JES3 Diagnosis
JES3 Diagnosis
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About this document

This document provides information for debugging JES3 and installation-written extensions of JES3. It describes the tools that JES3 users can use for debugging. This document is specifically designed for installations running z/OS.

Who should use this document

This document is intended for system programmers and IBM® service representatives or anyone who is responsible for diagnosing and correcting problems in JES3. Users of this publication must have a working knowledge of JES3 functions.

How to use this document

This document contains information used by the system programmer for diagnosing JES3 problems.

This document is divided into the following sections:

• Chapter 1, “Diagnosing, Resolving, and Reporting JES3 Problems”
  Discusses a general methodology for diagnosing JES3 problems and includes topics about:
  – Collecting an exact description of the problem.
  – Gathering relevant system supplied data.
  – Determining the system's status.
  – Publications that assist in diagnosis.
  – Recommendation for using JES3 dumps and Dump Core.
  – Viewing the contents of a dump
  – Viewing the JES3 control blocks
  – Types of problems in JES3 and associated address spaces.
  – Abends in JES3 address spaces
  – Miscellaneous JES3 problems areas
  – JES3 system abends in user address space
  – Problems in the FSS address space
  – Problems in the JES3DLOG address space
  – Problems in the JESXCF address space
  – Problems in the BDT address space
  – Typical JES3 problems and their resolution
  – Job related diagnosis
  – Reporting a problem to IBM.

• Chapter 2, “General Diagnosis”
  Discusses facilities and tools used for general system diagnosis. This discussion includes the format of trace tables and use of JES3 diagnostic facilities, such as descriptions of:
  – JES3 Trace Tables
  – FSS Trace Output
  – SNA RJP Trace Output
  – Dump Job Traces
  – Output Service Output
  – Networking Logging Facility
  – IOERR Output
  – GTF Trace Output
  – Job Validation SNAP Output
• **Chapter 3, “Using IPCS to View JES3 Information”**
  Discusses using the interactive problem control system (IPCS) to diagnose JES3 problems.

• **Chapter 4, “JES3 Formatted Dump”**
  Discusses how to identify areas in a formatted dump of a JES3 or C/I Functional Subsystem (FSS).

• **Chapter 5, “JES3 Monitoring Facility”**
  This section provides a description on how system programmers can use the JES3 Monitoring Facility (JMF) to obtain statistical data of the system.

• **Chapter 6, “Reading a JMF Hard-Copy Report”**
  This section provides a description of the JMF hardcopy report and a description of how to generate a report using SMF records.

• **Chapter 7, “JES3 Recovery”**
  This section describes the following recovery procedures:
  – JES3 and C/I Functional Subsystem Failsoft
  – Alternate CPU Recovery
  – Reconfiguring a Processor Complex
  – Checkpoint/Restart
  – Restarting JES3 After a Failure
  – JES3 Checkpoint Data Sets
  – Dynamic System Interchange
  – BSC RJP Recovery
  – Recovering from Output Writer Functional Subsystem Failures
  – Recovering from SAPI Failures
  – Recovering an IBM 3480 Tape Drive for a Stand-Alone Dump
  – Recovering from Spool I/O Errors
  – Recovering from C/I Functional Subsystem Address Space Failures

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### 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://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/Shelves/ZDOCAPAR).

### 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: [http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/Shelves/ZDOCAPAR](http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/Shelves/ZDOCAPAR)

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

### The z/OS Basic Skills Information Center

The z/OS Basic Skills Information Center is a Web-based information resource intended to help users learn the basic concepts of z/OS, the operating system that runs most of the IBM mainframe computers in use today. The Information Center is designed to introduce a new generation of Information Technology professionals to basic concepts and help them prepare for a career as a z/OS professional, such as a z/OS system programmer.
Specifically, the z/OS Basic Skills Information Center is intended to achieve the following objectives:

- Provide basic education and information about z/OS without charge
- Shorten the time it takes for people to become productive on the mainframe
- Make it easier for new people to learn z/OS.

To access the z/OS Basic Skills Information Center, open your Web browser to the following Web site, which is available to all users (no login required):

http://publib.boulder.ibm.com/infocenter/zoslnctr/v1r7/index.jsp
How to send your comments to IBM

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  GA22-7547-09
• The topic and page number related to your comment
• The text of your comment.

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If you have a technical problem

Do not use the feedback methods listed above. Instead, do one of the following:
• Contact your IBM service representative
• Call IBM technical support
• Visit the [IBM zSeries support web page](http://www.ibm.com/systems/z/support/) at [http://www.ibm.com/systems/z/support/](http://www.ibm.com/systems/z/support/)
Summary of Changes

Summary of Changes
for GA22-7547-09
z/OS Version 1 Release 12

This document contains information previously presented in z/OS JES3 Diagnosis, GA22-7547-08, which supports z/OS Version 1 Release 11.

The following summarizes changes to that information.

New information
• None.

Changed 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 xvii. The hardcopy mail-in form has been replaced with a page that provides information appropriate for submitting readers comments to IBM.

Deleted information
• Deleted IATIPSL1, IATIPSY1, and IATIPSY2 from Table 16 on page 136.

You may notice changes in the style and structure of some content in this document—for example, headings that use uppercase for the first letter of initial words only, and procedures that have a different look and format. The changes are ongoing improvements to the consistency and retrievability of information in our documents.

This book includes terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Summary of Changes
for GA22-7547-08
z/OS Version 1 Release 11

This document contains information previously presented in z/OS JES3 Diagnosis, GA22-7547-07, which supports z/OS Version 1 Release 10.

The following summarizes changes to that information.

New information
• Added codes A3, A4, A5, A6, A7, and A8 for MAINSCHD. See "MAINSCHD" on page 178.
• Added a new formatting field TODX= in Format of a JES3 Trace Entry. See "Format of a JES3 Trace Entry" on page 55.
• Added control block's common names CLST, OSPL, SLBF, SMW, SPW, SWBB, SWBC, SWBG, SWBL, SWBM, SWBT, SWBW, SYSD, SYSL, WKGS, WKSR, WKSS, WRKGR70, and WRKSI70 for JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand, see Table 16 on page 136.

Changed information
• Updated SNAP of the Job's Incorrect Control Blocks for Format of Job Validation
  SNAP Output. See “SNAP of the Job's Incorrect Control Blocks” on page 122.
• Updated SPOOL Information for JMF Reports. See “SPOOL Information” on page 299.
• Updated Description of the JMF Hardcopy Report. See “Description of the JMF
  Hardcopy Report” on page 319.
• Updated example JES3 GLOBAL SOCKET TABLES for TCP - TCP/IP/NJE Data.
  See “TCP - TCP/IP/NJE Data” on page 164.

This document contains terminology, maintenance, and editorial changes, including
changes to improve consistency and retrievability.
Chapter 1. Diagnosing, Resolving, and Reporting JES3 Problems

Diagnostic Methodology

This chapter provides a general methodology for diagnosis and problem solving in the JES3 and associated address spaces. In addition, the information required for reporting problems to IBM is identified.

Diagnosis can be a difficult task. But you increase the difficulty if you do not diagnose in a disciplined way. Discipline cannot replace experience or intuition, but it can structure your diagnosis effort and save you valuable time.

This publication contains debugging techniques and guidelines that have been proven to be the most useful to system programmers that have experience in debugging JES3 problems. These techniques are presented in terms of a debugging “approach”. This debugging approach is summarized in the following steps:

1. Obtain an exact description of the problem and the events that lead to the problem.
2. Gather relevant data from the information the system has provided in order to isolate the problem.
3. Analyze the information. Try to pinpoint the functional area where the problem occurred.
4. Determine if the system has provided you with enough information to diagnose the problem. If you do not have enough information:
   - Determine what additional information is needed
   - Use the available diagnostic tools and commands to gather the information. You can use DUMP CORE to supplement the information provided in the JES3 dump, or to gather information when a JES3 dump is not provided.
5. Pinpoint the problem to a module within the function.
   - If the problem is an installation problem, continue diagnosing.
   - If the problem is in IBM provided code, start searching problem reporting. See z/OS Problem Management for more information about search arguments.
6. Correct the problem if possible. Otherwise, report the problem to your IBM Support Center and supply the information listed in “Reporting a Problem to IBM” on page 26.

Gathering Relevant System Supplied Data

After you have the external symptom identified, you can gather additional information by using commands that are described in z/OS JES3 Commands. Depending on the external symptom and the command that is issued, you can obtain either a portion or a complete JES3 dump to help you determine the problem.

The specific actions you might take in solving a JES3 problem is further refined into the following topics:

- Obtaining an exact description of the problem
- Determining the system events preceding the problem
- Determining the status of the system
Obtaining an exact description of the problem

You should obtain an exact description of the problem and recent events that preceded the problem. A description of the problem can be obtained from:

- The operator who experienced the problem.
- Messages documented in the MLOG portion of the dump (if a JES3 dump is provided)
- The formatted dump (if provided)

You can use DUMP CORE to supplement the information provided in the JES3 dump, or to gather information when a JES3 dump is not provided.

Relevant data can also be gathered from:

- The failsoft logout (message IAT3713) that was issued to describe the error.

The failsoft logout is obtained from either the SYSLOG or from the queue of action messages retained by the active action message retention facility. See [z/OS JES3 Commands](#) for the commands that are used to display the commands.

Determining the Status of the System

You need to determine the status of the system. This includes the following items:

- What maintenance has been applied - JES3 and non-JES3
- What user and OEM code can affect JES3 operations
- What hardware changes have been made
- Any Production/workload changes
- What Initialization stream changes have been made
Documentation that can Assist in Diagnosing JES3 Problems

The information in the following publications can assist you in diagnosing JES3 problems:

- z/OS JES3 Commands
- z/OS JES3 Messages
- z/OS JES3 Initialization and Tuning Guide
- z/OS JES3 Customization
- z/OS JES3 Diagnosis Reference
- z/OS MVS System Codes
- z/OS MVS Diagnosis: Reference

Recommendations for Use of JES3 Dumps and DUMPCORE

You need to consider the following recommendation in securing dump information for your diagnosis efforts:

- JES3 WANTDUMP Recommendations
- Taking JES3 Dumps
- DUMPCORE

JES3 WANTDUMP Recommendation

IBM suggests that you allow the WANTDUMP option on the STANDARDS initialization parameter to default to "YES" instead of setting it to "ASK". Using the default of "YES" allows the system to determine what action to take when a JES3 failure condition occurs. In today's sysplex environment setting this parameter to "ASK" can cause delays in operations because the JES3 address space essentially stops functioning until you respond to the IAT3714 message. Also, certain portions of the dump, such as the system trace, are invalid because the system continues processing until you response to message IAT3714.

Taking JES3 Dumps

If you need to take a dump of JES3 and its related address spaces, such as FSS address spaces, consider the following hints:

- Always include the SDATA parameters RGN, LSQA, LPA, SUM, CSA, NUC, PSA, and SWA. JES3 stores most of its control blocks and modules in the private region.
- If you run SAPI applications, you can include SAPI dataspaces (JES3SAPI) by adding DSPNAME ('JES3'.JES3SAPI) to your dump command.

If you need to take a dump of JESXCF (only if running JES3 SP5.1.1 or higher) always include its dataspaces. See Information APAR II09383 for instructions on including this information.

DUMPCORE

DUMPCORE is an alternative to a dump for many problems associated with JES3. DUMPCORE is a tool that allows you to:

- Examine control blocks
- Set traps
- Find modules
- Zap storage
You can get additional information using DUMPCORE that is not included in a dump. See z/OS JES3 Commands and the *START,DC command for DUMPCORE options that you can use. DUMPCORE options are similar to options you can use with IPCS.

**Viewing the Contents of Dumps**

You can use the IPCS VERBX JES3 command to view online a portion or the entire JES3 formatted dump. You specify IP VERBX JES3 'OPTION=xxx', where "xxx" is the keyword for a specific segment. For example, you may want to view the Client Output Work (COW) Area segment of the dump. In this case you would enter:

```
IP VERBX JES3 "OPTION=COW"
```

For a description of each segment see Chapter 4, “JES3 Formatted Dump,” on page 149.

**Viewing JES3 Control Blocks**

You can format JES3 control blocks using IPCS. Use the CBFORMAT subcommand to format "online" single control blocks with the field name followed by the values in the fields. See “Viewing Specific JES3 Control Blocks Mappings Using IPCS” on page 135.

**Types of Problems in JES3 and Associated Address Spaces**

You experience problems in JES3 and associated address spaces in the following general categories:

- JES3 address space performance problems
- Hangs in the JES3 address space
- Abends in the JES3 address space
- Miscellaneous JES3 problem areas
- JES3 system abends in the user address space
- Problems in the FSS address space
- Problems in the JES3DLOG address space
- Problems in the JESXCF address space
- Problems in the BDT address space

**JES3 address space performance problems**

The symptoms of JES3 address space performance problems include:

- High CPU usage by the address space
- Inquiry commands are not being responded to in a timely manner
- TSO logons are backing up
- Output processing slowdowns
- Poor job throughput
- System not connecting.

**Documentation Required for Diagnosing Performance Problems**

The following documentation is required for diagnosing JES3 address space performance problems:

- JES3 Job Monitor Facility (JMF) output during problem and non-problem periods
It is recommended that JMF be run periodically to establish a baseline of normal performance. This is especially important following system modifications. This baseline can then be used as comparison reference point in respect to current performance.

- Dump/s created during the problem period
- JES3 initialization stream
- RMF™ (Remote Measurement Facility) reports if problem isn't centralized to JES3
- DEV (Device Activity Report) to diagnose slow spool I/O response time.

## Debugging Performance Problems

- **Obtain Job Monitor Facility (JMF) Output**

  Depending on the parameters specified and where it is run (global or local), the following reports or SMF type 84 records can be generated:
  - System report
  - FCT and AWAIT report
  - Spool data management report
  - JES3 control block utilization report
  - Job analysis report
  - Hot spot analysis report
  - JES3 function report

- **Interpret the Reports**

  A description of how to interpret each report is provided in Chapter 6, "Reading a JMF Hard-Copy Report," on page 317.

- **Running JMF and suggested parameters**

  Example, on the global processor issue the following command:

  ```
  *X JMF,TIME=10,SPOT=Y,WIDTH=100,DEBUG=Y,OUT=nnn,WTR=Y
  ```

  Run JMF for 10 minutes (TIME=10), creating a HOT SPOT report (SPOT=Y) for 100 bytes of data within a CSECT (WIDTH=100), take a dump when it's finished (DEBUG=Y), and send the report output to printer nnn (OUT=nnn, WTR=Y).

  If you run JMF on a local processor, SMF records are created, but a dump is not taken. There are a number of parameters that can be used depending on the nature of the problem. See [z/OS JES3 Commands](#) for a description of these parameters.

- **Examining the dump.**

  - Look for repetitious code paths in JES3 trace*
  - Look for large gaps between JES3 trace entries*
  - Look for FCTs not giving up control for long periods of time*

  **Note:** *These conditions could indicate inefficient algorithms in the code. See “Format of Trace Tables and JES3 Diagnostic Facilities” on page 47 for an explanation of JES3 trace entries.

  - Compare JES3 dispatching priority to other address spaces in system.

   If JES3 is defined lower than other non-system address spaces, there may not be getting enough CPU time defined for JES3. This is a tuning situation, not a code defect.

---

## Hangs in the JES3 address space

The symptoms for system hangs in the JES3 address space are:

- High CPU usage by the JES3 address space

---
• No response to JES3 commands
• No JES3 messages being issued
• No job throughput

Hangs in the JES3 address space require you to take JES3 down by using the
FORCE command or by a re-IPL.

Documentation Required for Diagnosing Hangs
The following documentation is required for diagnosing JES3 address space hangs:
• Dump of JES3 (and JESXCF if running JES3 Release SP5.1.1 or higher)
• SYSLOG

Debugging Hangs in JES3 Address Space
• Examine SYSLOG for communication that was lost between JES3 and JESXCF
  (IXZ messages) if running JES3 Release SP5.1.1 or higher.
  Look at all IXZ messages. There are many types of communication failures and
  the IXZ message is the most common failure message. For example:

  IXZO108E COMMUNICATION FROM xcfmember TO xcfmember2 HAS BEEN LOST, GROUP xcfgroup

• Examine SYSLOG for the most current processing up to the time when no
  response occurs. This tells you what were the most recent functions executing.
• Examining the dump.
  – Examine the JES3 nucleus task TCB (IATNUC).
    Is the JES3 nucleus task in an MVS™ WAIT (ACTIVE PRB WLIC=00020001)?
    If yes, where is it waiting and on whom? (use OPSW value to find out what
    code is executing). The nucleus task cannot be made to wait because of an
    MVS WAIT, because this will cause the address space to stop functioning.
    The only valid MVS WAIT that can be issued against JES3 is for the WAIT
    FCT, which indicates that JES3 has no work to do.
  – Examine the FCTs using IP VERBX JES3 'OPTION=FCT'.
    Are there any FCTs that are not posted, but waiting for a specific JES3
    response (such as for file directory entries or JSAM buffers)? These FCTs can
    indicate a shortage or lockout condition if an FCT is not posted where it is
    waiting. If this wait condition is not specified in the explanation of the await
    reason code, find what code is in control from storage using the await return
    address.
  – Examine the JES3 trace for loops in the FCTs running under the nucleus task
    TCB. A loop is indicated by the same call and return sequence executing
    repetitively. See [Format of Trace Tables and JES3 Diagnostic Facilities” on
    page 47] for an explanation of JES3 trace entries.
  – Examine the system trace for interruptions in the JES3 nucleus TCB and look
    for the same address range being executing repetitively.
  – Look for system resource contention by issuing, IP ANALYZE RESOURCE (find
    JES3). If the response to this command is "YES", find out who holds the
    resource that is needed?

Abends in the JES3 Address Space
For JES3 address space abends, you should examine the following:
• User completion codes
• JES3DM abend codes
• System completion codes
Documentation Required to Diagnose ABENDS in the JES3 Address Space

The following documentation is required to diagnose abends in the JES3 address space:

- A dump produced by JES3
- SYSLOG

Depending on the nature of the abend the following additional items may be required:

- The JCL/joblog
- Your Initialization statements
- JES3OUT

Debugging Abends in JES3 Address Space

- You should obtain abend information from the failsoft logout area located in SYSLOG (IAT3713 messages) or by issuing the IP ST, or IP VERBX JES3 'OPTION=FSL' command for the dump. For example, the IP ST command results in:

  Dump Title: JES3 OS290 FLNO=001 WTR FCT=052AF150 S878-00000014
  IN NOT JES3 PSW=070C1000815A6FB6 209/1717

- For user abend codes (JES3 errors encountered during initialization) and DM abend codes (JES3 errors encountered under a DSP) see [z/OS JES3 Diagnosis](#) for a description of the abend. The system action and programmer response given in the abend code description may be sufficient for determining the cause of the problem.

- For system abend codes see [z/OS MVS System Codes](#) for a description of the abend.

- JES3 does not always produce a dump when an abend occurs. The common situations in which a dump is not taken are as follows:
  - DM133 - JES3 abend code issued as a result of a FAIL command issued for a DSP. A dump will not be taken unless the keyword "DUMP" is added to the FAIL command.
  - DM146 - A subtask request has abended. When JES3 is notified of the abend, DM146 is issued and the DSP is terminated. No dump is taken because the failing subtask should have called for a dump. Examine the messages in the SYSLOG to identify the failure. If SYSLOG is not available and the problem persists, set a SLIP on the JES3 completion code to get a dump. JES3 completion codes are considered user completion codes to the MVS (for example, completion code, DM133 to JES3 is U085 to MVS).

- Abends in the JES3 address space and other address spaces can be suppressed through Dump Analysis Elimination (DAE). If a dump is not produced, check to see if DAE has suppressed it. If yes, find out when the dump took place and how often it occurred.

- Examining a dump regardless of abend type:
  For a high level path taken through code leading up to abend issue the following IPCS command and examine the output from the command as illustrated below:
  
  IP VERBX JES3 'OPTION=FSL'
For a lower level path taken through code that leads to an abend, examine the JES3 trace. Obtain fctaddr from IP ST results:

Dump title: JES3 OS130 FLNO=015 NJESND FCTA=1F3E8DE8 DM722

Issue the command:

IP VERBX JES3 'OPTION=TRC,FCT= address from FCTA'

The results are illustrated below:

When examining the JES3 trace table the most recent entry appears first in the list of entries. You can map out the calling sequence to determine the path through the code that was taken. From the example above:

1. A CALL was issued from IATDMNC+0162E to the APUTBUF macro and RETURNed.
2. IATDMNC then RETURNed to whoever called it. In this case IATDMDT+CE2.
3. IATDMDT recognized that an error occurred of some nature (R0 return contains 000002D2, hex value for 722).

Figure 1. IP VERBX JES3 'OPTION=FSL' - Example

For a lower level path taken through code that leads to an abend, examine the JES3 trace. Obtain fctaddr from IP ST results:

Dump title: JES3 OS130 FLNO=015 NJESND FCTA=1F3E8DE8 DM722

Issue the command:

IP VERBX JES3 'OPTION=TRC,FCT= address from FCTA'

The results are illustrated below:
4. IATDMDT will issue a CALL to the FAILSOFT macro to take a dump.

- Format of a JES3 Event Trace Table.

See "Format of Trace Tables and JES3 Diagnostic Facilities" on page 47 for a description of trace table events. A trace event can include the following information:
  - FCT active when trace was taken
  - A Descriptor identifying the function being traced (call, return, etc.)
  - Name of module issuing the trace
  - Address of active FCT
  - Time stamp
  - Identification number
  - TCB
  - In addition, an event can include registers at the time the trace was taken, error information, and pertinent function information.

**EXAMPLE:**

```plaintext
NJSEND TYP=CALL MOD=IATGRSV FCT=1F3E8DE8 TOD=184154-327292 ID=0028 TCB=006E0E88 APUTBUF
1FE09198 9EA1E7A6 1EA1F174 7F41600C 00000000 7F41600C 1EA95E9C 1FE091B0
000002D2 00000010 9EA1AEA6 7F416000 9EA1AF9A 1EA1E56A 1F3E8DE8 1EA01000
```

**where:**

- FCT active time of trace: NJESND
- Descriptor identifying function: CALL
- Name of mod issuing trace: IATGRSV
- Address of active FCT: 1F3E8DE8
- Time stamp: 184154-327292 (6:41:54 pm)
- Identification number: 28
- TCB: 006E0E88
- What was being executed: APUTBUF
- The remainder:

```
1FE09198   R13 from calling routine (usually data CSECT)
9EA1E7A6   Return address (routine issuing APUTBUF)
1EA1F174   Entry point to called routine (APUTBUF)
7F416000C - > 7F416000  R0 - R12 of calling routine
```

- The JES3 trace provides the footprints the function took through the code. The registers provide the storage addresses of the control blocks used by the function. Use CBF (control block format) to format the pertinent control blocks used by the function. For many DM abends, the OS JES3 Diagnosis Reference provides tips and hints of what control blocks to examine to determine the cause of the abend.

**Miscellaneous JES3 Problem Areas**

The miscellaneous JES3 problems areas are:
- Initialization problems
- C/I Problems
- MDS Problems
- GMS problems
- DJC problems
- Output service problems
- Communications problems with remotes
Initialization Problems
You can approach initialization problems as follows:

- Obtain contents of JES3OUT data set and look for error messages issued during initialization. Determine if changes were made to the initialization deck since the last restart was flagged.
- If initialization completes you can use DUMPCORE to display the intermediate text and initialization checkpoint records.
- If an abend is issued follow the same procedures as defined under "Abends in the JES3 Address Space".
- If the cause of the error cannot be determined from an analysis of JES3OUT, use the INTDEBUG facility by placing a INTDEBUG card in the initialization deck statement preceding the point where the error message occurs in the JES3OUT contents. See JES3 Initialization and Tuning Reference for specific syntax. This is only valid on restarts that read the initialization stream (cold, warm, hot/refresh).

Note: When modifying the JES3 initialization stream you should always run the JES3 initialization stream checker.

Converter/Interpreter (C/I) Problems
- If a job is failing converter/interpreter and the reason cannot be determined from an examination of the joblog, rerun the job inserting the following JECL (JES3 control statements):

  Note: JECL is invalid for started tasks.

  //MYJOB JOB etc.
  //*PROCESS CI
  DEBUG=ALL
  //*PROCESS CBPRNT
  //*PROCESS MAIN
  //*PROCESS CBPRNT
  //*PROCESS OUTSERV
  //OUTI OUTPUT etc.

  An examination of the control blocks will be required
- If a job is hung in CI (*I,J,=xx,W or *I,A,D=CI), examine the FCT associated with the function using DUMPCORE. If the FCT is waiting for a C/I or locate subtask you will need to take a dump to determine what the subtask is doing.

MDS (Main Device Scheduling) Problems
Approach MDS problems as follows:

- If an inquiry on a job indicates that it is stuck on an MDS queue (*I,S,A,J - allocate, unavailable, error, restart):
  - issue *I,S,V=VOLSER,E
  - issue *I,S,DE=DSN
  - issue *CALL,DISPLAY,J=xx
  - issue *S DC,OPTION=SNP (to get the JSTs and the resqueue)
  - issue *S DC,OPTION=SYS or STU or STN or MDS or VLM
- If an inquiry on a job indicates that it is stuck on the system select queue:
  - issue *I,S,SS,J=xx
  - issue D SMS,SG(xx),LISTVOL - then talk to SMS
- If necessary, rerun the job adding C/I debug statements (see C/I above for instructions).
Note: Often problems with jobs getting stuck in MDS, failing, or failing execution is a result of C/I processing.

GMS (Generalized Main Scheduling) Problems
Problem - Job stuck in GMS select.
• Issue *I,J=xx,W - what is job waiting for?
• Enter the following commands on each main:
  – *I,G,main-name,G (inquiry on GROUP status)
  – *I,G,main-name,S (inquiry on SELECT mode options)
  – *I,G,main-name,C (inquiry on CLASS status)
• Get a display listing for job in question:
  – Issue *CALL,DISPLAY,J=xx
• If more details regarding GMS is required use DUMPCORE with OPTION=GMS or MPC

Note: The typical cause of GMS problems is not enough initiators available for the job class group.

DJC (Dependent Job Control) Problems
Problem - DJC net job not executing as expected:
• Execute command to obtain DISPLAY DJC output.
  *CALL,DISPDJC,OUT=nnn.NET=xxx

  Where:  nnn is the printer to be used
          xxx is the name of the network to be displayed
• Typical cause - A job may have abnormally terminated and did not have an ABCMP statement in the JCL

Output Service Problems
Problem - Job stuck in output service.
• Use DUMPCORE to obtain the job’s output service related control blocks:
  – *S,DC,OPTION=(SNP),J=jobnum - OSEs, JDSs, resqueue
  – If running R3 and up, also run DUMPCORE including the DIAG keyword on the command to obtain formatted OSEs. See Displaying Output Scheduling Elements (OSEs) for a Job” on page 41 for a description of the contents.

Problem - Output not printing as expected.
• Turn on diagnostic mode when starting the writer (*START,wtr,D). This will provide additional message IAT7060 during output service processing. See “Output Service Diagnostic Mode” on page 109 for a description of the contents.

Communication Problems with Remote Connections
Approach communication problems with remote connections as follows:
• BSC RJP problems:
  – Run the RJPSNPS service aid during a failure transmission sequence. Issue *CALL,RJPSNPS or *START,RJPSNPS
• SNA RJP problems:
  – Turn on SNA RJP trace facility for the failing line. Issue *START,SNARJP,T=wsname,TRACEON
– Turn on VTAM® GTF trace for the failing LU. Use the CID specified in the logon message and trace LU and NCP buffers. See "Communication Traces" on page 61 for a description of the traces.

**JES3 System Abends in User Address Space**

The following describes debugging system abends issued from JES3 modules running under control of user address space (ABEND1FB, ABEND6FB, etc.).

**Documentation Required for JES3 System Abends in User Address Space**

The documentation required for diagnosis of JES3 system abends in user address spaces is:

- System created dump
- Syslog

**Debugging System Abends**

- Obtain abend code from dump or syslog and examine z/OS JES3 Diagnosis Reference for explanation.
- Examine TCB, RB, SVRB, linkage stack structure, and save area chains associated with failing task. Use OPSWs and WLICs to see what path was taken leading up to abend.
- Examine system trace for trace entries leading up to abend. Search for "RCVY" to find where abend occurred in most cases.
- Examine code up to point of failure.

**Problems in the FSS Address Space**

The FSS (Functional SubSystem) is a separate address space which can be used in a JES3 environment to offload converter/interpreter or writer functions from the global. The use of FSS allows installations to use products such as PSF to drive printers in a JES3 environment.

**FSS Problems - C/I or WTR**

There is a variety of problems that can occur in either kind of FSS. Most should be treated like any other JES3 problem with the exception that we are dealing with a separate address space. The types of problems are:

- DM or system abends
- Hangs
- Lost connection messages from JESXCF
- Printers not picking up work

**Documentation Required for FSS Problems**

The documentation required for diagnosis of FSS problems is:

- Dump of JES3 and FSS address space (include JESXCF if running JES3 5.1.1 or higher)
- Syslog

**Debugging FSS Problems**

- For abends - follow the same procedure as with a JES3 dump. There is one difference - to obtain the FSS trace table issue:

  `IP VERBX JES3 'ASID=xxx,OPTION=yyy' or 'FSSNAME=xxx,OPTION=yyy'`
Look at the last FSS entry in the table and compare it to what the JES3 trace table activity for the FSS FCT shows. See "Format of a Functional Subsystem (FSS) Address Space Trace Table" on page 58 for a description of a FSS event ID table and explanation of FSS events.

- For hangs or if a printer is not printing:
  - Examine the FSS/FSA table status flags, issue:
    
    IP VERBX JES3 'OPTION=FSS'
  
  - Examine the JES3 FCT activity associated with the FSS. Is it waiting for a post from the address space?

- With WTR FSSs there is the FSS application to consider as well (such as PSF, Printway, etc.). For WTRs additional diagnostic information can be obtained by turning on diagnostics when calling, starting, or restarting the writer by adding D to the command. This will cause an additional messages with diagnostic information to be issued. See "Output Service Diagnostic Mode" on page 109 for an explanation of the message contents.

- If a C/I FSS hangs because of a minimal spool condition, and it is defined (or was modified with) TERM=YES, it will not be possible to automatically bring it down by ending the global address space. Therefore exercise care when restarting JES3 during a minimal spool condition.

## Problems in the JES3DLOG Address Space

The JES3DLOG address space was introduced in Release 5.2.1 as a means of tracking all message activity in a sysplex in the JES3 format. It is a separate address space that uses an MCS extended console. Installations can choose JES3DLOG or Operlog. JES3DLOG problems are indicated by:

- External symptoms similar to JES3 such as:
  - Performance - high CPU usage
  - Hangs
- DLOG suspend/alert conditions
- Missing DLOG messages

### Documentation Required for JES3DLOG Problems

The following documentation is required for diagnosing JES3DLOG problems:

- Dump of JES3DLOG address space and the data space associated with the Consoles asid that is created for DLOG.

  JOBNAME=(CONSOLE,JES3DLOG),DSPNAME=('console'.ieam*).

  Explanation: DLOG will obtain MDBs (message data blocks) from the consoles data space to create the messages it will put in the log.

### Debugging JES3DLOG Problems

- DLOG has an alert mechanism that will signal when it reaches its maximum message or dataspace limitation (messages will be issued). In many cases the alerts will be relieved internally. If not, it indicates a problem. DLOG will save trace events for startup/termination, suspend/alert conditions, abnormal termination, and resmgr within its address space.

- Issue an inquiry (*I,O,DLOG) to obtain what JES3 believes to be the status of the asid. JES3 message IAT7000 provides a lengthy explanation.

- An examination of the TCB structure and the data being accessed in the console dataspace may be necessary if the trace table does not indicate a specific problem.
If messages missing from JES3DLOG are not displayed on the console, then console support needs to be contacted.

Problems in the JESXCF Address Space

JES3 support for JESXCF was introduced in Release 5.1.1. It acts as a communication vehicle between all the address spaces in a complex. JESXCF uses XCF and a coupling facility or CTCs for communication. If an installation is running JES3 5.1.1 or higher, then JESXCF exists. Often JESXCF problems will manifest themselves as a problem with another address space. For this reason it is important to dump JESXCF and its dataspaces even when it is not apparent that JESXCF is involved. There is a JESXCF address space on each processor. JESXCF problems are indicated by JESXCF abends and communication failures.

Documentation Required for JESXCF Problems

The following documentation is required for diagnosing JESXCF problems:

- Dump of JESXCF address space including its dataspaces for each processor (unless the system has created a dump).
- Depending on the nature of the problem XCF may be required.
- Syslog.

Debugging JESXCF Problems

- JESXCF code is delivered with the Userexit and Flow component traces active: these traces need to be left active for debugging purposes.
- IP VERBX JESXCF provides control block information about the mailboxes defined for members in the sysplex. For communication failures, examine the formatted transport buffers.
  - Examine head/tail pointers. If the tail value is high it may indicate an accumulation of messages which is an indication of lost transport buffers.
- JESXCF is shipped Object Code Only (OCO). Level 2 Support will need to examine the documentation to determine the cause of the problem.

Problems in the BDT Address Space

BDT is a mechanism for transferring data (sysout or jobs) between nodes using SNANJE or File-to-File Transfer. Installations can choose whether to use BDT. BDT problems are indicated by BDxxx abends, system abends, and hangs.

Note: Often a problem externally looks like a BDT problem, but internally it is a result of a VTAM problem. A thorough understanding of the received messages is required for an accurate diagnosis.

Documentation Required for BDT Problems

The following documentation is required for diagnosing BDT problems:

- For BDxxx and system abends
  - Dump provided
  - Syslog
- For Hangs
  - Dump of sending system and JES (if using SNANJE)
  - Dump of receiving system and JES (if using SNANJE)
  - Syslog
  - VTAM traces
### Debugging BDT Problems

- For BDxxx abends, examine *BDT Messages and Codes* for an explanation of the abend. The information provided may be sufficient for determining the cause of the problem.
- To format the BDT address space issue one of the following:

  - **IP SUMMARY FORMAT JOBNAME(jobname)**
    where: jobname is the name of the BDT job
    (OR)
  - **IP SUMMARY FORMAT ASIDLIST(xxx)**
    (OR)
  - **IP TCBX BDTABPR TCBxxxB**
    where: xxx is the decimal value of the BDT ASID
    - If the TCBX fails, you are missing the formatter. In SYS1.PARMLIB member BLSCECT you need to INCLUDE the following TCB exit:
      ```
      'EXIT EP(BDTABPR) FORMAT(TCB) AMASK(x'00FFFFFF')/*BDT'
      ```
    - Examine the FCT chain for the failing function (format similar to JES3 FCT chain)

- **Hangs**
  - Examine BDT and VTAM messages in each syslog
    - For nodes in question - is one unavailable?
    - If message BDT9311 exists BDT may not be hung. JES3 may have not told it that there is work available. Examine the JES3 dump.
  - Determine if there is work available for BDT from JES3. Issue JES3 inquiry:
    ```
    *I.U,J=?,Q=BDT,BS=?,H=?,BG=?
    ```

  **Note:** BS status can indicate what is happening.

### Debugging TCP/IP/NJE problems

For transmission problems, use the command

*MODIFY,SOCKET=sockname,JTRACE=YES,ITRACE=YES.* (Optionally you can also specify VTRACE=YES.) Then start up a GTF procedure to collect trace records.

For socket connection problem, use the command

*MODIFY,NETSERV=nsvname,JTRACE=YES,ITRACE=YES.* (Optionally you can also specify VTRACE=YES.) If you are having trouble with a signon of a TCP/IP node it might be useful to turn on Netserv and socket traces. Then start a GTF procedure to collect trace records.

To determine if a host name specified on a socket definition is properly defined through TCP/IP, you can try a ‘ping’ command from TSO. For example, if a socket is defined with HOSTNAME=MYCORP.COM and you suspect that MYCORP.COM is not defined to TCP/IP, you can go to a TSO session and enter the command PING MYCORP.COM. If the command times out without sending any packets, the host is likely undefined to TCP/IP. You can also try to ping the IP address, for example, ‘ping 11.22.33.44’. If the ping for the IP address works but the ping for the host name does not, suspect that the IP address is not defined correctly to the TCP/IP resolver.
If you take a dump to aid diagnosis, the JES3 Global and Netserv address spaces will likely be needed. They might not be on the same processor.

## Typical JES3 Problems and Their Resolutions

The following section discusses how to identify a problem with JES3 and gives a suggested solution to the problem.

### Shortage of JES3 Job Numbers

**Problem Description:**

An indication of a shortage of job numbers in your installation is a backlog of jobs which will eventually affect the performance of your installation. If your installation has experienced a shortage of job numbers, messages such as IAT6192, IAT4075, and IAT9126 may be issued. These messages are retained by the action message retention facility. Scan the messages on the action message retention queue to determine if any of these messages were retained on the message queue.

**Suggested Resolution:**

The situation may be eased by one of the following:

- Canceling some jobs.
- Locating the bottleneck of jobs in your installation.

**Suggested Changes for Temporary Fix:**

In an installation, jobs typically become backlogged while waiting to be processed by CI, MAIN, OUTSERV, and NJESND. Issue an *INQUIRY,B or *INQUIRY,Q,D=dspname command to determine the jobs that are waiting to be processed by the CI, MAIN, OUTSERV, and NJESND DSPs. See [z/OS JES3 Commands](https://www.ibm.com/support/knowledgecenter/en/SSEDSV_1.1.0/com.ibm.zos.v2r12.doc/zos commands.html) for more information on this command. The maximum number of jobs active under any particular DSP is dependent on the installation. Each installation must determine the maximum number of jobs that can run under a particular DSP.

If a bottleneck of jobs exists in output service, either:

- Cancel some jobs by issuing a *MODIFY,J=jobno,C or *MODIFY,J=jobname,C,N=ALL command.
- Cancel output data sets from the HOLD queue by issuing a *MODIFY,U,Q=queue,{JAGE|DAGE} command.
- Change the printer requirements for the job. Issue a *MODIFY,U,Q=WTR command to change the printing requirements for the job.


If there is a bottleneck of jobs waiting to be processed by the NJESND DSP, ensure:

- The BSC lines are active. Issue an *INQUIRY,NJE command to display the status of the lines defined to your node.
- The lines are not hung. Issue an *INQUIRY,NJE,NODE=nodename,LINe command to determine the status of the lines defined to your node.
- That a large job is not tying up the line. Issue an *INQUIRY,A,D=NJESND command to display the amount of time that the job has used to transmit a job. If too much time has been taken to transmit the job, issue either:
  - *R,dspname to terminate the job and requeue it to the DSP or
- *C,dspname to terminate the job and place it in operator hold.

**Suggested Changes for Next Restart:**

To prevent a shortage of job numbers in the future, check the JOBNO parameter on the OPTIONS initialization statement. Allocate enough direct-access space to accommodate your installation's working data set for JCT records. (See [z/OS JES3 Initialization and Tuning Guide](https://publib.boulder.ibm.com/infocenter/ijesv3r2/topic/com.ibm.jes3.jes3init devuelve.html) for more information on determining the size of the JCT.)

**Misrouted Messages**

**Problem Description:**

Because JES3 has a complex method of routing messages, some messages issued in your installation may not appear where you expect. JES3 messages are issued by using information specified on a JES3 MESSAGE macro. JES3 converts the message macro into a WTO and the destination class into MVS routing codes. The message processing facility (MPF) can change, add, or delete the routing codes specified on the message macro.

**Suggested Resolution:**

You can use the Generalized Trace Facility (GTF) to gather information to help diagnose where your system is routing messages for display. GTF intercepts requests to route messages from JES3 and MVS and records information for the request. See [z/OS JES3 Customization](https://publib.boulder.ibm.com/infocenter/ijesv3r2/topic/com.ibm.jes3.jes3custom devuelve.html) for additional information on using GTF in JES3.

**Job Related Diagnosis**

This topic discusses the statements used to invoke the diagnostic facilities and commands that you can use to obtain information when JES3 is active.

The system can supply you with information that is gathered while the installation is experiencing a problem. However, sometimes it can be necessary to recreate the problem and collect additional information. This information can help diagnose problems the installation is experiencing.

Whenever JES3 is active, commands can be entered from a console to obtain diagnostic information. Use the commands in Table 1 to obtain information that will help you:

- Identify the functional area where JES3 might be experiencing a problem.
- Obtain additional information while recreating a JES3 problem. You can use the information obtained using the commands in this section and the information in the formatted dump to diagnose the problem.

After you have identified the functional area that might be experiencing a problem, use the commands in Table 2 to obtain information specific to that functional area.

For more information about the commands used in Table 1 and Table 2, see [z/OS JES3 Commands](https://publib.boulder.ibm.com/infocenter/ijesv3r2/topic/com.ibm.jes3.jes3commands devuelve.html).
# Job Related Diagnosis

## Table 1. Commands Used to Obtain General JES3 Diagnostic Information

<table>
<thead>
<tr>
<th>If you want to:</th>
<th>See the following sections in this book or use command specified:</th>
</tr>
</thead>
<tbody>
<tr>
<td>stop the processing of a JES3 FCT</td>
<td>Dump</td>
</tr>
<tr>
<td>obtain in-</td>
<td></td>
</tr>
<tr>
<td>formation contained in a control block or storage</td>
<td></td>
</tr>
<tr>
<td>CLASS (Job Class Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>CSA (Common Service Area)</td>
<td>Dump</td>
</tr>
<tr>
<td>DJST (Dynamic Job Summary Table)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>DYNAL (DYNAL FCT Data Areas)</td>
<td>Dump</td>
</tr>
<tr>
<td>EXRESC (Execution Resource Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>FCT (Function Control Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>FSS (Function Subsystem Tables)</td>
<td>Dump</td>
</tr>
<tr>
<td>GRPTBL (Job Class Group Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>ICP (Initialization Checkpoint Record)</td>
<td>Dump</td>
</tr>
<tr>
<td>IDD (C/I DSP Data Area)</td>
<td>C/I Debug Facility</td>
</tr>
<tr>
<td>JBT/TAT/JOBTAT(Job Track Allocation Table)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>JCT (Job Control Table)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>JDAB (Job Data Accounting Block)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>JDS (Job Data Control Block)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>JNCB (DJC JOBNET Control Blocks)</td>
<td>Dump</td>
</tr>
<tr>
<td>JQE (Job Queue Element)</td>
<td>Dump</td>
</tr>
<tr>
<td>JSQ (Job Select Queue Element)</td>
<td>Dump</td>
</tr>
<tr>
<td>JST (Job Summary Table)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>JVT (Job Volume Table)</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>LRS (Locate Response Table)</td>
<td>C/I Debug Facility</td>
</tr>
<tr>
<td>LVS (Locate Table Entries)</td>
<td>Dump</td>
</tr>
<tr>
<td>MEM (JES3 Memory Usage Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>MPC (Main Processor Control Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>NUC (JES3 Nucleus)</td>
<td>Dump</td>
</tr>
<tr>
<td>OSE/MOSE (Output Scheduling Element)</td>
<td>Dump, Control Block Print</td>
</tr>
<tr>
<td>PCAT (Pass/Catalog Table)</td>
<td>C/I Debug Facility</td>
</tr>
<tr>
<td>RQ/RESQ (Resident Job Queue Table)</td>
<td>Dump, Control Block Print</td>
</tr>
<tr>
<td>SDA (Statistics Data Area)</td>
<td>Dump</td>
</tr>
<tr>
<td>STN (SETNAMES Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>STT (Single Track Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>STU (SETUNITS Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>SUP (SUPUNITS Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>SWA Control Blocks</td>
<td>Dump</td>
</tr>
<tr>
<td>SYS (SYSUNITS Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>TRC (JES3 Trace Tables)</td>
<td>C/I Debug Facility</td>
</tr>
<tr>
<td>VLM (SETVOL and SETDSN Tables)</td>
<td>Dump</td>
</tr>
<tr>
<td>obtain job-related information</td>
<td></td>
</tr>
<tr>
<td>display information for a specific job</td>
<td>*CALL,DISPLAY or *INQUIRY,J</td>
</tr>
<tr>
<td>display the status of jobs being processed by a</td>
<td>*INQUIRY,A</td>
</tr>
<tr>
<td>particular or all JES3 DSPs</td>
<td></td>
</tr>
<tr>
<td>display the status of jobs on a specific or on all</td>
<td>*INQUIRY,A</td>
</tr>
<tr>
<td>processors</td>
<td></td>
</tr>
<tr>
<td>display a summary of jobs in the queue, by JES3</td>
<td>*INQUIRY,A</td>
</tr>
<tr>
<td>function</td>
<td></td>
</tr>
<tr>
<td>obtain the status of a particular job including why</td>
<td>*INQUIRY,B</td>
</tr>
<tr>
<td>the job is waiting to be scheduled and how long the</td>
<td></td>
</tr>
<tr>
<td>job has been active or waiting to be scheduled</td>
<td></td>
</tr>
<tr>
<td>obtain information on a single or all jobs on the</td>
<td>*CALL,DISPLAY or INQUIRY,Q</td>
</tr>
<tr>
<td>JES3 job queue</td>
<td></td>
</tr>
<tr>
<td>display information for jobs which have allocated</td>
<td>*CALL,DISPLAY or *INQUIRY,Q</td>
</tr>
<tr>
<td>spool space</td>
<td></td>
</tr>
<tr>
<td>display information for DJC network and jobs within</td>
<td>*INQUIRY,N</td>
</tr>
<tr>
<td>DJC networks</td>
<td>Display DJC Network</td>
</tr>
<tr>
<td>select events that JES3 traces</td>
<td>JES3 Trace</td>
</tr>
<tr>
<td>display portions of storage</td>
<td>Dump</td>
</tr>
<tr>
<td>display a particular spool record</td>
<td>Dump</td>
</tr>
</tbody>
</table>

---

18  z/OS V1R12.0 JES3 Diagnosis
### Table 1. Commands Used to Obtain General JES3 Diagnostic Information (continued)

<table>
<thead>
<tr>
<th>If you want to:</th>
<th>See the following sections in this book or use command specified:</th>
</tr>
</thead>
<tbody>
<tr>
<td>determine the devices JES3 allocated to a job</td>
<td>DISPLAY, C/I Debug Facility, or JSTTEST Facility</td>
</tr>
<tr>
<td>obtain information for a specific module</td>
<td>*INQUIRY,X or Dump</td>
</tr>
<tr>
<td>obtain DSP related information</td>
<td>*INQUIRY,X</td>
</tr>
</tbody>
</table>

Use the commands in the following table to obtain diagnostic information for a particular JES3 functional area. For more information about using these commands, see [z/OS JES3 Commands](#).

### Table 2. Commands Used to Obtain Additional Information for a Functional Area

<table>
<thead>
<tr>
<th>If you want to obtain more information for:</th>
<th>See the following sections in this book or use commands specified:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initialization</strong> and you want to:</td>
<td>INTDEBUG (See <a href="#">z/OS JES3 Initialization and Tuning Guide</a> for more information.)</td>
</tr>
<tr>
<td>force a storage dump when JES3 encounters an error while initializing the global configuration information that JES3 created from the initialization statements that were processed</td>
<td>Dump (*START,DC,OPTION=SDA) Dump (*START,DC,OPTION=ITX,ICP)</td>
</tr>
<tr>
<td>gather statistics that were recorded during JES3 initialization.</td>
<td>Dump (*START,DC,OPTION=SDA) Dump (*START,DC,OPTION=ITX,ICP)</td>
</tr>
<tr>
<td>display the configuration information that JES3 created from the initialization statements that were processed</td>
<td>Dump (*START,DC,OPTION=SDA) Dump (*START,DC,OPTION=ITX,ICP)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Input Service</strong> and you want to:</th>
<th>JCLTEST Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>obtain a list of interpreted JCL for a job processed by the MVS converter interpreter</td>
<td>JCLTEST Facility</td>
</tr>
<tr>
<td>display control blocks or storage related to input service:</td>
<td>JCLTEST Facility</td>
</tr>
<tr>
<td>FRP (format parameter buffer)</td>
<td>Control Block Print, Dump Dump Dump</td>
</tr>
<tr>
<td>IRA (internal reader anchor block)</td>
<td>Control Block Print, Dump Dump Dump</td>
</tr>
<tr>
<td>IRE (internal reader element)</td>
<td>Control Block Print, Dump Dump Dump</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>C/I and you want to:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>display control blocks or storage related to C/I:</td>
<td></td>
</tr>
<tr>
<td>FSS-Functional Subsystem Table Entries</td>
<td></td>
</tr>
<tr>
<td>IDD</td>
<td></td>
</tr>
<tr>
<td>IJS</td>
<td></td>
</tr>
<tr>
<td>JST</td>
<td></td>
</tr>
<tr>
<td>JVT</td>
<td></td>
</tr>
<tr>
<td>LRS</td>
<td></td>
</tr>
<tr>
<td>LVS</td>
<td></td>
</tr>
<tr>
<td>PCAT</td>
<td></td>
</tr>
<tr>
<td>SWA control blocks</td>
<td></td>
</tr>
<tr>
<td>display the status of a procedure library</td>
<td>*INQUIRY,PROCLIB=</td>
</tr>
<tr>
<td>display information for a CI FSS</td>
<td>*INQUIRY,F</td>
</tr>
<tr>
<td>display why a job is not being scheduled for C/I</td>
<td>*INQUIRY,J</td>
</tr>
</tbody>
</table>

---

**Job Related Diagnosis**

**Chapter 1. Diagnosing, Resolving, and Reporting JES3 Problems**
### Table 2. Commands Used to Obtain Additional Information for a Functional Area (continued)

<table>
<thead>
<tr>
<th>If you want to obtain more information for:</th>
<th>See the following sections in this book or use commands specified:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Device Scheduling</strong> and you want to:</td>
<td></td>
</tr>
<tr>
<td>display a list of the devices JES3 has allocated to a job</td>
<td>JSTTEST Facility</td>
</tr>
<tr>
<td>display control blocks related to main device scheduling</td>
<td></td>
</tr>
<tr>
<td>JST</td>
<td>Control Block Print</td>
</tr>
<tr>
<td>MDS (Main Device Scheduler Area)</td>
<td>Dump</td>
</tr>
<tr>
<td>STN (SETNAMES Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>STU (SEUTNITS Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>SYS (SYSUNITs Table)</td>
<td>Dump</td>
</tr>
<tr>
<td>VLM (SETVOL/SETDSN Tables)</td>
<td>Dump</td>
</tr>
<tr>
<td>display why a job is waiting in MDS processing</td>
<td>*INQUIRY,J and *INQUIRY,S,A,J=</td>
</tr>
<tr>
<td>display a summary of the jobs in MDS allocation processing and why they are waiting</td>
<td>*INQUIRY,S,A,SUMM</td>
</tr>
<tr>
<td><strong>Output Service</strong> and you want to:</td>
<td></td>
</tr>
<tr>
<td>display jobs that originate from a designated device group</td>
<td>*INQUIRY,B</td>
</tr>
<tr>
<td>display information for a WTR FSS</td>
<td>*INQUIRY,F</td>
</tr>
<tr>
<td>display control blocks or storage related to output service:</td>
<td></td>
</tr>
<tr>
<td>FSS-Functional Subsystem Table Entries</td>
<td>Dump</td>
</tr>
<tr>
<td>MOSE (Master OSE and OSS)</td>
<td>Dump, Control Block Print</td>
</tr>
<tr>
<td>OSE (Disk Resident OSE)</td>
<td>Dump, Control Block Print</td>
</tr>
<tr>
<td>PPQ/PDQ-Pipeline Writer Control Blocks</td>
<td>Dump</td>
</tr>
<tr>
<td>WTR (Writer Data Area)</td>
<td>Output Service Diagnostic Mode</td>
</tr>
<tr>
<td><strong>Consoles</strong> and you want to:</td>
<td></td>
</tr>
<tr>
<td>trace information for misrouted messages</td>
<td>Generalized Trace Facility</td>
</tr>
<tr>
<td>display console status information</td>
<td>*INQUIRY,O and *INQUIRY,D</td>
</tr>
<tr>
<td>display outstanding action messages</td>
<td>MVS Commands: D R and D CONSOLES</td>
</tr>
<tr>
<td>display message routing information</td>
<td>*INQUIRY,M , *INQUIRY,O and D CONSOLES</td>
</tr>
<tr>
<td>display status of console buffers</td>
<td>*INQUIRY,C,C</td>
</tr>
<tr>
<td><strong>Networking</strong> and you want to:</td>
<td></td>
</tr>
<tr>
<td>obtain information for a node that uses BSC protocols</td>
<td>Network Log Facility</td>
</tr>
<tr>
<td>display control blocks or storage related to networking:</td>
<td></td>
</tr>
<tr>
<td>NJE (networking node table)</td>
<td>Dump</td>
</tr>
<tr>
<td>TCP (TCP/IP/NJE structures)</td>
<td></td>
</tr>
<tr>
<td>display the status of all networking nodes and lines</td>
<td>*INQUIRY,NJE</td>
</tr>
<tr>
<td>inquire about output destined for other NJE nodes</td>
<td>*INQUIRY,U,Q=BDT</td>
</tr>
</tbody>
</table>
Table 2. Commands Used to Obtain Additional Information for a Functional Area (continued)

<table>
<thead>
<tr>
<th>If you want to obtain more information for:</th>
<th>See the following sections in this book or use commands specified:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spool</strong> and <strong>you want to:</strong></td>
<td><strong>See the following sections in this book or use commands specified:</strong></td>
</tr>
<tr>
<td>display control blocks or storage related</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>to spool:</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>JBT (job track allocation table)</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>JDS (job data sets)</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>JIO (spool related control blocks)</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>display information for spool partitions</td>
<td>*INQUIRY,C and *INQUIRY,Q</td>
</tr>
<tr>
<td>display information for JSAM spool buffers</td>
<td>*INQUIRY,C and *INQUIRY,Q</td>
</tr>
<tr>
<td>display information for spool data sets</td>
<td>*INQUIRY,Q and DISPLAY</td>
</tr>
<tr>
<td>display information for allocated spool space</td>
<td>*INQUIRY,Q and DISPLAY</td>
</tr>
<tr>
<td>display a summary of records that are in</td>
<td>*START,DC,OPTION=STT</td>
</tr>
<tr>
<td>the Single Track Table (STT) or dump the</td>
<td></td>
</tr>
<tr>
<td>contents of all records or specific</td>
<td></td>
</tr>
<tr>
<td>records</td>
<td></td>
</tr>
<tr>
<td>display the contents of a spool record</td>
<td>*START,DC,SPADDR=</td>
</tr>
<tr>
<td><strong>Remote Job Workstations</strong> and you want</td>
<td><strong>See the following sections in this book or use commands specified:</strong></td>
</tr>
<tr>
<td>to:</td>
<td></td>
</tr>
<tr>
<td>display control blocks or storage related</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>to RJP workstations:</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>RJP-resident RJP line, terminal tables</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>WSB-resident workstation block</td>
<td>Dump, Control Block Print Dump, Control Block Print Dump</td>
</tr>
<tr>
<td>display the status of a BSC or SNA RJP</td>
<td>*INQUIRY,D,T=</td>
</tr>
<tr>
<td>workstation</td>
<td></td>
</tr>
<tr>
<td>display BSC line information</td>
<td>*INQUIRY,T</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Control Block Print DSP (CBPRNT)**

CBPRNT prints JES3 and MVS control blocks to the CBPRNT data set. CBPRNT prints the data set when the job ends.

To use the facility, take the following steps:
1. Determine the control blocks you require to diagnose the problem.
2. Use the following list to identify the control blocks you can request:
   - The TAT, JDAB, PARM, JDS, FRP, ASR, or the RESQ, after any scheduler element.
   - The JVT, JST, or the SWA control blocks, after the CI or a subsequent scheduler element.
   - The MOSE, after the OUTSERV scheduler element.
3. Place a */PROCESS CBPRNT statement after the scheduler element that creates the required control block.
   - If a */PROCESS CBPRNT statement is placed at the beginning of the job, CBPRNT prints all the control blocks associated with the job's scheduler elements.

**Converter/Interpreter Debug Facility**

The converter/interpreter debug facility provides additional parameters that you can specify on the */PROCESS CI statement used to create a non-standard job.

Consider the following when using this diagnostic facility:
- Errors in the DEBUG statement inhibit the converter/interpreter debug facility for the job. JES3 will not flush the job from the system.
Converter/Interpreter Debug Facility

- You should include a //PROCESS OUTSERV statement with this job to insure that the debug output will be printed.
The syntax for using DEBUG and CLASS statements for the C/I Debug Facility follows:

```
//*PROCESS CI
followed by (on a separate statement) and preceded by a blank
```

Note: The DEBUG or CLASS parameter must start on a new line following the//*PROCESS CI statement and a blank must precede the first parameter you specify.

**DEBUG=cbname**
- Identifies the one or more control blocks to be printed. You must separate the control blocks by a comma if you specify more than one control block.

  - **cbname** converter/interpreter debug facility will print the:
    - **LOC** Locate table (LVS) entries as they are built and the Locate Response Area (LRS).
    - **JST** Job summary table (JST) entries as they are built.
    - **JVT** Job volume table (JVT) entries as they are built.
    - **COMP** MVS control blocks as they are read and the compatibility interface records as they are referenced. Control blocks are the JCT, ACT, SCT, SIOT, and JFCB. Compatibility interface records are the JES3 job level, step level, and DD level records (JBL, STP, DDL).
    - **SWB** Scheduler work blocks after processing is complete.
    - **PCAT** Pass/catalog entries as they are built.
    - **IJS** Intermediate job summary table (IJS) entries as they are built.
    - **CKPT** Checkpointed buffers for any of the specified options. This provides the final contents of the control blocks.
    - **ALL** All the previously listed control blocks.

**CLASS**
- Allows the user to assign a JES3 message class to the DEBUG data set for a job. The class must be a single alphabetic (A through Z) or a numeric (0 through 9) character. It can either precede or follow the DEBUG=keyword and must be separated by a comma.

If you do not specify the message class for the converter/interpreter debug facility, JES3 uses the message class specified by the DBGCLASS parameter on the STANDARDS initialization statement.
Converter/Interpreter Debug Facility

The following examples show correct and incorrect ways to specify the DEBUG control statement:

<table>
<thead>
<tr>
<th>Correct and Incorrect DEBUG statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALID</strong></td>
</tr>
<tr>
<td>DEBUG=ALL</td>
</tr>
<tr>
<td>DEBUG=ALL,CLASS=M</td>
</tr>
<tr>
<td>DEBUG=IJS,JST,JVT,CLASS=C</td>
</tr>
<tr>
<td>CLASS=4,DEBUG=ALL</td>
</tr>
<tr>
<td><strong>NOT VALID</strong></td>
</tr>
<tr>
<td>DEBUG=ANY</td>
</tr>
<tr>
<td>CLASS=*,DEBUG=ALL</td>
</tr>
<tr>
<td>DEBUG=(IJS,JST),CLASS=E</td>
</tr>
</tbody>
</table>

JCLTEST Facility

The JCLTEST facility generates a listing of interpreted JCL that has been processed by the MVS converter interpreter. You can use this listing to verify JCL results before allowing further processing of the job.

If you specify the PGM=JCLTEST parameter on an EXEC statement, JES3 stops processing the job when it completes converter/interpreter processing; the job is not scheduled for execution. The JCL and any applicable diagnostic messages are then printed.

If you want to use JCLTEST for a deferred-restart job, you must specify PGM=JCLTEST on the EXEC statement located after the one for the step names on the RESTART parameter of the JOB statement.

The output from the JCLTEST facility is a listing of interpreted JCL. The JCL below runs the JCLTEST facility.

```
// EXEC PGM=JCLTEST
```

JSTTEST Facility (Print JCL Allocation Decisions)

The JSTTEST facility allows you to obtain summary information that describes the resources required by a job in order to execute.

If you specify the PGM=JSTTEST parameter on an EXEC statement, JES3 uses the job's Job Summary Table (JST) to produce a summary of the devices that should be allocated to your job. JES3 then stops processing the job when it completes converter/interpreter processing; the job is not scheduled for execution. The JCL and JSTTEST output are then printed.

An example of output from the JSTTEST facility is included in the following. The JCL to run the facility is illustrated below:

```
//stepname EXEC PGM=JSTTEST
```
Converter/Interpreter Debug Facility

The JSTTEST facility uses the information in the job summary table (JST) to obtain information for the messages that describe the allocation decisions made during CI. Sets of messages are written to the JESMSG data set. The first set of messages describes the job step of the job. The information that describes a job step is the:

- step name
- procedure name
- step number

The second set of messages describes the job's data sets defined by the DD statements. The information generated by JSTTEST for a data set is the:

- ddname of each DD statement
- names of the devices
- setup status of the devices
- disposition and share status of the devices
- scratch status of each device
- device type (disk, tape, unit, or graphic)
- ring requirement (tape only)
- first 20 characters of the data set name
- serial of the first volume
- ddname of any explicit backwards reference that appears on the DD statement

To invoke the JSTTEST facility, enter the JCL statements in the job stream in place of one of the job's actual EXEC statements:

To use JSTTEST for a deferred-restart job, place the EXEC statement for JSTTEST so that it replaces one of the EXEC statements after the one for the step named on the RESTART parameter of the JOB statement.

Below is sample JCL used to invoke the JSTTEST facility for JES3-managed devices:

```jcl
//TESTCS JOB MSGCLASS=A,MSGLEVEL=(1,1)
//*PROCESS CI
  DEBUG=IJS,JST
//*PROCESS MAIN
//*PROCESS OUTSERV
//STEP1 EXEC PGM=JSTTEST
//DD1 DD DSN=DATA.ONE,DISP=OLD,UNIT=3380
//DD2 DD DSN=DUMMY.DS,DISP=OLD
```

Output generated from the JSTTEST facility using the sample JCL:
Converter/Interpreter Debug Facility

IAT6140  JOB ORIGIN FROM GROUP=LOCAL , DSP=CR , DEVICE RDR012 , 012
14:51:41  IAT4802  ATTEMPTED DEBUG OPTIONS ARE AS FOLLOWS
14:51:41  IAT4402  LOCATE FOR STEP=STEP1 DD=DD1 DSN=DATA.ONE
14:51:41  IAT4402  UNIT=3380 , VOL ($)=V3380A
14:51:41  IAT4401  LOCATE FOR STEP=STEP1 DD=DD2 DSN=DUMMY.DS
14:51:41  IAT4401  UNIT=3480 , VOL ($)=V3380A
14:51:41  IAT4402  UNIT=3480 , VOL ($)=V3380A
14:51:41  IAT4811  *STEP/DD PSTP/DEV MT/DV DISP/STEP# TYPE 1ST VOL BK-REF SCR RING DSN 20(BYT)
14:51:41  IAT4812  *STEP 1001
14:51:41  IAT4812  DD1 3380 Y/Y OLD/NONX DISK V3380A (NONE) NO NO DATA.ONE
14:51:41  IAT4812  DD2 3480 N/N OLD/NONX DISK V3480A (NONE) NO NO DUMMY.DS
14:51:41  IAT4810  JOB TERMINATED BY JES JESTEST FACILITY

Sample JCL used to invoke the JSTTEST facility for MVS-managed devices:

//TESTCS  JOB 'ACCT01','P.WEIGEL',MSGCLASS=A,MSGLEVEL=(1,1)
//STEP1  EXEC PGM=JSTTEST
//DD1  DD DSN=SMSX.NEW.DATA.SET01,DISP=(NEW,DATLG),
// STORCLAS=STANDARD,DATACLAS=PDS,MGMTCLAS=NEVER
//DD2  DD DSN=SMSX.NEW.DATA.SET01,DISP=SHR
//STEP3  EXEC PGM=IEFBR14
//DD3  DD DSN=SMSX.NEW.DATA.SET01,DISP=(SHR,DELETE)

/*

Output generated from the JSTTEST facility for MVS-managed devices using the sample JCL:

IAT6140  JOB ORIGIN FROM GROUP=LOCAL , DSP=CR , DEVICE RDR012 , 012
11:04:00  IAT4811  *STP/DD PSTP/DEV MT/DV DISP/STEP# TYPE 1ST VOL BK-REF SCR RING DSN(20BYT)
11:04:00  IAT4812  *STEP 1001
11:04:00  IAT4812  DD1 N/A N/N NEW/NONX SMS N/A (NONE) NO YES SMSX.NEW.DATA.SET01
11:04:00  IAT4812  DD2 N/A N/N SHR SMS N/A DD1 NO NO SMSX.NEW.DATA.SET01
11:04:00  IAT4812  DD3 N/A N/N SHR SMS N/A DD1 NO NO SMSX.NEW.DATA.SET01
11:04:00  IAT4810  JOB TERMINATED BY JES JESTEST FACILITY

Reporting a Problem to IBM

To reduce the quantity of APARs that must be returned because of insufficient documentation, and to improve APAR turnaround time, the following documentation is needed for all JES3 APARs submitted:

1. Problem description.
2. JES3 formatted dump with trace table entries and a dump of JESXCF address space with its dataspaces or JES3 dump data set (IBM suggests this dump because it includes the JESXCF address space and dataspaces)
3. Initialization stream listing.
4. Failing JCL.
5. Description of maintenance level of system.
6. The hardcopy log before failure took place and including the time of the dump. If the job causing the failure can be identified, the hardcopy log history of that job should be sent.
7. Output of applicable service aids.
8. Description and listing of user-modified modules which may relate to the problem.
9. Copy of JCL used in the JES3 start procedure.
Converter/Interpreter Debug Facility

If a failure causes the system to become inoperable, take a stand-alone dump. If the console is working, use the operator DUMP command. In both cases, ensure that the JES3 address space, the JESXCF address space and the JESXCF dataspaces are dumped. Format the JES3 address space and control blocks using IPCS. Ensure that the JES3 exit program IATABPR is active.

For problems in subsystem interface and associated service modules, a dump of address spaces other than JES3 may be required in addition to the dump of JES3 memory.

For problems in certain JES3 areas, additional information is desirable. This additional documentation requirement is described in the following paragraphs.

Initialization Problems
1. Listing of JES3OUT data set
2. Dump of system using INTDEBUG service aid
3. Use JES3 initialization stream checker

Input Service Problems
1. If incorrect control blocks are suspected, rerun the job with //*PROCESS CBPRNT and //*PROCESS OUTSERV statements.
2. For problems involving JCL processing, rerun the job with //*FORMAT PR,DDNAME=JCLIN to print the job's JCL.

BSC RJP Problems
1. Turn on the RJP trace facility for the failing line.
2. Run the RJPSNPS service aid during the failure transmission sequence.

GMS Problems
1. Enter the following commands for all mains:
   *I,G,main-name,G
   *I,G,main-name,S
   *I,G,main-name,C
2. Get a DISPLAY listing for the job in question.

MDS Problems
If a response to an *I,Q, *I,S,A ,U ,E ,R ,SS ,or SV command indicates the existence of a particular job in one of the following queues:
A MDS Allocate
U Unavailable
E Error
R Restart
SS System Select
SV System Verify

Detailed information should be obtained. List the reasons why the job is in the indicated main device scheduler (MDS) queue by issuing the command
Converter/Interpreter Debug Facility

If incorrect volume, data set, or device management is suspected, run the dump core DSP with the DMP option to capture the status of the resident queue.

1. If improper JCL handling is suspected, rerun the failing job with // EXEC PGM=JCLTEST.
2. For job-related problems, run the DC DSP with the SNP option.
3. Run the failing job with a */*PROCESS CI statement followed by

```
Running the Failing Job with DEBUG=ALL
```

```
DEBUG=ALL
/*PROCESS CBPRNT
/*PROCESS MAIN
/*PROCESS CBPRNT
/*PROCESS OUTSERV
```

C/I Problems

1. Run the failing job with a /*PROCESS CI statement followed by a DEBUG=ALL parameter statement.
2. For SETUP problems, rerun the job with a // EXEC PGM=JSTTEST statement.
3. Run the failing job with a /*PROCESS OUTSERV statement followed by a DEBUG=ALL parameter statement.
4. Supply information on user exits.
5. If C/I enters a wait state, do the following:
   - Analyze the following areas in the C/I FCTs:
     FCT
     AWAIT registers
   - Determine which FCT caused the AWAIT and why.
     a. Register 1 points to the FDB buffer address of the data buffer block (DAT).
     b. The DATDMC field contains the address of the data management control block (DMC).
     c. The DATFCT field contains the address of the function control block (FCT).
   - Often the problem is with the LOCATE FCT which runs under the CI FCT. The LOCATE FCT attaches a subtask TCB (IATLVIN). Look at that TCB and find out where it is waiting (module and sequence number).

DJC Problems

1. Provide DISPLAY DJC output.
2. Provide a description of the DJC network and all /*NET statements.
Output Service Problems

1. Rerun the failing job with /*PROCESS statements. Process CBPRNT just before output service.
2. If possible, generate a dump before JES3 writes the output scheduling elements (OSEs) to spool. This spooling occurs in the module IATOSDR.

Spool I/O Error Problems

If the I/O error occurred on a global main, save the output of the IOERR DSP. If the error occurred on a local main, try to recreate the error on a global main.

SNA RJP Problems

Turn on VTAM GTF trace for the failing LU. Use CID specified in the logon message. Trace LU and NCP buffers.

XCF Problems

When you report your problem to IBM, you may be told to turn on or off the SYSJES component tracing. For more information on this facility, see z/OS MVS Diagnosis: Tools and Service Aids.

JESXCF Problems

See z/OS MVS Programming: JES Common Coupling Services if you are experiencing JESXCF address space problems such as:

- JES3 DM759 abends
- JES3 DM762 abends
- System DC5 abends
- System EC5 abends
- IXZ0108E messages

This publication contains procedures on how to dump the JESXCF address space and all associated data spaces.
Converter/Interpreter Debug Facility
Chapter 2. General Diagnosis

This chapter describes two general areas of diagnosis in the following order:

- General System Diagnosis
- Formats of Trace Tables and JES3 Diagnostic Facilities

General System Diagnosis

This chapter discusses diagnostic facilities that you can use to obtain information about JES3.

Display DJC Network (DISPDJC)

Use the DISPDJC facility to display the status of a dependent job control network on a printer.

For each network the DISPDJC facility displays:

- The name of the network.
- The FLAG1 parameters as defined in the job network control block (JNCB).
- The FLAG2 parameters as defined in the JNCB.
- The number of jobs in the designated network.
- The number of jobs in the designated network that have completed.

For each job in the network the DISPDJC facility displays:

- The job name.
- The current status of the job (completed, active, inactive, or in network hold).
- The names of the jobs that are successors to the designated job and cannot be processed until its completion.
- The name and net-id of a successor in another network.
- The number of predecessor jobs that must complete before the designated job can be processed.
- The action to be taken when a predecessor job ends normally or abnormally.
- The FLAG1 attributes as defined in the network control block (NCB). The following are possible values for FLAG1:
  - X'01'  the successors to the job were updated
  - X'02'  the JCT is no longer in HOLD
  - X'04'  the job was updated by a predecessor
  - X'08'  the job completed but had to be resubmitted
  - X'10'  the job did not include a MAIN scheduler element (SE)
  - X'20'  an error occurred during CI that caused the job to fail
  - X'40'  the job has completed
  - X'80'  no changes have been made to the job's control blocks and the control blocks do not have to be written back to spool.

- The FLAG2 attributes as defined in the NCB. The following are possible values for FLAG2:
  - X'01'  the job abnormally ended
The job has been placed in NET HOLD
the NCB is missing a successor
the job is missing a successor in a sub-net
the job must be resubmitted
the NCB does not contain any information
the job segment scheduler (JSS) processed a NCB that did not contain
any information
the job has been placed in operator hold.

- The FLAG3 attributes as defined in the NCB.
- The FLAG4 attributes as defined in the NCB.
- The FLAG5 attributes as defined in the NCB. The following are possible values
  for FLAG5:
  - X'80' when the job is completed processing, it will release a dedicated device
  - X'40' input service is currently processing the job
  - X'20' the completed count has been updated
nn is the number of successors for the job.
- The FLAG6 attributes as defined in the NCB.

Example

```
*** NET-ID=DJC2 *** 98.089 15:08:36
** JNCB PARAMETERS ** FLAG1=00 FLAG2=00 TOTAL COUNT=0000027 COMPLETED=0000000 PENDING=0000000
H/R ACTION ATTRIBUTES ATTRIBUTES
JOB NAME STATUS SUCCESSORS COUNT PARAMETERS FLAG1 FLAG2 FLAG3 FLAG4 FLAG5 FLAG6
J24 IN NET HOLD J28 00001 NRML=D ABNML=D 00 00 24 00 00 88
J214 IN NET HOLD 00001 NRML=D ABNML=D 00 00 24 00 00 88
J224 IN NET HOLD 00001 NRML=D ABNML=D 00 00 24 00 00 88
J25 IN NET HOLD J210 00001 NRML=D ABNML=D 00 00 24 00 00 88
J215 IN NET HOLD 00001 NRML=D ABNML=D 00 00 24 00 00 88
J225 IN NET HOLD 00001 NRML=D ABNML=D 00 00 24 00 00 88
J27 IN NET HOLD J214 00001 NRML=D ABNML=D 00 00 24 00 00 88
J226 IN NET HOLD 00001 NRML=D ABNML=D 00 00 24 00 00 88
J216 IN NET HOLD 00001 NRML=D ABNML=D 00 00 24 00 00 88
J28 IN NET HOLD J216 00001 NRML=D ABNML=D 00 00 24 00 00 88
```

The Monitor DSP

You can use the monitor DSP to monitor a resource or queue based on information
you specify. JES3 starts the MONITOR DSP and monitors various queues and
resources automatically.

