagnosis: Reference
XCF and XES

Chapter 27. Sysplex Services (XCF and XES)
XCF and XES
+___________________________________________________________________________________________
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THRLSTMQA_1
R 00044018 00003D19 10/06/2005 11:07:48.277120 N64
01001306 Ack SsidRelNotify
XloMsgBasedEvent
THRLSTLOG_1
R 00043808 00003D17 10/06/2005 11:07:48.277062 N64
01001306 Ack SsidRelNotify
XloMsgBasedEvent
THRLCKDB2_1
R 00043018 00003D15 10/06/2005 11:07:48.277009 N64
01001306 Ack SsidRelNotify
XloMsgBasedEvent
THRCACIMS_1
R 00042808 00003D13 10/06/2005 11:07:48.276909 N64
01001306 Ack SsidRelNotify
XloMsgBasedEvent
THRCACDB2_5
R 00042018 00003D11 10/06/2005 11:07:48.276844 N64
01001306 Ack SsidRelNotify
XloMsgBasedEvent
THRCACDB2_3
R 00087808 00003D0F 10/06/2005 11:07:48.276516 N64
01001306 Ack SsidRelNotify
RsrConfirmSSID
THRCACDB2_4
R 00087018 00003D0E 10/06/2005 11:07:48.276498
RsrConfirmSSID
THRCACDB2_3
XloMsgBasedEvent
THRCACDB2_4
01001306 Ack SsidRelNotify
XloMsgBasedEvent
THRCACDB2_2
01001306 Ack SsidRelNotify
RsrConfirmSSID
THRCACDB2_2

R 00085808 00003D0D 10/06/2005 11:07:48.276450
R 00041808 00003D0B 10/06/2005 11:07:48.276321 N64

RsrConfirmSSID
IRRXCF00_P003
RsrConfirmSSID
IRRXCF00_B003
RsrConfirmSSID
IRRXCF00_B002
XloMsgBasedEvent
IRRXCF00_P003
01001306 Ack SsidRelNotify
RsrConfirmSSID
IRRXCF00_P002
RsrConfirmSSID
THRCACDB2_1
XloMsgBasedEvent
IRRXCF00_P002
01001306 Ack SsidRelNotify
RsrConfirmSSID
IRRXCF00_P001
XloMsgBasedEvent
THRCACDB2_1
01001306 Ack SsidRelNotify

R
R
R
R

RsrConfirmSSID
IRRXCF00_B001
XloMsgBasedEvent
DBSVPLX1_SCA
01001306 Ack SsidRelNotify
XloMsgBasedEvent
IRRXCF00_B003
01001306 Ack SsidRelNotify
XloMsgBasedEvent
IRRXCF00_B002
01001306 Ack SsidRelNotify
XloMsgBasedEvent
IRRXCF00_B001
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IRRXCF00_P001
01001306 Ack SsidRelNotify
XloMsgBasedEvent
SYSIGGCAS_ECS
01001306 Ack SsidRelNotify
RsrConfirmSSID
SYSIGGCAS_ECS
RsrConfirmSSID
SYSZWLM_ABEC2084
RsrConfirmSSID
SYSZWLM_WORKUNIT
XloMsgBasedEvent
ISTGENERIC
01001306 Ack SsidRelNotify
XloMsgBasedEvent
SYSZWLM_ABEC2084
01001306 Ack SsidRelNotify
XloMsgBasedEvent
SYSZWLM_WORKUNIT
01001306 Ack SsidRelNotify
XloMsgBasedEvent
DBSVPLX1_LOCK1
01001306 Ack SsidRelNotify

R 0003D808 00003CFC 10/06/2005 11:07:48.275023
R 0003D018 00003CFB 10/06/2005 11:07:48.274994 N64

R 00041018 00003D09 10/06/2005 11:07:48.276256 N64
R 00040808 00003D08 10/06/2005 11:07:48.276228
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00084018
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10/06/2005

11:07:48.275603
11:07:48.275468
11:07:48.275381
11:07:48.275352 N64

R 00040018 00003D02 10/06/2005 11:07:48.275289
R 0003F808 00003D01 10/06/2005 11:07:48.275244
R 0003F018 00003D00 10/06/2005 11:07:48.275181 N64
R 0003E808 00003CFF 10/06/2005 11:07:48.275114
R 0003E018 00003CFE 10/06/2005 11:07:48.275060 N64

R 0003C808 00003CF8 10/06/2005 11:07:48.274864 N64
R 0003C018 00003CF5 10/06/2005 11:07:48.274756 N64
R 0003B808 00003CF3 10/06/2005 11:07:48.274698 N64
R 0003B018 00003CF1 10/06/2005 11:07:48.274614 N64
R 0003A808 00003CEF 10/06/2005 11:07:48.274376 N64
R
R
R
R

0003A018
00039808
00039018
00038808

00003CEE
00003CEC
00003CEB
00003CEA

10/06/2005
10/06/2005
10/06/2005
10/06/2005

11:07:48.274342
11:07:48.273789
11:07:48.273761
11:07:48.273643 N64

R 00038018 00003CE9 10/06/2005 11:07:48.273611 N64
R 00037808 00003CE6 10/06/2005 11:07:48.273518 N64
R 00037018 00003CE4 10/06/2005 11:07:48.273415 N64

XloMsgBasedEvent
ISGLOCK
R 00028808
01001306 Ack SsidRelNotify
IxcQuery
R 00082018
09/17/2042 19:53:47.370496 00000000 00000000
RsrConfirmSSID
IXCPLEX_PATH4
R 00081808
RsrConfirmSSID
IXCPLEX_PATH3
R 00081018
RsrConfirmSSID
IXCPLEX_PATH2
R 00080808
DsrConvert
IRRXCF00_B003
R 00080018
RsrConfirmSSID
IXCPLEX_PATH1
R 0007F808

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00003D06
00003D05
00003D04
00003D03

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00003CE2 10/06/2005 11:07:48.273208 N64
00003CE0 10/06/2005 11:07:48.214355
00003CDF
00003CDE
00003CDD
00003CDC
00003CDB

10/06/2005
10/06/2005
10/06/2005
10/06/2005
10/06/2005

11:07:48.166435
11:07:48.113413
11:07:48.058709
11:07:48.055631
11:07:47.986876


<table>
<thead>
<tr>
<th>Event Type</th>
<th>Node ID</th>
<th>Event Code</th>
<th>Date/Time</th>
</tr>
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<tr>
<td>RsrConfirmSSID</td>
<td>R0007F018</td>
<td>00003CDA</td>
<td>10/06/2005 11:07:47.868214</td>
</tr>
<tr>
<td>XloMsgBasedEvent</td>
<td>R0007E808</td>
<td>00003CD8</td>
<td>10/06/2005 11:07:47.844329</td>
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<tr>
<td>RsrConfirmSSID</td>
<td>R0007D808</td>
<td>00003CD4</td>
<td>10/06/2005 11:07:47.844186</td>
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<td>00003CC0</td>
<td>10/06/2005 11:07:47.842086</td>
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<tr>
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<td>10/06/2005 11:07:47.841791</td>
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<td>10/06/2005 11:07:47.841655</td>
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<td>R00076808</td>
<td>00003CBA</td>
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<td>R00075808</td>
<td>00003CB7</td>
<td>10/06/2005 11:07:47.838214</td>
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<td>XloMsgBasedEvent</td>
<td>R00074808</td>
<td>00003CAF</td>
<td>10/06/2005 11:07:47.837806</td>
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<td>R00073808</td>
<td>00003CA8</td>
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<tr>
<td>XloMsgBasedEvent</td>
<td>R00072018</td>
<td>00003CA0</td>
<td>10/06/2005 11:07:47.837163</td>
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<tr>
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<td>00003C9A</td>
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<td>00003C9E</td>
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<td>00003C9B</td>
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<td>00003C9A</td>
<td>10/06/2005 11:07:47.836409</td>
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Chapter 27. Sysplex Services (XCF and XES) 27-19
XCF and XES

04001309 Ack SsidRelNotify
XloMsgBasedEvent IRRXCF00_B002 R 0006A808 00003C88 10/06/2005 11:07:47.83743 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent IRRXCF00_P002 R 0006A018 00003C86 10/06/2005 11:07:47.834955 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent IRRXCF00_B001 R 00069808 00003C84 10/06/2005 11:07:47.834626 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent SYSIGGCAS_ECS R 00069018 00003C82 10/06/2005 11:07:47.833960 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent ISTGENERIC R 00068808 00003C80 10/06/2005 11:07:47.833857 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent DBSVPLX1_LOCK1 R 00066808 00003C78 10/06/2005 11:07:47.833348 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent ISGLOCK R 00066018 00003C76 10/06/2005 11:07:47.833230 N67
04001309 Ack SsidRelNotify
RsrConfirmSSID SYSIGGCAS_ECS R 00068008 00003C74 10/06/2005 11:07:47.833040 N67
04001309 Ack SsidRelNotify
RsrConfirmSSID SYSZWLM_WORKUNIT R 00067808 00003C72 10/06/2005 11:07:47.833040 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent SYSZWLM_WORKUNIT R 00067018 00003C70 10/06/2005 11:07:47.833040 N67
04001309 Ack SsidRelNotify
XloMsgBasedEvent IGWLOCK00 R 00028018 00003C6F 10/06/2005 11:07:47.166655 N67
XloMsgBasedEvent IGWLOCK00 R 00028018 00003C6F 10/06/2005 11:07:47.166955 N67
04001309 Ack SsidRelNotify
IxcQuery R 0001F808 00003C6D 10/06/2005 11:07:47.131043

09/17/2042 19:53:47.370496 00000000 00000000
XloMsgBasedEvent IGWLOCK00 R 00028018 00003C72 10/06/2005 11:07:47.130775 N64
01001306 Ack SsidRelNotify
CFRM SUMMARY report encountered one or more validity check warnings.
Run COUPLE CFRM EXCEPTION report.

* * * * END OF COUPLE (CROSS-SYSTEM COUPLING FACILITY) REPORT * * * *

COUPLE GROUP DETAIL report

This report provides detailed information about groups and their members that are currently defined to
the sysplex.

The GROUP report displays:
• the current state of each member in the group
• notifications pending delivery to group exits
• notifications in the process of being delivered to group exits
• group or member requests that are queued for processing

The following command was issued to produce the GROUP report:
COMMAND===> COUPLE GROUP DETAIL GRPNAME(SYSMCS)

* * * G R O U P D E T A I L R E P O R T * * *
GROUPS/MEMBERS DEFINED IN THE SYSPLEX
--------------------------------------------------------------
Group: SYSMCS Member: SYSMCS#MCS System: N/A
Diag021:00500200 Diag022:00540200
Member State: Created
Memtoken: 00000001 00040001
Permanent Status Recording: ON
ASID: N/A
Jobname: N/A
Address Space STOKEN: 00000028 00000001
User State: 04040001 00000024 A87EA568 B5F89905
04000001 00040009 00000000 00000000
Time stamp of last update: 12/06/93 14:11:51
History Data (listed in reverse chronological order):
Event: User State Event
Member State Old: Created Member State Old: Created
New: Created New: Created
Time: 12/06/93 14:11:51 Time: 12/06/93 14:11:33
Event: User State Event
Member State Old: Created Member State Old: Created
New: Created New: Created

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XCF and XES

Chapter 27. Sysplex Services (XCF and XES) 27-21
XCF and XES

Jobname: N/A
Address Space STOKEN: 00000028 00000001
User State: 04000005 00000008 A87EA425 B903D405
01000001 00040006 00000000 00000000
Time stamp of last update: 12/06/93 14:06:12
History Data (listed in reverse chronological order):
Event: User State Event
Member State Old: Created
New: Created
Event: Member State Event
Member State Old: Created
New: Created
Time: 12/06/93 14:06:12
Event: User State Event
Member State Old: Created
New: Created
Time: 12/06/93 14:05:39
Event: User State Event
Member State Old: Created
New: Created
Time: 12/06/93 10:52:23
Event: User State Event
Member State Old: Created
New: Created
Time: 12/06/93 10:51:50
Event: User State Event
Member State Old: Created
New: Created
Time: 12/06/93 10:50:27
Event: User State Event
Member State Old: Created
New: Created
Time: 12/06/93 10:50:24
Event: User State Event
Member State Old: Created
New: Created
Time: 12/06/93 10:50:20
Time: 12/06/93 10:50:09
No group exit associated with current member.
Group: SYSMCS
Member: D13ID30
System: D13ID30
Diag021:00500C00 Diag022:00540C00
Member State: Active
Memtoken: 01000001 00040006
Permanent Status Recording: ON
ASID: N/A
Jobname: CONSOLE
Address Space STOKEN: 00000028 00000001
User State: 04010000 0000C000 00000000 00000000
00000000 00000000 00000000 00000000
Time stamp of last update: 12/06/93 10:50:09
History Data (listed in reverse chronological order):
Event: User State Event
Member State Old: Active
New: Active
Time: 12/06/93 10:50:09
Event: Member State Event
Member State Old: Not defined
New: Active
Time: 12/06/93 10:50:07
Group exit information not available.
Group: SYSMCS
Member: D13ID31
System: D13ID31
Diag021:00500E00 Diag022:00540E00
Member State: Active
Memtoken: 02000001 00040007
Permanent Status Recording: ON
ASID: X'000A'
Jobname: CONSOLE
Member Association: Task
TCB: 007FDE88
Address Space STOKEN: 00000028 00000001
User State: 04020000 0000C000 00000000 00000000
00000000 00000000 00000000 00000000
Time stamp of last update: 12/06/93 10:50:16
History Data (listed in reverse chronological order):
Event: User State Event
Member State Old: Active
New: Active
Time: 12/06/93 10:50:16
Event: Member State Event
Member State Old: Not defined
New: Active
Time: 12/06/93 10:50:15
No events awaiting delivery to the group exit.
Group: SYSMCS
Member: D13ID32
System: D13ID32
Diag021:00501000 Diag022:00541000
Member State: Active
Memtoken: 03000001 00040008
Permanent Status Recording: ON
ASID: N/A
Jobname: CONSOLE
Address Space STOKEN: 00000028 00000001
XCF and XES

COUPLE SERIAL DETAIL report

This report provides detailed information about the activity associated with the couple data sets.

For each type of couple data set, the SERIAL report displays:
- what data sets are in use in the sysplex
- the system's I/O activity to the couple data sets
- active requests affecting the status of the couple data sets
- which resources are being serialized

The following command was issued to produce the SERIAL report:

** Command: COUPLE SERIAL DETAIL **

--- SERIAL DETAIL REPORT ---

** COUPLE DATA SET INFORMATION **

Type: CFM (IXCF0FD)
Primary Data Set: SYS1.PFUNCT.CTTEST
Volume Serial: FDSKP
IOSB: 01C011B0
+0000 FLA...... C0 FLB...... 80 FLC...... 20
PR. 00 DVRID.... 01 FLD...... 44
+0006 ASID..... 0006 PGAD..... FF6EA768 PKEY...... 00
CO. 7F OPT...... 94 OPT2..... 80
+0010 UCB...... 00FDE9A8 CCWAD.... 01513F48 DSTAT.... 0C
SS. 00 CWRAC.... 0001
+001C SRB..... 01C0121C USE...... 7F56BD50 IOPID.... 00000000
SC. 4007 SNS...... 0000
+002C IP1B..... 00000000 PCHM.... 00000000 ERP...... 00000000
PC. 00000000 NRM...... FF6EA558

--- END OF COUPLE (CROSS-SYSTEM COUPLING FACILITY) REPORT ---
XCF and XES

+0040 ABN....... FF6E9F90 DIE....... FF6E9CB0 RST....... 0163ED98
VS. 7F568D98 DSID....... 00000000 LEVEL....... 01
+0055 GPMSK....... 00 DCTI....... 0000 FMSK....... 00
CK....... 00 MDB....... 00 MDM....... 00
+005C RSV....... 00000000 CTC....... 00000300 SKM....... 00
SK....... 0000 SKCC....... 0000 SKH1....... 00
+006A SKH2....... 03 SKR....... 00
Diag008: 00000000 00000000 00000000 00000000 00000000 00000000
Diag009: 00000000 00000000 00000000 00000000 7F568E68 7F583038
Diag047: 00000000 00 80110000 00
Alternate Data Set: SYS1.AFUNCT.CTTEST
Volume Serial: FDSPKA

IOSB: 01C01240
+0000 FLA....... C0 FLB....... 80 FLC....... 20
PR. 00 DVRID....... 01 FLD....... 44
+0006 ASID....... 0006 PGAD....... FF6E768 PKEY....... 00
CO. 7F OPT....... 94 OPT2....... 80
+0010 UCB....... 00F0E2A8 CCWAD....... 0151E80 DSTAT....... 0C
SS. 00 CWRD....... 0001
+001C SRB....... 01C01284 USE....... 7F568E88 IOPID....... 00000000
SC. 4007 SNS....... 0000
+002C IPIB....... 00000000 PCHN....... 00000000 ERP....... 00000000
PC....... 00000000 NRM....... FF6E558
+0040 ABN....... FF6E9F90 DIE....... FF6E9CB0 RST....... 0163EEF0
VS. 7F568E88 DSID....... 00000000 LEVEL....... 01
+0055 GPMSK....... 00 DCTI....... 0000 FMSK....... 00
CK....... 00 MDB....... 00 MDM....... 00
+005C RSV....... 00000000 CTC....... 00000300 SKM....... 00
SK....... 0000 SKCC....... 0000 SKH1....... 00
+006A SKH2....... 03 SKR....... 00
Diag008: 00000000 00000000 00000000 00000000 00000000 00000000
Diag009: 00000000 00000000 00000000 00000000 7F568E80 7F58304C
Diag047: 00000000 00 80110000 00
Type: SFM (IXCAPFD)
Primary Data Set: XCF.XCJSFT99.SFMFDS01
Volume Serial: Y36WRK

IOSB: 01C0241B
+0000 FLA....... C0 FLB....... 80 FLC....... 20
PR. 00 DVRID....... 01 FLD....... 44
+0006 ASID....... 0006 PGAD....... FF6E768 PKEY....... 00
CO. 7F OPT....... 94 OPT2....... 80
+0010 UCB....... 00F21250 CCWAD....... 015490D0 DSTAT....... 0C
SS. 00 CWRD....... 0001
+001C SRB....... 01C01284 USE....... 7F568E88 IOPID....... 00000000
SC. 4007 SNS....... 0000
+002C IPIB....... 00000000 PCHN....... 00000000 ERP....... 00000000
PC....... 00000000 NRM....... FF6E558
+0040 ABN....... FF6E9F90 DIE....... FF6E9CB0 RST....... 0163EEF0
VS. 7F568E88 DSID....... 00000000 LEVEL....... 01
+0055 GPMSK....... 00 DCTI....... 0000 FMSK....... 00
CK....... 00 MDB....... 00 MDM....... 00
+005C RSV....... 00000000 CTC....... 00000300 SKM....... 00
SK....... 0000 SKCC....... 0000 SKH1....... 00
+006A SKH2....... 03 SKR....... 00
Diag008: 00000000 00000000 00000000 00000000 00000000 00000000
Diag009: 00000000 00000000 00000000 00000000 7F568E80 7F58304C
Diag047: 00000000 00 80110000 00
Type: SYSPLEX (IXCLMD)
Primary Data Set: SYS1.ACOUPLE
Volume Serial: CPLPKA

IOSB: 01C041DB
+0000 FLA....... C0 FLB....... 80 FLC....... 20
PR. 00 DVRID....... 01 FLD....... 44
+0006 ASID....... 0006 PGAD....... FF6E768 PKEY....... 00
CO. 7F OPT....... 94 OPT2....... 80
+0010 UCB....... 00F21250 CCWAD....... 015490D0 DSTAT....... 0C
SS. 00 CWRD....... 0001
+001C SRB....... 01C04244 USE....... 7F57DD50 IOPID....... 00000000
SC. 4007 SNS....... 0000
+002C IPIB....... 00000000 PCHN....... 00000000 ERP....... 00000000
PC....... 00000000 NRM....... FF6E558
+0040 ABN....... FF6E9F90 DIE....... FF6E9CB0 RST....... 0112CD98
VS. 7F57DD98 DSID....... 00000000 LEVEL....... 01
+0055 GPMSK....... 00 DCTI....... 0000 FMSK....... 00
CK....... 00 MDB....... 00 MDM....... 00
+005C RSV....... 00000000 CTC....... 00000300 SKM....... 00
SK....... 0000 SKCC....... 0000 SKH1....... 00
+006A SKH2....... 03 SKR....... 00
Diag008: 00000000 00000000 00000000 00000000 00000000 00000000
Diag009: 00000000 00000000 00000000 00000000 7F57DE68 7F58304C
Diag047: 00000000 00 80150000 00
Type: SFM (IXCAPFD)
Primary Data Set: XCF.XCJSFT99.SFMFDS01
Volume Serial: Y36WRK

IOSB: 01D0980B
+0000 FLA....... C0 FLB....... 80 FLC....... 20
PR. 00 DVRID....... 01 FLD....... 44
+0006 ASID....... 0006 PGAD....... FF6E768 PKEY....... 00
CO. 7F OPT....... 94 OPT2....... 80
+0010 UCB....... 00F0E928 CCWAD....... 0095D4F0 DSTAT....... 0C
SS. 00 CWRD....... 0001
XCF and XES
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z/OS V1R13.0 MVS Diagnosis: Reference
I/O ACTIVITY ON THE DATA SET
----------------------------
Type: CFRM (IXCLOFD)
Primary I/O Activity:
There is no I/O activity on the data set.
Alternate I/O Activity:
There is no I/O activity on the data set.

Type: SFM (IXCAPFD)
Primary I/O Activity:
There is no I/O activity on the data set.
Alternate I/O Activity:
The data set is not functional.

Type: SYSPLEX (IXCLKMD)
Primary I/O Activity:
There is no I/O activity on the data set.
Alternate I/O Activity:
The data set is not functional.

XCF SERIALIZATION DATA SET REQUESTS
-------------------------------------
Diag005: 00000000 00000000 00000000 00000000
Diag051: 00000000 00000000
No data set requests to report on.

XCF SERIALIZATION RESOURCES
---------------------------
Resource ID: 003D0954
Dataspace: IXCDSLK1
  Request ID: 00013018
  Request Type: 00000000
  Record Type/Number: IXCLOACP 00000001
  Record Subtype/Number: IXCLOHDW
    IXCLOIDX
    IXCLOTBL 0000000A
  Ownership: Global Waiter
  Owning System: S2
  Diag002: 00000000
  Diag054: 0000138C 0000138C

No exceptional conditions were found in the SERIAL DETAIL report generator.

* * * * END OF COUPLE (CROSS-SYSTEM COUPLING FACILITY) REPORT * * * *

COUPLE SIGNAL SUMMARY report
This report provides detailed information about XCF signalling and communication services.
The following command was issued to produce the COUPLE SIGNAL SUMMARY report:

```
COMMAND==> COUPLE SIGNAL SUMMARY
```

### XCF SIGNALLING DEFINITIONS FOR SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Transport Class</th>
<th>MaxMsg</th>
<th>Retry Limit</th>
<th>Assigned Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEFAULT</td>
<td>3,000</td>
<td>10</td>
<td>UNDESIG</td>
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### Outbound Path MaxMsg Retry Transport Signalling Path Type (K) Limit Class

<table>
<thead>
<tr>
<th>Path</th>
<th>Type</th>
<th>Limit</th>
<th>Class</th>
<th>Status</th>
<th>Path Status Information</th>
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<tbody>
<tr>
<td>08E0</td>
<td>CTC</td>
<td>3,000</td>
<td>10</td>
<td>DEFAULT</td>
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</tr>
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</table>

### Inbound Path MaxMsg Retry Signalling Path Type (K) Limit

<table>
<thead>
<tr>
<th>Path</th>
<th>Type</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0CE2</td>
<td>CTC</td>
<td>3,000</td>
</tr>
<tr>
<td>0CE3</td>
<td>CTC</td>
<td>3,000</td>
</tr>
</tbody>
</table>

### Summary of outbound connectivity from B7VBID86 to indicated systems:

```
Target System Signalling Most Recent
System Number Connectivity Connectivity Event Time of Event
B7VBID87 01000001 YES Signals transferred 01/19/2009 17:37:50.479915
```

### Summary of inbound connectivity to B7VBID86 from indicated systems:

```
Source System Signalling Most Recent
System Number Connectivity Connectivity Event Time of Event
B7VBID87 01000001 YES Signals transferred 01/19/2009 17:37:50.479915
```

### XCF SIGNALLING PATH SUMMARY FOR SYSTEM B7VBID86

### Summary of outbound paths from B7VBID86 to indicated systems:

```
Target Outbound Path Path
System Signalling Path Type Status Status Time Path Status Information
B7VBID87 08E0 CTC Idle 01/19/2009 17:37:48.219701 -
B7VBID87 08E1 CTC Idle 01/19/2009 17:37:48.219701 -
```

### Summary of inbound paths to B7VBID86 from indicated systems:

```
Source Inbound Path Path
System Signalling Path Type Status Status Time Path Status Information
OCE2 CTC Inoper 01/19/2009 08:38:33.366466 Start request failed
OCE3 CTC Inoper 01/19/2009 08:38:33.366372 Start request failed
```

### XCF DELIVERY STATUS SUMMARY FOR SIGNALS OUTBOUND FROM SYSTEM B7VBID86

```
Outbound Target Path Last Signal Last Signal Last Signal
Target Path CTC System Status Accepted Completed Monitored
08E0 OCEF B7VBID87 Idle 49,221 49,221 49,218
08E1 OCEE B7VBID87 Idle 90,056 90,056 90,055
```

### XCF DELIVERY STATUS SUMMARY FOR SIGNALS INBOUND TO SYSTEM B7VBID86

```
Target Last InOrder #Pending Msgs Last Pending
System Msg Sent Being Held Msg Queued
B7VBID87 4,327 0 0
```

---

XCF and XES

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**XCF and XES**

<table>
<thead>
<tr>
<th>Inbound Source</th>
<th>Source Path</th>
<th>Last Signal</th>
<th># Read</th>
<th>#Messages</th>
<th>CTC System Status</th>
<th>Completed</th>
<th>Active</th>
<th>In Delivery</th>
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<td>CTC System</td>
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<td>0CEE</td>
<td>08E1</td>
<td>B7VBID87</td>
<td>Working</td>
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<td>Inbound List</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source Last InOrder #Ordered Msgs

<table>
<thead>
<tr>
<th>System</th>
<th>InOrder</th>
<th>#Ordered Msgs</th>
<th>Being Held</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7VBID87</td>
<td>5,420</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**XCF DELIVERY STATUS SUMMARY FOR SIGNALS LOCAL TO SYSTEM B7VBID86**

Transport #Messages

Class In Delivery

There is no information to report.

**XCF DELIVERY STATUS SUMMARY FOR MANAGED MESSAGES SENT BY SYSTEM B7VBID86**

Broadcast, get response, and queued messages

Group Source Member #Targ Pend Pend Rsp Status Message ID Message Anchor Signal Token

There is no information to report.

**XCF DELIVERY STATUS SUMMARY FOR MEMBERS ON SYSTEM B7VBID86**

Group Member Notify NotifyQ Incompl Delvry DelvryQ Active Queued Member Token

There is no information to report.

**XCF BUFFER USAGE SUMMARY FOR SIGNALS OUTBOUND FROM SYSTEM B7VBID86**

Target Transport Class Msglen Buff Space Buff Space #No Buffer

System Class Length In Use In Use (K) Allowed (K) Conditions

<table>
<thead>
<tr>
<th>Target</th>
<th>Transport Class</th>
<th>Msglen</th>
<th>Buff Space</th>
<th>Buff Space</th>
<th>#No Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B7VBID87</td>
<td>DEFAULT</td>
<td>956</td>
<td>956</td>
<td>8</td>
<td>12,000</td>
</tr>
</tbody>
</table>

**XCF BUFFER USAGE SUMMARY FOR SIGNALS INBOUND TO SYSTEM B7VBID86**

Source Inbound Path Signalling Path Type Signal# Token

System Signalling Path Type In Use In Use (K) Allowed (K) Conditions

<table>
<thead>
<tr>
<th>Source</th>
<th>Inbound Path</th>
<th>Signalling Path</th>
<th>Type</th>
<th>Signal#</th>
<th>Token</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B7VBID87</td>
<td>OCEE</td>
<td>CTC</td>
<td>956</td>
<td>10</td>
<td>3,000</td>
</tr>
<tr>
<td>B7VBID91</td>
<td>IXC1</td>
<td>LIST</td>
<td>4,028</td>
<td>0</td>
<td>3,000</td>
</tr>
<tr>
<td>B7VBID87</td>
<td>OCEC</td>
<td>CTC</td>
<td>1,024</td>
<td>4</td>
<td>3,000</td>
</tr>
<tr>
<td>B7VBID91</td>
<td>OCEC</td>
<td>CTC</td>
<td>1,024</td>
<td>0</td>
<td>3,000</td>
</tr>
</tbody>
</table>

**XCF SUMMARY OF MESSAGES OUTBOUND FROM SYSTEM B7VBID86**

Group Source Member Target Member Target Signal System Status Signalling Path Path Type Signal# Signal Token

<table>
<thead>
<tr>
<th>Group</th>
<th>Source Member</th>
<th>Target Member</th>
<th>Target Signal</th>
<th>System Status</th>
<th>Signalling Path</th>
<th>Path Type</th>
<th>Signal#</th>
<th>Token</th>
</tr>
</thead>
<tbody>
<tr>
<td>XCF*</td>
<td>GROUPNOTIFY</td>
<td>GROUPNOTIFY</td>
<td>B7VBID07</td>
<td>Unknown</td>
<td>O8E0</td>
<td>CTC</td>
<td>49,222</td>
<td>0005F800</td>
</tr>
<tr>
<td>XCF*</td>
<td>GROUPNOTIFY</td>
<td>GROUPNOTIFY</td>
<td>B7VBID07</td>
<td>Closed</td>
<td>O8E0</td>
<td>CTC</td>
<td>49,222</td>
<td>0005F800</td>
</tr>
<tr>
<td>XCF*</td>
<td>TRANSPORTLAYER</td>
<td>TRANSPORTLAYER</td>
<td>B7VBID07</td>
<td>10comp</td>
<td>O8E0</td>
<td>CTC</td>
<td>90,052</td>
<td>00100000</td>
</tr>
<tr>
<td>XCF*</td>
<td>TRANSPORTLAYER</td>
<td>TRANSPORTLAYER</td>
<td>B7VBID07</td>
<td>10comp</td>
<td>O8E1</td>
<td>CTC</td>
<td>90,052</td>
<td>00035000</td>
</tr>
<tr>
<td>XCF*</td>
<td>TRANSPORTLAYER</td>
<td>TRANSPORTLAYER</td>
<td>B7VBID07</td>
<td>10comp</td>
<td>O8E1</td>
<td>CTC</td>
<td>90,055</td>
<td>00046000</td>
</tr>
</tbody>
</table>

**XCF SUMMARY OF MESSAGES INBOUND TO SYSTEM B7VBID86**

Group Source Member Target Member Target Signal System Status Signalling Path Path Type Signal# Signal Token

<table>
<thead>
<tr>
<th>Group</th>
<th>Source Member</th>
<th>Target Member</th>
<th>Target Signal</th>
<th>System Status</th>
<th>Signalling Path</th>
<th>Path Type</th>
<th>Signal#</th>
<th>Token</th>
</tr>
</thead>
<tbody>
<tr>
<td>XCF*</td>
<td>TRANSPORTLAYER</td>
<td>TRANSPORTLAYER</td>
<td>B7VBID91</td>
<td>Delvry</td>
<td>DCEC</td>
<td>CTC</td>
<td>18,060</td>
<td>00018000</td>
</tr>
<tr>
<td>XCF*</td>
<td>TRANSPORTLAYER</td>
<td>TRANSPORTLAYER</td>
<td>B7VBID91</td>
<td>Delvry</td>
<td>DCEC</td>
<td>CTC</td>
<td>18,060</td>
<td>00018000</td>
</tr>
</tbody>
</table>

Chapter 27. Sysplex Services (XCF and XES) 27-27
XCF and XES

---

XCF SUMMARY OF MESSAGES LOCAL TO SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Group</th>
<th>Source Member</th>
<th>Target Member</th>
<th>Signal</th>
<th>Status</th>
<th>Token</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYMSC</td>
<td>B7VBID86</td>
<td>B7VBID86</td>
<td>Delvry</td>
<td></td>
<td>0002D000</td>
</tr>
<tr>
<td>SYMSC</td>
<td>B7VBID86</td>
<td>B7VBID86</td>
<td>Avail</td>
<td></td>
<td>0002D000</td>
</tr>
</tbody>
</table>

XCF SIGNALLING WORK REQUEST SUMMARY FOR SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Work Request Name</th>
<th>Additional Work Request Data</th>
<th>Time Request Initiated</th>
<th>Diag041</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no information to report.

IXC80305I SIGNAL SUMMARY report encountered one or more validity check warnings.
IXC80308I Run COUPLE SIGNAL EXCEPTION report.
IXC80307I SIGNAL SUMMARY report encountered one or more storage access failures, reported data may be incomplete.

* * * END OF COUPLE (CROSS-SYSTEM COUPLING FACILITY) REPORT * * *

COUPLE SIGNAL DETAIL report

This report provides detailed information about XCF signalling and communication services. Information is presented for signalling using CTCs or using a coupling facility. This information includes:

- signalling path definitions
- signalling connectivity data
- data for specific signalling paths
- signal delivery data
- signalling buffer usage
- messages sent using signalling
- signalling work requests
- signalling information for all servers defined on the dump system in response (EXPAND)

The following command was issued to produce the SIGNAL report:

COMMAND===> COUPLE SIGNAL DETAIL GRPNAME(SYSIGW01)

* * * SIGNAL DETAIL REPORT * * *

XCF SIGNALLING DEFINITIONS FOR SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Default Maxmsg</th>
<th>Class (K) Length</th>
<th>Assigned Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000</td>
<td>956</td>
<td>UNDESIG</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outbound Path Type</th>
<th>Maxmsg</th>
<th>Retry Limit</th>
<th>Transport Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>08E0</td>
<td>CTC</td>
<td>3,000</td>
<td>10 DEFAULT</td>
</tr>
<tr>
<td>08E1</td>
<td>CTC</td>
<td>3,000</td>
<td>10 DEFAULT</td>
</tr>
<tr>
<td>IXC1</td>
<td>STR</td>
<td>3,000</td>
<td>10 DEFAULT</td>
</tr>
</tbody>
</table>

... Inbound Path

<table>
<thead>
<tr>
<th>Inbound Path Type</th>
<th>Maxmsg</th>
<th>Retry Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0CE2</td>
<td>CTC</td>
<td>3,000</td>
</tr>
<tr>
<td>0CE3</td>
<td>CTC</td>
<td>3,000</td>
</tr>
<tr>
<td>IXC1</td>
<td>STR</td>
<td>3,000</td>
</tr>
</tbody>
</table>

XCF SIGNALLING CONNECTIVITY DETAIL FOR SYSTEM B7VBID86

Detail of outbound connectivity from B7VBID86 to indicated systems:

<table>
<thead>
<tr>
<th>Target System</th>
<th>Signalling Connectivity</th>
<th>Connectivity Event</th>
<th>Time of Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7VBID87</td>
<td>YES</td>
<td>Initialized</td>
<td>01/19/2009 08:38:33.379171</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gained connectivity</td>
<td>01/19/2009 08:38:33.379174</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signals transferred</td>
<td>01/19/2009 17:37:50.479915</td>
</tr>
</tbody>
</table>
History of outbound connectivity events on B7VBID86:

<table>
<thead>
<tr>
<th>System Number</th>
<th>Connectivity Event</th>
<th>Time of Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no information to report.

Detail of inbound connectivity to B7VBID86 from indicated systems:

<table>
<thead>
<tr>
<th>Source System</th>
<th>Signalling</th>
<th>System Number</th>
<th>Connectivity Event</th>
<th>Time of Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7VBID87</td>
<td>YES</td>
<td>01000001</td>
<td>Initialized</td>
<td>01/19/2009 08:38:33.378149</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gained connectivity</td>
<td>01/19/2009 08:38:33.378152</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Signals transferred</td>
<td>01/19/2009 17:37:50.479915</td>
</tr>
</tbody>
</table>

History of inbound connectivity events on B7VBID86:

<table>
<thead>
<tr>
<th>System Number</th>
<th>Connectivity Event</th>
<th>Time of Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no information to report.

Summary of Transport Class connectivity from B7VBID86 to indicated systems:

<table>
<thead>
<tr>
<th>Target System</th>
<th>Transport Class</th>
<th>#Oper</th>
<th>#Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7VBID87</td>
<td>DEFAULT</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

XCF SIGNALLING PATH DETAIL FOR SYSTEM B7VBID86

Signalling Path Definition for: CTC Device 08E0
System Name: B7VBID86
Direction: Outbound
Maxmsg: 1,000 K
Transport Class: DEFAULT
Retry Limit: 10

Hardware
Unit Type: 3088 Model: 08
Device Type: 0000 Model: 00

Current Resource Status
Message length: 956
Buffer space in use: 0 K
Signal format: SP510

Path Connection
State: Operational
Last established at time: 01/19/2009 08:38:33.381004
Last established at signal: 0

Outbound
System Name: B7VBID86
System Number: 03000003
Connection: Local Established
Desired Signal format: SP510
Device: 08E0 OCEF

Signal Transfer
Status: Idle
#Sent when idle: 36,141
#Sent when busy: 483
First signal in working set: 49,222
Last signal in working set: 49,221
#Completed: 0
#Failed: 0
#Active: 0
#To do: 0

Data is incomplete, some queued signals not in dump

Signal# Status Token
------------- ------ --------

There is no information to report.

Path Monitor
Status: Idle
Path operational at time: 01/19/2009 17:37:50.479915
Duration of inactivity: 0 Seconds
Last signal monitored: 49,218
Last signal completed: 49,221
#Path start/restarts: 2
#Retrans: 0

Path Requests
<table>
<thead>
<tr>
<th>Time Request Initiated</th>
<th>Request</th>
<th>Reason</th>
<th>CC</th>
<th>Diag073</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/19/2009 08:38:33.377593</td>
<td>Restart</td>
<td>Normal completion of start</td>
<td>00 08320220</td>
<td>- - - -</td>
</tr>
</tbody>
</table>

Chapter 27. Sysplex Services (XCF and XES) 27-29
## XCF and XES

### Path Request History

<table>
<thead>
<tr>
<th>Time Request Recorded</th>
<th>Request</th>
<th>Reason</th>
<th>Req#</th>
<th>Diag074</th>
<th>044</th>
<th>037</th>
<th>038</th>
<th>039</th>
<th>087</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

There is no information to report.