The information that the monitor DSP displays includes both of the following:
- The queue or resource the job or Function Control Table (FCT) is waiting for.
- The amount of time the job or FCT has been waiting.

The monitor DSP provides you with the ability to monitor how long a job or FCT has
been waiting for a specific JES3 function or resource. For example, if you want to
know when a job has been waiting for a CI DSP for more than five minutes, you can set the monitor DSP to issue a message when five minutes have elapsed.

The following is a chronological example of the monitor DSP in use:

**10:01 AM** You issue the \*START,MONITOR,DISPLAY command to examine the current monitoring parameters.

The system issues the following messages:

<table>
<thead>
<tr>
<th>ID</th>
<th>INTERVAL</th>
<th>THRESHOLD</th>
<th>COUNT</th>
<th>SUMMARY</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESOURCE</td>
<td>005</td>
<td>001</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>CIFSS</td>
<td>005</td>
<td>001</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>SYSEQ</td>
<td>005</td>
<td>005</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>ALLOCQ</td>
<td>000</td>
<td>000</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>VERIFYQ</td>
<td>000</td>
<td>000</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>DSPWAIT</td>
<td>005</td>
<td>005</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>IOWAIT</td>
<td>030</td>
<td>001</td>
<td>ALL</td>
<td>YES</td>
<td>INACTIVE</td>
</tr>
</tbody>
</table>

You see that CIFSS is being monitored among others.

**10:02 AM** You want to increase the frequency at which the C/I FSS queue is monitored from once every 5 minutes to once every minute.

You modify the monitoring parameters as follows:

\*START,MONITOR,ID=CIFSS,INTERV=1

The system issues:

IAT6402  MONITOR MODIFY PROCESSING COMPLETE

**10:03 AM** The PAYROLL job is scheduled to the C/I FSS.

The monitor DSP examines the C/I FSS queue because the one minute interval has expired and finds that no jobs have been waiting for more than one minute. The monitor DSP displays no information.

**10:04 AM** The AMORT job is scheduled to the C/I FSS.

The monitor DSP examines the C/I FSS queue and finds that the PAYROLL job has been scheduled for one minute. Since you issued SUMMARY=YES, the system issues the following messages:

IAT6395  00001 REQUEST(S) ACTIVE IN A C/I FSS
IAT6396  JOB PAYROLL (JOB01234) ACTIVE IN A C/I FSS
IAT6398  0000 HOURS 01 MINUTES 00 SECONDS

**10:05 AM** The monitor DSP examines the C/I FSS queue and finds that the PAYROLL job has been scheduled for two minutes and the AMORT job has been scheduled for one minute.

The system issues the following messages:

IAT6395  00001 REQUEST(S) ACTIVE IN A C/I FSS
IAT6396  JOB PAYROLL (JOB01234) ACTIVE IN A C/I FSS
IAT6398  0000 HOURS 02 MINUTES 00 SECONDS
IAT6396  JOB AMORT (JOB1235) ACTIVE IN A C/I FSS
IAT6398  0000 HOURS 01 MINUTES 00 SECONDS
Dump Core

Use the dump core (DC) facility to do the following:

- Display and then modify data in main storage
- Intercept program flow during processing
- Format control blocks for debugging purposes
- Find the location of a module in storage
- Display a requested portion of JES3’s storage
- Display the contents of a spool record

To use the dump core facility, perform the following:

1. Determine where the output from the dump core DSP should be routed. You specify the destination of the output by using the OUT= parameter on the *CALL DC command when you invoke the dump core facility or any *START DC command.

2. Invoke the DC DSP using the *CALL DC command.

3. Use Table 3 to locate the task you would like to perform and then the appropriate parameters you should use on the DC command to perform the task.

Table 3. Dump Core Commands

<table>
<thead>
<tr>
<th>If you want to:</th>
<th>Use this parameter:</th>
<th>On this command:</th>
</tr>
</thead>
<tbody>
<tr>
<td>invoke dump core</td>
<td></td>
<td>*CALL,DC</td>
</tr>
<tr>
<td>specify the device DC output should be routed to</td>
<td>OUT=</td>
<td>*CALL,DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*START,DC</td>
</tr>
<tr>
<td>display:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>registers at a specific address</td>
<td>TREGS</td>
<td>*START,DC</td>
</tr>
<tr>
<td>registers with snapshots at a specific address</td>
<td>REGSON</td>
<td>*START,DC</td>
</tr>
<tr>
<td>all active traps</td>
<td>ACTIVE</td>
<td>*START,DC</td>
</tr>
<tr>
<td>dynamic parch area within IATUTDC</td>
<td>PATCH</td>
<td>*START,DC</td>
</tr>
<tr>
<td>storage at a specific address</td>
<td>PTRAP</td>
<td>*START,DC</td>
</tr>
<tr>
<td>locate a module</td>
<td>FIND</td>
<td>*START,DC</td>
</tr>
<tr>
<td>locate a module in a load list</td>
<td>FIND=mod, SEQ=nn</td>
<td>*START,DC</td>
</tr>
<tr>
<td>display storage at a specific address</td>
<td>C=adr</td>
<td>*START,DC</td>
</tr>
<tr>
<td>alter data in storage</td>
<td>C=adr</td>
<td>*START,DC</td>
</tr>
<tr>
<td>set a trap at a specific address</td>
<td>C=adr</td>
<td>*START,DC</td>
</tr>
<tr>
<td>display a job’s control blocks or display JES3 control blocks</td>
<td>OPTION=</td>
<td>*START,DC</td>
</tr>
<tr>
<td>display the contents of a spool record</td>
<td>SPADDR=mmmm.rrrrrrr</td>
<td>*START,DC</td>
</tr>
<tr>
<td>intercept JES3’s processing</td>
<td>TRAP=adr</td>
<td>*START,DC</td>
</tr>
<tr>
<td>restart JES3 after DC waits at an address</td>
<td>TRAPGO</td>
<td>*START,DC</td>
</tr>
<tr>
<td>activate a trap</td>
<td>TRAPON</td>
<td>*START,DC</td>
</tr>
<tr>
<td>deactivate a trap</td>
<td>TRAPOFF</td>
<td>*START,DC</td>
</tr>
<tr>
<td>clear all waiting traps</td>
<td>TRAPGO</td>
<td>*START,DC</td>
</tr>
</tbody>
</table>
4. Determine if you will be setting traps to examine data at critical points during the processing of the program.
5. To clear any traps that are waiting, enter a *START,DC,TRAPGO command.
6. After you have identified where JES3 can be experiencing a problem, end the dump core DSP using the *CANCEL,DC command.

The following options can be used with the *START,DC, OPTION= parameter. See z/OS JES3 Commands for more information.

**OPTION=(name ,name1 ,...)**
The name of dump contents of storage option(s) to be displayed.

**DMP**
Causes all the standard formatting to be performed just as though a completely formatted JES3 dump was requested without system intervention.

**INS**
Displays information about internal reader control blocks.

**SNP**
Causes a dump of job-related control blocks to be recorded on the output device.

**(SNP=name)**
Causes a dump of a specific job-related control block to be recorded on the output device. You can request any one of the following control blocks:

<table>
<thead>
<tr>
<th>Name</th>
<th>Dumps the</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARL</td>
<td>Allocation resource list</td>
</tr>
<tr>
<td>ASR</td>
<td>Available spool records</td>
</tr>
<tr>
<td>JDAB</td>
<td>Job description accounting block</td>
</tr>
<tr>
<td>JDS</td>
<td>Job data set control block</td>
</tr>
<tr>
<td>RQ</td>
<td>Resqueue</td>
</tr>
<tr>
<td>FRP</td>
<td>Format parameter buffer</td>
</tr>
<tr>
<td>JST</td>
<td>Job summary table</td>
</tr>
<tr>
<td>JVT</td>
<td>Job volume table</td>
</tr>
<tr>
<td>TAT</td>
<td>Job or data set track allocation table</td>
</tr>
<tr>
<td>MOSE</td>
<td>Master output service element</td>
</tr>
<tr>
<td>OSE</td>
<td>Output service element</td>
</tr>
<tr>
<td><strong>DIAG</strong></td>
<td>Displays a formatted OSE, which includes such information as:</td>
</tr>
<tr>
<td></td>
<td>• class</td>
</tr>
<tr>
<td></td>
<td>• forms</td>
</tr>
<tr>
<td></td>
<td>• queue</td>
</tr>
<tr>
<td></td>
<td>• destination</td>
</tr>
</tbody>
</table>

Use **caution** when specifying this parameter. Control block displays are potentially very long, and output directed to the operator's console can disrupt normal operator/system interaction.

Depending on the command that you issue, the dump core facility responds with at least one of the following:

- Formatted storage
- Unformatted storage
- Messages
Displaying JES3 Statistics

Displaying JES3 Statistics (Statistics Data Area)

Statistics are collected by JES3 in a control block called the statistics data area (SDA). The statistics data area consists of a header (mapped by IATYSDA) and function dependent extensions.

The following types of statistics are collected:

- Initialization related statistics (mapped by macro IATYSDA1)
  The following is an example of the type of information collected about JES3 initialization:
  - Total initialization time
  - Times for different phases of initialization (job validation, read initialization statements, RJP initialization, device initialization)
  - Number of jobs in the queue (total, DJC, in main, in output service)
  - I/O counts during job validation for different control blocks
- Restart/Connect related statistics (mapped by macro IATYSDA2)
  The following is an example of the type of information collected about JES3 restart/connect processing:
  - MDS restart time and number of jobs processed
  - Total connect time for each system
  - Times for the different phases of connect for each system (for example, initial verify time)
- Output service related statistics (mapped by macro IATYSDA3)
  The following is an example of the type of information collected about output service:
  - Output service restart time

You can use dump core to dump the information in the Statistics Data Area by issuing the following command:
*S,DC,OPTION=SDA

The following is an example of the output that is produced when the *S,DC,OPTION=SDA command is issued.
In order to determine what information is present in the SDA, you need to assemble macro IATYSDA and match the offsets in the assembly to the offsets in the Dump Core Output.

Displaying Initialization Related Information

When the initialization stream is read, the initialization statements are converted into an internal format and written to the spool or the checkpoint data set.

There are two types of information created from the initialization statements:

1. Intermediate text (ITX) - Intermediate text is a spool file that contains information from an initialization statement. Not all initialization statements cause an intermediate text file to be created.

2. Initialization Checkpoint Record (ICP) - The Initialization Checkpoint Record contains the checkpointed portions of the following control blocks:
   - IATYTVT - Transfer Vector Table (TVT)
   - IATYTVTC - Checkpointed TVT Extension (TVTC)
   - IATYSVT - Subsystem Vector Table (SSVT)
   - IATYOSD - Output Service Data Area (OSD)
   - IATYINT - Initialization Data CSECT (INT)

Information that does not go into the intermediate text files are typically put into one the above control blocks. The checkpointed portions of those control blocks are used to create the ICP which is written to the JES3 checkpoint data set.
Displaying Initialization Related Information

You can use Dump Core to dump the intermediate text files by issuing one of the following commands:

*S,DC,OPTION=ITX - Dump all of the intermediate text files.
*S,DC,OPTION=(ITX=fileid) - Dump a specific intermediate text file.

To dump a specific intermediate text file, an intermediate text file id must be specified. The following table shows the file ids that can be specified and the mapping macros or DSECT names that are used to map the intermediate text records:

<table>
<thead>
<tr>
<th>File id on *S,DC,OPTION= Command</th>
<th>Initialization Statement(s)</th>
<th>Mapping Macro or DSECT location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIPARM</td>
<td>CiPARM</td>
<td>IATYCTX</td>
<td>CIPARM intermediate text</td>
</tr>
<tr>
<td>CLASS</td>
<td>CLASS (MDEPTH parameter)</td>
<td>DSECT MTABLE in IATINCL</td>
<td>See initialization statement description</td>
</tr>
<tr>
<td>CLASS</td>
<td>CLASS (MLIMIT parameter)</td>
<td>DSECT MTABLE in IATINCL</td>
<td>Each record is preceded by a two byte id that identifies the type of record</td>
</tr>
<tr>
<td>CLASS</td>
<td>CLASS (TLIMIT parameter)</td>
<td>DSECT MTABLE in IATINCL</td>
<td>CLASS(MDEPTH) - 5</td>
</tr>
<tr>
<td>CLASS</td>
<td>CLASS (SYSTEM parameter)</td>
<td>DSECT MCSTABLE in IATINCL</td>
<td>CLASS(MLIMIT) - 7</td>
</tr>
<tr>
<td>GROUP (EXRESC)</td>
<td></td>
<td>DSECT MGXSTART in IATYMGP</td>
<td>CLASS(TDEPTH) - 6</td>
</tr>
<tr>
<td>SELECT</td>
<td></td>
<td>IATYMPS</td>
<td>CLASS(SYSTEM) - 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSECT SELCGST in IATINSL</td>
<td>GROUP(EXRESC) - 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SELECT(class/group list) - 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SELECT(other) - 2</td>
</tr>
<tr>
<td>COMPACT</td>
<td>COMPACT</td>
<td>IATYCTE</td>
<td>COMPACT intermediate text</td>
</tr>
<tr>
<td>CONSTD</td>
<td>CONSTD</td>
<td>Label CSTDREC in IATINPK</td>
<td>CONSTD intermediate text</td>
</tr>
<tr>
<td>DEADLINE</td>
<td>DEADLINE</td>
<td>IATYDLT (DSECT DLTENTRY)</td>
<td>DEADLINE intermediate text</td>
</tr>
<tr>
<td>DYNALDSN</td>
<td>DYNALDSN</td>
<td>IATYDYD</td>
<td>DYNALDSN intermediate text</td>
</tr>
<tr>
<td>FENCE</td>
<td>GROUP (EXRESC and DEVPOOL parameters)</td>
<td>IATYDFC</td>
<td>Device fence intermediate text from EXRESC and DEVPOOL parameters</td>
</tr>
<tr>
<td>FSSDEF</td>
<td>FSSDEF</td>
<td>DSECT FDEFAREA in IATINFS</td>
<td>FSSDEF intermediate text</td>
</tr>
<tr>
<td>HWSNAME</td>
<td>HWSNAME</td>
<td>IATYHTX</td>
<td>HWSNAME intermediate text</td>
</tr>
<tr>
<td>MAINPROC</td>
<td>MAINPROC (except MDEPTH MLIMIT, TLIMIT, SYSTEM parameters)</td>
<td>IATYMPE IATYMCL</td>
<td>See initialization statement description</td>
</tr>
<tr>
<td></td>
<td>GROUP (except EXRESC parameter)</td>
<td>IATYMGP</td>
<td>Each record is preceded by a two byte id which identifies the type of record</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MAINPROC - 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CLASS - 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GROUP - 4</td>
</tr>
<tr>
<td>MSGROUTE</td>
<td>MSGROUTE</td>
<td>IATYINM</td>
<td>MSGROUTE intermediate text</td>
</tr>
</tbody>
</table>
## Displaying Initialization Related Information

<table>
<thead>
<tr>
<th>File id on *S,DC,OPTION=Command</th>
<th>Initialization Statement(s)</th>
<th>Mapping Macro or DSECT location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NETSERV</td>
<td>NETSERV</td>
<td>DSECT NTSVSTRTR in IATYNSTV</td>
<td>NETSERV intermediate text</td>
</tr>
<tr>
<td>NJERMT</td>
<td>NJERMT</td>
<td>DSECT NJEENTRY in IATYNJY</td>
<td>NJERMT intermediate text</td>
</tr>
<tr>
<td>RESDSN</td>
<td>RESDSN</td>
<td>None - first byte = length, remaining bytes = data set name</td>
<td>RESDSN intermediate text</td>
</tr>
<tr>
<td>RJPLINE</td>
<td>RJPLINE</td>
<td>DSECT RLNSTART in IATYRLT</td>
<td>RJPLINE intermediate text</td>
</tr>
<tr>
<td>RJPTERM</td>
<td>RJPTERM</td>
<td>DSECT RTMSTART in IATYRLT</td>
<td>RJPTERM intermediate text</td>
</tr>
<tr>
<td>RJPWS</td>
<td>RJPWS</td>
<td>DSECT RTMSTART in IATYRLT</td>
<td>Resident Line/Terminal table for RJPWS</td>
</tr>
<tr>
<td>RMTCONS</td>
<td>CONSOLE</td>
<td>IATYINC</td>
<td>CONSOLES intermediate text for remote consoles</td>
</tr>
<tr>
<td>SETNAME</td>
<td>SETNAME</td>
<td>DSECT STNAMES in IATINMD</td>
<td>SETNAME intermediate text</td>
</tr>
<tr>
<td>SETPARAM</td>
<td>SETPARAM</td>
<td>DSECT SPARM in IATINMD</td>
<td>SETPARAM intermediate text</td>
</tr>
<tr>
<td>SETACC</td>
<td>SETACC</td>
<td>Label ACCVOL in IATINMD</td>
<td>SETACC intermediate text</td>
</tr>
<tr>
<td>SETRES</td>
<td>SETRES</td>
<td>Label SETRESVL in IATINMD</td>
<td>SETRES intermediate text</td>
</tr>
<tr>
<td>SETUNITS</td>
<td>DEVICE (XTYPE and XUNIT parameters)</td>
<td>DSECT SETINIT in macro IATYINT</td>
<td>SETUNITS intermediate text</td>
</tr>
<tr>
<td>SOCKET</td>
<td>SOCKET</td>
<td>DSECT SOCKSTRTR in IATYSOCK</td>
<td>SOCKET intermediate text</td>
</tr>
<tr>
<td>SUPUNITS</td>
<td>DEVICE (parms other than XTYPE, XUNIT)</td>
<td>IATYSUP</td>
<td>SUPUNITs intermediate text</td>
</tr>
<tr>
<td>SYSOUT</td>
<td>SYSOUT</td>
<td>IATYSCT</td>
<td>SYSOUT intermediate text</td>
</tr>
<tr>
<td>WSB</td>
<td>RJPWS</td>
<td>IATYWSB</td>
<td>Workstation Blocks for SNA RJP workstations</td>
</tr>
<tr>
<td>USER1</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER2</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER3</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER4</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER5</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER6</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER7</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER8</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER9</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
<tr>
<td>USER10</td>
<td>User defined</td>
<td>User defined</td>
<td>User defined</td>
</tr>
</tbody>
</table>

In the following example, the *S,DC command is used to dump the CIPARM intermediate text:
Displaying Initialization Related Information

*S,DC,OPTION=(ITX=CIPARM)

In the following example, the *S,DC command is used to dump the Initialization Checkpoint Record.
*S,DC,OPTION=ICP
Displaying Output Scheduling Elements

You can use the dump core command to provide diagnostic information for a job's output scheduling element (OSE) control block. When you use the dump core command and the keyword DIAG with the OPTION=(SNP=OSE) keyword, you will get a formatted display of the OSE. The formatted version of the OSE shows characteristics associated with the scheduling of SYSOUT to print devices. Using the dump core command in this way greatly reduces the manual formatting of a 'raw' OSE dumped from spool. Below is the JCL for a job that creates SYSOUT on the WTR queue, the HOLD queue, and the BDT queue. The JCL includes the //OUTPUT and //*FORMAT statements.
Displaying Output Scheduling Elements

The following dump core display is for the above job's OSE. Note that:

1. The first OSE variable section is marked complete (CMPLT=Y). Data sets JESMSGLG, JESJCL, and JESYSMSG were processed by device PRT002. Therefore, the data set name is not displayed.

2. The /*FORMAT statement exists for all OSEs created from a SYSUT2 DD statement. The /*FORMAT statement was not applied to the SYSUT2 on the HOLD queue. /*FORMAT statements are not applied to SYSOUT on the HOLD queue. Use the "MODIFY,U,NQ=WTR command to move the SYSOUT to the WTR queue to allow the system to apply the /*FORMAT statements to the SYSOUT on the HOLD queue.

3. The SYSUT2 data set for STEP2 has an OSE for the //OUTPUT statement and the /*FORMAT statement. When a data set is directly referenced by a //OUTPUT statement and a /*FORMAT statement, JES3 creates an OSE for both references.

4. FMDF=Y is set to reflect the FORMDEF specification on the //OUTPUT statement for STEP2.SYSUT. This indication suggests that at least one data set entry represented by this variable section contains a FORMDEF specification. This is also true of PAGEDEF and IPADDR.

5. The characteristics for SYSOUT destined for a SNA node are in the NJE
Data set header. The OSE does not contain this information. Consequently, SYSOUT on the BDT queue does not display SYSOUT characteristics.
Displaying Output Scheduling Elements

Figure 2. Dump Core Display for Job OSE (Part 2 of 2)

If you omit the DIAG keyword from the dump core command when displaying the OSE, JES3 displays the 'raw' OSE. Additional information is displayed during this processing. If an OUTPUT statement exists for a data set, the 'raw' scheduler work block (SWB) information is displayed following the OSE data set section it represents. If the 'raw' OSE was displayed for the above job, the OUTPUT statement information would be displayed following the display of the OSE data set section for STEP1.SYSUT2. This SWB information is shown below:

```
OUTPUT 00000000 E201D7C6 021C001C D6E4E3D7 04E34040
       06E4E3F1 40404040 00000000 00160001 *SJPF....OUT1         *.
SWBTU 00000000 00040D4D 0C101017 00010000 001D0001
       0006E207 D9D5E340  *.MODA.........SPRNT *
```

Displaying Single Track Table (STT) Information

The single track table (STT) is used to allocate spool space to system related control blocks. Its purpose is to be economical with spool space by allocating only one record at a time instead of an entire track group.

The STT contains the following information:
Displaying Single Track Table Information

- DJC net control blocks
- Checkpoint records for:
  - Main Device Scheduler (MDS)
  - Generalized Main Scheduling (GMS)
  - Locate
  - Dynamic allocation
  - Volume unavailable table
  - Online devices
  - FSS status
  - Deadline control blocks
  - JESNEWS
  - Control blocks for DSP's invoked through the "CALL command
  - JOB0 control blocks (for example, JDS and OSE)

The STT is defined using the STT or STTL parameters on the FORMAT and TRACK statements. These parameters allow you to control which spool data sets contain the STT. The STT that is allocated using the FORMAT and TRACK statements is called the preallocated or primary STT. If the preallocated STT fills up, JES3 gets a track group from the default partition and creates an expansion STT. When an expansion STT is created, it is never deleted. Therefore, if you want to control which spool data sets contain STT information, you should define the preallocated STT large enough so that it never expands. See z/OS JES3 Initialization and Tuning Reference for more information on allocating the STT.

You can use dump core to display STT information. This is useful for determining which spool records reside on a spool data set that will be replaced or deleted, and for displaying information for diagnostic purposes. The information in the STT can be displayed in one of the following ways:

- *S,DC,OPTION=STT - Formats the spool address and control block identifier associated with each allocated spool record. If the spool record does not have a valid IATYSRF format, the first X'80' bytes of the record will be formatted.
- *S,DC,OPTION=(STT=ALL) - Formats the spool address and control block identifier and also dumps the entire spool record.
- *S,DC,OPTION=(STT=nnnn) - Formats the spool address and control block identifier and also dumps nnnn hex bytes of the spool record.
- *S,DC,OPTION=STT=id' - Formats those spool records in the STT that contain the specified control block identifier. The entire spool record is formatted. The control block identifier must be four characters or less.

Note: When a spool record in the STT is displayed, only the non-zero portion of the spool record is displayed. For example, if a spool record contains zeros starting at offset X'100' into the record, and you request that X'200' be dumped, only X'100' bytes will be dumped.

The following is an example of the output that is produced when the *S,DC,OPTION=STT command is issued:
Displaying Single Track Table Information

The following is an example of the output that is produced when the *S,DC,OPTION=(STT=10) command is issued:

```plaintext
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```
Displaying Single Track Table Information

The following is an example of the output that is produced when the
*S,DC,OPTION=(STT='OSE') command is issued:

```
STT SEGMENT: SPOOL1 TOTAL = 00024 AVAIL = 00000
STT SEGMENT: SPOOL1 TOTAL = 00012 AVAIL = 00004 DYNAMIC

SPOOL RECORD: 0002.0000124B - OSE
00000000-00020000 124B0001 D6E2C540 00000000 *........OSE ....*
00000010-00000000 00000000 5CA2A3A3 00600060 *........*stt.--.*
00000020-00000000 00000000 00000000 00000000 *................*
00000030-00000000 00000000 00000000 00000000 *................*
00000040-00000000 00000000 00000000 00000000 *................*
00000050-00000000 00000000 00000000 00000000 *................*
00000060-FFFFFFFF *.... *
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

Displaying Contents of a Spool Record

When diagnosing problems, it may be useful to view the contents of a spool record. You can use dump core to dump the spool record having a spool address of
```
mmmm.rrrrrrrr
```
by issuing the following command:

```
*S,DC,SPADDR=mmmm.rrrrrrrr
```

- The `mmmm` portion of the spool address is the spool extent address number (module) where the record resides.
- The `rrrrrr` portion of the spool address is the spool record number within the spool extent.

The following is an example of the output that is produced when you issue
```
*S,DC,SPADDR=0002.0000124B
```

```
SPOOL RECORD: 0002.0000124B
00000000-00020000 124B0001 D6E2C540 00000000 *........OSE ....*
00000010-00000000 00000000 5CA2A3A3 00600060 *........*stt.--.*
00000020-00000000 00000000 00000000 00000000 *................*
00000030-00000000 00000000 00000000 00000000 *................*
00000040-00000000 00000000 00000000 00000000 *................*
00000050-00000000 00000000 00000000 00000000 *................*
00000060-FFFFFFFF *.... *
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

Note: When a spool record is displayed, only the non-zero portion of the spool record is displayed. For example, if a spool record contains zeros starting at offset X'100' into the record, and you request that X'200' be dumped, only X'100' bytes will be dumped.

Format of Trace Tables and JES3 Diagnostic Facilities

Format of a JES3 Event Trace Table

The JES3 event tracing facility allows the system programmer to obtain diagnostic information pertinent to a JES3 system failure. The information appears in the JES3 abend dump each time an abend dump is displayed. In addition, the operator can also request that the information be displayed on the console.

JES3 uses up to four separate trace tables that are merged during abend formatting:
JES3 Event Trace Table

- EVENT
- NUCPATH
- AUXPATH
- DSPACE

The DSPACE is activated by the "MODIFY,E,START= tracename" command. An IBM Service Representative may ask you to activate the trace when additional tracing information is required.

The DSPACE trace requires:
- Sufficient paging space allocated to hold all the data space pages. The default size of the data space is 10 megabytes.
- Sufficient amount of space in your dump data sets (if those data sets are pre-allocated).

The trace is deactivated when the "MODIFY,E,STOP= tracename" command is entered or when JES3 is stopped.

You can request that a subset of tables be used for formatting by specifying the TABLE keyword on the IPCS VERBX JES3 command. For example:

VERBX JES3 'OPTION=TRC,TABLE=(EVENT,NUCPATH)'.

You can also limit the trace format to specific identifiers. For example:

VERBX JES3 'OPTION=TRC,ID=(37,38,39)'.

The trace table can contain one or more entries. Each entry represents an event that occurred in the address space. There is a unique identifier assigned to each JES3 event. JES3 traces all events, however, the installation can control the events that are traced through the use of modify commands. For additional information on the commands used to trace events see [z/OS JES3 Commands](https://www.ibm.com/support/knowledgecenter/SSEPGG_1.10.0/com.ibm.jes.doc/ datapage.htm).

Each entry contains a header that may be followed by additional information, such as the contents of the registers at the time of the trace or data in a work area. The header for an entry contains at least the following information:
- The FCT that was active when the trace was taken
- A descriptor that identifies the function being traced
- The name of the module that issued the trace request
- The address of the active FCT
- A time stamp
- A identification number
- The address of the task control block (TCB)

The C/I FSS address space has its own trace table in private area subpool 230 managed by a copy of module IATGRTX loaded into the FSS address space. When formatting a C/I FSS address space, the events that occurred in the C/I FSS address space are traced.

Additionally, all FSS address spaces (both C/I and WTR) have a private FSS trace table, which is contained in load module IATFCTR. These traces cannot be affected by the "F,E" command.

For each trace id, Table 4 provides:
- The module that issues the IATXTTRC macro to record the event
- A description of the event
- Information in the entry other than the header for the entry
### JES3 Event Trace Table

**Table 4. JES3 Trace Events**

<table>
<thead>
<tr>
<th>Trace ID</th>
<th>Module of origin</th>
<th>Description of Trace Origin (function)</th>
<th>Additional data (by word number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IATGRTX</td>
<td>*F E,TRAP=nnnnn and location nnnnnn has been reached</td>
<td>None</td>
</tr>
<tr>
<td>24</td>
<td>IATDMNC</td>
<td>ZEROCORE</td>
<td>1: Return address 2: Address of entry point 3: Address area 4: Count</td>
</tr>
<tr>
<td>25</td>
<td>IATDMGB</td>
<td>I/O completion</td>
<td>1: Address of data queue element</td>
</tr>
<tr>
<td>26</td>
<td>IATDMGB</td>
<td>USAM track allocation</td>
<td>1: Address of staging area</td>
</tr>
<tr>
<td>27</td>
<td>IATDMDT</td>
<td>MOVEDATA</td>
<td>1: Return address 2: TO address 3: FROM address 4: Count</td>
</tr>
<tr>
<td>28</td>
<td>IATGRSV</td>
<td>Entry to ASAVE (CALL)</td>
<td>1: Register 13 from calling routine 2: Return address 3: Entry point to called routine 4: Register 0 5: Register 1 6-16: Registers 2-12 from calling routine (register 10 is caller's base)</td>
</tr>
<tr>
<td>29</td>
<td>IATGRSV</td>
<td>Exit from ASAVE (RETURN)</td>
<td>1: Address of save area from pool 2: Return address to calling routine (based on return code) 3: Register 15 from called routine 4: Register 0 from called routine 5: Register 1 from called routine 6-16: Registers 2-12 of the calling routine</td>
</tr>
<tr>
<td>30</td>
<td>IATGRCT</td>
<td>Ready DSP dispatched by MFM</td>
<td>1: Posted ECF address 2: Posted ECF content</td>
</tr>
<tr>
<td>32</td>
<td>IATSIEM</td>
<td>End-of-memory call</td>
<td>1-7: Registers 2-8 8: Address of SSVT 9-35: SEL data, starting at label SELSEC1</td>
</tr>
<tr>
<td>37</td>
<td>IATGRCT</td>
<td>IATXELA macro</td>
<td>1: Register 14 - return address 2: Register 15 - entry point of the routine 3: Register 0 - address of ECF 4: Register 1 - ECF mask 5: Register 2 - address of ECF list control block (IATYLELB)</td>
</tr>
<tr>
<td>38</td>
<td>IATGRCT</td>
<td>IATXELD macro</td>
<td>1: Register 14 - return address 2: Register 15 - entry point of the routine 3: Register 0 - relative position number of ECF entry 4: Register 1 - address of ECF list control block (IATYLELB)</td>
</tr>
<tr>
<td>39</td>
<td>IATGRCT</td>
<td>IATXELS macro</td>
<td>1: Register 14 - return address 2: Register 15 - entry point of the routine 3: Register 0 - relative position number of ECF entry 4: Register 1 - address of ECF list control block (IATYLELB)</td>
</tr>
<tr>
<td>40</td>
<td>IATDMNC</td>
<td>IATXIOX macro</td>
<td>1: Register 14 - Return address 2: Register 15 - Entry point address 3: Dump code 4: Reason code 5: Control block identifier 6: FDB address</td>
</tr>
</tbody>
</table>
## JES3 Event Trace Table

**Table 4. JES3 Trace Events (continued)**

<table>
<thead>
<tr>
<th>Trace ID</th>
<th>Module of origin</th>
<th>Description of Trace Origin (function)</th>
<th>Additional data (by word number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>IATMSMS</td>
<td>Determine which initiators to stop</td>
<td>(No additional data defined for IDs 41 through 58)</td>
</tr>
<tr>
<td>42</td>
<td>IATMSMS</td>
<td>Staging area purge (SSISERV)</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>IATMSMS</td>
<td>JOB select for a task which has been started</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>IATMSMS</td>
<td>End of job step task (EOT)</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>IATMSJT</td>
<td>End of job (EOJ)</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>IATMSMS</td>
<td>End of initiator (EOM)</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>IATMSMS</td>
<td>VS initiator request that job be reenqueued</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>IATMSMS</td>
<td>Determine number of initiators to start or the number to start for a group</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>IATMSMS</td>
<td>Checkpoint GMS data in MPCPROC</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>IATMSMS</td>
<td>RESQUEUE add</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>IATMSMS</td>
<td>Logical storage update</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>IATMSMS</td>
<td>ECF posted for error recovery</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>IATMSMS</td>
<td>Inspect job select queue element</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>IATMSMC</td>
<td>Job flush (*S,main,FLUSH command or job IPLed off main)</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>IATMSMS</td>
<td>Cannot start initiator</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>IATMSMS</td>
<td>Out-of-tracks conditions for GMS</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>IATMSMS</td>
<td>End of job (EOJ) or end of initiator (EOM) during job select</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>IATABMN</td>
<td>JES3 ESTAE routine entered</td>
<td>1,2: Registers 0 and 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,4: PSW at time of failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: ABEND code</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6: Additional processing request (1 byte) instruction length code (1 byte) interrupt code (2 bytes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7: Error type (1 byte) additional error information (3 bytes) The error type and additional error information description is in the field SWDAFLGS of the the SDWA (HASDWA).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8: Machine check error information (1 byte) FSINDEX1 (1 byte) TVTFSFG1 (1 byte) ESTAE exit level (1 byte)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9: FCTACTIV at time of failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-25: Registers 0 through 15</td>
</tr>
<tr>
<td>61</td>
<td>IATABRT</td>
<td>Entry to JESTAE exit routine</td>
<td>1: Address of JESTAE exit routine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: Address of FSWA</td>
</tr>
<tr>
<td>62</td>
<td>IATABRT</td>
<td>Exit from JESTAE exit routine</td>
<td>1: Return code from JESTAE exit routine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: Address of JESTAE retry routine if return code is 4</td>
</tr>
<tr>
<td>63</td>
<td>IATDMGB</td>
<td>I/O error</td>
<td>None</td>
</tr>
<tr>
<td>Trace ID</td>
<td>Module of origin</td>
<td>Description of Trace Origin (function)</td>
<td>Additional data (by word number)</td>
</tr>
<tr>
<td>----------</td>
<td>------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>65</td>
<td>IATRJM6</td>
<td>Event on RJP line</td>
<td>1: Identifier of event type (see “RJP Debugging Aids”) 2: Action taken 3-4: Line name 5: Register 0 6: Register 1 7: Register 2 8: Register 3 9: Register 4</td>
</tr>
<tr>
<td>66</td>
<td>IATDMNC</td>
<td>JES3 file directory FIND routine</td>
<td>1: Return address 2: Entry address 3: TAT FDB address 4: FDB address</td>
</tr>
<tr>
<td>67</td>
<td>IATDMNC</td>
<td>JES3 file directory ADD routine</td>
<td>1: Return address 2: Entry address 3: TAT FDB address 4: FDB address</td>
</tr>
<tr>
<td>68</td>
<td>IATDMNC</td>
<td>JES3 file directory DELETE routine</td>
<td>1: Return address 2: Address of entry point of function 3: Address of FDB 4: Address of file directory entry</td>
</tr>
<tr>
<td>69</td>
<td>IATGRCT</td>
<td>Multifunction Monitor (AWAIT)</td>
<td>1: Address of ECF 2: ECF mask (If this is the list form of AWAIT, the above two words are repeated for each entry in the list)</td>
</tr>
<tr>
<td>71</td>
<td>IATDMJA</td>
<td>JDS access routine for user data set allocation</td>
<td>1: Return address 2: Address of staging area</td>
</tr>
<tr>
<td>72</td>
<td>Many MDS modules</td>
<td>MDS trace record from the module indicated within the record</td>
<td>Variable number of words, in EBCDIC</td>
</tr>
<tr>
<td>75</td>
<td>IATFCxx IATFPxx IATSICD</td>
<td>FSS trace record from the module indicated within the record.</td>
<td>See “Functional Subsystem (FSS) Address Space Trace Output” in z/OS JES3 Diagnosis for a description of the FSS trace records. <strong>Note:</strong> This ID will appear in the JES3 FSS formatted trace.</td>
</tr>
<tr>
<td>76</td>
<td>IATOSENF</td>
<td>Indicates an ENF signal was issued</td>
<td>1: Register 2 - ENF exit routine address 2: Register 3 - Work register 3: Register 4 - Address of the caller's parameter list 4: Register 5 - Work area address 5: Register 6 - Work register 6: Register 7 - Work register 7: Register 8 - Return code from the ENFREQ macro 8: Register 9 - Work register</td>
</tr>
<tr>
<td>77</td>
<td>IATCNNF</td>
<td>Indicates an ENF signal was received by JES3 from MCS.</td>
<td>1: Qualifier code</td>
</tr>
<tr>
<td>78</td>
<td>IATMDxx</td>
<td>Indicates the status of an SMS-managed volume has changed</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>IATCNDDxx</td>
<td>DLOG event</td>
<td>Variable, see macro IATYDTR</td>
</tr>
<tr>
<td>80</td>
<td>IATGRCT IATXSTMD</td>
<td>(Setmode)</td>
<td>1: Contains following, Byte 0 - the option byte from R0 at entry to setmode. The high order bit of this byte indicates the task mode requested. 1 indicates IATAUX task mode. 0 indicates IATNUC task mode. Byte 1 - FCTMODE field at entry to setmode Byte 2 - TVTATFLG field at entry to setmode Byte 3 - unused 2: Return address</td>
</tr>
<tr>
<td>81</td>
<td>IATMOTR</td>
<td>The traced parameters of the *F,E command are: ON OFF EXEL=RESET EXCL=id</td>
<td>1-3: Contains parameters (in hexadecimal) from the *F,E command</td>
</tr>
</tbody>
</table>
### JES3 Event Trace Table

#### Table 4. JES3 Trace Events (continued)

<table>
<thead>
<tr>
<th>Trace ID</th>
<th>Module of origin</th>
<th>Description of Trace Origin (function)</th>
<th>Additional data (by word number)</th>
</tr>
</thead>
</table>
| 82       | IATOSPD          | Indicates that a PSO staging area has been received by the PSO DSP | 1: RESQUEUE address  
           |                  |                                        | 2: SSOB header address  
           |                  |                                        | 3: WSP address  
           |                  |                                        | 4: Staging area address |
| 83       | IATOSSD          | Indicates that a SYSOUT application program interface staging area has been received by the SYSOUT application program interface DSP | 1: Checkpoint job's RESQUEUE address or zero  
           |                  |                                        | 2: SSOB header address  
           |                  |                                        | 3: COW address  
           |                  |                                        | 4: Staging area address |
### JES3 Event Trace Table

#### Table 4. JES3 Trace Events (continued)

<table>
<thead>
<tr>
<th>Trace ID</th>
<th>Module of origin</th>
<th>Description of Trace Origin (function)</th>
<th>Additional data (by word number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>IATDJSV</td>
<td>DJ server address space events</td>
<td>1–8: Registers 2–9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9–10: &quot;IATDJSV&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11–12: Event Type:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• DYNALLOC - Dynamic allocation request has completed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• WAKEUP - DJ address space has been posted to process a request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• OPEN - Open request has completed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• CLOSE - Close request has completed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• EOV - End of volume (EOV) request has completed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• EXCP - Execute channel program (EXCP) has completed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• RETURN - Server address space has been told to terminate by JES3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• EXIT - Server address space is terminating; this will occur as a result of a RETURN request or when the server address space determines that JES3 is down.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• JES3DOWN - The timer exit has determined that JES3 is down.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13: DJ server job id</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14: ASCB address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15: DJ FCT address</td>
</tr>
</tbody>
</table>

**WAKEUP Requests**

|          |                  |                                        | 16: Function code from the ECB   |

**DYNALLOC Requests**

|          |                  |                                        | 16: SVC 99 request block address |
|          |                  |                                        | 17: DYNALLOC return code         |
|          |                  |                                        | 18: Bytes 1–2: DYNALLOC error reason code. Bytes 3–4: DYNALLOC information reason code |

**OPEN Requests**

|          |                  |                                        | 16: DCB address                   |
|          |                  |                                        | 17: OPEN return code              |
|          |                  |                                        | 18: First four bytes of current volser |
|          |                  |                                        | 19: Bytes 1–2: last two bytes of current volser. Bytes 3–4: zero |

**CLOSE Requests**

|          |                  |                                        | 16: DCB address                   |
|          |                  |                                        | 17: CLOSE return code             |

**EOV Requests**

|          |                  |                                        | 16: DCB address                   |
|          |                  |                                        | 17: EOV return code               |
|          |                  |                                        | 18: First four bytes of current volser |
|          |                  |                                        | 19: Bytes 1–2: last two bytes of current volser. Bytes 3–4: zero |
### JES3 Event Trace Table

#### Table 4. JES3 Trace Events (continued)

<table>
<thead>
<tr>
<th>Trace ID</th>
<th>Module of origin</th>
<th>Description of Trace Origin (function)</th>
<th>Additional data (by word number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>84 cont.</td>
<td>IATDJSV</td>
<td>DJ server address space events.</td>
<td>EXCP Requests</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16: IOB address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17: I/O completion ECB contents</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>19: First four bytes of CSW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20: Bytes 1–3: last three bytes of CSW. Byte 4: zero.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>JES3DOWN Requests</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16–17: Set to POST if the server address space was posted for termination. Set to CANCEL if the server address space was cancelled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For RETURN and EXIT requests, there is no additional information</td>
</tr>
<tr>
<td>105</td>
<td>IATDMNC</td>
<td>Traced JSAM buffer contents on SRF mismatch for a JESREAD ABEND DM704, RC X'14'.</td>
<td>1: Register 2 - work register</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: Register 3 - return code</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: Register 4 - FDB address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: Register 5 - JQX address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: Register 6 - return address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6: Register 7 - SRF identifier</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7: Register 8 - buffer address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8: Register 9 - work register</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9-488 or 1023: Failing buffer contents</td>
</tr>
<tr>
<td>107</td>
<td>IATGRQC</td>
<td>Error exit from IATXGCL</td>
<td>1-8: Registers 2-9 for IATGRQC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9-13: Caller's registers 2-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14: Caller's register 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15: Primary CPB address from the caller</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16: Return code from IATXGCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17: Return address</td>
</tr>
<tr>
<td>108</td>
<td>IATDMNC</td>
<td>A MRF was read from spool using the ADEBLOCK, APOINT, AOPEN or ABACKR macros. The VALID in the spool buffer did not match the VALID in the file directory entry. JES3 issued an abend code of DM722.</td>
<td>1: Register 2-buffer address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: Register 3-FD entry address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: Register 4-FDB address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: Register 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: Register 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6: Register 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7: Register 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8: Register 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9-488: Failing buffer contents</td>
</tr>
<tr>
<td>109</td>
<td>IATGRQC</td>
<td>Error exit from IATXRCL</td>
<td>1-8: Registers 2-9 for IATGRQC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9-13: Caller's registers 2-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14: Caller's register 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15: Primary CPB address from the caller</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16: Return code from IATXRCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17: Return address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18: Cell address to be released</td>
</tr>
</tbody>
</table>
### Table 4. JES3 Trace Events (continued)

<table>
<thead>
<tr>
<th>Trace ID</th>
<th>Module of origin</th>
<th>Description of Trace Origin (function)</th>
<th>Additional data (by word number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>IATDMTK</td>
<td>Track allocation</td>
<td>1: X from X.G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: G from X.G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: VALID from the TAT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: Slot address from VALID array</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: The RQ address from FCTRQAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6: Job number from RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7: DSP dictionary address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8-12: ASAVE return for the last 5 ACALLS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Identifier 120 is present only</strong> when the SAT trace has been activated via the <em>F,E,START=SAT command.</em>*</td>
</tr>
<tr>
<td>121</td>
<td>IATDMTK</td>
<td>Track allocation</td>
<td>1: X from X.G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: G from X.G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: VALID from the TAT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: Slot address from VALID array</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: The RQ address from FCTRQAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6: Job number from RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7: DSP dictionary address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8-12: ASAVE return for the last 5 ACALLS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Identifier 121 is present only</strong> when the SAT trace has been activated via the <em>F,E,START=SAT command.</em>*</td>
</tr>
<tr>
<td>3000-4005</td>
<td></td>
<td>Available to installations</td>
<td></td>
</tr>
</tbody>
</table>

### Format of a JES3 Trace Entry

Figure 3 illustrates the format of a JES3 event trace table found in a formatted dump.
JES3 Event Trace Table

*** JES3 TRACE (MOST RECENT ENTRY FIRST) ***

ALL TRACE IDS ARE ENABLED

<table>
<thead>
<tr>
<th>Type</th>
<th>Mod</th>
<th>FCT</th>
<th>TOD</th>
<th>ID</th>
<th>TCB</th>
<th>TODX</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAVO</td>
<td>RETURN</td>
<td>IATGRSV</td>
<td>02ADD6B0</td>
<td>222552</td>
<td>0029</td>
<td>027191BE</td>
</tr>
<tr>
<td>BRAVO</td>
<td>CALL</td>
<td>IATGRSV</td>
<td>02ADD6B0</td>
<td>222552</td>
<td>0028</td>
<td>027191BE</td>
</tr>
<tr>
<td>BRAVO</td>
<td>RETURN</td>
<td>IATGRSV</td>
<td>02ADD6B0</td>
<td>222552</td>
<td>0029</td>
<td>027191BE</td>
</tr>
<tr>
<td>BRAVO</td>
<td>CALL</td>
<td>IATGRSV</td>
<td>02ADD6B0</td>
<td>222552</td>
<td>0028</td>
<td>027191BE</td>
</tr>
<tr>
<td>BRAVO</td>
<td>RETURN</td>
<td>IATGRSV</td>
<td>02ADD6B0</td>
<td>222552</td>
<td>0029</td>
<td>027191BE</td>
</tr>
<tr>
<td>CONSDM</td>
<td>RETURN</td>
<td>IATGRSV</td>
<td>02ADD6B0</td>
<td>222552</td>
<td>0028</td>
<td>027191BE</td>
</tr>
</tbody>
</table>

Figure 3. Format of a JES3 Event Trace Table

*** JES3 TRACE is the information in the JES3 trace table. The first line following this heading may be one of the following:

ALL TRACE IDS ARE ENABLED

This is the default JES3 takes when the installation has not selected specific trace ids. JES3 creates an entry for all events that occur in the address space.

ALL TRACE IDS ARE DISABLED

This indicates the installation turned off the tracing facility. JES3 will not create any entries for the trace table.

THE FOLLOWING TRACE IDS ARE ENABLED: 0044 0045 0047

The installation selected the specified trace ids using the modify commands. See [z/OS JES3 Commands](#) for more information on the commands.

name - is a DSP name (for example, CONSOLES) for the FCT that is active at the time of trace.
JES3 Event Trace Table

TYP=cccccccc - is a one- to eight-character descriptor of the JES3 function being traced.

MOD=cccccccc - is the name of the module in which the trace originated.

FCT=hhhhhhhh - is a 6-digit hexadecimal address. This can be an MPC address, but is typically the FCT address.

TOD=dddddd-dddddd - is the time of day, expressed as “hours, minutes, seconds-fraction”. The fraction is a decimal fraction of a second down to one millionth of a second.

ID=dddd - is the trace identification number extracted from the IATXTRC macro.

TCB=hhhhhhhh - is the address of the TCB under which the trace entry is made for either the primary task or the auxiliary task. In the case of trace entries created under SRBs, the TCB address will be formatted as TCB=N/A.

cccccccc - is the symbolic name of a called routine or (for RETURN) the symbolic location of the caller. The CALL/RETURN sequence occurs each time ASAVE (register save) is used, since it is in most JES3 macro calls. The symbolic name is either the name of the actual routine being entered or the name of a module plus offset.

TODX=xxxxxxxxxxxxxxxx - is the time of day, expressed as an 8-byte hexadecimal quantity in STCK (Store Clock) format.

Up to 128 words of data as specified in IATXTRC may follow. See Table 4 for descriptions of individual trace events.

(Not shown) - EBCDIC translation of user data for some types of entries.

Note: Serialization logic is implemented for the trace function in order to prevent concurrent entry to the routine. As a result of this serialization, some trace entries may be lost.

***TRACE FORMAT COMPLETE dd*** contains a code (dd) that shows what happened when tracing was attempted:

<table>
<thead>
<tr>
<th>Code</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>The TVT could not be found.</td>
</tr>
<tr>
<td>01</td>
<td>There was a problem entering one of the trace pointers.</td>
</tr>
<tr>
<td>02</td>
<td>The last trace entry was invalid, or there were no entries.</td>
</tr>
<tr>
<td>03</td>
<td>Unassigned.</td>
</tr>
<tr>
<td>04</td>
<td>A trace entry address is for a location before the start of the trace table, or the entry is otherwise inaccessible.</td>
</tr>
<tr>
<td>05</td>
<td>A trace entry address is for a location beyond the end of the trace table, or the entry is otherwise inaccessible.</td>
</tr>
<tr>
<td>06</td>
<td>The address of the previous trace entry is invalid.</td>
</tr>
<tr>
<td>07</td>
<td>A trace entry was found in the table, but the entry had an invalid ID.</td>
</tr>
<tr>
<td>08</td>
<td>A specific trace entry could not be found.</td>
</tr>
</tbody>
</table>
The last entry in the trace table was processed. (Normal completion.)

Format of a Functional Subsystem (FSS) Address Space Trace Table

Information about the events that occurred in a C/I or writer FSS address space provides FSS trace output. The events are recorded in an FSS trace table in the private area. Each FSS and FSA maintains its own trace table to record events that occur within that particular FSS or FSA.

The trace table from an FSS address space is obtained when a dump of the address space is taken. The trace output is located in the MVS portion of a dump.

JES3 defines the size of the FSS trace table that contains the trace output. The FSS trace table contains a limited number of entries. When the number of entries in the table exceeds the size of the table, JES3 starts placing entries at the beginning of the table and continues to replace the entries with new trace entries. The FSS trace table provides the installation with the addresses of several trace entries in the FSS trace output. These addresses define the size and bounds of the FSS trace table and identify the last entry that was recorded.

Entries are added to the FSS trace table when a IATXTRC macro with an identifier of 75 is issued. A trace identifier of 75 invokes the FSS trace routine IATFCTR. The events that an FSS address space records in the FSS trace table are:

- Connect and disconnect FSI functions, if the trace routine is available.
- FSS-to-JES3 FSI functions after the function has completed. The FSS to JES3 FSI functions are:
  - GETDS
  - GETREC
  - FREEREC
  - RELDS
  - CHKPT
  - SEND
- JES3-to-FSS FSI functions after the interface routine has finished processing the request. The JES3-to-FSS FSI functions are:
  - ORDER
  - POST
- Errors detected by a service routine that does not generate a DFB abend.
- Initialization, non-abend error conditions, termination, and entry to an ESTAE routine for each of the JES3-created asynchronous tasks in the FSS address space. See Table 5 which identifies the asynchronous tasks in an FSS address space that are traced.

Format of an FSS Trace Entry

Figure 4 illustrates the format of an FSS trace table found in a formatted dump.
TRACE TABLE FOR DEVICE: ATD13000

TYP=FSSTRACE MOD=SEE TEXT R11=000B58F8 TOD=131207-250717 ID=0075 TCB=006D0E88

006EF10 006EF1A0 006EF60 0933D61A 09309420 00000000 006E8B10 03FA1000
C9C1E3C6 C3D03E340 C4D50D40 EE90340

IATFCT-DEQ-SRL-----------------

TYP=FSSTRACE MOD=SEE TEXT R11=000B58F8 TOD=131207-250717 ID=0075 TCB=006D0E88

006EF10 006EF1A0 006EF60 0933D61A 09309420 00000000 006E8B10 03FA1000
C9C1E3C6 C3D03E340 D7D6E2E3 40404040 40404040 40404040 40404040 40404040

IATFCT-POST-------------------

TYP=FSSTRACE MOD=SEE TEXT R11=000B58F8 TOD=131207-250717 ID=0075 TCB=006D0E88

006EF10 006EF1A0 006EF60 0933D61A 09309420 00000000 006E8B10 03FA1000
C9C1E3C6 C3D03E340 C4D50D40 EE90340

IATFCT-DEQ-SRL-----------------

Figure 4. Format of an FSS Event Trace Table

TRACE TABLE FOR describes the information in the FSS trace table. The first line following this heading may be one of the following:

TRACE TABLE FOR DEVICE: dev
Indicates that this is a FSS trace table for the specified device.
TRACE TABLE FOR FSS: fssname
Indicates that this is a FSS trace table for the specified FSS.

TYP=FSSTRACE - is an eight-character descriptor of the FSS trace.

MOD=SEE TEXT - see the EBCDIC version of the entry (located to the right of the trace entry) for the name of the module in which the trace originated.

R11=nnnnnnnn - is the contents of the caller's register 11.

TOD=ddddd-ddddd - is the time of day, expressed as “hours, minutes, seconds-fraction”. The fraction is a decimal fraction of a second down to one millionth of a second.

ID=dddd - is the event id (0075).

TCB=hhhhhhhh - is the address of the TCB under which the trace entry is made.

The first line of the trace entry is the contents of the caller's registers 2-9.
The second line of the trace entry is 114 bytes of the user's data. The user's data contains the:

**MODULE**
- specifies the module that is recording the trace entry.

**EVENT ID**
- is the EBCDIC mnemonic of the function being traced.

**OTHER INFORMATION**
- is additional information available in the trace record.

The following chart identifies the contents of the user's data area by each FSS module:

*Table 5. User's Data Supplied in an FSS Trace Entry*

<table>
<thead>
<tr>
<th>MODULE</th>
<th>EVENT ID</th>
<th>OTHER INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IATFCLT</td>
<td>INIT</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>DEQ</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>SRL</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>TERM</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ESTAE</td>
<td>none</td>
</tr>
<tr>
<td>IATFCOR</td>
<td>ORDER</td>
<td>FSIP(ORDBSIZ1+24)</td>
</tr>
<tr>
<td>IATFCPT</td>
<td>POST</td>
<td>FSIP(POSTSIZ1)</td>
</tr>
<tr>
<td>IATFCSN</td>
<td>SEND</td>
<td>FSIP(SNDSIZ1)</td>
</tr>
<tr>
<td>IATFPCP</td>
<td>FSA</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>CONN</td>
<td>none</td>
</tr>
<tr>
<td>IATFPCW</td>
<td>CHKPT</td>
<td>FSIP(CHKSIZ1) ddname</td>
</tr>
<tr>
<td>IATFPCW</td>
<td>INIT</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>PERM</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ERR</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>TERM</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ESTAE</td>
<td>none</td>
</tr>
<tr>
<td>IATFPDD</td>
<td>FSA</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>DCON</td>
<td>none</td>
</tr>
<tr>
<td>IATFPGD</td>
<td>GETDS</td>
<td>FSIP(GDSSJMSG-FSIPARM) ddname</td>
</tr>
<tr>
<td></td>
<td>CKPT</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ERR</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>NO NEWS</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ESTAE</td>
<td>none</td>
</tr>
<tr>
<td>IATFPFG</td>
<td>GETREC</td>
<td>FSIP(GLRSIZ1) ddname</td>
</tr>
<tr>
<td></td>
<td>NO BUFF</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>PERM</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ERR</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>LOG ERR</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>FREEREC</td>
<td>none</td>
</tr>
<tr>
<td>IATFPRA</td>
<td>INIT</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>NO BUFF</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>NO INDEX</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>PERM</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ERR</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>RCID</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ERR</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>UNEX</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>EOF</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>TERM</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>ESTAE</td>
<td>none</td>
</tr>
</tbody>
</table>
Communication Traces

This section is divided into the following topics:

**BSC remote job processing snaps output**
Examines the output from the RJP line snap facility described in [BSC Remote Job Processing (RJP) Snaps Output](#). The output is a storage dump that describes:
- The line device characteristics table (DCT)
- The remote device DCTs for a signed-on terminal
- Current SRB/IOSB
- Transmission data areas for each channel end processed

**RJP Hardcopy Log trace output**
Enteries are added to the JES3 trace table when this facility is invoked. An entry is added to the JES3 trace table when a I/O operation is performed on a specified line.

**SNA RJP trace output**
Suggests solutions when the problems seems to be with SSNA RJP. Included are discussions of:
- Exception responses
- Error recovery after communications stops between a remote workstation and the host
- The SNA RJP recording environment

**BSC network logging facility**
Describes the format of the trace output produced for a BSC node.

**TCP/IP/NJE trace**
Describes the format of the trace output produced by a Netserv, a socket for a TCP/IP node, or both.

**BSC Remote Job Processing (RJP) Snaps Output**
Figure 5 shows an example of the RJP snaps output. See mapping macros in the program listings to find where specific information appears in the snap output.

Mapping macros for RJP snaps output are:
- **LINE DCT** - IATYSUP
- **LINE RAT** - IATYRAT
- **SRB** - IHASRB
- **IOSB** - IECIOSB
Communication Traces

RMDCT - IATYSUP

Figure 5. RJP Snaps Output

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shows the time of day the snap was taken, the control block printed, and the RJP line number. Time of day is in the form hhmmsssth where hh is the hour, mm is the minute, ss is the second, and th is tenths and hundredths of a second. Time of day appears at the beginning of each snap.</td>
</tr>
<tr>
<td>2</td>
<td>WRITE shows the location from which data was written. READ shows the location from which data was read.</td>
</tr>
<tr>
<td>3</td>
<td>Shows the data that was written or read.</td>
</tr>
<tr>
<td>4</td>
<td>Begins a snap taken after channel-end. Each remote DCT (RMDCT) represents a device.</td>
</tr>
<tr>
<td>5</td>
<td>Shows the data being sent or received displayed in EBCDIC.</td>
</tr>
</tbody>
</table>

**RJP Hardcopy Log Trace Facility:** The RJP hardcopy log trace facility generates a continuous indication of the internal program flow within RJP. Data is printed on
the hardcopy log each time an important event occurs. An entry is also added to the
JES3 event trace table with an id of 65. For the format of a JES3 event trace entry
see [Format of a JES3 Event Trace Table]. Table 6 lists the hardcopy log events and
contains a brief description of each. The facility should never trace more lines than
necessary, since console buffers may be filled faster than they can be printed,
resulting in a lockout condition. The same problem may occur when tracing a very
fast line.

Table 6. RJP Hardcopy Log Trace Events

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Module (IATRJxx)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEND</td>
<td>M1</td>
<td>Channel-end processing started.</td>
</tr>
<tr>
<td>CENDSNAP</td>
<td>M1</td>
<td>Channel-end processing started; IOSB/SRB, LDCT, RDCT, and data buffers snapped.</td>
</tr>
<tr>
<td>CLOSSIO</td>
<td>M2/M3</td>
<td>RJPCLOSE issued. Write last buffer to non-programmable terminal.</td>
</tr>
<tr>
<td>CONQ</td>
<td>M1</td>
<td>Remote console is in ALERT condition.</td>
</tr>
<tr>
<td>DISASIO</td>
<td>M3</td>
<td>At line termination time, issue the disable line command.</td>
</tr>
<tr>
<td>IDLE</td>
<td>M3</td>
<td>Timer is set to cause line idle cycle for multi-leaving terminal.</td>
</tr>
<tr>
<td>INIOSIO</td>
<td>M3</td>
<td>After receiving control sequence from multi-leaving terminal, start appropriate I/O.</td>
</tr>
<tr>
<td>INIT</td>
<td>M1</td>
<td>Initialize RJP I/O control blocks.</td>
</tr>
<tr>
<td>MGET</td>
<td>M1</td>
<td>Received date on a line with no terminal currently signed on.</td>
</tr>
<tr>
<td>OPENSIO</td>
<td>M2/M3</td>
<td>Read for first block of data from a remote non-programmable terminal.</td>
</tr>
<tr>
<td>OPS</td>
<td>M3</td>
<td>Received permission to send from a suspended device on a multileaving terminal.</td>
</tr>
<tr>
<td>OPSTxxx</td>
<td>M3</td>
<td>Received permission to send or request to send from remote device or multi-leaving terminal. xxx is the logical device name.</td>
</tr>
<tr>
<td>POSTPRNT</td>
<td>M1</td>
<td>Positive response to ENQ received. Post output processor for nonprogrammable terminal.</td>
</tr>
<tr>
<td>POSTPNCH</td>
<td>M1</td>
<td>I/O to terminal ended normally. xxx is the logical device name.</td>
</tr>
<tr>
<td>POSTCONS</td>
<td>M1</td>
<td>Buffer queued for output to programmable terminal. Buffers not written because I/O is active or line already has buffers queued.</td>
</tr>
<tr>
<td>RCON</td>
<td>M1</td>
<td>Remote console message received.</td>
</tr>
<tr>
<td>READSIO</td>
<td>M2/M3</td>
<td>Read for next block of data from a remote non-programmable terminal.</td>
</tr>
<tr>
<td>RESTSIO</td>
<td>M1</td>
<td>Restart I/O after error condition. Post FCT of current RCB in current input buffer. xxx is the logical device name.</td>
</tr>
<tr>
<td>RPSTxxx</td>
<td>M1/M3</td>
<td>Restart I/O after error condition. Post FCT of current RCB in current input buffer. xxx is the logical device name.</td>
</tr>
<tr>
<td>SRDR</td>
<td>M1</td>
<td>ENQ received from non-programmable terminal; RJP issues *X,CR.</td>
</tr>
<tr>
<td>STRTSIO</td>
<td>M1/M3</td>
<td>Initial EXCP at start line time.</td>
</tr>
</tbody>
</table>
Table 6. RJP Hardcopy Log Trace Events (continued)

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Module (IATRJxx)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEXPSIO</td>
<td>M1/M3</td>
<td>Timer expired for this line; start some I/O.</td>
</tr>
<tr>
<td>WABTSIO</td>
<td>M3</td>
<td>Write buffer to programmable terminal. Wait bit sequence.</td>
</tr>
<tr>
<td>WAIT</td>
<td>M1</td>
<td>No pending activity for this line.</td>
</tr>
<tr>
<td>WEOTSO</td>
<td>M2/M3</td>
<td>Write EOT sequence to nonprogrammable terminal.</td>
</tr>
<tr>
<td>WPSTxxx</td>
<td>M1</td>
<td>Post output devices based on received FCS. xxx is the logical device name.</td>
</tr>
<tr>
<td>WRITSIO</td>
<td>M2/M3</td>
<td>RJPPUT issued; current buffer full. Issue EXCP to non-programmable terminal.</td>
</tr>
<tr>
<td>WTXTSIO</td>
<td>M3</td>
<td>Write previously queued output buffer and read data from programmable terminal.</td>
</tr>
</tbody>
</table>

SNA RJP Trace Output and Problem Analysis

This section describes what to do if you encounter some of the situations unique to SNA RJP. Included are:

- The format of the output from the SNA RJP recording environment.
- An analysis of the problems unique to SNA RJP. The topics included are:
  - Exception responses
  - Error recovery after communication stops between a workstation and the host

SNA RJP Recording Environment

The SNA RJP recording environment produces traces for problem determination of SNA RJP modules. For a discussion of the commands used to invoke the SNA RJP recording environment, see [z/OS JES3 Commands](#).

Traces can include:

- Protocols, including chaining, bracket, and function management header information.
- Negative response sense data.
- Task control block and service request block interactions.
- Results of compare and swap operations.
- Error returns from VTAM.
- Up to four bytes of pertinent data.

The traced information is printed automatically:

- A session is ended.
- The operator entered a *STARTRJP command with the TRACEOFF parameter.
- Inbound data errors are detected by JES3.

The SNA RJP recording environment also produces snapshot dumps when decompress or deblock errors occur for inbound data. Like traces, snapshot dumps are produced only if the SNA RJP recording environment has been activated for a workstation; they are then printed automatically when the errors are detected.

The trace output consists of a trace table header, a number of 8-byte entries, and the following control blocks: logical unit control block (LCB); buffer entries (BFEs); request/response units (RUs); workstation block (WSB); and device entries (DVEs).
## TRACE TABLE - REASON FOR SNAP IS OPER. CANCEL

<table>
<thead>
<tr>
<th>Reason</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPER. REQUEST</td>
<td>The command *S,SNARJP,T=WSnnn,TRACEOFF was entered by the operator.</td>
</tr>
<tr>
<td>OPER. CANCEL</td>
<td>The command *C(or *R),SNARJP,T=WSnnn was entered by the operator.</td>
</tr>
<tr>
<td>OPER. CANCEL (.I)</td>
<td>The command *C(or *R),SNARJP,T=WSnnn,l was entered by the operator.</td>
</tr>
<tr>
<td>LU LOGGED OFF COND.</td>
<td>A LOGOFF TYPE=COND command was entered from the workstation.</td>
</tr>
<tr>
<td>LU LOGGED OFF UNCOND.</td>
<td>A LOGOFF TYPE=UNCOND command was entered from the workstation.</td>
</tr>
<tr>
<td>DFC INTERNAL CANCEL</td>
<td>An event such as session abend occurred.</td>
</tr>
</tbody>
</table>

** SESSION TRACE TABLE SNAP 85.004**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPER. REQUEST</td>
<td>The command *S,SNARJP,T=WSnnn,TRACEOFF was entered by the operator.</td>
</tr>
<tr>
<td>OPER. CANCEL</td>
<td>The command *C(or *R),SNARJP,T=WSnnn was entered by the operator.</td>
</tr>
<tr>
<td>OPER. CANCEL (.I)</td>
<td>The command *C(or *R),SNARJP,T=WSnnn,l was entered by the operator.</td>
</tr>
<tr>
<td>LU LOGGED OFF COND.</td>
<td>A LOGOFF TYPE=COND command was entered from the workstation.</td>
</tr>
<tr>
<td>LU LOGGED OFF UNCOND.</td>
<td>A LOGOFF TYPE=UNCOND command was entered from the workstation.</td>
</tr>
<tr>
<td>DFC INTERNAL CANCEL</td>
<td>An event such as session abend occurred.</td>
</tr>
</tbody>
</table>
Communication Traces

DFC RESTARTED LU
JES3 entered a Clear or Start Data Traffic command for this session (instead of quiescing the session).

The trace table header contains the following:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'08'</td>
<td>Workstation name</td>
</tr>
<tr>
<td>X'0D'</td>
<td>Logical unit (LU) name</td>
</tr>
<tr>
<td>X'15'</td>
<td>Session bind options:</td>
</tr>
<tr>
<td></td>
<td>X'80' Peripheral data set information records (PDIRs)</td>
</tr>
<tr>
<td></td>
<td>X'40' Card format input</td>
</tr>
<tr>
<td></td>
<td>X'20' Card format output</td>
</tr>
<tr>
<td></td>
<td>X'10' Document format output</td>
</tr>
<tr>
<td></td>
<td>X'08' Inbound compression</td>
</tr>
<tr>
<td></td>
<td>X'04' Outbound compression</td>
</tr>
<tr>
<td></td>
<td>X'02' Inbound compaction</td>
</tr>
<tr>
<td></td>
<td>X'01' Outbound compaction</td>
</tr>
<tr>
<td>X'16'</td>
<td>Session bind options:</td>
</tr>
<tr>
<td></td>
<td>X'80' ASCII</td>
</tr>
<tr>
<td></td>
<td>X'40' Cards may span request/response units (RUs)</td>
</tr>
<tr>
<td>X'17'</td>
<td>Console simulation:</td>
</tr>
<tr>
<td></td>
<td>X'80' Console is simulated</td>
</tr>
<tr>
<td>X'38'</td>
<td>Address of next available trace entry (the preceding 8 bytes contain the most current entry)</td>
</tr>
<tr>
<td>X'3C'</td>
<td>End of trace table</td>
</tr>
</tbody>
</table>

Each trace table entry is eight bytes long. The general format of an entry is:

```
module-id  subpath  data
```

| 0 | 1 | 2-8 |

**module-id**
A one-character identifier for the module being traced. For the IATSNDx series of modules, the module ID is the last letter of the module name. For other modules, identifiers are:

<table>
<thead>
<tr>
<th>Module ID</th>
<th>Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>IATSNLD</td>
</tr>
<tr>
<td>X</td>
<td>IATSNLO</td>
</tr>
<tr>
<td>Y</td>
<td>IATSNLS</td>
</tr>
<tr>
<td>Z</td>
<td>IATSNLB</td>
</tr>
</tbody>
</table>

**subpath**
A two-digit number that identifies the trace point within the module.

**data**
The traced information, which varies with placement of the IATXSNTR macro and with its subparameters.

Trace table entries begin at offset X'40'. With no table wraparound, the first entry will be the oldest, and offset X'38' will point to the next available entry. With a table wraparound, offset X'38' will point to the oldest entry.
To analyze a trace entry, first locate the path identifier in the first two bytes of the entry. The path identifier consists of a one-character module identifier and a two-digit subpath identifier. Next, look up the path identifier in the first column of Table 7 and find the type of trace (PATH, DFC, RESP, or ERR) in the second column. The third column explains the circumstances of the trace and describes the format of the trace.

The logical unit control block (LCB) is the internal representation of a session. The LCB contains the session’s send/receive request parameter lists (RPLs), the node initialization block (NIB) used to connect with the logical unit, stack pointers, and pointers for managing send/receive buffers.

There is one buffer entry (BFE) per request/response unit (RU). BFEs contain summaries of information about RUs, including chain element position and protocols. Each BFE points to its associated RU. The BFE is the basic interface to module IATSNDM, which updates session states for protocols.

The workstation block (WSB) is built by module IATINWS during processing of the RJPWS initialization statement. The WSB is the anchor for all session control blocks associated with a specific terminal.

The device entry (DVE) is used for allocating a device to a session, and is the mechanism used for managing session interrupt situations. Each LCB contains two push-down stacks, an inbound stack and an outbound stack. When a device is allocated to a session, its DVE is pushed into the appropriate stack. When the device is allocated, its DVE is removed from the stack.

Table 7. SNA RJP Recording Environment Trace Entries

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01</td>
<td>ERR</td>
<td>There has been a VTAM macro error return. See Figure 9 on page 87 for the trace format.</td>
</tr>
<tr>
<td>A05</td>
<td>PATH</td>
<td>An error return indicates that the request cannot be satisfied, but can be retried. IATSNDN issues an EXEWRPL macro and checks the result. No data is traced.</td>
</tr>
<tr>
<td>A0D</td>
<td>PATH</td>
<td>IATSNDN is returning to its caller. Byte 5 of the trace entry contains the return offset if the return is not a normal return. Byte 5 can contain: X’00’ Retry, X’04’ Permanent error, X’08’ Temporary error</td>
</tr>
</tbody>
</table>

IATSNDC Trace Entries

Module IATSNDC is the workstation close module. It is called when a session is no longer needed, or when a session is to be temporarily released (a writer may temporarily release a session to allow sending of console data).

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
</table>

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### Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C01</td>
<td>PATH</td>
<td>During CLOSE processing, the quiesce-immediate bit was set on in the logical unit control block. Information about the device being closed is traced. The trace entry format is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DVEDVSL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DVECON</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C03</td>
<td>PATH</td>
<td>A CLOSE macro has been issued for a writer. No data is traced.</td>
</tr>
<tr>
<td>C05</td>
<td>DFC</td>
<td>The writer has entered CLOSE processing specifying TYPE=TEMP, and its session may be interrupted. A Suspend Destination will be sent if the console close routine needs to send. A Suspend Destination, Change Direction will be sent if a Signal RU has been received from the workstation.</td>
</tr>
<tr>
<td>C07</td>
<td>DFC</td>
<td>One of the following will be sent for the writer being closed:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• End Destination, End Bracket</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• End Destination, Change Direction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Abort Destination</td>
</tr>
<tr>
<td>C0A</td>
<td>PATH</td>
<td>The console close routine will find a suspended writer and will send a Resume Destination. The resume address is traced. The trace entry format is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FMH1DTY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C0C</td>
<td>PATH</td>
<td>The console close routine will send End Destination, End Bracket to close a prior console Begin Bracket, Begin Destination. No data is traced.</td>
</tr>
<tr>
<td>C0E</td>
<td>PATH</td>
<td>The console close routine will send Only in Chain, Change Direction because it found a reader on the inbound stack. No data is traced.</td>
</tr>
<tr>
<td>C10</td>
<td>PATH</td>
<td>The workstation close processing abnormally ended while using this session.</td>
</tr>
</tbody>
</table>
Communication Traces

Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>CFF</th>
<th>ABEND</th>
<th>An attempt was made to reuse a request parameter list (RPL) which is still active.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Contents</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>CFF</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>RPLPLHPT</td>
<td></td>
</tr>
</tbody>
</table>

MODE
X'00' The abnormal end is a DM551.
X'80' The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.

IATSNDD Trace Entries

Module IATSNDD is the DFASY module. It is an exit routine that is scheduled when one of the following is sent by a workstation:
- Signal RU (request for Change Direction)
- Request Shutdown command

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>D01</td>
<td>PATH</td>
<td>Identifies request/response unit (RU) type (Signal or Shutdown). A Signal RU is supported as a request for Change Direction. A Request Shutdown is a request for immediate session termination. The trace entry format is:</td>
</tr>
<tr>
<td>Offset</td>
<td>Contents</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>D01</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RPLCNTDC</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RPLCNTSC</td>
<td></td>
</tr>
<tr>
<td>4-5</td>
<td>RPLSIGDA</td>
<td></td>
</tr>
</tbody>
</table>

RPLCNTDC
X'10' Signal RU received

RPLCNTSC
X'10' Request Shutdown command received

RPLSIGDA
Must be X'0001' for Signal RU, otherwise the session will be terminated.

Following processing of a Signal RU, module IATSNLO is scheduled. Module IATSNLO will send Suspend Destination, Change Direction. No data is traced.

IATSNDE Trace Entries

Module IATSNDE is the termination module. It is called when a session is to be quiesced or cleared, in response to an operator command or following a session error.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
</table>
### Communication Traces

#### Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>E01 PATH</th>
<th>Module IATSNDE has been entered. Each entry to module IATSNDE causes a trace, even when no action is taken. The trace entry format is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Contents</td>
</tr>
<tr>
<td>0</td>
<td>E01</td>
</tr>
<tr>
<td>2-4</td>
<td>caller-id</td>
</tr>
<tr>
<td>5</td>
<td>type of quiesce requested</td>
</tr>
</tbody>
</table>

Caller ID

See Figure 24.

Type of quiesce requested

- X'00' - Quiesce at End Bracket
- X'04' - Quiesce immediately
- X'08' - Send Clear or Start Data Traffic command

<table>
<thead>
<tr>
<th>E02 PATH</th>
<th>Module IATSNDE has been entered for a normal quiesce and has determined that the session is between brackets. No data is traced.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>E05 PATH</th>
<th>The reset routine found the outbound console's device entry on the stack, but the console is waiting for a response to an End Destination. Since the console has already been through CLOSE processing, module IATSNDE will do the destack. The trace entry format is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Contents</td>
</tr>
<tr>
<td>0</td>
<td>E05</td>
</tr>
<tr>
<td>2</td>
<td>WSBCOPN</td>
</tr>
</tbody>
</table>

WSBCOPN

- X'08' - Console requested a session; an outstanding End Destination response exists.

<table>
<thead>
<tr>
<th>E06 PATH</th>
<th>The reset routine found a writer on the stack, but the destack routine is waiting for a response to End Destination. Since the console has already been through CLOSE processing, module IATSNDE will do the destack. No data is traced.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>E07 PATH</th>
<th>All session users have been quiesced. Module IATSNDE is about to do the ENQUEUE for the CLSDST routine, or is about to call module IATSNDT to send a Start Data Traffic command. The trace entry format is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Contents</td>
</tr>
<tr>
<td>0</td>
<td>E07</td>
</tr>
<tr>
<td>2</td>
<td>LCBCSFL2</td>
</tr>
<tr>
<td>3</td>
<td>LCBCSFL0</td>
</tr>
</tbody>
</table>

LCBCSFL2

- X'80' - Store session at end of chain
- X'10' - Quiesce immediately
- X'08' - Send Clear or Start Data Traffic command

LCBCSFL0

<table>
<thead>
<tr>
<th>E09 PATH</th>
<th>The SESSIONC (cleared) exit routine has been scheduled. No data is traced.</th>
</tr>
</thead>
</table>

**IATSNDM Trace Entries**

Module IATSNDM is the state manager module. It updates the session state for brackets, chains, change directions, and function management headers.
## Communication Traces

### Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| M01     | PATH | Module IATSNDM has been entered. The trace entry format is:  
|         |      | Offset: 0  
|         |      | Contents: M01  
|         |      | Offset: 2-3  
|         |      | Contents: caller-id  
|         |      | Caller ID  
|         |      | See Table 11 |
| M04     | PATH | Module IATSNDM did an ENQUEUE for inbound console data because Begin Bracket, Begin Destination Select was received. No data is traced. |
| M05     | PATH | The line control block (LCB) is placed on the Open queue for processing. |
| M06     | RESP | Routine NRSP was called to send a negative response. See Figure 8 for the trace format. |
| M09     | DFC  | A positive response was sent to the query request routine; a compaction table is being sent. The trace entry shows the query for the compaction table function management header. See Figure 8 and Figure 7 for trace formats. |
| M0B     | PATH | A negative response was sent to an inbound stream and a Cancel or End of Chain has been received. The trace entry format is:  
|         |      | Offset: 0  
|         |      | Contents: M0B  
|         |      | Offset: 2  
|         |      | Contents: RPLRH3  
|         |      | RPLRH3  
|         |      | Offset: 3  
|         |      | Contents: X'40'  
|         |      | End Bracket  
|         |      | Offset: 4  
|         |      | Contents: RPLPLHPT  
| MFF     | ABEND | An attempt was made to reuse a request parameter list (RPL) which is still active.  
|         |      | Offset: 0  
|         |      | Contents: MFF  
|         |      | Offset: 2  
|         |      | Contents: MODE  
|         |      | Offset: 3  
|         |      | Contents: RPLPLHPT  
|         |      | MODE  
|         |      | Offset: 4  
|         |      | Contents: X'00'  
|         |      | The abnormal end is a DM551.  
|         |      | Offset: 5  
|         |      | Contents: X'80'  
|         |      | The abnormal end is a X'AFB'.  
|         |      | RPLPLHPT is the link register of the current RPL user. |

### IATSNDN Trace Entries

Module IATSNDN is the negative response routine. It sends a negative response for data-related errors for VTAM-detected protocol violations.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>N01</td>
<td>RESP</td>
<td>Module IATSNDN will send the negative response. Either module IATSNFI found a data-related error (sense - 1001), or VTAM detected an inbound protocol violation. See Figure 8 for the trace format.</td>
</tr>
</tbody>
</table>
Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>NFF</th>
<th>ABEND</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>An attempt was made to reuse a request parameter list (RPL) which is still active.</td>
</tr>
</tbody>
</table>

Offset Contents
0      NFF
2      MODE
3      RPLPLHPT

MODE
X'00' The abnormal end is a DM551.
X'80' The abnormal end is a X'AFB'.
RPLPLHPT is the link register of the current RPL user.

IATSNDO Trace Entries
Module IATSNDO is the workstation open routine. It obtains sessions for writers and consoles.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>O03</td>
<td>PATH</td>
<td>A Begin Bracket, Begin Destination is being sent for a console. The session is idle. No data is traced.</td>
</tr>
<tr>
<td>O04</td>
<td>PATH</td>
<td>A Suspend Destination is being sent for the indicated writer. The trace entry format is:</td>
</tr>
</tbody>
</table>

Offset Contents
0      O04
2      FM1DTY

FM1DTY
X'F0' Media indicator
X'30' Printer
X'20' Punch
X'0F' Subaddress (for example, 30 is PR1)

O06     DFC   A Begin Destination is being sent on behalf of the writer. See Figure 6 and Figure 7 for trace formats.

O07     PATH  A peripheral data set information record (PDIR) is being sent for the writer. The PDIR copies field is traced.

O09     PATH  A session was found for the calling writer. However, the buffer cannot be used because the receive exit routine may be receiving an inbound bracket. To prevent multiple simultaneous use of the logical unit control block (LCB), buffer entries (BFEs), and request units (RUs), a Begin Bracket, Only in Chain is sent. No data is traced.

O0B     DFC   The compaction table will be sent. See Figure 6 and Figure 7 for trace formats.

O0D     PATH  A negative response was received during writer OPEN processing. No data is traced.

O0F     PATH  The workstation open processing abnormally ended when using this session.
### Communication Traces

#### Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>OFF</td>
<td>ABEND</td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RPLPLHPT</td>
<td></td>
</tr>
</tbody>
</table>

**MODE**
- X'00': The abnormal end is a DM551.
- X'80': The abnormal end is a X'AFB'.
- RPLPLHPT is the link register of the current RPL user.

#### IATSNDP Trace Entries

Module IATSNDP is the RUPUT module. It obtains a request/response unit (RU) to be filled with data and makes the previously filled RU available to the send exit routine (IATSNDS).

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P07</td>
<td>PATH</td>
<td>Module IATSNDP detected a session-related error. The error reason code returned to the caller is traced is follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contents</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>P07</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>reason code</td>
</tr>
</tbody>
</table>

**Reason Code**
- X'0C': Temporary device error
- X'10': Permanent device error
- X'14': Session error
- X'18': Terminate immediately
- X'20': Intervention required (writer only)

#### IATSNDR Trace Entries

Module IATSNDR is the inbound response exit routine. IATSNDR is scheduled when a positive or negative response is received from a workstation. For positive responses, it calls module IATSNDM; for negative responses, it calls its PURGE routine to determine whether a Cancel must be sent.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>R01</td>
<td>RESP</td>
<td>A negative response to an outbound chain was received before the End of Chain RU was sent. This is an interrupt request block (IRB) scheduled entry to IATSNDR. Sense bytes are traced. See Figure 8 for the trace format.</td>
</tr>
<tr>
<td>R03</td>
<td>RESP</td>
<td>A negative response was received after the End of Chain RU was sent. This is a system request block (SRB) scheduled entry to IATSNDR. Sense bytes are traced. See Figure 8 for the trace format.</td>
</tr>
</tbody>
</table>
Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>R04 PATH</th>
<th>A negative response was received and the PURGE routine was called. The trace entry format is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset</td>
<td>Contents</td>
</tr>
<tr>
<td>0</td>
<td>R04</td>
</tr>
<tr>
<td>2</td>
<td>LCBWTRO</td>
</tr>
<tr>
<td>3</td>
<td>DVEDTYP</td>
</tr>
<tr>
<td>LCBWTRO</td>
<td>X'20' Writer is in OPEN processing</td>
</tr>
<tr>
<td>X'10'</td>
<td>Console is in OPEN processing</td>
</tr>
<tr>
<td>DVEDTYP</td>
<td>X'80' Console</td>
</tr>
<tr>
<td>X'40'</td>
<td>Punch</td>
</tr>
<tr>
<td>X'20'</td>
<td>Printer</td>
</tr>
<tr>
<td>R05 PATH</td>
<td>A negative response (sense 0802) was received to a writer OPEN request. A RECEIVE SPEC macro is issued for the expected LUSTAT. (Sense value 0802 means intervention required. The status is sent inbound when the device is readied.) No data is traced.</td>
</tr>
<tr>
<td>R07 PATH</td>
<td>A Begin Bracket, End Bracket will be sent because a permanent console error occurred following a console Begin Bracket, Begin Destination. No data is traced.</td>
</tr>
<tr>
<td>R09 PATH</td>
<td>In the case of a negative response to an outbound console RU, the PURGE routine determined that the send exit routine (IATSND) either is active or will be activated. No data is traced.</td>
</tr>
<tr>
<td>R0A PATH</td>
<td>A Cancel RU is sent to cancel an outbound console request. No attempt is made to reactivate the send exit routine (IATSND). No data is traced.</td>
</tr>
<tr>
<td>R0D PATH</td>
<td>A positive response to a writer End of Chain was received and the writer (SNDP) was posted to handle it. No data is traced.</td>
</tr>
<tr>
<td>R0E PATH</td>
<td>In the case of a negative response to a writer RU, the PURGE routine determined that the send exit routine (IATSND) either is now active or will be activated. No data is traced.</td>
</tr>
<tr>
<td>R0F PATH</td>
<td>In the case of a negative response to a writer RU, the PURGE routine determined that the send exit routine (IATSND) was no longer active and so posted the writer (IATSNDP) to handle the negative response. No data is traced.</td>
</tr>
<tr>
<td>R10 PATH</td>
<td>The SRB error routine, SRBTER, has been invoked because a SEND EOC request completed with a temporary error because of a negative response to a previous RU. No data is traced.</td>
</tr>
<tr>
<td>R11 PATH</td>
<td>When processing a temporary error condition for a SEND EOC request, the SRBTER routine determined that the SEND was issued by a writer and that the IRB negative response exit already processed the pending - R. Therefore, SRBTER posted the writer (SNDP) to handle the error. No data is traced.</td>
</tr>
<tr>
<td>R12 PATH</td>
<td>When processing a temporary error condition for a SEND EOC request, SRBTER routine determined that the IRB negative response exit had not yet processed the pending - R. Therefore, SRBTER exited from SRB processing. No data is traced.</td>
</tr>
</tbody>
</table>
Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>RFF</th>
<th>ABEND</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>An attempt was made to reuse a request parameter list (RPL) which is still active.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

MODE
X'00' The abnormal end is a DM551.
X'80' The abnormal end is a X'AFB'.
RPLPLHPT is the link register of the current RPL user.

IATSNDS Trace Entries

Module IATSNDS is the send exit routine. It is scheduled through a system request block (SRB), and it issues SEND macros if data is available.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>S02</td>
<td>PATH</td>
<td>VTAM responded to a SEND macro with the error return code 0C, 0D (request cancelled, prior negative response outstanding). The SEND request was for an outbound console RU. The trace entry format is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

RPLCHN
X'80' First of Chain
X'40' Middle of Chain
X'20' End of Chain
X'10' Only in Chain

S03     | PATH | VTAM responded to a SEND macro with the error return code of 0C, 0D (request cancelled, prior negative response outstanding). The SEND request was for writer output. The trace entry format is: |
|         |      | Offset | Contents |
|         |      | 0      | S03      |
|         |      | 2      | RPLCHN   |

RPLCHN
X'80' First of Chain
X'40' Middle of Chain
X'20' End of Chain
X'10' Only in Chain

IATSNDT Trace Entries

Module IATSNDT is the restart routine. It initializes a session for logon complete and session restart situations. At every End of Chain, IATSNDT determines what activity should occur next. At First of Chain and Middle of Chain, IATSNDT activates receive or send exits.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>T01</td>
<td>PATH</td>
<td>Module IATSNDT has been entered. The trace entry format is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Caller ID
See Table 12
## Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Trace Entry Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>T02 PATH</td>
<td>The receive system request block (SRB) is reactivated. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T04 PATH</td>
<td>The start data traffic exit routine has been scheduled. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T06 PATH</td>
<td>The session is between brackets and in normal quiesce state. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T09 PATH</td>
<td>The line control block (LCB) is placed on the Open queue for processing.</td>
<td></td>
</tr>
<tr>
<td>T0A PATH</td>
<td>A RECEIVE macro is issued for the expected LUSTAT after a negative response (0802) to a writer or console data chain. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T0B PATH</td>
<td>The writer's session will be interrupted because the console will send or because Signal was received. The trace entry format is:</td>
<td></td>
</tr>
<tr>
<td>T0C PATH</td>
<td>The compare-and-swap lock between IATSNDT and IATSNDO is checked. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T0D PATH</td>
<td>The SNDTCONS routine has been entered under the assumption that the console must be serviced. The trace entry format is:</td>
<td></td>
</tr>
<tr>
<td>T0E PATH</td>
<td>The SNDTCONS routine will send Only in Chain, Change Direction in the case where IATSNDV received a Change Direction, but in the process the console acquired another session. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T0F PATH</td>
<td>An End Bracket will be sent to the workstation. No data is traced.</td>
<td></td>
</tr>
<tr>
<td>T10 PATH</td>
<td>A Resume Destination will be sent. A writer was suspended for a reader or console completion and the address of the device on which the writer is to resume activity is traced. The trace entry format is:</td>
<td></td>
</tr>
</tbody>
</table>
Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>TFF</td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
</tr>
<tr>
<td>3</td>
<td>RPLPLHPT</td>
</tr>
</tbody>
</table>

TFF ABEND

An attempt was made to reuse a request parameter list (RPL) which is still active.

The abnormal end is a DM551.

The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.

IATSNDU Trace Entries

Module IATSNDU is the output routine that is used by the restart (module IATSNDT) to activate the Send exit routine (module IATSNDS). Module IATSNDU is also used by the Send exit routine for sending of the front request/response unit (RU) or for sending a cancel command.

Path ID | Type | Explanation
---|---|---
U01 | DFC | The SENDIT routine is about to send the front RU. Only the first End of Chain (Only in Chain) between function management headers is traced to avoid frequent End of Chain, positive response sequences likely for outbound mains. See Figure 6 and Figure 7 for the trace formats.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>U02</td>
</tr>
<tr>
<td>2-5</td>
<td>SUPCARR</td>
</tr>
</tbody>
</table>

U02 | PATH | The writer is sending a Set Vertical Format (FCB load) sequence. The trace entry format is:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>U02</td>
</tr>
<tr>
<td>2-5</td>
<td>SUPCARR</td>
</tr>
</tbody>
</table>

U03 | PATH | IATSNDU has detected a purging chain state, and will send a cancel command. No data is traced.

U05 | PATH | IATSNDU has received an OC,0D return code on an outbound console SEND request (indicating a Send was cancelled because a previous negative response was outstanding). The trace entry format is:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>U05</td>
</tr>
<tr>
<td>2</td>
<td>RPLCHN</td>
</tr>
</tbody>
</table>

RPLCHN

X'80' First of Chain

X'40' Middle of Chain

X'20' End of Chain

X'10' Only in Chain
Table 7. SNA RJP Recording Environment Trace Entries (continued)

Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>U07</td>
</tr>
<tr>
<td>2</td>
<td>RPLCHN</td>
</tr>
<tr>
<td>RPLCHN</td>
<td></td>
</tr>
<tr>
<td>X'80'</td>
<td>First of Chain</td>
</tr>
<tr>
<td>X'40'</td>
<td>Middle of Chain</td>
</tr>
<tr>
<td>X'20'</td>
<td>End of Chain</td>
</tr>
<tr>
<td>X'10'</td>
<td>Only in Chain</td>
</tr>
</tbody>
</table>

An attempt was made to reuse a request parameter list (RPL) which is still active.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>UFF</td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>RPLPLHPT</td>
</tr>
</tbody>
</table>

MODE
X'00' The abnormal end is a DM551.
X'80' The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.

IATSNDV Trace Entries
Module IATSNDV is the receive exit routine. It contains two SRB-scheduled routines: receive any (RCVANY) and receive specific (RCVSPEC).

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>V01</td>
<td>PATH</td>
<td>The receive any routine has been scheduled and a Begin Bracket request/response unit (RU) has been received. The session direction, regardless of initial setting, has been forced to inbound. No data is traced.</td>
</tr>
<tr>
<td>V04</td>
<td>PATH</td>
<td>A non-data RU such as LUSTAT has been received. The trace entry format is:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>V04</td>
</tr>
<tr>
<td>2</td>
<td>RPLCNTDC</td>
</tr>
<tr>
<td>3</td>
<td>RPLCNTDF</td>
</tr>
</tbody>
</table>

RPLCNTDC
X'40' Ready to Receive (RTR) command received
X'20' LU status received

RPLCNTDF
X'80' Data RU
X'40' Cancel
X'04' Chase
### Communication Traces

#### Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>V05</td>
</tr>
<tr>
<td>2-5</td>
<td>LCBSNS</td>
</tr>
</tbody>
</table>

VTAM has detected an inbound protocol error and requires JES3 to send a negative response with the sense bytes traced. The trace entry format is:

- V05
- LCBSNS

  Sense Bytes (See VTAM Macro Language Reference).

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>V06</td>
</tr>
<tr>
<td>2</td>
<td>RPLCNTDF</td>
</tr>
<tr>
<td>3</td>
<td>RPLCHN</td>
</tr>
</tbody>
</table>

DFC

A First of Chain or Only in Chain has been received. See Figure 6 and Figure 7 for trace formats.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>V07</td>
</tr>
<tr>
<td>2</td>
<td>RPLCNTDF</td>
</tr>
<tr>
<td>3</td>
<td>RPLCHN</td>
</tr>
</tbody>
</table>

Module IATSNDV will send a Signal (0001) RU to request Change Direction. The console routine entered OPEN processing and found no available sessions and no currently outbound sessions. Therefore, it set an indicator so module IATSNDV would request interruption of an outbound session. No data is traced.

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>V08</td>
</tr>
<tr>
<td>2</td>
<td>RPLCNTDF</td>
</tr>
<tr>
<td>3</td>
<td>RPLCHN</td>
</tr>
</tbody>
</table>

First of Chain

Middle of Chain

End of Chain

Only in Chain

A purging chain state has been detected, probable because module IATSNDN sent a negative response. The first entry to the PURGE routine will be traced, and the receipt of the End of Chain. Cancel will be traced. Intervening RUs are not traced. The trace entry format is:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>V09</td>
</tr>
<tr>
<td>2</td>
<td>RPLCNTDF</td>
</tr>
<tr>
<td>3</td>
<td>RPLCHN</td>
</tr>
</tbody>
</table>

This is a data RU

Cancel

Chase

First of Chain

Middle of Chain

End of Chain

Only in Chain

A cancel command or end of chain has been received, and a purging chain state exists. No data is traced.
<table>
<thead>
<tr>
<th>V0C</th>
<th>PATH</th>
<th>A data flow control request/response unit (RU) has been received. The trace entry format is:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Offset</td>
<td>Contents</td>
</tr>
<tr>
<td>0</td>
<td>V0C</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>validity</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>LCBRXM</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>LCBCNSO</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>DVEDVSL</td>
<td></td>
</tr>
</tbody>
</table>

validity
X'80' Byte 5 (DVEDVSL) contains a valid address
X'00' Byte 5 (DVEDVSL) contains an invalid address
X'80' Wait for Logical Unit Status (LUS) command. The sense bytes contain X'0802'
X'40' Wait for Logical Unit Status (LUS) command. The sense bytes contain X'081B'
X'20' Unit is available if RU is an LUS command; unit is unavailable in all other cases.

LCBCNSO
X'20' OPEN processing being performed for a writer.
X'10' OPEN processing being performed for a console.

DVEDVSL
Valid only if byte 2 (validity) contains X'80'. Upon receipt of a negative response (sense bytes contain X'0802' or X'081B') module IATSNDR provides the address of the device entry representing the unit for which there is a wait for an LUS command.
X'30' Printer
X'20' Reader or punch
X'10' Exchange or basic exchange device
X'00' Console
X'0F' Subaddress (for example, X'30' is PR1, X'31' is PR2)

V0D | PATH | The DFCRUD subroutine will send a Begin Bracket, End Bracket, Only in Chain, Null request/response unit (RU) for an error recovery program when a LUSTAT follows a console Begin Destination. |

V0F | PATH | The “receive any” exit has been scheduled for a session that is already inbound. Another “receive any” will be issued without issuing a “receive specific.” |

VFF | ABEND | An attempt was made to reuse a request parameter list (RPL) which is still active. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Offset</td>
<td>Contents</td>
</tr>
<tr>
<td>0</td>
<td>VFF</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RPLPLHPT</td>
<td></td>
</tr>
</tbody>
</table>

MODE
X'00' The abnormal end is a DM551.
X'80' The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.
### Communication Traces

#### Table 7. SNA RJP Recording Environment Trace Entries (continued)

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFF</td>
<td>ABEND</td>
<td>An attempt was made to reuse a request parameter list (RPL) which is still active.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Offset</strong> <strong>Contents</strong></td>
</tr>
<tr>
<td>0</td>
<td>BFF</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RPLPLHPT</td>
<td></td>
</tr>
</tbody>
</table>

**MODE**
- X'00'  The abnormal end is a DM551.
- X'80'  The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X01</td>
<td>PATH</td>
<td>The work queue processor routine sends Suspend Destination, Change Direction if the writer is 'temporarily closed'. Module IATSNDD initiated the request because a Signal RU was received. The trace contains the address of the suspended unit. The trace entry format is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Offset</strong> <strong>Contents</strong></td>
</tr>
<tr>
<td>0</td>
<td>X01</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>DVEDVSL</td>
<td></td>
</tr>
</tbody>
</table>

**DVEDVSL**
- X'30'  Printer
- X'20'  Reader or punch
- X'10'  Exchange or basic exchange device
- X'00'  Console

**X'0F'**  Subaddress (for example, X'30' is PR1, X'31' is PR2)

An attempt was made to reuse a request parameter list (RPL) which is still active.

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>XFF</td>
<td>ABEND</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Offset</strong> <strong>Contents</strong></td>
</tr>
<tr>
<td>0</td>
<td>XFF</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MODE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RPLPLHPT</td>
<td></td>
</tr>
</tbody>
</table>

**MODE**
- X'00'  The abnormal end is a DM551.
- X'80'  The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.
Table 7. SNA RJP Recording Environment Trace Entries (continued)

IATSNLS Trace Entries

Module IATSNLS is the SNA RJP subtask. It:
- Opens the access method control block (ACB) and issues a SETLOGON macro
- Closes the ACB and returns to MVS upon termination of SNA RJP
- Contains VTAM exit routines scheduled through IRBs

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y03</td>
<td>PATH</td>
<td>The OPNDST exit routine has been entered. A response has been received to the JES3 bind request. No data is traced.</td>
</tr>
<tr>
<td>Y06</td>
<td>PATH</td>
<td>The CLSDST exit routine has been entered. No data is traced.</td>
</tr>
<tr>
<td>Y0D</td>
<td>PATH</td>
<td>The LOSTERM routine has been entered (because of logoff, buffer limit exceeded, or lost contact). LOSTERM reason codes are documented in module IATSNLS. See VTAM Macro Language Reference for additional codes. The trace entry format is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset Contents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 Y0D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 LOSTERM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LOSTERM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major codes are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X'14' LU logoff immediate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X'20' LU logoff conditional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X'24' Buffer limit exceeded</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td>If the buffer limit is exceeded 5 times, a CLR/Start Data Traffic will be issued for the session.</td>
</tr>
</tbody>
</table>

IATSNRS Trace Entries

Module IATSNRS is responsible for resetting:
- Printers
- Punches
- Card readers
- Consoles

<table>
<thead>
<tr>
<th>Path ID</th>
<th>Type</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>H01</td>
<td>PATH</td>
<td>Module IATSNRS is entered. No data is traced.</td>
</tr>
<tr>
<td>H02</td>
<td>PATH</td>
<td>The console device is being reset. No data is traced.</td>
</tr>
<tr>
<td>H03</td>
<td>PATH</td>
<td>The console device is closed. No data is traced.</td>
</tr>
<tr>
<td>H04</td>
<td>PATH</td>
<td>The writer type devices are reset. No data is traced.</td>
</tr>
<tr>
<td>H05</td>
<td>PATH</td>
<td>The reader type devices are reset. No data is traced.</td>
</tr>
</tbody>
</table>

While attempting to logon to a SNARJP workstation, JES3 encountered an error. JES3 returns sense information to the VTAM application or workstation. The LOGON command failed for one of the following reasons:

Table 8. Sense Codes

<table>
<thead>
<tr>
<th>Sense Code in Hex</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0801</td>
<td>The resource is not available. The LOGON command was entered issuing a request to a workstation that is not defined to JES3 or JES3 is unable to obtain the necessary resources to establish the session.</td>
</tr>
<tr>
<td>0804</td>
<td>An incorrect password was specified by a workstation logging on.</td>
</tr>
<tr>
<td>0805</td>
<td>JES3 reached the maximum number of active sessions.</td>
</tr>
<tr>
<td>080F</td>
<td>The workstation is not available for logon. The maximum number of attempts to logon has been reached.</td>
</tr>
<tr>
<td>Sense Code in Hex</td>
<td>Explanation</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>0815</td>
<td>The workstation is already logged on.</td>
</tr>
<tr>
<td>0818</td>
<td>The workstation is currently ending.</td>
</tr>
<tr>
<td>0821</td>
<td>The workstation specified incorrect parameters.</td>
</tr>
</tbody>
</table>
## Communication Traces

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>path-id</td>
</tr>
<tr>
<td>2</td>
<td>BFECFLG1</td>
</tr>
<tr>
<td>3</td>
<td>FMHLENTH</td>
</tr>
<tr>
<td>4</td>
<td>FMHTYPE</td>
</tr>
<tr>
<td>5</td>
<td>FMH1DTY</td>
</tr>
<tr>
<td></td>
<td>FMH2CODE</td>
</tr>
<tr>
<td>6</td>
<td>FMH1DSFL</td>
</tr>
<tr>
<td>7</td>
<td>FMH1ERCL</td>
</tr>
</tbody>
</table>

**BFECFLG1**

- **X'80'**  First of Chain
- **X'40'**  End of Chain
- **X'20'**  Middle of Chain
- **X'C0'**  Only in Chain
- **X'10'**  Next entry is function management header (FMH) present entry
- **X'08'**  Begin Bracket
- **X'04'**  End Bracket
- **X'02'**  Change Direction
- **X'01'**  Associated request/response unit (RU) is in ASCII

**FMHLENTH** (length of the FMH)

**FMHTYPE**

- **X'01'**  Type 1 header
- **X'02'**  Type 2 header: JES3 peripheral data set information record (PDIR) or box query for compaction table
- **X'03'**  Type 3 header: used by JES3 to send compaction tables

**FMH1DTY (Type 1 headers only)**

- **X'30'**  Printer
- **X'20'**  Reader or punch
- **X'10'**  Select-diskette/data format is SNA
- **X'00'**  Console

**FMH2CODE (Type 2 and type 3 headers)**

- **X'03'**  Box query for compaction table (type 2 headers)
- **X'02'**  Compaction table (type 3 headers)
- **X'01'**  Print/punch setup header (type 2 headers)

*Figure 6. DFC Trace Entry Format, FMH Present (Part 1 of 2)*
Communication Traces

FMH1DSFL (Type 1 headers only)

- **X'80'** Suspend Destination
- **X'40'** Begin Destination
- **X'20'** End Destination
- **X'10'** Select-diskette/data format is non-SNA
- **X'E0'** Resume Destination
- **X'C0'** Continue Destination
- **X'A0'** Abort Destination
- **X'04'** Stream will be compressed
- **X'02'** Stream will be compacted

FMH1ERCL (Type 1 headers only - logical length of the stream)

Figure 6. DFC Trace Entry Format, FMH Present (Part 2 of 2)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>path-id</td>
</tr>
<tr>
<td>2-4</td>
<td>BFECFLG1</td>
</tr>
<tr>
<td>3-4</td>
<td>BFEDATL</td>
</tr>
</tbody>
</table>

**BFECFLG1**

- **X'80'** First in Chain
- **X'40'** End of Chain
- **X'20'** Middle of Chain
- **X'CO'** Only in Chain
- **X'10'** Next entry is FMH present entry
- **X'08'** Begin Bracket
- **X'04'** End Bracket
- **X'02'** Change Direction
- **X'01'** Associated RU is in ASCII

**BFEDATL**

is the RU length

Figure 7. DFC Trace Entry Format, FMH Not Present
Communication Traces

<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>path-id</td>
</tr>
<tr>
<td>2-5</td>
<td>sense bytes</td>
</tr>
</tbody>
</table>

**Sense Byte 1**

- **X'80'** Path error
- **X'40'** RH error in the transmitted RU (RH indicates chaining, brackets, RMH, CD)
- **X'20'** State error, such as:
  - **X'20010000'** Sequence error
  - **X'20020000'** Chaining violation
  - **X'20030000'** Bracket protocol error
- **X'10'** Request error
  - **X'10010000'** Deblock/decompress error, inbound
  - **X'1008xxxx'** FMH error:
    - **X'1008080B'** Invalid compaction table name
    - **X'10082001'** Invalid destination, destination is active
    - **X'10082004'** Interruption level violation
    - **X'10082007'** Destination not available
    - **X'10082008'** Invalid end sequence
    - **X'10082009'** Invalid FMH length
    - **X'1008200A'** Invalid field setting
    - **X'10082010'** Bind FMH header violation
    - **X'10082019'** Stack reference error
    - **X'10084001'** Invalid FMH type
    - **X'10084002'** Invalid FMH code
    - **X'10084007'** Media not supported
    - **X'10084009'** Concatenation error
- **X'08'** Request reject, such as:
  - **X'08020000'** Intervention required
  - **X'08140000'** Bracket reject, Ready to Receive may follow
  - **X'081B0000'** Bracket reject, LU status may follow

*Figure 8. RESP Trace Entry Format*
<table>
<thead>
<tr>
<th>Offset</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>path-id</td>
</tr>
<tr>
<td>2</td>
<td>RPLREQ</td>
</tr>
<tr>
<td>3</td>
<td>RPLRTNCD</td>
</tr>
<tr>
<td>4</td>
<td>RPLFDB2</td>
</tr>
<tr>
<td>5-6</td>
<td>caller-id</td>
</tr>
</tbody>
</table>

**RPLREQ**

Request type, traced if a logical unit control block (LCB) pointer exists.
- X'15'  Set logon
- X'16'  Simulate logon
- X'17'  Open Destination
- X'1A'  Inquiry, session parameters
- X'1F'  Close Destination
- X'22'  Send
- X'23'  Receive
- X'24'  Reset Send or Receive
- X'25'  Clear or Start Data Traffic

**RPLRTNCD**

Return code, traced if an LCB pointer exists.

See *VTAM Programming*.

**RPLFDB2**

Feedback code, traced if an LCB pointer exists.

See *VTAM Programming*.

**Caller ID**

See [Table 9](#)

---

**Figure 9. ERR Trace Entry Format**

**Table 9. Caller IDs, Path A01**

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03</td>
<td>IATSND A</td>
<td>ERCK000 called internally after EXCRPL macro issued.</td>
</tr>
<tr>
<td>A04</td>
<td>IATSND A</td>
<td>ERCK000 called internally after EXCRPL macro issued.</td>
</tr>
<tr>
<td>C04</td>
<td>IATSND C</td>
<td>Cancel send by the writer CLOSE routine.</td>
</tr>
<tr>
<td>C06</td>
<td>IATSND C</td>
<td>Suspend Destination or Suspend Destination, Change Direction sent by the writer CLOSE routine.</td>
</tr>
<tr>
<td>C08</td>
<td>IATSND C</td>
<td>End Destination, End Bracket or End Destination, Change Direction or Abort Destination sent for the writer.</td>
</tr>
<tr>
<td>C0B</td>
<td>IATSND C</td>
<td>Resume Destination select sent by the console CLOSE routine.</td>
</tr>
<tr>
<td>C0D</td>
<td>IATSND C</td>
<td>End Destination, End Bracket sent by the console CLOSE routine.</td>
</tr>
<tr>
<td>C0F</td>
<td>IATSND C</td>
<td>Only in Chain, Change Direction sent to resume activity of an inbound reader interrupted for the outbound console.</td>
</tr>
<tr>
<td>E08</td>
<td>IATSND E</td>
<td>SESSIONC macro issued (SRB scheduled).</td>
</tr>
<tr>
<td>E0A</td>
<td>IATSND E</td>
<td>SESSIONC macro entered cleared exit. IATXERCK macro issued to check a VTAM return code.</td>
</tr>
<tr>
<td>M02</td>
<td>IATSND M</td>
<td>Send positive response (SRB control).</td>
</tr>
<tr>
<td>Caller ID</td>
<td>Caller</td>
<td>Explanation</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>M03</td>
<td>IATSNDM</td>
<td>Send positive response (DSP control).</td>
</tr>
<tr>
<td>M07</td>
<td>IATSNDM</td>
<td>Negative response sent by the NRSP routine.</td>
</tr>
<tr>
<td>M08</td>
<td>IATSNDM</td>
<td>Send positive response to query for compaction table.</td>
</tr>
<tr>
<td>M0A</td>
<td>IATSNDM</td>
<td>Compaction table sent.</td>
</tr>
<tr>
<td>M0C</td>
<td>IATSNDM</td>
<td>Send End Bracket or Change Direction for ERP after negative response sent and Cancel or End of Chain seen.</td>
</tr>
<tr>
<td>M0E</td>
<td>IATSNDM</td>
<td>POSREXIT system request block (SRB) scheduled after sending of positive response is complete.</td>
</tr>
<tr>
<td>N02</td>
<td>IATSNDN</td>
<td>Negative response sent.</td>
</tr>
<tr>
<td>N03</td>
<td>IATSNDN</td>
<td>NREXIT SRB scheduled after sending of negative response is complete.</td>
</tr>
<tr>
<td>005</td>
<td>IATSNDO</td>
<td>Suspend Destination sent by the console OPEN routine (writer is temporarily closed).</td>
</tr>
<tr>
<td>008</td>
<td>IATSNDO</td>
<td>Peripheral data set information record (PDIR) or Begin Destination sent.</td>
</tr>
<tr>
<td>00A</td>
<td>IATSNDO</td>
<td>Writer Begin Bracket sent.</td>
</tr>
<tr>
<td>00C</td>
<td>IATSNDO</td>
<td>Compaction table sent.</td>
</tr>
<tr>
<td>00F</td>
<td>IATSNDO</td>
<td>End Bracket sent from the reject routine for an ERP (after negative response to writer Begin Destination or compaction table).</td>
</tr>
<tr>
<td>R02</td>
<td>IATSNDR</td>
<td>Positive or negative response received after End of Chain RU sent.</td>
</tr>
<tr>
<td>R06</td>
<td>IATSNDR</td>
<td>PURGE routine issued Receive Spec for LU status after negative response (0802) was sent to writer Begin Destination.</td>
</tr>
<tr>
<td>R08</td>
<td>IATSNDR</td>
<td>PURGE routine sent Begin Bracket, End Bracket, Only in Chain to workstation (permanent console device error).</td>
</tr>
<tr>
<td>R0B</td>
<td>IATSNDR</td>
<td>PURGE routine issued Cancel after negative response to data chain.</td>
</tr>
<tr>
<td>S01</td>
<td>IATSNDS</td>
<td>Send exit (Check RU sent by IATSNDU).</td>
</tr>
<tr>
<td>T03</td>
<td>IATSNDT</td>
<td>RESETSR exit routine scheduled.</td>
</tr>
<tr>
<td>T05</td>
<td>IATSNDT</td>
<td>Start data traffic SESSIONC exit routine scheduled.</td>
</tr>
<tr>
<td>T07</td>
<td>IATSNDT</td>
<td>RESETR macro issued by Between Brackets routine to put session in ANY mode (SRB).</td>
</tr>
<tr>
<td>T08</td>
<td>IATSNDT</td>
<td>RESETR macro issued by Between Brackets routine to put session in ANY mode (DSP).</td>
</tr>
<tr>
<td>T11</td>
<td>IATSNDT</td>
<td>Common error check (IRB/SRB).</td>
</tr>
<tr>
<td>T12</td>
<td>IATSNDT</td>
<td>Common error check (DSP).</td>
</tr>
<tr>
<td>U04</td>
<td>IATSNDU</td>
<td>Common error check called by the SENDIT routine (after sending front RU) or by the CANCEL routine (DSP control).</td>
</tr>
<tr>
<td>U06</td>
<td>IATSNDU</td>
<td>Common error check called by the SENDIT routine (after sending front RU) or by CANCEL (SRB control).</td>
</tr>
<tr>
<td>V02</td>
<td>IATSNDV</td>
<td>Common error check (CHECK=yes).</td>
</tr>
<tr>
<td>V03</td>
<td>IATSNDV</td>
<td>Common error check (CHECK=no).</td>
</tr>
<tr>
<td>Z01</td>
<td>IATSNLB</td>
<td>CLSDST macro was issued for LOGON abort.</td>
</tr>
<tr>
<td>Z02</td>
<td>IATSNLB</td>
<td>OPNDST macro was issued.</td>
</tr>
<tr>
<td>W01</td>
<td>IATSNLD</td>
<td>SIMLOGON macro was issued.</td>
</tr>
<tr>
<td>W02</td>
<td>IATSNLD</td>
<td>CLSDST (error) macro was issued from JESTAE routine (ABEND during logon.</td>
</tr>
<tr>
<td>X02</td>
<td>IATSNLO</td>
<td>Work queue processor sent Suspend Destination, Change Direction.</td>
</tr>
<tr>
<td>X03</td>
<td>IATSNLO</td>
<td>CLSDST macro was issued by work queue processor.</td>
</tr>
<tr>
<td>Y01</td>
<td>IATSNLS</td>
<td>OPEN/CLOSE subtask issued SETLOGON macro.</td>
</tr>
<tr>
<td>Y02</td>
<td>IATSNLS</td>
<td>OPEN/CLOSE subtask issued RECEIVE macro to allow data transfer from any LU.</td>
</tr>
<tr>
<td>Y04</td>
<td>IATSNLS</td>
<td>OPNDST exit.</td>
</tr>
</tbody>
</table>
## Communication Traces

### Table 9. Caller IDs, Path A01 (continued)

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y07</td>
<td>IATSNLS</td>
<td>CLSDST exit.</td>
</tr>
<tr>
<td>Y08</td>
<td>IATSNLS</td>
<td>CLSDST error exit.</td>
</tr>
<tr>
<td>Y09</td>
<td>IATSNLS</td>
<td>SETLOGON exit.</td>
</tr>
<tr>
<td>Y0A</td>
<td>IATSNLS</td>
<td>SIMLOGON exit.</td>
</tr>
<tr>
<td>Y0B</td>
<td>IATSNLS</td>
<td>Logon exit (INQUIRE macro was issued for SESSPARMS and logon data).</td>
</tr>
<tr>
<td>Y0C</td>
<td>IATSNLS</td>
<td>CLSDST macro was issued in logon exit.</td>
</tr>
<tr>
<td>Y0F</td>
<td>IATSNLS</td>
<td>CLSDST macro was issued in ESTAE routine.</td>
</tr>
</tbody>
</table>

### Table 10. Caller IDs, Path E01

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA02</td>
<td>IATSNDA</td>
<td>Error condition, return code (RTNCD) is greater than X'14'.</td>
</tr>
<tr>
<td>DA03</td>
<td>IATSNDA</td>
<td>Error condition, return code (RTNDC) is zero.</td>
</tr>
<tr>
<td>DA04</td>
<td>IATSNDA</td>
<td>Exception condition routine gets FDBK2 for basic mode (SNA RJP uses record mode).</td>
</tr>
<tr>
<td>DA08</td>
<td>IATSNDA</td>
<td>Asynchronous retry limit was reached.</td>
</tr>
<tr>
<td>DA09</td>
<td>IATSNDA</td>
<td>Synchronous retry limit was reached (SIMLOGON).</td>
</tr>
<tr>
<td>DA0A</td>
<td>IATSNDA</td>
<td>Data integrity routine gets FDBK2 for basic mode.</td>
</tr>
<tr>
<td>DA0B</td>
<td>IATSNDA</td>
<td>Environmental error routine gets unknown FDBK2.</td>
</tr>
<tr>
<td>DA0C</td>
<td>IATSNDA</td>
<td>Unrecoverable error routine terminates for all codes except X'12'.</td>
</tr>
<tr>
<td>DC01</td>
<td>IATSNDC</td>
<td>Reader entered CLOSE and End Destination has not arrived.</td>
</tr>
<tr>
<td>DC02</td>
<td>IATSNDC</td>
<td>Inbound console entered CLOSE and End Destination Select has not arrived.</td>
</tr>
<tr>
<td>DD01</td>
<td>IATSNDD</td>
<td>Unsupported DFASY exit routine request or unsupported SIGNAL code.</td>
</tr>
<tr>
<td>DF01</td>
<td>IATSNDF</td>
<td>Functional recovery routine cancels session for SRB abend on session.</td>
</tr>
<tr>
<td>DM01</td>
<td>IATSNDM</td>
<td>End Bracket was processed, but attempt to decrease workstation session counts resulted in a negative value (RB control).</td>
</tr>
<tr>
<td>DM02</td>
<td>IATSNDM</td>
<td>End Bracket was processed, but attempt to decrease workstation session counts resulted in a negative value (DSP control).</td>
</tr>
<tr>
<td>DM03</td>
<td>IATSNDM</td>
<td>End Bracket was processed without prior End Destination Select; destack implied for all session users (RB control) TYPE=CLEAR.</td>
</tr>
<tr>
<td>DM04</td>
<td>IATSNDM</td>
<td>End Bracket was processed without prior End Destination Select; destack implied for all session users (DSP control) TYPE=CLEAR.</td>
</tr>
<tr>
<td>DM05</td>
<td>IATSNDM</td>
<td>FMH routine was called to process an FMH that occurred on First of Chain, but will take effect on End of Chain. No FMH backout bits were on, nor was End Destination Select pending (RB control).</td>
</tr>
<tr>
<td>DM06</td>
<td>IATSNDM</td>
<td>FMH routine was called to process an FMH that occurred on First of Chain, but will take effect on End of Chain. No FMH backout bits were on, nor was End Destination Select pending (DSP control).</td>
</tr>
<tr>
<td>DM07</td>
<td>IATSNDM</td>
<td>JES3 sent an exchange or basic exchange header and the device entry (DVE) could not be located.</td>
</tr>
<tr>
<td>DM08</td>
<td>IATSNDM</td>
<td>NRSP routine has been called for a bracket error, or has been called for an outbound session.</td>
</tr>
<tr>
<td>DM09</td>
<td>IATSNDM</td>
<td>Change Direction routine attempted to update workstation session counts with a resulting negative value (RB control).</td>
</tr>
<tr>
<td>DM10</td>
<td>IATSNDM</td>
<td>Change Direction routine attempted to update workstation session counts with a resulting negative value (DSP control).</td>
</tr>
</tbody>
</table>
### Table 10. Caller IDs, Path E01 (continued)

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM11</td>
<td>IATSNDM</td>
<td>JES3 received a negative response sequence error (TYPE=CLEAR).</td>
</tr>
<tr>
<td>DM12</td>
<td>IATSNDM</td>
<td>An only in chain, end bracket, with FMH header detected while in chain state. Session terminated. (RB mode)</td>
</tr>
<tr>
<td>DM13</td>
<td>IATSNDM</td>
<td>An only in chain, end bracket, with FMH header detected while in chain state. Session terminated. (DSP mode)</td>
</tr>
<tr>
<td>DO01</td>
<td>IATSNDO</td>
<td>A new compaction table was sent and rejected; the previous (active) table was re-sent and also rejected.</td>
</tr>
<tr>
<td>DR01</td>
<td>IATSNDR</td>
<td>Negative response received to Suspend Destination Select, Resume Destination Select, Continue Destination Select (TYPE=CLEAR).</td>
</tr>
<tr>
<td>DR02</td>
<td>IATSNDR</td>
<td>Negative response received for error recovery program RU; there is a path or response header error; or a negative response was received with the error code 20xx, where xx is not 01.</td>
</tr>
<tr>
<td>DR03</td>
<td>IATSNDR</td>
<td>Negative response received after the SEND of the EOC RU was scheduled.</td>
</tr>
<tr>
<td>DR05</td>
<td>IATSNDR</td>
<td>The negative response exit in IATSNDR has detected an incorrect sense code of X'1008'.</td>
</tr>
<tr>
<td>DT11</td>
<td>IATSNDT</td>
<td>Module IATSNDP called IATSNDT to restart the session traffic outbound and the session flipped to inbound. Session direction changed by the RECEIVE exit in IATSNDV.</td>
</tr>
<tr>
<td>DV01</td>
<td>IATSNDV</td>
<td>DFCRU routine was called and it received an error return from IATXERCK upon sending an error recovery program RU.</td>
</tr>
<tr>
<td>DV02</td>
<td>IATSNDV</td>
<td>BUFF routine found the inbound stack to be empty, indicating no active inbound users.</td>
</tr>
<tr>
<td>DV03</td>
<td>IATSNDV</td>
<td>A permanent error was detected in the CHKOUT routine. CHKOUT found the LCBIQF flag on, indicating that a quiesce normal was in progress. CHKOUT will call the termination routine (IATSNDE).</td>
</tr>
<tr>
<td>LC01</td>
<td>IATSNLC</td>
<td>Operator cancel or SNA RJP cancel (TYPE=Q,QI).</td>
</tr>
<tr>
<td>LD01</td>
<td>IATSNLD</td>
<td>JESTAE recovery after DM551.</td>
</tr>
<tr>
<td>LS01</td>
<td>IATSNLS</td>
<td>OPNDST failed.</td>
</tr>
<tr>
<td>LS02</td>
<td>IATSNLS</td>
<td>LOSTERM routine was entered, not logoff immediate. (TYPE=Q for logoff conditional, TYPE=CLEAR for BUFLIM exceeded.)</td>
</tr>
<tr>
<td>LS03</td>
<td>IATSNLS</td>
<td>LOSTERM routine was entered, logoff immediate.</td>
</tr>
<tr>
<td>LS04</td>
<td>IATSNLS</td>
<td>ESTAE recovery for LOSTERM abend.</td>
</tr>
<tr>
<td>LS05</td>
<td>IATSNLS</td>
<td>ESTAE recovery for RESP IRB routine abend.</td>
</tr>
<tr>
<td>LS06</td>
<td>IATSNLS</td>
<td>LOPNDST exit entered for a session that has an outstanding operator CANCEL.</td>
</tr>
</tbody>
</table>

### Table 11. Caller IDs, Path M01

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C02</td>
<td>IATSNDC</td>
<td>Positive response to End Destination (reader).</td>
</tr>
<tr>
<td>C09</td>
<td>IATSNDC</td>
<td>Console close positive response to End Destination Select.</td>
</tr>
<tr>
<td>G01</td>
<td>IATSNDG</td>
<td>Send positive response to End of Chain (data chain).</td>
</tr>
<tr>
<td>G03</td>
<td>IATSNDG</td>
<td>Send positive response to Chase or Cancel.</td>
</tr>
<tr>
<td>N04</td>
<td>IATSNDN</td>
<td>Negative response sent, receive exit has seen End of Chain or Cancel.</td>
</tr>
<tr>
<td>O01</td>
<td>IATSNDO</td>
<td>Begin Destination Select arrived, call for positive response (reader).</td>
</tr>
<tr>
<td>O02</td>
<td>IATSNDO</td>
<td>Positive response to inbound console Begin Destination Select.</td>
</tr>
<tr>
<td>P02</td>
<td>IATSNDP</td>
<td>Process positive response to writer End of Chain.</td>
</tr>
</tbody>
</table>
Table 11. Caller IDs, Path M01 (continued)

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P03</td>
<td>IATSNDP</td>
<td>Negative response received to writer chain; End of Chain was already sent.</td>
</tr>
<tr>
<td>R0C</td>
<td>IATSNDR</td>
<td>Process Purging Chain State or positive response to End of Chain RU.</td>
</tr>
<tr>
<td>V0A</td>
<td>IATSNDV</td>
<td>Negative response sent, receive exit routine has seen End of Chain or Cancel.</td>
</tr>
<tr>
<td>V0B</td>
<td>IATSNDV</td>
<td>Update session state for First of Chain, Only in Chain.</td>
</tr>
</tbody>
</table>

Table 12. Caller IDs, Path T01

<table>
<thead>
<tr>
<th>Caller ID</th>
<th>Caller</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>E08</td>
<td>IATSNDP</td>
<td>Send Start Data Traffic.</td>
</tr>
<tr>
<td>G02</td>
<td>IATSNDG</td>
<td>Issue a Receive.</td>
</tr>
<tr>
<td>M0D</td>
<td>IATSNDM</td>
<td>ERP inbound complete.</td>
</tr>
<tr>
<td>M0F</td>
<td>IATSNDM</td>
<td>Issue Receive after positive response to End of Chain.</td>
</tr>
<tr>
<td>N05</td>
<td>IATSNDN</td>
<td>Issue Receive; End of Chain has not arrived and Receive exit routine is not active.</td>
</tr>
<tr>
<td>P01</td>
<td>IATSNDP</td>
<td>I/O not pending, buffer 50% full or End of Chain, activate send exit routine.</td>
</tr>
<tr>
<td>P04</td>
<td>IATSNDP</td>
<td>Negative response was received for writer chain and End of Chain had already been sent; give the console or reader a chance to use the session.</td>
</tr>
<tr>
<td>P05</td>
<td>IATSNDP</td>
<td>Activate send exit to Cancel-for-Writer chain (negative response received).</td>
</tr>
<tr>
<td>P06</td>
<td>IATSNDP</td>
<td>Activate send exit to Cancel-for-Console chain; negative response was received.</td>
</tr>
<tr>
<td>V0E</td>
<td>IATSNDV</td>
<td>Data flow control RU processed.</td>
</tr>
<tr>
<td>Y05</td>
<td>IATSNLs</td>
<td>OPNDST complete, send Start Data Traffic.</td>
</tr>
</tbody>
</table>

Typical SNA RJP Protocol Sequences

A general understanding of SNA RJP protocol sequences is important when using traces for debugging. Figure 10 contains sample protocols you can use in establishing a context for interpreting trace output.

Abbreviations used in Figure 10 are:

+R  Positive Response
-R  Negative Response
BB  Begin Bracket
BDS Begin Destination
CD  Change Direction
CDS Continue Destination
CTAB Compaction Table
EB  End Bracket
EDS End Destination
EOC End of Chain
FMH Function Management Header
FOC First in Chain
LUSTAT Logical Unit Status
MOC Middle of Chain
OC  Only in Chain
PDIR Peripheral Data Set Information Record
RDS Resume Suspended Destination
Communication Traces

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RH</td>
<td>Request Header</td>
</tr>
<tr>
<td>RQD</td>
<td>Request Definite Response</td>
</tr>
<tr>
<td>RQE</td>
<td>Request Exception Response</td>
</tr>
<tr>
<td>RU</td>
<td>Request Unit</td>
</tr>
<tr>
<td>SDS</td>
<td>Suspend Destination</td>
</tr>
<tr>
<td>SVF</td>
<td>Set Vertical Format</td>
</tr>
<tr>
<td>TH</td>
<td>Transmission Header</td>
</tr>
</tbody>
</table>

Inbound Console (Idle Session)

Console data need not be sent with select headers. If a data chain is received and there is no destination selected or the current selected destination is suspended, the chain implies a select sequence for the console.

```
BH,BE,OC,data,RQD
+R
```

Inbound Reader

```
BH,BDS(RD1),OC,RQD
+R
FRC,data,RQE
MOC[data,RQE
+R
FOC[data,RQD
+R
FDS(RD1),EB,OC,RQD
+R
```

Reader Interrupted for Outbound Console

```
BH,BDS(RD1),OC,RQD
+R
FRC[data,RQE
MOC[data,RQE
+R(10010000)
JES3 sends data error
Cancel
+R
OC,CD,RQD
+R
JES3 requests Change Direction
FRC[data,RQE
```

Reader Negative Response (Data Chain Error)

```
BH,BDS(RD1),OC,RQD
+R
FRC[data,RQE
MOC[data,RQE
+R
EDS(RD1),EB,OC,RQD
```

EB is an implied deselect sequence for all active or suspended destinations.

Figure 10. Typical SNA RJP Protocol Sequences (Part 1 of 5)
Figure 10. Typical SNA RJP Protocol Sequences (Part 2 of 5)
Communication Traces

**Writer (continued)**

- FOC data RQE
- MOC data RQE
- FOC data RQQ

**Writer Suspended for Outbound Console**

- B9.OC.RQD
- B9S/PRx,OC,RQQ

**Writer Suspended for Outbound Console (continued)**

- FOC data RQE
- MOC data RQE
- FOC data RQQ

**Writer Negative Response (Intervention required)**

- B9.OC.RQD
- B9S/PRx,OC,RQQ

**Writer Interrupted for Reader**

- B9.OC.RQD
- B9S/PRx,OC,RQQ

**Writer Suspended for Outbound Console**

- FOC data RQE
- MOC data RQE

**Writer Negative Response (Intervention required)**

- B9.OC.RQD
- B9S/PRx,OC,RQQ

**Writer Interrupted for Reader**

- B9.OC.RQD
- B9S/PRx,OC,RQQ

---

*Figure 10. Typical SNA RJP Protocol Sequences (Part 3 of 5)*
Communication Traces

Figure 10. Typical SNA RJP Protocol Sequences (Part 4 of 5)
Trace Data Reduction

To reduce the number of repetitive entries that would otherwise appear in a trace, the SNA RJP recording environment performs some data reduction and, for certain situations, selectively prints entries.

For inbound chains, traces include every First of Chain and End of Chain request/response unit (RU) for path ID V06. However, intervening Middle of Chain RUs are not traced (protocols may be sent on First of Chain or End of Chain, but not Middle of Chain).

For outbound chains, traces include only the first End of Chain between activity changes at path ID U01. An activity change is defined as processing for a function management header, Begin Bracket, Change Direction, or End Bracket RU. Thus, for outbound chains, the trace table will show only one data chain although many data chains may have been sent. Outbound protocols are always traced. Also, writer cancel data set conditions are always traced (in this case, an Only in Chain, Null RU may be sent), and FCB load sequences (such as Set Vertical Format) are traced. Data reduction for outbound chains prevents trace entries for the frequently-occurring End of Chain, positive response sequences. If the entry for path ID U01 is suppressed, the entries for path ID M01 and R0D are also suppressed (the entries for path ID M01 and R0D would be that for the positive response). Figure 11 illustrates selective tracing for a standard writer sequence and for a writer sequence where the writer is interrupted for console activity:

Figure 10. Typical SNA RJP Protocol Sequences (Part 5 of 5)
Entries to modules IATSNDA and IATSNDE are always traced at path IDs A01 and E01, respectively. Entry to module IATSNDM is always traced at path M01 except as noted earlier for outbound chains. Entry to module IATSNDT at path ID T01 is selectively traced. Events not traced at path T01 are:

- **Positive responses to outbound chains:** If a positive response to an outbound console chain is received, module IATSNDR will invoke module IATSNDM for updating session states. In this case, module IATSNDM will always use its EOCH routine to invoke module IATSNDT. Similarly, if a positive response to an outbound writer chain is received, module IATSNDP will invoke module IATSNDM to update session states. However, in this case, IATSNDM will not invoke IATSNDT. Instead, control will be returned to IATSNDP, and IATSNDP will invoke module IATSNDT to restart session activity.

- **Positive responses to inbound Only in Chain, no data:** If an Only in Chain, no data RU is received or, in certain cases, if an Only in Chain, function management header (FMH) is received, module IATSNDM will use its EOCH routine to send the required positive response and will then call module IATSNDT. (Module IATSNDM is called by module IATSNDV for First of Chain processing.)

- **Reactivation of send/receive exits:** Module IATSNDT may be called by module IATSNDG to reactivate the receive exit routine, as would happen when the receive exit routine had previously filled all buffers and the reader has processed...
#### Communication Traces

... enaugh buffers to resume receiving. Module IATSNDT may also be called by module IATSNDP to reactivate the send exit routine. Neither of these entries to module IATSNDT are traced at path ID T01. There will, however, be a trace entry for reactivation of the receive exit routine at path ID T02. For reactivation of the send exit routine, there will be no trace in module IATSNDT.

#### Snapshot Dump Output

When the SNA RJP recording environment is activated, a snapshot dump is produced and printed automatically every time a decompress or deblock error is found in an inbound stream. The format of a snapshot dump is different from that of a trace.

---

**ERROR BFE** contains the address of the RU for which a negative response was sent.

The reason for the negative response is at offset X'384'. Reason codes are:

**X'02'**

Decompression error, module IATSNPI. Possible causes are:

1. The string control byte (SCB) count indicates more data than exists in the current RU.
2. The SCB indicates compaction, but decompaction is not supported.
3. Pointers were incorrectly managed, and a data byte was taken to be an SCB (resulting in #2, above).
Communication Traces

4. The SCB count is zero.

X'03' The transparent data (TRN) count indicated more data than was available.

X'04' There is a short record in the current RU, and the bind image specifies that
data cannot span RUs (readers only).

The presentation services interface area begins at offset X'334'. Four values in the
interface area control the decompression process:

**Offset**  **Meaning**

X'33C' The current position of module IATSNPI in the RU

X'340' The current position of module IATSNPI in the 512-byte work area

X'344' The number of bytes to be processed in the RU

X'346' The number of unused bytes in the 512-byte work area

The function management inbound area begins at offset X'368'. Relevant values
are:

**Offset**  **Meaning**

X'36C' Scan pointer to the RU or 512-byte work area

X'376' The maximum number of records that will fit in the caller's area

X'378' The number of unused record slots in the caller's area

X'37C' The data count for the temporary work area

X'37E' The count from the last TRN,CNT sequence

X'3B0' The start of the temporary work area, which is used for spanning

**Format of a BSC Network Trace Entry**
The BSC network logging facility is a debugging aid for nodes that use BSC
networking protocols. An entry is added to the trace data set from each I/O
operation performed on a BSC networking line.

The following is a sample of the trace function report:
The time-stamp is in the form hhmmssth, where hh is the hour, mm is the minute, ss is the second and th is the tenths and hundredths of a second. The time-stamp indicates the time of day the trace entry was made and appears at the beginning of each trace entry.

LNIOSB is the input/output supervisor block for the line. It is mapped by IECDIOSB.

CCWCHAIN is the full channel program used which caused this trace entry to be taken.

READ and WRITE refer to data read from or written to the line and bear a direct relationship to the CCW chain. Any CCW which causes data to be read, such as READ or SENSE, will cause a READ data entry to be made. Any CCW which causes data to be written will cause a WRITE entry to be made. These full READ and WRITE data entries will follow CCWCHAIN and appear in an order corresponding to the order of the CCW string.

Exception Responses: JES3 may receive an exception response after transmitting data to a remote workstation, or it may transmit an exception response after receiving data from a remote workstation. For each exception response, 01 console. The meanings of exception response codes are described in z/OS MVS System Messages, Vol 5 (EDG-GFS).
Actions taken by SNA RJP to recover from exception response situations depend upon the type and seriousness of the error. Failing devices are varied offline. Errors related to data files cause input jobs to be flushed and output data sets to be requeued in hold status. When permanent session errors occur, the session is terminated.

Some exception responses are the result of inoperable devices or line failures and program debugging would be meaningless. Others can be program-related, as when an invalid protocol is transmitted by JES3 or when input data is misinterpreted by JES3. Before notifying the IBM representative about program-related problems, obtain the following:

- A listing of the initialization stream
- SNA RJP trace output
- The console log containing the exception response message

**No Communication Between a Workstation and the Host:** In the event that SNA RJP will not accept input from a remote workstation console or reader and at the same time will not transmit to the console, printer, or punch at that workstation, the operator of the remote console should direct the host operator to restart SNA RJP for the workstation. If such a problem occurs repeatedly and you seek assistance from the IBM representative, obtain the following:

- A listing of the initialization stream.
- SNA RJP trace output.
- The console log.
- An MVS dump of JES3 address space (with the CSA), taken before restarting or canceling the workstation.

**Format of TCP/IP/NJE Trace Records**

TCP/IP/NJE trace records are generated by IAZNJTCP at the direction of JTRACE and ITRACE on the Netserv and socket definitions. These trace records are collected by using GTF record F60, subtype 0004.

Each record contains an identifier consisting of the string "NETSERV" or "SOCKET", which is followed by the letter "I" or "J". The "NETSERV" or "SOCKET" characters identify the level of the trace record. The letter "I" or "J" identifies the type of trace record (for example, ITRACE or JTRACE). An ITRACE record contains internal trace information that is passed between IAZNJTCP and TCP/IP. A JTRACE record contains NJE control information and data. NJE control information and data is a subset of the trace information that is produced by BSC line logging. Compressed data, control information, and header/trailer records are generated in TCP/IP/NJE. Trace records consisting of CCW, IOSB, or SRB information, unlike BSC logging, are not generated in TCP/IP/NJE.

TCP/IP traces contain most trace records at the socket level. Trace records at the Netserv level are typically produced early in the signon sequence before a socket connection is established.

ITRACE and JTRACE records are controlled by the ITRACE= and JTRACE= parameters that is on the NETSERV or SOCKET initialization statements or on the *MODIFY,NETSERV and *MODIFY,SOCKET commands. The records are written using the Generalized Trace Facility (GTF). See "Using the Data Collected by the Generalized Trace Facility" on page 112 for more information.

IAZNJTCP produces a third type of trace record that is called Verbose Trace (VTRACE). VTRACE records are controlled by the VTRACE= parameter that is on
The following example is a TCP/IP/NJE trace after it has been collected and formatted in IPCS.
Communication Traces

HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00100011 E2E8F140 40404040 | .......SY1 |
+0020 E2D6C3D2 C5E3C940 7C0000F0 F0F0F0F1 SOCKETI 00000001 |
+0030 28000004 E3E3D9C3 9985B835 00000000 ....uTTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 ........... | 
+0050 00000000 00000000 00000000 00000000 ........... |
+0060 00000000 00000000 00000000 00000000 ........... |
+0070 00000000 00000000 00000000 00000000 ........... |
+0080 00000000 00000000 00000000 00000000 ........... |
+0090 00000000 00000000 00000000 00000000 ........... |
+00A0 00000000 00000000 00000000 00000000 ........... |
+00B0 00000000 00000000 00000000 00000000 ........... |
+00C0 00000000 00000000 00000000 00000000 ........... |
+00D0 00000000 00000000 00000000 00000000 ........... |
+00E0 00000000 00000000 00000000 00000000 ........... |
+00F0 00000000 00000000 00000000 00000000 ........... |


HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00100011 E2E8F140 40404040 | .......SY1 |
+0020 E2D6C3D2 C5E3C940 7C0000F0 F0F0F0F1 SOCKETI 00000001 |
+0030 00000016 00000016 00000000 00000000 ....TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 ........... |
+0050 00000000 00000000 00000000 00000000 ........... |
+0060 00000000 00000000 00000000 00000000 ........... |
+0070 00000000 00000000 00000000 00000000 ........... |
+0080 00000000 00000000 00000000 00000000 ........... |
+0090 00000000 00000000 00000000 00000000 ........... |
+00A0 174097B8 00000010 174097C8 00000000 ..p..... pH.... |
+00B0 00000000 00000000 00000000 00000000 ........... |
+00C0 00000000 00000000 00000000 00000000 ........... |
+00D0 00000000 00 | ..... |


HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00100011 E2E8F140 40404040 | .......SY1 |
+0020 E2D6C3D2 C5E3C940 7C0000F0 F0F0F0F1 SOCKETI 00000001 |
+0030 3000000A 00000000 00000000 00000000 ...."TRCrecv.... |
+0040 00000000 00000000 00000000 00000000 ........... |
+0050 00000000 00000000 00000000 00000000 ........... |
+0060 00000000 00000000 00000000 00000000 ........... |
+0070 00000000 00000000 00000000 00000000 ........... |
+0080 00000000 00000000 00000000 00000000 ........... |
+0090 00000000 00000000 00000000 00000000 ........... |
+00A0 00000000 00000000 00000000 00000000 ........... |
+00B0 174097B8 00000010 174097C8 00000000 ..p..... pH.... |
+00C0 00000000 00000000 00000000 00000000 ........... |
+00D0 00000000 00 | ..... |


HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00100011 E2E8F140 40404040 | .......SY1 |
+0020 E2D6C3D2 C5E3C940 7C0000F0 F0F0F0F1 SOCKETI 00000001 |
+0030 28000024 E3E3D9C3 9985B835 00000000 ...TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 ........... |
+0050 00000000 00000000 00000000 00000000 ........... |
+0060 00000000 00000000 00000000 00000000 ........... |
+0070 00000000 00000000 00000000 00000000 ........... |
+0080 00000000 00000000 00000000 00000000 ........... |
+0090 00000000 00000000 00000000 00000000 ........... |
+00A0 174097B8 00000010 174097C8 00000000 ..p..... pH.... |
+00B0 00000000 00000000 00000000 00000000 ........... |
+00C0 00000000 00000000 00000000 00000000 ........... |
+00D0 00000000 00 | ..... |

Communication Traces

HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1CE2F3 E2F34040 C7E3D9C3 | ....JES3S GTRC |
+0010 00000004 00010001 E2EBF140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 SOCKETI 00000001 |
+0030 28000024 0024D39C A2B59B84 00000000 | .......uTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 00000000 00000000 | ................ |
+0060 00000000 00000000 00000000 00000000 | ................ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000000 00000000 | ................ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 174097B4 00000010 174097C8 00000000 | .. ....p.... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 00000000 00000000 | ................ |

HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1CE2F3 E2F34040 C7E3D9C3 | ....JES3S GTRC |
+0010 00000004 00010001 E2EBF140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 SOCKETI 00000001 |
+0030 28000024 E3E3D9C3 A2B59B74 00000000 | .......uTTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 00000000 00000000 | ................ |
+0060 1755265C 00000016 00000000 00000000 | ...*............ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000000 00000000 | ................ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B4 00000010 174097C8 | ..........p... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 00000000 00000000 | ................ |

HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1CE2F3 E2F34040 C7E3D9C3 | ....JES3S GTRC |
+0010 00000004 00010001 E2EBF140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 SOCKETI 00000001 |
+0030 28000024 E3E3D9C3 A2B59B84 00000000 | .......uTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 00000000 00000000 | ................ |
+0060 1755265C 00000016 00000000 00000000 | ...*............ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000000 00000000 | ................ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 174097B8 00000010 174097C8 | ........p.... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 00000000 00000000 | ................ |

HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1CE2F3 E2F34040 C7E3D9C3 | ....JES3S GTRC |
+0010 00000004 00010001 E2EBF140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 SOCKETI 00000001 |
+0030 28000024 E3E3D9C3 A2B59B84 00000000 | .......uTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 00000000 00000000 | ................ |
+0060 1755265C 00000016 00000000 00000000 | ...*............ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000000 00000000 | ................ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B8 00000010 174097C8 | ..... p...... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 00000000 00000000 | ................ |
For general information on JES3 GTF trace records and how the record header is mapped, see "Using the Data Collected by the Generalized Trace Facility" on page 112. For TCP/IP records specifically, the information that follows the GTF record header is mapped by macro IATYG004.

**Dump Job Trace Output**

Three types of trace output may be obtained from the dump job facility (DJ):

- Channel command word (CCW) tracing

For TCP/IP records specifically, the information that follows the GTF record header is mapped by macro IATYG004.
Dump Job Traces

- Control block (CB) name tracing
- Control block data (CBD) tracing

If ALL is specified on the TRACE= parameter of the *START command, all three types of tracing are performed. The output of DJ tracing is written to the DJ message log data set and is described below.

### CCW Trace Output

When CCW tracing is requested, the dump job facility traces the channel command words for each I/O operation. A trace entry is generated for each CCW in the channel program that is about to be initiated.

<table>
<thead>
<tr>
<th>CCW Trace</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>01210000 200010E8</td>
<td>Is the contents of a CCW in the channel program. If a plus sign (+) precedes the CCW, the CCW is chained to the CCW that precedes it. In this example, 1F000000 60000001 is chained to 03000000 20000001.</td>
<td></td>
</tr>
<tr>
<td>0120A878 20000050</td>
<td>IAT7229 DJ572-0017: SUCCESSFULLY DUMPED JOB PAGE (0005)</td>
<td></td>
</tr>
<tr>
<td>27000000 60000001</td>
<td>******** BLK TRACE -- JCT DUMPED FOR JOB OUT03 (0008)</td>
<td></td>
</tr>
</tbody>
</table>

### CB Name Trace Output

When CB name tracing is requested, the dump job facility traces the names of the control blocks and multi-record files (MRFs) (pointed to by the job data set (JDS) control block) that are dumped or restored for each job or DJC network. No data is traced. A single trace entry is generated each time a control block or MRF is dumped or restored. The entry identifies the name of the control block or MRF and the associated job or DJC network.

<table>
<thead>
<tr>
<th>CB Trace</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCT DUMPED FOR JOB PAGE (0005)</td>
<td>Is the ID of the control block being traced (for example, JCT, or JDAB) or MRF.</td>
<td></td>
</tr>
<tr>
<td>JESMSG RECORD CNT = 0000000007</td>
<td><strong>DUMPED</strong> indicates that the control block or MRF is being written to tape. <strong>RESTORED</strong> may appear instead, and indicates that the control block or MRF is being written back to spool.</td>
<td></td>
</tr>
<tr>
<td>JESYSMSG RECORD CNT = 0000000005</td>
<td><strong>JOB</strong> appears in all the trace entries for job-related</td>
<td></td>
</tr>
</tbody>
</table>
control blocks (for example, JCT and JDAB). The number in parentheses is the job number of the job at the time it was dumped. **NET** will appear instead, but only in the trace entries for control blocks that describe a DJC network such as JNCB or NCB.

Indicates the release identification (fmid), such as HJS2329, of the control block data or the ddname associated with the MRF. This is included in the trace entry only if control block translation is being performed.

**RECORD CNT=nnnnnnnn** indicates the number of logical records in the file and appears only for MRF tracing.

**CBD Trace Output**
When control block data tracing is requested, the dump job facility traces the names of the control blocks and multi-record files or MRFs that are dumped or restored for each job or DJC network in the same way as control block name tracing. In addition, the dump job facility traces the actual data contents of the control block buffers.

When TRANS=YES is specified, the dump job facility traces both the input and output versions of the control blocks. That is, the dump job facility traces the control blocks when they are read in from tape or spool before translation and then again when they are restored to spool or dumped to tape after translation.

Note that the traced versions of the control block buffers might not always appear in sequence in the Dump Job message log data set. Other processing being performed may result in messages or other type of trace entries being generated between the control block traces. Nor does a one to one correspondence between the traced versions of a control block buffer always exist. A single input control block buffer may expand into two or more control block buffers when the translation is performed.

When TRANS=NO is specified, the dump job facility traces only single copies of each control block buffer when it is dumped or restored.

---

| 1 | Is the ID of the control block being traced (for example, JCT or JDAB) or MRF. |
| 2 | Indicates either DUMPED, RESTORED, or READ IN. DUMPED indicates that the control block or MRF is being written to tape. If translation is required, it has already been translated by this time. RESTORED indicates that the control block or MRF is being written back to spool. If translation is required, it has already been translated by this time. READ IN indicates that |
Dump Job Traces

the control block was read in from tape (if restoring) or spool (if dumping). This type of tracing only occurs when translation is in effect and the data has not yet been translated.

3 Indicates the DJC network or specific job with which the control block data or MRF is associated. NET appears only in the trace entries for control blocks that describe a DJC network such as JNCB or NCB. JOB appears in all the trace entries for job-related control blocks (for example, JCT and JDAB). The number in parentheses is the job number of the job at the time it was dumped.

4 Indicates the release level (fmid), such as HJS2327, of the control block data or the ddname associated with the MRF. fmid is included in the trace entry only if control block translation is being performed.

5 RECORD CNT=nnnnnnnn indicates the number of logical records in the file and appears only for MRF tracing.

6 Indicates the control block data in hexadecimal format. The entire control block buffer is traced.

Storage Dumps

An abnormal end of JES3 produces a storage dump of the JES3 address space. In certain situations, it can become necessary or desirable to produce such an abend dump intentionally. Use the *DUMP command for this purpose. After the dump, JES3 must be reinitialized, as the *DUMP command causes JES3 to end. You cannot enter the *DUMP command in the input stream.

Dumps produced by the *DUMP command, or because of a JES3 failure, are handled according to the specification made at initialization time on the OPTIONS statement. See [z/OS JES3 Initialization and Tuning Reference](https://www.ibm.com/docs/en/zos-2012.2.0?topic=jes3-initialization-and-tuning-reference) for additional information. The type of dump taken at the time of the failure is indicated by JES or MVS:

- A JES3-formatted dump is written to the JESABEND data set. This data set is defined by the JESABEND DD statement in the JES3 procedure.
- An MVS dump of JES3 is written to either the SYSUDUMP or SYSABEND data set, depending upon which DD statement is used in the JES3 procedure. The storage areas dumped are controlled by the IEADMP00 or IEAABD00 dump default lists in SYS1.PARMLIB. These dump lists can be dynamically changed by the MVS CHNGDUMP (CD) command. See [z/OS MVS System Commands](https://www.ibm.com/docs/en/mvs-2012.2.0?topic=mvs-system-commands) for more detail on CHNGDUMP.

When a system failure occurs, the system attempts to write a storage dump on a SYS1.DUMP system data set, record the failure on the SYS1.LOGREC data set, recover from the failure, and continue processing.

If you want a dump of the JES3 address space without terminating the JES3 address space, you can issue the MVS DUMP command. For more information about the MVS DUMP command, see [z/OS MVS System Commands](https://www.ibm.com/docs/en/mvs-2012.2.0?topic=mvs-system-commands).

JES3 Dump Suppression

JES3 failsoft (ABENDDMxxx) dumps taken on the global processor can be suppressed using the JES3 dump suppression facility. All JES3 failsoft codes with the exceptions of dumps taken during initialization or dumps taken as a result of the *FAIL,DSP,DUMP command (ABENDDM133), can be suppressed. Dump suppression remains active across a JES3 hot start and warm start.
Dump Job Traces

JES3 dump suppression can only be used for JES3 failsoft dumps (ABENDDMxxx). To suppress other types of dumps, such as an ABEND0C4 or an ABEND2FB, see z/OS Problem Management.

JES3 dump suppression is available only when a JES3 failsoft normally issues a dump for ABENDDMxxx failures. This is set by the OPTIONS initialization stream statement, by either specifying the WANTDUMP=YES parameter or by omitting the WANTDUMP parameter from the OPTIONS statement.

If your system automatically asks the operator if a dump is to be taken (WANTDUMP=ASK), or if dumps are automatically bypassed (WANTDUMP=NO), JES3 dump suppression is not available. To change the WANTDUMP parameter, a warm start of JES3 is required.

Output Service Diagnostic Mode

Using the output service diagnostic mode, you can display information on the data sets that are selected by a writer for processing. The output service diagnostic mode is invoked by including the D parameter on the *CALL, *START, *RESTART, and *CANCEL command. The diagnostic mode remains active until it is reset using the /D parameter.

When the output service diagnostic mode has been invoked for a writer, messages IAT7006 and IAT7060 are displayed to identify the data set that was selected for output processing. Following message IAT7006, the output service diagnostic mode displays a seven byte field of information, within the text of message IAT7060, about the writer data area. The writer data area is mapped by either:
- IATODWD for a hot or dynamic writer
- IATODFD for a FSS writer

This data is obtained from the following fields in the writer work area in module IATODWD: WTRIMFLP, WTRIFLG1, WTRIFLG2, WTRIFLG3, WTRIFLG4, WTRIFLG5, and WTRINDX. The data FSS mode writers also display this information from IATODFD and append five additional bytes (WTRFFLG1, WTRFFLG2, WTRFFLG3, WTRFFLG4, and WTRFFLG5) to the message. See z/OS JES3 Messages for an explanation of these messages.

The data displayed in message IAT7060 is:

<table>
<thead>
<tr>
<th>Byte</th>
<th>Bits</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>WTRIMFLP</td>
<td>Flag byte</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td>WTRIFLG1</td>
<td>Command is an *START</td>
</tr>
<tr>
<td></td>
<td>.1..</td>
<td>WTRIFLG2</td>
<td>Command is an *RESTART</td>
</tr>
<tr>
<td></td>
<td>...1.</td>
<td>WTRIFLG3</td>
<td>Command is an *CANCEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WTRIFLG4</td>
<td>Command is an *CALL</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRIFLG5</td>
<td>Writer synchronization has been done</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRIFLG6</td>
<td>Job selected</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRIFLG7</td>
<td>Data set selected</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRIFLG8</td>
<td>Mount (setup) condition</td>
</tr>
</tbody>
</table>

2 WTRIFLG1 Save area for OSEDFLG1
Output Service Diagnostic Mode Output

<table>
<thead>
<tr>
<th>Byte</th>
<th>Bits</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1...</td>
<td>WTRIFLG2</td>
<td>Flag byte</td>
</tr>
<tr>
<td>3</td>
<td>.1.</td>
<td>WTRIOS</td>
<td>OSE selected flag</td>
</tr>
<tr>
<td>3</td>
<td>..1.</td>
<td>WTRISTUP</td>
<td>Command implementation in setup</td>
</tr>
<tr>
<td>3</td>
<td>...1</td>
<td>WTRINNPR</td>
<td>processing</td>
</tr>
<tr>
<td>3</td>
<td>...1</td>
<td>WTRIREOF</td>
<td>No NPRO value specified</td>
</tr>
<tr>
<td>3</td>
<td>....1</td>
<td>WTRIENERG</td>
<td>Parameter error detected</td>
</tr>
<tr>
<td>3</td>
<td>....1</td>
<td>WTRIPFOK</td>
<td>Ignore selection characteristics (/ used)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WTRIPFOR</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1...</td>
<td>WTRIFLG3</td>
<td>Flag byte</td>
</tr>
<tr>
<td>4</td>
<td>.1.</td>
<td>WTRIDSBG</td>
<td>Data started</td>
</tr>
<tr>
<td>4</td>
<td>..1.</td>
<td>WTRIDSDN</td>
<td>Data completed</td>
</tr>
<tr>
<td>4</td>
<td>...1</td>
<td>WTRIPAGE</td>
<td>Reposition by pages</td>
</tr>
<tr>
<td>4</td>
<td>...1</td>
<td>WTRIDSLD</td>
<td>Data set label exit called</td>
</tr>
<tr>
<td>4</td>
<td>....1</td>
<td>WTRITRNC</td>
<td>Short output required</td>
</tr>
<tr>
<td>4</td>
<td>....1</td>
<td>WTRIRSCD</td>
<td>Job rescheduling required</td>
</tr>
<tr>
<td>4</td>
<td>....1</td>
<td>WTRIRJPE</td>
<td>Terminate by RJP cancel</td>
</tr>
<tr>
<td>4</td>
<td>....1</td>
<td>WTRIKPJS</td>
<td>Keep job start PPQ/PDQ</td>
</tr>
<tr>
<td>5</td>
<td>1...</td>
<td>WTRIFLG4</td>
<td>Flag byte</td>
</tr>
<tr>
<td>5</td>
<td>.1.</td>
<td>WTRIEND</td>
<td>Termination flag</td>
</tr>
<tr>
<td>5</td>
<td>..1.</td>
<td>WTRIHOT</td>
<td>Hot writer flag</td>
</tr>
<tr>
<td>5</td>
<td>...1</td>
<td>WTRIRSCH</td>
<td>Job (PDQ) rescheduling required</td>
</tr>
<tr>
<td>5</td>
<td>...1</td>
<td>WTRIDLE</td>
<td>Hot writer going idle</td>
</tr>
<tr>
<td>5</td>
<td>....1</td>
<td>WTRICHNG</td>
<td>OSE rescheduling required</td>
</tr>
<tr>
<td>5</td>
<td>....1</td>
<td>WTRINDSR</td>
<td>Data set rescheduling required</td>
</tr>
<tr>
<td>5</td>
<td>....1</td>
<td>WTRICPPL</td>
<td>Plus copies option</td>
</tr>
<tr>
<td>5</td>
<td>....1</td>
<td>WTRICPMI</td>
<td>Minus copies option</td>
</tr>
<tr>
<td>6</td>
<td>1...</td>
<td>WTRIFLG5</td>
<td>Flag byte</td>
</tr>
<tr>
<td>6</td>
<td>.1.</td>
<td>WTRISREQ</td>
<td>Setup required</td>
</tr>
<tr>
<td>6</td>
<td>..1.</td>
<td>WTRIJOB</td>
<td>Job selected flag</td>
</tr>
<tr>
<td>6</td>
<td>...1</td>
<td>WTRIDSD</td>
<td>Data set selected flag</td>
</tr>
<tr>
<td>6</td>
<td>...1</td>
<td>WTRIMANM</td>
<td>Dynamic manual mode</td>
</tr>
<tr>
<td>6</td>
<td>....1</td>
<td>WTRINONE</td>
<td>OPEN LABEL=NONE required</td>
</tr>
<tr>
<td>6</td>
<td>....1</td>
<td>WTRIDSO</td>
<td>Data set opened</td>
</tr>
<tr>
<td>6</td>
<td>....1</td>
<td>WTRIWMSC</td>
<td>Wait message queued</td>
</tr>
<tr>
<td>6</td>
<td>....1</td>
<td>WTRIVLOR</td>
<td>Volume label open required</td>
</tr>
<tr>
<td>7</td>
<td>...1</td>
<td>WTRINDEX</td>
<td>Return index for input message. This field can have any one of the following indicated:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hex Value</th>
<th>Name and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>WTRIJS - Job select</td>
</tr>
<tr>
<td>4</td>
<td>WTRISU - Device setup</td>
</tr>
<tr>
<td>8</td>
<td>WTRIVO - Volume open</td>
</tr>
<tr>
<td>C</td>
<td>WTRIRM - Ready message</td>
</tr>
<tr>
<td>10</td>
<td>WTRIDSO - Data set open</td>
</tr>
<tr>
<td>14</td>
<td>WTRIDSR - Data set repositioning</td>
</tr>
<tr>
<td>18</td>
<td>WTRIDL - DEBLOCK loop</td>
</tr>
<tr>
<td>1C</td>
<td>WTRIEP - EOD put</td>
</tr>
<tr>
<td>20</td>
<td>WTRIPRT - Put truncate</td>
</tr>
<tr>
<td>24</td>
<td>WTRIPQ - Put output</td>
</tr>
<tr>
<td>28</td>
<td>WTRIDSD - Data set done</td>
</tr>
<tr>
<td>2C</td>
<td>WTRIDSC - Data set complete</td>
</tr>
<tr>
<td>30</td>
<td>WTRIGNO - Get next OSE</td>
</tr>
<tr>
<td>34</td>
<td>WTRITLC - Trailer label close</td>
</tr>
</tbody>
</table>

The following are also displayed for FSS mode writers:
### Output Service Diagnostic Mode Output

<table>
<thead>
<tr>
<th>Byte</th>
<th>Bits</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
<td>WTRFFLG1</td>
<td>Flag byte</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td>WTRFMFSS</td>
<td>This is an FSS writer</td>
</tr>
<tr>
<td></td>
<td>.1..</td>
<td>WTRFFSS</td>
<td>This writer supports an FSS</td>
</tr>
<tr>
<td></td>
<td>..1.</td>
<td>WTRFFDA</td>
<td>This writer supports an FSA</td>
</tr>
<tr>
<td></td>
<td>...1.</td>
<td>WTRFFSSA</td>
<td>FSS is active</td>
</tr>
<tr>
<td></td>
<td>....1.</td>
<td>WTRFFSSAA</td>
<td>FSA is active</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFRESP</td>
<td>Order response pending</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFMFER</td>
<td>OSMP in command error processing</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFNCKP</td>
<td>New checkpoint buffer without spool address</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>WTRFFLG2</td>
<td>Flag byte</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td>WTRFMDPL</td>
<td>ADELETE module IATOSMP</td>
</tr>
<tr>
<td></td>
<td>.1..</td>
<td>WTRFSET</td>
<td>Setup to complete processing</td>
</tr>
<tr>
<td></td>
<td>..1.</td>
<td>WTRFSRC</td>
<td>OSFS received reject command</td>
</tr>
<tr>
<td></td>
<td>...1.</td>
<td>WTRFUIR</td>
<td>Update intervention required</td>
</tr>
<tr>
<td></td>
<td>....1.</td>
<td>WTRFCPMQ</td>
<td>Checkpoint error message queued</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFMPORQ</td>
<td>POST for GETDS required</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFDUMP</td>
<td>Operator requested dump during failsoft</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFRCUR</td>
<td>abend FSS address space with dump</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Failsoft recursion</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>WTRFFLG3</td>
<td>Flag byte</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td>WTRFGETRL</td>
<td>Release writer's pending OSEs</td>
</tr>
<tr>
<td></td>
<td>.1..</td>
<td>WTRFTREQ</td>
<td>Set order required</td>
</tr>
<tr>
<td></td>
<td>..1.</td>
<td>WTRFVAL</td>
<td>DS validation on synch order required</td>
</tr>
<tr>
<td></td>
<td>...1.</td>
<td>WTRFSMSG</td>
<td>WTRIOSE has message IAT7018 in</td>
</tr>
<tr>
<td></td>
<td>....1.</td>
<td>WTRFDRET</td>
<td>formation</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFMSUP</td>
<td>OSMP return without command</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFSARS</td>
<td>implementation</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFDSRVS</td>
<td>WTRFDSAD DS unprintable by FSS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FSA restart requested</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Device is to be restarted</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>WTRFFLG4</td>
<td>Flag byte</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td>WTRFDCPI</td>
<td>WTRFDSAD DS checkpoint invalid</td>
</tr>
<tr>
<td></td>
<td>.1..</td>
<td>WTRFRSCD</td>
<td>RELDS incomplete received</td>
</tr>
<tr>
<td></td>
<td>..1.</td>
<td>WTRFJTRL</td>
<td>Job trailer was specified on synch order</td>
</tr>
<tr>
<td></td>
<td>...1.</td>
<td>WTRFJNDS</td>
<td>to device</td>
</tr>
<tr>
<td></td>
<td>....1.</td>
<td>WTRFJNXX</td>
<td>JESNEWS being selected</td>
</tr>
<tr>
<td></td>
<td>....1.</td>
<td>WTRFCLR</td>
<td>JESNEWS to be sent next</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFFAIL</td>
<td>PDQ clear in progress</td>
</tr>
<tr>
<td></td>
<td>....</td>
<td>WTRFDOSU</td>
<td>FSS and writer to terminate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Update DOSE on PDQWOSWR</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>WTRFFLG5</td>
<td>Flag byte</td>
</tr>
<tr>
<td></td>
<td>1...</td>
<td>WTRFRSTR</td>
<td>FSS writer to restart after IPL of FSS</td>
</tr>
<tr>
<td></td>
<td>.1..</td>
<td>WTRFRSTRS</td>
<td>main</td>
</tr>
<tr>
<td></td>
<td>..1.</td>
<td>WTRFSYWT</td>
<td>Staging area received—resent over restart</td>
</tr>
<tr>
<td></td>
<td>...1.</td>
<td>WTRFFRIP</td>
<td>Waiting for data set synchronization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FSA restart in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Job/OSE selected status lock</td>
</tr>
</tbody>
</table>

### IOERR Output

IOERR output is produced after an I/O error is detected by IOS, recognized by IATDMIT, and processed by IATDMER. Sample IOERR output is shown in Figure 12. Because recovery from the I/O error can involve multiple retries, there could be more output than is shown. The output goes to the class specified in the DBGCLASS parameter of the STANDARDS initialization statement if the retry occurred on the global in the JES3 address space. Local JES3 and all C/I FSS
Using the Data Collected by the Generalized Trace Facility

You can use the generalized trace facility (GTF) to trace information such as the message traffic in your installation. For information on starting GTF, see z/OS JES3 Commands. For background information on message processing, see z/OS JES3 Initialization and Tuning Guide.
Setting Up and Tracing JES3 Events

In the GTF procedure, you either:

- Specified the name of a data set allocated for GTF records
- Did not specify a data set. If you did not specify a data set, the GTF records remain in storage.

Before GTF records are created, GTF must be started.