### Diagnostics

| Diag030: | 02738BA0 00000005 00000000 00000001 00000001 |
| Diag031: | 00000004 00000000 A0420000 00040000 |
| Diag032: | 01 |

### IOSB: 02738E00

+0000 FLA.... 40  
+0006 ASID.... 0006  
+0010 UCB..... 00F1E8CB  
+0013 SRCB.... 0273BE74  
+002C IPIB..... 00000000  
+0040 AIN..... FF489E8A DIF..... FF47C7F0  
+0055 GPMSK..... 00  
+0060 CTC..... 00000000  
+0068 SKR..... 00  

UCBPFX: 00F1EBC0  
UCB0: 00F1EBC8  
+0000 JBNR..... 00  
+0007 FLA.... 00  
+0012 DVCLS.... 41  
+001D RV042.... 000000  
+0060 STLI..... 00  
+006E ASID.... 0006  
+0088 INQ..... 00000000  
+00A0 ETI..... 19  
+00A6 STL1..... 00  
+00CE CSS 1d 00  
+00E0 Ld/Sld 01  
+00E0 Number 0026  
+0010 PMON1.... 288  
+001E CHPID.... 54000000  
+0024 LVMsk.... 00000001  

Actual UCB Common segment address 00F1E8C8  
Device is installation-static

### Signalling Path Definition for: Structure IXC1

<table>
<thead>
<tr>
<th>Pathout</th>
<th>Pathin</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

Visible to other systems: YES YES

Maxmsgs: 3,000 3,000

Transport Class: DEFAULT N/A

Retry Limit: 10 10

### Hardware

Connection Name: SIGPATH_03000003  
Connect Token: IXLOG015 7F139100 00D30001  
Connect Version ID: 00033001  
Structure Version ID: C39E8A6A 4D45DFBF  
Maximum Structure Size: 10 M  
Actual Structure Size: 10 M  
Number Lists: 64

Maximum number signalling paths: 56  
Maximum number elements: 636  
Maximum number entries: 665  
Vector Token: 02710800 15586A58 15586A58  
Vector Length: 32

List Signalling Paths

<table>
<thead>
<tr>
<th>Other Pathout from Pathin to System</th>
<th>B7V810DB</th>
<th>B7V810DB</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7V810DB</td>
<td>Started</td>
<td>Started</td>
</tr>
</tbody>
</table>

### Path Connection

Acceptable: YES  
Connect Status: Completed IXLOG000 RC/RSN: 00000000 00000000  
Disconnect Status: N/A  
Rebuilding: NO  
Rebuild Connect Status: N/A

### Signal Transfer

27-30 z/OS V1R13.0 MVS Diagnosis: Reference
Inbound List Transition: 01/19/2009 17:37:40.878427

Sending Vectr
System Index  Active  #Transitions  List#  Diag043  Diag084
----------  ------  ----------  ------  --------  --------
B7VBID87    3       NO           2568   9    02480000  7EF60570

Path Monitor
Structure Status: Working
Pathout Status: Working
Pathin Status: Working

Path Requests

<table>
<thead>
<tr>
<th>Dir</th>
<th>Time Request Initiated</th>
<th>Request</th>
<th>Reason</th>
<th>CC</th>
<th>Diag073</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>01/19/2009 14:38:36.746008</td>
<td>Start</td>
<td>Operator request</td>
<td>00 08690004 0E014B00 00000000 00000000 00000000</td>
<td></td>
</tr>
<tr>
<td>OUT</td>
<td>01/19/2009 14:38:42.633309</td>
<td>Start</td>
<td>Operator request</td>
<td>00 08690004 0E014B00 00000000 00000000 00000000</td>
<td></td>
</tr>
<tr>
<td>STR</td>
<td>01/19/2009 14:38:43.376300</td>
<td>Restart</td>
<td>Refresh control data from structure</td>
<td>00 087E0206</td>
<td></td>
</tr>
</tbody>
</table>

Path Request History

<table>
<thead>
<tr>
<th>Dir</th>
<th>Time Request Recorded</th>
<th>Request</th>
<th>Reason</th>
<th>Req#</th>
<th>Diag074</th>
<th>044</th>
<th>037</th>
<th>038</th>
<th>039</th>
<th>087</th>
</tr>
</thead>
</table>

There is no information to report.

Diagnostics
Diag030: 7EF6C768 00000014 00000000 00000000 00000001
Diag042: 7EF6C768

Signalling Path Definition for: Structure IXC1 LIST# 8
System Name: B7VBID86
Direction: Outbound
Maxmsg: 3,000 K
Transport Class: DEFAULT
Retry Limit: 10

Hardware
Connect Token: IXCLO015 7F139100 00030001
Connect Version ID: 00030001
List limit: 320
Diag042: 7EF6C768
Diag084: 7EF60590

Current Resource Status
Message length: 956
Buffer space in use: 0 K
Signal format: SP510

Path Connection
State: Operational
Last established at time: 01/19/2009 14:38:43.698393
Last established at signal: 0

Outbound  Inbound
----------  ----------
System Name: B7VBID86  B7VBID87
System Number: 03000003 01000001
Connection: Local  Established
Desired Signal format: SP510  SP510
Diag083: 0001 0001
Diag085: 01/19/2009 14:38:43.383935 03000003 00000000 00000000
Diag086: 03000003 00000001 01000001 00000001 00000001 00000000 00000000 01400000 00010001 00000006

Signal Transfer
Status: Idle
#Sent when idle: 350
#Sent when busy: 15
First signal in working set: 15,140
Last signal in working set: 15,140
#Completed: 1
#Failed: 0
#Active: 0
#To do: 0

Signal# Status Token
------------ ------ --------
There is no information to report.

Path Monitor
Status: Idle
Path operational at time: 01/19/2009 17:37:48.219701
Duration of inactivity: 0 Seconds
Last signal monitored: 15,140
Last signal completed: 15,140
#Path start/restarts: 4
Retry count: 0

Path Requests

<table>
<thead>
<tr>
<th>Time Request Initiated</th>
<th>Request</th>
<th>Reason</th>
<th>CC</th>
<th>Diag073</th>
</tr>
</thead>
</table>
Signalling Path Definition for: Structure IXC1

System Name: B7VBID86
Direction: Inbound
Maxmsg: 3,000 K
Transport Class: N/A
Retry Limit: 10

Hardware
Connect Token: IXCLO015 7F139100 00030001
Connect Version ID: 00030001
List limit: 0

Diag030: 02378A90 00000005 00000000 00000001 00000001
Diag031: 00000004 00000000 A0400000 00040000
Diag032: 01

Path Connection
State: Operational
Last established at time: 01/19/2009 14:38:43.381254
Last established at signal: 1

Outbound Inbound
---------- ----------
System Name: B7VBID87 B7VBID86
System Number: 01000001 03000003
Connection: Estblishd Local
Desired Signal format: SP510 SP510

Diag083: 0001 0001
Diag085: 01/19/2009 14:38:42.645802 03000003 00000000
Diag086: 01000001 00100001 03000003 00030001
00000000 00000000 00010001 00000003
00000000 00000000 00010001 00000003

Signal Transfer
Status: Stalled
First signal in working set: 15,101
Last signal in working set: 15,104
#Completed: 1
#Failed: 0
#Active: 0
#To do: 0

There is no information to report.

Path Monitor
Status: Stalled
Path operational at time: 01/19/2009 17:37:41.927091
Duration of inactivity: 6 Seconds
Last signal monitored: 15,101
Last signal completed: 15,101
#No buffer conditions: 0
#Path start/restarts: 3
Retry count: 0

There is no information to report.

XCF and XES

01/19/2009 14:38:42.642629 Start System started to use structure 00 08180001 08710000 4A000008 00000000 00000000
01/19/2009 14:38:43.381080 Restart Reset parameters 00 087C021B 00000140 00000281 00000002 01400000

Time Request History

<table>
<thead>
<tr>
<th>Time Request Recorded</th>
<th>Request</th>
<th>Reason</th>
<th>Req#</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/19/2009 14:38:42.643280</td>
<td>Start</td>
<td>System started to use structure</td>
<td>00 08180001 08710000 4A000008 00000000 00000000</td>
</tr>
<tr>
<td>01/19/2009 14:38:43.376275</td>
<td>Restart</td>
<td>Start converted to restart</td>
<td>00 08180001 087E06120 5A400009 00000000 00000000</td>
</tr>
</tbody>
</table>

Path Requests

<table>
<thead>
<tr>
<th>Time Request Initiated</th>
<th>Request</th>
<th>Reason</th>
<th>CC</th>
<th>Diag073</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/19/2009 14:38:42.643280</td>
<td>Start</td>
<td>System started to use structure</td>
<td>00 08180001 08710000 4A000008 00000000 00000000</td>
<td></td>
</tr>
<tr>
<td>01/19/2009 14:38:43.376275</td>
<td>Restart</td>
<td>Start converted to restart</td>
<td>00 08180001 087E06120 5A400009 00000000 00000000</td>
<td></td>
</tr>
</tbody>
</table>

Timings for Recent Signal Transfers

<table>
<thead>
<tr>
<th>Source Memtoken</th>
<th>TOD When MSGO Requested</th>
<th>Queue Time</th>
<th>Transfer Time</th>
<th>TOD When Arrived</th>
<th>Signal Token</th>
</tr>
</thead>
<tbody>
<tr>
<td>0100001 00000000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>01/19/2009 17:37:01.072687 00004900</td>
<td></td>
</tr>
<tr>
<td>0100001 00000000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>01/19/2009 17:37:01.072687 00008300</td>
<td></td>
</tr>
<tr>
<td>0100001 00000000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>01/19/2009 17:37:01.072685 00008B000</td>
<td></td>
</tr>
</tbody>
</table>
Signalling path details are presented for each outbound and inbound path, which is omitted from this example.

### XCF DELIVERY STATUS SUMMARY FOR SIGNALS OUTBOUND FROM SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Outbound Target</th>
<th>Target Path</th>
<th>Last Signal</th>
<th>Last Signal</th>
<th>Last Signal</th>
<th>Last Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTC Path</td>
<td>CTC</td>
<td>System Status</td>
<td>Accepted</td>
<td>Completed</td>
<td>Monitored</td>
</tr>
<tr>
<td>OB01</td>
<td>OB02</td>
<td>B7VBID87</td>
<td>Idle</td>
<td>49,221</td>
<td>49,218</td>
</tr>
<tr>
<td>OB02</td>
<td>OB01</td>
<td>B7VBID86</td>
<td>Idle</td>
<td>90,056</td>
<td>90,055</td>
</tr>
<tr>
<td>OB03</td>
<td>OB04</td>
<td>B7VBID87</td>
<td>Idle</td>
<td>15,149</td>
<td>15,149</td>
</tr>
<tr>
<td>OB04</td>
<td>OB03</td>
<td>B7VBID86</td>
<td>Idle</td>
<td>15,149</td>
<td>15,149</td>
</tr>
</tbody>
</table>

### XCF DELIVERY STATUS SUMMARY FOR SIGNALS INBOUND TO SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Inbound Source</th>
<th>Source Path</th>
<th>Last Signal</th>
<th># Read</th>
<th>#Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTC Path</td>
<td>CTC</td>
<td>System Status</td>
<td>Completed</td>
<td>Active</td>
</tr>
<tr>
<td>OB01</td>
<td>OB02</td>
<td>B7VBID87</td>
<td>Working</td>
<td>55,580</td>
</tr>
<tr>
<td>OB02</td>
<td>OB01</td>
<td>B7VBID86</td>
<td>Idle</td>
<td>15,101</td>
</tr>
</tbody>
</table>

### XCF DELIVERY STATUS SUMMARY FOR SIGNALS LOCAL TO SYSTEM B7VBID86

There is no information to report.

### XCF DELIVERY STATUS SUMMARY FOR MANAGED MESSAGES SENT BY SYSTEM B7VBID86

Broadcast, get response, and queued messages

<table>
<thead>
<tr>
<th>Group</th>
<th>Source</th>
<th>Member</th>
<th>#Send</th>
<th>#Resp</th>
<th>Get Msg</th>
<th>#Targ</th>
<th>Pend</th>
<th>Pend</th>
<th>Rsp Status</th>
<th>Message ID</th>
<th>Message Anchor</th>
<th>Signal Token</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no information to report.

### XCF BUFFER USAGE SUMMARY FOR SIGNALS OUTBOUND FROM SYSTEM B7VBID86

<table>
<thead>
<tr>
<th>Target Transport Class</th>
<th>Msglen</th>
<th>Buff Space</th>
<th>Buff Space</th>
<th>#No Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Class</td>
<td>Length</td>
<td>In Use</td>
<td>In Use (K)</td>
<td>Allowed (K)</td>
</tr>
<tr>
<td>B7VBID87 DEFAULT</td>
<td>956</td>
<td>956</td>
<td>8</td>
<td>12,000</td>
</tr>
</tbody>
</table>

### XCF BUFFER USAGE SUMMARY FOR SIGNALS INBOUND TO SYSTEM B7VBID86

Source Inbound Path Msglen Buff Space Buff Space #No Buffer

Chapter 27. Sysplex Services (XCF and XES) 27-33
COUPLE SYSPLEX DETAIL report

This report provides detailed information about status and monitoring for systems and group members in the sysplex. System and subsystem monitoring information is included, such as:

- member monitoring status
- request and pending notifications to a member
- status of requests for sysplex partitioning
- SFM policy

The following command was issued to produce the SYSPLEX report:

COMMAND===> COUPLE SYSPLEX DETAIL

In the following report, system B7VB0032 is being partitioned as a result of connector termination. The SYSPLEX PARTITIONING REQUESTS sections show the ongoing removal of system B7VB0032.
## XCF and XES

Number of IPLing systems: 0
Number of inactive systems: 0
Number of systems being removed: 1
Number of systems detected stopped: 0
PR/SM policy status: N/A
Active PRSM POLICY PARMLIB member: N/A
Sysplex failure management status: ACTIVE
Started sysplex failure management policy: WCNTST
TOD when policy activated: 09/15/2009 12:36:19.033968
TOD when policy last updated: 09/15/2009 12:31:15.787810

### Sysplex Failure Management Specifications for Current Policy

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONNFAIL(NO)</td>
<td></td>
</tr>
<tr>
<td>WEIGHT(10) PROMPT</td>
<td></td>
</tr>
<tr>
<td>CFSTRHANGTIME(NO)</td>
<td></td>
</tr>
<tr>
<td>WEIGHT(10) PROMPT</td>
<td></td>
</tr>
<tr>
<td>CFSTRHANGTIME(45)</td>
<td></td>
</tr>
</tbody>
</table>

There are no sysplex failure management requests outstanding.

### System Status Detection partitioning protocol connection status:

B7VB0032 could not connect to any systems: BCP II SERVICES NOT AVAILABLE

### Status for Each System

---

**System ID:** 01000002  **System Name:** B7VB0031

**SYSTEM MONITOR STATUS**

- **XCF level:** 0105010B
- **System status:** Active
  - **Time of status:** 09/15/2009 12:27:51.257552
  - **ETR ID:** 15
  - **Clock Status:** Simulated ETR
  - **Timing Mode:** ETR
- **System failure detection interval:** 88 seconds
- **System operator notification interval:** 91 seconds
- **System indeterminate status action:** PROMPT
- **System SSUMLIMIT:** NONE
- **Interval since last status update:** 3 seconds
- **Date and time of last status update:** 09/15/2009 13:12:17.83631

Sysplex partitioning is not active for this system.

---

**MEMBER MONITORING REQUESTS PENDING**

- **Members(s) pending monitoring:** 0

---

**MEMBERS BEING MONITORED**

<table>
<thead>
<tr>
<th>Grp Name</th>
<th>Member Name</th>
<th>Memtoken</th>
<th>Interval</th>
<th>Current Status</th>
<th>Event TOD</th>
<th>Event Type</th>
<th>Diag028</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSGRS</td>
<td>SY1</td>
<td>01000004</td>
<td>00020001</td>
<td>18,000 Normal</td>
<td>08/05/2009 15:46:36.147981 Last Good Stat 0001D018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYS10501</td>
<td>SY1</td>
<td>01000002</td>
<td>00020001</td>
<td>200 Normal</td>
<td>08/05/2009 15:46:36.147981 Last Good Stat 0001D090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYS10502</td>
<td>SY1</td>
<td>01000002</td>
<td>00020001</td>
<td>200 Normal</td>
<td>08/05/2009 15:46:36.147981 Last Good Stat 0001D108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSJES</td>
<td>SY1</td>
<td>01000002</td>
<td>00100001</td>
<td>30,000 Normal</td>
<td>08/05/2009 15:46:33.001506 Last Good Stat 0001D180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP1</td>
<td>MEMBER1</td>
<td>01000002</td>
<td>001B0001</td>
<td>800 Confirmed SUM</td>
<td>08/05/2009 15:45:38.464720 Confirmed Sun 0001D450</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Members(s) being monitored:** 10

---

**System ID:** 02000003  **System Name:** B7VB0032

**SYSTEM MONITOR STATUS**

- **XCF level:** 0105010B
- **System status:** Being Removed
  - **Time of status:** 09/15/2009 12:29:33.459515
  - **ETR ID:** 15
  - **Clock Status:** Simulated ETR
  - **Timing Mode:** ETR
- **System failure detection interval:** 88 seconds
- **System operator notification interval:** 91 seconds
- **System indeterminate status action:** PROMPT
- **System SSUMLIMIT:** NONE
- **Interval since last status update:** 0 seconds
- **Date and time of last status update:** 09/15/2009 13:12:20.858425

System recovery processing is being handled by: B7VB0031

**SYSPLEX PARTITIONING STATUS**

- **Primary reason for partitioning:** Connector termination
- **Other reasons:** None
- **Monitor:** B7VB0031
- **Active:** Yes
- **Reset:** No
- **Gone sent:** No

**SYSPLEX PARTITIONING REQUESTS**

---

**Primary Reason** | **Wait** | **SPRE**
---

---

Chapter 27. Sysplex Services (XCF and XES) 27-35
XCF and XES

<table>
<thead>
<tr>
<th>Request Type</th>
<th>Other Reason(s)</th>
<th>Code</th>
<th>Retain</th>
<th>C/Q</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate</td>
<td>Connector termination</td>
<td>001880A2</td>
<td>Yes</td>
<td>C</td>
<td>00019018</td>
</tr>
</tbody>
</table>

MEMBER MONITORING REQUESTS PENDING

Members(s) pending monitoring: 0

MEMBERS BEING MONITORED

Members(s) being monitored: 0

No monitor notifications are pending for this system.

COUPLE SYSPLEX EXCEPTION report

This report provides detailed information about the exception state of signal exit SRB's for systems and group members in the sysplex.

The following command was issued to produce the EXCEPTION report:
COMMAND===> COUPLE SYSPLEX EXCEPTION

* * * * S Y S P L E X  E X C E P T I O N  R E P O R T  * * * *

SYSPLEX STATUS

Number of active systems: 2
Number of IPLing systems: 0
Number of inactive systems: 0
Number of systems being removed: 0
Number of systems detected stopped: 0

PR/SM policy status: N/A
Active PRSMPOLICY PARMLIB member: N/A

BLS18100I ASID(X'0006') DSPNAME(IXCAP1DS) 00 not available
Sysplex failure management status: NOT ACTIVE
Started sysplex failure management policy: N/A

STATUS FOR EACH SYSTEM

System ID: 01000006  System Name: SY1

MEMBER MONITORING EXCEPTIONS

Grp Name  Member Name  Memtoken  Interval  Current Status  Event TOD  Event Type  Diag028
----------  -------------  ---------  --------  --------------  ---------  ----------  ---------
GROUP1  MEMBER1  01000002  001B0001  800 Confirmed  08/05/2009 15:45:38.464720 Confirmed Sum 0001D450

BLS18100I ASID(X'0006') DSPNAME(IXCAP1DS) 40000000 not available

System ID: 02000007  System Name: SY2

No exceptions were found for this system.

* * * * E N D O F C O U P L E  (CROSS-SYSTEM COUPLING FACILITY) REPORT  * * * *

Formatting dump data using the IPCS subcommand - XESDATA

Format the SVC dump or stand-alone dump with the IPCS XESDATA subcommand to produce diagnostic reports about XES. [z/OS MVS IPCS Commands](z/OS MVS IPCS Commands) gives the syntax of the XESDATA subcommand.

The dump may also contain component trace data for XES. See the component trace chapter of [Diagnosis: Tools and Service Aids](Diagnosis: Tools and Service Aids) for information on how to format this trace data.
XESDATA divides the information about XES into multiple reports. Each report corresponds to the following XESDATA keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays</th>
<th>Example on page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACHE</td>
<td>Information about outstanding cache requests for this system.</td>
<td>27-37</td>
</tr>
<tr>
<td>CONNECTION</td>
<td>Information about connectors to structures in the coupling facility</td>
<td>27-40</td>
</tr>
<tr>
<td>FACILITY</td>
<td>Information about the coupling facilities and coupling facility structures known to the system.</td>
<td>27-43</td>
</tr>
<tr>
<td>LIST</td>
<td>Information about outstanding list requests for this system.</td>
<td>none</td>
</tr>
<tr>
<td>LOCK</td>
<td>Information about outstanding lock requests for this system.</td>
<td>27-46</td>
</tr>
<tr>
<td>LOCKMGR</td>
<td>Information about lock resources managed globally by the system.</td>
<td>27-48</td>
</tr>
<tr>
<td>LOCKRESOURCE</td>
<td>Information about the local lock resources owned or requested by the system.</td>
<td>27-50</td>
</tr>
<tr>
<td>XESSTACK</td>
<td>Information about Cross System Extended Services execution flow.</td>
<td>none</td>
</tr>
</tbody>
</table>

This report contains diagnostic information for IBM Service personnel.

Notes:
1. IPCS for z/OS V1R10 does not produce certain XESDATA reports for dumps taken on levels of z/OS prior to V1R10 because of expected locations of storage in the dump.
2. Some XESDATA reports for dumps taken on z/OS V1R10 cannot be formatted on IPCS versions lower than IPCS for z/OS V1R10 because of storage location changes of data in z/OS V1R10.
3. All report examples have been compressed and repetitive information has been pared down for this document. Therefore, these examples look slightly different than the way they look on your system.

**XESDATA CACHE DETAIL report**

This report provides detailed information about cache requests for this system.