```
S gtfproc.GTF
```

gtfproc is the procedure library name that contains the JCL used to start GTF. GTF is the name that the GTF address space can be referred to (for example, in a STOP comand).

The following is an example of a procedure used to start GTF. In this procedure, the GTF output will be written to a data set, but you can change it so that the GTF records remain in-storage in the GTF address space. See [z/OS MVS Diagnosis: Tools and Service Aids] for more information.

```
//GTFJES3 PROC MEMBER=GTFJES3
//IEFPROC EXEC PGM=AHLGTF,PARM='MODE=EXT,DEBUG=NO,TIME=YES',
// TIME=1440,REGION=2880K
//IFRDER DD DSNAME=SYS1.JES3.TRACE,UNIT=SYSALLDA,SPACE=(TRK,20),
// DISP=(NEW,CATLG),VOL=SER=TSPACE
//SYSLIB DD DSNAME=SYS1.PARMLIB(&MEMBER),DISP=SHR
```

In this example, the GTF procedure points to a member GTFJES3 in SYS1.PARMLIB. The following shows the contents of that member:

```
TRACE=USRP
USR=(F60)
END
```

Note that in the member USR=(F60) is specified. This is necessary because JES3 GTF records are created using the event identifier X'F60'. If you do not specify this event identifier in the GTF procedure, you can specify it in response to AHL125A when GTF is started (see below).

The following shows the messages that are displayed when GTF is started:

```
IOERR Output

• [z/OS JES3 Customization]

Starting GTF - Example

S gtfproc.GTF

[...]

GTF Start Procedure - Example

[...]

In this example, the GTF procedure points to a member GTFJES3 in SYS1.PARMLIB. The following shows the contents of that member:

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The following shows the messages that are displayed when GTF is started:

```
IOERR Output

• [z/OS JES3 Customization]

Starting GTF - Example

S gtfproc.GTF

[...]

GTF Start Procedure - Example

[...]

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The following shows the messages that are displayed when GTF is started:

```
IOERR Output

• [z/OS JES3 Customization]

Starting GTF - Example

S gtfproc.GTF

[...]

GTF Start Procedure - Example

[...]

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The following shows the messages that are displayed when GTF is started:

```
IOERR Output

• [z/OS JES3 Customization]

Starting GTF - Example

S gtfproc.GTF

[...]

GTF Start Procedure - Example

[...]

In this example, the GTF procedure points to a member GTFJES3 in SYS1.PARMLIB. The following shows the contents of that member:

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END
```

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The following shows the messages that are displayed when GTF is started:
GTF Start Messages

AHL121I TRACE OPTION INPUT INDICATED FROM MEMBER GTFJES3 OF PDS
SYS1.PARMLIB
TRACE=USRP
USR=(F60)
END

AHL103I TRACE OPTIONS SELECTED --USR=(F60)

*10 AHL125A RESPECIFY TRACE OPTIONS OR REPLY U
10,U

Reply U, unless you want to change the options

After GTF is started, you must also activate JES3 GTF tracing using the *TRACE command. For example, if you want to trace events related to Workload Management (WLM), you would issue the following command:

Tracing WLM Events

*TRACE,ON,WLMENF

As a result, the following message is issued:

IAT7136 JES3 GTF TRACE STATUS
TRACE ID  TRACE NAME  STATUS  TRACE ID  TRACE NAME  STATUS
--------- ----------  ------  --------- ----------  ------
14         WLMENF    ACTIVE

You then issue commands, run jobs, or do whatever you need to do to cause the GTF records to be created. For example, if you are tracing WLM-related events, you might issue an F WLM,RESOURCE= command or a VARY WLM,POLICY= command. After the trace records have been created, you should turn JES3 GTF tracing off.

Turning GTF Tracing Off

*TRACE,OFF,WLMENF

As a result, the following message is issued:

IAT7136 JES3 GTF TRACE STATUS
TRACE ID  TRACE NAME  STATUS  TRACE ID  TRACE NAME  STATUS
--------- ----------  ------  --------- ----------  ------
14         WLMENF    INACTIVE

If the GTF output is being written to a data set, you must stop the GTF address space. If the GTF output is being kept in storage in the GTF address space, you must issue an MVS DUMP command to dump the GTF address space. In this example, because the GTF output is being written to a data set, the following command is issued to stop the GTF address space:
Stopping the GTF Address Space

The following shows the messages that are displayed when GTF is stopped:

AHL0061 GTF ACKNOWLEDGES STOP COMMAND
AHL9041 THE FOLLOWING TRACE DATA SETS CONTAIN TRACE DATA:
SYS1.JES3.TRACE
IEF404I GTFJES3 - ENDED - TIME=17.20.09

In the above example, the GTF output was written to a data set SYS1.JES3.TRACE. The following job can be used to print the GTF output and delete the data set:

Printing GTF Output

//GTFPRINT JOB ...
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=A
//PRINTDD DD DSN=SYS1.JES3.TRACE, DISP=(OLD,DELETE)
//SYSIN DD *

PRINT INFILE(PRINTDD) -

DUMP

/*

The GTF output has the following format:

The records written by JES3 contain the string GTRC at offset X'18' into the record. The GTRC is the JES3 GTF record header. It is eight bytes long and mapped by macro IATYGTRC. The information that follows the JES3 GTF record header is event specific and mapped by an event specific macro. For example, the event specific information for the WLMENF event (event number 14) is mapped by IATYG014.

Chapter 2. General Diagnosis 115
### Events Eligible for Tracing

Table 13 identifies the GTF records that are written to the GTF data set for each event that JES3 traces.

#### Table 13. GTF Records Created to Trace an Event

<table>
<thead>
<tr>
<th>Event No.</th>
<th>Event Name</th>
<th>GTF Record Macro</th>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WTOSSI</td>
<td>IATYG001</td>
<td>IATSIWO</td>
<td>Created for a single line WTO at entry to the subsystem interface.</td>
</tr>
<tr>
<td>2</td>
<td>WTOSSI</td>
<td>IATYG002</td>
<td>IATSIWO</td>
<td>Created for a single line WTO at exit from the subsystem interface.</td>
</tr>
<tr>
<td>3</td>
<td>WTOSSI</td>
<td>IATYG003</td>
<td>IATSIWO</td>
<td>Created when information is sent to the JES3 global if a WTO requires special processing in the global (for example, an automatic reply), or when User Exit 69 determines that the information should be routed to the global so that User Exit 70 can examine it.</td>
</tr>
<tr>
<td>4</td>
<td>NJETCP</td>
<td>IATYG004</td>
<td>IATNTTXR</td>
<td>Created by exits NXASTRAC and NXSTTRAC when called by IAZNJTCP to trace Netserv or Socket level activity.</td>
</tr>
<tr>
<td>5</td>
<td>WTLSSI</td>
<td>IATYG005</td>
<td>IATSIWO</td>
<td>Created for a WTL request at entry to the subsystem interface.</td>
</tr>
<tr>
<td>6</td>
<td>WTLSSI</td>
<td>IATYG006</td>
<td>IATSIWO</td>
<td>Created for a WTL request at exit from the subsystem interface.</td>
</tr>
<tr>
<td>7</td>
<td>MBSTATS</td>
<td>IATYG007</td>
<td>IATSIAD</td>
<td>Created during unallocation of a multiple-buffer spool input data set.</td>
</tr>
<tr>
<td>8</td>
<td>WTOSSI</td>
<td>IATYG008</td>
<td>IATSIWO</td>
<td>Created for a multi-line WTO (major WQE) at entry to the subsystem interface.</td>
</tr>
<tr>
<td>9</td>
<td>WTOSSI</td>
<td>IATYG009</td>
<td>IATSIWO</td>
<td>Created for a multi-line WTO (major WQE) at exit from the subsystem interface.</td>
</tr>
<tr>
<td>11</td>
<td>WTOSSI</td>
<td>IATYG011</td>
<td>IATSIWO</td>
<td>Created for a multi-line WTO (minor WQE) at entry to the subsystem interface.</td>
</tr>
<tr>
<td>12</td>
<td>WTOSSI</td>
<td>IATYG012</td>
<td>IATSIWO</td>
<td>Created for a multi-line WTO (minor WQE) at exit from the subsystem interface.</td>
</tr>
<tr>
<td>14</td>
<td>WLMENF</td>
<td>IATYG014</td>
<td>IATMSEWL</td>
<td>Created when a WLM ENF signal is processed by JES3’s listen exit.</td>
</tr>
<tr>
<td>15</td>
<td>WLMMDSFCT</td>
<td>IATYG015</td>
<td>IATMDWLE</td>
<td>Created when a WLM related event is processed by the MDS (SETUP) FCT.</td>
</tr>
<tr>
<td>16</td>
<td>WLMMDJSJOB</td>
<td>IATYG016</td>
<td>IATMDWLE</td>
<td>Created when a job is updated by MDS as a result of a WLM related event.</td>
</tr>
<tr>
<td>17</td>
<td>WLMGMSFCT</td>
<td>IATYG017</td>
<td>IATMSWLE</td>
<td>Created when a WLM related event is processed by the GMS (MAIN) FCT.</td>
</tr>
<tr>
<td>18</td>
<td>WLMGMSJOB</td>
<td>IATYG018</td>
<td>IATMSWLE</td>
<td>Created when a job is updated by GMS as a result of a WLM related event.</td>
</tr>
<tr>
<td>19</td>
<td>SAPI</td>
<td>IATYG019</td>
<td>IATSISO</td>
<td>Created when a SAPI request is received through the subsystem interface and when information is returned to the subsystem interface caller.</td>
</tr>
</tbody>
</table>
Job Validation SNAP Output

During a JES3 warm start with or without analysis or hot start with or without analysis, JES3 evaluates the jobs that remain in the job queue to ensure they can be restarted when JES3 has been reinitialized.

To validate a job on the job queue, JES3 evaluates job-related control blocks. If JES3 determines a control block is not valid, JES3 issues message IAT4174. Message IAT4174 allows the operator to:
- Take a SNAP of the incorrect control block
- Cancel the job
- End JES3 initialization

Respond SNAP to message IAT4174 to obtain information that can help you determine why JES3 found the job in error.

If you have started JES3 without analysis, JES3 only provides you with the:
- Job control table (JCT)
- Job track allocation table (JBT)
- Job data set control block (JDS)
- Job description accounting block (JDAB)
- Job management record (JMR)

If JES3 is started with analysis, JES3 provides additional job-related control blocks.

Evaluating SNAP Output from Job Validation

JES3 generates five sections when you ask JES3 to provide SNAP output for the incorrect job. These sections provide you with information that you can use to determine why JES3 found the job incorrect.

You can use the first section of the job validation SNAP output, the SNAP of the Job Validation Work Area, to identify the contents of the work area used by the job validation DSP. The work area contains the addresses of the job's control blocks that are in storage.

The second section of the SNAP output, the Job Validation Work Area Status Indicators, provides a summary of the:
- Errors JES3 found while validating the job
- Processing JES3 performed for the job

The third section, the Job Validation JES3OUT/Console Messages, provides you with messages that summarize the reasons JES3 found the job incorrect.

You can use the fourth section, Summary of Spool Records Validated, to identify the control blocks associated with the job and their chaining structure.

The last section, the SNAPs of the incorrect control blocks for the job, provides a snap of the job's control blocks that were incorrect.

To evaluate SNAP output for a job:
1. Examine the JES3OUT/CONSOLE MESSAGE section of the SNAP output. This section and [Z/OS JES3 Messages] should provide you with the reasons JES3 found the job incorrect.
2. Examine the SUMMARY OF SPOOL RECORDS section of the SNAP output. This section provides you with a list of the spool records associated with the job. If JES3 found an incorrect spool record associated with the job, JES3 snaps the contents of the spool record to the SNAP output.
If JES3 found the spool record incorrect because it was unable to read or write to the spool record, a failsoft (DM) code and dump will provide you with additional information. See z/OS JES3 Diagnosis Reference for information for the failsoft code.

If JES3 found the spool record incorrect for some other reason, a message may be provided under the SNAP output for the control block. Verify the length of the record and its variable sections. If the control block contains scheduler elements for the job, ensure the control block contains valid SEs.

Format of Job Validation SNAP Output
These sections should provide you with enough information to determine why the job is incorrect:
- SNAP of the Job Validation Work Area (IATYJVW)
- Job Validation Work Area Status Indicators
- Job Validation JES3OUT/Console Messages
- Summary of Spool Records Validated
- SNAPs of the incorrect control blocks for the job

SNAP of the Job Validation Work Area (IATYJVW):

```
+0000 D1E5E640 00000000 00000000 00000000 024EC4BC 01A00001 00000000 00000005 00000000 *JW........+D.................*
+0020 00000000 0010002F 00000001 E6C1E5C5 F3404040 0106C2F1 F0F0F0F2 025065E8 *..........WAVE3 JOB10002 ..Y*
+0040 025065E8 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *...Y....................*
+0060 024EC31C 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.C.......................
+0080 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.C.......................
+00A0 19E30490 80000000 0248411B 00000000 00000000 00000000 00000000 00000000 *.T
+00C0 024EC480 0249E000 024EC4B4 7FS1A90 0242A186 6DE43322 024EC13C 0245D872 *....+O....+O.".......OUTSERV *
**+0100 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.C.......................
+0120 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.C.......................
+0140 19E50490 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.V.................*
+0160 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.A...........
+0180 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.A...........
+0200 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.A...........
+0220 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.A...........
+0240 0240D406 0234090C 023C0094 024C5909 00909084 0963EC53 03EC4C40 40D1C3E3 *SPOOL RECORD ERROR DETECTED (JCT*
+0260 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *...+OEO TO +039F SUPPRESSED, DATA CONTAINS ZEROS ****
**+0280 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *+.A...Q..WOSE........................
+02A0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *
```

Validation SNAP Heading
Each job that JES3 found incorrect during JES3 initialization is identified by a heading. The heading contains the job name, the job identifier, which is followed by the heading VALIDATION SNAP.

SNAP of the JOB Validation Work Area
The JVW contains job-related information that JES3 uses during job validation/restart processing. You can use the information in the JVW to:
Job Validation SNAP Output

- Identify the incorrect job
- Locate addresses of control blocks that are in storage that represent the job
- Identify the parameters used on the IATXVFDB and IATVXSRV macros. The parameters specified on these macros can be used on subsequent occurrences of the IATXVFDB, IATXVSRV and IATXVTAT macros.

JOBNM cccccc - The job name of the job JES3 is validating.

JOBID cccccc - The job identifier of the job JES3 is validating.

JVDAD cccccc - The address of the job validation data csect for the job validation/restart FCT.

SRVAD cccccc - The address of the first spool validation entry (SRV). Each SRV entry represents a control block that the job validation/restart FCT validates.

JCTSZ ccc - The length of the JCT record.

MSGQ ccc - The address of the beginning of the message queue for the job. Buffers that contain messages are added to the queue when the job validation/restart routines issue either a IATXVSRE or IATXVMSG macro.

MSGQE ccccc - The last buffer that contains a message on the message queue.

SYSTM ccccc - Name of the main that the job was running on before JES3 was restarted. The job must be active for the name to appear.

FSSID cccccc - The id of CI FSS address space that is processing the job. The active SE must be CI for a name to appear in this field.

JCT cccccc - The address of the JCT in storage.

JDAB cccccc - The address of the JDAB in storage.

JMR cccccc - The address of the JMR in storage.

FUNC nn - is a footprint that identifies the processing the job validation DSP was performing when the error occurred.

A footprint of:

Indicates JES3:
1 was validating the fixed segment of the JCT
2 was validating the scheduler elements (SEs) in the JCT
3 was validating the status of the job
4 was performing initial job spool space validation
5 was initiating I/O for spool control blocks
6 was validating the spool data management control blocks for the job
7 was validating the fixed segment of the JDAB
8 was validating the SEs in the JDAB
9 was validating the JMR
10 was ensuring the job's JCT and JDAB contained the same SEs
Job Validation SNAP Output

11 started DSP specific job validation processing
12 was performing job validation cleanup
13 was performing job validation I/O services (IATXVIO) cleanup
14 job validation complete

ACTSE ccccccccc - The address of the scheduler element (SE) that the job was active in when the job failed.

DSPNM cccccccc - The name of the DSP that the job was active in when JES3 terminated.

RESQ cccccccc - The address of the RESQUEUE for the job.

RCEAD cccccccc - The address of the RCE for the job.

JDSCT cccc - The number of JDSes associated with the job.

JCFDB cccccccc - The file descriptor block (FDB) that contains the address of the job control table (JCT) for the job.

JDFDB cccccccc - The FDB that contains the address of the job data accounting block (JDAB) for the job.

JMFDB cccccccc - The FDB that contains the address of the job management record (JDAB) for the job.

JSFDB cccccccc - The FDB that contains the address of the job summary table (JST) for the job.

DJFDB cccccccc - The FDB that contains the address of the dynamic job summary table (DJST) for the job.

+nnnn - is the offset into the JVW. The information that follows is the contents of the JVW in hex and EBCDIC.

Job Validation Work Area Status Indicators:

<table>
<thead>
<tr>
<th>JOB VALIDATION WORK AREA STATUS INDICATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>JVWSTA1</td>
</tr>
<tr>
<td>X'04' - JOB SPOOL SPACE NOT REALLOCATED</td>
</tr>
<tr>
<td>JVWSTA3</td>
</tr>
<tr>
<td>JVWSTA4</td>
</tr>
<tr>
<td>JVWSTA6</td>
</tr>
<tr>
<td>JVWSTA7</td>
</tr>
<tr>
<td>X'20' - DSP USE COUNT UPDATED BY VALIDATION RESTART</td>
</tr>
</tbody>
</table>

The Job Validation Work Area Status Indicators identify the status of the job. You can use the status indicators from the job validation work area to obtain an understanding of the types of errors that caused JES3 to find the job incorrect.
For each flag that is on in the JVW, the job validation work area status indicators section of the SNAP provide you with:

- The bits that are set for the flag
- An explanation of the bit

The status indicators in the job validation work area (JVW) are set by the job validation/restart routines.

**Job Validation JES3OUT/CONSOLE Messages:**

The job validation JES3OUT/CONSOLE message section of the SNAP output produced for a job contain informational messages that JES3 issued while validating the job. They summarize the reasons why JES3 found the job incorrect.

**Summary of Spool Records Validated:**

<table>
<thead>
<tr>
<th>SEQ#</th>
<th>ROOT</th>
<th>SPOOL-ADDRESS</th>
<th>-ID-</th>
<th>SPOOL RECORD DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>1</td>
<td>0001.00000879</td>
<td>JCT</td>
<td>JOB CONTROL TABLE ENTRY</td>
</tr>
<tr>
<td>*</td>
<td>2</td>
<td>0002.000019E1</td>
<td>JBT</td>
<td>JOB TRACK ALLOCATION TABLE</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0002.000019E8</td>
<td>JDS</td>
<td>JOB DATA SET CONTROL BLOCK</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>0002.000019E8</td>
<td>JDAB</td>
<td>JOB DESCRIPTION/ACCOUNTING BLOCK</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0002.000019E8</td>
<td>JMR</td>
<td>JOB MANAGEMENT RECORD</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0002.000019E3</td>
<td>JST</td>
<td>JOB SUMMARY TABLE</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>0002.000019E8</td>
<td>DJST</td>
<td>DYNAMIC JOB SUMMARY TABLE</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>0002.000019E8</td>
<td>OSE</td>
<td>OUTPUT SERVICE ELEMENT</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>0002.000017B1</td>
<td>WOSE</td>
<td>WORK OUTPUT SERVICE ELEMENT</td>
</tr>
</tbody>
</table>

The Summary of Spool Records Validated identifies the control blocks that JES3 validated for the job. You can use this section to identify the chaining structure of the job's control blocks. Each control block is assigned a sequence number. The sequence number is used to identify the control block that contains the addresses of the job's other control blocks. For example, the job's JCT is assigned a sequence number of 1 and it contains the addresses of the job's JBT, JDS, JDAB, JMR, JST, DJST, and the job's OSE. (These control blocks have a sequence number of 1 under the heading ROOT.) The job's OSE is assigned a sequence number of 8 and contains the address of the job's WOSE. (The WOSE has a sequence number of 8 under the heading ROOT.)

If an * precedes the sequence number of the control block, it indicates JES3 logged diagnostic messages for the control block. The diagnostic messages can be found preceding the SNAP of the control block.

SEQ# nnnn - A record sequence number used to identify the record.

ROOT nnnn - Identifies the control block, by sequence number, that contains the address of the control block.

SPOOL-ADDRESS cccccccc - The spool record address of the control block on spool.
Job Validation SNAP Output

ID cccc - The acronym that identifies the control block.

SPOOL RECORD DESCRIPTION - A description of the record being validated.

**SNAP of the Job's Incorrect Control Blocks:**

<table>
<thead>
<tr>
<th>JCT FOR JOB WAVE3 (JOB10002) AT 0001.00008979 DDNAME=JES3JCT CYL=000000E H=0 R=3</th>
</tr>
</thead>
<tbody>
<tr>
<td>*** SPOOL RECORD DIAGNOSTIC/ERROR MESSAGES ***</td>
</tr>
<tr>
<td>JBT FDB ERROR</td>
</tr>
</tbody>
</table>

| +0000 00010000 89790000 D1C3E340 00000000 00000000 00000000 00000000 D1C3E340 | *.........JCT ..........................* |
| +0020 016C015C 00040000 27120000 E6C165C5 | F3404040 00000000 00000000 00000000 040102FF | *.........WAVE3 ..........................* |
| +0040 00000064 0000005C 0000003B 00C31111 02000000 1F000000 00000000 00000000 | *.........Y.M............................* |
| +0060 00000000 00000000 00000000 00000000 00002000 | 19EO6949 80000000 00002000 19E10969 | *..............................* |
| +0080 80000000 00000000 00000000 00000000 00000000 | 22D4366C 00000000 00020000 19E08490 80000000 | *..............................* |
| +00A0 00000000 00000000 00000000 00000000 | 19E50490 80000000 00002000 19E30490 | *.........V...........................* |
| +00C0 00000000 00000000 00000000 00000000 | 00000000 0000030B C3C10340 4040C140 | *..............................LOCAL A * |
| +00E0 40404040 40400000 00000000 00000000 00000000 | 00000000 00001000 00000400 00000000 | *..............................* |
| +0100 04000000 04000000 0000003B 9E4122D4 | 00100000 00000000 00000000 00000000 | *..............................* |
| +0120 00000000 00002720 000C851C 00000000 | 00000000 00000000 00000000 00000000 | *..............................* |
| +0140 00000000 00000000 00000000 00000000 | 00000000 00000000 00000000 00000000 | *..............................* |

**cbname** FOR JOB **jobname** (jobid) at **adr1** DDNAME=ddname CYL=ccccccc H=h R=r is the heading that identifies the control block that JES3 validated.

- **cbname** identifies the control block.
- **jobname** identifies the job the control block represents.
- **jobid** is the job identifier associated with the job.
- **adr1** is the spool record address (M.R) of the control block.
- **ddname** is the name of the data set where the control block resides.
- **adr2** is the address (cylinder, head, and record) of the control block on spool.

SPOOL RECORD DIAGNOSTIC/ERROR MESSAGES - informational messages that identify why JES3 found the job's control block incorrect.

SNAP of the control block - A snap of the control block. For information on the contents of these control blocks see *z/OS MVS Data Areas* in the *z/OS Internet Library:* [http://www.ibm.com/systems/z/os/zos/bkserv/](http://www.ibm.com/systems/z/os/zos/bkserv/)
Chapter 3. Using IPCS to View JES3 Information

You can view a dump data set by using the interactive problem control system (IPCS). IPCS is an interactive, online facility used to diagnose problems. IPCS allows the installation to examine information in a dump data set without having to print the data. It provides the option of printing the information in the data set and allows you to:

- Locate key control blocks
- View a portion of or the entire formatted dump
- View portions of storage
- Format specific control block mappings

In addition to the capabilities that IPCS provides, JES3 support in IPCS:

- Provides you with panel support that minimizes the number of IPCS subcommands you have to issue to retrieve JES3 diagnostic information.
- Allows you to logically group information to diagnose a problem or to create groups of information for a particular dynamic support program (DSP) or JES3 function. "Tailoring Your IPCS JES3 Session" on page 128 contains additional information on creating models for control blocks and creating control block groups.
- Allows you to supplement the diagnostic information IBM supplies by adding formatters for control blocks that IBM does not supply or by creating formatters for control blocks that your installation has created.

To use the IPCS JES3 panels to view JES3 information, select JES3 in the Component Analysis option. You can display JES3 diagnostic information by:

- Using the panels provided in the JES3 Component Analysis Option. Using the panels minimizes the number of IPCS subcommands you have to issue to retrieve JES3 diagnostic data.
- Issuing IPCS subcommands. See "z/OS MVS IPCS Commands" for additional information on IPCS subcommands.

You may choose one particular method of accessing JES3 diagnostic information or you can combine methods. "z/OS JES3 Diagnosis Reference" contains some IPCS subcommands you may find useful while using the panels.

Before starting an IPCS session, read the following topics in "z/OS MVS IPCS User's Guide" to create a dump data set and establish an IPCS session:

- Introduction to IPCS
- Accessing IPCS
- Using the IPCS Dialog

You should also be familiar with the different types of information you can obtain using IPCS. Table 14 identifies the different options available through the IPCS JES3 panels and through IPCS subcommands.

<table>
<thead>
<tr>
<th>Type of JES3 Information</th>
<th>Selection on IPCS JES3 - Primary Options Panel</th>
<th>IPCS Subcommand</th>
<th>Documentation for Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary Information through control blocks</td>
<td>• CI FSS Summary Information • JES3 Summary Information</td>
<td>VERBEXIT JES3</td>
<td>&quot;z/OS JES3 Diagnosis&quot;</td>
</tr>
</tbody>
</table>
Table 14. Types of JES3 Output Available through IPCS (continued)

<table>
<thead>
<tr>
<th>Type of JES3 Information</th>
<th>Selection on IPCS JES3 - Primary Options Panel</th>
<th>IPCS Subcommand</th>
<th>Documentation for Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formatted JES3 Control Blocks</td>
<td>• JES3 Control Block Information</td>
<td>CBFORMAT</td>
<td></td>
</tr>
</tbody>
</table>
| JES3 Event Trace Information     | • Trace Information for JES3, CI FSS and Writer FSS  
                              | • JES3 Summary Information                      
                              | • CI FSS Trace Information                       | VERBEXIT JES3    | [z/OS JES3 Diagnosis Reference | [z/OS JES3 Diagnosis] |

Setting Up the IPCS JES3 Dialog

After you have allocated all the necessary data sets IPCS requires as stated in [z/OS MVS IPCS User's Guide](#), select the ‘JES3D’ option on the IPCS Component Analysis Option panel.

Notes:

1. The data set 'SYS1.SIATTBL0' must contain the members IATIPCSG, IATIPCCS, and IATIPCSS. If another data set is to be used, you must allocate the alternate data set with a DD statement that designates IATTABL as the DDNAME. (Do not allocate this data set to the ISPTLIB DD name or assign a LIBDEF for ISPTLIB to it.) The IATTABL data set must be partitioned and cannot be concatenated. If you are using IPCS to look at a dump that was created on a different JES3 release than the one currently running on the system to which you are logged on, you must allocate as an alternate data set a table data set from that release instead of the one for the JES3 release currently running.

2. You will have to scroll down the list of options before you will find the ‘JES3D’ option on the Component Analysis Option panel.

3. In order to bring up the JES3 dialog, you must include the members of 'SYS1.VvRrMm.SIATPARM' in the PARMLIB data set you use when you bring up IPCS. You can do this by copying the members into 'SYS1.PARMLIB' or an alternate PARMLIB data set as described in [z/OS MVS IPCS Customization](#) or you can include 'SYS1.SIATPARM' in the alternate PARMLIB concatenation. If you copy the members, keep in mind that the members must be recopied if they are updated by JES3 maintenance.

The IPCS dialog displays the IPCS JES3 - Primary Options panel [Figure 13](#) after you select the JES3 component.
On the IPCS JES3 - Primary Options panel you should:

1. Obtain a list of valid address space identifiers (ASIDs) for the dump. If you specify Y for yes, IPCS JES3 produces the output IPCS would produce for the SUMMARY subcommand. Use Table 15 on page 126 for information on locating the ASIDs you can specify on the IPCS JES3 - Primary Options panel.

2. Specify the ASIDs you want to use for the IPCS JES3 session.

Every control block IBM-supplies for IPCS JES3 is prefixed by either CI, IATY, WTR, or JOB. The prefix indicates which ASID is used to obtain the control block. If a control block is not prefixed, the ASID specified for Other Address Space is used to format the control block. You should use caution when respecifying ASIDs because you could eventually assign the same ASID to all the prefixes.

3. Select the type of data you want to display.

IPCS JES3 allows you to display the following types of JES3 diagnostic information:

- Summary information JES3 gathers from control blocks for processing in a JES3 or CI FSS address space.
- JES3 control blocks that were created for processing in a JES3, CI FSS, or WTR FSS address space or an address space for a TSO/E user, started task, or batch job.
- Events that are traced in a JES3, CI FSS, or WTR FSS address space.
Table 15. Locating ASIDs for JES3-related Problems

<table>
<thead>
<tr>
<th>Address Space</th>
<th>How to Obtain the ASID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JES3</strong></td>
<td>Locate the ASID for the JES3 address space by:</td>
</tr>
<tr>
<td></td>
<td>1. Indicating you want a list of valid ASIDs for the dump by specifying Y for List of valid ASIDs. The output provides you with a list of the jobs that are in the dump.</td>
</tr>
<tr>
<td></td>
<td>2. Locate the entry for the JES3 ASID by entering 'L JES3' on the option command line.</td>
</tr>
<tr>
<td></td>
<td>3. Obtain the ASID for the JES3 address space on the far right of the entry.</td>
</tr>
</tbody>
</table>

| CI FSS | If you have a **dump of the CI FSS address space** and the CI FSS abended, you can obtain the ASID for the CI FSS by either: |
|        | • Locating message IAT3713 in the SYSLOG. Message IAT3713 contains the ASID and fssname of the CI FSS address space that failed. |
|        | • OR by |
|        | 1. Indicating you want a list of valid ASIDs for the dump by specifying Y for List of valid ASIDs. The output provides you with a list of the jobs that are in the dump. |
|        | 2. Locating the entry for the CI FSS ASID by entering 'L CIFSS' on the option command line. |
|        | 3. Obtaining the ASID for the CI FSS address space on the far right of the entry. |

If you have a **dump of the JES3 address space** and there was a problem in communications between the JES3 and CI FSS, you can obtain the ASID for the CI FSS by:

1. Obtaining the ASID of the JES3 address space as described above.
2. Specifying the JES3 ASID for the IATY prefix on the "IPCS JES3 - Primary Options" panel.
3. Selecting the option Display all Control Block Groups from the "Display or Modify JES3 Control Block Information" panel.
4. Selecting the CIFSS, JES3 or a control block group you have defined that contains the DESTQ. You can examine the queue of staging areas on the destination queue 153 to determine the CI FSS address space JES3 last attempted to communicate with.
Table 15. Locating ASIDs for JES3-related Problems (continued)

<table>
<thead>
<tr>
<th>Address Space</th>
<th>How to Obtain the ASID</th>
</tr>
</thead>
</table>
| WTR FSS       | When diagnosing WTR FSS address spaces, you should have obtained at least one of the following from the SYSLOG:  
|               | • The FSS name of the WTR FSS  
|               | • The name of the device (jname)  
|               | • The address of the device  
|               | If you have a **dump of a JES3 address space:**  
|               | 1. Obtain the ASID of the JES3 address space as described above.  
|               | 2. Specify the JES3 ASID for the IATY prefix on the "IPCS JES3 - Primary Options" panel.  
|               | 3. Select the JES3 Control Block Information option from the "IPCS JES3 - Primary Options" panel.  
|               | 4. Select the option Display all Control Block Groups from the "Display or Modify JES3 Control Block Information" panel.  
|               | 5. Select the JES3 group or a control block group you have defined that contains the FSS control block. The FSS control block contains the ASID of the WTR FSS address space in field FSSASID.  
|               | If you have a **dump of only the WTR FSS address space:**  
|               | 1. Indicate you want a list of valid ASIDs for the dump by specifying Y for List of valid ASIDs on the "IPCS JES3 - Primary Options" panel. The output provides you with a list of the jobs that are in the dump.  
|               | 2. Locate the job names that have the procnname for a WTR FSS address space. You can identify the valid WTR FSS procnnames by examining the JES3 FSSDEF initialization statements from your initialization stream, if available.  
|               | 3. Record the ASIDs for each WTR FSS address space.  
|               | 4. Return to the "IPCS JES3 - Primary Options" panel and select the JES3 Control Block Information option.  
|               | 5. Select the Display all Control Block Groups option from the "Display or Modify JES3 Control Block Information" panel.  
|               | 6. Select the WTRFSS group or a control block group you have defined that contains the FSCB control block.  
|               | 7. Select the FSCB from the list of control blocks that are defined to the group.  
|               | 8. For each ASID you recorded from step 3:  
|               | a. Enter the ASID of a WTR FSS address space on the "WTRFSCB - FSS/FSA Information" panel.  
|               | b. Obtain the valid FSIDs for the WTR FSS address space  
|               | c. Return to the "WTRFSCB - FSS/FSA Information" panel and enter a valid FSSID and FSAID for the ASID. If the FSAID is 0, FSCBNAME contains the fsname for the FSS address space. If the FSAID contains a hexadecimal number, FSCBNAME contain the name of the device. FSCBTAIRA contains the address of the trace area for the FSS or FSA.  

**Using Control Block Groups**

All IBM-defined control blocks are grouped according to the address spaces where the control block resides. All the control blocks in the IBM-defined control block groups are prefixed to allow you to relate the ASID to the control block you require. The control blocks provided in a group can reside in either the specified address space or in common storage. The following are IBM-defined control block groups:

- **JES3**
  Contains control blocks that reside in the JES3 address space and in common storage. Use this control block group when diagnosing problems in the JES3 local or global address space.
CIFSS  Contains control blocks that reside in the CI FSS address space and in common storage. Use this control block group when you are diagnosing problems in a CI FSS address space.

WTRFSS  Contains control blocks that reside in the WTR FSS address space or in common storage. Use this control block group when you are diagnosing problems in a WTR FSS address space.

JOBASID  Contains control blocks that reside in the specified address space or in common storage. Use this control block group when you are diagnosing problems in an address space for a started task, batch job, or TSO/E user.

You should select a control block group based on the type of address space where the problem occurred. If your installation experiences a recurring problem or experiences problems in a specific functional area, you may want to create control block groups that will display information more closely related to the problem. See "Adding Control Block Models to Your IPCS JES3 Session" on page 128 for information.

Tailoring Your IPCS JES3 Session
You can enhance your IPCS JES3 session to include formatters for your installation-specific control blocks or control block groups that are specific to problems or JES3 functional areas where your installation may be experiencing a problem.

Adding Control Block Models to Your IPCS JES3 Session
It may be necessary for you to include control blocks in your IPCS session to allow you to view all the information necessary to solve a JES3 problem. The control block may be an IBM-defined control block your installation has modified or it may be a control block specific to your installation.

Creating a Model for a Modified IBM-defined Control Block:  If your installation has added fields to an IBM-defined control block you change the control block's model to ensure it formats correctly. You can add the additional fields to the control block's model by using SMP/E or by:

1. Naming and creating a new member in the IATIPCSI member of SYS1.VnRnMn.SIATPARM for the control block your installation has modified.
2. Copying the model's source code for the control block from SYS1.VnRnMn.AIATSRC. Use Table 16 on page 136 to determine the model name for the control block you are creating a new model for.
3. Identifying the fields that your installation has added to the control block.
4. Adding the BLSQMF LD macros in the appropriate location in your copy of the model. z/OS MVS Programming: Assembler Services Reference ABE-HSF syntax for the macro.
5. Assembling and link-editing the new member into the appropriate system library.

To use the model that contains the fields your installation has added, each system programmer requiring the control block's model must:

a. Select the option JES3 Control Block Information from the IPCS JES3 - Primary Options panel.

b. Select the option Add a Control block from the Display or Modify JES3 Control Block Information panel.

c. Complete the information on the Add a Control Block panel.
6. Including the control block in an IBM-defined control block group or an installation-defined control block group.

Creating a Model for an Installation-defined Control Block: To add an installation-defined control block to your installation:

1. Name and create a new member in the IATIPCSI member of SYS1.VnRnMn.SIATPARM for the control block you are creating a model for.
2. Assign the model residency of AMODE31 and RMODE ANY
3. Code a CSECT for the model
4. Code a BLSMDEF macro. IBM suggests you include the following keywords on the macro invocation:

   - **CBLEN**: Specifies the total length of the control block.
   - **ACRONYM**: Specifies the contents of the control block acronym field.
   - **LBLSPC**: Specifies the spacing between label fields in the formatted output. All IBM-supplied formatters code a 20 as the value for this keyword.
   - **PREFIX**: Specifies the number of characters to be removed from the front of a field name to produce the field label.
   - **OFFSETS**: Specifies whether the field offset information should be printed at the beginning of each output line of the formatted control block. IBM suggests you specify PRINT as the value for this keyword.
   - **ACROLEN**: Specifies the length of the acronym name, defined by the ACRONYM keyword.
   - **MAINTLV**: Specifies the maintenance level of the control block.

To obtain additional information for invoking the BLSMDEF macro see [z/OS MVS Programming: Assembler Services Reference ABE-HSP](#).

**Note:** If the control block you are creating a model for includes a file descriptor block (FDB), IBM supplies the following models for FDBs:

- **IATIPFDB**: Formats an FDB for a single-record file (SRF)
- **IATIPFDM**: Formats an FDB for a multiple-record file (MRF)

5. Code a BLSQMFLD macro for each field in the mapping macro. IBM suggests you include the following keywords on the macro invocation:

   - **NAME**: Specifies the name of the control block field described by the BLSQMFLD macro.
   - **OFF**: Specifies the offset of the field from the beginning of the mapping macro.
   - **LEN**: Specifies the length of the control block field.
   - **VIEW**: Allows you to display selected types of fields in the control block.

To obtain additional information for invoking the BLSQMFLD macro see [z/OS MVS Programming: Assembler Services Reference ABE-HSP](#).

6. Code a BLSQMDEF END instruction to indicate you have included all the fields for the control block.

   To obtain additional information for invoking the BLSQMFLD macro see [z/OS MVS Programming: Assembler Services Reference ABE-HSP](#).
7. Assemble and link-edit the new member into the appropriate system library. To use the model that contains the fields your installation has added, each system programmer requiring the control block's model must:
   a. Select the option JES3 Control Block Information from the **IPCS JES3 - Primary Options** panel.
   b. Select the option Add a Control block from the **Display or Modify JES3 Control Block Information** panel.
   c. Complete the information on the **Add a Control Block** panel.

8. Include the control block in an IBM-defined control block group or an installation-defined control block group.

### Creating Control Block Groups

You can create control block groups that contain the control blocks that you may need to examine while you are diagnosing a particular problem. The control block groups are created for your user id, they cannot be shared by other users at your installation unless the other users create their own groups.

The IBM-supplied control block groups identify the control blocks that are available for a particular address space. You can create your own control block groups by adding and deleting control blocks from the IBM-supplied control block groups. The control blocks in your control block groups cross address space boundaries.

1. Determine the control blocks you need to diagnose the problem or functional area.
2. Identify the control blocks that IBM supplies models for. Table 16 on page 136 identifies the control blocks for which IBM supplies models.
3. Determine if your installation should create models for control blocks that IBM does not format. Select the correct prefix for the control block. If the control block resides in:
   - A CI FSS address space prefix the control block with CI.
   - An address space for a batch job, started task, or a TSO/E user prefix the control block with JOB.
   - The JES3 address space prefix the control block with IATY.
   - WTR FSS address space prefix the control block with WTR.
   
   You could follow the directions in "Adding Control Block Models to Your IPCS JES3 Session" on page 128 to add those control blocks that IBM does not provide formatters for.
4. Establish an IPCS session and select JES3 from the **IPCS Component Analysis** panel.
5. Select JES3 Control Block Information from the **IPCS JES3 - Primary Options** panel.
6. Select Add a user-defined Control Block Group from the **Display or Modify JES3 Control Block Information** panel.
7. Enter the control block group name next to each control block you want to include in your control block group for WTR FSS problems.
8. Press PF 3 to create the control block group and to enter the description of the control block group you just created.

**Example of Creating a Control Block Group:** If you were diagnosing a problem for a 3812 printer, you might want to create your own control block group to diagnose WTR FSS problems. Some of the control blocks you need to diagnose the problem could reside in the JES3 address space, common storage, and in the writer FSS address space.
The following is an example of how you might build a control block group, named MYWTR, to diagnose a problem for a 3812 printer driven by an FSA in a writer FSS address space.

1. **Determine the control blocks you need to diagnose the problem or functional area.**

   For example, to diagnose FSS-managed printers, you would need the following control blocks to diagnose a problem:
   - BFPX
   - CHK
   - DESTQ
   - FCT
   - FSA
   - FSBX
   - FSCB
   - FSCT
   - FSDB
   - FSIP
   - FSS
   - FSVT
   - GFC
   - IDX
   - INPX
   - JSPA
   - PDQ
   - OSE
   - QCP
   - RESPA
   - SUPUNITS
   - SRL
   - WTR

2. **Identify the control blocks that IBM supplies models for.**

   Table 16 indicates IBM supplies models for the following control blocks.
   - BFPX
   - DESTQ
   - FCT
   - FSA
   - FSCB
   - FSS
   - OSE
   - QCP
   - RESPA
   - SUP

3. **Determine if your installation should create models for control blocks that IBM does not format.**

   If you created models for the:
   - FSBX, FSDB, INPX, QCP, SRL, FSIP, JSPA, RESPA, CHK, FSCT, FSVT, and IDX, you would prefix those control blocks with WTR. When you selected one of the previous control blocks, IPCS JES3 would use the ASID specified for the WTR prefix to format the control block.

   Notice that the FSIP, JSPA, RESPA, CHK, FSCT, FSVT, and IDX are not JES3 control blocks. You can create formatters for these control blocks and include them into a control block group.

   - PDQ, GFC, FSIP, JSPA, and RESPA, you would prefix those control blocks with IATY. When you selected one of the previous control blocks, IPCS JES3 would use the ASID specified for the IATY prefix to format the control block.
Notice that the FSIP, JSPA, and RESPA appear in both lists because these control blocks can reside in the WTR FSS address space and in the JES3 address space.

4. Establish an IPCS session and select JES3 from the Component Analysis panel.

5. Select JES3 Control Block Information from the IPCS JES3 - Primary Options panel (IATKPOM).

6. Select the option. Add a user-defined Control Block Group from the Display or Modify JES3 Control Block Information.
7. Enter the control block group name next to each control block you want to include in your control block group.

IPCS JES3 displays all the control blocks IBM has supplied models for and the control blocks have been added to the IPCS session. Place a unique control block group name next to each control block required in the control block group that you are creating.

8. Press PF 3 to create the control block group and to enter the description of the control block group you just created. Figure 18 illustrates the panel for specifying the description of the control block group.
Helpful Hints for Using the IPCS JES3 Panel Dialog

The IPCS JES3 panel dialog consists of panels that help retrieve JES3 diagnostic information. Each panel has a panel identifier and help panels that may be useful when working with IBM service representatives.

To obtain the panel identifier, enter PANELID on the command line; the panel identifier appears in the upper left-hand side of the screen.

To obtain help information for error messages and help for the functional panels, press the PF1 key. If an error message is displayed in the upper right-hand corner of the screen, obtain an extended description of the error message, by pressing the PF1 key. The extended description of the error message appears immediately underneath the OPTION command line. If you need additional help on supplying information on an IPCS JES3 panel, you can press the PF1 key or enter HELP on the OPTION command line.

Using IPCS Subcommands to View JES3 Diagnostic Data

To view JES3 diagnostic information, enter an IPCS subcommand on the command line in an IPCS session. The following list identifies the IPCS commands you might find useful when diagnosing JES3 problems:

**VERBEXIT**
Provides sections of the JES3 formatted dump. The JES3 formatted dump summarizes information from JES3 control blocks. See either "Viewing JES3 Formatted or Summary Information" on page 135 or z/OS JES3 Diagnosis Reference for information about the IPCS subcommand.

**CBFORMAT**
Provides the contents of an entire JES3 control block. See either "Viewing Specific JES3 Control Blocks Mappings Using IPCS" on page 135 or z/OS JES3 Diagnosis Reference for information about the IPCS subcommand.

**LIST**
Provides a list of storage starting at a specified address. See either "Viewing Portions of JES3's Storage" on page 148 or z/OS JES3 Diagnosis Reference for information about the IPCS subcommand.

**SUMMARY JOB SUMMARY ALL**
Provides a list of valid address space ids (ASIDs) for the dump that you are viewing. See either z/OS MVS IPCS Commands or z/OS JES3 Diagnosis Reference for information about the IPCS subcommand.

**STACK x**
Places the symbol name for the requested control block on a stack. Use this command to aid in the retrieval of data you have already displayed. See z/OS MVS IPCS Commands for information about the IPCS subcommand.
WHERE

Identifies the area in a dump where an address resides. See z/OS MVS IPCS Commands for information about the IPCS subcommand.

FIND

Locates literal values in a dump. See z/OS MVS IPCS Commands for information about the IPCS subcommand.

Viewing JES3 Formatted or Summary Information

You can use the IPCS VERBEXIT command to view a portion of or the entire JES3 formatted dump online. The JES3 formatted dump provides summary information from JES3 control blocks. For additional restrictions and a list of keywords you may want to include on the VERBEXIT subcommand, see z/OS MVS IPCS User’s Guide.

The syntax for the VERBEXIT command follows:

```
VERBEXIT JES3
  'ASID=nnnn'
  'FSSNAME=fssname'
  'NSVNAME=nsvname'
  ,OPTION=verb_option
  ,BUFADDR=aaaaaaaa
```

ASID=[nnnn | (nnnn)]

Formats the JES3 control blocks associated with a JES3, a CI FSS, a writer FSS address space, a Network Server, or an address space for a batch job, TSO/E user, or started task.

FSSNAME=fssname

Specifies the job name of a CI FSS address space or a writer FSS address space. Use the ASID= keyword if it is necessary to specify the JES3 address space. To obtain the job name associated with the required address space issue a JES3 *I,F,ACTIVE command to display information for all active FSSs.

NSVNAME=nsvname

Specifies the name of a Network Server (Netserv). This parameter, or alternatively ASID=nnnn, can be used to limit all Netserv and socket level formatting to the specified Netserv address space.

OPTION=verb_option

Specifies the portion of the JES3 formatted dump that you want to display. The verb_options and the portion of the JES3 formatted dump they display are shown in the table in Chapter 4, “JES3 Formatted Dump,” on page 149. If you do not specify a verb_option, the entire JES3 formatted dump is displayed. If the JES3 address space does not contain the requested section of the dump, the system issues the following message to indicate the section does not exist:

```
NO DATA CAN BE ACCESSED
```

BUFADDR=aaaaaaaa

Specifies the address of the MRF buffer whose information has to be displayed. This option can be used only if OPTION=DAT is specified. For each record in the MRF buffer, the DATCC and a portion of data in the record is displayed.

Viewing Specific JES3 Control Blocks Mappings Using IPCS

IPCS can also be used to view a single requested control block online. The CBFORMAT subcommand is used to format single control blocks with the field name followed by the values for the fields.
The syntax for the CBFORMAT subcommand follows:

```
CBFORMAT adr STRUCTURE(name) MODEL(name)
```

**adr**

Specifies the address of the requested control block. See Table 16 on page 136 to determine if an address is required for the control block you want to format. If an address is not required, replace the structure name for the address.

**STRUCTURE (name)**

Specifies the name of the requested control block. See Table 16 on page 136 to determine the structure name of the control block you want to format.

**MODEL (name)**

Specifies the name of the IPCS model associated with the control block. See Table 16 on page 136 to determine the model name of the control block you want to format.

### Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Structure (name)</th>
<th>adr</th>
<th>Model (name)</th>
<th>Formats the</th>
<th>Address contained in</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADA</td>
<td>IATYADA</td>
<td>Yes</td>
<td>IATIPADA</td>
<td>Authorization Data Area</td>
<td>Register 6 in IATSIAU</td>
</tr>
<tr>
<td>ARL</td>
<td>IATYARL</td>
<td>Yes</td>
<td>IATIPARL</td>
<td>Allocation resource list</td>
<td>RQARLADD in IATYRSQ; ARLFCHN in IATYARL</td>
</tr>
<tr>
<td>BAL</td>
<td>IATYBAL</td>
<td>Yes</td>
<td>IATIPBAL</td>
<td>First buffer allocator block for the JES3 address space</td>
<td>SVTBALJC or SVTBALP in IATYSVT; TVTBALJ in IATYT VT</td>
</tr>
<tr>
<td>CIBAL</td>
<td>No IATIPBAL</td>
<td></td>
<td></td>
<td>First buffer allocator block for a CI FSS address space</td>
<td></td>
</tr>
<tr>
<td>BFPX</td>
<td>WTRBFPX</td>
<td>Yes</td>
<td>IATIPBFP</td>
<td>FSA buffer prefix control block for a WTR address space</td>
<td>FSBXABUF in IATYFSBX; INPXBFPA in IATYINPX; BFPXCHAN in IATYBFPX</td>
</tr>
<tr>
<td>BLK</td>
<td>IATYBLK</td>
<td>Yes</td>
<td>IATIPBLK</td>
<td>Block spooler parameter list</td>
<td></td>
</tr>
<tr>
<td>CIBK</td>
<td>Yes IATIPBLK</td>
<td></td>
<td></td>
<td>Block spooler parameter list</td>
<td></td>
</tr>
<tr>
<td>WTRBLK</td>
<td>Yes IATIPBLK</td>
<td></td>
<td></td>
<td>Block spooler parameter list</td>
<td></td>
</tr>
<tr>
<td>BWA</td>
<td>IATYBWA</td>
<td>Yes</td>
<td>IATIPBWA</td>
<td>Spool Browse Core Storage Buffer Work Area</td>
<td>DSBCBWKA</td>
</tr>
<tr>
<td>Common Name</td>
<td>Structure (name)</td>
<td>adr</td>
<td>Model (name)</td>
<td>Formats the</td>
<td>Address contained in</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>-----</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>CAT</td>
<td>IATYCAT1</td>
<td>Yes</td>
<td>IATIPCA1</td>
<td>Catalog allocate parameter list</td>
<td>LCTALLOC in IATYLC1 for IATYCAT1; LCTUNALC in IATYLC1 for IATYCAT2</td>
</tr>
<tr>
<td></td>
<td>IATYCAT2</td>
<td>Yes</td>
<td>IATIPCA2</td>
<td>Catalog unallocate parameter list</td>
<td></td>
</tr>
<tr>
<td>CFGS</td>
<td>IATYCFGFS</td>
<td>Yes</td>
<td>IATIPCF1</td>
<td>Configuration Services Data Area</td>
<td>ITKCFGTK in IATYITK INTOFS in IATYITK CFKCFG in IATYCFW</td>
</tr>
<tr>
<td>CFT</td>
<td>IATYCFT</td>
<td>Yes</td>
<td>IATIPCF1</td>
<td>CI FSS table</td>
<td>FSSEXPT in IATYFSS IDACFTST in IATYIDA CFTCHAIN in IATYICFT for the next CFT in the chain</td>
</tr>
<tr>
<td>CLST</td>
<td>IATYCLST</td>
<td>Yes</td>
<td>IATABCLS</td>
<td>Data set concatenation list header and entries</td>
<td>DSBCLST</td>
</tr>
<tr>
<td></td>
<td>IATYCLSH</td>
<td>Yes</td>
<td>IATIPCL1</td>
<td>Data set concatenation list header</td>
<td>DSBCLST</td>
</tr>
<tr>
<td></td>
<td>IATYCLSE</td>
<td>Yes</td>
<td>IATIPCL2</td>
<td>Data set concatenation list entry</td>
<td></td>
</tr>
<tr>
<td>CNB</td>
<td>IATYCNB</td>
<td>No</td>
<td>IATIPCNB</td>
<td>Console buffer control block</td>
<td>Address contained in ACONSB in IATYTVT</td>
</tr>
<tr>
<td>CNC</td>
<td>IATYCNB1</td>
<td>Yes</td>
<td>IATIPCC1</td>
<td>Console service constants</td>
<td>ACONCONS in IATYTVT for IATYCNB1</td>
</tr>
<tr>
<td>CNDB</td>
<td>IATYCNDB</td>
<td>Yes</td>
<td>IATIPCDB</td>
<td>Console Destination Block</td>
<td>CALLCNDB, LMPCNDB in IATYNDT; CONCNDB in IATYCNB; CONSL in IATYPRM; DJCND in IATYJDB; DCON in IATYUTDA; FSANDB and FSANDB2 in IATYFSA; FSSNDB1, FSSNDB, and FSSNDB in IATYFSS; IQOSNC, IQOSNC in IATYIQOS; ISDCNDB in IATYSD; JCTCNDB in IATYJCT; JDBCNDB in IATYJAY; JNDBCNDB in IATYJAI; JSOCNDB in IATYJSQ; MDSCNDB, MDSCNDB, MDSCNDB in IATYMDS; MESCND, MESCND, MESCND in IATYMES; MOOSCNCSL, MOOSCNCS in IATYMOS; MPSCNDB in IATYMPC; NRSCNDB in IATYNRS; NPSCNDB in IATYPRM; DSRCNDB, DSRCNDB, DSRCNDB in IATYRD; RTTCOND in IATYRTL; QMSCNDB, QSCNDB, QSCNDB in IATYSRD; SUPCNDB, SUPCNDB, SUPCNDB in IATYSUP; STACTNDB in IATYMIF; SS4CNDB in IATYSS; TVTNCSEM, TVTBDNM in IATYTVT; VMSCNDB in IATYVY; VRVND in IATYVRY; WSBNDC in IATYWSB; WDCNDB in IATYWDT; WTRDCNDB, WTRDCNDB in IATYWTR</td>
</tr>
</tbody>
</table>
### Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Structure (name)</th>
<th>adr</th>
<th>Model (name)</th>
<th>Formats the</th>
<th>Address contained in</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>IATYCNS1</td>
<td>Yes</td>
<td>IATIPCMS1</td>
<td>Console buffer map</td>
<td>ACONSCB in IATYVT</td>
</tr>
<tr>
<td></td>
<td>IATYCNS4</td>
<td>Yes</td>
<td>IATIPCMS4</td>
<td>CONACTN DSECT</td>
<td>FCTCBPTR in IATYFCT</td>
</tr>
<tr>
<td></td>
<td>IATYCNS6</td>
<td>Yes</td>
<td>IATIPCMS6</td>
<td>Console spool buffer</td>
<td>JDABPFDB in IATYJDA</td>
</tr>
<tr>
<td>COW</td>
<td>IATYCW</td>
<td>Yes</td>
<td>IATIPCW</td>
<td>Client Work Area</td>
<td>SS2JEST in IAZSS2</td>
</tr>
<tr>
<td>CPB</td>
<td>IATYCPB</td>
<td>Yes</td>
<td>IATIPCPB</td>
<td>Cell pool control block</td>
<td>CPBNXCPB in IATYCPB for the next IATYCPB</td>
</tr>
<tr>
<td>CSCP</td>
<td>IATYCSCP</td>
<td>Yes</td>
<td>IATIPCSBP</td>
<td>Chained single-record file (SRF) cell pool pointers</td>
<td>TVTCSCP in IATYVT</td>
</tr>
<tr>
<td>DAT</td>
<td>IATYDAT</td>
<td>Yes</td>
<td>IATIPDAT</td>
<td>Data buffer block for the JES3 address space</td>
<td>BALDATBA and BALXDTBA of IATYBAL; DSBDATBA of IATYDSB; WTRIDATA of IATYWTR</td>
</tr>
<tr>
<td>CIDAT</td>
<td>IATIPDAT</td>
<td>Yes</td>
<td>IATIPDAT</td>
<td>Data buffer block for a CI FSS address space</td>
<td>BALDATBA and BALXDTBA of CIBAL; WTRIDATA of IATYWTR</td>
</tr>
<tr>
<td>DLA</td>
<td>IATYDLA</td>
<td>Yes</td>
<td>IATIPDLA</td>
<td>DLOG address space data area</td>
<td>DGLDLA in IATYDLOG</td>
</tr>
<tr>
<td>DLG</td>
<td>IATYDLG</td>
<td>Yes</td>
<td>IATIPDLG</td>
<td>DLOG common data area</td>
<td>SVTDLOG in IATYSVT</td>
</tr>
<tr>
<td>DMC</td>
<td>IATYDMC</td>
<td>Yes</td>
<td>IATIPDMC</td>
<td>Data management control block</td>
<td>BALDMCBA of IATYDSB; DSBDMCMBA of IATYDSB; OSDDMCMCP of IATYOSD - points to the first cell pool extent</td>
</tr>
<tr>
<td>CIDMC</td>
<td>IATIPDMC</td>
<td>Yes</td>
<td>IATIPDMC</td>
<td>Data management control block for a CI FSS address space</td>
<td>BALDMCBA of IATYDSB; DSBDMCMBA of IATYDSB; OSDDMCMCP of IATYOSD - points to the first cell pool extent</td>
</tr>
<tr>
<td>DOI</td>
<td>IATYDOI</td>
<td>Yes</td>
<td>IATIPDOI</td>
<td>Dataset Output Information</td>
<td>JDSOFDB in IATYJDS, OSEOFTDB in IATYOSE</td>
</tr>
<tr>
<td>DOIX</td>
<td>IATYDOIX</td>
<td>Yes</td>
<td>IATIPDOX</td>
<td>Dataset Output Information Extension</td>
<td>DOIEXTOF in IATYDOI contains offset</td>
</tr>
<tr>
<td>DOT</td>
<td>IATYDOT</td>
<td>Yes</td>
<td>IATIPDOT</td>
<td>Dataset Output Table</td>
<td>JETEDTAD in IATYJET</td>
</tr>
<tr>
<td>DOTPLIST</td>
<td>IATYDOTP</td>
<td>Yes</td>
<td>IATIPDOP</td>
<td>IATXDOT Parameter List</td>
<td>Embedded in IATYPUR, IATYJAD, IATYJW</td>
</tr>
<tr>
<td>DSB</td>
<td>IATYDSB</td>
<td>Yes</td>
<td>IATIPDSB</td>
<td>Data set block</td>
<td>DSDBSB in IATYDSS</td>
</tr>
<tr>
<td>DSN</td>
<td>IATYDSN</td>
<td>Yes</td>
<td>IATIPDSN</td>
<td>SETDSN table</td>
<td>VLMDSNPT in SETVOL (IATYVLM)</td>
</tr>
<tr>
<td>DSP</td>
<td>IATYDSP</td>
<td>Yes</td>
<td>IATIPDSP</td>
<td>Dynamic support program dictionary for the JES3 address space</td>
<td>FCTDSPDC of IATYFCT</td>
</tr>
<tr>
<td>CIDSP</td>
<td>IATIPDSP</td>
<td>Yes</td>
<td>IATIPDSP</td>
<td>Dynamic support program dictionary for a CI FSS address space</td>
<td>FCTDSPDC of CIFCT</td>
</tr>
<tr>
<td>DSQ</td>
<td>IATYDSQ</td>
<td>Yes</td>
<td>IATIPDSQ</td>
<td>JES3 destination queue</td>
<td>DSQLOC in IATYVT</td>
</tr>
<tr>
<td>DSS</td>
<td>IATYDSS</td>
<td>Yes</td>
<td>IATIPDSS</td>
<td>Data set status block for the JES3 address space</td>
<td>MEMDSS and MEMRRDSS in IATYMEM; DEBIRBAD in IEZDEB; ICTJCDSS, ICTJEDSS, ICTSYSDSS in IATYICT; DFRDSS in IATYDFR; DSBDSS in IATYDSB; SVTPBUFO in IATYSVT; ICTCHAIN in IATYICT</td>
</tr>
<tr>
<td>CIDSS</td>
<td>IATIPDSS</td>
<td>Yes</td>
<td>IATIPDSS</td>
<td>Data set status block for a CI FSS address space</td>
<td>MEMDSS and MEMRRDSS in CIMEM; DEBIRBAD in IEZDEB; ICTJCDSS, ICTJEDSS, ICTSYSDSS in CIICT; SVTPBUFO in IATYSVT</td>
</tr>
<tr>
<td>Common Name</td>
<td>Structure (name)</td>
<td>Model (name)</td>
<td>Formats the</td>
<td>Address contained in</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>--------------</td>
<td>-------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>DTR</td>
<td>IATYDTR</td>
<td>IATIPDTR</td>
<td>DLOG trace table header</td>
<td>DLGTRACE in IATYDLOG DTRCURR in IATYDTR DTRNEXT in IATYDTR</td>
<td></td>
</tr>
<tr>
<td>DTRRE</td>
<td>IATYDTRRE</td>
<td>IATIPDT2</td>
<td>DLOG trace table entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUL</td>
<td>IATYDUL</td>
<td>IATIPDUL</td>
<td>Dump list for CSA</td>
<td>SVTDULST in IATYSVT</td>
<td></td>
</tr>
<tr>
<td>DVE</td>
<td>IATYDVE</td>
<td>IATIPDVE</td>
<td>SNAPUP device entry table</td>
<td>Contiguous to the WSB</td>
<td></td>
</tr>
<tr>
<td>DYA</td>
<td>IATYDYA1</td>
<td>IATIPDA1</td>
<td>Dynamic allocation buffer</td>
<td>SELDATA in IATYSEL SELDATA in IATYSEL</td>
<td></td>
</tr>
<tr>
<td>DYA</td>
<td>IATYDYA2</td>
<td>IATIPDA2</td>
<td>Request buffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYN</td>
<td>IATYDYN</td>
<td>IATIPDYN</td>
<td>DYNAL FCT data area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYQ</td>
<td>IATYDYQ</td>
<td>IATIPDYQ</td>
<td>Dynamic allocation queue entries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYR</td>
<td>IATYDYR</td>
<td>IATIPDYR</td>
<td>Dynamic allocation record control block</td>
<td>AWADYR in IATYAWA</td>
<td></td>
</tr>
<tr>
<td>JOBDYR</td>
<td>IATIPDYR</td>
<td>Dynamic allocation record control block for a batch job or TSO</td>
<td>AWADYR in IATYAWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIDYR</td>
<td>IATIPDYR</td>
<td>Dynamic allocation record control block for a CI FSS address space</td>
<td>AWADYR in IATYAWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT</td>
<td>IATYFCT</td>
<td>IATIPFCT</td>
<td>Function control table chain for the JES3 address space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFCT</td>
<td>IATIPFCT</td>
<td>Function control table chain for the CI FSS address space</td>
<td>FCTTOP in CITVT ROFCTAD in IATYRSQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDD</td>
<td>IATYFDD</td>
<td>IATIPFDD</td>
<td>File directory entry for the JES3 address space</td>
<td>AIOFDTOP in IATYTVT</td>
<td></td>
</tr>
<tr>
<td>CIFDD</td>
<td>IATIPFDD</td>
<td>File directory entry for the CI FSS address space</td>
<td>AIOFDTOP in CITVT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSA</td>
<td>IATYFSA</td>
<td>IATIPFSA</td>
<td>Functional subsystem application table</td>
<td>FSSFSAPT in IATYFSS FSACHAIN in IATYFSA</td>
<td></td>
</tr>
<tr>
<td>FSCB</td>
<td>WTRFSCB</td>
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<td>JES3 I/O parameter block JES3 fixed section Extent entry</td>
<td>SVTIOPRM in IATYSVT or TVTIOPRM in IATYTVT for IATYIOP; IPBEXITAB in IATYIOPE for IATYIOPE</td>
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<td>TVTJADAD in IATYTVT, R13 in module IATDMJA</td>
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<td>JQEFDB in IATYJQE JVWJCFDB and JWWJCT in IATYJVW</td>
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### Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

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### Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

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<td>IATYNCK2</td>
<td>Yes</td>
<td>IATIPNK2</td>
<td>Networking job trailer</td>
<td>NTHTNJ in IATYNHT</td>
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<tr>
<td>NDH</td>
<td>IATYNDH</td>
<td>Yes</td>
<td>IATIPNDH</td>
<td>Networking data set header</td>
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<td>NDN</td>
<td>IATYNDN</td>
<td>Yes</td>
<td>IATIPNDN</td>
<td>NJE Reader data area</td>
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<td>NDP</td>
<td>IATYNPD</td>
<td>Yes</td>
<td>IATIPNPD</td>
<td>NJE decompression parameter list</td>
<td></td>
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<td>NJH</td>
<td>IATYNJH</td>
<td>Yes</td>
<td>IATIPNJH</td>
<td>Networking job header</td>
<td>ISHDFB in IATYNIS NTHTNJH in IATYNHT</td>
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<td>NJT</td>
<td>IATYNJT</td>
<td>Yes</td>
<td>IATIPNJT</td>
<td>Networking job trailer</td>
<td>NTHTNJ in IATYNJT</td>
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<tr>
<td>NRD</td>
<td>IATYNRD</td>
<td>Yes</td>
<td>IATIPNRD</td>
<td>NJE receiver work area</td>
<td></td>
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<tr>
<td>NTSV</td>
<td>IATYNTSV</td>
<td>Yes</td>
<td>IATIPNSV</td>
<td>Netserv table, as defined on the JES3 global</td>
<td>SUPPEND of the containing SUPUNIT; the SUPUNIT is pointed to by TVNTNTSV in IATYTVT, SOCKNTSV in IATYSOCK, SUPCHAIN in IATYSUP, and SUPTYCH in IATYSUP</td>
</tr>
<tr>
<td>OCF</td>
<td>IATYOCCF</td>
<td>Yes</td>
<td>IATIPOCF</td>
<td>Old configuration data entry</td>
<td>CFSDCFAD in IATYCFGNS OCFNEXT in IATYOCCF</td>
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<td>ODP</td>
<td>IATYOCCF</td>
<td>Yes</td>
<td>IATIPODP</td>
<td>NJE Reader data area</td>
<td></td>
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<tr>
<td>OSA</td>
<td>IATYOSA</td>
<td>Yes</td>
<td>IATIPOSA</td>
<td>Output service data area</td>
<td>Register 13 contains its address in modules IATOSDR and IATOSDO</td>
</tr>
<tr>
<td>OSD</td>
<td>IATYOSD</td>
<td>Yes</td>
<td>IATIPOSMD</td>
<td>Output service resident data area</td>
<td></td>
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<td>OSE</td>
<td>IATYOSEF</td>
<td>Yes</td>
<td>IATIPOS3</td>
<td>Output service element</td>
<td>RQOSFDB in IATYRSQ JCTOSEFD in IATYJCT OSDOSECH in IATYOSD JDAOSE and JDAOSES in IATYJDA</td>
</tr>
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<td></td>
<td>IATYOSEV</td>
<td>Yes</td>
<td>IATIPOS1</td>
<td>Fixed section of the OSE</td>
<td></td>
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<td>IATYOSED</td>
<td>Yes</td>
<td>IATIPOS2</td>
<td>Variable section of the OSE</td>
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<td>Data set section of the OSE</td>
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<td>OSS</td>
<td>IATYOSSJ</td>
<td>Yes</td>
<td>IATIPOSS</td>
<td>Output service summary table</td>
<td>Select IATYOSSJ to obtain OSS control blocks for a job. RQOSSTOP in IATYRSQ points to the first OSS for a job. Select IATYOSSM to obtain OSS control blocks for a MOSE. OSEOSS in IATYOSE points to the first OSS on a MOSE chain.</td>
</tr>
<tr>
<td></td>
<td>IATYOSSM</td>
<td>Yes</td>
<td>IATIPOSS</td>
<td>Output service summary table</td>
<td></td>
</tr>
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<td>OSPL</td>
<td>IATYOSPL</td>
<td>Yes</td>
<td>IATIPOSIL</td>
<td>SPLITOSE service parameter list</td>
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### Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Structure (name)</th>
<th>adr</th>
<th>Model (name)</th>
<th>Formats the</th>
<th>Address contained in</th>
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<tbody>
<tr>
<td>PAB</td>
<td>IATYPAB</td>
<td>Yes</td>
<td>IATIPPAB</td>
<td>PPQ Attributes Block</td>
<td>PPQPAB in IATYPPQ</td>
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<tr>
<td>PAR</td>
<td>IATYPAR</td>
<td>No</td>
<td>IATIPPAR</td>
<td>Interpreter parameter list for the JES3 address space</td>
<td>TIPARMS in IATYTVT</td>
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<tr>
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<td>CIPAR</td>
<td>Yes</td>
<td>IATIPPAR</td>
<td>Interpreter parameter list for a CI FSS address space</td>
<td>TIPARMS in CITVT</td>
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<tr>
<td>PCD</td>
<td>IATYPCD</td>
<td>Yes</td>
<td>IATIPPCD</td>
<td>Program Call Descriptor table</td>
<td>SVTPCDP in SSVT</td>
</tr>
<tr>
<td>PDQ</td>
<td>IATYPDQ</td>
<td>Yes</td>
<td>IATIPPDQ</td>
<td>Pending data set queue</td>
<td>WTRFPDQF in IATYWTR points to the first PDQ on the chain; WTRFPDQL in IATYWTR points to the last PDQ on the chain; WTRFPDQC in IATYWTR points to the PDQ at the channel; WTRFPDQS in IATYWTR points to the &quot;synched to&quot; entry</td>
</tr>
<tr>
<td>PPQ</td>
<td>IATYPPQ</td>
<td>Yes</td>
<td>IATIPPPQ</td>
<td>Pending Page Queue entry</td>
<td>WTROPPQF in IATYWTR</td>
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<td>PRO</td>
<td>IATYPRO1</td>
<td>No</td>
<td>IATIPPR0</td>
<td>Procedure library table for the JES3 address space Header section Entry section</td>
<td>TPROCCHN in IATYTVT ICTPRCAD in IATYICT</td>
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<td>IATYPRO2</td>
<td>Yes</td>
<td>IATIPPR1</td>
<td>Header section</td>
<td>ICTPRCAD in ICICT</td>
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<td>CIPRO1</td>
<td>No</td>
<td>IATIPPR0</td>
<td>Procedure library table for a CI FSS address space Header section Entry section</td>
<td>TPROCCHN in CITVT ICTPRCAD in CIICT</td>
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<td>IATIPPR1</td>
<td>Header section</td>
<td>ICTPRCAD in ICICT</td>
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<td>PUR</td>
<td>IATYPUR</td>
<td>Yes</td>
<td>IATIPPUR</td>
<td>Purge Data Area</td>
<td>R13 in module IATPURG</td>
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<td>RAB</td>
<td>IATYRAB</td>
<td>Yes</td>
<td>IATIPRAB</td>
<td>USAM record allocation block</td>
<td>DSSRAB in IATYDSS IDDRAB in IATYIDD RQCIRAB in IATYRSQ</td>
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<td>RIP</td>
<td>IATYRIP</td>
<td>Yes</td>
<td>IATIPRIP</td>
<td>Reply Information Prefix</td>
<td>JESXCF CADS buffer, at the starting data address minus the prefix length</td>
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<tr>
<td>RLT</td>
<td>IATYRLT</td>
<td>YES</td>
<td>IATIPRLT</td>
<td>RJP line &amp;terminal table</td>
<td>RJPTAB IN IATYTVT SRTPRTRM IN IATYTVT SRTPSRT IN IATYTVT WSBRLTA IN IATYWBS LCBSRPL IN IATYLSCB</td>
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<td>RRE</td>
<td>IATYRRE</td>
<td>Yes</td>
<td>IATIPRRE</td>
<td>RAB Refresh element</td>
<td>DMCREAD in IATYDMC</td>
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<td>RSQ</td>
<td>IATYRSQ</td>
<td>Yes</td>
<td>IATIPRQ3</td>
<td>Resident job queue table</td>
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<td>IATIPRQ2</td>
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<td>IATIPRQ4</td>
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<td>IATIPRQ7</td>
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<td>SDE</td>
<td>IATYSDE</td>
<td>Yes</td>
<td>IATIPSDE</td>
<td>SYSOUT application program interface DSP entry</td>
<td>TVTSDEAD, SDEFIRST, SDELAST, SDENEXT, SDEPREV, SDEIDLEQ</td>
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<tr>
<td>SDW</td>
<td>IATYSDW</td>
<td>Yes</td>
<td>IATIPSDW</td>
<td>SYSOUT application program interface DSP work area</td>
<td>SDESJDWAD</td>
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<td>SEE</td>
<td>IATYSEE</td>
<td>Yes</td>
<td>IATIPSEE</td>
<td>SAPI Exclusion Element</td>
<td>OSTSEEQ in IATYOST, RQSAPSEE in IATYRSQ</td>
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<tr>
<td></td>
<td>IATYSE1</td>
<td>Yes</td>
<td>IATIPSEE1</td>
<td>SAPI Thread Exclusion List</td>
<td>SEETHRED in IATYSEE</td>
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<td>SEL</td>
<td>IATYSEL</td>
<td>Yes</td>
<td>IATIPSEL</td>
<td>Service entrance list for SSI requests</td>
<td>Register 1 of the SSISERV invocation AWASEL in IATYAWA</td>
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<tr>
<td>SETUNITS</td>
<td>IATYSET</td>
<td>No</td>
<td>IATIPSET</td>
<td>SETUNIT table entry</td>
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<td>Common Name</td>
<td>Structure (name)</td>
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<td>SETVOL</td>
<td>IATYVLML</td>
<td>Yes</td>
<td>IATIPVLM</td>
<td>Resident volume allocation table</td>
<td>MDSVLCHN in IATYMD, SYSVOLAD in IATYSYS, VLMCHAIN in IATYVLML, DSNVOLAD in IATYDSN</td>
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<td>SFW</td>
<td>IATYSFW</td>
<td>Yes</td>
<td>IATIPFW</td>
<td>SYSD data (SLBUFREC)</td>
<td>SDESFWAD</td>
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<td>SLBF</td>
<td>IATYSLB2</td>
<td>Yes</td>
<td>IATIPSL2</td>
<td>SYSLOG time stamp data (STCKDATA)</td>
<td>CLSTSYSD</td>
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<td>SMW</td>
<td>IATYSMW</td>
<td>Yes</td>
<td>IATIPSMW</td>
<td>SSI 70 SWB merge/modify work area</td>
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<td>SNFS</td>
<td>IATYSNFS</td>
<td>Yes</td>
<td>IATIPSNF</td>
<td>SNARJP fail DSP work area</td>
<td>Register 2 in an AFB-08 dump and register 2 in DM552 and DM553 dumps</td>
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<td>SOCK</td>
<td>IATYSOCK</td>
<td>Yes</td>
<td>IATIPSOC</td>
<td>Socket table, as defined on the JES3 global</td>
<td>TVTSOCK in IATYTVT, SOCKNEXT in IATYSOCK, SOCKNXNS in IATYSOCK, SOCKNXND in IATYSOCK, NTSVFSOC in IATYNJTS, NTSVLSOC in IATYNJTS, NJEFSOCK in IATYNJY, NJELOSOCK in IATYNJY</td>
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<td>SPB</td>
<td>IATYSBP</td>
<td>Yes</td>
<td>IATIPSPB</td>
<td>Spool partition block</td>
<td>TVTSPLST in IATYTVT, EXTSPB in IATYIOP</td>
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<tr>
<td>SPW</td>
<td>IATYSPW</td>
<td>Yes</td>
<td>IATIPSPW</td>
<td>SSI 82 spool partition work area</td>
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<td>SQD</td>
<td>IATYSQD</td>
<td>Yes</td>
<td>IATIPSDQ</td>
<td>Subtask Queue Descriptor</td>
<td>GSDDQAD in IATYGSD, GSGFRSQD in IATYGSG, QEDATA in IATYQUE, SQDNEXT in IATYSQD</td>
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<td>SRT</td>
<td>IATYSRT</td>
<td>Yes</td>
<td>IATIPSRT</td>
<td>Resident SNA RJP table</td>
<td>SRJPSRT in IATYTVT</td>
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<td>SRVC</td>
<td>IATYSRVC</td>
<td>Yes</td>
<td>IATIPSRV</td>
<td>Service Class table</td>
<td>WLM_SRVCFS in IATYVLM, WLM_SRVCFLAST in IATYVLM, SRVC_NEXT in IATYSRVC</td>
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<td>SST</td>
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<td>Yes</td>
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<td>Security subtask control table</td>
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<td>SSVT</td>
<td>IATYSVT</td>
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<td>IATIPSVT</td>
<td>Subsystem vector table</td>
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<td>SSWE</td>
<td>IATYSSWE</td>
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<td>IATIPSSW</td>
<td>Security subtask work element</td>
<td>NRDSSWRK in IATYNRD, Pointers in IATYSSST</td>
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<td>SSX</td>
<td>IATYSSX</td>
<td>Yes</td>
<td>IATIPSSX</td>
<td>Security installation exit parameter list</td>
<td>Register 1 in IATUX58 and IATUX59</td>
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<td>STA</td>
<td>IATYSTA</td>
<td>Yes</td>
<td>IATIPSTA</td>
<td>Staging area SELSTAG in IATYSEL, MPSTAGE and MPSTATL in IATYMPC, DSQOHD and DSQQTAIL in IATYDSD, STACHAIN and STAPREV in IATYSTA</td>
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<td>CISTA</td>
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<td>Yes</td>
<td>IATIPSTA</td>
<td>Staging area for a CI FSS SELSTAG in IATYSEL, JADSTAR in IATYJAD</td>
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<td>STLP</td>
<td>IATYSTLP</td>
<td>Yes</td>
<td>IATIPSTL</td>
<td>Status List Parameter Area</td>
<td>GRESSTLP</td>
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<td>IATYSTT1</td>
<td>Yes</td>
<td>IATIPST1</td>
<td>Single track allocation table</td>
<td>JCTSTT of IATINJQ, JBTSTT of IATYJBT</td>
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<td>IATYSTT2</td>
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<td>IATIPST2</td>
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Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Structure (name)</th>
<th>adr</th>
<th>Model (name)</th>
<th>Formats the</th>
<th>Address contained in</th>
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<td>SUPUNITS</td>
<td>IATYSUP1 IATYSUP2 IATYSUP3 IATYSUP4</td>
<td>Yes</td>
<td>IATIPSU1 IATIPSU2 IATIPSU3 IATIPSU4</td>
<td>Support units table; Fixed section - applies to all devices; Initialization section; Remote devices; RJP lines</td>
<td>CONSUP in IATYCN3; GLADDR in IATYFCT; FSASUPPT in IATYFSA; LCBFISU and LCBFOSUP in IATYLCB; MPSYSADD in IATYMPC; PRTAB, PUNTP, SUPUNITS, SYSTAB in IATYTVT; WSPASUP in IATYWSP</td>
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<td>SVTX</td>
<td>IATYSVTX</td>
<td>Yes</td>
<td>IATIPSVX</td>
<td>JES3 Subsystem Vector Table; Fixed Extension</td>
<td>SVTSSVTX in IATYSVT</td>
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<td>IATYSVTX</td>
<td>Yes</td>
<td>IATIPSVP</td>
<td>JES3 Subsystem Vector Table; Pageable Extension</td>
<td>SVTSSVTX in IATYSVT</td>
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<td>SWBB</td>
<td>IATYSWBB</td>
<td>Yes</td>
<td>IATIPSWB</td>
<td>SWBCMP service parameter list</td>
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<td>SWBC</td>
<td>IATYSWBC</td>
<td>Yes</td>
<td>IATIPSWC</td>
<td>SWBSPLCE service parameter list</td>
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<td>SWBG</td>
<td>IATYSWBG</td>
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<td>IATIPSWG</td>
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<td>Yes</td>
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<td>Yes</td>
<td>IATIPSWT</td>
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<td>SWBW</td>
<td>IATYSWBW</td>
<td>Yes</td>
<td>IATIPSWW</td>
<td>SWBWRITE service parameter list</td>
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<td>SWE</td>
<td>IATYSWE</td>
<td>Yes</td>
<td>IATIPSWE</td>
<td>SYSCOUT application program interface wait for work element</td>
<td>TVTSAWQ; SWFIRST; SWELAST; SWENEXT; SWEPREV</td>
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<tr>
<td>SYSL</td>
<td>IATYSYS3</td>
<td>Yes</td>
<td>IATIPSY3</td>
<td>SYSLOG job data header</td>
<td>TVTYSYS</td>
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<td>IATYSYS4</td>
<td>Yes</td>
<td>IATIPSY4</td>
<td>SYSLOG job data entry</td>
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<td>IATYSYS5</td>
<td>Yes</td>
<td>IATIPSY5</td>
<td>SYSLOG job data build header</td>
<td>JVQSYS</td>
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<td>IATYSYS6</td>
<td>Yes</td>
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<td>SYSUNITS</td>
<td>IATYSYS</td>
<td>No</td>
<td>IATIPSYS</td>
<td>System units table</td>
<td>SYSUNITS in IATYTVT; SVTSSVUS in IATYSVT; SYSHNEXT in IATYSYS; SETADD in IATYSET; SUPADD in IATYSUP</td>
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<td>S34</td>
<td>IATYS34</td>
<td>Yes</td>
<td>IATIP34</td>
<td>SVC 34 data area</td>
<td>STADATA in IATYSTA</td>
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<td>TEL</td>
<td>IATYTEL</td>
<td>Yes</td>
<td>IATIPTEL</td>
<td>Timer element</td>
<td>TVTTELTP in IATYTVT for the first TEL element; TVTTELLEN in IATYTVT for the last TEL element; TELNEXT in IATYTVT for the next TEL; TELPREV in IATYTVT for the previous TEL; FCTTELTP in IATYFCT for the TEL elements for an FCT; TELFNEXT in IATYTEL for the next TEL element for an FCT</td>
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<td>TVT</td>
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<td>No</td>
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<td>Transfer vector table for the JES3 address space</td>
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<td>CITV</td>
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<td>Transfer vector table for a CI FSS address space</td>
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<td>T35</td>
<td>IATYT35</td>
<td>Yes</td>
<td>IATIP T35</td>
<td>WTO/WTOR text and JES3 prefix</td>
<td>STADATA in IATYSTA</td>
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<td>UX57</td>
<td>IATYUX57</td>
<td>Yes</td>
<td>IATIPU57</td>
<td>Parameter list for exit IATUX57</td>
<td></td>
</tr>
<tr>
<td>Common Name</td>
<td>Structure (name)</td>
<td>adr</td>
<td>Model (name)</td>
<td>Formats the</td>
<td>Address contained in</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>-----</td>
<td>--------------</td>
<td>-------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>VIO</td>
<td>IATYVIO</td>
<td>Yes</td>
<td>IATIPVIO</td>
<td>Job validation I/O element</td>
<td>VIONEXT, VIOPREV, VIIONXT in IATYVIO VIWVIOAD, VIWVIORF, VIWVIORL, VIWVIOWF, VIWVIOWL in IATYVIW</td>
</tr>
<tr>
<td>VITR</td>
<td>IATYVITR</td>
<td>Yes</td>
<td>IATIPVIT</td>
<td>Job validation I/O trace entry</td>
<td>VIWTRSTR in IATYVIW VIWTRCUR in IATYVIW</td>
</tr>
<tr>
<td>VIW</td>
<td>IATYVIW</td>
<td>Yes</td>
<td>IATIPVIW</td>
<td>Job validation I/O work area</td>
<td>JVVVIWAD in IATYVIW</td>
</tr>
<tr>
<td>WBQS</td>
<td>IATYWBQS</td>
<td>Yes</td>
<td>IATIPWB1</td>
<td>Workload Manager Batch Queue Sampling information - Matrix Prefix (WBQS_PREFIX)</td>
<td>SRVC_CRSYSPLX in IATYSRVC, SRVC_PVSYSPLX in IATYSRVC, SRVC_CRSYSTEM in IATYSRVC, SRVC_PVSYSTEM in IATYSRVC, WLM_PVPLEXRC in IATYWLM, WLM_CRPLEXRC in IATYWLM</td>
</tr>
<tr>
<td></td>
<td>IATYWBQS</td>
<td>Yes</td>
<td>IATIPWB2</td>
<td>Workload Manager Batch Queue Sampling information - Sysplex Wide Service Class Data Entry (WBQS_SYSPLEX_SC_ENTRY)</td>
<td>SRVC_CRSYSPLX in IATYSRVC, SRVC_PVSYSPLX in IATYSRVC, WLM_PVPLEXRC in IATYWLM, WLM_CRPLEXRC in IATYWLM</td>
</tr>
<tr>
<td></td>
<td>IATYWBQS</td>
<td>Yes</td>
<td>IATIPWB3</td>
<td>Workload Manager Batch Queue Sampling information - Sysplex Wide Report Class Data Entry (WBQS_SYSPLEX_RC_ENTRY)</td>
<td>SRVC_CRSYSPLX in IATYSRVC, SRVC_PVSYSPLX in IATYSRVC, WLM_PVPLEXRC in IATYWLM, WLM_CRPLEXRC in IATYWLM</td>
</tr>
<tr>
<td></td>
<td>IATYWBQS</td>
<td>Yes</td>
<td>IATIPWB4</td>
<td>Workload Manager Batch Queue Sampling information - System specific Service Class Data Entry (WBQS_SYSTEM_SC_ENTRY)</td>
<td>SRVC_CRSYSTEM in IATYSRVC, SRVC_PVSYSTEM in IATYSRVC</td>
</tr>
<tr>
<td>WKGS</td>
<td>IATYWKGS</td>
<td>Yes</td>
<td>IATIPWGS</td>
<td>IATGPJPS module work area</td>
<td></td>
</tr>
<tr>
<td>WKSR</td>
<td>IATYWKSR</td>
<td>Yes</td>
<td>IATIPWSR</td>
<td>IATSJP module work area</td>
<td></td>
</tr>
<tr>
<td>WKSS</td>
<td>IATYWKSS</td>
<td>Yes</td>
<td>IATIPWSS</td>
<td>IATSJPS module work area</td>
<td></td>
</tr>
<tr>
<td>WJS</td>
<td>IATYWJS</td>
<td>Yes</td>
<td>IATIPWJ1</td>
<td>Workload Manager Job Sampling Element - GMS Job Sampling Element (WJS_GMSSTART)</td>
<td>WLM_WJSGMS in IATYWLM</td>
</tr>
<tr>
<td></td>
<td>IATYWJS</td>
<td>Yes</td>
<td>IATIPWJ2</td>
<td>Workload Manager Job Sampling Element - MDS Job Sampling Element (WJS_MDSSTART)</td>
<td>WLM_WJSMDS in IATYWLM</td>
</tr>
<tr>
<td></td>
<td>IATYWJS</td>
<td>Yes</td>
<td>IATIPWJ3</td>
<td>Workload Manager Job Sampling Element - Main Service Wait WLM Sampling Element (WJS_MSBSTART)</td>
<td>WLM_WJSMAINW in IATYWLM</td>
</tr>
<tr>
<td>WLM</td>
<td>IATYWLM</td>
<td>Yes</td>
<td>IATIPWLM</td>
<td>Workload Manager Data Area Element - (WLM_START)</td>
<td>TVTXWLM in IATYTVTX</td>
</tr>
<tr>
<td>WRKGR70</td>
<td>IATYG70</td>
<td>Yes</td>
<td>IATIPG70</td>
<td>IATGR70 module work area</td>
<td></td>
</tr>
<tr>
<td>WRKSI70</td>
<td>IATYS70</td>
<td>Yes</td>
<td>IATIPS70</td>
<td>IATSI70 module work area</td>
<td></td>
</tr>
<tr>
<td>WSB</td>
<td>IATYWSB</td>
<td>Yes</td>
<td>IATIPWSB</td>
<td>Workstation control block</td>
<td>IATYDVE</td>
</tr>
<tr>
<td>WSP</td>
<td>IATYWSP</td>
<td>Yes</td>
<td>IATIPWSP</td>
<td>Output service parameter mapping area</td>
<td>IATOSDR or IATYWTR</td>
</tr>
<tr>
<td>WTR</td>
<td>IATYWTR</td>
<td>Yes</td>
<td>IATIPWT1</td>
<td>Writer work/control area (input area)</td>
<td>WTRDIARE in IATYWTR</td>
</tr>
<tr>
<td></td>
<td>IATYWTR</td>
<td>Yes</td>
<td>IATIPWTO</td>
<td>Writer work/control area (output area)</td>
<td>WTDAREA in IATYWTR</td>
</tr>
<tr>
<td>WTRX</td>
<td>IATYWTRX</td>
<td>Yes</td>
<td>IATIPWTX</td>
<td>Writer work/control area extension</td>
<td>WTROWTRX in IATYWTR</td>
</tr>
</tbody>
</table>
### Table 16. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Structure (name)</th>
<th>adr</th>
<th>Model (name)</th>
<th>Formats the</th>
<th>Address contained in</th>
</tr>
</thead>
<tbody>
<tr>
<td>YIQOS</td>
<td>IATYIQOS</td>
<td>Yes</td>
<td>IATIPIQO</td>
<td>Output Service Inquiry data area</td>
<td></td>
</tr>
<tr>
<td>YMOOS</td>
<td>IATYMOOS</td>
<td>Yes</td>
<td>IATIPMOO</td>
<td>Output Service Modify data area</td>
<td>MOOSNEXT in IATYMOOS</td>
</tr>
<tr>
<td>YOSPC</td>
<td>IATYOSPC</td>
<td>Yes</td>
<td>IATIPOSP</td>
<td>IATOSPC Work area</td>
<td>Register 13 in IATOSPC</td>
</tr>
<tr>
<td>YSWBR</td>
<td>IATYSWBR</td>
<td>Yes</td>
<td>IATIPSWR</td>
<td>SWB Retrieve parameter list</td>
<td></td>
</tr>
<tr>
<td>YUX72</td>
<td>IATYUX72</td>
<td>Yes</td>
<td>IATIPU72</td>
<td>IATUX72 parameter list</td>
<td></td>
</tr>
</tbody>
</table>

### Viewing Portions of JES3’s Storage

IPCS can also be used to view JES3’s storage online. The LIST subcommand can be entered in a CLIST.

```plaintext
IATYVT - JES3 TRANSFER VECTOR TABLE
LIST 03001000 ASID(X'0011') LENGTH(3432) STRUCTURE(IATYVT)
+00000000 03001000. C9C1E3C7 D9E5E340 CBD1E2F4 F4F2F140 |IATGRVT HJS4421 |
+00000010 03001010. F0F661F2 F861F9F1 FOF34BF4 F8400000 |06/28/9103.48 ..|
+00000020 03001020. 0300230B 0D680000 0091193F 10255142 |.........j....|
+00000030 03001030. 0302FCC8 00000000 00B49F7C 03021388 |...........h...
+00000040 03001040. 03039ABC 03039B42 0000DCA8 0000DB58 |...........y....
+00000050 03001050. 03035EE4 03036564 030368A6 03036AFA |...........w....
+00000060 03001060. 03004BD8 03002C40 03002320 7FFFFFFF |...Q... .......|
```

**Figure 20. IPCS Output using the LIST Subcommand**

The syntax for the LIST subcommand follows:

```
LIST adr length
```

- **adr**
  Specifies the address of the requested control block.

  **Note:** Use the FIND subcommand to locate the SSVT to obtain the addresses of other JES3 control blocks. After you have located the SSVT, you can locate the address of the required control block and use the LIST subcommand to display its storage.

- **length**
  Specifies the number of bytes to be displayed. The value can be specified as a decimal or hexadecimal value.

For restrictions and more information on IPCS keywords you may want to include on the LIST subcommand, see [z/OS MVS IPCS User’s Guide](https://www.ibm.com) and [z/OS MVS IPCS Commands](https://www.ibm.com).
Chapter 4. JES3 Formatted Dump

The descriptions on the following pages should be used to identify areas in a formatted dump of a JES3 or CI FSS address space. Specific areas of a dump are shown, followed by an explanation. In the descriptions, the lowercase characters following the field names identify the type of data as follows:

- b - bit
- c - character
- dev - device
- d - decimal
- h - hexadecimal

To conserve space, the formatted dumps are truncated or compressed. More than one dump was used to produce these examples, and the order of items shown may not correspond to the order in a specific dump. Use the following chart to locate the segment of the formatted dump you are interested in. The chart also identifies the address space that provides information for the specified segment.

The page headings of each section of the formatted dump includes (in parenthesis) the verb_option you would use when referencing that section of the dump with IPCS.

<table>
<thead>
<tr>
<th>verb_option</th>
<th>Segment of JES3 Dump</th>
<th>Description</th>
<th>Address Space</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/I</td>
<td>CIDRVR ECF identifier entries</td>
<td>Displays information that identifies the type of ECF/EVENT, an FCT is awaiting on</td>
<td>JES3</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>CIDRVR ECF list control block</td>
<td>Displays information required by the ECF list management routines</td>
<td>JES3</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>C/I FSS tables</td>
<td>Contains data to keep track of the status and work being processed by C/I FSS</td>
<td>JES3</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>C/I parameter tables</td>
<td>Contains the converter parmlist and region size for a particular PARMID</td>
<td>JES3, CI FSS</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>C/I related TVT information</td>
<td>Displays the information related to C/I control blocks</td>
<td>JES3, CI FSS</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>Interpreter data area</td>
<td>Contains information related to the CI FSS</td>
<td>JES3</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>Interpreter control tables</td>
<td>Contains Converter/Interpreter work area and status information</td>
<td>JES3, CI FSS</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>PROCLIB tables</td>
<td>contains a header and an entry for every dataset in concatenation</td>
<td>JES3, CI FSS</td>
<td>255</td>
</tr>
<tr>
<td>COW</td>
<td>Client Output Work area</td>
<td>contains information pertaining to a SAPI thread COW and copy of its SSOB and SSS2</td>
<td>JES3</td>
<td>251</td>
</tr>
<tr>
<td>CSA</td>
<td>Address Range</td>
<td>maps the JES3 control blocks and data from CSA, SQA, the JES3 private area, and the JES3 auxiliary address space private area.</td>
<td>JES3, CI FSS</td>
<td>248</td>
</tr>
<tr>
<td>DFC</td>
<td>Device fence control blocks</td>
<td>Contains information used to allocate or deallocate fenced devices for job class groups or DJC networks</td>
<td>JES3</td>
<td>262</td>
</tr>
<tr>
<td>verb_option</td>
<td>Segment of JES3 Dump</td>
<td>Description</td>
<td>Address Space</td>
<td>Page</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>DJC</td>
<td>DJC JOBNET control blocks (JNCB)</td>
<td>contains information on the total network of jobs in DJC.</td>
<td>JES3, CI FSS</td>
<td>247</td>
</tr>
<tr>
<td>DLY</td>
<td>JOEX delay information for jobs in main service</td>
<td>Delay information for jobs that are waiting to be scheduled for or active in main service</td>
<td>JES3</td>
<td>263</td>
</tr>
<tr>
<td>DSP</td>
<td>DSP dictionary entries</td>
<td>Displays the information regarding each Dynamic Support Program entry</td>
<td>JES3, CI FSS</td>
<td>264</td>
</tr>
<tr>
<td>DYN</td>
<td>DYNAL FCT data area</td>
<td>information used to control the dynamic allocation requests to the DYNAL DSP.</td>
<td>JES3</td>
<td>213</td>
</tr>
<tr>
<td></td>
<td>ECF list</td>
<td>maintains information on the completion of I/O requests that are issued by the DYNAL FCT.</td>
<td>JES3</td>
<td>213</td>
</tr>
<tr>
<td>ENQ</td>
<td>AENQ control data entries</td>
<td>Contains information about exclusive or shared use of JES3 resources.</td>
<td>JES3, CI FSS</td>
<td>265</td>
</tr>
<tr>
<td></td>
<td>FCT AENQ elements</td>
<td>Contains information to map AENQ resource with the corresponding FCT</td>
<td>JES3, CI FSS</td>
<td>265</td>
</tr>
<tr>
<td></td>
<td>FCT AENQ element free queue</td>
<td>Contains information about the resources in the FCT AENQ element free queue</td>
<td>JES3</td>
<td>265</td>
</tr>
<tr>
<td>FCT</td>
<td>Auxiliary Task Control Block</td>
<td>contains status and control information on the execution of the auxiliary task</td>
<td>JES3</td>
<td>227</td>
</tr>
<tr>
<td></td>
<td>FCT Ready Queue Summary</td>
<td>contains the addresses of the FCTs that have completed a JSAM I/O request.</td>
<td>JES3</td>
<td>227</td>
</tr>
<tr>
<td></td>
<td>Function control table</td>
<td>contains information on a JES3 DSP.</td>
<td>JES3, CI FSS</td>
<td>228</td>
</tr>
<tr>
<td>FSS</td>
<td>FSS table entries</td>
<td>contains definition and status information on functional subsystem address spaces.</td>
<td>JES3</td>
<td>173</td>
</tr>
<tr>
<td>GMS</td>
<td>CLASS/S</td>
<td>contains information specified on the CLASS initialization statement.</td>
<td>JES3</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>EXRESC/S</td>
<td>identifies and defines the resources that JES3 can allocate.</td>
<td>JES3</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>GRPTBL/S</td>
<td>defines the characteristics of a job class and group. It also contain information specified on the GROUP initialization statement.</td>
<td>JES3</td>
<td>182</td>
</tr>
<tr>
<td></td>
<td>JSQ/S</td>
<td>contains information used to schedule communication with initiators via SSI routines.</td>
<td>JES3</td>
<td>188</td>
</tr>
<tr>
<td></td>
<td>MPC/S</td>
<td>describes each main in the complex. The information in the table is obtained from the MAINPROC initialization statement.</td>
<td>JES3, CI FSS</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>RESQ/S</td>
<td>contains information JES3 uses to start a job. It contains an entry for each job that has been sent to, or selected by a main for execution.</td>
<td>JES3</td>
<td>187</td>
</tr>
<tr>
<td>verb_option</td>
<td>Segment of JES3 Dump</td>
<td>Description</td>
<td>Address Space</td>
<td>Page</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>GST</td>
<td>Generalized subtask global data area</td>
<td>Contains information used to manage the generalized subtasks and the work associated with those tasks</td>
<td>JES3, CI FSS</td>
<td>267</td>
</tr>
<tr>
<td>Non-specific subtask GSDS</td>
<td>Generalized subtask directories for the non-specific subtasks</td>
<td>JES3, CI FSS</td>
<td>267</td>
<td></td>
</tr>
<tr>
<td>Specific subtask GSDS</td>
<td>Generalized subtask directories for the specific subtasks</td>
<td>JES3, CI FSS</td>
<td>267</td>
<td></td>
</tr>
<tr>
<td>SQDS in the free pool</td>
<td>Contains information that is used by a generalized subtask to process an IATXCSF request</td>
<td>JES3, CI FSS</td>
<td>267</td>
<td></td>
</tr>
<tr>
<td>HED</td>
<td>Heading page</td>
<td>contains summary information on the failure.</td>
<td>JES3, CI FSS</td>
<td>154</td>
</tr>
<tr>
<td>INS</td>
<td>Internal reader anchor block</td>
<td>contains information used to schedule individual internal reader jobs</td>
<td>JES3</td>
<td>194</td>
</tr>
<tr>
<td>JIO</td>
<td>Data management extent table</td>
<td>contains information on each spool data set JES3 can access</td>
<td>JES3, CI FSS</td>
<td>216</td>
</tr>
<tr>
<td></td>
<td>Data management file directory</td>
<td>contains information on multi-record and some single-record files.</td>
<td>JES3, CI FSS</td>
<td>222</td>
</tr>
<tr>
<td></td>
<td>Data management IOSB - SRB pairs</td>
<td>contains information used by the STARTIO macro to write data to spool.</td>
<td>JES3</td>
<td>219</td>
</tr>
<tr>
<td></td>
<td>Data management JSAM/USAM data buffers</td>
<td>contains information about the JSAM and USAM buffer pools.</td>
<td>JES3, CI FSS</td>
<td>223</td>
</tr>
<tr>
<td></td>
<td>I/O parameter block</td>
<td>contains information used to control spool I/O and information on spool data sets.</td>
<td>JES3, CI FSS</td>
<td>216</td>
</tr>
<tr>
<td></td>
<td>RPS sector tables</td>
<td>information contained in this table is used for scheduling spool I/O.</td>
<td>JES3</td>
<td>220</td>
</tr>
<tr>
<td></td>
<td>Single track table</td>
<td>maintains a record of the spool space allocated to the JES3 single track table.</td>
<td>JES3</td>
<td>221</td>
</tr>
<tr>
<td></td>
<td>Spool partition control blocks</td>
<td>contains information on each spool partition defined to JES3.</td>
<td>JES3</td>
<td>220</td>
</tr>
<tr>
<td>JMQ</td>
<td>Header and entries</td>
<td>JESMSG control queue.</td>
<td>JES3</td>
<td>254</td>
</tr>
<tr>
<td>JQE</td>
<td>JES3 job queue elements</td>
<td>contains job-related information.</td>
<td>JES3</td>
<td>198</td>
</tr>
<tr>
<td>JTV</td>
<td>Data management IATYTVT definitions</td>
<td>contains the entry point addresses for most JES3 data management routines and tables.</td>
<td>JES3, CI FSS</td>
<td>214</td>
</tr>
<tr>
<td>verb_option</td>
<td>Segment of JES3 Dump</td>
<td>Description</td>
<td>Address Space</td>
<td>Page</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------</td>
<td>-------------</td>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>LOC</td>
<td>Locate control tables</td>
<td>Contains information used by each Locate subtask and Locate FCT</td>
<td>JES3, CI FSS</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Locate data area</td>
<td>Contains information used by all locate modules under the Locate FCT</td>
<td>JES3, CI FSS</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Locate entrance tables</td>
<td>Contains information used by a DSP to request the services of the Locate FCT</td>
<td>JES3, CI FSS</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Locate Restart Records</td>
<td>Contains information about jobs active in Locate on a local processor during connect processing</td>
<td>JES3, CI FSS</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Locate subtask vector table</td>
<td>Contains information to map Locate subtask control table with Locate subtask TCB address</td>
<td>JES3, CI FSS</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Master locate control table</td>
<td>Contains information regarding Locate Master task like Master task ECB,LCT for the subtask that is being attached, parameter list, etc</td>
<td>JES3, CI FSS</td>
<td>270</td>
</tr>
<tr>
<td>MDS</td>
<td>Main device scheduler data area</td>
<td>contains information used by the main device scheduler to schedule jobs.</td>
<td>JES3</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>MDS RESQUEUE tables</td>
<td>lists the jobs that are waiting to be processed by each MDS function.</td>
<td>JES3</td>
<td>202</td>
</tr>
<tr>
<td>MEM</td>
<td>Auxiliary Task Dispatching Element</td>
<td>used to select an FCT for dispatching under the auxiliary task TCB</td>
<td>JES3</td>
<td>231</td>
</tr>
<tr>
<td></td>
<td>JES3 memory usage</td>
<td>contains the addresses of modules and control blocks in the JES3 address space.</td>
<td>JES3, CI FSS</td>
<td>226</td>
</tr>
<tr>
<td>MOD</td>
<td>JES3 module information from the JDEs</td>
<td>Displays information regarding JES3 directory elements</td>
<td>JES3, CI FSS</td>
<td>276</td>
</tr>
<tr>
<td>MPC</td>
<td>DESTQ</td>
<td>contains a list of all the unsolicited staging areas received by JES3 according to the function.</td>
<td>JES3</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>JESMAIN</td>
<td>contains information on main processors.</td>
<td>JES3</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>MAINSCHD</td>
<td>identifies the staging areas waiting to be processed by a main.</td>
<td>JES3</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>MEMDATA</td>
<td>contains information on active address spaces for each main and the jobs within an address space.</td>
<td>JES3</td>
<td>181</td>
</tr>
<tr>
<td>MVD</td>
<td>Multi-version data access Master control areas</td>
<td>Contains data that is used by JES3 to control access to data areas that have multiple versions</td>
<td>JES3, CI FSS</td>
<td>182</td>
</tr>
<tr>
<td>NJE</td>
<td>Networking console pointers and queues</td>
<td>contains information on the buffers containing NMRs</td>
<td>JES3</td>
<td>245</td>
</tr>
<tr>
<td></td>
<td>NJE active BSC node table</td>
<td>formats work areas used by the network.</td>
<td>JES3</td>
<td>246</td>
</tr>
<tr>
<td></td>
<td>NJE resident node table</td>
<td>contains information on the nodes in the network.</td>
<td>JES3</td>
<td>242</td>
</tr>
<tr>
<td>NUC</td>
<td>JES3 Nucleus</td>
<td>contains a list of modules and their entry points within the JES3 nucleus.</td>
<td>JES3, CI FSS</td>
<td>156</td>
</tr>
<tr>
<td>verb_option</td>
<td>Segment of JES3 Dump</td>
<td>Description</td>
<td>Address Space</td>
<td>Page</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>OSS</td>
<td>Master OSE table</td>
<td>summary information of the OSEs that are placed on spool.</td>
<td>JES3</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>TCP/IP Master OSE table</td>
<td>describes the TCP/IP/NJE Master OSE Table.</td>
<td>JES3</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>SNA/NJE Master OSE table</td>
<td>describes the SNA/NJE Master OSE Table.</td>
<td>JES3</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>Allocated OSS Pool</td>
<td>describes the Allocated OSS Pool.</td>
<td>JES3</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>TCP/IP Allocated OSS Pool</td>
<td>describes the TCP/IP/NJE Allocated OSS Pool.</td>
<td>JES3</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>SNA/NJE Allocated OSS Pool</td>
<td>describes the SNA/NJE Allocated OSS Pool.</td>
<td>JES3</td>
<td>169</td>
</tr>
<tr>
<td>PRT</td>
<td>PPQ/PDQ writer control blocks</td>
<td>contains information on JES3 writers.</td>
<td>JES3</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>SUPUNITS print/punch resources</td>
<td>describes the types of print and punch resources defined to JES3.</td>
<td>JES3</td>
<td>159</td>
</tr>
<tr>
<td>RJP</td>
<td>Resident remote and line DCT entries</td>
<td>contain device control information for lines and terminals.</td>
<td>JES3</td>
<td>232</td>
</tr>
<tr>
<td></td>
<td>Resident RJP line and terminal table</td>
<td>contains control information for each line or terminal.</td>
<td>JES3</td>
<td>235</td>
</tr>
<tr>
<td></td>
<td>Resident SNA RJP Table (SRT)</td>
<td>contains information specified on the COMMDEFN initialization statement.</td>
<td>JES3</td>
<td>236</td>
</tr>
<tr>
<td></td>
<td>Resident SNA terminal entries</td>
<td>contains information on started RJP lines and remote RJP workstations that are signed on.</td>
<td>JES3</td>
<td>237</td>
</tr>
<tr>
<td>RSQ</td>
<td>RESQUEUE table</td>
<td>contains an entry for each active job.</td>
<td>JES3, CI FSS</td>
<td>196</td>
</tr>
<tr>
<td>SAPI</td>
<td>SAPI processing control blocks</td>
<td>contains the following SAPI control blocks: the SFW, all of the SDEs, all of the SDWs, and all of the SWEs.</td>
<td>JES3</td>
<td>249</td>
</tr>
<tr>
<td>SCT</td>
<td>SYSOUT Class Table</td>
<td>Contains the device characteristics of SYSOUT class</td>
<td>JES3</td>
<td>277</td>
</tr>
<tr>
<td>SRS</td>
<td>MDSSRS Data Area</td>
<td>Contains information needed by the MDSSRS FCT</td>
<td>JES3</td>
<td>279</td>
</tr>
<tr>
<td></td>
<td>MDS Control Tables</td>
<td>Contains status information, addresses and work areas used by MDS subtasks, the MDS master task and MDSSRS FCT</td>
<td>JES3</td>
<td>279</td>
</tr>
<tr>
<td></td>
<td>SMS Available Resource Blocks</td>
<td>Contains information regarding the status of an SMS managed resource</td>
<td>JES3</td>
<td>279</td>
</tr>
<tr>
<td>STN</td>
<td>SETNAMES table</td>
<td>contains information specified on the SETNAMES initialization statements.</td>
<td>JES3, CI FSS</td>
<td>205</td>
</tr>
<tr>
<td>STU</td>
<td>SETUNITS table</td>
<td>contains control information for all devices attached to a main. The table contains information specified on the DEVICE initialization statement.</td>
<td>JES3, CI FSS</td>
<td>206</td>
</tr>
</tbody>
</table>
### Table 17. Segment of JES3 Dump (continued)

<table>
<thead>
<tr>
<th>verb_option</th>
<th>Segment of JES3 Dump</th>
<th>Description</th>
<th>Address Space</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUP</td>
<td>SUPUNITS table</td>
<td>identifies the devices that are allocated to the global. These devices are used by JES3's support services (i.e. readers, printers, tape units, RJP lines and networking lines).</td>
<td>JES3</td>
<td>170</td>
</tr>
<tr>
<td>SYS</td>
<td>SYSUNITS table</td>
<td>contains a unique entry for each device in the complex. Each entry maintains the allocation status of the device.</td>
<td>JES3, CI FSS</td>
<td>208</td>
</tr>
<tr>
<td>TCP</td>
<td>TCP/IP/NJE information</td>
<td>contains information on Netservs, Sockets, and TCP/IP networking requests.</td>
<td>JES3, Netserv</td>
<td>164</td>
</tr>
<tr>
<td>TRC</td>
<td>JES3 event trace table</td>
<td>contains diagnostic information pertinent to a JES3 system failure.</td>
<td>JES3, CI FSS</td>
<td>55</td>
</tr>
<tr>
<td>VLM</td>
<td>SETDSN table</td>
<td>contains information on data sets that are allocated to volumes.</td>
<td>JES3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SETVOL table</td>
<td>contains information on all known volume requirements for jobs in the system and maintains the status of all currently mounted volumes.</td>
<td>JES3</td>
<td>210</td>
</tr>
<tr>
<td>WLM</td>
<td>IATYWLM</td>
<td>JES3 work load manager data area</td>
<td>JES3</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>IATYSRVC</td>
<td>JES3 data area for WLM service class, including the sampling statics for service class</td>
<td>JES3</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>IATYWJS</td>
<td>GMS WLM job sampling device</td>
<td>JES3</td>
<td>189</td>
</tr>
<tr>
<td>WSB</td>
<td>LCB Entry</td>
<td>Describes all the active LCBs associated with the workstation.</td>
<td>JES3</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>LCB Entry</td>
<td>describes all the active LCBs associated with the workstation.</td>
<td>JES3</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>Resident WSB/LUCB entries</td>
<td>contains information on each active workstation.</td>
<td>JES3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WSB Entry</td>
<td>describes the contents of the workstation control block (WSB) which contains information for all the active workstations.</td>
<td>JES3</td>
<td>238</td>
</tr>
</tbody>
</table>

### Heading Page

The heading is a consolidation of the failure. The heading always appears in dumps dynamically formatted by the JES3. Similar information is concurrently recorded in the logrec data set.
JES3 cccc - identifies the failing subsystem and its release level.

FLNO=ddd - is the number of failures since initialization.

**Notes:**

1. A more extensive heading is generated through a normal abend rather than one which is generated by the *DUMP command.
2. Another line is printed when running in an FSS address space. See FSS and ASID below.

FSS cccccc - is the FSS name, obtained from field TVTFSSNM in module IATGRVT.

ASID=ccc - is the ASID of the FSS obtained from field TVTEASID in module IATGRVT.

cccccccc - is the name of the DSP in control at failure.

FCTA=hhhhhhhh - is the address of the active FCT at failure.

Sccc-hhhh - is the system completion code, followed by the actual interrupt code.

IN cccccccc - is the name of the module in control at failure.

PSW=hhhhhhhhhhhhhh - is the PSW at failure.

D=ddd - is the Julian day of the year.

T=dddddddd - is the time in hours, minutes, seconds and tenths.

Data is formatted to assist in pinpointing the source of the termination for dumps being dynamically processed by JES3.

SYSTEM or USER ABEND CODE IS hhh - is the system or user abend code.

0C1, if the dump is the result of a FAILDSP macro or operator *FAIL command.

PROGRAM ABENDED IN MODULE cccccccc - is the name of the module that was in control at the time of the interruption.
LOCATION hhhhhhhh - is the PSW address at the time of interrupt.

REL LOC hhhhhhhh - is the relative displacement into the named module where the interrupt occurred.

MODULE BASE IS hhhhhhhh - is the address of the module in storage.

INTERRUPTING INSTRUCTION IS hhhhhhhh - can be one of the following forms:
- CALL, if the dump originated from the DC (Dump Core) DSP.
- DMxxxx, if the dump is the result of a FAILDSP macro or operator *FAIL.
- hhhhhhhh, if neither of the above, the actual instruction image in hexadecimal (see below).
- *DUMP, if the user abend code is X'008' (operator *DUMP command), or when LOCATION is on a byte boundary.
- IMPRECISE (ILC=0), if the PSW instruction length code is zero. It signifies that the hardware could not determine the precise location of the interrupt.
- INACCESSIBLE, if interrupted location cannot be accessed.
- “Instruction image” is printed when none of the foregoing conditions exist (hhhhhhh).
- (Not shown) - TVTABLE ADDRESS IS INVALID is printed if the beginning of the TVT does not contain the character constant ‘IATGRVT’ (‘IATGRVTF’ for an FSS address space) or when the end of the TVT cannot be accessed in the dump.

ACTIVE FCT ENTRY IS cccccc - is the name of the active DSP.

AT hhhhhhhh - is the address of the active FCT.

JES3 Nucleus

MAP OF JES3 NUCLEUS is a list of all modules and their entry points within the JES3 nucleus (module IATNUC). FSS is substituted for JES3 when running in an FSS address space (module IATNUCF) and the mapping is significantly shorter.
JES3 Nucleus (NUC)

MAP OF JES3 NUCLEUS

17509000  IATGRVT
17509000  TVTABLE
1750A72B  IATGRVTC
1750B04B  IATGRTX
1750B2A0  IATATCB
1750B328  IATCNCM
1750B028  IATCNCN
1750C88  CNCNLQMD
175000A8  IATCNDB
17500E80  IATCNDM
1750170  IATCNDQ
17501F3C  IATCNI1A
17512D58  IATCNC1C
17513768  IATCNI1N
1751A080  IATCNIJ
1751AE0  IATCNRN
1751C410  IATCN5V
1751D838  IATCNCT
1751E1F0  IATCNI40
1751F0F8  IATCS03
1751FC28  IATCS06
17520CC0  IATCS07
17521F80  IATCS08
17523110  IATCS09
17523F38  IATCS10
17524890  IATCS11
175253C0  IATCS12
17525C10  IATCNCN
17527600  IATDMCS
17528818  IATDMDT
1752AB20  IATDMGB
1752B9F8  IATDMNC
17531558  IATDMST
17531AE8  IATDMTK
17534440  IATDS11
175355E0  IATGRCP
175362A8  IATGRCT
17536EF8  IATGRDLY
17537D18  IATGRES
1753B8F8  IATGRGM
1753BCC0  IATGRGPF
1753BC0  IATGRGS
1753CBA0  IATGRGU
1753F29B  IATGRG1
1753FD50  IATGRJA
17543678  IATGRJN
17543E68  IATGRJQS
175446E8  IATGRJR
17545208  IATGRJS
JES3 Nucleus (NUC)

MAP OF JES3 NUCLEUS (cont’d)

175499B8 IATGRJX
1754C188 IATGRJXS
1754C330 IATGRLD
1754D3C0 IATGRLG
1754D560 IATGROCO
17550198 IATGRPJ
17550C88 IATGRPT
17550CB0 DSPDICT
17553418 DEVREQ
175592B8 IATGRQC
1755A740 IATGRRQ
1755D558 IATGRRSR
1755DC98 IATGRSRV
1755E1F0 IATGRTM
1755F148 IATGRWDM
1755F910 IATGRWPM
17560590 IATGRWQ
17561CF8 IATINIT
175636A0 IATIQDV
17565398 IATIQFD
17565650 IATMODV
175692B8 IATMOVL
1756AF78 IATMSGC
1756B640 IATMSGCX
1756C98 IATMSCC
1756D9C8 IATMSWLD
1756DCB0 IATMSWLS
1756DF20 IATNTSR
1756E4A0 IATOSBM
1756FF10 IATOSDA
17570510 IATOSDO
17573C70 IATOSDR
175777F0 IATOSGP
17579110 IATOSGR
1757C5F8 IATOSOR
17580CD8 IATOSPC
175852F0 IATSSC
17586C80 IATSSO
1758D848 IATOSSR
1758E8F0 IATOSWB
1758F8A8 IATOSPWP
17593738 IATOSWS
17596488 IATPUSC
175966B8 IATRJGR
175984A0 IATRJPC
175993C0 IATSSDS
17599C80 IATSSJS
1759A110 IATWLCLFL
1759AEB0 IATWLCSM
1759B438 IATWLDRG
1759B5D0 IATWLDRV
1759BABB IATWLFSM
1759BE20 IATWLGSM
1759D198 IATWLJCK
1759D508 IATWLRC
1759DFE0 IATWLSSR
1759E4F8 IATWLSRV
1759ED8 IATWLSTK
1759EE88 IATGRJM
175A0260 IATGLRM
175A0618 IATMSSCR
175A0C70 IATMLEVT
175A16E0 IATWLEVS
175A2870 IATWLFJR
175A2968 IATWLSTA
PRINT/PUNCH RESOURCES are not formatted in an FSS dump. The information in this portion of the dump is mapped by the IATYSUP macro instruction.

**DTYPE** - is the type of the device.

**DGROUP** - is the device group.

**DEVAD** - is the device number of the device.

**FORMS** - is the type of forms used for this device.

**CARRIAGE cccccccc** - is either the carriage tape of the forms control buffer (FCB) in use.

**RJP (YES or NO)** - indicates whether this is an RJP device.

**TRAIN cccccccc** - indicates either the train or universal character set (UCS) of the CHARS for this device.

**WTRWAREA hhhhhhh** - is the pointer to the writer data CSECT.

---

**Chapter 4. JES3 Formatted Dump**

159
SUPUNITS Print/Punch Resources (PRT)

F1 through F5 hh - are SUPUNIT flags bytes SUPPRFL1, SUPPRFL2, SUPPRFL3, SUPPRFL4, and SUPPRFL5 respectively.

LINELIM nnnnn - is the total number of lines for all data sets in one OSE. A"+" symbol to the right of the line limit indicates that only data sets with the number of lines indicated can be scheduled for the device.

PAGELIM - is the maximum amount of pages that can be processed per data set on this device. A"+" symbol to the right of the page limit indicates that only data sets with the number of pages indicated can be scheduled for the device.

IC hh - is the number of spool records to build and chain ahead for the device. It comes from the RECORDS parameters on the DEVICE statement.

CKLNCT ddddd - is the number of records which are processed between checkpoints.

FLASH cccc - is the name of the flash cartridge to load for the 3800 printer.

STACKER - is the stacker option for the 3800 printer. C specifies that the output is to be placed in the continuous forms stacker. S specifies that the output is to be placed in the sheet stacker.

FSSTABLE hhhhhhh - is the address of the FSS table.

FSA TABLE hhhhhhhh - is the address of the FSA table.

NPRO nnnn - is the nonprocess run-out interval for the 3800-3 printer running in FSS mode.

CKINT nnnn - is the checkpoint record value.

WS - is the work selection criteria for this writer.

WC - is the writer class selection list.

PRMODE - are the process modes in effect for this device. If NO PRMODE DATA AVAILABLE appears for a device, the device is a remote workstation that is not defined by a DEVICE statement in the JES3 initialization stream.

PPQ/PDQ Writer Control Blocks

PPQ/PDQ Writer Control Blocks - the following three segments of the JES3 dump document the PPQ/PDQ writer control blocks:
• 3800 Writer Segcomon Pageids
• Pending Data set Queue for FSS Writers
• Pending Data set Queue for 3800 Writers
3800 WRITER SEGCOMON PAGEIDS - are the most recent page numbers returned by the 3800 device in response to a “REQUEST PRINTER INFORMATION, SENSE INTERMEDIATE BUFFER” CCW sequence. These represent the position of user data within the 3800 with respect to the various synchronization points (that is, channel, transfer station, fuser, and stacker).

PENDING PAGE QUEUE FOR 3800 WRITER PRT803

<table>
<thead>
<tr>
<th>PPQ ADDRESS</th>
<th>PPQAPID</th>
<th>PPQPID</th>
<th>LINE POSITION</th>
<th>FLG1</th>
<th>FLG2</th>
<th>WTR OSE FDB</th>
<th>RESQUEUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>02211374</td>
<td>0000000000</td>
<td>2572</td>
<td>8001</td>
<td>8C</td>
<td>00</td>
<td>028C300C</td>
<td>02100158</td>
</tr>
<tr>
<td>02211330</td>
<td>0000000000</td>
<td>2570</td>
<td>0004</td>
<td>13</td>
<td>00</td>
<td>022111DC</td>
<td>021CE074</td>
</tr>
<tr>
<td>022112EC</td>
<td>0000000000</td>
<td>2570</td>
<td>0001</td>
<td>80</td>
<td>00</td>
<td>022111DC</td>
<td>021CE074</td>
</tr>
<tr>
<td>022112AB</td>
<td>00000256F</td>
<td>256F</td>
<td>0005</td>
<td>10</td>
<td>40</td>
<td>022111DC</td>
<td>021CE074</td>
</tr>
<tr>
<td>02211264</td>
<td>00000256F</td>
<td>256F</td>
<td>0001</td>
<td>80</td>
<td>40</td>
<td>022111DC</td>
<td>021CE074</td>
</tr>
<tr>
<td>02211220</td>
<td>00000256F</td>
<td>256E</td>
<td>0006</td>
<td>10</td>
<td>40</td>
<td>022111DC</td>
<td>021CE074</td>
</tr>
<tr>
<td>0221110C</td>
<td>00000256F</td>
<td>256E</td>
<td>0001</td>
<td>8C</td>
<td>00</td>
<td>028C24F8</td>
<td>021CF6E0</td>
</tr>
</tbody>
</table>

PENDING DATA SET QUEUE FOR FSS WRITER PRT803

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PPQ ADDR</th>
<th>RESQUEUE</th>
<th>WTR OSE FDB</th>
<th>QUALIFIED</th>
<th>DATA SET NAME</th>
<th>DATA SET ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB</td>
<td>020BA100</td>
<td>02075OE8</td>
<td>7F6F88OC0000</td>
<td>D4 00 00 20 00000000</td>
<td>.JESMSG</td>
<td>98C1CF6EC682A1000000000</td>
</tr>
<tr>
<td></td>
<td>020BA200</td>
<td>02075OE8</td>
<td>000000000000</td>
<td>00 00 00 00 00000000</td>
<td>.JESJCL</td>
<td>98C10D01DB53B0100000000</td>
</tr>
<tr>
<td></td>
<td>020BA280</td>
<td>02075OE8</td>
<td>000000000000</td>
<td>00 00 00 00 00000000</td>
<td>.JESMSG</td>
<td>98C1D090CDACE0100000000</td>
</tr>
<tr>
<td></td>
<td>020BA300</td>
<td>02075OE8</td>
<td>000000000000</td>
<td>00 00 00 00 00000000</td>
<td>.STEP</td>
<td>98C10D8B59A2CC1000000000</td>
</tr>
<tr>
<td></td>
<td>020BA400</td>
<td>02075OE8</td>
<td>000000000000</td>
<td>01 00 00 00 00000000</td>
<td>.STEP</td>
<td>98C10D011B1221000000000</td>
</tr>
</tbody>
</table>

3800 WRITER SEGCOMON PAGEIDS - are the most recent page numbers returned by the 3800 device in response to a “REQUEST PRINTER INFORMATION, SENSE INTERMEDIATE BUFFER” CCW sequence. These represent the position of user data within the 3800 with respect to the various synchronization points (that is, channel, transfer station, fuser, and stacker).

PENDING PAGE QUEUE FOR 3800 WRITER- is the format of the pending page queue entries currently active for the 3800 device.

TYPE - is the type of the PPQ. There are two PPQ types, ‘JOB’, or ‘OSE’.

PPQ ADDR - is the storage address of this PPQ entry.

RESQUEUE - is the storage address of the job’s RESQUEUE entry.

WTR OSE FDB - is the spool address of the writer’s OSE.

PPQAPID - is the adjusted pageid of this PPQ entry. This field represents the pageid if repositioning occurs within this entry.

PPQPID - is the pageid of this PPQ entry. This is the pageid returned from the 3800 device when the entry was created.

LINE POSITION - is the FCB line position returned from the 3800 device when the entry was created.

PENDING DATA SET QUEUE FOR FSS WRITER- is the format of the pending data set queue entries currently active for the FSS device.

TYPE - is the type of the PDQ. There are two PDQ types, ‘JOB’, or ‘OSE’.
**PPQ/PDQ Writer Control Blocks (PRT)**

PDQ ADDR - is the virtual storage address of this PPQ entry.

RESQUEUE - is the storage address of the job's RESQUEUE entry.

WTR OSE FDB - is the spool address of the writer's OSE.

F1 hh to F4 hh - are the values (in hexadecimal) of the flag fields PDQFLG1 to PDQFLG4.

JNEWS hhhhhhhh - is the address of JESNEWS control block PDQJNEWS.

DATA SET ID - is the name of the data set.

---

**Master OSE Table**

MASTER OSE TABLE (MOSE) is not formatted in the FSS dump. The MOSE table contains a summary of the information in the OSE that is out on spool. The MOSE is kept in main storage and is a system-related control block in that every output data set in the system is associated with an MOSE. The MOSE is mapped by the IATYOSE macro.

<table>
<thead>
<tr>
<th>LOC</th>
<th>GROUP</th>
<th>DEST</th>
<th>TYPE</th>
<th>FORMS</th>
<th>CARRIAGE</th>
<th>UCS</th>
<th>FLASH</th>
<th>MOD-RC</th>
<th>CHAR</th>
<th>CL</th>
<th>TOTLINES</th>
<th>F1</th>
<th>F2</th>
<th>M1</th>
<th>OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>02200010</td>
<td>ANYLOCAL</td>
<td>ANYLOCAL</td>
<td>PRT</td>
<td>1PRT</td>
<td>6</td>
<td>PN</td>
<td>NONE</td>
<td>NONE-0</td>
<td>GS10</td>
<td>A</td>
<td>00000437</td>
<td>00</td>
<td>10</td>
<td>00</td>
<td>022010CC</td>
</tr>
</tbody>
</table>

LOC hhhhhhhh - is the address of the MOSE entry.

GROUP cccccc - is the name of the output device group.

DEST cccccc - is the output destination.

TYPE ccccc - is the output device type.

FORMS ccccc - is the forms identifier.

CARRIAGE c - is the printer carriage tape or FCB identifier.

UCS cc - is the printer chain or train image (UCS) identifier.

FLASH ccccc - is the flash-ID, if printer on a 3800, or NONE.

MOD-RC cccc-s - is the copy modification and table reference character, if printed on a 3800, or NONE-0.

CHARS cccc [,+] - are the character arrangements, if printed on a 3800. The first arrangement is identified. If more than one arrangement is specified in the MOSE, a “+” sign follows the first arrangement name.

CL c - is the output class.

PTY hh - is the output priority.
Master OSE Table (OSS)

TOTLINES dddddddd - specifies the total number of records reflected by this MOSE.

F1 hh F2 hh - is FLAG1 and FLAG2 fields, respectively.

M1 hh - specifies the value of OSEMFLG1.

OSS hhhhhhhh - specifies the OSS pointer.

TCP/IP Master OSE Table

TCP/IP Master OSE Table is not formatted in the FSS dump. The TCP/IP MOSE contains a summary of the TCP/IP OSEs that exist on spool. Related groups of TCP/IP data sets are associated with a unique TCP/IP MOSE. JES3 macro IATYOSE maps the TCP/IP MOSE.

<table>
<thead>
<tr>
<th>LOC</th>
<th>DEST</th>
<th>PTY</th>
<th>TPTY</th>
<th>FLAG</th>
<th>BFLG1</th>
<th>BFLG2</th>
<th>OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>04CA9100</td>
<td>NODE3</td>
<td>02</td>
<td>02</td>
<td>00</td>
<td>20</td>
<td>08</td>
<td>04CAA05C</td>
</tr>
</tbody>
</table>

LOC hhhhhhhh - is the address of the TCP/IP/NJE MOSE entry.

DEST cccccccc - is the final destination of the network stream.

PTY hh - is the output priority.

TPTY hh - is the TCP/IP/NJE transmission priority.