**The following command was issued to produce a CACHE report:**

COMMAND==> XESDATA CACHE DETAIL

***** XESDATA (CROSS-SYSTEM EXTENDED SERVICES) REPORT *****

Options list:

- Report(s).............. CACHE
- Level(s) of detail..... DETAIL
- Filter(s) in use....... NONE

Sysplex name............ PLEX1
System name............... B7VB0027
Facility name............ LF01
Structure name........... DITCACHE02
ASID.................. X'0021'
Connection name.. IXCL00390001

***** CACHE DETAIL REPORT *****

DETAIL OF CACHE STRUCTURES

Connection Name.................... IXCL00390001
ConToken............................ IXCL0039 7FFD0038 00010003
XCF and XES

Connection Identifier.............. 01
Connect Data........................ 0B53C9D8 8726B018
ASID.................................... X'0021'
Jobname.................................. MAINASID
Structure Name...................... DITCACHE02
Structure ID: Primary...0001 Secondary...0001
Facility Name: Primary...LF01 Secondary...LF02
Structure has data elements........ Yes
  Data element size in bytes........ 256
  Maximum data elements per entry... 4
Structure has adjunct data.......... No
Number of storage classes.......... 10
Number of castout classes.......... 10

Diag001: 025A5010  Diag003: 02603630  Diag017: 00800000  Diag018: 01D4D20

Cache Activity on the System
---------------------------------
Request............................. Read_Data
Request ID.......................... 00000000 00000000
Request mode....................... AsyncToken
Request Operation.................. 03 (ASync)
Request token...................... 7FFD8038 000E47B5 000E4A30 01D4D200
Requestor is suspended............ No
This request has completed.

Data for Simplex Request:
Arwe address: 01D40200  Scte address: 00000000
Request Status: 06 (Complete)
Request Flags: 38808000  Shell Request Flags: C000
Async token: 7FD8038 00E47B5 00E4A30 01D40200
Duplex chain next: 00000000 prev: 00000000
Duplex Scte addr: 00000000  Duplex triple buffer: 00000000
Duplex operations count: 00000000  FirstOfThree address: 00000000

Request............................. Read_DirInfo
Request ID.......................... 00000000 00000000
Request mode....................... SyncSuspend
Requestor is suspended............ Yes
  Requestor TToken.................. 00000084 00000003 0000000E 064D7EBB
  Requestor Asid.................... X'0021'
  Requestor ASCB address......... 00F98A00
  Requestor TCB address.......... 004D7EBB
  Requestor RB address........... 004D60F0
This request has completed.
This request was issued at 04/30/2007 16:12:56 and is 00:00:05 old.

Data for Simplex Request:
Arwe address: 01D46200  Scte address: 00000000
Request Status: 09 (Precomplete)
Request Flags: F0808000  Shell Request Flags: 4000
Async token: 7FD8038 00E479B 00E4A15 01D46200
Duplex chain next: 00000000 prev: 00000000
Duplex Scte addr: 00000000  Duplex triple buffer: 00000000
Duplex operations count: 00000000  FirstOfThree address: 00000000

Request............................. Read_StgStats
Request ID.......................... 00000000 00000000
Request mode....................... SyncSuspend
Request Operation.................. 03 (ASync)
Requestor is suspended............ Yes
XCF and XES

Chapter 27. Sysplex Services (XCF and XES) 27-39

Requestor TToken.............. 00000084 00000003 00000010 004D7A60
Requestor Asid................ X'0021'
Requestor ASCB address........ 00F98A00
Requestor TCB address......... 004D7A60
Requestor RB address......... 004D7900
This request has completed.
This request was issued at 04/30/2007 16:10:29 and is 00:02:32 old.

Data for Simplex Request:
Arwe address: 01B65200  Scte address: 00000000
Request Status: 06 (Complete)
Request Flags: F0000000  Shell Request Flags: 0000
Async token: FFFD8038 000E4755 000E90FD 01B65200
Duplex chain next: 00000000 prev: 00000000
Duplex Scte addr: 00000000 Duplex triple buffer: 00000000
Duplex operations count: 00000000 FirstOfThree address: 00000000

Requestor TToken.............. 00000084 00000003 0000000F 004D7CF0
Requestor Asid................ X'0021'
Requestor ASCB address........ 00F98A00
Requestor TCB address......... 004D7CF0
Requestor RB address.......... 004D7C68
This request has completed.
This request was issued at 04/30/2007 16:12:57 and is 00:00:04 old.

Data for Simplex Request:
Arwe address: 01CF7200  Scte address: 00000000
Request Status: 09 (Precomplete)
Request Flags: F0000000  Shell Request Flags: 2000
Async token: FFFD8038 000E47AD 000E4A27 01CF7200
Duplex chain next: 00000000 prev: 00000000
Duplex Scte addr: 00000000 Duplex triple buffer: 00000000
Duplex operations count: 00000000 FirstOfThree address: 00000000

Requestor TToken.............. 00000084 00000003 00000003 004D6F68
Requestor Asid................ X'0021'
Requestor ASCB address........ 00F98A00
Requestor TCB address......... 004D7CF0
Requestor RB address.......... 004D6F68
This request has completed.
This request was issued at 04/30/2007 16:12:56 and is 00:00:05 old.

Data for Simplex Request:
Arwe address: 01CA5200  Scte address: 00000000
Request Status: 09 (Precomplete)
Request Flags: F0000000  Shell Request Flags: 8000
Async token: FFFD8038 000E47AD 000E4A1C 01CA5200
Duplex chain next: 00000000 prev: 00000000
Duplex Scte addr: 00000000 Duplex triple buffer: 00000000
Duplex operations count: 00000000 FirstOfThree address: 00000000
XCF and XES

Number of requests .......................... 5
  Number of Simplex Requests ............... 5
  Number of First of One Requests .......... 0
  Number of First of Two Requests .......... 0
  Number of Second of Two elements ......... 0
  Number of Base of Three Requests ......... 0
  Number of First of Three elements ....... 0
  Number of Second of Three elements ..... 0
  Number of Third of Three elements ...... 0
  Number of request work elements .......... 5

Requests passing filters ............... 5
  Request elements passing filters .. 5

No exceptional conditions were found by the CACHE DETAIL report.

***** END OF XESDATA (CROSS-SYSTEM EXTENDED SERVICES) REPORT *****

XESDATA CONNECTION DETAIL report

This report provides detailed information about connections to structures from the dumping system.

The CONNECTION report identifies the connectors by connection name and includes such information as:
  • Job name
  • Address space identifier (ASID)
  • Rebuild status, if applicable
  • Connectivity status
  • Response monitoring that was in progress when the dump was taken.

The CONNECTION report also shows the CTRACE options that were in effect and the address of the trace buffers.

Information is provided to identify the coupling facility to which the structure is connected. For each type of structure, specific information, such as group name and exit address, is provided. This report will also display information when XES recovery is being performed. For lock and serialized list structures, the signal activity on the system is formatted to give you the status of signals for a structure to and from other connections. For cache structures, the NAMECLASSMASK in use for a structure is reported if applicable.

The following command was issued to produce a CONNECTION report:
COMMAND====> XESDATA CONNECTION DETAIL CONNAME(HNGTME3#SYS2)

In the following report, connector HNGTME3#SYS2 illustrates a connector with an overdue event response.

***** XESDATA (CROSS-SYSTEM EXTENDED SERVICES) REPORT *****
Options list:
  Report(s) ............... CONNECTION
  Level(s) of detail ....... DETAIL
  Filter(s) in use ........ NONE
  Sysplex name ............ PLEX1
  System name ............. B7VB0032
  Facility name ........... LF01
  Structure name .......... CACHE01
  ASID .................. X'002A'
  Connection name .. HNGTME3#SYS2
  Structure name .......... IXCTL_SIGNAL03
  ASID .................. X'0006'
  Connection name .. SIGPATH_02000003

***** CONNECTION DETAIL REPORT *****
CONNECTIONS DEFINED IN THE SYSTEM
Connect Name .................. HNGTME3#SYS2
Connection Function ........ NOT SPECIFIED
ConToken ..................... IXCL0002 7F599A00 00030001
Connection Identifier ...... 03
Connection Version .......... 00030001
Connection Disposition ...... Delete
Connection Status ........... Active
ASID ......................... X'002A'
Job name ..................... MAINASID
TCB address ................. 004E17E0
Address Space STOKEN ...... 00000000 00000003
Connect Data ................. 00000000 0AF84B80
Connect Level ............... 00000000 00000000
Operational CF Level ........ 00000008
Structure rebuild allowed.. Yes
Duplexing rebuild allowed... No
System-managed support..... No
Termination level ......... Task
Critical Connector......... No
Connection is failure isolated
Outstanding Responses:
   Have not received a response to the disconnected/failed connection event
   Started monitoring ...... 09/15/2009 12:36:42.743800
   Subject Connection Name. HNGTME3#SYS3
   MON address ................. 7FFD1468
   Response is overdue
Maximum hang interval (CFSTRHANGTIME) ... 45 seconds
Next hang relief action time ........... 09/15/2009 12:39:37.086051
Component Trace Information:
   Current Trace Buffer .......... Connector
   Current Options ............... Lockmgr
   Connect Trace Buffer Address .... 01841000
   Connect Trace Buffer Size .......... 4095 K
   Connect Trace Buffer Data Space Name .. IXLCTCAD
   Global Trace Buffer Address .... 00001000
   Global Trace Buffer Size ........ 16383 K
   Global Trace Buffer Data Space Name .. IXLCTCAD
   Connect Trace Buffer Address .......... 01841000
   Connect Trace Buffer Size ........... 4095 K
   Connect Trace Buffer Data Space Name .. IXLCTCAD
Structure and Facility Information:
   Structure Name .................. CACHE01
   Structure Type .................. Cache
   Structure Logical Version ...... C4CB0ABC C97FA120
   Structure Disposition .......... Delete
   Structure ID .................... 0003
   Structure Physical Version ..... C4CB0ABC C97FA120
   Facility Name .................. LF01
   Facility ID .................... 00000001
   Facility CFLevel .................. 16
Structure Specific Information:
   Event Exit Address ............ 0AE61F90
   Complete Exit Address .......... 00FD8042
   Number of Directory Entries ...... 15933
   Structure has data elements .... Yes
   Total Data Elements Defined ...... 15933
   Data Element Size in Bytes ...... 256
   Maximum data elements per entry.. 1
   Structure has adjunct data ....... No
   Number of Storage Classes ...... 1
   Number of Castout Classes ....... 1
   UDF Order Queue maintained ...... No
   Name class mask .................. 0000

---

XCF and XES

---

Chapter 27. Sysplex Services (XCF and XES)  27-41
XCF and XES

Vector Token........................ 02134840 62973198 00000728
Diag128: 00000001 Diag129: 0049C0E8 00000003
Diag001: 02357B90 Diag002: 7F509A00 Diag003: 02134718
Diag586: 00000000

Connect Name................. SIGPATH_02000003
Connection Function........... NOT SPECIFIED
ConToken.................... IXCLO014 7EEB1900 00020001
Connection Identifier....... 02
Connection Version.......... 00020001
Connection Disposition...... Delete
Connection Status........... Active
ASID........................ X'0006'
Job name................... XCFAS
TCB address................. 004F9238
Address Space STOKEN....... 00000018 00000001
Connect Data................. 7EE47768 00000000
Connect Level............... 00000000 00000000
Operational CF Level........ 00000010
Structure rebuild allowed... Yes
Duplexing rebuild allowed... No
System-managed support...... No
Termination level........... XCF signaling
Critical Connector.......... No
Connection is not failure isolated
Outstanding Responses:
  No Outstanding Responses
Component Trace Information:
  Current Trace Buffer............ Connector
  Current Options.................. Lockmgr
                        Connect
                        Signal
                        Request
                        Recovery
                        Hwlayer
                        Config

Global Trace Buffer Address..... 00001000
Global Trace Buffer Size ........ 16383 K
Global Trace Buffer Data Space Name .. IXLCTCAD
Connect Trace Buffer Address..... 01041000
Connect Trace Buffer Size ........ 4095 K
Connect Trace Buffer Data Space Name .. IXLCTCAD

Structure and Facility Information:
  Structure Name.................. IXCTL_SIGNAL03
  Structure Type.................. List
  Structure Logical Version...... 00000000 00000000
  Structure Disposition........... Delete
  Structure ID.................... 0001
  Structure Physical Version..... C4CB08D4 8B5E884C
  Facility Name.................. LF01
  Facility ID.................... 00000001
  Facility CFLevel................ 16

Structure Specific Information:
  Event Exit Address.............. FF5E71A8
  Complete Exit Address.......... FF506100
  List Transition Exit Address .... FF50D938
  Number of List Headers......... 64
  Number of List Entries.......... 1580
  Number of Event Monitor Controls... 0
  Structure has data elements..... Yes
    Total Data Elements Defined.... 1562
    Data Element Size in Bytes..... 4096
    Maximum data elements per entry.. 16
  Structure has adjunct data....... Yes
  Key Support..................... No
  Secondary Key Support........... No
  Name Support................... No
  Entry ID assigned by.......... CF
XCF and XES

IXL0017I No information to display in report.
IXL0015I No exceptional conditions were found by the CONNECTION DETAIL report.

***** END OF XESDATA (CROSS-SYSTEM EXTENDED SERVICES) REPORT *****

XESDATA FACILITY DETAIL report

This report provides detailed information about the coupling facility. The FACILITY report shows:

- the hardware configuration information for each coupling facility that a system has hardware connections to
- the structures that are allocated in each coupling facility on a system
- the active and queued requests for each of the structures allocated in a coupling facility

The following command was issued to produce a FACILITY report:

COMMAND===> XESDATA FACILITY DETAIL

***** FACILITY DETAIL REPORT *****

Diag054............................. 8 (decimal)
Diag175................................ 00000113
Diag176................................ 000001C9
Diag190................................ 00000113
Diag191................................ 00000227
Diag177................................ 44000000
CF Request Time Ordering Function not installed on this system

COUPLING FACILITIES KNOWN TO THIS SYSTEM
---------------------------------------------

Facility Name................. LF01
Coupling Facility.............. SIMDEV.IBM.EN.ND010000000
Partition........................... 00
CPCID.................................. 00
CFLevel.............................. 16 (decimal)
Control Unit..................... 0001
Connected............................ Yes
Managed.............................. Yes
Volatile............................ No
Authority......................... PLEX1 BF4600B7 02B554FA
SYID................................ BF4600B7 02B554FA
Facility Space.................. 194 M
Maximum Structure ID.......... 03FF
Maximum Signalling-Segment Index. 7 (decimal)
CF Request Time Ordering Function
Installed......................... No
Required............................ No
Capable............................. No
Failed.............................. No
ETR Network ID................ none
Dynamic I/O in Progress........ No
Number of Structures........... 1 (decimal)
Number of Subchannels.......... 4 (decimal)
Number of Requests Active..... 0 (decimal)
Number of Requests Ready...... 0 (decimal)
Number of Requests Delayed.... 0 (decimal)
Delayed for dump ser.......... 0 (decimal)
Delayed for dump ser remote... 0 (decimal)
Delayed for sys-mgd process... 0 (decimal)
Delayed for dup req failure... 0 (decimal)
Number of Requests Serial Delay.. 0 (decimal)
Number of Requests Completed..... 0 (decimal)
Number of Requests Held.......... 0 (decimal)
Number of Requests Duplex Held... 0 (decimal)
Time of Most Recent IFCC......... None recorded
Diag026.......................... 00000070
Diag027.......................... 00000004
MFID............................. 00000001
Diag032.......................... 0236C300
SCLE Address..................... 025721F8
Diag039.......................... 02455000
Diag186.......................... 02744300
Diag187.......................... 000021B8
Diag188.......................... 00000000
Diag189.......................... C9780000
Diag152.......................... 41EDF19B 00001EE6
Diag028.......................... 00000000

0236C390 C3C6C3C3 14000405 07172006 09350000 | CFCC............ |
   +0010 00000000 00000000 00000000 00000000 | ................ |
   +0020 18000500 E2C9D4C4 C5E5F0F0 F1C9C2D4 | ....SIMDEV001IBM |
   +0030 C5D5D5C4 F0F1F0F0 F0F0F0F0 F0F00000 | ENND0100000000.. |

Remote Facility Information:
RFAT address ................. 025141A8
Max RFAT entries ............. 0004
Number of CFIBs ............. 0001
Remote Facility Name........... A
Coupling Facility............. SIMDEV.IBM.EN.SES100000000
Partition...................... 00
CPCID......................... 00
SYID......................... BF4600B8 378B90DA
Receiver paths installed
Path Channel type Degraded Latency
F2 CIB 12X-1FB3 Yes xxxxxxxx
F3 CIB 1X-1FB No xxxxxxxx
Sender paths installed
PATH Channel type Degraded Latency
E0 CFP F N/A xxxxxxxx
E1 ICP N/A xxxxxxxx
Signal vector token ...... 614D4508 00001EE8

Remote Facility Name........... TESTCF
Coupling Facility............. SIMDEV.IBM.EN.CF010000000
Partition...................... 00
CPCID......................... 00
SYID......................... BF4600B7 D1531875
Receiver paths installed
Path Channel type Degraded Latency
F0 CFP H N/A xxxxxxxx
Sender paths installed
Path Channel type Degraded Latency
E3 CFP F N/A xxxxxxxx
Signal vector token ...... 41EDFF08 00001EE4

Remote Facility Name........... LF02
Coupling Facility............. SIMDEV.IBM.EN.ND0206000000
Partition...................... 00
CPCID......................... 00
SYID......................... BF4600B7 68854990
Receiver paths installed
Path Channel type Degraded Latency
F1 CIB 1X-1FB No xxxxxxxx
Sender paths installed
Path Channel type Degraded Latency
Processor Information:

- Has Dedicated CP: Yes
- Dynamic CF Dispatching: No
- Number CP Dedicated: 2 (decimal)
- Number CP Shared: 3 (decimal)
- CP Number: 00
  - CP Classification: Shared
  - CP Weight: 1 (decimal)
- CP Number: 01
  - CP Classification: Dedicated
- CP Number: 02
  - CP Classification: Shared
  - CP Weight: 2 (decimal)
- CP Number: 03
  - CP Classification: Dedicated
- CP Number: 04
  - CP Classification: Shared
  - CP Weight: 3 (decimal)

Pathing Information:

<table>
<thead>
<tr>
<th>PATH</th>
<th>PHYSICAL</th>
<th>LOGICAL</th>
<th>CHANNEL TYPE</th>
<th>AID</th>
<th>PORT</th>
<th>LATENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>ONLINE - DEGRADED</td>
<td>ONLINE</td>
<td>CIB 12X-IFB3</td>
<td>xxxx</td>
<td>xx</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>C0</td>
<td>ONLINE</td>
<td>OFFLINE</td>
<td>ICP</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Subchannel Information:

- Subchannel ID: 0060
  - Device Number: CF00
  - Active: No
  - Operational: Yes
  - Pending Deallocation: No
  - Diag029: 02744100
  - Diag030: 00000000
  - Diag034: 00000000
  - Diag179: 00020000
  - Diag159: 00000000
  - Diag160: 00000000

- Subchannel ID: 0061
  - Device Number: CF01
  - Active: No
  - Operational: Yes
  - Pending Deallocation: No
  - Diag029: 02744300
  - Diag030: 00000000
  - Diag034: 00000000
  - Diag041: 01
  - Diag179: 00010000
  - Diag159: 00000000
  - Diag160: 00000000

Structure Information:

- Structure Name: ISGLOCK
- Structure Type: Lock
- Structure ID: 0001
- Structure Version: BF4600B9 38768C12
XCF and XES

Request Count.................. 6239 (decimal)
Number of connected users..... 1 (decimal)
Diag038....................... 02453100

Queued Request Information:

Facility Name..................... LF01
Low Priority Work Queue
  Number of Queued Requests... 0 (decimal)
  Total Number of Requests.... 0 (decimal)
High Priority Work Queue
  Number of Queued Requests... 0 (decimal)
  Total Number of Requests.... 0 (decimal)

Moving Weighted Average Subchannel Delay Time (MWASDT) Information:

Refresh Counter.................. 0 (decimal)
Refresh Limit.................... 250 (decimal)
Queued Count..................... 0 (decimal)
Total Count...................... 2 (decimal)
MWASDT (in microseconds)......... 13 (decimal)

Sync/Async Heuristics Data

Simplex Requests:

<table>
<thead>
<tr>
<th>OpCode</th>
<th>Acronym</th>
<th>Size</th>
<th>ReqCount</th>
<th>ConvReqCount</th>
<th>Avg Svc Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0301</td>
<td>ALST</td>
<td>0-0</td>
<td>0</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>0303</td>
<td>RLSC</td>
<td>0-0</td>
<td>0</td>
<td>0</td>
<td>66</td>
</tr>
<tr>
<td>0303</td>
<td>RLSC</td>
<td>1-1</td>
<td>0</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>0306</td>
<td>ALSU</td>
<td>0-0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>0307</td>
<td>DLSU</td>
<td>0-0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>030A</td>
<td>RLTE</td>
<td>0-0</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>030B</td>
<td>WLTE</td>
<td>0-0</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>0320</td>
<td>SGLMV</td>
<td>0-0</td>
<td>326</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>0321</td>
<td>RGLMV</td>
<td>0-0</td>
<td>319</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>0322</td>
<td>SLMV</td>
<td>0-0</td>
<td>2676</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0323</td>
<td>RLLMV</td>
<td>0-0</td>
<td>2586</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0328</td>
<td>CLTE</td>
<td>0-0</td>
<td>0</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>0381</td>
<td>WLCC</td>
<td>1-1</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>

XESDATA LOCK DETAIL report

This report provides detailed information about outstanding asynchronous coupling facility lock requests. Both simplex and duplex request data is included in the status information.