FLAG hh - indicates the status of the network job.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT).

BFLG2 hh - indicates the state of the network job.

OSS hhhhhhhh - is the address of the OSS entry in the LOC field of the TCP/IP Allocated OSS Pool dump listing.

SNA/NJE Master OSE Table

SNA/NJE MASTER OSE TABLE is not formatted in the FSS dump. The SNA/NJE MOSE contains a summary of the SNA/NJE OSE that exist on spool. Related groups of SNA/NJE data sets are associated with a unique SNA/NJE MOSE. JES3 macro IATYOSE maps the SNA/NJE MOSE.

<table>
<thead>
<tr>
<th>LOC</th>
<th>DEST</th>
<th>PTY</th>
<th>TPTY</th>
<th>FLAG</th>
<th>BFLG1</th>
<th>OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>04CA92E0</td>
<td>NODE6</td>
<td>02</td>
<td>02</td>
<td>00</td>
<td>A0</td>
<td>04CAA2E0</td>
</tr>
<tr>
<td>04CA9100</td>
<td>NODE5</td>
<td>02</td>
<td>02</td>
<td>00</td>
<td>A0</td>
<td>04CAA0B8</td>
</tr>
</tbody>
</table>

LOC hhhhhhhh - is the address of the SNA/NJE MOSE entry.

DEST cccccc - is the final destination of the network stream.
SNA/NJE Master OSE Table (OSS)

PTY hh - is the output priority.

TPTY hh - is the SNA/NJE transmission priority.

FLAG hh - indicates the status of the network job.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT).

BFLG2 hh - indicates the state of the network job.

OSS hhhhhhhh - is the address of the OSS entry in the LOC field of the SNA/NJE ALLOCATED OSS POOL dump listing.

TCP - TCP/IP/NJE Data

Various tables are formatted when you enter the "VERBX JES3" IPCS command, the "VERBX JES3 'OPTION=TCP" dump formatting command (with or without the ASID or NSVNAME parameter), or the *START,DC,OPTION=TCP operator command. What table is formatted depends on the following conditions:

- Global Netserv and socket tables if the JES3 Global address space is available.
- Netserv control tables (NSCT) if CSA is available.
- Netserv socket control tables (NSST) under the associated NSCT, for each Netserv address space that is available. NSSTs are not formatted if the *START,DC,OPTION=TCP command is used.
- TCP/IP request (TCRQ) chains under the associated NSCT if CSA is available.
In the formatted Netservs:

- **FLG1** - is the flag byte NTSVFLG1.
- **FLG2** - is the flag byte NTSVFLG2.
- **STAK** - is the TCP/IP stack name.
- **SYSN** - is the system name on which the Netserv runs.
TCP/IP/NJE Data (Global)

MAIN - is the MPC corresponding to the above system name.
ASID - is the address space of the Netserv.
FCT - is the pointer to the TCP FCT corresponding to this Netserv.
TCPA - is the a pointer to IATYTCP (data CSECT) for the above FCT.
JBN0 - is the JES3 job number of the Netserv.
RQ - is the RESQUEUE address of the Netserv.

In the formatted Sockets:
FLG1 - is the flag byte SOCKFLG1.
FLG2 - is the flag byte SOCKFLG2.
NODE - is the node name that this socket communicates with.
NVNM - is the name of the Netserv under which this socket runs.
JTRN - is the number of job transmitters (from the above node).
OTRN - is the number of output transmitters (from the above node).
JRCV - is the number of job receivers (from the above node).
ORCV - is the number of output receivers (from the above node).
SPDX - is the index of the spool partition where jobs received over this socket are assigned (from the a node).

In the formatted NSCTs:
NNAM - is the name of the Netserv.
STAK - is the TCP/IP stack name.
TCT - is a pointer to the NJE/TCP Control Table in IAZNJTCP.
EECB - is the task end ECB.
WECB - is the work ECB.
MEM - is the pointer to IATYMEM for the Netserv.
FLG1 - is the flag byte NSCTFLG1 (copy of NTSVFLG1).
FLG2 - is the flag byte NSCTFLG2 (copy of NTSVFLG2).

In the formatted NSSTs:
NODE - is the name of the node that is connected to this socket.
TSCT - is a pointer to the NJE/TCP socket control table in IAZNJTCP.
TCP/IP/NJE Data (Global)

JTRN - is the number of job transmitters (from the above node).

OTRN - is the number of output transmitters (from the above node).

JRCV - is the number of job receivers (from the above node).

ORCV - is the number of output receivers (from the above node).

FEAT - is the feature flags.

SPDX - is the spool partition index (from the above node).

FLG1 - is flag byte NSSTFLG1 (copy of SOCKFLG1).

DDNM - is the current DD name for the dummy data set in the job/SYSOUT receiver.

In the formatted TCRQs:

NNAM - is the name of the Netserv that the TCRQ is sent to.

NEXT - is the address of the next TCRQ in the chain.

PREV - is the address of the previous TCRQ in the chain.

LEN - is the length of the TCRQ and associated data.

FUNC - is the function code assigned to the TCRQ.

DATX - is the first 60 bytes of the data contained in the TCRQ printed in hexadecimal form.

DATA - is the same 60 bytes in DATX printed in character form.

Allocated OSS Pool

ALLOCATED OSS POOL is not formatted in the FSS dump. Only allocated OSS entries are formatted; the entire OSS pool is not formatted. This control block is mapped by the IATYOSS macro.

<table>
<thead>
<tr>
<th>LOC</th>
<th>RQCHAIN</th>
<th>JPTY</th>
<th>NEXT</th>
<th>PRTY</th>
<th>MOSE</th>
<th>FLAG1</th>
<th>BUFF</th>
<th>RESQUEUE</th>
<th>MAXLINES</th>
<th>MINLINES</th>
<th>TOTLINES</th>
<th>AVAIL</th>
<th>SCHED</th>
<th>OUTBIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>04CA1114</td>
<td>00000000</td>
<td>0F</td>
<td>00000000</td>
<td>0F</td>
<td>04CA91F0</td>
<td>44</td>
<td>0001</td>
<td>04812340</td>
<td>00000005</td>
<td>00000005</td>
<td>00000005</td>
<td>0000</td>
<td>0001</td>
<td>00000000</td>
</tr>
</tbody>
</table>

LOC hhhhhhhh - is the address of the OSS.

RQCHAIN hhhhhhhh - is the RESQUEUE chain field. If more than one OSS is required to represent a job's output, this field points to the next OSS.

JPTY dd - is the job's priority.

NEXT hhhhhhhh - is the pointer to the next OSS chained to the MOSE.

PRTY hh - is the output priority.
Allocated OSS Pool (OSS)

MOSE hhhhhhh - is the master OSE pointer.

FLG1 hh - is the OSSFLAG1 field.

BUFF hhhh - is the buffer number of the 1st OSE in the OSE chain represented by this OSS.

RESQUEUE hhhhhhhh - is the pointer to the RESQ for which the OSS represents output.

MAXLINES dddddd - is the maximum record count.

MINLINES dddddd - is the minimum record count.

TOTLINES dddddd - is the total record count.

AVAIL dddd - is the number of OSEs that are available for scheduling.

SCHD dddd - is the number of OSEs that are scheduled or in operator hold.

OUTBIN hhhhhhh - is the printer output bin ID in hexadecimal.

TCP/IP Allocated OSS Pool

TCP/IP Allocated OSS Pool is not formatted in the FSS dump. JES3 formats only allocated OSS entries; the entire TCP/IP OSS pool is not formatted. JES3 macro IATYOSS maps this control block.

TCP/IP ALLOCATED OSS POOL

<table>
<thead>
<tr>
<th>LOC</th>
<th>RQCHAIN</th>
<th>JPTY</th>
<th>NEXT</th>
<th>PRI</th>
<th>MOSE</th>
<th>FLAG1</th>
<th>BUFF</th>
<th>RESQUEUE</th>
<th>AVAIL</th>
<th>SCHD</th>
<th>BFLG1</th>
<th>BFLG2</th>
<th>OUTBIN</th>
<th>GROUPID</th>
<th>LINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>04CAA05C</td>
<td>00000000</td>
<td>02</td>
<td>04CAABA8</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E3F00</td>
<td>0004</td>
<td>0000</td>
<td>20</td>
<td>08</td>
<td>00000000 TCP00001 00000018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04CA6988</td>
<td>00000000</td>
<td>02</td>
<td>04CA6988</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E2000</td>
<td>0004</td>
<td>0000</td>
<td>20</td>
<td>08</td>
<td>00000000 TCP00001 00000018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LOC hhhhhhh - is the address of the TCP/IP/NJE OSS.

RQCHAIN hhhhhhh - is the RESQUEUE chain field. If more than one TCP/IP/NJE OSS is required to represent a job's output, this field points to the next TCP/IP/NJE OSS.

JPTY hh - is the job's priority.

NEXT hhhhhhh - is the pointer to the next OSS chained to the MOSE.

PRTY hh - is the network job/SYSOUT stream priority.

MOSE hhhhhhhh - points to the MOSE for this OSS.

FLAG1 hh - is the status indicator (HOLD or NOHOLD) of the OSS.

BUFF hhhh - is the buffer number of the 1st OSE in the OSE chain represented by this OSS.

RESQUEUE hhhhhhhh - is the pointer to the RESQUEUE for which the OSS represents output.
TCP/IP Allocated OSS Pool (OSS)

AVAIL dddd - is the number of OSEs that are available for scheduling.

SCHD dddd - is the number of OSEs that are scheduled or in operator hold.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT) and indicates whether the data set is a job header, a data set header, a data set, or a job trailer.

BFLG2 hh - status flag, OSEBFLG2, of the network job. This flag indicates whether the job has been sent to a Netserv.

OUTBIN hhhhhhhh - is the printer output bin ID in hexadecimal.

GROUPID cccccc - identifies a related group of network data sets.

LINES hhhhh - identifies the number of lines of the transmission stream represented by the OSS.

SNA/NJE Allocated OSS Pool

SNA/NJE ALLOCATED OSS POOL is not formatted in the FSS dump. JES3 formats only allocated OSS entries; the entire SNA/NJE OSS pool is not formatted. JES3 macro IATYOSSEX maps this control block.

<table>
<thead>
<tr>
<th>LOC</th>
<th>RQCHAIN</th>
<th>JPTY</th>
<th>NEXT</th>
<th>PRTY</th>
<th>MOSE</th>
<th>FLAG1</th>
<th>BUFF</th>
<th>RESQUEUE</th>
<th>AVAIL</th>
<th>SCHD</th>
<th>BFLG1</th>
<th>BFLG2</th>
<th>OUTBIN</th>
<th>GROUPID</th>
<th>LINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>04CA05C</td>
<td>00000000</td>
<td>02</td>
<td>04CAA1CC</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E3F00</td>
<td>0004</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
</tr>
<tr>
<td>04CA0088</td>
<td>00000000</td>
<td>02</td>
<td>04CAA170</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E121A0</td>
<td>0006</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
</tr>
<tr>
<td>04CA170</td>
<td>04CA05C</td>
<td>02</td>
<td>04CA065C</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E3F00</td>
<td>0004</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
</tr>
<tr>
<td>04CA11CC</td>
<td>04CAA22B</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E3F00</td>
<td>0004</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04CA22B</td>
<td>00000000</td>
<td>02</td>
<td>04CA228</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
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<td>0004</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
</tr>
<tr>
<td>04CA284</td>
<td>00000000</td>
<td>02</td>
<td>04CA9100</td>
<td>04</td>
<td>0001</td>
<td>047E4400</td>
<td>0004</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04CA2E0</td>
<td>04CA33C</td>
<td>02</td>
<td>04CA33C</td>
<td>02</td>
<td>04CA92E0</td>
<td>04</td>
<td>0001</td>
<td>04812680</td>
<td>0006</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
</tr>
<tr>
<td>04CA33C</td>
<td>00000000</td>
<td>02</td>
<td>04CA398</td>
<td>02</td>
<td>04CA92E0</td>
<td>04</td>
<td>0001</td>
<td>047E4900</td>
<td>0004</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
</tr>
<tr>
<td>04CA398</td>
<td>00000000</td>
<td>02</td>
<td>04CA92E0</td>
<td>04</td>
<td>0001</td>
<td>048124E0</td>
<td>0006</td>
<td>0000</td>
<td>AD</td>
<td>00</td>
<td>00000000</td>
<td>BDT00000</td>
<td>000000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LOC hhhhhhh - is the address of the SNA/NJE OSS.

RQCHAIN hhhhhhh - is the RESQUEUE chain field. If more than one SNA/NJE OSS is required to represent a job's output, this field points to the next SNA/NJE OSS.

JPTY hh - is the job's priority.

NEXT hhhhhhhh - is the pointer to the next OSS chained to the MOSE.

PRTY hh - is the network job/SYSOUT stream priority.

MOSE hhhhhhhh - points to the MOSE for this OSS.

FLAG1 hh - is the status indicator (HOLD or NOHOLD) of the OSS.

BUFF hhhh - is the buffer number of the 1st OSE in the OSE chain represented by this OSS.

RESQUEUE hhhhhhhh - is the pointer to the RESQUEUE for which the OSS represents output.
SNA/NJE Allocated OSS Pool (OSS)

AVAIL dddd - is the number of OSEs that are available for scheduling.

SCHD dddd - is the number of OSEs that are scheduled or in operator hold.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT) and indicates whether the data set is a job header, a data set header, or a job trailer.

BFLG2 hh - status flag, OSEBFLG2, of the network job. This flag indicates the job has been sent to MVS/BDT or queued in the MVS/BDT work queue.

OUTBIN hhhhhhh - is the printer output bin ID in hexadecimal.

GROUPID ccccccc - identifies a related group of network data sets.

LINES hhhhh - identifies the line number of the transmission stream represented by the OSS.

SUPUNITS Table

SUPUNITS TABLE is not formatted in the FSS dump but for JES3 represents devices belonging to the global main for JES3 support services (consoles, readers, printers, punches, main processors, tape units, RJP lines and networking lines).
### SUPUNITS Table (SUP)

<table>
<thead>
<tr>
<th>LOC</th>
<th>TYPE</th>
<th>DNAME</th>
<th>GROUP</th>
<th>UNIT1</th>
<th>UNIT2</th>
<th>FLAG1</th>
<th>FLAG2</th>
<th>SYSUNIT</th>
<th>DCTADD</th>
<th>UCB1</th>
<th>UCB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>183653DC</td>
<td>NJELINE</td>
<td>LINE3</td>
<td>LOCAL</td>
<td>0506</td>
<td>80</td>
<td>00</td>
<td>1606ECB</td>
<td>00F12A30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18365494</td>
<td>NJELINE</td>
<td>LINE4</td>
<td>LOCAL</td>
<td>0506</td>
<td>80</td>
<td>00</td>
<td>1606E9B0</td>
<td>00F12A80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1836554C</td>
<td>NJELINE</td>
<td>LINE2</td>
<td>LOCAL</td>
<td>0907</td>
<td>80</td>
<td>00</td>
<td>1606EA3B</td>
<td>00F219E0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1836F704</td>
<td>NJESNDR</td>
<td>A0002SN</td>
<td>NODE2</td>
<td>00</td>
<td>00</td>
<td>1606EAF0</td>
<td>00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1834BD88</td>
<td>PRT3203</td>
<td>PRT650</td>
<td>LOCAL</td>
<td>0650</td>
<td>A0</td>
<td>00</td>
<td>1623FAB</td>
<td>00F19B00</td>
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SUPUNITS Table (SUP)

TYPE - is the device type as defined by the DTYPE parameter on the DEVICE initialization statement.

DDNAME - is the ddname as defined by the JNAME parameter on the DEVICE initialization statement.

GROUP - is the group name as defined by the DGROUP parameter on the DEVICE initialization statement.

UNIT1 - is the device number as defined by the JUNIT parameter on the DEVICE initialization statement.

UNIT2 - is the device number of the alternate path CTC.

FLAG1 hh and FLAG2 hh - are, respectively, SUPFLAG1 and SUPFLAG2 in IATYSUP.

SYSUNIT hhhhhhhh - is the address of the system unit table for the device, except when it is an RJP device.

DCTADD hhhhhhhh - is the address of the DCT if the device is an RJP device.

UCB1 hhhhhhhh - is the address of the primary UCB in storage.

UCB2 hhhhhhhh - is the address of the alternate path CTC UCB in storage.
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FSS TABLE ENTRIES contains:

FSSNAME - is the name of the FSS as supplied on an FSSDEF or DEVICE initialization statement.

FSSID - is the numeric id that uniquely identifies this FSS (assigned during initialization.)

FSAID - is the numeric id that, in combination with the FSSID, uniquely identifies this FSA. It is assigned during initialization.

Note: C/I FSS address spaces do not have FSAIDs.

ENTRY'S ADDRESS - is the address of the FSS table entry or FSA table entry.
FCT ADDRESS - is the address of the FCT that controls this FSS or FSA. This field is zero if the FSS or FSA is inactive.

CNDB ADDRESS - is the address of the CNDB containing message delivery information for the device.

STATUS-FLAGS - is the FSSSTAT1 field (startup status), FSSSTAT2 field (shutdown status) and the FSSMSTAT field (*MODIFY command status) for FSS and the FSASTAT1 field (startup status), FSASTAT2 field (shutdown status) and the FSAWSTAT field (FSS writer status) for FSA.

SYSTEM/JNAME - is the name of the system (specified either by a FSSDEF statement or a *MODIFY,F command) where the FSS and FSA are assigned to run. JNAME is the name of the device assigned to the FSA.

JOB NUMBER nnnnn - is the number of the job that is running as the FSS address space.

ASID nnnn - is the address space id of the FSS address space.

FSS TYPE - is the type of FSS address space. 01 indicates a writer FSS and 02 indicates a C/I FSS.

ECF - is the address and mask of the status change ECF.

FLAGS - is the request flags (FSSREQ) for use with the IATXFSS macro and the option flags (FSSOPT) representing the options on the FSSDEF initialization statement.
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<th>JESMAIN</th>
<th>Chapter 4. JES3 Formatted Dump</th>
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**JESMAIN (MPC)**

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**JESMAIN**

- **CTCIXIF** - address of JESXEF information; mapped by IXZYIXIF.
- **CTCFLAGS** hhhhhhh - are flag bytes CTCFLG1, CTCFLG2, CTCFLG3, and CTCFLG4.
- **CTCMSWA** - address of IATMSDR work area.
- **MF hh** - is the MPLFLG status byte. The MF field contains flag bytes that indicate the status of the main represented by the MPC.
- **RELEASE** - the JES3 release that the system is running.
- **H/R DATE** - hot start with refresh date associated with this main (MPCHRDAT).
- **H/R TIME** - hot start with refresh time associated with this main (MPCHRTIM).
- **CFG DATE** - *MODIFY,CONFIG date associated with this main (MPCCFDAT).
- **CFG TIME** - *MODIFY,CONFIG time associated with this main (MPCCFTIM).
JESMAIN (MPC)

PL - the JES3 product level associated with the JES3 release running on this main (MPCPLEVL) as defined in macro IATYGLOB.

SL - the JES3 service level associated with significant JES3 maintenance running on this main (MPCSLEVL) as defined in macro IATYGLOB.

DESTQ

DESTQ is the destination routing table. It is used to queue all unsolicited staging areas received by JES3 to the appropriate JES3 function routine for processing. The table is mapped by macro IATYDSQ.

There is a unique table for every DESTQ that has staging areas associated with it.

Note: The addresses under staging addresses for the MAINSCHD DESTQ are not staging addresses, they are MPC addresses.
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<td>0480189A</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SNA J E</td>
<td>843D7D40</td>
<td>44</td>
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<td>04801227</td>
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<tr>
<td>ARM PJCL</td>
<td>843D7D64</td>
<td>44</td>
<td>40</td>
<td>048018AC</td>
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<tr>
<td>SAPI</td>
<td>843D7D88</td>
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<td>40</td>
<td>048018D4</td>
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</tr>
<tr>
<td>ENSTATUS</td>
<td>843D7DAC</td>
<td>44</td>
<td>20</td>
<td>04801BE3</td>
<td>00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESERVED</td>
<td>843D7E00</td>
<td>00</td>
<td>00</td>
<td>00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>RESERVED</td>
<td>843D7E3C</td>
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<tr>
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<td>00</td>
<td>00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESERVED</td>
<td>843D7E84</td>
<td>00</td>
<td>00</td>
<td>00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESERVED</td>
<td>843D7EAE</td>
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<td>00</td>
<td>00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FUNCTION - is the internal name of the destination queue.

FSSID - is the numeric id that uniquely identifies this FSS (assigned during initialization.)

FSAID - is the numeric id that, in combination with the FSSID, uniquely identifies this FSA. It is assigned during initialization.

QUEUE hhhhhhhh - is the address of the queue entry.

FL hh - is flag byte DSQFLG.

MK hh - is the ECF mask.

ECF-ADDR hhhhhhhh - is the ECF address. The ECF is posted when a staging area is added to the queue.

EC hh - is the contents of the ECF whose address is in MSK-ADDR.

DYNAMIC DESTQ ANCHOR - indicates that this is the primary DESTQ entry for a dynamic destination queue. The ECF-ADDR field contains the number of FSS-level entries.

FSS-LEVEL ENTRY - indicates that this is the FSS-level dynamic destination queue entry. The ECF-ADDR field contains the number of FSA-level destination queues.

MAINSCHD

MAINSCHD shows the staging areas on the DESTQ. BRAVO is the queue of staging areas chained from MPSTAGE in the MPC for the main named BRAVO in the initialization stream. SVC34 is the queue of staging areas chained from the SVC34 entry on the DESTQ. Queues for other MPC entries and other entries on the DESTQ are shown if the staging areas exist. The formatted areas are mapped by the macro IATYSTA.

<table>
<thead>
<tr>
<th>SA</th>
<th>MESSAGE TOKEN</th>
<th>FLAGS</th>
<th>SAID</th>
<th>FSID</th>
<th>TP</th>
<th>FU</th>
<th>MD</th>
<th>SD</th>
<th>RD</th>
<th>UF</th>
<th>RECL</th>
<th>MPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0264C42B</td>
<td>000420900005A018</td>
<td>80000008</td>
<td>0014</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
</tr>
<tr>
<td>02662AF0</td>
<td>0000420E0009741</td>
<td>80000008</td>
<td>0016</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
</tr>
<tr>
<td>0265C70</td>
<td>0000421000096C2</td>
<td>80000008</td>
<td>0017</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
</tr>
<tr>
<td>02660F20</td>
<td>000459CB1990000</td>
<td>80000008</td>
<td>0018</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
</tr>
<tr>
<td>02664130</td>
<td>80000008</td>
<td>0019</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
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<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
<td></td>
</tr>
<tr>
<td>02665210</td>
<td>80000008</td>
<td>001A</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
<td></td>
</tr>
<tr>
<td>0265E578</td>
<td>80000008</td>
<td>001B</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
<td></td>
</tr>
<tr>
<td>0265E820</td>
<td>80000008</td>
<td>00EB</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
<td></td>
</tr>
<tr>
<td>0265B668</td>
<td>80000008</td>
<td>0024</td>
<td>00000000</td>
<td>80</td>
<td>05</td>
<td>00</td>
<td>07</td>
<td>06</td>
<td>00</td>
<td>0164</td>
<td>0268A000</td>
<td></td>
</tr>
</tbody>
</table>

STAGING AREA ADDRESSES - is a list of the addresses of the first six staging areas for the staging areas on the destination routing table.

Note: For the MAINSCHD queue, it is not the staging area address, but the MPC addresses of the main service functions. The MPSTAGE field in IATYMPC points to the staging areas. The MPCs are already formatted under the heading MPC/S.
SA hhhhhhh - is the address of the staging area.

MESSAGE TOKEN - is the value for the JESXCF message token for the JESXCF message corresponding to this staging area.

FLAGS hhhhhhh - are flag bytes STAFLAG1, STAFLAG2, STAFLAG3, and STAFLAG4.

SAID hhhh - is the address space identification (ASID) of the address space associated with the staging area.

FSID hhhhhhhh - is the functional subsystem identifier of the address space and application from which the staging area came or to which the staging area is going.

TP hh - is the type of SSISERV request.

FU hh - is the function code of an SSISERV macro (SSOB function code of requester or JES3 destination code).

<table>
<thead>
<tr>
<th>Code</th>
<th>Destination Queue</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>TSO output</td>
</tr>
<tr>
<td>02</td>
<td>TSO cancel</td>
</tr>
<tr>
<td>03</td>
<td>TSO status</td>
</tr>
<tr>
<td>04</td>
<td>end-of-task</td>
</tr>
<tr>
<td>05</td>
<td>job select</td>
</tr>
<tr>
<td>06</td>
<td>allocate</td>
</tr>
<tr>
<td>07</td>
<td>unallocate</td>
</tr>
<tr>
<td>08</td>
<td>end-of-memory</td>
</tr>
<tr>
<td>09</td>
<td>write-to-operator (WTO)</td>
</tr>
<tr>
<td>0A</td>
<td>SVC34</td>
</tr>
<tr>
<td>0B</td>
<td>validate id</td>
</tr>
<tr>
<td>0C</td>
<td>job termination</td>
</tr>
<tr>
<td>0D</td>
<td>job requeue</td>
</tr>
<tr>
<td>10</td>
<td>OPEN</td>
</tr>
<tr>
<td>11</td>
<td>CLOSE</td>
</tr>
<tr>
<td>12</td>
<td>CHECKPOINT</td>
</tr>
<tr>
<td>13</td>
<td>RESTART</td>
</tr>
<tr>
<td>14</td>
<td>request job id</td>
</tr>
<tr>
<td>15</td>
<td>return job id</td>
</tr>
<tr>
<td>16</td>
<td>beginning of step</td>
</tr>
<tr>
<td>17</td>
<td>dynamic allocation</td>
</tr>
<tr>
<td>18</td>
<td>common allocation</td>
</tr>
<tr>
<td>19</td>
<td>common unallocation</td>
</tr>
<tr>
<td>1A</td>
<td>change dname</td>
</tr>
<tr>
<td>1B</td>
<td>change ENQ</td>
</tr>
<tr>
<td>1C</td>
<td>DDR candidate select</td>
</tr>
<tr>
<td>1D</td>
<td>DDR candidate verify</td>
</tr>
<tr>
<td>1E</td>
<td>DDR DASD swap request</td>
</tr>
<tr>
<td>1F</td>
<td>DDR swap complete</td>
</tr>
<tr>
<td>20</td>
<td>SVC34 command failure</td>
</tr>
<tr>
<td>22</td>
<td>write-to-log</td>
</tr>
<tr>
<td>28</td>
<td>early volume release</td>
</tr>
<tr>
<td>35</td>
<td>FSS/FAA connect/disconnect</td>
</tr>
<tr>
<td>36</td>
<td>subsystem version information</td>
</tr>
<tr>
<td>3E</td>
<td>BDT subsystem</td>
</tr>
</tbody>
</table>
MAINSCHD (MPC)

3F  BDT staging area shuttle
40  transaction processing
48  Vary path
4B  Notify user
4D  Persistent JCL
4F  SAPI (SSOB function code)
50  Extended Status (SSOB function code)
80  main service
81  generalized main scheduling
82  verify
83  locate
84  JES3 data management
85  user track allocation
86  consoles SVC34
87  consoles WTO
89  verify response
8A  work to do driver
8B  SSICS
8C  SSICS
8D  ENDREQ
8E  modify driver
8F  inquiry driver
90  SYSOUT interface
91  system connect
92  alternate CTC retry
93  main service
94  staging area shortage
95  DYNAL allocation
96  DYNAL unallocation
97  DYNAL change DDNAME
98  communication from an FSS
99  CI Driver
9A  IOERR
9B  FSS start failure
9D  SAPI (JES3 destination code)
9E  Extended Status (JES3 destination code)
9F  Workload Manager
A0  JESMSG
A1  Local Module Load/Call
A2  TCP/IP Server Request
A3  JES Properties - Class Information
A4  JES Properties - Initiator Information
A5  JES Properties - Node Information
A6  JES Properties - Spool Partition
A7  JES Properties - JESplex Information
A8  Scheduler JCL Facilities

MD hh - is the MOD parameter of the SSISERV macro to further identify requests within function code.

SD hh - is the number of the main sending a request.

RD hh - is the number of the main receiving a request.

UF hh - is the user-defined staging area flags (STAUFLG field).
RECL hh - is the record length of the staging area data for the request.

MPC hhhhhh - is the address of the main processor control table associated with the staging area.

MEMDATA

MEMDATA (memory data control block) represents information about active address spaces within a given main and jobs within an address space. There is one MEMDATA per address space. They are used by SSI routines for job information. MEMDATA is mapped by macro IATYMEM.

<table>
<thead>
<tr>
<th>******** MEMDATA ********</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASID</td>
</tr>
<tr>
<td>0238A448</td>
</tr>
<tr>
<td>0238A238</td>
</tr>
<tr>
<td>023A1580</td>
</tr>
<tr>
<td>02600020</td>
</tr>
<tr>
<td>0239C218</td>
</tr>
<tr>
<td>0239C200</td>
</tr>
<tr>
<td>0239C5AB</td>
</tr>
<tr>
<td>026C1520</td>
</tr>
<tr>
<td>0239C10</td>
</tr>
<tr>
<td>0239C470</td>
</tr>
</tbody>
</table>

MEMDATA hhhhhhh - is the address of the MEMDATA control block in CSA.

ASID hh - is the ASID of the user address space represented by this MEMDATA control block.

ASCB hhhhhhhh - is the address of the address space control block of the user address space represented by this MEMDATA.

WISEQ hhhhhhhh - for WLM managed initiators, this is the unique sequence number assigned to the initiator. For JES managed initiators or demand select jobs this is always zero.

WSELS hhhhhhhh - is a queue of SEL control blocks. This queue is the result of requests that had to be postponed because the barrier count for ACTSAS was reached.

GRP/SRVC cccccccc - For JES managed initiators, this is the name of the group that belongs to the initiator for the the job associated with this MEMDATA. For WLM managed initiators, this is the name of the service class that belongs to the initiator for the the job associated with this MEMDATA. For demand select jobs this is an 8-character identifier that was used when the address space was created.

ENTRY1 hhhhhhhh - is the address of a MEMDATA entry containing control data for the initiator (or the job, if demand select).
MEMDATA (MPC)

JOB1 cccccccc - is the name of the initiator (or the job, if demand select) for the associated address space.

ENTRY2 hhhhhhhh - is the address of a MEMDATA entry containing control data for the job started by the initiator and identified in JOB2.

Note: JES3's own entry contains the job name in ENTRY2, even though it is a demand select job.

JOB2 cccccccc - is the name of the job started by the initiator in the associated address space.

MULTI-VERSION DATA ACCESS MASTER CONTROL AREAS

The Multi-Version Data Access Master Control areas are control blocks in CSA that control serialized access to the JES3 tables SETUNITS, SETNAMES, and DYNALDSN tables, which are also in CSA. The control areas are used by JES3 to determine if there are any address spaces still using an old version of a table when a new version of the table is built upon a JES3 restart (including additions, deletions, and changes during a hot start with refresh). When an old version of a table is no longer being used, its storage is freed. Each table has one master control area and each master control area has zero or more version control areas. Each version control area points to and controls one version of the table.

A sample output of the multi-version data access master control areas is shown below:

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>TABLE</th>
<th>CVCT</th>
<th>OVCT</th>
<th>BVCT</th>
<th>TYP</th>
<th>CUSE</th>
<th>OUSE</th>
<th>BTKN</th>
</tr>
</thead>
<tbody>
<tr>
<td>04C7A930</td>
<td>SETUNITS TABLE</td>
<td>04C0B140</td>
<td>00000000</td>
<td>00000000</td>
<td>01</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>VERS</td>
<td>04C0B140</td>
<td>TYPE=CURRENT</td>
<td>VNXT=00000000</td>
<td>VTAB=04BB6660</td>
<td>TSIZ=0000C49C</td>
<td>VUSE=00000000</td>
<td>MCTL=04C7A930</td>
<td>TMFL=04BB90C8</td>
</tr>
<tr>
<td>04C7A978</td>
<td>SETNAMES TABLE</td>
<td>04CDF58</td>
<td>00000000</td>
<td>00000000</td>
<td>02</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>VERS</td>
<td>04CDF58</td>
<td>TYPE=CURRENT</td>
<td>VNXT=00000000</td>
<td>VTAB=04BC5430</td>
<td>TSIZ=000008BC</td>
<td>VUSE=00000000</td>
<td>MCTL=04C7A978</td>
<td>TMFL=00000000</td>
</tr>
<tr>
<td>04C7A9C0</td>
<td>DYNALDSN TABLE</td>
<td>04CE3E28</td>
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<td>00000000</td>
<td>03</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>VERS</td>
<td>04CE3E28</td>
<td>TYPE=CURRENT</td>
<td>VNXT=00000000</td>
<td>VTAB=04D5D1C8</td>
<td>TSIZ=00000014</td>
<td>VUSE=00000000</td>
<td>MCTL=04C7A9C0</td>
<td>TMFL=00000000</td>
</tr>
<tr>
<td>04C7AA08</td>
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<td>RESERVED</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
<td>05</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
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<td>00000000</td>
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<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>04C7AAC0</td>
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<td>00000000</td>
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<td>00000000</td>
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<td>00000000</td>
<td>00000000</td>
</tr>
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</tr>
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<td>00000000</td>
<td>00000000</td>
<td>09</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
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<td>RESERVED</td>
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<td>00000000</td>
<td>00000000</td>
<td>0A</td>
<td>00000000</td>
<td>00000000</td>
<td>00000000</td>
</tr>
</tbody>
</table>

GRPTBL/S

GRPTBL/S define characteristics of a job class group defined by a GROUP initialization statement.
GRPTBL hhhhhhh - is the address of the group table.

GRPNAM cccccccc - is the name of the job class group, as defined by the NAME parameter of a GROUP initialization statement.

MODE - is WLM if the group is WLM managed, JES if the group is JES managed.

GS dd - is a unique sequence number assigned to the group.

FL hh - is flag byte MGFLAG.

RESQ hhhhhhh - is the address of the first RESQUEUE entry in a chain of RESQUEUE entries that belong to this group.

EXRESC hhhhhhh - is the address of the execution resources table that defines the resources to allocate.

BR hh - is the priority level at which jobs must be scheduled before any jobs below the barrier priority can schedule for execution. NO is inserted if BAR was not specified.

JSP hhhh - is the number of jobs to examine in the group for scheduling at any one time. ALL is inserted if JSPAN=ALL was specified or invoked as a default.

ENABLED hhhhhhh - is a main mask of systems where the group has been enabled.

DFCB hhhhhhh - is a pointer to the device fence control block for the group (zero if none).

EXRESC/S

EXRESC/S is the execution resources table. It is the result of EXRESC parameters on the GROUP initialization statement. These parameters define the execution resources to be assigned to a job class group. EXRESC is mapped by macro IATYMGP.
### EXRESC/S (GMS)

<table>
<thead>
<tr>
<th>EXRECS</th>
<th>MS</th>
<th>GS</th>
<th>PS</th>
<th>DI</th>
<th>AI</th>
<th>PI</th>
<th>UI</th>
<th>ST</th>
<th>AL</th>
<th>JL</th>
<th>TI</th>
<th>RI</th>
<th>DFCB</th>
</tr>
</thead>
<tbody>
<tr>
<td>02AD52F8</td>
<td>01</td>
<td>01</td>
<td>86</td>
<td>0003</td>
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<td>0000</td>
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<td>48</td>
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<td>00000000</td>
</tr>
<tr>
<td>02AD5340</td>
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<td>48</td>
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EXRESC/S (GMS)

EXRESC hhhhhhh - is the address of the execution resources table.

MS dd - is the unique sequence number of the main for this entry.

GS hh - is a unique group sequence number.

PS hh - is flag byte MGXPOST.

DI hhhh - is the number of initiators exclusively assigned (dedicated initiators) to the job class group.

AI hhhh - is the number of dedicated initiators that have been started (activated initiators).

PI hhhh - is the number of dedicated initiators for which the S INIT command has been issued, but for which no INIT STARTED message have been received (pending initiators).

UI hhhh - is the number of initiators in use (that is, jobs active).

ST hh - is flag byte MGXSTAT.

AL hh - is flag byte MGXALLOC.

JL hh - is flag byte MGXJAL.

TI hhhh - is the number of initiators ended by the system.

RI hhhh - is the number of ended initiators that can be restarted.

CLASS/S

CLASS/S are the class tables generated from the CLASS initialization statement. It is used to define characteristics of a JES3 job class as it appears on the JOB statement, MAIN statement, or by default. The class table is mapped by macro IATYMCN.
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<td>00</td>
<td>FF</td>
<td>04</td>
<td>FF</td>
<td>05</td>
<td>19</td>
<td>00</td>
<td>7F000000</td>
<td>00</td>
<td>7F000000</td>
</tr>
<tr>
<td>02AC8900</td>
<td>7</td>
<td>00000000</td>
<td>00</td>
<td>FF</td>
<td>00</td>
<td>FF</td>
<td>04</td>
<td>FF</td>
<td>02</td>
<td>1A</td>
<td>00</td>
<td>7F000000</td>
<td>00</td>
<td>7F000000</td>
</tr>
<tr>
<td>02AC8940</td>
<td>8</td>
<td>00000000</td>
<td>00</td>
<td>FF</td>
<td>00</td>
<td>FF</td>
<td>04</td>
<td>FF</td>
<td>03</td>
<td>1B</td>
<td>00</td>
<td>7F000000</td>
<td>00</td>
<td>7F000000</td>
</tr>
<tr>
<td>02AC8980</td>
<td>9</td>
<td>00000000</td>
<td>00</td>
<td>FF</td>
<td>00</td>
<td>FF</td>
<td>04</td>
<td>FF</td>
<td>05</td>
<td>1C</td>
<td>00</td>
<td>7F000000</td>
<td>00</td>
<td>7F000000</td>
</tr>
</tbody>
</table>

**CLSTBL hhhhhhhh** - is the address of the table.

**CLSNAM ccccccccc** - is the name of the job class for this entry.

**CONSTR hhhhhhhh** - is the address of a class constraints entry.

**SD hh** - is the current total setup depth accumulated.

**SM hh** - is the maximum number of jobs in this job class that can concurrently be in setup. This is derived from the SDEPTH parameter on the CLASS statement.) ‘FF’ means no limit.

**TD hh** - is the number of jobs active in this job class in the complex.

**TM hh** - is the maximum number of jobs in this job class than can be currently in execution. This is derived from the TDEPTH parameter on the CLASS statement.) ‘FF’ means no limit.

**IO hh** - is the I/O rate specified in the IORATE parameter of the CLASS initialization statement or MAIN statement. A value of 01 indicates a low I/O rate, a value of 02 indicates a high I/O rate, and a value of 04 indicates a medium I/O rate.

**PR hh** - is the JES3 job priority to be assigned to each job in this class.
**CLASS/S (GMS)**

GS hh - is the unique sequence number of the group for this job class.

CS hh - is the unique sequence number of this job class.

FL hh - is flag byte MCSCHFG.

IN hh - is flag byte MCINFLG.

ENABLED hhhhhhhh - is a bit pattern representing the enable-disable mask (1=enabled) for mains that can execute this job class and are varied online. The high-order byte corresponds to the main mask.

ELIGIBLE hhhhhhhh - is a bit pattern representing the enable-disable mask (1=enabled) for mains eligible to execute jobs in this class but not necessarily online. If a bit in ENABLED is on with its corresponding ELIGIBLE bit off, a condition of exceeded constraints exists. The high order byte corresponds to the mask.

**RESQ/S**

RESQ/S is the resident job queue for JES3. It is formatted for all jobs that have been sent to, or selected for, a main for execution. It contains information used to start a job. It is mapped by macro IATYRSQ.

<table>
<thead>
<tr>
<th>RESQ</th>
<th>INDEX</th>
<th>GRPCHN</th>
<th>JOBID</th>
<th>JOBNAME</th>
<th>ASID</th>
<th>CS</th>
<th>GS</th>
<th>MS</th>
<th>M1</th>
<th>M2</th>
<th>SRVCLASS</th>
<th>WLMCLSTK</th>
<th>WISEQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>03B6C000 ONMAIN</td>
<td>03B6C500</td>
<td>JOB00001</td>
<td>SYSLG</td>
<td>0001</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>00</td>
<td>00000000</td>
<td>00000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03B6C500 ONMAIN</td>
<td>03B6C280</td>
<td>JOB00004</td>
<td>VTAMJ3</td>
<td>0018</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>00</td>
<td>00000000</td>
<td>00000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>003B6280 ONMAIN</td>
<td>00000000</td>
<td>JOB00007</td>
<td>TCAS</td>
<td>001D</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>00</td>
<td>00000000</td>
<td>00000000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESQ hhhhhhhh - is the address of the RESQ.

INDEX ccccc - is a job status corresponding to the field RQINDEX.

GRPCHN hhhhhhhh - is the address of the next RESQ in the group chain or MPC chain.

JOBID cccccc - is the job identifier associated with the job.

JOBNAME ccccccc - is the job name.

CS hh - is the unique sequence number of this job class.

GS hh - is the unique sequence number of the group for this job class.

MS nn - is the MPC (IATYMPG) sequence number.

M1 hh - is the flag byte RQMSFL1.

M2 hh - is the flag byte RQMSFL2.

SRVCLASS cccccc - is the WLM service class for the job.
### RESQ/S (GMS)

WLMCLSTK hhhhhhhh - is the WLM classification token for the job.

WISEQ hhhhhhhh - is the sequence number of the WLM managed initiator that selected the job, zero if the job is running in a JES managed group.

### JSQ/S

JSQ/S represents the job select queue (JSQ) elements. They are used by generalized main scheduling (GMS) for communication with initiators through SSI routines. The area is mapped by macro IATYJSQ.

<table>
<thead>
<tr>
<th>JSQBL</th>
<th>MPNAME</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F8</th>
<th>TYPE</th>
<th>GRP/SRVC</th>
<th>WISEQ</th>
<th>JOBNAME</th>
<th>JOBID</th>
<th>ASID</th>
</tr>
</thead>
<tbody>
<tr>
<td>0267074</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>JES</td>
<td>IJ</td>
<td>INT0028</td>
<td>0629</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0266397</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>WLM</td>
<td>DISCRETN</td>
<td>00000001</td>
<td>INT04062</td>
<td>0301</td>
<td></td>
</tr>
<tr>
<td>0268524</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>WLM</td>
<td>DISCRETN</td>
<td>00000002</td>
<td>INT04058</td>
<td>012F</td>
<td></td>
</tr>
<tr>
<td>02684CB</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>JES</td>
<td>IJ</td>
<td>INT00027</td>
<td>0120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0266606</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>WLM</td>
<td>DISCRETN</td>
<td>00000003</td>
<td>INT04066</td>
<td>0202</td>
<td></td>
</tr>
<tr>
<td>026568E</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>WLM</td>
<td>DISCRETN</td>
<td>00000004</td>
<td>INT00019</td>
<td>0302</td>
<td></td>
</tr>
<tr>
<td>0265898</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>WLM</td>
<td>DISCRETN</td>
<td>00000005</td>
<td>INT03634</td>
<td>0203</td>
<td></td>
</tr>
<tr>
<td>0268923</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>WLM</td>
<td>DISCRETN</td>
<td>00000006</td>
<td>INT04064</td>
<td>0405</td>
<td></td>
</tr>
<tr>
<td>0268E16</td>
<td>CHARLIE</td>
<td>40</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>JES</td>
<td>IJ</td>
<td>INT00021</td>
<td>0142</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

JSQTBL hhhhhhhh - is the address of the JSQ.

MPNAME cccccccc - is the name of the main.

F1-F6, F8 hh - are flag bytes JSQFLG1 - JSQFLG6, JSQFLG8 respectively.

TYPE ccc - JES or WLM, indicating the type of initiator making this job selection request.

GRP/SRVC cccccccc - For JES managed initiators, this is the name associated with the initiator group. For WLM managed initiators, this is the service class associated with the initiator.

INITGRP cccccccc - is the name associated with the initiator group.

JOBNAME cccccccc- is the name of the job.

JOBID cccccccc - is the job identifier associated with the job.
MPC/S begins the list of the main control (MPC) tables. There is one MPC table for each main in a complex. Each main contains the MPCs of all defined mains. The source of the data is the MAINPROC initialization statement. Macro IATYMPC maps the MPC.

<table>
<thead>
<tr>
<th>MPCDAT</th>
<th>MPNAME</th>
<th>SELECT</th>
<th>ACTSTA</th>
<th>EXRESC</th>
<th>MAINFCT</th>
<th>AI</th>
<th>DEEP</th>
<th>RQONMN</th>
<th>MAXI</th>
<th>WTOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>02690000</td>
<td>JULLIET</td>
<td>Z</td>
<td>00000000</td>
<td>02AD52F8</td>
<td>0275EC70</td>
<td>0000</td>
<td>0000</td>
<td>00000000</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>0268F000</td>
<td>ECHO</td>
<td>Z</td>
<td>00000000</td>
<td>02AD54A8</td>
<td>0275F158</td>
<td>0000</td>
<td>0000</td>
<td>00000000</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>0268E000</td>
<td>INDIA</td>
<td>Z</td>
<td>00000000</td>
<td>02AD5658</td>
<td>02762E30</td>
<td>0000</td>
<td>0000</td>
<td>00000000</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>0268D000</td>
<td>LIMA</td>
<td>Z</td>
<td>00000000</td>
<td>02AD580B</td>
<td>02762A78</td>
<td>0000</td>
<td>0000</td>
<td>00000000</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>0268C000</td>
<td>GOLF</td>
<td>Z</td>
<td>00000000</td>
<td>02AD59B8</td>
<td>027640C0</td>
<td>0000</td>
<td>0000</td>
<td>00000000</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>0268B000</td>
<td>CHARLIE</td>
<td>Z</td>
<td>00000000</td>
<td>02AD5868</td>
<td>02AD40B0</td>
<td>0013</td>
<td>0003</td>
<td>02A844F8</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>0268A000</td>
<td>BRAVO</td>
<td>Z</td>
<td>02689460</td>
<td>02AD5D18</td>
<td>02ADD6B0</td>
<td>0037</td>
<td>0004</td>
<td>02A841A8</td>
<td>0000</td>
<td>0000</td>
</tr>
</tbody>
</table>

MPCDAT hhhhhhhh - is the address of the MPC.

MPNAME hhhhhhhh - is the name of the MPC (main) as specified on the MAINPROC statement.

SELECT cccccccc - is the name of the job selection mode as defined by the SELECT parameter on the MAINPROC initialization statement, unless the default of JS3BATCH is applied.

ACTSTA - is the address of the active staging area.

EXRESC - is the address of the first execution resource entry for this main processor.

MAINFCT - is the address of the MAIN FCT that is responsible for the Generalized Main Scheduling (GMS) function for this main processor.

AI - is the number of allocated initiators for this main processor.

DEEP - is the number of jobs in execution on this main processor.

RQONMN - is the address of the first RQ on the "on main" or execution queue for this processor.

MAXI - The initiator high water mark value for this main.

WTOT - The total number of WLM managed jobs running on this main.

**Workload Manager Data Area**

Workload Manager Data Area represents the data used by the JES3 WLM FCT, which communicates with the Workload Manager component of z/OS. This information is formatted when the WLM formatter is invoked using the IPCS command VERBX JES3 'OPTION=WLM' or the Dump Core command *S DC,OPTION=WLM. The following data areas are formatted:

- IATYWLM, the JES3 WLM data area.
MPC/S (GMS)

- **IATYSRVC**, the JES3 data area for a WLM service class, including the sampling statistics for service class.
- **IATYWJS**, the GMS WLM job sampling elements.
In the WORKLOAD MANAGER DATA AREA formatted output:

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>GMSJ0BNO</th>
<th>GMMAIN5</th>
<th>GMSSCHM</th>
<th>GMSSRVC</th>
<th>GMSWLMTK</th>
<th>GMSSPNDX</th>
<th>GMSSRPSQ</th>
<th>GMSCLSQ</th>
<th>GMSFLG1</th>
<th>GMSBYPAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>055A7490</td>
<td>0000123A</td>
<td>01000000</td>
<td>01000000</td>
<td>VEL90</td>
<td>310C8001</td>
<td>0000</td>
<td>3A</td>
<td>21</td>
<td>00</td>
<td>33</td>
</tr>
</tbody>
</table>

- **CONNTOKN**: The WLM connection token
- **SRVDEFID**: The WLM service definition
- **IATWLCSM**: Module IATWLCSM address (WLM subtask common sampling services)
- **IATWLDRG**: Module IATWLDRG address (WLM deregistration processing)
- **IATWLDVRV**: Module IATWLDVRV address (WLM FCT driver)
- **IATWLEVT**: Module IATWLEVT address (WLM event processing)
- **IATWLFJR**: Module IATWLFJR address (WLM FCT JESTAE retry routine)
- **IATWLFSM**: Module IATWLFSM address (WLM FCT sampling services)
- **IATWLGSW**: Module IATWLGSM address (WLM global subtask sampling services)
- **IATWLJCK**: Module IATWLJCK address (WLM JCT delay checkpointing)
- **IATWLLLSTM**: Module IATWLLSM address (WLM local subtask sampling services)
- **IATWLRLCL**: Module IATWLRLCL address (WLM recategorization processing)
- **IATWLRSR**: Module IATWLRSR address (WLM subtask recovery)
- **IATWLST**: Module IATWLST address (WLM staging area processor)
- **IATWLST**: Module IATWLSTK address (WLM subtask)
- **SRVCFRST**: Address of first Service Class Table (SRVC)
- **SRVC_LAST**: Address of last Service Class Table (SRVC)
- **CLSFYWRK**: Address of preallocated WLM Classification Work Area (WCWA)
- **TASKTCB**: WLM subtask TCB address
- **SAMPECB**: Sampling ECB
- **TIMEECB**: Timer ECB - posted when a specified time elapses.
- **COMMCECB**: Communication ECB - posted when mail is sent by the global to the WLM subtask on the local system
- **LOCKECB**: Lock ECB - posted when the sampling lock is released
- **BQSHDR**: Address of Batch Queue Samples header
- **BSQSC**: Service class matrix
- **BQSC**: Report class matrix
- **WSTBADDR**: WLM sampling transport buffer address
- **WSTBSIZE**: WLM sampling transport buffer size
- **DSPALLET**: Data space ALET
- **DSPSTOKN**: Data space TOKEN
- **DSPOREIGN**: Data space origin
- **DSPEND**: Data ending address
- **VPVFEXRC**: Address of report class matrix that contains SYSPLEX wide information for the previous sampling interval
- **CPRFEXRC**: Address of report class matrix that contains SYSPLEX wide information for the current sampling interval
- **DSPFREE**: Data space free space pointer
- **WJSBIGMS**: WLM job sampling element queue for jobs in GMS select
- **WJSMDMS**: WLM job sampling element queue for jobs in MDS
- **WJSMAINW**: WLM job sampling element queue for jobs that are waiting to be scheduled for main service
- **SAMPINTV**: Current sampling interval in 100ths of a second
- **SAMPTMID**: Sampling timer id
- **SAMPOWNR**: Owning TCB or FCT address of the sampling lock
- **SAMPWAIT**: Wait indicators for the sampling lock
- **ECF1**: CF one
In the SERVICE CLASS TABLES formatted output:

**NAME**
Service class name

**INDEX**
Service matrix index

**NEXT**
Address of next Service Class Table

**QFIRST**
Address of first RQ on the service class queue

**QLAST**
Address of last RQ on the service class queue

**FLAG1**
Flag one

**FLAG2**
Flag two

**NINTMMSK**
Main mask of systems where there are no initiators started for this service class

**BRIPMMSK**
Main mask of systems to be included in the IWMBRIP request that will be used to start initiators

**REGRETC**
Return code from IWMBREG

**REGRESN**
Reason code from IWMBREG

**RQ**
The address of a Resident Queue element (IATYRSQ) for a job in the service class being formatted. The IATYRSQ fields formatted together with this RQ address are all from this RQ.

**JOBNAM**
Job name

**JNUM**
Job number in EBCDIC

**WLMCTK**
WLM classification token
MSARIV
  Main service arrival time

GRPPRV
  Previous RQ pointer on RQ subchain (RQGRPCHN points to next rq on rq
  subchain)

GRPSEQ
  Group sequence number

JCLASS
  Job class

MSFL1
  GMS flag 1

JSTAT
  A list of 32 bytes for each potential system in the complex, each byte
  representing the reason why the job has not been selected on the
  corresponding system (defined in IATYRQJS)

MSWCOUNT
  Number of jobs waiting to be scheduled for main service

MDSCOUNT
  Number of jobs in MDS

GMSCOUNT
  Number of jobs in GMS select

MNCOFFCT
  Number of jobs ineligible because main is not connected or is offline

GRPDISCT
  Number of jobs ineligible because the group is disabled

JOBHLDCT
  Number of jobs ineligible because it is in operator hold

CLSDISCT
  Number of jobs ineligible because the class is disabled

SCHENVCT
  Number of jobs ineligible because the scheduling environment is not
  available or undefined

MSPARTCT
  Number of jobs ineligible because a marginal spool space condition exists

TDEPTHCT
  Number of jobs ineligible because the TDEPTH has been reached

TLIMITCT
  Number of jobs ineligible because the TLIMIT has been reached

MDEPTHCT
  Number of jobs ineligible because the MDEPTH has been reached

MLIMITCT
  Number of jobs ineligible because the MLIMIT has been reached

In the SAMPLING STATISTICS FOR SERVICE CLASS formatted output:
MPC/S (GMS)

SCOPE
Indicates whether the sampling statistics being formatted are for the entire
SYSPLEX or a particular main

ELIG
The number of jobs eligible to run

INELIG
The number of jobs ineligible to run

LIMITED
The number of jobs that cannot run because of GMS limits

GMSJOBNO
Job number being sampled

GMSMAINS
Main eligibility mask from RQMAINS

In the GMS WLM JOB SAMPLING ELEMENTS formatted output:

GMSSCHMM
Scheduling environment main mask from RQSCHEMM

GMSSRVCL
Service class name from from RQSRVCLS

GMSWLMTK
WLM Classification token from RQWLMCTK

GMSSPNDX
Spool partition index from RQSPNDX or zero

GMSGRPSQ
Group sequence number from RQGRPSEQ

GMSCLSSQ
Class sequence number from RQJCLASS

GMSFLG1
Flag one

GMSBYPAS
Bypass code (defined in IATYRQJS) if sampling determines that the job is
not eligible to run

Internal Reader Anchor Block

The INTERNAL READER ANCHOR BLOCK (IRA) contains information used to
control the scheduling of internal reader jobs. The information for this portion of the
dump is obtained from IATYIRA. This section of a formatted dump is not formatted
in an dump taken from an FSS address space.
LOC adr - is the address of the IRA in storage.

IRE adr - is the address of the first internal reader element (IRE) chained from the IRA.

ISCD adr - is the entry point address for module IATISCD. Module IATISCD schedules internal reader data sets that are submitted using TSO or by a batch job.

DICT adr - is the address of the internal reader dictionary.

ACTIVE nnnn - is the number of internal reader jobs on the JES3 job queue that are waiting to be scheduled or are scheduled for processing.

IDLE nnnn - is the number of internal reader DSPs that are not processing any internal reader jobs.

INTERNAL READER ELEMENT CHAIN (IRE) The IRE contains information used to schedule individual internal reader jobs. The information for this portion of the dump is obtained from IATYIRE.

LOC adr - is the address of the IRE in storage.

RESQ adr - is the address of the RESQ for the internal reader job.

NEXT adr - is the address of the next IRE in the queue.

PREV adr - is the address of the previous IRE in the queue.

ECFA adr - is the address of the work-to-do driver or the CANCEL ECF.

FLAG nn - indicates the state of the internal reader DSP that the job is running under. The possible states that an internal reader DSP can be in are:

**X'80'** the internal reader DSP is idle. The internal reader DSP is not processing any internal reader data sets.

**X'40'** the work-to-do driver is posted. JES3 has processed the internal reader data sets.
Internal Reader Anchor Block (INS)

X'20' the internal reader DSP was canceled. The operator issued a command to cancel the internal reader DSP.

INTRDR JOBnnnnn - indicates the job number of the internal reader DSP.

JOBNO JOBnnnnn - indicates the job number of the job being processed by the internal reader DSP.

RESQUEUE Table

RESQUEUE TABLE is the table of RESQs for active jobs. This section illustrates the general usage field of the RESQ. The RESQ is mapped by macro IATYRSQ.

<table>
<thead>
<tr>
<th>LOC</th>
<th>JOBID</th>
<th>JOB-NAME</th>
<th>FUNCTION</th>
<th>PRIORITY</th>
<th>OWNERID</th>
<th>USERID</th>
<th>SECLABEL</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F7</th>
<th>F8</th>
<th>F9</th>
<th>DJCF</th>
<th>ADDITIONAL</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>03C0B000</td>
<td>JOB00000</td>
<td>JES3</td>
<td>ND INDEX 30,08,15</td>
<td>IBMUSER</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>02</td>
<td>00</td>
<td>00</td>
<td>OSS=00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03BDC000</td>
<td>JOB00001</td>
<td>SYSLOG</td>
<td>ON MAIN 15,08,15</td>
<td>+MASTER+</td>
<td>SYSHIGH</td>
<td>80</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>03</td>
<td>02</td>
<td>00</td>
<td>00</td>
<td>SEE GMS SECTI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03BDC200</td>
<td>JOB00005</td>
<td>VTAMJ3</td>
<td>ON MAIN 15,08,15</td>
<td>VTAMJ3</td>
<td>80</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>SEE GMS SECTI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03BDC500</td>
<td>JOB00006</td>
<td>TCAS</td>
<td>ON MAIN 15,08,15</td>
<td>IBMUSER</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>OSS=00000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03C34000</td>
<td>JOB00007</td>
<td>RJP</td>
<td>ND INDEX 15,08,15</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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03C341B0</td>
<td>JOB00009</td>
<td>RJPSNPS</td>
<td>ND INDEX 15,08,15</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></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LOC cccccccc - is the address of the resqueue in storage.

JOBID cccccccc - is the job identifier assigned to the job that the resqueue represents.

JOB-NAME cccccccc - is the job name assigned to the job that the resqueue represents.

FUNCTION cccccccc - is the functional state that currently exists for the job. A functional state of:

- ALLOC
  - is waiting for one or more resources

- BRKDOWN
  - is in MDS breakdown

- DONE
  - has completed GMS and MDS processing

- DSELECT
  - is a demand select job

- EFBAD
  - encountered an error while it was in the ending function

- EFFWAIT
  - is in the ending function but is waiting for I/O to complete

- ERROR
  - is on the MDS error queue

- FETCH
  - is waiting for the MDS fetch function

- FSSCI
  - is active in a CI FSS address space
RESQUEUE Table (RSQ)

INVALID
is in a function that JES3 is unaware of

NO INDEX
does not have any scheduler elements associated with it

ON MAIN
is scheduled to execute on a main

OSCOMPLT
has completed output service processing

PSTBATCH
is a batch job and is waiting for the postscan phase

PSTDMSEL
is a demand select job is waiting for the postscan phase

RESTART
is waiting for MDS to restart

SELECT
is waiting to be selected on a main

SYSSEL
is waiting on the system select queue

SYSVER
is waiting on the system verify queue

VERIFY
is waiting for a volume to be mounted

VOLUAV
is waiting for an unavailable volume

WAITOS
is waiting for output service processing

WAITOSW
is waiting for an writer

WAITRSVD
has completed MAIN processing but has not completed output service processing

WAITVOL
is waiting for setup processing

PRIORITY dd, dd, dd - is the job priority, the group priority, and the RESQUEUE priority for the job, respectively.

OWNERID cccccc - identifies the owner of the job.

TUSERID cccccc - is the TSO user ID expressed in EBCDIC.

SECLABEL cccccc - identifies the security level assigned to the job.

FLG1-FLG9 hh - are RESQ flags obtained starting at RQFLG1.

DJCF hh - is flag byte RQDJCFLG.
RESQUEUE Table (RSQ)

ADDITIONAL INFO ccccc...cc - contains notes that depend on the FUNCTION active for the RESQ entry.

Note: “ADDITIONAL INFO” will read “SEE FSS SECTION” when the job is a demand select job which is running as an FSS address space.

JES3 Job Queue Elements

JES3 JOB QUEUE ELEMENTS are not formatted in the FSS dump but for JES3 are resident in main storage to facilitate quick access to information pertinent to a particular job. The JQE controls I/O scheduling and ENQ/DEQ for the job's JCT, provides a pointer to a job's RESQ entry, and contains basic information for a job.

<table>
<thead>
<tr>
<th>JQEADD</th>
<th>JOBNO</th>
<th>JOB-NAME</th>
<th>ORIGIN</th>
<th>PREV</th>
<th>NEXT</th>
<th>RESQ</th>
<th>ENQB</th>
<th>FCTADDR</th>
<th>QPREV</th>
<th>QNEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>03BAA1A0</td>
<td>00000001</td>
<td>SYSLOG</td>
<td>ANYLOCAL</td>
<td>00000000</td>
<td>00000005</td>
<td>03BDC000</td>
<td>00</td>
<td>03B39440</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>03BAA20C</td>
<td>00000005</td>
<td>VTAMJ3</td>
<td>ANYLOCAL</td>
<td>00000001</td>
<td>00000006</td>
<td>03BDC280</td>
<td>00</td>
<td>03B39440</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>03BAA278</td>
<td>0000006</td>
<td>TCAS</td>
<td>ANYLOCAL</td>
<td>00000005</td>
<td>00000007</td>
<td>03BDC500</td>
<td>00</td>
<td>03B39440</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>03BAA2E4</td>
<td>0000007</td>
<td>RJP</td>
<td>ANYLOCAL</td>
<td>00000006</td>
<td>00000009</td>
<td>03C34000</td>
<td>00</td>
<td>03B39440</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>03BAA350</td>
<td>0000009</td>
<td>RJPSNPS</td>
<td>000000007</td>
<td>000000000</td>
<td>03C34180</td>
<td>00</td>
<td>03B39440</td>
<td>00000000</td>
<td>00000000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JQEADD</th>
<th>JOBNO</th>
<th>JOB-NAME</th>
<th>JCTFDB</th>
<th>UCT</th>
<th>J1</th>
<th>J2</th>
<th>S1</th>
<th>S2</th>
<th>F1</th>
<th>F2</th>
<th>CL</th>
<th>GR</th>
<th>TOD</th>
<th>ST</th>
<th>QF</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>03BAA1A0</td>
<td>00000001</td>
<td>SYSLOG</td>
<td>00010000</td>
<td>003004D0</td>
<td>80000000</td>
<td>000</td>
<td>00</td>
<td>00</td>
<td>15</td>
<td>16</td>
<td>40</td>
<td>80</td>
<td>20</td>
<td>02</td>
<td>02</td>
<td>BO3AD225</td>
</tr>
<tr>
<td>03BAA20C</td>
<td>00000005</td>
<td>VTAMJ3</td>
<td>00010000</td>
<td>003104D0</td>
<td>80000000</td>
<td>000</td>
<td>08</td>
<td>00</td>
<td>15</td>
<td>16</td>
<td>40</td>
<td>80</td>
<td>20</td>
<td>02</td>
<td>B03AEB90</td>
<td></td>
</tr>
<tr>
<td>03BAA278</td>
<td>0000006</td>
<td>TCAS</td>
<td>00010000</td>
<td>003204D0</td>
<td>80000000</td>
<td>000</td>
<td>08</td>
<td>00</td>
<td>15</td>
<td>16</td>
<td>40</td>
<td>80</td>
<td>20</td>
<td>02</td>
<td>B03AD225</td>
<td></td>
</tr>
<tr>
<td>03BAA2E4</td>
<td>0000007</td>
<td>RJP</td>
<td>00010000</td>
<td>003304D0</td>
<td>80000000</td>
<td>000</td>
<td>00</td>
<td>00</td>
<td>15</td>
<td>2A</td>
<td>40</td>
<td>80</td>
<td>20</td>
<td>02</td>
<td>B03AEB9E</td>
<td></td>
</tr>
<tr>
<td>03BAA350</td>
<td>0000009</td>
<td>RJPSNPS</td>
<td>00010000</td>
<td>003404D0</td>
<td>80000000</td>
<td>000</td>
<td>00</td>
<td>00</td>
<td>15</td>
<td>37</td>
<td>40</td>
<td>80</td>
<td>20</td>
<td>00</td>
<td>AB1622CA</td>
<td></td>
</tr>
</tbody>
</table>

JQEADD cccccccc - is the address of the JQE in storage.
JOBNO cccccccc - is the number of the job the JQE represents.
JOB-NAME cccccccc - is the name of the job the JQE represents.
ORIGIN cccccccc - is the group name of the device that originated the job.
PREV dddd - is the job number for the previous job in this priority level.
NEXT dddd - is the job number for the next job in this priority level.
RESQ hhhhhhhh - is the address of the RESQUEUE entry for the job.
ENQB hhhh - is the read/write enqueue type.
FCTADDR hhhhhhhh - is the address of the FCT that has Read/Write access to the JCT.
QPREV hhhhhhhh - is the address of the JQE that precedes the current JQE on the chain described by QF.
QNEXT hhhhhhhh - is the address of the JQE that follows the current JQE on the chain described by QF.
JES3 Job Queue Elements (JQE)

JQEADD cccccccc - is the address of the JQE in storage. This address is used to associate the information for each JQE in each section of the JQE Job Queue Elements.

JCTFDB hhhhhhhh hhhhhhhh hhhhhhhh - is the FDB for the JCT.

UCT ddd - is the number of read only users for this JCT.

J1 hh - is flag byte JCTFL1.

J2 hh - is flag byte JCTFL2.

PR dd - is the job priority level.

S1 hh - is the DSP number for the currently active scheduler element (SE) or the next SE to be scheduled.

S2 hh - is flag byte SEFLGS in the currently active SE or the next SE to be scheduled.

F1 hh - is flag byte JQEFLG1.

F2 hh - is flag byte JQEFLG2.

CL hh - is the sequence number for the GMS job class.

GR hh - is the sequence number for the GMS EXRESC group.

TOD cccccccc - is the time of day the job entered the system.

ST hh - indicates the status of the JQE.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'40'</td>
<td>The job is waiting to be processed by the ending function for the last active scheduler element (SE) for the job.</td>
</tr>
<tr>
<td>X'20'</td>
<td>JSS suspended processing the job after the last SE.</td>
</tr>
<tr>
<td>X'10'</td>
<td>Another function was accessing the JCT that represents the job. JSS places the job on the FCT ready queue so that the job is rescheduled when the JCT is released.</td>
</tr>
<tr>
<td>X'08'</td>
<td>OUTSERV should use the current RESQUEUE.</td>
</tr>
<tr>
<td>X'04'</td>
<td>The DSP pending use count was incremented for the JQE.</td>
</tr>
<tr>
<td>X'02'</td>
<td>JES3 encountered an error while processing the JQE.</td>
</tr>
</tbody>
</table>

QF hh - is used to determine why JES3 should not process the job.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'01'</td>
<td>The job is waiting to be processed by the scheduling or ending function.</td>
</tr>
<tr>
<td>X'02'</td>
<td>The use count for the DSP has reached the maximum. The JQE was placed on the HOLD or WAIT queue.</td>
</tr>
<tr>
<td>X'03'</td>
<td>JSS is waiting for a RESQUEUE to become available so the job can be scheduled.</td>
</tr>
</tbody>
</table>
X'04'  The job is waiting for a required proclib to become available so the job can be rescheduled.

X'05'  The job is waiting for a required main, group or class to become available so the job can be rescheduled.

X'06'  The job came from the C/I DSP backlog but was not scheduled because of being rejected by a user exit.

X'07'  The job is waiting for SMS resources to become available.

X'08'  The job is waiting for a main processor to perform locates to become available.

X'09'  The job is waiting for a job with the same job name to complete execution.

SE hh - is the sequence number of the current scheduler element (SE)

### Main Device Scheduler Data Area

<table>
<thead>
<tr>
<th>DEEP</th>
<th>RMTLM</th>
<th>DSNSZ</th>
<th>OPTN</th>
<th>ECF</th>
<th>IECF</th>
<th>ALECF</th>
<th>SSECF</th>
<th>DARET</th>
<th>DASUB</th>
<th>TARET</th>
<th>TASUB</th>
<th>OTRET</th>
<th>OTSUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>001</td>
<td>044</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>02</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

MAIN DEVICE SCHEDULER DATA AREA - LOC hhhhhhhh

This is not formatted in the FSS dump but for JES3:

DEEP hh - is the current number of jobs that have been set up.

RMTLM hh - is the maximum number of times a job will be allowed to attempt correction of operator volume mount errors before releasing the devices and reentering MDS allocation.

DSNSZ dd - is the maximum number of characters of the data set name to be included in volume fetch, mount, and breakdown messages.

OPTN hh - is a flag byte set from the various options on the SETPARAM statement.

ECF hh - is the ECF that is posted to activate for MDSECF.

IECF hh - is a further posting definition for MDSECF.

ALECF hh - is the allocation descriptor byte and is a further description of the reason for posting MDSECF.

SSECF hh - is the subsystem descriptor and is a further description of the reason for posting MDSECF.

DARET hh - is the number of direct access devices returned to MDS.

DASUB hh - is a number for internally used algorithms.

TARET hh - is similar to DARET, except that it is for magnetic tape devices.
Main Device Scheduler Data Area (MDS)

TASUB hh - is a number for internally used algorithms.

OTRET hh - is similar to DARET, except that it is for devices other than direct access or tape.

OTSUB hh - is a number for internally used algorithms.

AFL1 hh - is flag byte MDAFLG1.

AFL2 hh - is flag byte MDAFLG2.

BFL1 hh - is flag byte MDBFLG1.

BFL2 hh - is flag byte MDBFLG2.

BFL3 hh - is flag byte MDBFLG3.

DFL1 hh - is flag byte MDDFLG1.

DFL2 hh - is flag byte MDDFLG2.

FFL1 hh - is flag byte MDFFLG1.

FFL2 hh - is flag byte MDFFLG2.

SBFL1 hh - is flag byte MDSBFLG1.

SBFL2 hh - is flag byte MDSBFLG2.

RFL1 hh - is flag byte MDRFLG1.

RFL2 hh - is flag byte MDRFLG2.

SFL1 hh - is flag byte MDSFLG1.

SFL2 hh - is flag byte MDSFLG2.

SFL3 hh - is flag byte MDSFLG3.

SFL4 hh - is flag byte MDSFLG4.

VFL1 hh - is flag byte MDVFLG1.

VFL2 hh - is flag byte MDVFLG2.

GFL1 hh - is flag byte MDSGFLG1.

GFL2 hh - is flag byte MDSGFLG2.

GFL3 hh - is flag byte MDSGFLG3.

GFL4 hh - is flag byte MDSGFLG4.
MDS RESQUEUE Tables (MDS)

MDS RESQUEUE Tables

MDS cccccc RESQUEUE TABLE is the queue of jobs waiting to be processed by
the indicated MDS function. The MDS functions (cccccc) are:

FETCH
ALLOCATE
DYNAMIC
WAITVOL
UNAVAILABLE
VERIFY
ERROR
BREAKDOWN
RESTART
SYSSEL
SYSVER

The MDS Resqueue Table contains fields that are common to all the functions and
some of the MDS Resqueue tables contain additional information.

<table>
<thead>
<tr>
<th>MDS ALLOCATE RESQUEUE TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
</tr>
<tr>
<td>038CD000</td>
</tr>
<tr>
<td>ARL</td>
</tr>
<tr>
<td>DEVICE</td>
</tr>
<tr>
<td>SY1</td>
</tr>
<tr>
<td>SY7</td>
</tr>
</tbody>
</table>

Common Information

LOC hhhhhhhh - is the address of the RESQUEUE table.

JOBNAME hhhhhhhh - is the job name for the job the RESQUEUE represents.

JOBID hhhhhhhh - is the job identifier of the job the RESQUEUE represents.

H c - Y indicates job-held status. If the job is not held, this field is blank.

MAIN hhhhhhhh - consists of all eight bytes of RQMAINS, which shows which
mains are eligible to execute the job.

CL hh - GMS class sequence number, used to index the class table.

GP hh - GMS group sequence number, used to index the group table.

JSTFDB hhhhhhhhhhh - is the FDB.

M1-M3 hh hh hh - are flag bytes obtained consecutively starting at RQMDFLG1.

VFY ddd - is the number of volumes remaining to be mounted.

DA dd - is the number of required but unavailable DASD.

TA dd - is the number of required but unavailable tape devices.
OT dd - is the number of required but unavailable unit record or graphic devices.

TY hh - is the flag byte RQMDSREQ.

SCHENV - is the job's scheduling environment.