The following command was issued to produce a LOCK report:
COMMAND===> XESDATA LOCK DETAIL

***** XESDATA (CROSS-SYSTEM EXTENDED SERVICES) REPORT *****

Options list:

Report(s).......... LOCK
Level(s) of detail..... DETAIL
Filter(s) in use...... NONE

Sysplex name......... PLEX1
System name.......... B7VB0027
Facility name............. LF01

Structure name......... LIST8

ASID................ X'0026'

Connection name.. S1IS

***** LOCK DETAIL REPORT *****

DETAIL OF LOCK STRUCTURES
-------------------------

Connection Name............... S1IS
ConToken........................ IXCLO00B 7F54B900 00020004
Connection Identifier......... 02
Connect Data.................... 00000000 87C1D028
ASID.......................... X'0026'
JobName........................ MAINASID
Structure Name.................. LIST8
Structure ID: Primary...0002 Secondary...0001
Facility Name: Primary...LF01 Secondary...LF02

Diag001: 0283A278 Diag003: 01D7A188 Diag017: 008C0000 Diag018: 01E1120

Data Space Information:
Local Data Space Name: 00000IXL Alet: 01020038 Stoken: 80007600 0000147
Local Data Space 01 Name: 00001IXL Alet: 01010039 Stoken: 80006000 0000148
Local Data Space 02 Name: 00002IXL Alet: 0101003A Stoken: 80007100 0000149
Local Data Space 03 Name: 00003IXL Alet: 01010038 Stoken: 80007400 000014A
Local Data Space 04 Name: 00004IXL Alet: 0101003C Stoken: 80007500 000014B
Local Data Space 05 Name: 00005IXL Alet: 01010030 Stoken: 80007300 000014C
Local Data Space 06 Name: 00006IXL Alet: 0101003E Stoken: 80007A00 000014D
Local Data Space 07 Name: 00007IXL Alet: 0101003F Stoken: 80007200 000014E
Local Data Space 08 Name: 00008IXL Alet: 01010040 Stoken: 80007700 000014F
Local Data Space 09 Name: 00009IXL Alet: 01010041 Stoken: 80007900 0000150
Local Data Space 10 Name: 00010IXL Alet: 01010042 Stoken: 80007C00 0000151
Local Data Space 11 Name: 00011IXL Alet: 01010043 Stoken: 80007800 0000152
Local Data Space 12 Name: 00012IXL Alet: 01010044 Stoken: 80007D00 0000153
Local Data Space 13 Name: 00013IXL Alet: 01010045 Stoken: 80007E00 0000154
Local Data Space 14 Name: 00014IXL Alet: 01010046 Stoken: 80006E00 0000155
Local Data Space 15 Name: 00015IXL Alet: 01010047 Stoken: 80006F00 0000156
Local Data Space 16 Name: 00016IXL Alet: 01010048 Stoken: 80007F00 0000157
Global Data Space Name: 00017IXL Alet: 01010049 Stoken: 80008000 0000158

Lock Activity on the System
-----------------------------
Request OpCode............... 0320 (SGLMV)
Request Operation............ 03 (Async)
Request Lock Token............ 00124020 01010041
Connector Ttoken............... 00000098 00000005 004E6E88
This request is associated with a local resource

Data for First of Two:
Arwe address: 01E11200 Scte address: 00000000
Request Status: 04 (Ready)
Request Flags: 00000000 Shell Request Flags: 0000
Async token: 7F54B900 00089A32 00B9F81 01E11200
Duplex chain next: 02B84200 prev: 00000000
Duplex Scte addr: 00000000 Duplex triple buffer: 00000000
Duplex operations count: 00000000 FirstOfThree address: 00000000

Data for Second of Two:
Arwe address: 02B84200 Scte address: 00000000
XCF and XES

Request Status: 04 (Ready)
Request Flags: 00008000 Shell Request Flags: 0000
Async token: 7F549900 00089A32 00089FA2 02B82400
Duplex chain next: 00000000 prev: 01E11200
Duplex Scte addr: 00000000 Duplex triple buffer: 00000000
Duplex operations count: 00000000 FirstOfThree address: 00000000

Number of requests................. 1
  Number of Simplex Requests........ 0
  Number of First of One Requests... 0
  Number of First of Two Requests... 1
  Number of Second of Two elements.. 1
  Number of Base of Three Requests... 0
  Number of First of Three elements. 0
  Number of Second of Three elements. 0
  Number of Third of Three elements. 0
  Number of request work elements.... 2

Requests passing filters........... 1
Request elements passing filters.... 2

No exceptional conditions were found by the LOCK DETAIL report.

***** END OF XESDATA (CROSS-SYSTEM EXTENDED SERVICES) REPORT *****

XESDATA LOCKMGR DETAIL report

This report provides detailed information about lock resource contention defined by the XES global control structures. Lock resource contention information is displayed for connectors acting as a contention manager. This information includes:

• resource contention request information
• internal XES lock contention messages

The following command was issued to produce a LOCKMGR report:
COMMAND===> XESDATA LOCKMGR DETAIL
***** LOCKMGR DETAIL REPORT *****

Connection Name............................. XEJSEN10_1
Contains.................................. IXCL000A 7F545900 08020001
Connection Identifier..................... 02
ASID...................................... X'0028'
Jobname................................... XEASEN10
Structure Name............................ LOCK16
Structure ID.............................. 0001
Facility Name............................. LF01
Number of Lock Entries.................... 1

Global Data Space Name: 00017IXL Alet: 01010049 Stoken: 80007300 000000D4
Diag020: 00034028 Diag099: 00013010 Diag100: 00000000
Diag022: 02414288

Diag101: 0013010 Diag102: 00000000 Diag103: 00000000
Diag104: 00000000 Diag105: 00034160

Lock Structure Information
--------------------------
Lock Structure Entry Number......... 00000000

GLTE Information
----------------
ID................... GLTE
Fwd................... 00034028
Grab................... 00035028
EnabledDwe@........... 00000000
LTE#................... 00080000
StatusFlags........... 0080
DelayDeescFlags....... 00
PermanentFlags....... 00
Excl#................... 00000003
ManagedSsid........... 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
ChaserSsid........... 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
Escalatesee........... 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
ResponderSib@........... 00000000
ResponseData......... 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
HowBecameGM......... 00080000
GmStartTod........... 00000000 00000000
GmReadyTod........... 00000000 00000000
StartDeescTod........ 00000000 00000000
RequestCount......... 00000000
MgdResourceCount..... 00000000
NgmDueToPendDeesc.... 00000000
InterimDeescalatesee 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
DeescOnceAlready..... 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
DeferFwd............. 00000000
DeferBwd............. 00000000
DeferGrabFwd......... 00000000
DeferGrabBwd.......... 00000000
GtoLActiveSignals.... 00000000

Number of outstanding global to local manager signals: 0
Diag106: 00034160 Diag107: 00034028 Diag108: 00000000
Diag109: 00035028 Diag110: 00000000
Diag111: 00000000
Request is not enabled
Diag112: 60000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
Diag113: 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
This report provides detailed information about lock resources defined by the XES local control structures. Lock structure resource information is displayed for each connection. This information includes:

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Resource Name Length</th>
<th>Hash Value</th>
<th>Resource Contention Exit Work Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNAME1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNAME2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requestor ConName</th>
<th>Requestor Contoken</th>
<th>Requestor Connection Id</th>
<th>Status</th>
<th>Held State</th>
<th>Held User Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>XEJSEN10_1</td>
<td>XEJSEN10_1</td>
<td>02</td>
<td>Held</td>
<td>Exclusive</td>
<td></td>
</tr>
<tr>
<td>XEJSEN10_2</td>
<td>XEJSEN10_2</td>
<td>01</td>
<td>Held</td>
<td>Exclusive</td>
<td></td>
</tr>
</tbody>
</table>
the number of exclusive and shared locks held
an indication of whether there is any lock contention for the connection
resource ownership (including ownership and pending request information)
XES exit processing

The following command was issued to produce a LOCKRESOURCE report:
COMMAND===> XESDATA LOCKRESOURCE DETAIL

***** LOCKRESOURCE DETAIL REPORT *****
Connection Name........................ XEJSEN10_1
ConToken............................. IXCLO00A 7F545900 00200001
Connection Identifier................ 02
ASID................................. X'0028'
Jobname.............................. XASEN10
Structure Name....................... LOCK16
Structure ID......................... 0001
Facility Name........................ LF01
Number of Lock Entries............... 1
Average Lock Held Time............... 00000000

Data Space Information:
Local Data Space Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 01 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 02 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 03 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 04 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 05 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 06 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 07 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 08 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 09 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 10 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 11 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 12 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 13 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 14 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 15 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000
Local Data Space 16 Name: 00001IXL Alet: 01010039 Stoken: 80006200 00000000

Diag056: 0000000F Diag057: 00013010 Diag058: 00000000
Diag019: 00113010 Diag022: 02414288

Lock Structure Resource Information
Lock Structure Entry Number.... 00000000
This Entry Managed by Connector 02
Exclusive Resource Count....... 2
Shared Resource Count.......... 0

LTE Information

ID, ......................... RNA
Fwd, ......................... 00113010
CompletionQueue......... 00000000
RNA, ......................... 00123028
LTE#, ........................ 00000000
Excl#, ....................... 00000002
Shr#, ......................... 00000000
GlobalInfo1.............. C0
GlobalSSID............... 00
GlobalInfo2.............. 00
EscPendInfo51w@........ 00000000
RedriveToken.......... 00000000 00000000
InflightRequestCount. 00000000
DeescRespToken........... 00000000
EnabledDwe@............. 00000000
LatchInfo.............. 0001C2A0

Diag063: 00123028 Diag077: 00113010 Diag078: 00123028
Diag079: 00000000 Diag080: 00000000 Diag081: 00000000
Diag082: 00000000 Diag083: 00000000 Diag084: 00000000 00000000
Diag085: 0001C2A0 00000000 Diag086: 00000000 00000000
Diag087: 00000000 Diag162: 00000000 Diag908: 00

Accepted Resource Requests

Resource Name:
**XCF and XES**

<table>
<thead>
<tr>
<th>Address</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0000</td>
<td>D9D5C1D4 C5F24040</td>
</tr>
<tr>
<td>+0010</td>
<td>40404040 40404040 40404040 40404040</td>
</tr>
<tr>
<td>+0020</td>
<td>40404040 40404040 40404040 40404040</td>
</tr>
<tr>
<td>+0030</td>
<td>40404040 40404040 40404040 40404040</td>
</tr>
</tbody>
</table>

**Resource Name Length**: 0000040

**Hash Value**: 00000001

**Resource Status**: Held

---

**RNA Information**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
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**Resource Name**

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<tr>
<td>+0030</td>
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**Resource Name Length**: 0000040

**Hash Value**: 00000001

**Resource Status**: Held

**RNA Information**

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<td>RnaFwd</td>
<td>00000000</td>
</tr>
</tbody>
</table>

---

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Resource Ownership Information

Held State: Exclusive

Held User Data:
+0000 00000000 00000000 00000000 00000000 | ................ |
+0010 00000000 00000000 00000000 00000000 | ................ |
+0020 00000000 00000000 00000000 00000000 | ................ |
+0030 00000000 00000000 00000000 00000000 | ................ |

Held Lock Data:
+0000 00000000 00000000 | ....... |

Diag090: 00123260 Diag091: 00000000

IXL0015I No exceptional conditions were found by the LOCKRESOURCE DETAIL report.

Formatting coupling facility structure dump data using the IPCS subcommand - STRDATA

If you are having a problem with a structure, the STRDATA subcommand of IPCS provides information about structures.

Format the SVC dump with the IPCS STRDATA subcommand to produce diagnostic reports about coupling facility structures. [z/OS MVS IPCS Commands](https://www.ibm.com/support/knowledgecenter/STXKQY_2.1.0/com.ibm.zos.r21/cfchapt27.html) gives the syntax of the STRDATA subcommand.

The dump may also contain component trace data for XES. See the component trace chapter of [z/OS MVS Diagnosis: Tools and Service Aids](https://www.ibm.com/support/knowledgecenter/STXKQY_2.1.0/com.ibm.zos.r21/cfchapt27.html) for information on how to format this trace data.

STRDATA can result in many different reports depending on which keywords you use. Following is a table listing all the possible reports, and the STRDATA keywords to specify to get them. In many cases, a
XCF and XES

A report may be generated by several keywords. The STRDATA ALL STRUCTURES DETAIL REPORT and the STRDATA ALL STRUCTURES SUMMARY REPORT are generated with almost every invocation of the STRDATA subcommand.

Notes:
1. There is no exception report for the STRDATA subcommand.
2. All report examples have been compressed and repetitive information has been pared down for this document. Therefore, the examples look slightly different from the way they look on your system.

Table 27-4. Reports Generated by the STRDATA Subcommand of IPCS

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<thead>
<tr>
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<th>STRDATA Subcommand Keywords</th>
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</tr>
<tr>
<td>ALL STRUCTURES ALLDATA SUMMARY REPORT</td>
<td>ALLDATA SUMMARY</td>
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<tr>
<td>ASSOCIATED REQUEST BLOCK REPORT</td>
<td>• ARB</td>
</tr>
<tr>
<td>Note: Same report for DETAIL and SUMMARY</td>
<td>• ALLDATA</td>
</tr>
<tr>
<td>CACHE STRUCTURE DETAIL REPORT</td>
<td>STRNAME((cache structure name)) DETAIL</td>
</tr>
<tr>
<td>Note: No STRDATA ALL STRUCTURES DETAIL REPORT</td>
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</tr>
<tr>
<td>CACHE STRUCTURE SUMMARY REPORT</td>
<td>STRNAME((cache structure name)) SUMMARY</td>
</tr>
<tr>
<td>Note: No STRDATA ALL STRUCTURES SUMMARY REPORT</td>
<td></td>
</tr>
<tr>
<td>CASTOUT CLASS DETAIL REPORT</td>
<td>COCLASS(xx) DETAIL</td>
</tr>
<tr>
<td>CASTOUT CLASS ENTRY POSITION DETAIL REPORT</td>
<td>• COCLASS(xx) ENTRYPOS(yy) DETAIL</td>
</tr>
<tr>
<td></td>
<td>• ALLDATA DETAIL</td>
</tr>
<tr>
<td>CASTOUT CLASS ENTRY POSITION SUMMARY REPORT</td>
<td>• COCLASS(xx) ENTRYPOS(yy) SUMMARY</td>
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<tr>
<td></td>
<td>• ALLDATA SUMMARY</td>
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<tr>
<td>ENTRYID DETAIL REPORT</td>
<td>ENTRYID(xx) DETAIL</td>
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<tr>
<td>ENTRYID SUMMARY REPORT</td>
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<td>ENTRYNAME SUMMARY REPORT</td>
<td>ENTRYNAME(xx) SUMMARY</td>
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<td>EMCONTROLS(xx) DETAIL</td>
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<td>LISTNUM(xx) DETAIL</td>
</tr>
<tr>
<td>LIST NUMBER ENTRYKEY ENTRY POSITION DETAIL REPORT</td>
<td>• LISTNUM(xx) ENTRYPOS(yy) ENTRYKEY(nn) DETAIL</td>
</tr>
<tr>
<td></td>
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<td>• LISTNUM(xx) ENTRYPOS(yy) ENTRYKEY(nn) SUMMARY</td>
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<tr>
<td></td>
<td>• ALLDATA DETAIL</td>
</tr>
<tr>
<td>LIST NUMBER ENTRY POSITION DETAIL REPORT</td>
<td>• LISTNUM(xx) ENTRYPOS(yy) DETAIL</td>
</tr>
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<td></td>
<td>• ALLDATA DETAIL</td>
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### STRDATA Subcommand Keywords

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<tr>
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<td>LISTNUM(xx) SUMMARY</td>
</tr>
<tr>
<td>LIST STRUCTURE DETAIL REPORT</td>
<td>STRNAME((name of list structure)) DETAIL</td>
</tr>
<tr>
<td>LIST STRUCTURE SUMMARY REPORT</td>
<td>STRNAME((list structure name)) SUMMARY</td>
</tr>
<tr>
<td>LOCK ENTRIES REPORT</td>
<td>LOCKENTRIES(xx) ALLLDATA</td>
</tr>
<tr>
<td>STORAGE CLASS DETAIL REPORT</td>
<td>STGCLASS(xx) DETAIL</td>
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<td>STGCLASS(xx) ENTRYPPOS(yy) DETAIL ALLLDATA DETAIL</td>
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<td>STGCLASS(xx) SUMMARY</td>
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<tr>
<td>STRDATA ALL STRUCTURES SUMMARY REPORT</td>
<td>SUMMARY</td>
</tr>
<tr>
<td>USER CONTROLS REPORT</td>
<td>USRCNTLS ALLLDATA</td>
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</tbody>
</table>

### STRDATA for a list structure

This example provides detailed information for a list structure and all its list entries. Some of the information provided is:
- List structure name
- List type
- Structure control information
- The connection IDs of assigned users

**The following command was issued to produce an STRDATA report:**

COMMAND==> STRDATA DETAIL LISTNUM(0)ENTRYPOS(0) ORDER(HEAD)
STRNAME((DUPALLOWED02))

**** LIST STRUCTURE DETAIL REPORT ****
Structure Name....................... DUPALLOWED02
Structure Type....................... List
Structure Dump ID.................. 0101
Structure is the rebuild old structure
Rebuild is a duplexing rebuild
Process is system-managed

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XCF and XES

Coupling Facility................. SIMDEV.IBM.EN.ND0100000000
Partition.......................... 00
CPCID.............................. 00
CFLevel.............................. 16
Facility Name...................... LF01
Dump Status........................ Complete
Incident token:
PLEX1 B7V8ID6 09/10/2009 14:41:47
Structure Control Information:
List Structure Type:
  List limit accounting by entries
  Entry IDs are assigned by the System
  List entries have adjunct and entry data
  List entries have entry keys and secondary keys
Duplexed State Active............. Yes
Wait On Ready To Complete........ No
Immediate RTC completion enabled.. Yes
Duplex Retry Index Limit.......... 1799
Signalling Segment Index.......... 1
Duplex Signalling Segment Index... 1
Maximum User Id................... 0020
Maximum Data Entry Size........... 4096
Data Element Size................ 256
Marginal Structure Size........... 2 M
Minimum Structure Size........... 7 M
Structure Size.................... 10 M
Maximum Structure Size........... 10 M
Target Structure Size............. 10 M
Target Entry to Element Ratio..... 1:4
Pending EMC Storage Percentage.... 20.00
Target Entry Count................. 5165
Target Data Element Count......... 21461
Target EMC Count.................. 7882
List Number Count................ 25
Maximum Data Element Count........ 21461
Data Element Count................ 63
Maximum Entry Count.............. 5165
Entry Count....................... 32
Maximum EMC Count................ 7882
EMC Count......................... 6
Sublist Notification Delay........ 003E8000
List Set Cursor................... 0000
Execution Time Accumulator........ 00000000 00008C7F
Allocation Time................... 09/10/2009 14:32:43
Structure Authority:
+0000 C4C40B59 93D5821A 02000000 00000000 | DD.IN............ |
User Structure Controls:
+0000 D7D35C67 F1404040 C4E4D7C1 D3D3D6E6 | PLEX1 DUPALLOW |
+0110 C5C4F0F2 40404040 00100000 00008000 | E002 ........ |
Extended User Structure Controls:
+0000 C4C40B59 93D5821A 00000000 00000000 | DD.IN............ |
+0110 00000000 00000000 00000000 00000000 | ............... |
Structure Copy Controls Version Number........ 00000001
Structure Copy Controls
---------------
EYECATCHER           SCC
FUNCTION              01
CURRENT_PHASE         00
COPYID_SEQ#           00
PARTICIPANTS          00000000
WORKER_PARTICIPANTS   00000000
FAILED_PARTICIPANTS   00000000
COPYIDS(32)
  01 02 03 04 05 06 07 08
  -- -- -- -- -- -- --
  00 00 00 00 00 00 00 00
  00 00 00 00 00 00 00 00

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00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
SYSTEMS(32)
---01--- ---02--- ---03--- ---04---
-------- -------- -------- --------
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
COPYLEVEL 00000010
CREATED_TOD C4C4D859 AC400917
COMPLETED_TOD 00000000 00000000
FAILED_TOD 00000000 00000000
RECOVERED_TOD 00000000 00000000
CPI 00
COMPLETED_PHASES(16) 00000000 00000000 00000000 00000000
COMPLETING_COPYID(16) 00000000 00000000 00000000 00000000
CFLEVEL 00000010
CREATING_SYSTEM 02000012
SLOT# 02
SEQUENCE# 000012
AUTOVERSION 00000000 00000000

Remote Structure Information
----------------------------------------
Structure Id.......................... 0001
SYID................................. C4C4A2A7 CBDB6720
Coupling Facility.................... SIMDEV.IBM.EN.CF0100000000
Partition......................... 00
CPCID............................. 00
Structure Authority: +0000 C4C4DC1B 6AC53119 01000011 00000000 | DD...E.......... |
Assigned Users:
  Connection IDs:
  01 02 03 04 05 06

**** LIST NUMBER ENTRY POSITION DETAIL REPORT ****
List Number.......................... 0
List Number Status.................. Complete
List Controls:
  List Entry Count Limit........ 5165
  List Entry Count................ 6
  List State Transition Count.... 1
  List Cursor Direction.......... Head-to-tail
  List Cursor..................... 00000000 00000000 00000000
  List Scan Identifier........... 01
  List Scan State................ Available
  List Key For Key Assignment:
    +0000 00000000 00000000 00000000 00000000 | ................ |
  Maximum List Key For Key Assignment:
    +0000 00000000 00000000 00000000 00000000 | ................ |
  List KeyRange Start Value:
    +0000 00000000 00000000 00000000 00000000 | ................ |
  List KeyRange End Value:
    +0000 00000000 00000000 00000000 00000000 | ................ |
  List Notification Thresholds:
    List KeyRange Empty ........ 0
    List KeyRange Not Empty .... 0
    List Empty ................. 0
    List Not Empty ............ 0
  List Authority:
    +0000 00000000 00000000 00000000 00000000 | ................ |
List Description:
    +0000 00000000 00000000 00000000 00000000 | ................ |

Chapter 27. Sysplex Services (XCF and XES) 27-57
### List Monitor Table:

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### KeyRange Monitor Table:

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<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>15</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>16</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>17</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>18</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>19</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>1A</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>1B</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
<tr>
<td>1C</td>
<td>No</td>
<td>No</td>
<td>00000000</td>
</tr>
</tbody>
</table>
**** LIST STRUCTURE DETAIL REPORT ****
Structure Name....................... DUPALLOWED02
Structure Type....................... List
Structure Dump ID.................... 0201
Structure is the rebuild new structure
Rebuild is a duplexing rebuild
Process is system-managed
Coupling Facility.................... SIMDEV.IBM.EN.CF0100000000
Partition......................... 00
CPCID............................. 00
CFLevel.............................. 16
Facility Name....................... TESTCF

(The rest of the report is similar to the previously shown sections for the rebuild old structure and omitted from this sample.)

Additional STRDATA report information
If your keyed list structure is allocated in a CFLEVEL=3 or higher coupling facility, the following information will be included in the STRDATA detail report.

- Target EMC Count.................. 3317
- Maximum EMC Count............... 3317
- EMC Count......................... 5

STRDATA for a cache structure
This example provides detailed information for a cache structure and its storage class usage. Some of the information provided is:
- Cache structure name
- Type
- Structure control information
- The connection IDs of assigned users

The following command was issued to produce an STRDATA report:
COMMAND===> STRDATA DETAIL STGCLASS(01,02) STRNAME((CACHE02))

**** CACHE STRUCTURE DETAIL REPORT ****
Structure Name....................... CACHE02
Structure Type....................... Cache
Structure Dump ID.................... 0101
Structure is the rebuild old structure
Rebuild is a duplexing rebuild
Process is system-managed
Coupling Facility.................... SIMDEV.IBM.EN.ND0100000000
Partition......................... 00
CPCID............................. 00
CFLevel.............................. 16
Facility Name....................... LF01
Dump Status.......................... Complete
Incident token:
PLEX1 B7VBID86 09/10/2009 11:39:32
Structure Control Information:
- Duplexed State Active............. Yes
- Immediate RTC completion enabled.. Yes
- Duplex Retry Index Limit.......... 1799
- Signalling Segment Index......... 1
- Duplex Signalling Segment Index... 1
XCF and XES

Maximum Directory Entry Count..... 1012
Total Str Changed Entry Count..... 0
Maximum Data Element Count........ 2002
Total Str Changed Element Count... 0
Number of Storage Classes......... 20
Number of Castout Classes......... 2
Adjunct Data Present.............. Yes
UDF order queue maintained........ No
Name Class Mask................... 0000
Data Element Size................. 4096
Maximum Data Entry Size........... 8192
Marginal Structure Size........... 1828 K
Minimum Structure Size............ 2 M
Structure Size.................... 10 M
Maximum Structure Size............ 10 M
Target Structure Size............. 10 M
Target Entry to Element Ratio..... 1:2
Target Directory Entry Count...... 1012
Target Data Element Count......... 2002
Castout Class Cursor.............. 0000
WWCO Queue Count.................. 0
Unchanged with Reg Interest Count. 450
Free Directory Entry Count........ 562
Free Data Area Element Count...... 1952
Execution Time Accumulator........ 00000000 003877F
Allocation Time........ 09/10/2009 11:25:17
Structure Authority:
+0000 C4C4B174 CCF0A902 01000011 00000000 | DD...0.k........ |
User Structure Controls:
+0000 D7D3C5E7 F1404040 C3C1C3C8 C5F0F240 PLEX1 CACHE02 |
+0010 40404040 40404040 00010000 00008000 | ........ |
Extended User Structure Controls:
+0000 C4C4B174 CCF0A902 00000000 00000000 | DD...0.k........ |
+0010 00000000 00000000 00000000 00000000 | ........ |
Structure Copy Controls Version Number....... 0000001
Structure Copy Controls
------------------
EYECATCHER SCC
FUNCTION 01
CURRENT_PHASE 00
COPYID_SEQ# 00
PARTICIPANTS 00000000
WORKER_PARTICIPANTS 00000000
FAILED_PARTICIPANTS 00000000
COPYIDS(32)
01 02 03 04 05 06 07 08
-- -- -- -- -- -- -- --
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00
SYSTEMS(32)
---01--- ---02--- ---03--- ---04---
-------- -------- -------- --------
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000
COPYLEVEL 00000010
CREATED_TOD C4C4B174 D9F6538E
COMPLETED_TOD 00000000 00000000
FAILED_TOD 00000000 00000000
RECOVERED_TOD 00000000 00000000
XCF and XES

**** STORAGE CLASS DETAIL REPORT ****
Class Type........................... Storage
Class................................ 1
Class Status.......................... Complete

Class Control Information:
  Read Hit............................ 0
  Read Miss Directory Hit........... 5900
  Read Miss Assign Suppressed...... 0
  Read Miss Name Assigned.......... 100
  Read Miss Target StgCl Full...... 0
  Write Hit Unchanged Data......... 1440
  Write Hit Changed Data........... 0
  Write Miss Not Registered........ 0
  Write Miss Invalid State......... 0
  Write Miss Target StgCl Full...... 0
  Write Unchanged with XI......... 0
  Directory Entry Reclaim.......... 0
  Data Entry Reclaim............... 0
  Cross Inval For Dir Reclaim...... 0
  Cross Inval For Write............ 0
  Cross Inval For Delete Name...... 1440
  Cross Inval For Invalidate copy 0
  Cross Inval For LCVI Replace..... 0
  Castout Count..................... 0
  Reference Signal Miss............ 0
  Target StgCl Full................ 0
  Maximum Directory Entry Count... 100
  Data Element Count............... 0
  Total Changed Entries............ 0
  Completed Reference Lists........ 0
  Part Complete Reference Lists.... 0
  Repeat Factor..................... 0

Class Type........................... Storage
Class................................ 2
Class Status.......................... Complete

Class Control Information:
  Read Hit............................ 0
  Read Miss Directory Hit........... 5900
  Read Miss Assign Suppressed...... 0
  Read Miss Name Assigned.......... 100
  Read Miss Target StgCl Full...... 0
  Write Hit Unchanged Data......... 1500
  Write Hit Changed Data........... 0
  Write Miss Not Registered........ 0
  Write Miss Invalid State......... 0

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**XCF and XES**

- Write Miss Target StgCl Full... 0
- Write Unchanged with XI........ 0
- Directory Entry Reclalm........ 0
- Data Entry Reclalm............ 0
- Cross Inval For Dir Reclalm.... 0
- Cross Inval For Write.......... 0
- Cross Inval For Delete Name.... 1500
- Cross Inval For Invalidate copy 0
- Cross Inval For LCVI Replace... 0
- Castout Count................ 0
- Reference Signal Miss.......... 0
- Target StgCl Full............ 0
- Maximum Directory Entry Count.. 100
- Data Element Count........... 0
- Total Changed Entries......... 0
- Data Area Count.............. 0
- Completed Reference Lists..... 0
- Part Complete Reference Lists.. 0
- Repeat Factor................ 0

*** CACHE STRUCTURE DETAIL REPORT ***
- Structure Name.................. CACHE02
- Structure Type.................. Cache
- Structure Dump ID.............. 0201
- Structure is the rebuild new structure
- Rebuild is a duplexing rebuild
- Process is system-managed
- Coupling Facility............... SIMDEV.IBM.EN.CF0100000000
- Partition....................... 00
- CPCID........................... 00
- CFLevel.......................... 16
- Facility Name.................... TESTCF
- Dump Status.................... Complete
- Incident token:
  - PLEX1 B7VBID86 09/10/2009 11:39:32

(The rest of the report is similar to the previously shown sections for the rebuild old structure and omitted from this sample.)
Chapter 28. Virtual Lookaside Facility (VLF)

This topic contains the following diagnosis information for the virtual lookaside facility (VLF) component and data lookaside facility (DLF) subcomponent of VLF:

- "Requesting VLF dump data."
- "Formatting VLF dump data.
- "Requesting DLF dump data" on page 28-17.
- "Formatting DLF dump data" on page 28-17.

Requesting VLF dump data

To obtain dump data for a VLF class, you need to dump both the VLF address space and its associated data spaces. First, use the DISPLAY command to determine the data spaces assigned to the VLF job:

D J,VLF

Then use the DUMP command to dump the data, replacing clsname with the name of a VLF class:

DUMP COMM=(DUMP OF VLF)

The system issues message IEE094D to prompt the operator for information. Enter the following replies:

R xx, JOBNAME=VLF, CONT
R yy, DSPNAME=('VLF'.Dclsname,'VLF'.Cclsname), END

See z/OS MVS System Commands for more information about the DISPLAY and DUMP commands.

Formatting VLF dump data

Use the IPCS VLFDATA subcommand to produce diagnostic reports about VLF. z/OS MVS IPCS Commands gives the syntax of the VLFDATA subcommand and z/OS MVS IPCS User's Guide explains how to use the VLFDATA option of the IPCS dialog.

The dump may also contain component trace data for VLF. See the component trace chapter of z/OS MVS Diagnosis: Tools and Service Aids for information on how to format this trace data.

VLFDATA divides the information about VLF into six reports. Each report corresponds to the following VLFDATA keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays:</th>
<th>Explanation on page:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Information about a VLF class.</td>
<td>28-14</td>
</tr>
<tr>
<td>EXCEPTION</td>
<td>Information about any inconsistencies found in the VLF data.</td>
<td>28-5</td>
</tr>
<tr>
<td>STATS</td>
<td>Statistics on VLF activity</td>
<td>28-8</td>
</tr>
<tr>
<td>STORAGE</td>
<td>Information about storage management of VLF data spaces sysplex.</td>
<td>28-11</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>Information about classes specified in the COFVLFx x parmlib member.</td>
<td>28-2</td>
</tr>
</tbody>
</table>
Virtual Lookaside Facility

Examples of VLFDATA reports follow. The order of the reports represent a typical sequence for diagnosing a VLF problem:
- VLFDATA SUMMARY (or just VLFDATA)
- VLFDATA EXCEPTION
- VLFDATA USER
- VLFDATA STATS
- VLFDATA STORAGE
- VLFDATA CLASS

**VLFDATA SUMMARY subcommand output**

This report provides status information for each class specified in a COFVLFxx parmlib member. A VLF class is a collection of VLF-related objects, usually associated with a particular component, subsystem, or application. VLF classes are one of two types:

- **PDS** - A correspondence exists between the VLF major names for the class and partitioned data sets (PDS). The minor names for a class correspond to the members of a PDS. PDS classes are defined in a COFVLFxx parmlib member using the EDSN keyword for major names.
- **Non-PDS** - There is no correspondence between the VLF major names for the class and any data set structure. Non-PDS classes are defined in a COFVLFxx parmlib member using the EMAJ keyword for major names.

Enter either of the following IPCS subcommands to obtain this report:
- VLFDATA
- VLFDATA SUMMARY

*** *** FORMAT DUMP OF VLF DATA *** ***

BLS18077I VLFDATA processing may not be valid for a VIRTUAL dump

VIRTUAL LOOKASIDE FACILITY (VLF)

VLF ADDRESS SPACE = ASID(X'000B')

*******************************************************************
* *
* VLF Summary Report *
* *
*******************************************************************
The report contains the following information:

**CLASS**

This is the name of a VLF class. A class name is specified in a COFVLFxx parmlib member.

---

**CLASS**: CLASS2
**CLASS TYPE**: NON-PDS
**CLASS STATE**: Class has never been defined.

**DATA SPACES OWNED**

Control data space : CCLASS2
Object data space  : DCLASS2

Number of eligible major names for this class : 2

**USAGE STATISTICS**

Successful DEFINE requests : 0
Available object storage used : N/A

---

**CLASS**: CLASS1
**CLASS TYPE**: NON-PDS
**CLASS STATE**: Class is defined.

**DATA SPACES OWNED**

Control data space : CCLASS1
Object data space  : DCLASS1

Number of eligible major names for this class : 5

**USAGE STATISTICS**

Successful DEFINE requests : 1
Available object storage used : 0.6 %

---

**CLASS**: IKJEXEC
**CLASS TYPE**: PDS
**CLASS STATE**: Class is defined.

**DATA SPACES OWNED**

Control data space : CIKJEXEC
Object data space  : DIKJEXEC

Number of eligible major names for this class : 2

**USAGE STATISTICS**

Successful DEFINE requests : 1
Available object storage used : N/A

**MESSAGES:**

COF11000I Report may be incomplete due to unavailable data.

---

*** *** END OF VLF DATA *** ***

The report contains the following information:

**CLASS**

This is the name of a VLF class. A class name is specified in a COFVLFxx parmlib member.
Virtual Lookaside Facility

Note: An A-I prefix indicates an IBM-supplied class.

CLASS TYPE

VLF classes may be either:

- A set of related PDSs as specified with the EDSN keyword in a COFVLFxx
  parmlib member.
- A named collection of data as specified with the EMAJ keyword in a
  COFVLFxx parmlib member.

CLASS STATE

The 5 recognizable VLF class states are:

- **Defined** - The class is active and available for use.
- **Being Defined** - The COFDEFINE macro has been invoked for this class, but has
  not completed processing.
- **Being Purged** - The COFPURGE macro has been invoked for this class, but has
  not completed processing.
- **Previously Defined** - The class was defined and purged, and has not been
  redefined.
- **Never Defined** - The class is listed as a VLF class in a COFVLFxx parmlib
  member, but has never been defined.

Note: If the class is not in any of the above states, the report contains a message.

DATA SPACES OWNED

These are the names of the two data spaces used by the VLF class. Each name is
comprised of a prefix followed by the class name. The prefix is one of the
following values:

- **C** - Contains the control data for the class.
- **D** - Contains the user objects for the class.

USAGE STATISTICS

This section provides selected VLF statistics for the class. The possible statistics
displayed are:

- **Successful define requests** - The number of times that the class has been
  successfully defined to VLF.
- **Successful object RETRIEVE requests** - The number of times objects have been
  retrieved from the class.
- **Successful object CREATE requests** - The number of times objects have been
  created for the class.
- **Unsuccessful object CREATE requests** - The number of times that requests to
  create an object failed for this class. The reasons for failure are the following:
  - **No pending create** - A RETRIEVE request was not done prior to the CREATE
    as required, the CREATE PENDING timed out, or a NOTIFY was received for
    the major and/or minor before the CREATE completed.
  - **Major name not in search order** - The major name specified for the CREATE
    is not in the user's search order.
Virtual Lookaside Facility

- **Oldest object stored** - The time of last reference for the last recently used object at the time the object space was last reclaimed. The format is mm/dd/yy hh:mm:ss.

- **Available object storage used** - The percentage of object storage that is currently in use.

**Note:** The last two statistics, oldest object stored and object storage used, are data space related statistics. If the control space for the class is not found in the dump, the statistics each read N/A.

**VLFDATA EXCEPTION subcommand output**

The EXCEPTION report produces messages related to any inconsistencies detected in VLF data. This report contains information that IBM may request for diagnosis.

```plaintext
*** *** FORMAT DUMP OF VLF DATA *** ***
BLS18077I VLFDATA processing may not be valid for a VIRTUAL dump
```

**VIRTUAL LOOKASIDE FACILITY (VLF)**

VLF ADDRESS SPACE = ASID(X'000B')

*******************************************************************
* *
* VLF Exception Report *
* *
*******************************************************************

Inconsistencies found in VLF data for user associated with ASID X'000E'

**USER:**

COF11000I Report may be incomplete due to unavailable data.

**USER:**

COF11000I Report may be incomplete due to unavailable data.

*******************************************************************

Inconsistencies found in VLF data for user associated with ASID X'0012'

**USER:**

COF11000I Report may be incomplete due to unavailable data.

**USER:**

COF11000I Report may be incomplete due to unavailable data.

*******************************************************************

**VLFDATA USER subcommand output**

This report provides status information relating to the identified programs using VLF at the time the dump was requested. Specifically, the information provided relates to the address space associated with the active task that was using a VLF function. For SCOPE=SYSTEM, the address space is that of the using program that issued the IDENTIFY request and owns the user token.
Virtual Lookaside Facility

If VLFDATA USER(uclass) is specified, the report shows the information only for identified users related to a user class.

This information is available only if VLF recovery processing took the dump.

*** *** FORMAT DUMP OF VLF DATA *** ***
BLS18077I VLFDATA processing may not be valid for a VIRTUAL dump

VIRTUAL LOOKASIDE FACILITY (VLF)
VLF ADDRESS SPACE = ASID(X'000B')

*******************************************************************
* *
* VLF User Report *
* *
* *******************************************************************

USER REPORT for ASID: X'000E'

USER :

CLASS identified to : IKJEXEC
SCOPE of IDENTIFY : HOME
DDNAME : TSTDD1

MESSAGES:

COF11000I Report may be incomplete due to unavailable data.

USER :

CLASS identified to : CLASS2
SCOPE of IDENTIFY : SYSTEM
DDNAME : N/A

MESSAGES:

COF11000I Report may be incomplete due to unavailable data.

USER :

CLASS identified to : CLASS1
SCOPE of IDENTIFY : HOME
DDNAME : N/A
The following information appears in the report:

**CLASS identified to**

This is the name of the VLF class associated with the using program. It is the class name that was specified in the COFVLFx parmlib member.