SY1 - CCCC, SY2 - CCCC,... - lists the processor name along with the reason (obtained from the RQJSTAT field) why allocation was not attempted on the indicated main, as follows:
- RSUP - resource update scan
- HELD - job is held
- REGN - minimum region size not available
- REST - scan for MDS restart jobs
- MNAV - main not available
- CLGP - GMS class/group not available
- RESC - required resource not available
- FNCE - device fence not available
- M DP - main setup depth exceeded
- C DP - GMS class setup depth exceeded
- RNAV - restart main has not connected
- PRSC - pre-allocation scan failed
- SMSU - SMS managed resources are unavailable
- SEUD - scheduling environment is undefined
- SENA - scheduling environment is unavailable

Additional Information for the MDS Allocation Resqueue: This portion of the MDS ALLOCATE RESQUEUE TABLE contains information that is obtained from the first header in the allocation requirements list (ARL). The ARL header is followed by a list of all the devices, data sets, and volumes that JES3 could not allocate to a job during the prescan phase of converter interpreter. The information for this portion of the dump is mapped by the IATYARL mapping macro.

ARL identifies the allocation requirements list for the job.

adr is the address of the first ARL for the job.

MPC= nn is the index for the main processor control table (MPC) where the job attempted to obtain the resources.

BYSSCAN= is the number of times the job was bypassed for allocation.

REFRESH= is the number of times the ARL was refreshed because of an unsuccessful allocation attempt despite a successful preallocation ARL scan.

DEVICE identifies the device that JES3 attempted to allocate to the job. The devname can be a device, data set, or volume.

TY= is obtained from field ARLDEVTY for a device. Possible values for the field when the resource is a device are:
- X'40' - a specific device was requested

For a volume the information is obtained from field ARLVOLTY. Possible values for the field when the resource is a volume are:
- X'80' - JES3 could not allocate the volume
- X'40' - the volume could not be allocated
MDS RESQUEUE Tables (MDS)

For a data set the information is obtained from field ARLDSNTY.
X'80' the data set could not be allocated
X'40' the GDG base could not be allocated

For a device

NAME= contains the address of the SETUNIT or SETNAME entry for the device.

DEVRQ= is the number of devices requested by the job.

DEVFL= is the number of devices that were unavailable.

For a volume or data set

FLG1= indicates the type of usage the job requires of the device. The job can request exclusive use over the volume or data set.

VOL= adr - is the address of the SETVOL entry for the volume.

DSN= adr - is the address of the SETDSN entry for the data set. If the entry is for a volume the address will be 00000000.

Additional Information for the MDS System Select Resqueue: If SMS cannot obtain a resource required by a job, SMS creates a Scheduling Services Resource List (SCHRL). The SCHRL in the MDS System Select RESQUEUE Table contains the following information:

SCHRL - indicates the beginning of a list of resources SMS was unable to allocate to the job.

LOC= adr - is the address of the SCHRL for the job.

LEN=nnnnn - is the length in bytes of the SCHRL.

NUMRESC=nn - indicates the total number of resources SMS was unable to allocate to the job.

1ST SCHPL= adr - is the address of the first Scheduling Processor Resource List (SCHPL). JES3 creates one SCHPL for each main where the job could have executed. It identifies the resources that SMS could not allocate to the job.

SCHPL - indicates the following information refers to the SCHPL.

LOC= adr - is the address of the SCHPL in storage.

LEN =nnnn - is the length of the SCHPL.

NEXT = adr - is the address of the next SCHPL in for the job.

1ST SCHRE= adr - is the address of the Scheduling Services Required Resource Element (SCHRE). Each SCHRE identifies a resource SMS was unable to obtain for the job on the main identified by the SCHPL.

LOC= adr - indicates the address of the resource.
MDS RESQUEUE Tables (MDS)

TYPE= ccc - indicates the type of resource SMS could not obtain.

NAME= ddname - identifies the name assigned to the device. JES3 uses the name you assigned to the device on the JNAME parameter of the DEVICE statement.

REQUEST=c - is the status the SMS-managed resource must be in for the job to execute.

GROUP=cccccccc - indicates if the resource is the only resource required by the job. If GROUP indicates ONLY, that resource is the only resource required to execute the job. If GROUP indicates FIRST, MID, or LAST, that resource is part of a group defined to SMS and the entire group of resources is needed to execute the job.

SETNAMES Table

SETNAMES Table is generated from parameters on the SETNAME statements. The data is used to identify a name than can be used in the UNIT parameter of a DD statement for a device represented in a DEVICE initialization statement. The area is mapped by IATYNAM.

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LOC hhhhhhhh - is the address of the SETNAME entry.

TYPE hh - is a hexadecimal code count representing the XTYPE parameter on the SETNAME initialization statement.

NAME cccccc - is the name defined by the SETNAME statement.

ALT-TYPE cc - specifies that the name also appears for another device (TYPE B).

ALT-ADDR - address of next SETNAMES entry for the same device name.
SETNAMES Table (STN)

CLASS ccccc - is one of the following:
   TA (tape)
   DA (direct access)
   UR (unit record)
   GR (graphics)
   POOL (name appeared in POOLNAME parameter)

SETUNITS Table

SETUNITS TABLE FOR 'main name'. The SETUNITS table is generated to contain control information for all devices attached to a main that can be set up by MDS from the global main. The data for the table originates from the XUNIT and XTYPE parameters of the DEVICE initialization statement. One complete table is formatted for each main. The main is identified in the format heading for each table. The table is mapped by macro IATYSET.
## SETUNITS Table (STU)

### SETUNITS Table for JULLIET

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LOC hhhhhhhh - is the address of the SETUNITS table entry.
**SETUNITS Table (STU)**

- **TYPE nn** - is a binary sequential count representing the XTYPE parameter on the SETNAME initialization statement.
- **NUMBER dev** - is the device number.
- **VID cc** - is the last verify response ID character received from this device.
- **VNXT cc** - the address of next SETUNITs on SETUNITs verify chain.
- **FLG1 hh** - is a flag byte that contains the information in SETFLG1.
- **FLG2 hh** - is a flag byte that contains the information in SETFLG2.
- **FLG3 hh** - is an indicator that you can use to determine if the volume is managed by SMS or JES3.
- **MOUNT-ID cccccc** - is the last volume serial number needed for mounting during job execution on the main.
- **RESQUEUE hhhhhhhh** - is the address of the RESQ entry for a job that currently requires that a volume be mounted on this device.
- **SYSUNIT hhhhhhhh** - is the address of the SYSUNITS table entry corresponding to the device.

**SYSUNITS Table**

SYSUNITS TABLE contains a unique entry with allocation status for each device in the complex. Separate entries exist for the same device when it is shared by two or more mains. The table is mapped by macro IATYSYS.
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**LOC** hhhhhhhh - is the address of the entry.

**MAINADR/MAIN** - is the device number for the indicated main.

**JADR dev** - is the device number of the unit attached to the global main (JUNIT).

**STATUS cc** - is AC (allocated) when FLG1 is either 80 or 40. RS (reserved). OFF indicates that it is offline to the indicated main. POF indicates that it is pending offline.

**RES cc** - is the volume mount characteristic. The first portion identifies the JES3 mount; the second half shows the MVS mount. The JES3 portion is R for...
SYSUNITS Table (SYS)

“removable” or P for “volume mounted by operator” command. The MVS portion is P for permanently resident. If either portion indicates P, the volume is treated as “not removable”.

SETVOL hhhhhhhh - is the address of the SETVOL table entry for the currently mounted volume.

SERIAL cccccc - is the volume serial number of the currently mounted volume.

LBL cccc - is the type of volume label for the currently mounted volume:
   A-ANSI (label)
   B-BLP (bypass label processing)
   N-NL (no label)
   S-SL (standard label)
   X-NSL (non standard label)

UCB hh - is the UCB status byte.

F1 hh FL2 hh FL3 hh FL4 hh MDAL hh - are obtained from SYSFLAG1 through SYSMDSAL. They are flag bytes.

UCT hh - is the current number of jobs requiring the use of the volume.

RPTY hh - is the priority of the job reserving the device.

UNLD hh - is the main processor sequence number of the processor on which an unload is pending for the device.

NEXT - Next SYSUNITS entry on the free queue.

PREVIOUS - Previous SYSUNITS entry on the free queue.

INDEX - The SYSUNITS index assigned to the SYSUNITS entry.

SETVOL Table/SETDSN Table

SETVOL TABLE is not formatted in the FSS dump but for JES3 is generated to maintain information regarding all known volumes requirements for jobs in the system and to track the status of currently mounted volumes. The source of data includes DD statements, automatic verification (by JES3 VERIFY), and operator commands. The table is mapped by macro IATYVLM.
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### SETDSN Table (VLM)

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<th>LOC</th>
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<table>
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Chapter 4. JES3 Formatted Dump 211
SETVOL Table/SETDSN Table (VLM)

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</tbody>
</table>

LOC hhhhhhh - is the address of the entry.

VOLSER cccccc - is the volume serial number of the entry. If an * is followed by a data set name appears as the VOLSER, the volume contains one or more SMS-managed data set.

UCT hh - is the current number of jobs requiring the use of the volume.

ACT hh - is the current number of jobs allocated to the volume.

RSP hh - is the priority of the job reserving the volume.

SYSMNTD hhhhhhh - is the address of the SYSUNITS table entry for the device on which the volume is currently mounted.

SYSALOC hhhhhhh - is the address of the SYSUNITS table entry for the device originally allocated to the volume.

FL1 hh FL2 hh and FL3 hh - are obtained from VLMFL1, VLMFL2, and VLMFL3, respectively. They are flag bytes. If VLMFL3 contains a X'04', the data set is managed by SMS.

SETDSN TABLE - is not formatted in the FSS dump but for JES3 is created to represent all data sets allocated to volumes. It is used in conjunction with the SETVOL table to ascertain when a volume is no longer in use. The table is mapped by macro IATYDSDN.

LOC hhhhhhh - is the address of the entry.

HASH - Is the SETDSN hash table queue number that the SETDSN entry is on.

USE hhhhh - is the number of jobs allocated to this data set.
SETVOL Table/SETDSN Table (VLM)

RSPTY - is the priority of the job reserving the data set.

FL1 hh and FL2 hh - are obtained from DSNFL1 and DSNFL2, respectively. They are flag bytes.

DSN - is the data set name.

NEXT - is the address of the next SETDSN on the hash queue.

PREV - is the address of the previous SETDSN on the hash queue.

RSRV - is the address of the next SETDSN on the SETDSN reserve chain.

SETVOL - is the SETVOL.

GDGBASE - is the address of the SETDSN entry for the GDG base or zero.

**DYNAL FCT Data Area**

DYNAL FCT DATA AREA . . . IATYDYN is not formatted in the FSS dump but for JES3 is used by the DYNAI DSP to control the processing of the dynamic allocation requests to the DYNAI DSP.

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</table>

DYTRK=hhhhhhhhhh - is the record address of this file.

DYNCHN=hhhhhhhhhhhhhhhh - is the chain FDB.

DYNCKFDB=hhhhhhhhhhhhhhhhhhhhhhhh - is the checkpoint area FDB. Location of the DYNAI DSP checkpoint record.

DYNCT=ddd - is the user count.

DYNAIURS A=hhhhhhhh - is a pointer to the current staging area being processed by the DYNAI DSP.

DYNAIMSG - is the message data area for the IAT5830 message.

**DYNAI ECF List Control Block**

THE DYNAI ECF LIST control block (IATYELB) is used by the DYNAI DSP to keep track of the completion of the I/O requests.
DYNAL ECF List Control Block (DYN)

```
214 THE ECF LIST- MAXIO=026 ALWIO=011 INUSE=001 RPN=000

ECFREGS= 82BE7140 02719518 00000000 02AF3544 02AF3544 ECFEFLG=80 ECFRSV= 000000

LIST OF ECF'S AND RELATED DYQ'S

ECF-00=02701B41 00000000 LOC=02AF3568

LOC THE RELATED DYQ-
02AF363C  00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
02AF365C  C4E80B84 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
02AF367C  00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

MAXIO - specifies the maximum number of simultaneous I/O requests that can be processed simultaneously. This value is one greater than the value specified on the SETPARAM initialization statement.

ALWIO - specifies the current maximum (less than or equal to MAXIO) number of asynchronous I/O requests which can be processed at the same time. This value is one greater than the value specified on the SETPARAM initialization statement.

INUSE - is the number of simultaneous requests being processed by the DYNAL DSP.

RPN - is the relative position number in the ECF list, of the last I/O request processed.

ECFREGS - is the register save area.

ECFREGS is the flag byte.

ECFREGS - is a reserved area.

IATYTVT Definitions

DATA MANAGEMENT IATYTVT ADDRESSES are the entry point addresses for most JES3 data management routines and tables. They are extracted from the TVT, which is mapped by macro IATYTVT.
### IATYTVT Definitions (JTV)

#### DATA MANAGEMENT IATYTVT ADDRESSES

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<th>DATA</th>
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<td>TVTDMCSZ</td>
<td>0098</td>
<td>TVTMCHC</td>
<td>001A</td>
<td>AIONDBUFFS</td>
<td>01FF</td>
<td>TVTSPF</td>
<td>0200</td>
</tr>
<tr>
<td>AIONOBFM</td>
<td>0200</td>
<td>BUFSZ</td>
<td>OF4</td>
<td>TVTDA</td>
<td>000C</td>
<td>TVTGRPS</td>
<td>0014</td>
</tr>
</tbody>
</table>

#### DATA MANAGEMENT IATYTVT FLAGS

<table>
<thead>
<tr>
<th>LABEL</th>
<th>DATA</th>
<th>LABEL</th>
<th>DATA</th>
<th>LABEL</th>
<th>DATA</th>
<th>LABEL</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIOBFECF</td>
<td>FF</td>
<td>AIOFDPR</td>
<td>00</td>
<td>AIOFLAG1</td>
<td>40</td>
<td>AIOFLAG2</td>
<td>02</td>
</tr>
<tr>
<td>DEF</td>
<td>CO</td>
<td>IOERRECF</td>
<td>00</td>
<td>IATFLGS</td>
<td>40</td>
<td>TVTSPFLG</td>
<td>81</td>
</tr>
<tr>
<td>TVTSPFL2</td>
<td>00</td>
<td>TVTAECEF</td>
<td>00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LABEL cccccccc** - is the name of the JES3 data management routine or table as it appears in the TVT.

**DATA hhhhhhhh** - is the entry point address of the routine or table.

**DATA MANAGEMENT IATYTVT FULLWORD CONSTANTS** are data from the TVT used by JES3 data management to manage buffers and spool space.

**LABEL cccccccc** - is the field name in the TVT. Data for labels TVTERRRQ, TVTERRWK, and TVTTAWS are filled in only when running in an FSS address space.

**DATA hhhhhhhh** - is the contents of the location.

**DATA MANAGEMENT IATYTVT HALFWORD CONSTANTS** are data from the TVT used by JES3 data management to manage buffers and spool space.

**LABEL cccccccc** - is the field name in the TVT.

**DATA hhhh** - is the contents of the location.

**DATA MANAGEMENT IATYTVT FLAGS** are flag bytes in the TVT used by JES3 I/O routines.
IATYTVT Definitions (JTV)

LABEL cccccccc - is the field name in the TVT.
DATA hh - is the contents of the location.

I/O Parameter Block

DATA MANAGEMENT I/O PARAMETER BLOCK contains parameters used to manage ISRs (IOSB/SRB block for STARTIO) and JES3 spool data sets. It is also used to validate track addresses (spool record address) referenced for I/O and for checking the DASD characteristics and extent information. The IOSB contains data essential for IOS, and the SRB is used by IOS to schedule I/O termination routines the JES3 address space. The I/O parameter block is addressed by TVTIOPRM in the TVT. The mapping macro is IATYIOP.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRISR</td>
<td>019C43A0</td>
</tr>
<tr>
<td>ISRQ</td>
<td>00000000</td>
</tr>
<tr>
<td>LOISR</td>
<td>019C41E0</td>
</tr>
<tr>
<td>HIISR</td>
<td>019C4640</td>
</tr>
<tr>
<td>FRSRB</td>
<td>0197E7EC</td>
</tr>
<tr>
<td>LOSRB</td>
<td>0197E47C</td>
</tr>
<tr>
<td>HISRB</td>
<td>0197EEA0</td>
</tr>
<tr>
<td>SRBQ</td>
<td>00000000</td>
</tr>
<tr>
<td>JASCB</td>
<td>00F2F200</td>
</tr>
<tr>
<td>FS</td>
<td>00</td>
</tr>
</tbody>
</table>

FRISR hhhhhhhh - is the address of the first free ISR in the ISR area.

ISRQ hhhhhhhh - is the address of the queue of extents (logical spool data sets) waiting for ISRs (that is, waiting to be initiated).

LOISR hhhhhhhh - is the address of the first ISR (lowest storage address) in the ISR area.

HIISR hhhhhhhh - is the address of the last ISR (highest storage address) in the ISR area.

FRSRB hhhhhhhh - is the address of the first free SRB in the stand-alone SRBs area. SRBs are used for USAM I/O termination.

LOSRB hhhhhhhh - is the address of the first SRB (lowest storage address) in the stand-alone SRBs area.

HISRB hhhhhhhh - is the address of the last SRB (highest storage address) in the stand-alone SRBs area.

SRBQ hhhhhhhh - is the address of the queue of data set status blocks (DSSs) waiting for SRBs.

JASCB hhhhhhhh - is the address of the JES3ASCB.

FS hh - is flag byte IOPFLAGS.

Extent Table

DATA MANAGEMENT EXTENT TABLE (EXT) is the extent information for each extent defined by a DDNAME parameter on the TRACK or FORMAT statement. The EXT is used to validate spool record addresses. The EXT is mapped within macro IATYIOP.
hhhhhhhh - is the storage address of the extent table.

DDNM ccccc - is the ddname of the spool extent.

SPNM cccccc - is the name of the partition to which belongs to this spool data set.

NPEX hhhhhhh - is the address of the next extent entry in the same spool partition.

SPB hhhhhhhh - is the address of the SPB for this extent.

IOCNT hhhhhhhh - is the I/O count for this extent.

UCBAD hhhhhhhh - is the address of the UCB for this extent.

UCBCHAN hhhhh - contains the UCBCHAN value (that is the device number) of the UCB that the content of UCBAD points to.

WAITQ hhhhhhhh - is the address of the queue of data buffers waiting for I/O.

LOADR hhhhhhhh - is the low cylinder and head number in this extent (CCHH).

CTADR hhhhhhhh - is the center cylinder and head number in this extent (CCHH).

ISRAD hhhhhhhh - is the address of the “active” I/O ISR.

CHN hhhhhhhh - is the address of the next entry in the IOP table.

BUFSZ hhhhhhhh - is the buffer size for this extent.

BUSY hhhhhhhh - is the address of the first data buffer using this extent.

HIADR hhhhhhhh - is the high cylinder and head number in this extent (CCHH).

CTLOG hhhhhhhh - contains the ‘G’ portion of the X.G track group address. It identifies the first track group to the left of the center of the cylinder.

CTHIG hhhhhhhh - contains the ‘G’ portion of the X.G track group address. It identifies the first track group to the right of the center.

LOWR hhhhhhhh - contains the ‘R’ portion of the M.R record address. It identifies the first record in the extent.
Extant Table (JIO)

HIGHR hhhhhhhh - contains the ‘R’ portion of the M.R record address. It is the last record in the extent.

NLEFT hhhhhhhh - is the number of available track groups.

SIZE hhhhhhhh - is the number of track groups in the extent.

NXEXT hhhhhhhh - is the address of the next extent waiting for an ISR.

CYLCT hhhh - is the number of cylinders on the volume.

LSTCY hhhh - is the cylinder address where I/O was last performed.

SPNDX hhhh - is the spool partition index.

DEVTP devtyp - is the model number of the device. "z/OS JES3 Initialization and Tuning Reference" contains a list of the possible device types.

RECTK hhhh - is the number of records in a track.

GRPSZ hhhh - is the number of records in each track group.

TKCYL hhhh - is the number of tracks in each cylinder.

NDX hhhh - is the extent number.

GRPSP hhhh - is the size of the partition track group.

FLAGS hh - is flag byte EXTFLAGS in the EXT.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>Indicates the STRTIO linkup routine is using the busy queue.</td>
</tr>
<tr>
<td>X'20'</td>
<td>Indicates the device is a buffered DASD.</td>
</tr>
<tr>
<td>X'10'</td>
<td>Indicates at least one badtrack entry exists for the device.</td>
</tr>
</tbody>
</table>

STFLG hh - is flag EXTSTFLG which is used to indicate the status of the extent. The following are the possible hexadecimal values for hh and their meanings:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>The extent was not allocated for use.</td>
</tr>
<tr>
<td>X'40'</td>
<td>The extent was moved to the DRAIN partition.</td>
</tr>
<tr>
<td>X'20'</td>
<td>The extent is in a HELD state.</td>
</tr>
<tr>
<td>X'10'</td>
<td>The extent contains dynamic single track tables (STT).</td>
</tr>
<tr>
<td>X'08'</td>
<td>The extent was replaced.</td>
</tr>
<tr>
<td>X'04'</td>
<td>The extent was deleted. A TRACK statement for the extent was not included in the initialization stream.</td>
</tr>
<tr>
<td>X'02'</td>
<td>Formatting is required for the extent.</td>
</tr>
</tbody>
</table>

FLAG2 hh - is flag byte EXTFLAG2 in the EXT.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
</table>
**Extent Table (JIO)**

- **X'80'** Indicates the linkup routine is in Cross-Memory mode and is protected by a second-level Functional Recovery Routine (FRR).
- **X'40'** Purge is holding extent lock.

**Value** | **Meaning**
--- | ---
**X'80'** | Extent is being added to wait for ISR queue.

### IOSB - SRB Pairs

DATA MANAGEMENT IOSB-SRB PAIR are used for JES3 STARTIO. The IOSB contains data essential for IOS to perform a start I/O, and the SRB is used by IOS to schedule JESIO in the JES3 address space when the I/O operation has completed. The ISR is used to locate JES3-related control blocks when JES3 data management receives control after the I/O has completed. The mapping macro is IATYISR.

<table>
<thead>
<tr>
<th>DATA MANAGEMENT IOSB-SRB PAIR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>START</strong></td>
<td><strong>CSW</strong></td>
</tr>
<tr>
<td>01CASA540</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5120</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5200</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5280</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA52Q0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5580</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5560</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5740</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5520</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA55Q0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA55C0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5B40</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5BQ0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5B60</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5BQ0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5B60</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5BQ0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5B60</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5BQ0</td>
<td>0000000000000000</td>
</tr>
<tr>
<td>01CASA5B60</td>
<td>0000000000000000</td>
</tr>
</tbody>
</table>

**CSW** hhhhhhhhhhhhh - is the CSW from the I/O operation.

**VST** hhhhhhh - is the virtual address of the channel program.

**FA** hh **FB** hh **FC** hh - are IOS flags for the I/O, from the IOSB.

**PR** hh - is an indicator for the type of special processing to be performed by IOS components that are operating asynchronously to the mainline.

**CO** hh - is the I/O completion code.

**OP** hh - is an options byte to direct IOS operations per JES3 requirements.

**EXTEN** hhhhhhh - is the address of the JES3 extent table entry for this I/O request.

**CPEDE** hhhhhhh - is the address (+8) of the last CCW executed for the I/O request.
IOSB - SRB Pairs (JIO)

NXISR hhhhhhh - is the address of the next ISR.

ERDMC hhhhhhh - is the address of the data management control block (DMC) with an I/O error.

F1 hh - is a flag byte in the ISR (ISRFLAG1).

F2 hh - is a flag byte in the ISR (ISRFLAG2).

RPS Sector Tables

RPS (rotational position sensing) SECTOR TABLES are used during spool I/O scheduling. There is one entry in the table for each unique combination of device type and record per track.

DEVTP hhhh - is the device type for this table entry.

BUFSZ hhhh - is the record length (buffer size) for this table entry.

RECTK hhhh - is the number of records that will fit on one track.

TABLE hhhh.... - is the sector number for each record within a track. The number of table entries corresponds to RECTK. Each sector number is 2 hexadecimal characters long and they are formatted in a continuous string.

Spool Partition Control Blocks

SPOOL PARTITION CONTROL BLOCK describes a spool partition. The information for an SPB comes from the spool partition checkpoint record (IATYSPR) and from the I/O parameter block (IATYIOP) spool data set extent entries.

NAME cccccc - is the spool partition name, from the SPART initialization statement.

EXT hhhhhhh - is the address of the first extent entry in the IOP.
Spool Partition Control Blocks

MRG GP hhhhhhhh - is the marginal condition track group count.
MIN TR hhhhhhhh - is the minimal track group percentage.
OVR FL hhhhhhhh - is the overflow partition name.
EX REL hhhhhhhh - is the address of the extent relative vector.
MS GPT hhhhhhhh - is the address of the pending action message.
MRG TR hhhhhhhh - is the marginal track group percentage.
PT AT hhhhhhhh - is the address of the partition TAT.
TALL hhhhhhhh - is the number of track groups in the partition.
GRPSZ hhh - is the number of records per track group in this partition.
FLAG nn - is the flag byte (SPBFLAG).
TATSZ hhhhhhhh - is the length (in bytes) of the PTAT bit map.
NTEXT hhhhhhhh - is the largest extent size in track groups.
EXTN hhhh - is the number of extents in this partition.
STFLG hhhhhhhh - is the allocation status flag (SPBSTFLG).
SCNPT hhhhhhhh - is the PTAT allocation scan resume address.
NLEFT hhhhhhhh - is the number of track groups available in the partition.
NDX hhhh - is the partition index.
WTFLG nn - is the flag byte (SPBWTFLG).
SCNSZ hhhhhhhh - is the scan length remaining in the PTAT bit map.
MINGP hhhhhhhh - is the minimal condition track group count.
OVNDX hhh - is the index to the overflow partition.

Single Track Tables

DATA MANAGEMENT COMMON SINGLE TRACK TABLE is used to allocate and purge records that are system-related, single-record files. Its purpose is to be economical with queue space by allocating only one record at a time instead of a track group. The table is mapped by macro IATYSTT.
## Single Track Tables (JIO)

**DATA MANAGEMENT COMMON SINGLE TRACK TABLE**

<table>
<thead>
<tr>
<th>Address</th>
<th>Byte1</th>
<th>Byte2</th>
<th>Byte3</th>
<th>Byte4</th>
<th>Byte5</th>
<th>Byte6</th>
<th>Byte7</th>
<th>Byte8</th>
<th>Byte9</th>
<th>Byte10</th>
<th>Byte11</th>
<th>Byte12</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNTRKDB (02801ABC): 7F61800C 000006D0 00000000</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>

**HEADER ENTRY**

<table>
<thead>
<tr>
<th>START</th>
<th>SIZE</th>
<th>NSTT</th>
<th>SCAN</th>
<th>SCANL</th>
<th>F1</th>
<th>SEGMENT</th>
<th>RECCT</th>
<th>AVAIL</th>
<th>SPADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>02865038</td>
<td>0000004C</td>
<td>0001</td>
<td>02865050</td>
<td>0001</td>
<td>20</td>
<td>02865050</td>
<td>012C</td>
<td>0110</td>
<td>00020000079F</td>
</tr>
</tbody>
</table>

**DATA MANAGEMENT JCT SINGLE TRACK TABLE**

<table>
<thead>
<tr>
<th>Address</th>
<th>Byte1</th>
<th>Byte2</th>
<th>Byte3</th>
<th>Byte4</th>
<th>Byte5</th>
<th>Byte6</th>
<th>Byte7</th>
<th>Byte8</th>
<th>Byte9</th>
<th>Byte10</th>
<th>Byte11</th>
<th>Byte12</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCTRKFDB (02801AF0): 02865408 00000000 00000000</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>

**HEADER ENTRY**

<table>
<thead>
<tr>
<th>START</th>
<th>SIZE</th>
<th>NSTT</th>
<th>SCAN</th>
<th>SCANL</th>
<th>F1</th>
<th>SEGMENT</th>
<th>RECCT</th>
<th>AVAIL</th>
<th>SPADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0286544C</td>
<td>000000C4</td>
<td>0001</td>
<td>02865464</td>
<td>0001</td>
<td>A0</td>
<td>02865464</td>
<td>04EC</td>
<td>04E9</td>
<td>000000007135</td>
</tr>
</tbody>
</table>

**MNTRKFBDB hhhhhhh -** is the address of the STT JBTAT FDB, followed by the actual FDB.

**START hhhhhhh -** is the first STT header in the chain.

**SIZE hhhh -** is the size of the STT.

**NSTT hh -** is the number of entries in the STT.

**SCAN hhhhhhh -** is the address of the fixed segment in the STT that JES3 will allocate space from on the next allocation request.

**SCANL hhhh -** is the number of fixed segments remaining.

**F1 hh -** is a flag byte in the STT (STTFLG1).

**SEGMENT hhhhhhh -** is the address of this segment.

**RECCT hhhhh -** is the address of records in this segment.

**AVAIL hhhh -** is the number of records available in this segment.

**SPADR hhhhhhhhhhh -** is the M.R of the first record in this STT.

**DATA MANAGEMENT JCT SINGLE TRACK TABLE -** is used to allocate and purge records that are maintained in the JCT data set. The formatted fields have the same explanation as those in the COMMON SINGLE TRACK TABLE above.

**File Directory**

**DATA MANAGEMENT FILE DIRECTORY** accounts for all opened multi-record files and some single-record files. The directory is a prioritized queue of 24 byte entries. It is mapped by macro IATYFDD.
START hhhhhhhh - is the address of the file directory entry.

FD nn - is a flag byte in the FDD (FDFLAGS).

WF nn - is a WRTCHAIN flag FDWRTBYT.

WC nn - is the WRTCHAIN completion flag (FDWRTPST).

JTFDB hhhhhhhh - is the address of the JBTAT FDB (output files).

FCTADD hhhhhhhh - is the address of the FCT associated with the FDB.

VALID hhhhhhhh - is a validity check data field for input files.

START hhhhhhhh - is the address of the FDB.

DATA hhhhhhhhh - is the address of the buffer or track address for the data.

BPTR hhhhhhhh - is the address of the current buffer (multi-record files only).

RL hhhh - is the number of unused bytes remaining in the buffer.

IO hh - is the number of outstanding I/O requests.

ER hh - is the number of uncorrected I/O errors.

F0 hh FS hh FL hh F1 hh F2 hh - are flag bytes in the FDB (F1 and F2 are multi-record files only).

**JSAM/USAM Data Buffers**

DATA MANAGEMENT JSAM DATA BUFFERS is the buffer pool that is constructed during initialization as the result of parameters specified on the BUFFER statement. The buffer allocator block (BAL) is used to allocate and de-allocate buffers from this pool. One to two buffers per block per page is possible. The page containing any buffer in use may be fixed in main storage (that is, it cannot be paged out). The data buffer is mapped by macro IATYDAT and IATYDMC, and the buffer allocator block is mapped by IATYBAL.

DATA MANAGEMENT USAM DATA BUFFERS is used by a user address space to read data from spool or write data to spool. A USAM unprotected buffer (UBUF) is allocated from a page in the user address space. USAM contains the data that the user application is writing to or has read from spool. The actual I/O to or from spool uses a USAM protected buffer (PBUF). The data is transferred from a UBUF to a PBUF before writing it to spool. When reading data from spool the data is placed in
JSAM/USAM Data Buffers (JIO)

a PBUF and then transferred to a UBUF for the user application to access. The buffer allocator block (BAL) is used to allocate and de-allocate PBUFS. The protected buffer pool resides in CSA, the JES3 auxiliary address space, or both. See the PRTPAGE keyword on the MAINPROC initialization statement in z/OS JES3 Initialization and Tuning Reference for defining the USAM PBUF pool of buffers.

BALDMCBA hhhhhhhh - is the starting address of the DMC pool.

BALDMECA hhhhhhhh - is the ending address of the DMC pool.

BALDATBA hhhhhhhh - is the starting address of the JSAM or USAM CSA protected buffers.

BALDATEA hhhhhhhh - is the ending address of the JSAM or USAM CSA protected buffers.

BALBALBY hhhhhhhh - is the address of the buffer allocator bytes.

BALTTRT hhhhhhhh - is the address of the translation tables (used during allocation).

BALBUFCT hhhhhhhh - is the number of buffers in the buffer pool.

BAL4KBLK hhhhhhhh - is the number of 4K blocks (pages) minus one.

DMC hhhhhhhh - is the pointer to the data management control block.

DMCNXDMC hhhhhhhh - is the chaining field for linking DMCs.

DMCFCT hhhhhhhh - is the address of the last FCT to issue I/O on the buffer.

I/O-DSP cccccccc - is the name of the FCT that issued the last I/O request.

OWN-DSP ccccccc - is the name of the DSP that obtained the buffer.
F1 hh F2 hh F3 hh F4 hh - are the DMC flag bytes. These come from DMCFLAG1, DMCFLAG2, DMCFLAG3, and DMCFLAG4.

FDBSTART hhhhhhhh - is the address of the FDB.

F0 hh FS hh F1 hh - are FDB FLAG0, FLAGS, and FLAG1.

DMCDAT hhhhhhhh - is the address of the DAT associated with this DMC.

DATTHIS hhhhhhhh - is the self track address of the single record file (SRF).

SRFID ccc - is the SRF ID of the record.

RQ-ADR cccccc - is the RESQUEUE address if the JOBTAT is from the RESQUEUE. Otherwise, it is the address of the STTTABLE if the JOBTAT is from MNTRKFDB.

JOB# cccc - is the job number if the RESQUEUE is available. This field displays “JES3” if the JOBTAT is for the STT.

DATA MANAGEMENT USAM DATA BUFFERS is formatted identically to JSAM information with the following additional fields:

BALXDTBA hhhhhhhh - is the starting address of the USAM protected buffer pool in the JES3AUX address space.

BALXDTEA hhhhhhhh - is the ending address of the USAM protected buffer pool in the JES3AUX address space.

DMCMULT1 and DNCMULT2 -
- If the address of the DMC being formatted was obtained from the DSB, these 2 fields correspond to the DMCBPTR and DMCRL fields.
- If the address of the DMC being formatted was obtained from the ISR, these 2 fields correspond to the DMCDATRA and DMCWORK fields.

DMCCREC - Current record being processed

DMCNXDUP - Original DMC chain pointer

DMCDATPT hhhhhhhh - is a pointer to the associated unprotected (UBUF) DMC in the requesting address space.

F1 hh F2 hh F3 hh F4 hh F5 hh - are the DMC flag bytes. These come from DMCFLAG1, DMCFLAG2, DMCFLAG3, DMCFLAG4 and DMCFLAG5.

DMCSRCH hhhhhhhhh - is the DASD search address for the record on spool.

A/S -
- If CSA, the DAT is in CSA
- If AUX, the DAT is in JES3AUX

DMCFDDSS -
- DSS FOR NON-JES address space I/O
- FDB FOR JES address space I/O
JSAM/USAM Data Buffers (JIO)

Note: This portion of the dump is not printed when running in an FSS address space because protected buffers are managed only from the JES3 address space.

## JES3 Memory Usage

JES3 MEMORY USAGE is a map of the JES3 address space. It is developed by scanning the VS storage management blocks for contiguous free space in the region (FBQE chain), contiguous space in a subpool (DQE chain), contiguous free space in a subpool (FQE chain), and space within a subpool that is allocated to a module (CDE/XL and JDE chains). Note that space allocated by GETMAIN (except module space) is not mapped, but can be deduced.

Note: If running in an FSS address space, this header will read “FSS MEMORY USAGE”.

JES3 AUXILIARY ADDRESS SPACE MEMORY MAP is formatted identically to JES3 MEMORY USAGE.

Note: This portion will not appear in the dump when running in an FSS address space.

<table>
<thead>
<tr>
<th>JES3 MEMORY USAGE</th>
<th>START</th>
<th>END</th>
<th>LENGTH</th>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>00005470</td>
<td>00005547</td>
<td>00000008</td>
<td>000000216</td>
<td>MODULE IATISCB</td>
</tr>
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<td>00005548</td>
<td>00005C6F</td>
<td>00000079B</td>
<td>0000001944</td>
<td>MODULE IATGROP</td>
</tr>
<tr>
<td>0000C000</td>
<td>0000106CF</td>
<td>000004600</td>
<td>0000018128</td>
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</tr>
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<td>0000126A8</td>
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<td>000001958</td>
<td>0000006488</td>
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<td>000003430</td>
<td>0000014896</td>
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<td>0000002880</td>
<td>MODULE IEFQBJST</td>
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<tr>
<td>0001C180</td>
<td>0001C598</td>
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<td>0000001040</td>
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</tr>
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<td>0001FF90</td>
<td>000200FF</td>
<td>000001000</td>
<td>0000004304</td>
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<td>0000012808</td>
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<td>0000003A0</td>
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<td>000000064</td>
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<td>00002608</td>
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<td>04D29FFF</td>
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<td>009432</td>
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<td>04D2CA40</td>
<td>04D2CFFF</td>
<td>0002360</td>
<td>009056</td>
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</tbody>
</table>

**SP ddd** - subpool identifier associated with the line (or lines).

**START/END hhhhhhhh** - starting and ending address for the item being formatted.

**LENGTH hhhhhhhh dddddd** - size of the area described by the formatted item, stated first in hex, then in decimal.
CONTENTS ccccc... - a description of the area being formatted (an overview of the control blocks involved is shown in “General Information”).

SPACE ASSIGNED TO DQE - always appears first in a block of formatted data. The DQE describes a contiguous segment of space within a subpool.

FREE SPACE - represents unallocated space in the subpool.

FCT READY QUEUE SUMMARY

FCT Ready Queue Summary contains any FCT that has completed a JSAM I/O request. The MFM dispatches the FCTS on the queue.

<table>
<thead>
<tr>
<th>TVTRDQTP</th>
<th>82ACA4D8</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCT ADDRESS</td>
<td>FCTRCH</td>
</tr>
<tr>
<td>82ACA4D8</td>
<td>82C82320</td>
</tr>
<tr>
<td>82CA2320</td>
<td>82C82158</td>
</tr>
<tr>
<td>82C7158</td>
<td>82C7177F0</td>
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<tr>
<td>82C7177F0</td>
<td>82C710A0</td>
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<td>82C710A0</td>
<td>82C9E0C0</td>
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<tr>
<td>82C9E0C0</td>
<td>82C9A80</td>
</tr>
<tr>
<td>82C9A80</td>
<td>82C7180</td>
</tr>
<tr>
<td>82C7180</td>
<td>82C8B518</td>
</tr>
<tr>
<td>82C8B518</td>
<td>82C434B</td>
</tr>
<tr>
<td>82C434B</td>
<td>00000000</td>
</tr>
</tbody>
</table>

TVTRDQTP hhhhhhhh - is the address of the FCT ready queue.

FCT ADDRESS cccccccc - is the address of the next FCT on the FCT Ready Queue.

PRTY cc - is the priority level of the FCT.

Auxiliary Task Control Block

AUXILIARY TASK CONTROL BLOCK (ATCB) is the primary control block used by the auxiliary task to save status and control information relating to its execution.

| TCB | 007D8D828 |
| ECBA | 00B9EE2C |
| FCT | 028E6A60 |
| ATDC | 02BFD180 |
| WAIT | 02B6E6A0 |
| WCNT | 00001657 |
| POOL | 02BFD1C0 |
| ARQ | 00000000 |

The following ATCB fields will be formatted if the auxiliary task exists at the time of the dump.

TCB=hhhhhhhhh - is the address of the TCB for the auxiliary task.

ECBA=hhhhhhhhh - is the address of the ECB for the auxiliary task.

FCT=hhhhhhhhh - is the address of the currently dispatched FCT.
Auxiliary Task Control Block (FCT)

ATDC=hhhhhhhh - is the address of the auxiliary task dispatching queue.

WAIT=hhhhhhhh - is the address of the WAIT FCT.

WCNT=hhhhhhhh - is the auxiliary task wait count in decimal.

POOL=hhhhhhhh - is the address of the ATDE free pool.

ARQ=hhhhhhhh - is the address of the attach request queue.

ECBF=hhhhhhhh - is the ECB used for serialization during "*MODIFY,MT" processing.

ECFF=hh - is the ECF used for serialization during "*MODIFY,MT" processing.

Function Control Table

FUNCTION CONTROL TABLE is the JES3 control block which represents a DSP or function. The FCT is used by the multi-function monitor (MFM) to allocate processing time in the JES3 address space. When a function must wait for an event to occur, control is passed to the MFM, which selects the highest priority FCT whose function is ready to be dispatched. Control is then given to that function. This method is analogous to the VS technique of multi-programming tasks by using a TCB chain and a system dispatcher. System related functions (that is, functions not job related, such as CONSOLES, JSS and SETUP have permanent FCT entries. All others are created and deleted dynamically. The entries are defined by the IATYFCD macro. The FCT is mapped by macro IATYFCT.
Function Control Table (FCT)

ECF information - indicates the ECF mask and address the DSP last waited on, and indicates whether the ECF is posted. This information is extracted from the associated ATDE if the DSP was running under the auxiliary task at the time of the dump. Otherwise, it is obtained directly from the FCT. If the REASON= parameter was specified on the AWAIT macro, the AWAIT reason code in hex and its description is formatted. If the DATA= parameter was specified on the AWAIT macro, the AWAIT specific data is also formatted.

CDE hhhhhhh - is the JDE (JES3 directory element) address of the driver DSECT.

SAVCH hhhhhhh - is the address of the save area for the routine currently in control.

SESEQ-RQAD hh hhhhh - is the sequence number of the scheduler element being processed by this function. The three low-order bytes are the address of the RESQUEUE.

PRTY-DSPDC hh hhhhh - is the dispatching priority of the DSP. The three low-order bytes are the address of the DSP dictionary entry.

CSECT hhhhhhh - is the address of the DSP's data CSECT (register 13).

TIMON hhhhhhh - is time when the DSP started with a LOGIN macro.
Function Control Table (FCT)

LOGIN hhhhhhhh - is the address of a routine to be given control when console service has a message for this function. (Established by the LOGIN macro.)

TNEXT hhhhhhhh - is the address of the ATIME queue for this function so that multiple ATIME time intervals can be maintained.

TUID hhhhhhhh - is the name associated with the ATIME currently in effect.

TIMEI hhhhhhhh - is the interval (in hundredths of a second) that is to elapse before the ATIME exit routine is entered.

TFLAG-TIMEX hh hhhhhh - are obtained from FCTTFLAG and FCTTIMES, respectively. TFLAG is a flag for time control. TIMEX is the low-order three bytes, and represents the address of the routine to be given control when the time interval is exhausted.

CBPTR hhhhhhhh - is the address of the console buffer chain.

JCTPY-GLIST hhhhhhhh - is the JCT priority (for called DSPs) and the address of the GETUNIT list.

GSD hhhhhhhh - is the address of the general subtask directory.

FLAGS hh hh hh hh - are flag (IATYGSD) bytes FCTFLAG1 through FCTFLAG4.

FSFLS hh hh - are the flag bytes (FCTFSFL1, FCTFSFL2) for failsoft obtained from FCTFSFLG.

MFCNT hhhh - is the maximum number of failures which can occur before the DSP is terminated without retry.

ASTCB hhhhhhhh - is the associated subtask TCB address.

JESTAE---CONTROL---BLOCK - the first word is a chain address to the last JESTAE control block, if there are any. The second word is the address of a JESTAE exit routine. The third word is the address of the user-defined parameter list from the PARAM keyword of the JESTAE macro when it was issued for this function.

FSCOD hh - is the failure code issued from a FAILDSP macro when the function is failed.

FSLOC hhhhhhhh - is the location of the FAILDSP macro.

FSRTN hhhhhhhh - is the address in the DSP where the FAILDSP macro was issued.

FCNT-PCNT hhhh hhhh - are the FCT failure count and JESTAE percolation count, respectively.

FSWA hhhhhhhh - is the address of the failsoft work area (IATYFSWA).

SLEVL hhhhhhhh - is the address of current level of JESTAE ASAVE.

CLEVL hhhhhhhh - is the address of the current JESTAE control block.
Function Control Table (FCT)

RSCNT hhhh - is the number of resources enqueued by this function by use of AENQ.
RSFLG-CNFLG hh hh - are the specialized reschedule and console flags.
DMDSP hhhh - is the JSAM SRF chain displacement.
DMID hhhh - is the JSAM SRF ID (FCTDMIO).
DMRT hhhhhhhh - is the JSAM SRF root FDB address.
EFPST hhhhhhhh - is the EFP mask and address for post.
WORK - is the FCT work area (FCTWORK).
ECFAD=hhhhhhhh - is the ECF mask and ECF address.
ATDE=hhhhhhhh - is the address of the associated ATDE.
MODE=hh - is the FCTMODE flag byte.
LOCK=hhhhhhhh - is the address of the JES3 lock held by this FCT or zero.
LTYPE=hh - indicates the type of lock held if any.
RSVD2 - is a field reserved for the user.
TOD hhmmss-ffffff - is the time of day when an FCT was last active. The time stamp is expressed as “hours, minutes, seconds-fraction.” The fraction is a decimal fraction of a second down to one millionth of a second.

FCT REGISTER SAVE AREA - is the area used to save registers over an AWAIT macro service. R10, R14 and R15 show the name of the module and the offset whose address is in those registers. If no JES3 module could be found, the displayed text shows UNKNOWN.

Auxiliary Task Dispatching Element

AUXILIARY TASK DISPATCHING ELEMENT (ATDE) is the JES3 control block which is used to select an FCT for dispatching under the JES3 auxiliary task. This block is created and chained to the FCT only in the case of a writer DSP and the GENSERV DSP. If an ATDE is chained to a FCT, the ATDE will follow the FCT in the formatted dump output.
The ATDE fields that will be formatted are as follows:

- **NEXT=hhhhhhhh** - is the address of the next ATDE.
- **ECFAD=hhhhhhhh** - is the ECF mask and ECF address.
- **FCT=hhhhhhhh** - is the address of the FCT.
- **ATCB=hhhhhhhh** - is the address of the ATCB if the associated FCT was active under the auxiliary task at the time of the dump. Otherwise, this field is zeros.
- **PRTY=hh** - is the priority of the FCT associated with ATDE.
- **DISP=hh** - is the dispatching control switch.
- **FLAGS=hh hh** - the first hh is the ATDEFLG1 byte and the second hh is a reserved flag byte.

**Resident Remote and Line DCT Entries**

RESIDENT REMOTE AND LINE DCT ENTRIES are not formatted in the FSS dump but for JES3 represent device control information for lines and terminals. A line is the device used by RJP to communicate with a terminal. A terminal refers to one device or a collection of terminal devices at the other end of the line (remote). A line is used exclusively by RJP. The DCT is an extension to the SUPUNITs entry for a line or terminal. These SUPUNIT entries and their DCT extensions are not part of the system SUPUNITs chain. Rather, they are maintained on the JES3 queue (direct-access spool device) until a line is started or until a terminal is signed on. The resident remote and line DCT entries are mapped by macro IATYSUP.
Resident Remote and Line DCT Entries (RJP)

entries are addressed by the RJP remote/line table, which is mapped by macro IATYRLT.

<table>
<thead>
<tr>
<th>Device Name</th>
<th>SUPAD</th>
<th>BUFAD</th>
<th>LINE DCT</th>
<th>PR.WORK</th>
<th>COM.DWA</th>
<th>USERIOB</th>
<th>USER FCT</th>
<th>RES. AD</th>
<th>NEXT DCT</th>
<th>REC.SIZ</th>
<th>MAX.SIZ</th>
<th>BUF.SIZ</th>
<th>FCS</th>
<th>RCB/PUN</th>
<th>FL1</th>
<th>FL2</th>
<th>FL3</th>
<th>FL4</th>
<th>FL5</th>
<th>NO</th>
<th>BUFSIZ</th>
<th>FCS</th>
<th>RCB/PUN</th>
<th>FL1</th>
<th>FL2</th>
<th>FL3</th>
<th>FL4</th>
<th>FL5</th>
<th>BUFSIZ</th>
<th>FCS</th>
<th>RCB/PUN</th>
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<th>FL2</th>
<th>FL3</th>
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<th>RCB/PUN</th>
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<th>FL2</th>
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</tr>
</tbody>
</table>

LINENAME cccccccc - is the name of the line.

SUPAD hhhhhhh - is the address of the SUPUNIT entry for the line.

DCTAD hhhhhhh - is the address of the first remote DCT.

BUFAD hhhhhhh - is the address of the line input buffer.

CODAD hhhhhhh - is the address of one of the two possible code tables, used for the line transparency features.

OBUFAD hhhhhhh - is the address of the first output buffer on the output queue, and it applies only to intelligent terminals.

RES.AD hhhhhhh - is the address of the LINE entry in the RJP line and terminal table.

BAUD dddd - is the line speed rating, as specified by the S parameter of the RJPLINE initialization statement.

FCS hhhh - is the function control sequence last received from a programmable terminal.

RSQ hhhh - is the receive block sequence count for a programmable terminal.

TSQ hhhh - is the transmit block sequence count for a programmable terminal.

OCT hhhh - is the number of OEM remote devices for the line.
Resident Remote and Line DCT Entries (RJP)

ATT hh - is a flag byte.
FL1 and FL2 hh - are flag bytes from SUPLNFL1 and SUPLNFL2.
EXCPS hhhh - is the number of transmissions for the line.
ERRORS hhhh - is the number of line I/O errors.
TOTS hhhh - is the number of timeouts for the line.
LOCKWORD hhhhhhhh - is the line DCT lockword.
LOCKFCT hhhhhhhh - is the address of the FCT holding lock.
DEVICE NAME cccccc - is the device name for a terminal.
SUPAD hhhhhhhh - is the address of the SUPUNIT entry for the terminal.
BUFAD hhhhhhhh - is the address of the output buffer.
LINE DCT hhhhhhhh - is the address of the line DCT for which the terminal has
signed on.
PR. WORK hhhhhhhh - is the address of the printer work area.
COM.OWA hhhhhhhh - is the address of the work area for compress.
USER IOB hhhhhhhh - is the address of the terminal user's IOB.
USER FCT hhhhhhhh - is the address of the terminal user's FCT.
RES. AD hhhhhhhh - is the address of the terminal entry in the RJP line and
terminal table.
NEXT DCT hhhhhhhh - is the address of the next remote DCT when there is more
than one device associated with a terminal.
RECSIZ hhh - is the logical record length most recently written.
MAXSIZ hhh - is the maximum record length permitted for the device.
NO hh - is the terminal number.
BUFSIZ hhh - is the length of the RJP buffer.
FCS hhhh - is the function control sequence last sent from a programmable
terminal.
RCB/PUN hh - is the record control byte for punch select characters.
FL1 hh FL2 hh FL3 hh FL4 hh FL5 hh - are flag bytes obtained, consecutively,
starting from SUPRMFL1 in IATYSUP.
Resident RJP Line and Terminal Table

RESIDENT RJP LINE AND TERMINAL TABLE is not formatted in the FSS dump but in JES3 is used to locate a line SUPUNIT or DCT entry when a line is to be started, and to locate a remote SUPUNIT or DCT entry when a terminal is being signed on. It also contains control information for each line or terminal. The table is mapped by macro IATYRLT.

<table>
<thead>
<tr>
<th>LOC</th>
<th>DDNAME</th>
<th>TYPE</th>
<th>GROUP</th>
<th>PASSWORD</th>
<th>SUPUNITS</th>
<th>FLG1</th>
<th>FLG2</th>
<th>FLG3</th>
<th>FLG4</th>
<th>XCFF</th>
<th>FDB</th>
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<td></td>
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</tr>
</tbody>
</table>

GROUP cccccccc - is the group name to which the terminal belongs. Output from a job entered in the group may be routed to any terminal in the same group. The name is assigned by the G parameter of the RJPTERM initialization statement.

SUPUNITS hhhhhhhh - is the starting address of the DCT-SUPUNIT entries for the line or terminal. It is zero when a line has not started or a terminal has not signed on.

FLG1 hh FLG2 hh FLG3 hh FLG4 hh are control bytes obtained, consecutively, starting at RTTFLAG1 in IATYRLT.

XCFF is the control byte RTTXCFFG in IATYRLT used for the communications between JESXCF and RJPCONS.
Resident RJP Line and Terminal Table (RJP)

FDB hhhhhhhhhhh - is the FDB for the DCT-SUPUNITS entries spooled to the queue, which occurs when a terminal is not signed on, or when a line is not started.

Resident SNA RJP Table (SRT)

RESIDENT SNA RJP TABLE (SRT) is not formatted in the FSS dump but in JES3 is a multipurpose table built by IATINSNA and augmented with information from the COMMDEFN initialization statement.

<table>
<thead>
<tr>
<th>LOC</th>
<th>APLID</th>
<th>CTE</th>
<th>CIDU</th>
<th>SRDC</th>
<th>OUTM</th>
<th>MSG</th>
<th>INCN</th>
<th>RDRS</th>
<th>TERM</th>
<th>RESET</th>
<th>FRCB</th>
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<tr>
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<td>JES3</td>
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<td>0275F3A0</td>
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<td>FFFFFFFF</td>
<td>FFFFFFFF</td>
<td>FFFFFFFF</td>
<td>02028F70</td>
<td>FFFFFFFF</td>
<td>FFFFFFFF</td>
<td></td>
</tr>
</tbody>
</table>

APLID cccccccc - is the application name, obtained from the COMMDEFN initialization statement.

CTE hhhhhhhh - is the address of the CTE list for the compaction tables.

CIDU hhhhhhhh - is the address of the communications ID (CID)-to-session control block address (LCB) map table.

SRDC hhhhhhhh - is the address of the data CSECT for the SNA RJP DSP.

OUTM through CLRQ hhhhhhhh - are addresses of exit work queues.

MSG hhhhhhhh - is the address of the local console message queue.

INCD hhhhhhhh - is the address of the inbound console command queue.

RDRS hhhhhhhh - is the address of the reader call queue.

TERM hhhhhhhh - is the address of the terminate queue.

FRCB hhhhhhhh - is the address of the LUCB free queue.

WSOPN hhhhhhhh - is the address of the console out queue.

WSCHN hhhhhhhh - is the address of the workstation chain.

LPFQ hhhhhhhh - is the address of the LCB pending free queue.

WPFQ hhhhhhhh - is the address of the WSB pending free queue.

WPFQQ hhhhhhhh - is the address of the WSB pending free queue.

CMNDQ hhhhhhhh - is the address of the intercom command queue.

TRQ hhhhhhhh - is the address of the TR table free queue.

FLAG hh - are SRTFLG1 flag bytes.
Resident SNA Terminal Entries

RESIDENT SNA TERMINAL ENTRIES are not formatted in the FSS dump but are in a JES3 formatted dump.

GROUP cccccccc - is the group name to which the terminal belongs. Output from a job entered in the group may be routed to any terminal in the same group. The name is assigned by the G parameter of the RJPTERM initialization statement.

SUPUNITS hhhhhhhh - is the starting address of the DCT-SUPUNITS entries for the line or terminal. It is zero when a line has not started or a terminal has not signed on.

FLG1 hh FLG2 hh FLG3 hh FLG4 hh - are control bytes obtained, consecutively, starting at RTTFLAG1 in IATYRLT.

XCFF - is the control byte RTTXCFFG in IATYRLT used for the communications between JESXCF and RJPCONS.

FDB hhhhhhhhhhh - is the FDB for the DCT-SUPUNITS entries spooled to the queue, which occurs when a terminal is not signed on, or when a line is not started.
WSB Entry

RESIDENT WSB/LUCB ENTRIES are not formatted in the FSS dump but in JES3 shows the contents of the WSB for each active workstation, followed by the device entries for the workstation and all active LCBs associated with the workstation.

<table>
<thead>
<tr>
<th>LOC</th>
<th>NAME</th>
<th>AUTLU</th>
<th>WSCHN</th>
<th>WQ</th>
<th>LCB</th>
<th>RLTA</th>
<th>RDRDE</th>
<th>PRTDE</th>
<th>PUNDE</th>
<th>CONDE</th>
<th>CSFL</th>
<th>FLG1</th>
<th>ALF1</th>
<th>FLG2</th>
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<td>02CE2A6C</td>
<td>02D35F70</td>
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</tbody>
</table>

WSB ENTRY

NAME cccccccc - is the name of this workstation.

AUTLU cccccccc - is the name of the LU for auto-logon.

WSCHN hhhhhhhh - is the next resident WSB in the system.

WQ hhhhhhhh - is the continue field for SRTWSBWQ.

LCBA hhhhhhhh - is the first session LCB for this WSB.

RLTA hhhhhhhh - is the address of the resident terminal entry for this WSB.

RDRDE hhhhhhhh - is the address of the first device entry (DVE) for the reader device type.

PRTDE hhhhhhhh - is the address of the first DVE for the printer device type.

PUNDE hhhhhhhh - is the address of the first DVE for the punch device type.

CONDE hhhhhhhh - is the address of the inbound console DVE. The outbound console DVE follows the inbound DVE.

CSFL hh FLG hh ALF1 hh (not shown) FLG2 hh (not shown) - are flag bytes obtained from WSBSCSFL1, WSBFLAG1, WSBALLF1, and WSBFLAG2, respectively.
Device Entry

DEVICE ENTRY

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<th>LOC</th>
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<th>WSB</th>
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<th>FL3</th>
<th>FL4</th>
<th>CSFL</th>
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DEVICE ENTRY

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DEVICE ENTRY

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</tbody>
</table>

DEVICE ENTRY

<table>
<thead>
<tr>
<th>LOC</th>
<th>LCB</th>
<th>NSTE</th>
<th>WSB</th>
<th>SUP</th>
<th>SNSD</th>
<th>FL1</th>
<th>FL2</th>
<th>FL3</th>
<th>FL4</th>
<th>CSFL</th>
<th>DVSL</th>
<th>EXFL</th>
<th>LRCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>02CE2764</td>
<td>02D35F70</td>
<td>00000000</td>
<td>02CE256C</td>
<td>02CE27F4</td>
<td>0000000000</td>
<td>80</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>20</td>
<td>00</td>
<td>00</td>
<td>0084</td>
</tr>
</tbody>
</table>

DEVICE ENTRY

LOC hhhhhhh - is the address of this DVE.

LCB hhhhhhh - is the address of the LCB if the device is active for a session.

NSTE hhhhhhh - is the address of the next DVE.

WSB hhhhhhh - is the address of the WSB entry associated with this DVE.

SUP hhhhhhh - is the address of the SUPUNITS entry associated with this DVE.

SNSD hhhhhhh - are the DVE sense bytes.

FL1 hh FL2 hh FL3 hh FL4 hh CSFL hh - are flag bytes, prefixed by DVE.

DVSL hh - is the media type and subaddress used in a BDS FMH.

EXFL hh - is the DVEEXFLG which indicates whether this device is an exchange device.

LRCL hh - is the logical record length for an inbound deblock record or an outbound block record.
LCB Entry (WSB)

<table>
<thead>
<tr>
<th>LCB ENTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC hhhhhhh - is the address of this LCB.</td>
</tr>
<tr>
<td>NAME cccccccc - is the name of the logical unit.</td>
</tr>
<tr>
<td>CHN hhhhhhhh - is the address of the next LCB for this WSB.</td>
</tr>
<tr>
<td>WSB hhhhhhhh - is the address of the WSB associated with this LCB.</td>
</tr>
<tr>
<td>CID hhhhhhhh - is the communications ID for this session.</td>
</tr>
<tr>
<td>CIDSL hhhhhhhh - is the position of this LCB in the CID-to-LCB map table.</td>
</tr>
<tr>
<td>OUTM hhhhhhhh - a queue of console messages that the LCB is waiting to send</td>
</tr>
<tr>
<td>INCD hhhhhhhh - a queue of messages that the LCB is waiting to process</td>
</tr>
<tr>
<td>RDRS hhhhhhhh - a chain of LCBs that require a reader. The reader must be started before the LCB can be removed from the chain.</td>
</tr>
<tr>
<td>TERM hhhhhhhh - address of the LCBs whose destinations should be closed.</td>
</tr>
<tr>
<td>RESET hhhhhhhh - address of a chain of LCBs that require resetting</td>
</tr>
<tr>
<td>FRCB hhhhhhhh - address of a chain of LCBs. The control blocks that belong to the LCBs on the FRCB chain can be returned to storage.</td>
</tr>
<tr>
<td>WSOPN hhhhhhhh - address of a chain of LCBs that are waiting for a workstation open request.</td>
</tr>
<tr>
<td>IST hhhhhhhh - is a pointer to the inbound stack.</td>
</tr>
<tr>
<td>OST hhhhhhhh - is a pointer to the outbound stack.</td>
</tr>
<tr>
<td>FRONT hhhhhhhh - is the address of the front BFE. (Used for buffer allocation.)</td>
</tr>
<tr>
<td>REAR hhhhhhhh - is the address of the rear BFE. (Used for buffer allocation.)</td>
</tr>
<tr>
<td>FIRST hhhhhhhh - is the address of the first BFE.</td>
</tr>
<tr>
<td>LAST hhhhhhhh - is the address of the last BFE. RUUSECT hhhhhhhh - is the number of RUs currently in use.</td>
</tr>
</tbody>
</table>
FLCS1 hh - is a flag byte. See the following list of values to determine the meaning of the field.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>indicates I/O is pending at the workstation</td>
</tr>
<tr>
<td>X'40'</td>
<td>indicates the LCB is on the purge chain</td>
</tr>
<tr>
<td>X'20'</td>
<td>indicates the LCB is waiting for a response from another workstation</td>
</tr>
<tr>
<td>X'10'</td>
<td>indicates the workstation received a cancel or end-of-chain request.</td>
</tr>
<tr>
<td>X'08'</td>
<td>indicates the workstation sent a positive response to a request</td>
</tr>
<tr>
<td>X'04'</td>
<td>indicates the workstation sent a negative response to a request</td>
</tr>
<tr>
<td>X'02'</td>
<td>indicates the workstation will not send a positive response to any request</td>
</tr>
</tbody>
</table>

CSFL1 hh - is a status indicator used to determine the beginning and end of a request sent to a workstation. The flag is also used to determine if the request is sent to or issued by the workstation.

CSFL2 hh - is a status indicator used to indicate the workstation should stop sending requests at the next end-of-chain.

CSFL3 hh - is a status indicator used to determine if the workstation received or sent a signal to another workstation.

CSFL5 hh - is a status indicator used during the workstation's termination processing. The following values can be used in the flag:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>indicates the session is immediately quiescing</td>
</tr>
<tr>
<td>X'40'</td>
<td>indicates the session is quiescing</td>
</tr>
<tr>
<td>X'20'</td>
<td>indicates JES3 requested VTAM issue a close destination request.</td>
</tr>
<tr>
<td>X'10'</td>
<td>indicates JES3 processed the close destination request.</td>
</tr>
<tr>
<td>X'08'</td>
<td>indicates the LCB should be returned to storage when the use count reaches zero.</td>
</tr>
</tbody>
</table>

USCT hhhh - is the use count of the LCB

LUS hh - is the status flag for the logical unit (LU). The LU represents the line.

FL0 hh - is a status flag that indicates the data flow control. The following are values that can be found in this field.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>indicates the indicator, the bracket, at the beginning of a RU that was rejected.</td>
</tr>
<tr>
<td>X'40'</td>
<td>indicates a cancel request was sent to terminate the flow of data.</td>
</tr>
<tr>
<td>X'20'</td>
<td>indicates a request to open the workstation's writer was issued.</td>
</tr>
<tr>
<td>X'10'</td>
<td>indicates a request to open the workstation's console was issued.</td>
</tr>
<tr>
<td>X'04'</td>
<td>indicates VTAM indicated a session should be started.</td>
</tr>
</tbody>
</table>
**LCB Entry (WSB)**

FL1 dd - indicates the mode of the session. The mode of a session can be in one of the following states:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'40'</td>
<td>indicates the workstation received an RU that was empty or the caller did not properly initialize.</td>
</tr>
<tr>
<td>X'08'</td>
<td>indicates the session is in special mode</td>
</tr>
</tbody>
</table>

FL2 dd - is a status flag. The flag can have one of the following meanings:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>indicates the destination has not been selected</td>
</tr>
<tr>
<td>X'40'</td>
<td>A SMF type 47 record was received by the workstation.</td>
</tr>
<tr>
<td>X'20'</td>
<td>indicates the data stream can be sent</td>
</tr>
</tbody>
</table>

FL3 dd - is a status flag that indicates the status of the device currently being used.

FL4 dd - is a status flag that indicates the following:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>indicates a request to close the destination was received but the workstation has not processed the request.</td>
</tr>
<tr>
<td>X'40'</td>
<td>indicates the request to close the destination was processed.</td>
</tr>
<tr>
<td>X'20'</td>
<td>indicates an error occurred during the session</td>
</tr>
<tr>
<td>X'10'</td>
<td>indicates the session should be terminated</td>
</tr>
<tr>
<td>X'08'</td>
<td>indicates the destination is opened.</td>
</tr>
</tbody>
</table>

SRPL hhhhhhhh - is the address of the Send RPL.

RRPL hhhhhhhh - is the address of the Receive RPL.

NIB hhhhhhhh - is the address of the node initialization block (NIB) for this session.

LRCL hhhh - is the logical record length used for this session.

PSST hhhhhhhh - is the address of the beginning of the presentation services work area.

FMWA hhhhhhhh - is the address of the function management work area.

PSWA hhhhhhhh - is the address of the presentation services buffer area.

TRBL hhhhhhhh - is the address of the trace table.

---

**NJE Resident Node Table**

NJE RESIDENT NODE TABLE - contains information on each node that is defined to your installation. Each node is defined to your installation by the NJERMT initialization statement. The information for the table is obtained from mapping macro IATYNJY.
### NJE Resident Node Table (NJE)

#### NJE Resident Node Table

**HOMENODE cccccccc** - is the home node name.

**NJECTC hh through NJETYPSON hh** - are the entry flag bit names for the values displayed in the FLAG1 field.

**ADDRESS hhhhhhhh** - is the node table entry address.

**NJENAME cccccccc** - is the node name of the entry.

**NJEPATH cccccccc** - is the path name of the entry.

**NJELINE cccc** - is the BSC line name associated with the node entry.

**NJEBDTID cccccccc** - is the sysid of the MVS/BDT subsystem at the home node that processes SNA/NJE work.

---

**NJ E RESIDENT NODE TABLE.  HOMENODE = NODE1**

**NJΕΝΕΑΖΗ Α8 ΝΝΕΥΔΗΛΒ 40  ΝΝΕΧΜΗΡ 20 ΝΝΕΟΔΗΓΕΦ 10  ΝΝΕΤΣΙΠ 08 ΝΝΕΣΚΩΓΝ 04  ΝΝΕΑΚΤΙΒ 02 ΝΝΕΛΗΣ 01**

**NJΕ ΦΑΓΛ 1 ΔΕΣΚΡΙΠΣΙΟΝ**

<table>
<thead>
<tr>
<th>NJECTC</th>
<th>NJEAUTO</th>
<th>NJEMULTI</th>
<th>NJEHOMIE</th>
<th>NJEPWENC</th>
<th>NJEPWLOC</th>
<th>NJEHOLD</th>
<th>NJETYPSON</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>40</td>
<td>20</td>
<td>10</td>
<td>80</td>
<td>08</td>
<td>00</td>
<td></td>
</tr>
</tbody>
</table>

**NJΕ ΦΑΓΛ 2 ΔΕΣΚΡΙΠΣΙΟΝ**

<table>
<thead>
<tr>
<th>NJEALIAS</th>
<th>NJENTLHLD</th>
<th>NJEWMRM</th>
<th>NJOESSG</th>
<th>NJOACTIV</th>
<th>NJOELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>40</td>
<td>20</td>
<td>10</td>
<td>80</td>
<td>00</td>
</tr>
</tbody>
</table>

**ADDRESS NJENAME NJEPATH NJEBDTID NJESCT 3 NJEBFSIZ NJEFSOCK**

<table>
<thead>
<tr>
<th>04B72AC</th>
<th>NODE1</th>
<th>SYSA1</th>
<th>00000000</th>
<th>00000000</th>
<th>00000000</th>
<th>0190 10 00</th>
</tr>
</thead>
<tbody>
<tr>
<td>04B7314</td>
<td>NODE2</td>
<td>04BF4258</td>
<td>00000000</td>
<td>00000000</td>
<td>0780</td>
<td></td>
</tr>
<tr>
<td>04B737C</td>
<td>NODE3</td>
<td>A0</td>
<td>08</td>
<td>1 1 1 1 171C58A0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04B73E4</td>
<td>NODE4</td>
<td>A0</td>
<td>08</td>
<td>1 1 1 1 171C95E8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NJE ACTIVE BSC NODE DATA CSECTS/RECEIVER WORK AREA**

<table>
<thead>
<tr>
<th>LMSTAT1</th>
<th>LMSTAT2</th>
<th>LMSTAT3</th>
<th>LMSTAT4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDRCV 80</td>
<td>NAKRCVD 08</td>
<td>LMCTC 80</td>
<td>LMODERR 08</td>
</tr>
<tr>
<td>LDGNG 40</td>
<td>CANCEST 04</td>
<td>LMAUTO 40</td>
<td>RSETNRVC 04</td>
</tr>
<tr>
<td>DUMMYRD 20</td>
<td>LNSRTRD 02</td>
<td>LMMULTI 20</td>
<td>CANQIM 02</td>
</tr>
<tr>
<td>LNBUSY 10</td>
<td>LNSRNG 01</td>
<td>LNIORM 10</td>
<td>LNIOTERM 01</td>
</tr>
</tbody>
</table>

**LMSTAT5**

<table>
<thead>
<tr>
<th>NDTQIES 80</th>
<th>NDTRSLN 08</th>
<th>NDTRST 80</th>
<th>NOTUSED 04</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDTSRWT 40</td>
<td>NOTUSED 04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDTJBXAP 20</td>
<td>NOTUSED 02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDTOPXAP 10</td>
<td>NOTUSED 01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GENERAL-JOB-SYSOUT SENDER FLAGS DESCRIPTION**

<table>
<thead>
<tr>
<th>XMITRDY 80</th>
<th>XMITEOF 40</th>
<th>RESCHED 10</th>
<th>ALLOCED 08</th>
<th>XMITCAM 04</th>
<th>XMITABRT 02</th>
<th>XABRTSNT 01</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCVEOFK 80</td>
<td>RCVEOFRJ 40</td>
<td>NOTUSED 08</td>
<td>NOTUSED 04</td>
<td>NOTUSED 02</td>
<td>NOTUSED 01</td>
<td></td>
</tr>
</tbody>
</table>

**ADDRESS NAME LINE BUFSIZ RDBFR WRBFR LASTCP INFCS OUTFCS CALLCNID FRSTCNB**

<table>
<thead>
<tr>
<th>04BF4258</th>
<th>NODE2 992</th>
<th>0780</th>
<th>04CC9738</th>
<th>04CBF4CB</th>
<th>04BF437B</th>
<th>BFCF</th>
<th>BFCF</th>
<th>0005</th>
<th>00000000</th>
</tr>
</thead>
<tbody>
<tr>
<td>01B18130</td>
<td>04BF49F0</td>
<td>0218B8A8</td>
<td>A0</td>
<td>08</td>
<td>80</td>
<td>00</td>
<td>00000000</td>
<td>00000000</td>
<td></td>
</tr>
</tbody>
</table>

**SNDPMRM**

| 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |

**JBSNPMRM**

| 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |

**OPSNPMRM**

| 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |

---

**HOMENODE cccccccc** - is the home node name.

**NJECTC hh through NJETYPSON hh** - are the entry flag bit names for the values displayed in the FLAG1 field.

**ADDRESS hhhhhhhh** - is the node table entry address.

**NJENAME cccccccc** - is the node name of the entry.

**NJEPATH cccccccc** - is the path name of the entry.

**NJELINE cccc** - is the BSC line name associated with the node entry.

**NJEBDTID cccccccc** - is the sysid of the MVS/BDT subsystem at the home node that processes SNA/NJE work.
NJE Resident Node Table (NJE)

NJECSACT hhhhhhh - are the BSC line manager data csect pointers for the entry.

NJEBFSIZ hhhh - is the defined transmission buffer size for the entry.

NJEFLAG1 hh - are the entry flag settings.

NJEFLAG2 hh - are the second entry flag settings.

JT (NJEJTRN) h - is the number of job transmitters. This value applies to TCP/IP nodes only.

OT (NJEOTRN) h - is the number of output transmitters. This value applies to TCP/IP nodes only.

JR (NJEJRCV) h - is the number of job receivers. This value applies to TCP/IP nodes only.

OR (NJEORCV) h - is the number of output receivers. This value applies to TCP/IP nodes only.

NJEF SOCK hhhhhhh - is the address of the first socket for this node. This value applies to TCP/IP nodes only.

NJE ACTIVE NODE DATA CSECTS

LMSTAT1 through LMSTAT5 ccccccc h - are the line data area flag bit descriptions.

GENERAL-JOB-SYSOUT SENDER FLAGS DESCRIPTION

XMITRDY through XABRTSNT hh - are the bit descriptions for the first sender flag.

RCVEOFOK through NOTUSED hh - are the bit descriptions for the second sender flag.

ADDRESS hhhhhhh - is the BSC line manager data csect pointer.

NAME cccccc - is the node name.

LINE cccc - is the line name.

BUFSIZ hhh - is the defined transmission buffer size.

RDBFR hhhhhhh - is the address of the read buffer.

WRBFR hhhhhhh - is the address of the write buffer.

LASTCP hhhhhhh - is the address of the last channel program which was issued.

INFCS hhhh - are the received function control sequence (FCS) characters.

OUTFCS hhh - are the FCS characters to be sent.

CALLCNID hhh - is the calling console number.
NJE Resident Node Table (NJE)

FRSTCNSB hhhhhhhh - is the address of the first nodal message record (NMR) to be transmitted.

LNIOSB hhhhhhhh - is the address of the line input output supervisor block.

LNSRB hhhhhhhh - is the address of the line SRB.

JBRPLIST hhhhhhhh - is the address of the job parameter list for the network receiver.

OPRPLIST hhhhhhhh - is the address of the SYSOUT parameter list for the network receiver.

LMSTAT1 through LMSTAT5 hh - are the flag LMSTATn settings.

LMECF hhhhhhhh - is the line manager ECF setting.

LMECFS hh - is the line manager ECF setting serialized for a multitasking environment.

LNECB hhhhhhhh - is the line ECB setting.

SNDRPRM hhhhhhhh hhhhhhhh hhhhhhhh hhhhhhhh - is the general sender flag and parameter list.

JBSNPRM hhhhhhhh hhhhhhhh hhhhhhhh hhhhhhhh - is the job sender flag and parameter list.

OPSNPRM hhhhhhhh hhhhhhhh hhhhhhhh hhhhhhhh - is the SYSOUT sender flag and parameter list.

Networking Console Pointers and Queues

<table>
<thead>
<tr>
<th>NETWORKING CONSOLE POINTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSOLE QUEUE</td>
</tr>
<tr>
<td>04000900</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NETWORKING CONSOLE QUEUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESPONSE OCOMMAND OMESSAGE ICOMMAND IMESSAGE TSO OSNAMR REJECTED PENDING NJECNSFL</td>
</tr>
<tr>
<td>FIRST 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 03B6FFD8 10</td>
</tr>
<tr>
<td>LAST 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 03B6FFD8</td>
</tr>
</tbody>
</table>

NETWORKING CONSOLE POINTERS

CONSOLE QUEUE hhhhhhhh - is the address of the networking console queue (NCQ).

NETWORKING CONSOLE QUEUE
Networking Console Pointers and Queues (NJE)

FIRST, LAST hhhhhhh - are the address of the first and last NCQ entries.

NJECNSFL hhhhhhh - is the NJE console flag.

NJE Active BSC Node Table

<table>
<thead>
<tr>
<th>LMSTAT1</th>
<th>LMSTAT2</th>
<th>LMSTAT3</th>
<th>LMSTAT4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORCV 80 NAKRCVD 08</td>
<td>LMCTC 80 LMIDERR 08</td>
<td>CANXMIT 80 OPRCV 08</td>
<td>XMITSW 80 OPRMRQD 08</td>
</tr>
<tr>
<td>LOGGING 40 CANCROST 04</td>
<td>LM.AUTO 40 RSETNRVCV 04</td>
<td>TRANS 40 OPRTRANS 04</td>
<td>PENDG 40 JBPRMRQD 04</td>
</tr>
<tr>
<td>DUMMYRD 20 LMSTRTD 02</td>
<td>LMULTI 20 CANRQIM 02</td>
<td>JBCRV 20 NMRRCV 02</td>
<td>JBPENDG 20 PERMMRFP 02</td>
</tr>
<tr>
<td>LBUSY 10 LNRSTNG 01</td>
<td>LNAME 10 LINOTERM 01</td>
<td>JBTRANS 10 NOTUSED 01</td>
<td>OPPENDG 10 NOTUSED 01</td>
</tr>
</tbody>
</table>

LMSTAT5
|
| DNOTQUES 80 DNRTRSLN 08 | DNDTRQST 04 DNOTUSED 04 |
| DNDTXAP 20 DNOTUSED 02 | DNDTOPXAP 10 DNOTUSED 01 |

GENERAL-JOB-SYSOUT SENDER FLAG DESCRIPTION
|
| XMITRDY 80 XMITCMP 40 | RCVDEOF 20 RESCHED 10 | ALLOCED 08 XMITCNG 04 | XMITABRT 02 XABRTSNT 01 |

RECEIVER WORK AREA POINTER INVALID
|
| ADDRESS NAME LINE BUFSIZ RDBFR WRBFR LASTCP INFCS OUTFCS CALLCNI FRCSTCNSB |
| 04BF4258 NODE2 992 0780 04CC9738 04CBF4CB 04BF4378 BCF 8FCF 0005 00000000 |
| 01B18130 LNSR8 04BF49KPT LMSTAT1 LMSTAT2 LMSTAT3 LMSTAT4 LMSTAT5 LMFCE LMFCE |
| 04D92A28 JBSNPRM 00000000 00000000 00980009 00990009 04DFFA31 |

NJE ACTIVE BSC NODE DATA CSECTS/RECEIVER WORK AREA

LMSTAT1 through LMSTAT5 cccccc cccc hh - are the line data area flag bit descriptions.

GENERAL-JOB-SYSOUT SENDER FLAG DESCRIPTION

XMITRDY through NOTUSED hh - are the logical sender flag bit descriptions.

ADDRESS hhhhhhh - is the BSC line manager data csect pointer.

NAME ccccccccc - is the node name.

LINE ccccc - is the line name.

BUFSIZ hhhh - is the defined transmission buffer size.

RDBFR hhhhhhh - is the address of the read buffer.

WRBFR hhhhhhh - is the address of the write buffer.

LASTCP hhhhhhh - is the address of the last channel program which was issued.

INFCS hhhhh - are the received function control sequence (FCS) characters.

OUTFCS hhhhh - are the FCS control characters to be sent.
CALLCNID hhhh - is the calling console number.

FRSTCNSB hhhhhhhh - is the address of the first nodal message record (NMR) to be transmitted.

LNIOSB hhhhhhhh - is the address of the line input/output supervisor block.

LNSRB hhhhhhhh - is the address of the line SRB.

RCVWRKPT hhhhhhhh - is the address of the associated network receiver data area (NRD).

LMSTAT1 through LMSTAT5 hh - are the flag LMSTATn settings.

LMECF hhhhhhhh - is the line manager ECF setting.

LNECB hhhhhhhh - is the line ECB setting.

SNDRPRM hhhhhhhh hhhhhhhh - is the general sender parameter list.

JBSNPRM hhhhhhhh hhhhhhhh - is the job sender parameter list.

OPSNPRM hhhhhhhh hhhhhhhh - is the SYSOUT sender parameter list.

ADDRESS hhhhhhhh - is the address of the NRD.

NRDJPARM hhhhhhhh - is the address of the job reception parameter list.

NRDJRVF1 hh - is a flag in the NRDJPARM parameter list that indicates the status of the job being received.

NRDJRVF2 hh - is a NRDJPARM flag byte.

NRDOPARM hhhhhhhh - is the address of the SYSOUT reception parameter list.

NRDORVF1 hh - is a flag in the NRDOPARM parameter list that indicates the status of the SYSOUT data set being received.

NRDORVF2 hh - is a NRDOPARM flag byte.

NRDORVF3 hh - is a NRDOPARM flag byte.

NRDFLAG1 hh - is a flag byte for the receiver.

### DJC JOBNET Control Blocks

DJC JOBNET CONTROL BLOCKS (JNCBs) contain the information reflecting the total network of jobs in DJC. There is one JNCB for each unique job network identified by NET control statements submitted with the jobs. The JNCB chain, resident in storage, is the major control block that allows DJC management.
Djc Jobnet Control Blocks (DJC)

**TOTAL dddd** - is the number of jobs currently entered in the network regardless of completion status.

**CURR dddd** - is the number of jobs in the network that have completed all processing.

F1 hh F2 hh F3 hh - are flag bytes obtained, consecutively, starting at JNFLAG1.

**JSEBUFF hhhhhhh** - is formatted from the JNJSEBUF field of the JNCB. It is the address of the first job summary element (JSE) for this job net.

**JSEALLOC hhhhhhhh** - is formatted from the JNJSEALC field of the JNCB. It is the address of the first allocated JSE for this job net.

**JSEFREE hhhhhhhh** - is formatted from the JNJSEFRE field of the JNCB. It is the address of the first free JSE buffer.

**NFTBUFF hhhhhhhh** - is formatted from the JNNFTBUF field of the JNCB. It is the address of the first NCB FDB table (NFT) buffer.

---

**Address Range**