**Note:** An A-I prefix indicates an IBM-supplied class.

**SCOPE of IDENTIFY**

The scope of an identify is one of the following values:

- **HOME** - Indicates that only services with the same HASID as the task that issued the COFIDENT macro are allowed to invoke the retrieve function using the UTOken returned by the identify.
- **SYSTEM** - Indicates that any services in any address space are allowed to invoke the retrieve function using the UTOken returned by the identify.

**DDNAME**

The DDNAME identifies the concatenated data set list that is the major name search order corresponding to the identified using program. DDNAME is valid only for classes of VLF objects defined in a COFVLFx parmlib member with the EDSN keyword.

The DDNAME is not applicable for classes of VLF objects that do not correspond to PDSs. In this case, N/A appears in the report. The major names for these classes are defined in the COFVLFx parmlib member with the EMaj keyword and the user's search order was defined by the MAJNLST keyword of the COFIDENT macro at the time of the identify.

**Major names in search order**

These are the major names that are found in the identified user's search order.

- If the major name can be translated to characters, it appears in the report as **C'major name'**.
- If the major name cannot be translated to characters, it is converted to hexadecimal and appears in the report as **X'converted major name'**.

The column labeled VLF on the far right contains either:

<table>
<thead>
<tr>
<th>Major names in search order</th>
<th>VLF</th>
</tr>
</thead>
<tbody>
<tr>
<td>C'MAJ1'</td>
<td>Y</td>
</tr>
<tr>
<td>C'NONVLFMajor'</td>
<td>N</td>
</tr>
<tr>
<td>C'TestMaj1'</td>
<td>Y</td>
</tr>
<tr>
<td>C'TestMaj2'</td>
<td>Y</td>
</tr>
<tr>
<td>C'MAJ2'</td>
<td>Y</td>
</tr>
</tbody>
</table>

*** *** END OF VLF DATA *** ***
Virtual Lookaside Facility

- **Y** - Indicates that the printed major name is in the user's search order and is specified in a COFVLFx parmlib member with either the EDSN or EMAJ keyword.
- **N** - Indicates that the printed major name is in the user's search order but is not specified in the COFVLFx parmlib member.

**VLFDATA STATS subcommand output**

This report provides statistics pertaining to the usage of VLF.

If the optional class is specified, the report shows statistics only for the specified VLF class.

*******************************************************************
* VLF Statistics Report *
*******************************************************************

Number of classes 17
DPT termination count 0
TRIM termination count 0

**VLFNOTE Statistics:**
- Requests to purge a class 0
- Requests to purge a volume 0
- Requests to delete a major 0
- Requests against a minor 0

**Cross-System Notification Statistics:**
- Requests to purge a volume 0
- Requests to delete a major 0
- Requests against a minor 0
Virtual Lookaside Facility

**Major name statistics**

- PDS major names: 3
- PDS major name instances: 0
- Eligible PDS major name instances: 0
- Non-PDS major names: 24
- Non-PDS major name instances: 2
- Eligible non-PDS major instances: 2

**Majors in transitional states:**
- Major names: 0
- Major name instances: 43

**User statistics**

- Number of ASIDs: 64
- Number of ASIDs using VLF: 0
- Maximum number of users in one ASID: 0
- Number of active IDENTIFYs: 0
- Number of latent IDENTIFYs: 0

---

**Statistics for class CLASS1**

- Class state: Class is not defined but was previously defined.
  - Number of successful defines: 1
  - MAXVIRT value: 256
  - Actual size of obtained data space: 0
  - Number of majors known to VLF: N/A
  - Number of eligible majors: 14
  - Number of active IDENTIFYs: 0

**Create statistics:**

- Largest object create attempted: 2030
- Number of successful creates: 5
- Creates for ineligible majors: 0
- No pending create: 2
- Major not in search order: 1

**Retrieve statistics:**

- Number of successful retrieves: 5
- Object may be the correct one: 1
- Target area was too small: 1
- May be correct, area too small: 0
- Object not found: 2

**Identify statistics:**

- Total number of identifies: 2
- Duplicate identify requests: 0
- Unsuccessful identifies: 0
- Current identifies: 2
- Maximum active identifies: 2
- Maximum search order length: 4
Virtual Lookaside Facility

The following information appears in this report:

**VLFNOTE STATISTICS**

This section provides selected VLFNOTE macro statistics.

- **Requests to purge a class** - The number of times VLFNOTE macro was invoked to delete a class.
- **Requests to purge a volume** - The number of times VLFNOTE macro was invoked to delete a volume.
- **Requests to delete a major** - The number of times VLFNOTE macro was invoked to delete a major name.
- **Requests against a minor** - The number of times VLFNOTE macro was invoked to add, update, or delete a minor name.

**CROSS-SYSTEM NOTIFICATION STATISTICS**

This section provides selected statistics about notification this system received about changes made to shared data by other systems in the same sysplex. These statistics only apply to data in a PDS class.

- **Requests to purge a volume** - The number of times that a request to delete a volume was processed as a result of notification to this system about changes made to shared data by another system.
- **Requests to delete a major** - The number of times that a request to delete a major name was processed as a result of notification to this system about changes made to shared data by another system.
- **Requests against a minor** - The number of times that a request to add, update or delete a minor name was processed as a result of notification to this system about changes made to shared data by another system.

**VLF GENERAL STATISTICS**

This section provides selected VLF statistics.

- **Number of classes** - The number of classes currently known to VLF.
- **DPT termination count** - The number of times the delayed processing task (DPT) failed.
- **TRIM termination count** - The number of times trim task failed.

**MAJOR NAME STATISTICS**

This section provides selected major name statistics.

- **PDS major names** - The number of unique major names in VLF that belong to a PDS class.
- **PDS major name instances** - The number of PDS major names in VLF. Each major name may belong to more than one class.
- **Eligible PDS major name instances** - The number of PDS major name instances that are allowed to have objects stored in VLF.
- **Non-PDS major names** - The number of unique major names in VLF that belong to a non-PDS class.
- **Non-PDS major name instances** - The number of non-PDS major names in VLF. Each major name may belong to more than one class.
- **Eligible non-PDS major name instances** - The number of non-PDS major name instances that are allowed to have objects stored in VLF.
Virtual Lookaside Facility

- **Major names in transitional states** - The number of unique major names that are being deleted.
- **Major name instances in transitional states** - The number of major names that are being deleted from particular classes.

**USER STATISTICS**

This section provides selected VLF user statistics.

- **Number of ASIDs** - The number of address spaces known to the system.
- **Number of ASIDs using VLF** - The number of address spaces that have tasks using VLF.
- **Maximum number of users in one ASID** - The maximum number of users identified to one address space.
- **Number of active IDENTIFYs** - The number of users currently identified.
- **Number of latent IDENTIFYs** - The number of users that were once identified but are not currently active.

**CLASS STATISTICS**

This section provides selected VLF class statistics.

- **Class state** - The current state of the class, which is one of the following:
  - **Defined** - The class is active and available for use.
  - **Being defined** - The COFDEFIN macro has been invoked for this class, but has not completed processing.
  - **Being purged** - The COFPURGE macro has been invoked for this class, but has not completed processing.
  - **Undefined**
    - **Previously defined** - The class was defined and purged, and has not been redefined.
    - **Never defined** - The class is listed as a VLF class in the COFVLFx parmlib member, but has never been defined.
- **Number of successful defines** - The number of times the class was defined.
- **MAXVIRT value** - The maximum size of object storage for this class in 4-kilobyte blocks.
- **Actual size of obtained data space** - The actual size of the object storage obtained for this class in 4K blocks.
- **Number of majors known to VLF** - The number of major names known to VLF that belong to this class.
- **Number of eligible majors** - The number of major names belonging to this class that are allowed to have objects stored in VLF.
- **Number of active IDENTIFYs** - The number of users currently identified to this class.

**VLFDATA STORAGE subcommand output**

This report provides information about the storage management of VLF data spaces.

If VLFDATA STORAGE(sclass) is specified, the report shows storage management information only for the sclass.
Virtual Lookaside Facility

*** *** FORMAT DUMP OF VLF DATA *** ***
BLS18077I VLFDATA processing may not be valid for a VIRTUAL dump

VIRTUAL LOOKASIDE FACILITY (VLF)

VLF ADDRESS SPACE = ASID(X'000B')

********************************************************************
* *
* VLF Storage Report *
* *
********************************************************************

Class: CLASS2

Messages:
No errors detected

Class: CLASS1
Control data space: CCLASS1
Managed address range
Start address: X'00001000'
End address: X'7FFFFFFF'

Number of pages initially reserved for control: 1024
Number of pages in use for control: 19
Number of available areas: 1
Largest available area: 2143014912
Total available area: 2143014912

User control:

Pool 2
Cell size: 64
Primary count: 128
Secondary count: 128
Number of extents: 1
Cells in use: 1

Minor control:

Pool 1
Cell size: 48
Primary count: 256
Secondary count: 170
Number of extents: 1
Cells in use: 25
The following information appears in this report:

**CLASS**

The name of a VLF class.

**Note:** An A-I prefix indicates an IBM-supplied class.

**Control data space**

The name of the data space used by the VLF class. Each name is comprised of a prefix followed by the class name. The prefix is one of the following values:

- **C** - Contains the control data for the class.
- **D** - Contains the user objects for the class.

**Managed address range**

These are the range of addresses in the data space which are available for use by VLF. The following values are shown:

- **Start address** - The lowest valid address.
- **End address** - The highest valid address.

---

Pool 2

| Cell size: | 1024 |
| Primary count: | 200 |
| Secondary count: | 100 |
| Number of extents: | 1 |
| Cells in use: | 20 |

Pool 3

| Cell size: | 32 |
| Primary count: | 256 |
| Secondary count: | 128 |
| Number of extents: | 1 |
| Cells in use: | 20 |

Object control

Pool 1

| Cell size: | 40 |
| Primary count: | 307 |
| Secondary count: | 204 |
| Number of extents: | 1 |
| Cells in use: | 35 |

Messages:

No errors detected

Class: IKJEXEC

Messages:

COF11000I Report may be incomplete due to unavailable data.

*** *** END OF VLF DATA *** ***
Virtual Lookaside Facility

**Number of pages initially reserved for control** - The number of pages reserved at the time the class was defined.

**Number of pages in use for control** - The number of pages in the data space that are currently being used for control information.

**Number of available areas** - The number of available areas in the data space.

**Largest available area** - The size of the largest available area, in bytes, in the data space.

**Total available area** - The total amount of available storage, in bytes, in the data space.

**User control, minor control, and object control**

Information about the management of cell pools used for user, minor, and object data:

- **Cell Size** - The size of each cell in the pool in bytes.
- **Primary Count** - The number of cells in the first pool extent.
- **Secondary Count** - The number of cells in each of the other pool extents that have been added.
- **Number of Extents** - The total number of extents currently in the pool.
- **Cells in Use** - The total number of cells currently in use in the pool.

**VLFDATA CLASS subcommand output**

The CLASS reports provide status information pertaining to the requested VLF class. The level of detail included in the reports is determined by the other keywords specified.

The reports produce a header containing class-related information and usage statistics. This is followed by more detailed information regarding major names and/or minor names in the class, depending on the options specified on the VLFDATA subcommand.

Examples of how you can request various reports for a single class are:

VLFDATA CLASS(CLASS1) SHORT
VLFDATA CLASS(CLASS1) MAJOR(X'TESTMAJ1')
VLFDATA CLASS(CLASS1) MAJOR(MAJ1) MINOR(MIN0)
VLFDATA CLASS(CLASS1) MINOR(MIN0)
VLFDATA CLASS(CLASS1) ALL

**Note:** The VLF summary report can be used to view a summary of all VLF classes.

**VLFDATA CLASS(CLASS1) ALL** produces the following report:

```plaintext
*** *** FORMAT DUMP OF VLF DATA *** ***
BLS18077I VLFDATA processing may not be valid for a VIRTUAL dump

VIRTUAL LOOKASIDE FACILITY (VLF)

VLF ADDRESS SPACE = ASID(X'000B')
```
Virtual Lookaside Facility

*******************************************************************
* VLF Class Report *
*******************************************************************

CLASS : CLASS1
CLASS TYPE : NON-PDS
CLASS STATE : Class is defined.

DATA SPACES OWNED
Control data space : CCLASS1
Object data space : DCLASS1

Number of eligible major names for this class : 5

USAGE STATISTICS
Successful DEFINE requests : 1
Successful object RETRIEVE requests : 35
Successful object CREATE requests : 35
Unsuccessful object CREATE requests : 0
  No pending create : 0
  Major name not in search order : 0
Oldest object stored (timestamp) : 01/27/90 15:57:36
Available object storage used : 0.6 %

Major/minor pairs currently existing in VLF for class CLASS1
MINOR :
  C'BCDE'

N 0 Major names associated with minor name
-------------------------------

                     C'TestMaj1'

-------------------------------

MINOR :
  C'CDEF'

N 0 Major names associated with minor name
-------------------------------

                     C'TestMaj2'

------------------------------
Virtual Lookaside Facility

MINOR :

C'MINO'

NO Major names associated with minor name

| | C'TestMaj1' |
| | C'TestMaj2' |
| | C'MAJ1' |
| | C'MAJ2' |

****************************************************************
*** *** END OF VLF DATA *** ***

For descriptions of the following fields, see "VLFDATA SUMMARY subcommand output" on page 28-2.

CLASS
CLASS TYPE
CLASS STATE
DATA SPACES OWNED
USAGE STATISTICS

The following information also appears in this report:

I T M USERS

This table appears for the SHORT option or the default. The table lists all major names that are eligible to have objects placed into VLF for this class.

An * in one of the ITM columns indicates a problem was found with the major name listed to the right. A ? in one of the ITM columns indicates the information is not available.

The following columns appear in the table:

- I - A valid major name entry does not exist for the class.
- T - The major name entry for the class does not match the class type.
- M - The major name entry for the class does not relate to a major name known to VLF.
- USERS - The number of identified users of the major name.

MAJOR

These are the major names that are found in the identified user's search order.

- If the major name can be translated to characters, it appears in the report as C'major name'.
- If the major name cannot be translated to characters, it is converted to hexadecimal and appears in the report as X'converted major name'.

MINOR

The minor name specified on the VLFDATA subcommand.
If the minor name can be translated to characters, it appears in the report as "C'minor name'.

If the minor name cannot be translated to characters, it is converted to hexadecimal and appears in the report as "X'converted minor name'.

OBJECT STATISTICS

This section appears when both the MAJOR and MINOR keywords are specified on the VLFDATA subcommand. It provides selected statistics for a VLF object that represents the specified major/minor name pair for the given class.

- **Object Size** - The size of the VLF object in bytes.
- **Time of Last Retrieve** - The time that the object was last retrieved from VLF. If the object has never been retrieved, then it is the time that the object was created. The form is mm/dd/yy hh:mm:ss.

R N O TABLE

This table appears if only the MAJOR keyword is specified on the VLFDATA subcommand. The table lists all the minor names associated with the specified major name for the given class. An * in one of the columns has the following meanings for the associated major/minor name pair:

- **R** - The object has never been retrieved from VLF.
- **N** - The pointer to the object is null.
- **O** - The pointer to the object contains a value outside the range of object storage addresses.

N O TABLE

This table appears if the ALL keyword or only the MINOR keyword is specified on the subcommand. The table lists all majors that are associated with the specified minor name for the given class. An * in one of the columns indicates a problem was found with the associated major/minor name pair.

- **N** - The pointer to the object is null.
- **O** - The pointer to the object contains a value which is outside the range of object storage addresses.

---

**Requesting DLF dump data**

To obtain dump data for the DLF class COFGSDO, you need to dump both the DLF address space and its associated data space. Use the DUMP command to dump the data:

```
DUMP COMM=(DUMP OF DLF)
R xx, JOBNAME=DLF, CONT
R yy, DSPNAME=('DLF'.CCOFGSDO), END
```

See [z/OS MVS System Commands](https://www.ibm.com/support/knowledgecenter/SQA55C_2.2.0/COMHSM Commands/dmp.htm) for more information about the DISPLAY and DUMP commands.

---

**Formatting DLF dump data**

Use the IPCS DLFDATA subcommand to produce diagnostic reports about DLF. [z/OS MVS IPCS Commands](https://www.ibm.com/support/knowledgecenter/SSGSGG_2.2.0/COBOL/COBOL IPCS Commands/dlfdta.htm) gives the syntax of the DLFDATA subcommand and [z/OS MVS IPCS User's Guide](https://www.ibm.com/support/docview.wss?uid=swg21694065) explains how to use the DLFDATA option of the IPCS dialog.
Virtual Lookaside Facility

The dump may also contain component trace data for DLF. See the component trace chapter of z/OS MVS Diagnosis: Tools and Service Aids for information on how to format this trace data.

DLFDATA divides the information about DLF into six reports. Each report corresponds to the following DLFDATA keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Report Displays:</th>
<th>Explanation on page:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Information about a DLF class.</td>
<td>28-19</td>
</tr>
<tr>
<td>EXCEPTION</td>
<td>Information about any inconsistencies found in the DLF data.</td>
<td>28-24</td>
</tr>
<tr>
<td>STATS</td>
<td>Statistics on DLF activity</td>
<td>28-27</td>
</tr>
<tr>
<td>STORAGE</td>
<td>Information about storage management of DLF data spaces sysplex.</td>
<td>28-25</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>Information about each class known to DLF.</td>
<td>28-18</td>
</tr>
<tr>
<td>USER</td>
<td>Information about an address space associated with the active task that was using DLF at the time of the error.</td>
<td>28-23</td>
</tr>
</tbody>
</table>

Examples of DLFDATA reports follow. The order of the reports represent a typical sequence when diagnosing a DLF problem:

DLFDATA SUMMARY (or just DLFDATA)
DLFDATA CLASS
DLFDATA USER
DLFDATA CLASS OBJECT
DLFDATA EXCEPTION
DLFDATA STORAGE
DLFDATA STATS

**DLFDATA SUMMARY subcommand output**

This report provides status information for each class known to DLF. Enter either of the following IPCS subcommands to obtain this report:

DLFDATA
DLFDATA SUMMARY
Virtual Lookaside Facility

BLS18077I DLFDATA processing may not be valid for a VIRTUAL dump

*** *** FORMAT DLFDATA *** ***

Data Lookaside Facility (DLF)

DLF address space = ASID(X'000F')

DLFDATA subcommand

******************************************************************************
* * DLF Summary Report *
* *
******************************************************************************

Class: COFGSDO

Class state: Class is defined.

Maximum expanded: 524288
Current expanded: 0
Current largest object: 256

*** *** END OF DLFDATA *** ***

The following information appears in the report:

CLASS

This is the name of the DLF class. A class name is 7 alphanumeric characters and is specified in a COFDLFxx parmlib member.

Note: COFGSDO is the only valid DLF class.

CLASS STATE

There is only one recognizable DLF class state:

• Defined - The class is active and available for use.

DLFDATA CLASS subcommand output

The CLASS reports provide status information pertaining to the requested DLF class.

This topic shows reports for the following subcommands:

DLFDATA CLASS(class)
DLFDATA CLASS(class) OBJECT(name)

DLFDATA CLASS(COFGSDO) produces the following report:
Virtual Lookaside Facility

BLS18077I DLFDATA processing may not be valid for a VIRTUAL dump

*** *** FORMAT DLFDATA *** ***

Data Lookaside Facility (DLF)

DLF address space = ASID(X'000F')

DLFDATA subcommand

************************************************************************* *
*                         DLF Class Report                           *
*                                                                       *
************************************************************************* *

** Class: COFGSDO
** Class state: Class is defined.
** Maximum expanded: 524288
** Current expanded: 0
** Current largest object: 256

** Connect exit: COFMCXIT
** Current connects: 0
** Maximum active connects: 1
** Failed connects: 0

** Shared objects in the class: Connects
'C'SHARED 1MB RETAINED OBJECT CONNSPMR' 18

** Total number of objects found: 1

*** *** END OF DLFDATA *** ***

The following information appears in the report:

CLASS

This is the name of the DLF class. A class name is 7 alphanumeric characters and is specified in a COFDLFxx parmlib member. COFGSDO is the only valid DLF class.

CLASS STATE

There is only one DLF class state:
- Defined - The class is active and available for use.

STATISTICS

This section of the report provides selected DLF statistics for the class.
- Maximum expanded - The maximum number of 4-kilobyte blocks of expanded storage that may be used by DLF.
- Current expanded - The number of 4-kilobyte blocks of expanded storage that is assigned to DLF and that currently contains cached data.
- Current largest object - The size of the largest object that has been connected since DLF was started. This object is not necessarily currently connected.

Note: The above maximum values are specified in the COFDLFxx parmlib member.
Virtual Lookaside Facility

CONNECT EXIT

This section of the report provides selected DLF connect statistics for the class.
- **Current connects** - The number of objects currently connected.
- **Maximum connects** - The peak number of concurrent connects to all objects.
- **Failed connects** - The number of connect requests that have been unsuccessful.

**SHARED OBJECTS**

This is a list of the currently connected or retained shared objects that belong to the class.
- If the object name can be translated to characters, it appears in the report as `C'shared object name'`.
- If the object name cannot be translated to characters, it is converted to hexadecimal and appears in the report as `X'converted shared object name'`.

The total number of shared objects found in the dump is shown at the end of the report.

**DLFDATA CLASS(COGSDO) OBJECT('SHARED 1MB RETAINED OBJECT CONNSPMR')** produces the following report:

```
BLS18077I DLFDATA processing may not be valid for a VIRTUAL dump
*** *** FORMAT DLFDATA *** ***

Data Lookaside Facility (DLF)

DLF address space = ASID(X'000F')

DLFDATA subcommand
```

```
****************************************************************
** DLF Class Object Report **
****************************************************************

Class: COFGSDO
Class state: Class is defined.

Maximum expanded: 524288
Current expanded: 0
Current largest object: 256

Connect exit: COFMCXIT
Current connects: 0
Maximum active connects: 1
Failed connects: 0
```
OBJECT

C'SHARED 1MB RETAINED OBJECT CONNSPMR'

Object is shared

Total users of the object: 18

Object size in blocks: 256
Object status: Connected
Access mode: Update
Storage key: 0
Disconnect with RETAIN: Allowed
Control data space name: Not requested
Hiperspaces containing the object: 000000COF

******************************************************************
ASID: X'000E'
No objects found for specified ASID
******************************************************************
ASID: X'000F'
No objects found for specified ASID
******************************************************************
*** *** END OF DLFDATA *** ***

The following information appears in the report:

OBJECT

This is the object name that was specified on the DLFDATA subcommand for which information is requested.

- If the object name can be translated to characters, it appears in the report as 'object name'.
- If the object name cannot be translated to characters, it is converted to hexadecimal and appears in the report as X'converted object name'.

OBJECT SIZE

This is the size of the space obtained for the DLF object in 4-kilobyte blocks.

OBJECT STATUS

There are three DLF object states:

- **Connected** - The object is currently connected.
- **Connect in progress** - The COFCONNE macro has been issued for this object, but has not completed processing.
Virtual Lookaside Facility

- **Disconnect in progress** - The COFDISCO macro has been issued for this object, but has not completed processing.

**ACCESS MODE**

There are two types of access modes:
- **Update** - The user requested UPDATE access.
- **Read** - The user requested READ access.

**STORAGE KEY**

This is the storage key of the space or spaces that comprise the data object.

**RETAIN OPTION**

This field indicates whether the installation-defined Resource Access Control Facility (RACF) profile has been set up to allow the DELOPT=RETAIN option on a disconnect of the object. If the field is:
- **Allowed** - RETAIN is allowed on a disconnect.
- **Not allowed** - RETAIN is not allowed on a disconnect.

**CONTROL SPACE**

If the CNTLDSPC(YES) option was specified on the COFCONNE macro, this field contains the name of the requested control data space.

If CNTLDSPC(NO) was specified, then this field contains **Not Requested**.

**SPACES CONTAINING OBJECT**

This is a list of the Hiperspace names of the storage spaces that contain the object.

**DLFDATA USER subcommand output**

This report provides status information relating to the identified users of the DLF at the time a problem occurred. Specifically, the information provided relates to the address space associated with the active task that was using a DLF function.

If DLFDATA USER(class) is specified, the report shows the information only for identified users related to class.
A description of the sample output items is:

**SHARED OBJECTS**

This is a list of the shared objects that were connected by the address space indicated by the ASID. If the optional class name was specified, the objects listed all belong to that class.

- If the object name can be translated to characters, it appears in the report as `C'shared object name'.
- If the object name cannot be translated to characters, it is converted to hexadecimal and appears in the report as `X'converted shared object name'.

**DLFDATA EXCEPTION subcommand output**

The EXCEPTION report produces messages related to any inconsistencies detected in DLF data. The information may be requested by IBM for diagnosis.
BLS18077I DLFDATA processing may not be valid for a VIRTUAL dump

*** *** FORMAT DLFDATA *** ***

Data Lookaside Facility (DLF)

DLF address space = ASID(X'000F')

DLFDATA subcommand

****************************************************************
** * DLF Exception Report * 
**
****************************************************************

Error Information:
Class related to the error: COFGSD0
ASID related to the error: X'000E'
Retry was allowed: Yes
Total entries into recovery: 001
Recursive entries into recovery: 001

Module control flow:
COFMSDN1
COFMEST2

Trace information: Return code: 0000002C
Reason code: 0000D009
Footprints: E0000000 00000000

Control data space storage management messages:
No errors detected
COF111011 Errors detected in DLF data at address 0292A888
ASID(X'000F') reason 10400000 00000000.
10: 0292AF30
+0000 FFFFFFFD 00000000 | .......... |

*** *** END OF DLFDATA *** ***

DLFDATA STORAGE subcommand output

This report provides information about the storage management of DLF data spaces.

If DLFDATA STORAGE(class) is specified, the report shows storage management information only for the class.
The following information appears in the report:

**CLASS**

This is the name of the DLF class. A class name is 7 alphanumeric characters and is specified in a COFDLFxx parmlib member.
Note: COFGSDO is the only valid DLF class.

DATA SPACE

This is the name of the control data space used by the DLF class. The name appears with a prefix of ‘C’ followed by the class name.

ADDRESS RANGE

These are the range of addresses in the data space that are available for use by DLF. The following values are shown:

- **Start address** - The lowest valid address.
- **End address** - The highest valid address.

PAGE COUNTS

These are the number of pages of data space storage allocated to control information. The following two counts are shown:

- The number of pages reserved at the time the class was defined.
- The number of pages in the data space that are currently being used for control information.

AVAILABLE AREAS

These are statistics concerning the available areas of storage in the data space. The following three items are shown:

- **Available areas** - The number of available areas in the data space.
- **Largest area** - The size of the largest available area found in bytes.
- **Total area** - The total amount of available storage found in bytes.

CONTROL INFORMATION

This section contains information about the management of cell pools used for user and object data. For each pool, the following are shown:

- **Cell size** - The size of each cell in the pool in bytes.
- **Primary count** - The number of cells in the first pool extent.
- **Secondary count** - The number of cells in each of the other pool extents that have been added.
- **Number of extents** - The total number of extents currently in the pool.
- **Cells in use** - The total number of cells currently in use in the pool.

**DLFDATA STATS subcommand output**

The STATS reports provide statistics about DLF activity.

If DLFDATA STATS(class) is specified, the report shows statistics information only for the class.
The STATS report contains sets of selected DLF values. The first set of values in the report, after the class name, are the maximum resource values that were specified in a COFDLFxx parmlib member.
Following the maximum parmlib values are the amounts of each resource that were in use at the time of the dump. After these current values, selected connect statistics appear in the report followed by selected object statistics.

The connect statistics that appear include the total number of connect requests that were successful, the total number of requests that failed, and the maximum number of connects that were active at the same time. The system has accumulated these values since the system last started DLF.

The object statistics that appear include the total number of objects currently connected and the total number of objects that have no connected users but still exist in DLF. The system has accumulated these values since the system last started DLF.
Chapter 29. Virtual Storage Management (VSM)

The virtual storage management (VSM) component provides diagnostic data in dumps and traces.

Formatting VSM dump data

The IPCS VERBEXIT VSMDATA subcommand formats VSM control blocks.

For information about using IPCS and the syntax of the IPCS VERBEXIT VSMDATA, see [z/OS MVS IPCS Commands](#). For information about using the VSMDATA subcommand through the IPCS dialog, see [z/OS MVS IPCS User’s Guide](#).

VERBEXIT VSMDATA CONTROLBLOCKS subcommand output

The report generated by the VERBEXIT VSMDATA subcommand formats the following VSM control blocks:
- Address queue anchor table (AQAT)
- Allocated element (AE)
- Cell pool primary extent (PXT)
- Cell pool secondary extent (SXT)
- Double free element (DFE)
- Descriptor queue element (DQE)
- Free block queue element (FBQE)
- Free queue element (FQE)
- Global data area (GDA)
- Local data area (LDA)
- Size queue anchor table (SQAT)
- Subpool queue anchors (SPQA)
- Subpool queue element (SPQE)
- Subpool translation table (SPTT)
- VSM work area (VSWK)

The VERBX VSMDATA command also supports a SUMMARY parameter which provides a more concise report designed specifically for diagnosis of out of storage conditions. This report, generated by the VERBEXIT VSMDATA ‘SUMMARY’ subcommand, formats key data from the following VSM control blocks:
- Address queue anchor table (AQAT)
- Allocated element (AE)
- Double free element (DFE)
- Descriptor queue element (DQE)
- Free block queue element (FBQE)
- Free queue element (FQE)
- Global data area (GDA)
- Local data area (LDA)

This ‘SUMMARY’ report also generates the following:
- Global storage map
- Global subpool usage summary
- Local storage map
- Local subpool usage summary
Virtual Storage Management

**Note:** The Global and Local subpool usage summaries reflect pages that have all or some of the page allocated. You can find information on the allocation of a particular page in the VSM control blocks representing the page.

The SUMMARY option of the VSMDATA CONTROLBLOCKS report has a feature which allows for easier identification of the subpool, key, and TCB associated with a particular allocated or freemained area. Additionally, this new feature provides you with the capability of sorting the VSMDATA output by subpool, by key, by TCB, or by storage address, provided that the data is first routed to an ISPF data set.

Each line of VSMDATA output that represents an allocated or free area has data similar to the following at the far right:

```
TCB 006FE240 SP/K 229/ 5 hppmlaaa
```

This data allows for easy identification of the TCB, subpool, and key associated with a particular piece of VSM storage as represented by a line in the VSMDATA output. The character data at the far right (hppmlaaa) is a translation of the address of storage represented by this line of VSMDATA output. This translation gives you the capability of decimally sorting the data into ascending address order. This is useful when trying to identify what subpool a particular address lives in, or in trying to understand what distribution of subpools own a particular section of storage. It can also be helpful in a tuning analysis because it allows you to see the progression of storage growth within an address space.

To take advantage of the sorting capability provided by this feature, you must first append the PRINT and NOTERM keywords to the VSMDATA command to direct the output data to the IPCSPRNT data set. For example:

```
VERBX VSMDATA 'NOG SUMMARY' PRINT NOTERM
```

will route the data to the data set and prevent it from being displayed at the terminal. Then you should issue:

```
CLOSE PRINT
```

to close the file. Once this command has completed, the output should be viewable in the IPCSPRNT data set. Under ISPF, EDIT the data set and perform the following commands:

```
EXCLUDE ALL
F 'SP/K' ALL
DELETE ALL X
SORT x y
```

to exclude all lines from the data set, to find just the lines with the sortable data, to get discard of all of the other lines, and to sort the remaining line of data:

```
by ADDRESS x=116, y=123
by SUBPOOL x=109, y=111
by SUBPOOL and KEY x=109, y=114
by TCB x=94, y=101
```

Sorting the data by address places the allocated and free addresses in ascending order, making it easy to identify whether a particular address is GETMAINed or free, and if GETMAINed, to which subpool and key.
Note that this sorting technique is not effective for VSMDATA output that contains local data from multiple address spaces. VSMDATA output from an SVC dump generally contains only one address space. In the event the dump is of multiple address spaces, VSMDATA output can be limited to a single address space through the ASID or JOBNAME parameter.

**VERBEXIT VSMDATA OWNCOMM subcommand output**

Enter the VERBEXIT VSMDATA OWNCOMM command to display information about jobs or address spaces that hold storage in the common service area (CSA), extended CSA, system queue area (SQA), or extended SQA. The dump being analyzed with VERBEXIT VSMDATA OWNCOMM must contain the SQA and ESQA subpools. If you use the SDUMP or SDUMPX macro or the DUMP command to obtain the dump, make sure to specify the SQA option of the SDATA parameter. This ensures that the following control blocks will appear in the formatted dump:

<table>
<thead>
<tr>
<th>Control Block</th>
<th>Mapping Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address space control block (ASCB)</td>
<td>ASCB</td>
</tr>
<tr>
<td>Address space secondary block (ASSB)</td>
<td>ASSB</td>
</tr>
<tr>
<td>Common area user block (CAUB)</td>
<td>IGVCAUB</td>
</tr>
<tr>
<td>Getmaine queue element (GQE)</td>
<td>IGVGQE</td>
</tr>
<tr>
<td>GQE Queue Anchor Table (GQAT)</td>
<td>IGVGQAT</td>
</tr>
<tr>
<td>VSM address space block (VAB)</td>
<td>IGVVAB</td>
</tr>
</tbody>
</table>

If one of these control blocks does not appear in the dump, IPCS does one of the following:

- For a VERBEXIT VSMDATA OWNCOMM SUMMARY request, IPCS displays a message indicating that it cannot access the control block and stops processing the VERBEXIT VSMDATA OWNCOMM SUMMARY request.
- For a VERBEXIT VSMDATA OWNCOMM DETAIL request, IPCS displays a message indicating that it cannot access the control block, and continues processing the dump.

Enter the VERBEXIT VSMDATA OWNCOMM SUMMARY command to obtain a report like the one shown in Figure 29-1 on page 29-4. The report is sorted by ASID. The report displays information for all ASIDs.
Virtual Storage Management

The following fields appear in this report:

**Grand Totals**
 Header that indicates that totals for the information listed in the remainder of the report follows.

**Total SYSTEM-owned**
The amount of CSA, ECSA, SQA, and ESQA storage that the system is currently using. If the system cannot access the SYSTEM CAUB, all the counts in the “Grand Totals” part of the report display ‘????????’ and the counts for the SYSTEM CAUB are not included in the displayed total counts.

---

### GRAND TOTALS

<table>
<thead>
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<th>Total Length</th>
<th>SQA</th>
<th>CSA</th>
<th>ESQA</th>
<th>ECSA</th>
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<tr>
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Grand Total: 00404B00 01D668 068860 00205130 00179B08

---

### VIRTUAL STORAGE MANAGEMENT DUMP FORMAT ROUTINE

**THE FOLLOWING KEYWORDS ARE IN EFFECT:**

OWNCOMM

---

**OWNCOMM SUMMARY**

---

**GRAND TOTALS**

---

**Total**

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<th>Description</th>
<th>Length</th>
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<th>ESQA</th>
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Grand Total: 00404B00 01D668 068860 00205130 00179B08

---

**ASID Job Name ID St Length SQA CSA ESQA ECSA CAUB**

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</table>

END OF VIRTUAL STORAGE MANAGEMENT DUMP FORMAT ROUTINE

---

**Figure 29-1. Output from the VERBEXIT VSMDATA OWNCOMM SUMMARY**

The following fields appear in this report:

**Grand Totals**
Header that indicates that totals for the information listed in the remainder of the report follows.

**Total SYSTEM-owned**
The amount of CSA, ECSA, SQA, and ESQA storage that the system is currently using. If the system cannot access the SYSTEM CAUB, all the counts in the “Grand Totals” part of the report display ‘????????’ and the counts for the SYSTEM CAUB are not included in the displayed total counts.
Virtual Storage Management

Total for active ASIDs
The amount of CSA, ECSA, SQA, and ESQA storage in bytes that address
spaces were using when the system wrote the dump.

Total for "Owner Gone"
The amount of CSA, ECSA, SQA, and ESQA storage obtained by jobs and
address spaces that had ended without a FREEMAIN being issued before the
system wrote the dump.

Total for "No Detail"
The amount of CSA, ECSA, SQA, or ESQA storage obtained by jobs and
address spaces before the system programmer started the storage tracking
function. The system cannot identify users of this storage because the tracking
function was not on when you obtained the storage. (If you IPL the system
with the tracking function on and do not turn it off, the value in this field is
zero).

ASID
The hexadecimal identifier of the address space that owns the specified area of
CSA, ECSA, SQA, or ESQA storage.

Jobname
The name of the job that holds the reported area of CSA, ECSA, SQA, or ESQA
storage. The job may have finished without issuing a FREEMAIN to free the
storage.

ID
The system-assigned identifier for an instance of a job that holds the reported
area of CSA, ECSA, SQA, or ESQA storage. Used to identify multiple
occurrences of the job.

St
The status of the job specified in the Jobname field:
   Ac  Active - The job is active
   OG  Owner gone - The job has ended.

Total Length
The total amount of CSA, ECSA, SQA, or ESQA storage (in bytes) held by the
reported job. The system displays this amount in hexadecimal.

CSA, ECSA, SQA, ESQA
The total number of bytes of storage held in CSA, ECSA, SQA, and ESQA.

CAUB
The address of the CAUB that contains the reported information. A string of
asterisks (********) in this field indicates that the system might have gathered
the reported information from more than one CAUB. IGVCAUB maps the
CAUB; see z/OS MVS Data Areas in z/OS Internet Library at
http://www.ibm.com/systems/z/os/zos/bkserv/

Enter the VERBEXIT VSMDATA OWNCOMM DETAIL command to obtain a
report that displays a list of storage ranges owned by one or more jobs, like the
one shown in Figure 29-2 on page 29-6. The system assumes the following defaults:
   ALL
   SORTBY(ASIDADDR)
   CONTENTS(YES)
The field descriptions and defaults are the same as for the VERBEXIT VSMDATA OWNCOMM SUMMARY output shown in Figure 29-1 on page 29-4, except the following fields:

Total for active ASIDs
The amount of CSA, ECSA, SQA, and ESQA storage that address spaces were using when the system wrote the dump. This value only applies to address spaces that were requested for this report.

Total for "Owner Gone"
The amount of CSA, ECSA, SQA, and ESQA storage obtained by jobs and address spaces that had ended before the dump was written. This value only applies to address spaces that were requested for this report.

ASID
The hexadecimal identifier of the address space that owns the specified area of CSA, ECSA, SQA, or ESQA storage. Specify the ASIDLST keyword to limit the number of address spaces displayed in this column.

T
The type of storage:
Virtual Storage Management

- C - Indicates that the obtained storage is in CSA or ECSA.
- S - Indicates that the obtained storage is in SQA or ESQA.

Address
The starting address of a storage range held by the reported job.

Length
The length of the storage range, in hexadecimal, starting at the address shown in the Address column.

Ret Addr
The address to which the system returned after issuing the GETMAIN, STORAGE, or CPOOL macro for the specified storage range.

If the value in this field is X'FFFFFFFE', the specified storage was obtained during MVS initialization.

Date, Time
The date and time when the storage was obtained.

When the time-of-day clock is not available, IPCS displays “Not Available” in the Date and Time columns.

GQE
Information that IBM may request for diagnosis.

DATA----->
The first 10 bytes of data that the address in the Address field points to.

Grand Totals
Header that indicates that totals for the information listed above follow. The totals are provided only for entries selected by the filters specified on the VERBEXIT VSMDATA OWNCOMM DETAIL command. The following examples show the output that appears in the “Grand Totals” section when certain filters are specified:

VSMDATA OWNCOMM DETAIL
The grand totals section contains all the total lines shown in Figure 29-2 on page 29-6.

VSMDATA OWNCOMM DETAIL SYSTEM
The grand totals section contains only the Total SYSTEM-owned line.

VSMDATA OWNCOMM DETAIL ASIDLIST(4)
The grand totals section contains only the Total for active ASIDs and Total for “Owner Gone” lines. The totals counts listed on those lines are for ASID 4 only.
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Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
USA

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in z/OS enable users to:

- Use assistive technologies such as screen readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size.

Using assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in z/OS. Consult the assistive technology documentation for specific information when using such products to access z/OS interfaces.

Keyboard navigation of the user interface

Users can access z/OS user interfaces using TSO/E or ISPF. Refer to z/OS TSO/E Primer, z/OS TSO/E User’s Guide and z/OS ISPF User’s Guide Vol 1 for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

z/OS information

z/OS information is accessible using screen readers with the Library Server versions of z/OS books in the Internet library at:

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