```
<table>
<thead>
<tr>
<th>Address Range</th>
<th>IN JES3/CSA SP=228 (DUPLICATE LINES SUPPRESSED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>00B9EB60</td>
<td>00000027 01020304 05060708 090A0B0C 000E000F 10111213</td>
</tr>
<tr>
<td>00B9EB80</td>
<td>01020304 05060708 090A0B0C 000E000F 10111213</td>
</tr>
<tr>
<td>00B9ED00</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
</tr>
<tr>
<td>00B9ED20</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
</tr>
<tr>
<td>00B9ED40</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
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<td>00B9ED80</td>
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<tr>
<td>00B9EDC0</td>
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<td>00220D20 02299730 080B6E0F 82299F80</td>
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<tr>
<td>00B9EE80</td>
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<tr>
<td>00B9EEA0</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
</tr>
<tr>
<td>00B9EEC0</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
</tr>
<tr>
<td>00B9EEE0</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
</tr>
<tr>
<td>00B9EEF0</td>
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</tr>
<tr>
<td>00B9EFFE</td>
<td>00220D20 02299730 080B6E0F 82299F80</td>
</tr>
</tbody>
</table>
```

---

248 z/OS V1R12.0 JES3 Diagnosis
Address Range (CSA)

***** ADDRESS RANGE hhhhhhh TO hhhhhhh IS... This portion of the dump contains JES3 control blocks and data from the common service area (CSA), the system queue area (SQA), the JES3 address space private area, and the JES3 auxiliary address space private area. Each block is identified by address range and name.

Note: “JES3/CSA SP=228” will read “FSS/CSA SP=228” when running in an FSS address space. Data printed here is obtained form the storage trace table. This table, in CSA for the JES3 address space and in private for C/I FSS address spaces, reflects storage “logged in” or deliberately traced by the DSP managing the storage using the IATXSQE macro instruction.

SYSOUT Application Programming Interface Data

****** SAPI FCT Work Area ******

SFW: 04C9C300
+0000 SFWID... 04801227 SFWMASK... 04 SFWSDSOR. 00000000 SFWSDSEN. 7FFF0000 SFWSDSTK. 80002500
+0018 SFMCWSVD. 04D630000 SFWIDCWA. 00000000 SFWRECV.. 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
+0060 00000000
+009C SFWFLAG1. 00
    Bits set in flag SFWFLAG1
    ----------------------------------------
    None
+009D SFWFLAG2. 80 SFWXCOCP. 00000000 SFWXCOCA. 00000000 SFWXCRTN. 00000000 SFWXCRSN. 00000000 SFWXCTOK. ........
    Bits set in flag SFWFLAG2
    ----------------------------------------
    SFWSALOK - SAPI dataspace access OK
+00B8 SFMCWSV. 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
+00E4 00000000 00000000

****** SAPI DSP Entries ******

****** Base SDE ******

SDE: 04800630
+0000 SDEID.... 04EB SDEFIRST. 04CC3008 SDELAST.. 04CC3008 SDEIDLED. 00000000 SDESWAD. 04C9C300 SDESWAD. 00000000
+0018 SDETRACE. 00000000 00000000 00000000 00000000 SDECTAD. 00000000 SDESPAD. 00000000 SDESTAR.. 00000000
+0034 SDEQAQAR. 00000000
+0050 SDEBFLAG. 80
    Bits set in flag SDEBFLAG
    ----------------------------------------
    SDEBASE - Indicate this is the base entry
+0051 SDEPOST.. 00
    Bits set in flag SDEPOST
    ----------------------------------------
    None
+0052 SDEFLAG1. 00
    Bits set in flag SDEFLAG1
    ----------------------------------------
    None
### Active SDEs

<table>
<thead>
<tr>
<th>SDE ID</th>
<th>Flags Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>04CC3008</td>
<td>None</td>
</tr>
<tr>
<td>04DDC020</td>
<td>None</td>
</tr>
</tbody>
</table>

### Idle SDEs

There are no SDEs on this queue.
Client Output Work (COW) area

COW - Client Output Work area

COW: 00052000
+0000 COWREQLN. 09B8 COWID.... COW COWVER... 02
+0008 COWNEXT.. 00000000 COWPREV.. 00000000 COWAPJBN. TOMN
+0018 COWAPJBI. 00000015 COWRDCNT. 00000001 COWAASCW.. 00F48600
+0024 COWAPTCB. 007F9B08 COWTCBK. 00000668 00000602 00000000
+0034 007F9B08 COWAPSTT. B291398 5F8EC343
+0040 COWAPRQT. B291398 92824584 COWPRIV.. 00000000
+004C 00000000 COWSLJBI.. 00000000 COWSHJBI.. 00000000
+0058 COWSDST.. 00000000 00000000 COWS2DST. 00000000
+0064 00000000 COWUDST.. 00000000 00000000
+0070 COWU2DST. 00000000 00000000 COWLEN... 00000057
+008C COWCFJBI.. 00000000 COWSEFB. 0000 COWOFST. 0000
+0094 COWDOFST. 0000 COWSEFB. 00000000 00000000 00000000 0000
+00A4 COWBRTKIN. 006E COWTKKENT. 0007 COWTKPL1.. 0004
+00AA COWTKDD.. BTOK COWTKPL2.. 0002 COWTKTYP. 02
+00B1 COWTKVRS.. 02 COWTKPL3.. 0004 COWTKPTR. 7F6DF648
+00B8 COWTKPL4.. 0004 COWTKPL5.. 0002 COWTKPL6.. 0008
+00CC COWTKPL7.. 0000
+00D0 COWFLAG1. 00 COWSWBST.. 00000000 COWBUFAD. 00000000

Bits set in flag COWFLAG1

None
Client Output Work (COW) area

+0108  COWAUAXD. 00000000  COWKMERT. 00000000  COWKERAT. 00000000
+0114  COWADMPT. 00000000  COWADPPT. 00000000  COWADDPT. 00000000
+0120  COWADMK..  00000000  COWADMT. 00000000  COWADAPT. 00000000
+0128  COWACNCT.  00  COWACTXT. 00000000  00000000  00000000
+0135  00000000  00000000  00000000  00000000  00000000
+0149  00000000  00000000  00000000  00000000  00000000
+0150  00000000  00000000  00000000  00000000  00000000
+0171  00000000  00000000  00000000  00000000  00000000
+0185  00000000  00000000  00000000  00000000  00000000
+0199  00000000  00000000  00000000  00000000  00000000
+01AD  00000000  00000000  00000000  00000000  00000000  CONTRACE. 00000000
+01BC  00000000  00000000  00000000  00000000  00000000  00000000
+01D0  00000000  00000000  00000000  00000000  00000000  00000000
+01E4  00000000  00000000  00000000  00000000  00000000  00000000
+01F8  00000000  00000000  00000000  00000000  00000000  00000000
+020C  00000000  00000000  00000000  00000000  00000000  00000000
+0220  00000000  00000000  00000000  00000000  00000000  00000000
+0234  00000000  00000000  00000000  00000000  00000000  00000000
+0248  00000000  00000000  00000000  00000000  00000000  00000000
+025C  00000000  00000000  00000000  00000000  00000000  00000000
+0270  00000000  00000000  00000000  00000000  00000000  00000000
+0284  00000000  00000000  00000000  00000000  00000000  00000000
+0298  00000000  00001021  151E2829  2A96A0D7  D8DCDD3C
+02AC  46491063  COWJDSFB.. 00000000  0000
+02B6  COWOTSBW. 00000000  0000  CONWCID. ....
+02C0  CONFCBI..  ....  CONCKPL.. 0000  CONCKPP.. 0000
+02C8  CONCKPS.. 0000  CONCTABN. .......  CONWREC. 00000000
+02D8  CONFCDBV. 00000000  CONCTOKEN. 50010853  55540555  55555555
+02E8  55555555  55555555  55555555  55555555  55555555
+02FC  55555555  55555555  55555555  55555555  86839694
+0310  8691A4A5  55555555  55555555  B683B180  15151515
+0324  91A2A015  15151515  CONCWNTL. 00
+032D  COWFLAG2. 00 Bits set in flag COWFLAG2
----------------------------------------
None

+032E  COWFLAG3. 80  COWPENSA. 00000000  COWSAPTR. 0532D5E4
Bits set in flag COWFLAG3
----------------------------------------
COWPPOSE - Checkpoint OSE FDB used
+0338  CONTPO... 00000000
+0364  COWFLAG4. 40
### Client Output Work (COW) area

<table>
<thead>
<tr>
<th>Offset</th>
<th>Variable</th>
<th>Address</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0368</td>
<td>COWCLPTR</td>
<td>0532DCE2</td>
<td>7F4B032C</td>
</tr>
<tr>
<td>+0378</td>
<td>COWSAVEA</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>+038C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+03A0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+03B4</td>
<td>COWRETAD</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>+03C0</td>
<td>COWDATCC</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>+03CC</td>
<td>COWSWBC</td>
<td>00000000</td>
<td>00000000</td>
</tr>
<tr>
<td>+03D6</td>
<td>COWUSBSZ</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>+03DC</td>
<td>COWUSBSNZ</td>
<td>0000</td>
<td>0000</td>
</tr>
<tr>
<td>+0404</td>
<td>WCXRPRML</td>
<td>00000000</td>
<td>WCJRPRMA</td>
</tr>
<tr>
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<td>WCXRPRML</td>
<td>00000000</td>
<td>WCJRPRML</td>
</tr>
<tr>
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<td>ONECHAR</td>
<td>?</td>
<td>ZRORMOR</td>
</tr>
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</tr>
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</tr>
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<tr>
<td>+0570</td>
<td>COWSSOB</td>
<td>E2E2DCE2</td>
<td>001C004F</td>
</tr>
<tr>
<td>+0584</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+0590</td>
<td>COWSSS2</td>
<td>04200020</td>
<td>E2E2F2</td>
</tr>
</tbody>
</table>
The JMQ header and entry(ies) are not formatted in the FSS dump. The JMQ header and entry(ies) represent messages originating in the JES3 global that are to be included in the job's JESMSGLG data set. The JESMSG Queue Control Area Header points to the JESMSG Queue Entries.
JESMSG Queue Control Area Header

```
JESMSG QUEUE CONTROL AREA HEADER
ADDRESS AFL1 FIRST MSCPB RETRY
056813F8 00 0570000 0570300 05509958

JESMSG QUEUE ENTRIES
ADDRESS EJNAM EJID EJTIME EMNAM ELEN EJNXT EJPRV
0570000 DYNAL0T2 JOB00010 16:24:58 SY1 0000 00000000 00000000
IAT5110 JOB DYNAL0T2 (JOB00010) USES D D75902 KANIA.LINKLPA
0570000 DYNAL0T2 JOB00010 16:24:59 SY1 0000 00000000 00000000
IAT5110 JOB DYNAL0T2 (JOB00010) USES D D75902 MARIO.LINKLPA
0570000 DYNAL0T2 JOB00010 16:32:53 SY1 0000 00000000 00000000
IAT5110 JOB DYNAL0T2 (JOB00010) USES D D75902 JDESIGN.HJS7705.LI
```

JESMSG QUEUE ENTRY
- ADDRESS hhhhhhhh - is the address of the JESMSG QUEUE ENTRY.
- EJNAM cccccccc - is the job name associated with this entry.
- EJID cccccccc - is the job id associated with this entry.
- EJTIME cccccccc - is the time of spin off for this entry.
- EMNAM cccccccc - is the name of the system doing the spin off for this entry.
- ELEN hhhh - is the length of this JESMSG QUEUE ENTRY.
- EJNXT hhhhhhhh - is the address of the next JESMSG QUEUE ENTRY.
- EJPRV hhhhhhhh - is the address of the previous JESMSG QUEUE ENTRY.

C/I

CIDRVR ECF identifier entries
The C/I Driver ECF Identifier Entry identifies the type of ECF / Event that an FCT is AWAITing on. It is mapped by the JES3 macro IATYEIE. It is not formatted in an FSS dump.

```
CIDRVR ECF IDENTIFIER ENTRIES
ADDRESS PARM TYPE
0587BCFB 05604BFC 01
0587BD00 00000000 00
0587BD08 00000000 00
0587BD10 00000000 00
0587BD18 00000000 00
0587BD20 00000000 00
0587BD28 00000000 00
0587BD30 00000000 00
0587BD38 00000000 00
```

ADDRESS hhhhhhhh - is the address of the ECF Identifier Entry (EIE).
PARM hhhhhhhhh - is the type dependent parameter.
TYPE hh - is the type of ECF for a particular EIE.
X'01' indicates PARM is ECF address.
X'02' indicates PARM is FSS table address.

CIDRVR ECF list control block
The C/I Driver ECF List Control Block shows the ECF list, required by the ECF list management routines. It is mapped by the JES3 macro IATYELB. It is not formatted in an FSS dump.

```
CIDRVR ECF LIST CONTROL BLOCK - 0587BC8B
USE RPN ALOC ALOM EFLG
```
USE hhhh - is the in-use ECF count.
RPN hhhh - is the relative position number.
ALOC hhhh - is the pre allocated ECF count.
ALOW hhhh - is the allowed ECF count. For dynamic allocation, this field is checkpointed in DYNCKAL.
EFLG hh - is the flag byte of ECF List Control Block. The following bits can be set in this flag.

Value Meaning
X'80' ECF list is initialized.
X'40' ECF is unavailable.
X'20' AWAIT specified.
X'10' Single entry check.

C/I FSS tables
The C/I FSS Table is used (in the JES3 Global) to keep track of the status and the work being processed by a C/I FSS. The C/I FSS PROCLIB status entries are used to keep track of PROCLIB orders, status etc. There is one PROCLIB status entry for each PROCLIB table entry. They are pointed to by, and located at the end of the C/I FSS Table. It is mapped by the macro IATYCFT. It is not formatted in an FSS dump.

C/I FSS TABLES

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>NEXT</th>
<th>FSSPT</th>
<th>FSID</th>
<th>MPC</th>
<th>JOBCH</th>
<th>PRCSCT</th>
<th>SPE</th>
<th>BATUS</th>
<th>DSLUS</th>
<th>FORID</th>
<th>RSSEQ</th>
<th>FLAG1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0587B0A</td>
<td>0587B09</td>
<td>0584016</td>
<td>00010000</td>
<td>00000000</td>
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<td>00000000</td>
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<td>0A</td>
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<td>0587B1E</td>
<td>0584558</td>
<td>00040000</td>
<td>00000000</td>
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<tr>
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<td>0587B2C</td>
<td>0586280</td>
<td>00050000</td>
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<td>00000000</td>
<td>0587B2C0</td>
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<td>00000000</td>
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<td>0A</td>
</tr>
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<td>0587B30</td>
<td>05862A0</td>
<td>00060000</td>
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<td>0000</td>
<td>0000</td>
<td>00000000</td>
<td>00000000</td>
<td>0A</td>
</tr>
</tbody>
</table>

ADDRESS hhhhhhhhh - is the address of the C/I FSS entry.
NEXT hhhhhhhhh - is the address of the next C/I FSS entry.
FSSPT hhhhhhhhh - is the address of the FSS table.
FSID hhhhhhhhh - is the ID of the functional subsystem.
MPC hhhhhhhhh - is the address of MPC for the FSS set at FSS connect time or when FSS is found to be active over a JES3 restart.
JOBCH hhhhhhhhh - is the RQ chain for jobs being processed by the FSS.
PRCST hhhhhhhhh - is the address of PROCLIB status entries, located at the end of the FSS table.
SPE hhhhhhhhh - is the address of the RQ sub chain priority entries for jobs being processed by the FSS. This is used (by IATGRRQ) to maintain pointers to the RQs of different priorities within JOBCH.
BATUS hhhhh - is the number of batch C/I DSPs in use.
DSLUS hhhhh - is the number of demand select C/I DSPs in use.
FORID hhhhhhhhh - is the FSS portion of order /order-response identifier number. It is set when FSS connects or is restarted during the current JES3 start.
RSSEQ hhhhhhhhh - is the response sequence number of last modify count (TYPE=NORM) or process job (TYPE=NAVAIL) response.
FLAG1 hh - is the flag byte of C/I FSS table. The following bits can be set in this flag.
**C/I Parameter Tables**

The C/I Parameter Table contains the converter parameter list and region size for a particular PARMID. It is mapped by the macro IATYPAR. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>ID</th>
<th>CHN</th>
<th>ACPN</th>
<th>PRTY</th>
<th>STTM</th>
<th>JSRG</th>
<th>CMDS</th>
<th>BLP</th>
<th>MCSA</th>
<th>JMSL</th>
<th>AMSL</th>
<th>MSGC</th>
<th>RGTP</th>
<th>RGSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>058190B8</td>
<td>01</td>
<td>058190E4</td>
<td>4</td>
<td>00</td>
<td>003500</td>
<td>512</td>
<td>3</td>
<td>1</td>
<td>E000</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>058190E4</td>
<td>I1</td>
<td>05819110</td>
<td>4</td>
<td>00</td>
<td>003500</td>
<td>512</td>
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<td>1</td>
<td>E000</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>05819110</td>
<td>S1</td>
<td>0581913C</td>
<td>4</td>
<td>00</td>
<td>003500</td>
<td>512</td>
<td>3</td>
<td>1</td>
<td>E000</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>0581913C</td>
<td>T1</td>
<td>00000000</td>
<td>4</td>
<td>00</td>
<td>003500</td>
<td>512</td>
<td>3</td>
<td>1</td>
<td>E000</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDRESS hhhhhhhh - is the address of the C/I parameter table entry.

ID cc - is the C/I parameter identifier.

CHN hhhhhhhh - is the address of the next C/I parameter table entry.

ACPN c - is the parameter options:
- '1' - Programmer name required.
- '2' - Account number required.
- '4' - User SWA above indicator.

PRTY cc - is the default job priority.

STTM cccccc - is the maximum step execution time.

JSRG ccc - is the job/step region size.

CMDS c - is the command disposition.

BLP c - is the label processor indicator.
- '0' - BLP will be treated as NL.
- '1' - BLP will be treated as bypass label.

MCSA cccc - is the MCS command authority.

JMSL c - is the JCL MSGLEVEL default.

AMSL c - is the allocation MSGLEVEL default.

MSGC c - is the default system output class (MSGCLASS).

RGTP c - is the unit of measure of the region size (K or M).

RGSZ cccc - is the region size.

**C/I Related TVT Information**

The C/I Related TVT Information gives the data related to C/I control blocks in TVT. It is formatted in both JES3 and FSS dumps.
**Interpreter data area**

The Interpreter Data Area contains data related to the C/I FSS's which is used by the C/I Driver and other functions. It is mapped by the JES3 macro IATYIDA. It is not formatted in an FSS dump.
ELBST hhhhhhhh - is the address of ECF list control block.
EIEST hhhhhhhh - is the address of ECF identifier entries.
CFTST hhhhhhhh - is the address of the C/I FSS table.
CFCT hhhhhhhh - is the address of the C/I driver FCT.
JORID hhhhhhhh - is the JES3 portion of order/response identification number.
FORID hhhhhhhh - is the last FSS order/response identification number assigned.
PRCDS hhhhhhhh - is the address of the PROCLIB disable chain.
PRCEN hhhhhhhh - is the address of the PROCLIB enable chain.
PRCUP hh - is the number of PROCLIBs being updated.
PSCDS hhhhhhhh - is the address of demand select POSTSCAN scheduling chain.
PSCBT hhhhhhhh - is the address of the batch POSTSCAN scheduling chain.
PSSRC hhhhhhhh - is the entry point of C/I driver 'FSS Receive' routine (IATIIFR).
XCIO hhhhhhhh - is the entry point of C/I issue order (IATXCIO) routine (IATIION).
RETRY hhhhhhhh - is the entry point of C/I driver JESTAE retry routine (IATIICJ).
CICLN hhhhhhhh - is the entry point of C/I job cleanup routine in IATIIFS.
CAPST hhhhhhhh - is the entry point of console appendage post routine in IATIIFS.
PSSCH hhhhhhhh - is the entry point of POSTSCAN scheduling routine in IATIIFS.
FSTCK hhhhhhhh - is the entry point of FSS start check routine in IATIIFS.
FSSST hhhhhhhh - is the entry point of FSS status change routine in IATIIFS.
FSSDS hhhhhhhh - is the entry point of FSS PROCLIB disable routine in IATIIFS.
FSSEN hhhhhhhh - is the entry point of FSS PROCLIB enable routine in IATIIFS.
PRCCL hhhhhhhh - is the entry point of PROCLIB cleanup routine in IATIIFS.

FLG1 hh - is the flag byte of Interpreter Data Area.
The following bits can be set in this flag.
Value Meaning
X'80' POSTSCAN scheduling routine processing batch jobs.
X'40' Current job being processed still in FSS address space.
X'20' Fail job with dump.

FLG2 hh - is the flag byte of Interpreter Data Area (JESTAE / Recovery flag)
The following bits can be set in this flag.
Value Meaning
X'80' IDACENT1 is console message buffer.
X'40' IDACENT1 is PROCLIB table.
X'20' Staging area being processed. STAFLG=STACTIVE for the active staging area.
X'10' C/I driver initialization phase.
X'00' JESTAE retry routine in control.
X'04' Job cleanup routine is active.
X'02' PROCLIB use count has been decremented (Only if job cleanup routine is active).

FLG3 hh - is the flag byte of Interpreter Data Area (Job cleanup routine options flag).
The following bits can be set in this flag.
Value Meaning
X'80' Schedule job for POSTSCAN request.
JESMSG Queue Control Area Header

X'40' Return the job to JSS for C/I rescheduling.
X'20' Return the job to JSS for specialized rescheduling.
X'10' Cleanup the job’s control blocks.
X'08' Update JCT FDBs from RSQ FDBs.

Interpreter Control Tables

The Interpreter Control Table contains Converter/Interpreter work area and status information. JES3 macro IATYICT maps this control block. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>ACMOD</th>
<th>IIST</th>
<th>IDD</th>
<th>EXTPT</th>
<th>TCB</th>
<th>JSCB</th>
<th>TVT</th>
<th>JDE</th>
<th>PRCAD</th>
<th>ECB</th>
<th>RES</th>
<th>HDECB</th>
</tr>
</thead>
<tbody>
<tr>
<td>05908388</td>
<td>IATIIST</td>
<td>8590A6C0</td>
<td>0001F580</td>
<td>00040C60</td>
<td>007CFAC0</td>
<td>00700240</td>
<td>05604000</td>
<td>056903EB</td>
<td>00044528</td>
<td>80700058</td>
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<td>00000000</td>
</tr>
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<td>IATIIST</td>
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<td>007CF808</td>
<td>007003C0</td>
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<td>007003C0</td>
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<td>058E52C8</td>
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<td>00000000</td>
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<td>05690320</td>
<td>00000000</td>
<td>807CF0F0</td>
<td>00000000</td>
<td>00000000</td>
</tr>
</tbody>
</table>

ADDRESS hhhhhhhh - is the address of the interpreter control table entry.
ACMOD cccccccccc - is the name of the subtask active module.
IIST hhhhhhhh - is the address of the current IATIIST using this interpreter control table. This is used for trapping the right subtask.
IDD hhhhhhhh - is the address of the current Interpreter DSP data area.
EXTPT hhhhhhhh - is the address of the ICT extension.
TCB hhhhhhhh - is the TCB address of the subtask.
JSCB hhhhhhhh - is the JSCB address for subtask.
TVT hhhhhhhh - is the TVT address.
JDE hhhhhhhh - is the JDE address for the ICT.
PRCAD hhhhhhhh - is the address of the PROCLIB table.
ECB hhhhhhhh - is the ECB for subtask communication.
RES hhhhhhhh - is the ECB for subtask attach post.
HDECB hhhhhhhh - is the address space JCL limit quiesce ECB.
INCNT hhhhhhhh - is the subtask interpretation count.
PARID cc - is the current PARM ID.
JCDSS hhhhhhhh - is the JCLIN DSS pointer.
JEDESS hhhhhhhh - is the JESJCL DSS pointer.
JEDEB hhhhhhhh - is the JESJCL DEB pointer.
SYDSS hhhhhhhh - is the SYSMSG DSS pointer.
SYDEB hhhhhhhh - is the SYSMSG DEB pointer.
FLAG1 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value Meaning
X'80' Perform SJF termination processing.
X'20' Invoke SWA processing routine.
JESMSG Queue Control Area Header

X'10' Free SWA subpool (when zero subpool has been freed).
X'08' IATIIST's ESTAE (STESTAEX) has been previously entered.
X'04' Subtask is detached.
X'02' Perform SWA spooling.
X'01' Close the current PROCLIB.

FLAG2 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value Meaning
X'80' C/I subtask abended.
X'40' Subtask is active.
X'20' Output SWB processing is required for a job.
X'10' Subtask active in MVS C/I. If it is set, ESTAE exit closes JCLIN, JESJCL, SYMSG
and JCBLOCK data sets.
X'08' Interpreter finished with job.
X'04' Conversion/Interpretation is required for a job.
X'02' Subtask is allocated (in use).
X'01' Force subtask abend. It is set to cause the subtask to return to the control program.

FLAG3 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value Meaning
X'40' User exit IATUX02 is a dummy JES3 exit.
X'20' User exit IATUX03 is a dummy JES3 exit.

FLAG4 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value Meaning
X'80' No SDUMP from ESTAE.
X'40' ICT for demand select job.
X'20' ICT for batch job.
X'10' ICT for subtask which is used to start a C/I FSS address space.
X'08' ACEE created during C/I subtask processing.

PROCLIB tables

The procedure library tables contains a header and an entry for every data set
within the concatenation. It is mapped by the JES3 macro IATYPRO. It is formatted
in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>NAME</th>
<th>CHN</th>
<th>EDCH</th>
<th>UUSE</th>
<th>SEQN</th>
<th>CUSE</th>
<th>DSCT</th>
<th>EDCT</th>
<th>FLG1</th>
<th>MBSI</th>
<th>MSID</th>
</tr>
</thead>
<tbody>
<tr>
<td>00044528</td>
<td>IATPLBST</td>
<td>000445EC</td>
<td>00000000</td>
<td>0000</td>
<td>0001</td>
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<td>00000000</td>
</tr>
<tr>
<td>DSN</td>
<td>0004458B</td>
<td>DSN+SYSPROCLIB</td>
<td>UPJN=00000000</td>
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<tr>
<td>000445EC</td>
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<td>0003</td>
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</tr>
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<td>UPJN=00000000</td>
<td></td>
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<td>0004470C</td>
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<td>00044844</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

ADDRESS hhhhhhh - is the address of the C/I procedure library table entry.
NAME cccccccc - is the name of the procedure library.
CHN hhhhhhhh - is the address of the next C/I procedure library table entry.
EDCH hhhhhhhh - is the address of the Enable/Disable chain.
UUSE hhh - is the update use count. It gives the number of data sets being updated.
SEQN hhhh - is the procedure library sequence number.
CUSE hhhhhhh - is the current C/I use count. It gives the number of jobs in C/I using that procedure library.
DSCT hhhh - is the number of data set name entries.
FLG1 hh - is the flag byte of PROCLIB table.

The following bits can be set in this flag.

Value Meaning
X'80' Update job hold on this PROC.
X'40' Procedure library is unallocated.
X'20' Procedure library disabled by all C/I FSS's. It is used by the DISABLE DSP.
X'10' Procedure library enabled by all C/I FSS's. It is used by the ENABLE DSP.
X'08' PROC disabled due to error.
X'04' Enable request is pending for the procedure library.
X'02' Disable request is pending for the procedure library.
X'01' Abort the Disable/Enable for the procedure library. It is set by the C/I driver if an abend occurs.

MBSI hhhh - is the maximum block size.

MSID hhhhhhhh - is the message ID to dequeue.

DSN cccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccc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JESMSG Queue Control Area Header

Value Meaning
X'80' Request device dedication.
X'40' Request device unallocation.
X'20' Request build JST.
X'10' JST built for the DFCB.
X'08' DFCB in use. It is used to synchronize GMS/MDS.
X'04' The fence associated with the DFCB was found in the device dedication checkpoint (DDC) record during a restart.

FLG3 hh - is the flag byte of DFCB.
The following bits can be set in this flag.

Value Meaning
X'80' During a hot start with refresh, the old JST for the device
    fence was discarded because the new device fence definition
    no longer matches the old one. A new JST will be built after MDS restart.
X'40' During a hot start with refresh, the spooled DFCB in the JST was updated with new
    information.

DEV hhhhhhhh - is the address of device.
DEVT cccccccc - is the name of device.
DEVW hhhh - is the number of devices fenced.

DLY-JQEX delay information for jobs in main service

The JQEX Delay Information for Jobs in Main gives the job delay information from
the JQEX control block for jobs that are waiting to be scheduled for or active in
main service. It is mapped by the JES3 macro IATYJQEX. It is not formatted in an
FSS dump.

JQEX DELAY INFORMATION FOR JOBS IN MAIN SERVICE

ADDRESS JOBNAME JOBID FUNCTION TYPE REASON CLS CONVDLY RESCDLY JESSCDLY OPERDLY CURDLYTM
05902000 WTPLOPA JOB00039 MAINWAIT OPER NO AVAIL DPS 01 00000001 00000000 00000000 00000000 B74C0B0A
05902030 J3TEST JOB00042 MAINWAIT OPER NO AVAIL DPS 01 00000000 00000000 00000000 00000000 B74C0B44

ADDRESS hhhhhhhh - is the address of the JQEX for the job.
JOBNAME cccccccc - is the name of the job.
JOBID cccccccc - is the job id based on the job number in JQE table.
FUNCTION cccccccc - is the function the job is in. If the job does not have a RQ, the displayed function would
    be "MAINWAIT". Other descriptions that are possible for this field are: *INVALID, FETCH (MDS Fetch), WAITVOL
    (MDS WaitVol), SYSEL (MDS system select), ALLOCATE (MDS allocate), VOLUNAV (MDS volume unavailable), VERIFY
    (MDS verify), SYSSER (MDS system verify), ERROR (MDS error), SELECT (GMS select), ON MAIN (Job is executing),
    BRKDOWN (MDS breakdown), RESTART (MDS restart), DONE (MDS/GMS done).

TYPE cccccccc - is the description of the delay type. The descriptions that could be possible for this field
are:*INVALID,NO DELAY, RESOURCE (Resource delay), JESSCHED (JES Scheduling delay), OPER (Operational delay).

REASON ccccccccccccccc - is the description of the delay reason.
CLS hh - is the GMS job class sequence number.
CONVDLY hhhhhhhh - is the total C/I delay for the job.
RESCDLY hhhhhhhh - is the total resource delay for the job.
JESSCDLY hhhhhhhh - is the total JES scheduling delay for the job.
OPERDLY hhhhhhhh - is the total operational delay for the job.
CURDLYTM hhhhhhhh - is the current delay time stamp.
The DSP Dictionary Entries give information about each dynamic support program entry. It is mapped by the JES3 macro IATYDSP. It is formatted in both JES3 and FSS dumps.

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</table>

ADDRESS hhhhhhhh - is the address of DSP dictionary entry.
NAME cccccc - is the DSP name.
CSECT cccccc - is the CSECT name for re-entrant modules.
DRVR cccccc - is the DSP driver module name.
JBVAL cccccc - is the job validation module name.
NO hh - is the DSP number.
PRTY ddd - is the DSP priority.
MXCT hhhhhhhh - is the maximum allowable use count for the DSP.
USCT hhhhhhhh - is the current use count for the DSP.
JQEWQ hhhhhhhh - is the anchor for DSP JQE wait queue.
JQEAW hhhhhhhh - is the anchor for alternate DSP JQE wait queue.
SCCT hhhhhhhh - is the number of backlogged JQEs.
JESMSG Queue Control Area Header

SCCTA hhhhhhhh - is the alternate SCCT. It gives the number of CI/POSTSCAN DEMSEL JQEs moved to ready queue.

FLAGS hh - is the flag byte of DSP.
The following bits can be set in this flag.

Value Meaning
X'80' DSP is processable.
X'40' DSP rescheduled on GETUNIT not available.
X'20' JSJ does INIT GETUNIT for this DSP.
X'10' An FCT for the DSP is available.
X'08' No MXCT change allowed through *F
X'04' DSP is reentrant.
X'02' DSP is callable from console.
X'01' Use count change for this DSP.

FLAG1 hh - is the flag byte of DSP.
The following bits can be set in this flag.

Value Meaning
X'80' Refresh driver module.
X'40' Refresh data CSECT.
X'20' DSP holdable through modify command.
X'10' DSP held by modify command.
X'08' Exempt for message/WTO.

DEVREQ hhhhhhhh - is the address of device requirements limit.

NOREQ hh - is the number of requirements.

ENQ

AENQ control data entries

The AENQ Control Data Entry contains information about exclusive or shared use
of JES3 resource. It is mapped by the JES3 macro AENQ. It is formatted in both
JES3 and FSS dumps.

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<td>0564FCC8</td>
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</tr>
</tbody>
</table>

ADDRESS hhhhhhhh - is the address of the AENQ control data entry.
JESMSG Queue Control Area Header

NAME cccccccc - is the resource name.
EXFCT hhhhhhhh - is the address of the FCT who has exclusive use of the resource.
EXDSP hhhhhhhh - is the address of the DSP dictionary for FCT who has exclusive use of the resource.
SHFCT hhhhhhhh - is the address of the first FCT who has shared use of resource.
SHDSP hhhhhhhh - is the address of the DSP dictionary for first FCT who has shared use of resource.
SHRCT hhhh - is the number of users who have shared use of the resource.
EXFLG hh - is the exclusive use flag. The value of X'FF' indicates that someone has exclusive use of the resource.

FCT AENQ elements

The FCT AENQ element contains information to map AENQ resource with the corresponding FCT. Each time an FCT issues an AENQ request and obtains access to a resource, an FCT AENQ element is initialized and chained from the FCT. It is mapped by the JES3 macro AENQ. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>NAME</th>
<th>FCTADDR</th>
<th>ID</th>
<th>NEXT</th>
<th>RSNM</th>
<th>RSNO</th>
<th>FLG1</th>
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</thead>
<tbody>
<tr>
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<td>JSS</td>
<td>0574EBE0</td>
<td>FENQ</td>
<td>057BF198</td>
<td>FCT</td>
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<td>80</td>
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<td>057BF198</td>
<td>JSS</td>
<td>0574EBE0</td>
<td>FENQ</td>
<td>00000000</td>
<td>FCT</td>
<td>0006</td>
<td>80</td>
</tr>
</tbody>
</table>

ADDRESS hhhhhhhh - is the address of the FCT AENQ element queue for the resource that were AENQ'd by the FCT.
NAME cccccccc - is the name of the resource.
FCTADDR hhhhhhhh - is the address of the FCT entry.
ID cccc - is the ID of the control block (FENQ).
NEXT hhhhhhhh - is the address of the next FCT AENQ element on the FCT queue.
RSNM cccccccc - is the name of the AENQ resource.
RSNO hhhh - is the AENQ resource number.
FLG1 hh - is the flag byte of FCT AENQ.
The following bits can be set in this flag.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>Resource was obtained exclusively. If off, resource was obtained shared.</td>
</tr>
</tbody>
</table>

FCT AENQ element free queue

It contains information about the resources in the FCT AENQ element free queue. When an FCT issues an ADEQ request to release control of the resource, the FCT AENQ element is removed from the FCT chain and put on FCT AENQ element free queue. It is mapped by the JES3 macro AENQ. It is not formatted in an FSS dump.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>ID</th>
<th>NEXT</th>
<th>RSNM</th>
<th>RSNO</th>
<th>FCT</th>
<th>DSP</th>
<th>FLG1</th>
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<tr>
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<td>FENQ</td>
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<td>00000000</td>
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<tr>
<td>056BF1B8</td>
<td>FENQ</td>
<td>056BF1B8</td>
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<tr>
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<td>FENQ</td>
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</table>
JESMSG Queue Control Area Header

| ADDRESS hhhhhhh - is the address of the FCT AENQ element free queue entry. |
| ID cccc - is the ID of the control block (FENQ). |
| NEXT hhhhhhh - is the address of the next FCT AENQ element on the free queue. |
| RSNM cccccccc - is the name of the AENQ resource. |
| RSNO hhhh - is the number of the AENQ resource. |
| FCT hhhhhhhh - is the address of the FCT entry. |
| DSP hhhhhhhh - is the address of the DSP. |
| FLG1 hh - is the flag byte of FCT ENQ. |

The following bits can be set in this flag.

| Value Meaning |
| X'80' Resource was obtained exclusively. If off, resource was obtained shared. |

GST

Generalized subtask global data area

The Generalized Subtask Global Data Area contains information used to manage the generalized subtasks and the work associated with those tasks. It is mapped by the JES3 macro IATYGSD. It is formatted in both JES3 and FSS dumps.

| GENERALIZED SUBTASK GLOBAL DATA AREA - 05635838 |
| NSGSD hhhhhhhh - is the address of the first GSD on the queue. |
| SAVL hhhhhhhhh - is the address of the first GSD on the subtask available queue. The GSD is removed from this queue when a subtask is posted for work, and added to the queue when the subtask is finished. |
| SAVCT hhhhhhhhh - is the number of available subtasks. |
| SDISP hhhhhhhhh - is the number of times a subtask was dispatched. |
| SNOWK hhhhhhhhh - is the number of times a subtask was dispatched and there was no work found. |
| TSKAT hhhh - is the number of subtasks attached. |
| NSMAX hhhh - is the maximum number of non-specific Generalized subtasks. |
| FRSQD hhhhhh - is the address of the first free subtask queue descriptor. |
| SQDEX hhhh - is the number of SQD extents. |
| FLAG1 hh - is the flag byte of GSG. |

The following bits can be set in this flag.

| Value Meaning |
| X'80' Subtask Queue Descriptors are available. |
Non-specific subtask GSDS

This formatter gives the generalized subtask directories for the non-specific subtasks. It is mapped by the JES3 macro IATYGSD. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
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<th>ADDRESS</th>
<th>ID</th>
<th>ECB</th>
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<th>TCB</th>
<th>FLG</th>
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ADDRESS hhhhhhhh - is the address of the GSD entry on the queue.
ID cccc - is the directory ID (GSD).
ECB hhhhhhhh - is the subtask ECB.
AVNXT hhhhhhhh - is the address of the next GSD on the subtask available queue.
SQDAD hhhhhhhh - is the address of the subtask queue descriptor (SQD) being processed at the time of error.
TCB hhhhhhhh - is the address of the subtask TCB.
FLG1 hh - is the flag byte of GSD.
The following bits can be set in this flag.

Value Meaning
X'40' Subtask initialization complete.
X'20' Subtask is to terminate after this request.
X'10' Work was found after subtask was dispatched.

Specific subtask GSDS

This formatter gives the generalized subtask directories for the specific subtasks. It is mapped by the JES3 macro IATYGSD. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>ID</th>
<th>SBTID</th>
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<th>FLG1</th>
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</table>

ADDRESS hhhhhhhh - is the address of the GSD entry on the queue.
ID cccc - is the directory ID (GSD).
SBTID hh - is the subtask ID.
ECB hhhhhhhh - is the subtask ECB.
SQDAD hhhhhhhh - is the address of the subtask queue descriptor (SQD) being processed at the time of error.
USERP hhhhhhhh - is the user parameter area saved across subtask calls.
TCB hhhhhhhh - is the address of the subtask TCB.
FLG1 hh - is the flag byte of GSD.
The following bits can be set in this flag.

Value Meaning
X'40' Subtask initialization complete.
X'20' Subtask is to terminate after this request.
X'10' Work was found after subtask was dispatched.
SQDS in the free pool

The Subtask Queue Descriptor (SQD) contains information that is used by a generalized subtask to process an IATXCSF request. IATXCSF invokes the call subtask function service subroutines in IATGRGS. It is mapped by the JES3 macro IATYSQD. It is formatted in both JES3 and FSS dumps.

SQD in the free pool

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<th>FCTAD</th>
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<th>REG3</th>
<th>REG4</th>
<th>REG5</th>
<th>REG6</th>
<th>REG7</th>
<th>REG8</th>
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<td>IXZXIXCN-END</td>
<td>05803A20</td>
<td>05927AD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
</tr>
<tr>
<td>0580F70</td>
<td>IXZXIXCN-END</td>
<td>05803A20</td>
<td>05927AD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
</tr>
<tr>
<td>0580F7B</td>
<td>IXZXIXCN-END</td>
<td>05803A20</td>
<td>05927AD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
<td>0564ABD0</td>
</tr>
</tbody>
</table>

SQD hhhhhhhh - is the address of the active SQD under a generalized subtask.

DESC ccccccccccccccccc - is the function description of the subtask.

RTNAD hhhhhhhh - is the address of the routine to be subtasked.

FCTAD hhhhhhhh - is the address of the calling FCT.

ADDRESS hhhhhhhh - is the address of the free subtask queue descriptor entry.

FLAG1 hh - is the flag byte of SQD.

The following bits can be set in this flag.

Value Meaning
X'80' Asynchronous request.
X'40' Processing complete. This is the ECF mask used for synchronous subtask requests.
X'20' Don't issue DM146 abend if subtask abends.
X'08' Subtask should terminate after this request is complete.
X'04' JESTAE recursion indicator
X'04' Subtask should bypass processing this request because the requesting FCT is in recovery processing. This means that the data that needs to be referenced by the subtask may no longer be valid.

REG2 hhhhhhhh - is the Register 2 content used by the subtask.

REG3 hhhhhhhh - is the Register 3 content used by the subtask.

REG4 hhhhhhhh - is the Register 4 content used by the subtask.

REG5 hhhhhhhh - is the Register 5 content used by the subtask.
JESMSG Queue Control Area Header

REG6 hhhhhhhh - is the Register 6 content used by the subtask.

REG7 hhhhhhhh - is the Register 7 content used by the subtask.

REG8 hhhhhhhh - is the Register 8 content used by the subtask.

REG9 hhhhhhhh - is the Register 9 content used by the subtask.

REG10 hhhhhhhh - is the Register 10 content used by the subtask.

REG13 hhhhhhhh - is the Register 13 content used by the subtask.

ECFAD hhhhhhhh - is the address of ECF to be posted when work is complete. This field will only be non-zero for asynchronous requests where the caller specified an ECF address and mask.

ECFMK hh - is the ECF mask to be used to post the ECF when work is complete.

RTNRC hhhhhhhh - is the routine return code. It is the Register 15 content.

REG0 hhhhhhhh - is the routine return Register 0 content.

REG1 hhhhhhhh - is the routine return Register 1 content.

ABCC hhhhhhhh - is the abend completion code.

ABPSW hhhhhhhhhhhhhhhh - is the PSW content at the time of error (abend).

LOC

Locate control tables

The Locate Control Table contains data used by each locate subtask. It is also used by the locate FCT to communicate with each locate subtask. It is mapped by the JES3 macro IATYLCT. It is formatted in both JES3 and FSS dumps.
NEXT hhhhhhh - is the address of the next locate control table in chain.
MODEP hhhhhhh - is the module (IATVLCL) entry point.
LET hhhhhhh - is the address of the locate entrance table (LET) of the current request being processed.
TCB hhhhhhh - is the address of the locate subtask TCB address.
JSCB hhhhhhh - is the address of the locate subtask JSCB.
SEL hhhhhhh - is the address of the service entrance list for SSISERV (local locate subtask only).
SSOB hhhhhhh - is the address of the subsystem option block.
CSSSA hhhhhhh - is the address of the SSOB extension (SSSA) for SMS catalog services.
VSSSA hhhhhhh - is the address of the SSOB extension (SSSA) for SMS VOLREF services.
UVR hhhhhhh - is the address of the unit verification parameter list.
BLK hhhhhhh - is the address of the block spooler parameter list.
RAB hhhhhhh - is the address of the record allocation block of current request being processed.
SCACB hhhhhhh - is the address of the access method control block (ACB) for the SMS scheduling information data set.
JBACB hhhhhhh - is the address of the access method control block (ACB) for the SMS job information data set.
SCRPL hhhhhhh - is the address of the request parameter list (RPL) for the SMS scheduling information data set.
JBRLP hhhhhhh - is the address of the request parameter list (RPL) for the SMS job information data set.
SCDSS hhhhhhh - is the address of the data set status block (DSS) for the SMS scheduling information data set.
JBDDS hhhhhhh - is the address of the data set status block (DSS) for the SMS job information data set.
SCDEB hhhhhhh - is the address of the data extent block (DEB) for the SMS scheduling information data set.
JBDEB hhhhhhh - is the address of the data extent block (DEB) for the SMS job information data set.
SCSDM hhhhhhh - is the address of the spool data management (SDM) parameter for the SMS scheduling information data set.
JBSDM hhhhhhh - is the address of the spool data management (SDM) parameter for the SMS job information data set.
SPAFS hhhhhhh - is the address of the JES3 spool access facility parameter list for the SMS scheduling information data set.
SPAFJ hhhhhhh - is the address of the JES3 spool access facility parameter list for the SMS job information data set.
LRSWK hhhhhhh - is the address of the locate response work area which is used to create LRSs.
LRS hhhhhhh - is the address of the locate response. It is only for global locate subtask.
LRSLA hhhhhhh - is the address of the last locate response in the chain of LRSs. It is only for global locate subtask.
CRLRS hhhhhhh - is the address of the current LRS Fixed or Data entry in the current LRS buffer. It is set to zero when a new LRS buffer is initialized.
FRESP hhhhhhh - is the address of the next free space in the LRS work area to allocate a new LRS Fixed or LRS Data entry in the current LRS buffer.
LVS hhhhhhh - is the address of the locate request (LVS).
LVCID hhhhhhh - is the LVS cellpool identifier. This cellpool is also used for the SMS job information data set.
NXCAT hhh - is the relative LVS number of the next catalog LVS entry.
NXDSN hhh - is the relative LVS number of the next data set LVS entry.
CRLVS hhh - is the relative LVS number of the current LVS entry.
CTGPL hhhhhhh - is the address of the catalog parameter list.
CTGP2 hhhhhhh - is the address of the second catalog parameter list.
CTGWA hhhhhhh - is the address of the catalog work area.
CTGWM hhhhhhh - is the address of the second catalog work area.
PCTVL hhhhhhh - is the address of the preallocated catalog volume list.
**JESMSG Queue Control Area Header**

PCTV2 hhhhhhhh - is the address of the second preallocated catalog volume list.

GCTVL hhhhhhhh - is the address of the GETMAINed catalog volume list.

GCTV2 hhhhhhhh - is the address of the second GETMAINed catalog volume list.

CTGCV hhhhhhhh - is the address of the catalog control volume list.

CTGC2 hhhhhhhh - is the address of the second catalog control volume list.

CTGFL hhhhhhhh - is the address of the catalog field parameter list.

ALLOC hhhhhhhh - is the address of the catalog allocate parameter list.

UNALC hhhhhhhh - is the address of the catalog unallocate parameter list.

DVIDX hhhhhhhh - is the device index for the allocation of user catalogs.

VTIDX hhhhh - is the locate subtask vector table (LSVT) index.

DDNAM cccccccc - is the DDNAME used to allocate user catalogs.

FRSAV hhhhhhhh - is the address of the free save area.

ECB hhhhhhhh - is the locate subtask ECB.

JOBNO hhhhhhhh - is the job number of the job currently being processed.

LOCNT hhhhhhhh - is the number of locate requests performed by that subtask.

FLAG1 hh - is the flag byte of LCT.
The following bits can be set in this flag.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>Subtask is busy.</td>
</tr>
<tr>
<td>X'40'</td>
<td>Private catalog being allocated is an MSS catalog.</td>
</tr>
<tr>
<td>X'20'</td>
<td>GDS-all processing.</td>
</tr>
<tr>
<td>X'10'</td>
<td>Special unit count assignment needs to be done.</td>
</tr>
<tr>
<td>X'08'</td>
<td>The current data set is an SMS managed data set.</td>
</tr>
<tr>
<td>X'04'</td>
<td>Locate subtask termination complete - set by ETXR.</td>
</tr>
<tr>
<td>X'02'</td>
<td>Locate subtask abended.</td>
</tr>
<tr>
<td>X'01'</td>
<td>Subtask finished with current request. It is used by local locate FCT to determine which subtask completed.</td>
</tr>
</tbody>
</table>

FLAG2 hh - is the flag byte of LCT.
The following bits can be set in this flag.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>Last LRS buffer being sent.</td>
</tr>
<tr>
<td>X'40'</td>
<td>Locate request needs to be processed.</td>
</tr>
<tr>
<td>X'20'</td>
<td>Normal termination request.</td>
</tr>
<tr>
<td>X'10'</td>
<td>Don't take SDUMP in ESTAE.</td>
</tr>
<tr>
<td>X'08'</td>
<td>Last LRS entry created was a LRS Fixed entry (as opposed to an LRS Data entry).</td>
</tr>
<tr>
<td>X'04'</td>
<td>Single data set name locate request by a DSP.</td>
</tr>
<tr>
<td>X'02'</td>
<td>Catalog being processed is an OS CVOL. Do not open this catalog (used by the LCALLOC routine).</td>
</tr>
</tbody>
</table>

FLAG3 hh - is the flag byte of LCT.

NOTE: Currently this flag is not used.

**Locate data area**

The Locate Data Area contains information used by all locate modules under the locate FCT. It is mapped by the JES macro IATYLDA. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>LOCATE DATA AREA - 0584D158</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCT</td>
</tr>
<tr>
<td>058F4F40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECF</th>
<th>FLAG1</th>
<th>FLAG2</th>
<th>FLAG3</th>
<th>PARM</th>
<th>FUNC</th>
<th>TRACE</th>
<th>RCODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>02</td>
<td>00</td>
<td>00000000</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

LCT hhhhhhhh - is the address of the first locate control table.
MLCT hhhhhhh - is the address of the master locate subtask LCT.

LSVT hhhhhhh - is the address of the locate subtask vector table.

LVAT hhhhhhh - is the address of locate subtask maintenance module (IATLVAT).

LETQ hhhhhhh - is the address of the locate entrance table queue.

LCFCT hhhhhhh - is the address of locate FCT.

LCR hhhhhhh - is the address of locate restart record during main connect processing.

ATTT hhhhhhh - is the first word of time of the last locate subtask attach (STCK value).

DETT hhhhhhh - is the first word of time of the last locate subtask detach by LVINSDET (STCK value).

RMAIN hhhhhhh - is the main mask representing mains that cannot be scheduled because of some problem. It is initialized to FFFFFFFF.

LCPFD - is the locate checkpoint (LCP) FDB.

ECF hh - is the ECF of locate FCT. The following bits can be set in this flag.

Value Meaning
X'80' Locate request needs to be processed (a LET has been added to the LET queue).
X'40' Staging area has been added to the destination queue.
X'20' Locate subtask has completed processing.
X'10' Locate restart processing is required.
X'08' Locate subtask has abended.
X'04' Job has been cancelled.
X'02' Catalog being processed is an OS CVOL. Do not open this catalog (used by the LCALLOC routine).

FLAG1 hh - is the flag byte of LDA (Recursion flag). The following bits can be set in this flag.

Value Meaning
X'80' General recursion indicator.
X'40' LDACANCL - Job cancel.
X'20' LDASBTSK - Locate subtask completed.
X'08' LDASABND - Locate subtask abend.
X'04' LDARESTR - Locate restart.
X'02' LVINRTRY - Retry processing.

FLAG2 hh - is the flag byte of LDA. The following bits can be set in this flag.

Value Meaning
X'80' First CANCEL command.
X'40' Queued CANCEL command.
X'20' IATLVAT in control.
X'10' Disable the locate function.
X'08' Do not allow attaches.
X'04' At least one subtask attached.
X'02' Okay to schedule locates.

FLAG3 hh - is the flag byte of LDA. The following bits can be set in this flag.

Value Meaning
X'01' Staging area locate request.
X'02' Staging area locate response.
X'03' Staging area job cancel.
X'04' Staging area job cancel complete.
X'05' WRTCHAIN processing.
X'06' No LCP job entry processing.

RCODE hh - is the abend reason code. The following bits can be set in this flag.
JESMSG Queue Control Area Header

Code Meaning
X'01' No LCT address when LET entry indicates scheduled
X'02' Staging area specifies zero sequence number.
X'03' Staging area specifies an existing sequence number.
X'04' No LET entry on chain to dequeue.
X'05' Invalid staging area found.
X'06' WRTCHAIN error checkpointing the LCP.
X'07' No LCP checkpoint data set.
X'08' No LCP job entry existed for checkpoint.
X'09' Locate subtask attached but no schedule occurred.
X'0A' Invalid C/I FSS CANCEL command.
X'0B' An available LSVT entry could not be found when attempting to initialize a locate subtask.
X'0C' Master subtask attach failure.
X'0D' No global MPC found.
X'0E' Invalid LCT address.

Locate entrance tables

The Locate Entrance Table contains information used by the DSPs to request the services of the Locate FCT. It is mapped by the JES3 macro IATYLET. It is formatted in both JES3 and FSS dumps.

------------------------------------------------------------------------------------------------------------------
LOCATE ENTRANCE TABLES
------------------------------------------------------------------------------------------------------------------
ADDRESS CHAIN JOBNO MAINS LRS RAB MPC LCT FLAG1 FLAG2
000247F0 00012AE8 00000037 01000000 00000000 050E3330 04FE3000 059F3F40 04 00
00012AE8 00000000 00000038 01000000 00000000 050CF208 00000000 00000000 00 00
------------------------------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the LET entry.
CHAIN hhhhhhhh - is the address of the next LET entry on queue.
JOBNO hhhhhhhh - is the job number.
MAINS hhhhhhhh - is the main processor eligibility mask.
LRS hhhhhhhh - is the address of the locate response.
RAB hhhhhhhh - is the address of the record allocation block.
MPC hhhhhhhh - is the address of the main processor where the locate request has been scheduled to.
LCT hhhhhhhh - is the address of the locate control table of the locate subtask that is processing the job.

FLAG1 hh - is the flag byte of LET. The following bits can be set in this flag.
Value Meaning
X'80' Locate processing complete. It is set by the Locate FCT to post the requester.
X'40' Job was cancelled.
X'20' Locate FCT failure.
X'10' No eligible main.
X'08' LET was GETMAINed. Otherwise the LET is an integral part of the IOD.
X'04' LET serviced (scheduled).
X'02' LET is residual over a global restart.
X'01' LET will be marked complete at the end of locate restart processing. The job was in the global LCP but not the local's LCR, thus no match.

FLAG2 hh - is the flag byte of LET.
NOTE: Currently this flag is not used.

Locate Restart Records

The Locate Restart Record contains information about jobs active in Locate on a local processor during Main connect processing. For Main processor flush (^START,MMAINAME,FLUSH), it contains information about the main that was flushed. It is mapped by the macro IATYLCR. It is formatted in both JES3 and FSS dumps.

------------------------------------------------------------------------------------------------------------------
LOCATE RESTART RECORDS
------------------------------------------------------------------------------------------------------------------
ADDRESS SIZE JBCNT NEXT MPC MAIN HFLGI
LOCATE subtask vector table

The Locate Subtask Vector Table contains information to map Locate subtask
control table with locate subtask TCB address. It is mapped by the JES3 macro
IATYLSVT. It is formatted in both JES3 and FSS dumps.

Master locate control table

The Master Locate Control Table contains information regarding the locate master
task like master task ECB, LCT for the subtask that is being attached, parameter
list, etc. It is mapped by the JES3 macro IATYLCT. It is formatted in both JES3 and
FSS dumps.
MFLG1 hh - is the flag byte of master locate control table.
The following bits can be set in this flag.

Value Meaning
X'00' Locate subtask attach complete.
X'40' Locate subtask attach not successfully completed.
X'00' ESTAE entered. It is reset after a successful ATTACH has been performed.
X'40' Locate Master Task initialization complete.
X'80' Locate subtask attach complete.
X'00' ETAR processing being performed.
X'00' ATTACH processing being performed.

MOD-JES3 module information from the JDEs

It displays the information about the executable modules from the JES3 Directory Elements. It is mapped by the JES3 macro IATYJDE. It is formatted in both JES3 and FSS dumps.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>NAME</th>
<th>BUFAD</th>
<th>ADDR</th>
<th>PRVEP</th>
<th>MSIZE</th>
<th>DATE</th>
<th>TIME</th>
<th>APAR</th>
<th>PTF</th>
<th>USE</th>
<th>ALDS</th>
<th>FCTP</th>
<th>FLAG</th>
<th>FLAG2</th>
</tr>
</thead>
<tbody>
<tr>
<td>05690078</td>
<td>IATYJDE</td>
<td>056A013B</td>
<td>056A013B</td>
<td>00000000</td>
<td>00002868</td>
<td>010502</td>
<td>0730</td>
<td>1.4.0</td>
<td>0001</td>
<td>0001</td>
<td>00000000</td>
<td>00</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>05690068</td>
<td>IATMSO</td>
<td>0569C008</td>
<td>0569C008</td>
<td>00000000</td>
<td>00002868</td>
<td>113000</td>
<td>1613</td>
<td>1.2.0</td>
<td>0001</td>
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<td>00000000</td>
<td>00</td>
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<td></td>
</tr>
<tr>
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<td>00002868</td>
<td>00080000</td>
<td>00080078</td>
<td>010502</td>
<td>0730</td>
<td>1.4.0</td>
<td>0001</td>
<td>0001</td>
<td>00000000</td>
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</tr>
<tr>
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<td>0001</td>
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</tr>
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<td>00080078</td>
<td>010502</td>
<td>0730</td>
<td>1.4.0</td>
<td>0001</td>
<td>0001</td>
<td>00000000</td>
<td>00</td>
</tr>
<tr>
<td>05690002</td>
<td>IATMSO</td>
<td>0569C008</td>
<td>0569C008</td>
<td>00000000</td>
<td>00002868</td>
<td>00080000</td>
<td>00080078</td>
<td>010502</td>
<td>0730</td>
<td>1.4.0</td>
<td>0001</td>
<td>0001</td>
<td>00000000</td>
<td>00</td>
</tr>
<tr>
<td>05690002</td>
<td>IATMSO</td>
<td>0569C008</td>
<td>0569C008</td>
<td>00000000</td>
<td>00002868</td>
<td>00080000</td>
<td>00080078</td>
<td>010502</td>
<td>0730</td>
<td>1.4.0</td>
<td>0001</td>
<td>0001</td>
<td>00000000</td>
<td>00</td>
</tr>
</tbody>
</table>

ADDRESS hhhhhhhh - is the address of the JDE entry.
NAME cccccc - is the name of the module.
BUFAD hhhhhhhh - is the buffer address of the module location.
ADDR hhhhhhhh - is the address of the module origin.
PRVEP hhhhhhhh - is the address of the previous entry point of module before it was deleted.
MSIZE hhhhhhhh - is the size of the module in bytes.
DATE cccccc - is the date on which the module was assembled.
TIME cccccc - is the time at which the module was assembled.
APAR cccccc - is the most recent APAR applied.
PTF ccccccc - is the most recent PTF applied.

USE hhhh - is the module use count.

ALDS hhhh - is the total number of ALOADs of the module.

FCTP hhhhhhh - is the pointer to the owning FCT.

FLAG hh - is the flag byte of JDE. The following bits can be set in this flag.

Value Meaning
X'80' Refresh on next ALOAD.
X'40' Caller waiting for a new module.
X'20' Caller needs zero use count.
X'10' Not frequently used. Delete module if ON regardless of threshold value.
X'08' Lock to serialize the use of JDE.
X'04' Element is reusable.
X'02' Element is a data CSECT.
X'01' Module not deletable.

FLAG2 hh - is the flag byte of JDE. The following bits can be set in this flag.

Value Meaning
X'80' RMODE of module.
0 - RMODE = 24
1 - RMODE = ANY
X'40' BDL subtask called.
X'20' LOAD subtask called.
X'10' AMODE of module.
0 - AMODE = 24
1 - AMODE = 31
X'08' RETRY indicator for IATGRLD.
X'04' JDE Cleanup is in progress (left ON if cleanup abends).
X'02' A *F,X,M=modname,REFRESH command is pending. Delete the module and reset the load count when the module is no longer being used.
X'01' The JDE represents a JES3 Nucleus module that was refreshed through a *F,X,M=modname,REFRESH command.

SCT-SYSOUT Class Table

The SYSOUT Class Table contains the characteristics of SYSOUT classes. It is mapped by the JES3 macro IATYSCT. It is not formatted in the FSS dump.

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SCT-SYSOUT Class Table

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SCT-SYSOUT Class Table

The SYSOUT Class Table contains the characteristics of SYSOUT classes. It is mapped by the JES3 macro IATYSCT. It is not formatted in the FSS dump.
JESMSG Queue Control Area Header

ADDRESS hhhhhhhh - is the address of the SYSOUT Class Table entry.

CLASS c - is the SYSOUT Class (Valid values are A-Z, 0-9).

TYPE hh - is the SYSOUT Type flag.
The following bits can be set in this flag.

Value Meaning
X'80' PRINT Class (TYPE=PRINT).
X'40' PUNCH Class (TYPE=PUNCH).
X'10' The Class requires DS TAT (TYPE=DSISO).
X'08' Type reserved for user (TYPE=USER1).
X'04' Type reserved for user (TYPE=USER2).
X'02' Reserved SYSOUT Class (TYPE=RSVD).
X'01' HOLD for system output.

RSVT hh - is the reserved Type flag.
The following bits can be set in this flag.

Value Meaning
X'80' HOLD for MVS TSO output (HOLD=TSO).
X'40' HOLD for 3540 WTR (HOLD=3540).
X'20' HOLD for External WTR (HOLD=EXTWTR).

FLAG1 hh - is the flag byte of SCT.
The following bits can be set in this flag.

Value Meaning
X'80' Overflow is OFF (OVFL=OFF).
X'40' Overflow is ON (OVFL=ON).
X'20' Interpret option for punched output is required (INT=YES).
X'10' Interpret option for punched output is not required (INT=NO).
X'08' Program control required (CONTROL=PROGRAM).
X'04' Single spacing required (CONTROL=SINGLE).
X'02' Double spacing required (CONTROL=DOUBLE).
X'01' COPIES field is valid.

FLAG2 hh - is the flag byte of SCT.
The following bits can be set in this flag.

Value Meaning
X'80' PRTY field is valid.
X'40' COPIES sublist is valid.
X'20' FLASH count field is valid.
X'10' SYSOUT INISH card defined.
X'08' THRESHLD field is valid.
X'04' Chain size is a data set.
X'02' Chain size was specified.
X'01' MODIFY count field is valid.

FLAG3 hh - is the flag byte of SCT.
The following bits can be set in this flag.

Value Meaning
X'80' Trailing blanks are to be truncated (TRUNC=YES).
X'40' Trailing blanks are not to be truncated (TRUNC=NO).

COPY hh - is the number of copies of each data set to be produced.

DEST cccccccc - is the data set destination name (name for the printer or punch).

DEV T cccccccc - is the device type.

FORMS cccccccc - is the printer forms required.

CARR cccccccc - is the carriage tape / FCB required.

TRAIN cccccccc - is the print train or band required to print.
**JESMSG Queue Control Area Header**

CHARS cccc - is the name of the character image to be used.

COPYS hhhhhhhhhhhhh - is the copy subgroupings.

FLASH cccc - is the name of the forms flash cartridge.

MODID cccc - is the name of the copy modification module to be used.

FLCNT hh - is the number of consecutive copies the forms flash is to print.

MODRC c - is the table reference character to be used with the copy modification module.

STACK c - is the 3800 stacker required.

TRKG1 hh - is the number of primary track groups to be allocated.

TRKG2 hh - is the number of secondary track groups to be allocated.

THRES hhhhhhhh - is the default maximum size for a SYSOUT data set.

CTABN cccccccc - is the name of the compaction table. The data sets which are sent to SNA work station is compacted using this compaction table.

CHNSZ hhhh - the size of the RU chain to be transmitted to SNA work stations.

---

**SRS**

**MDSSRS Data Area**

The MDSSRS Data Area contains information needed by the MDSSRS FCT. It is mapped by the JES3 macro IATYSRS. It is not formatted in FSS dump.

<table>
<thead>
<tr>
<th>FCT</th>
<th>SELQ</th>
<th>VFYQ</th>
<th>MMCT</th>
<th>MCTCH</th>
<th>SAR</th>
<th>CURRQ</th>
<th>MDAT</th>
<th>MDRL</th>
<th>ATMW1</th>
<th>DTMW1</th>
</tr>
</thead>
<tbody>
<tr>
<td>059400A8</td>
<td>00000000</td>
<td>00000000</td>
<td>057C70A8</td>
<td>05965068</td>
<td>00000000</td>
<td>00000000</td>
<td>05967270</td>
<td>0595C2B0</td>
<td>B758AA78</td>
<td>B758AA78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECF</th>
<th>FLG1</th>
<th>FLG2</th>
<th>FLG3</th>
<th>MFOOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 10 00 00 00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FCT hhhhhhhh - is the address of the MDSSRS FCT.

SELO hhhhhhhh - is the address of the start of the MDS system select queue.

VFYQ hhhhhhhh - is the address of the start of the MDS system verify queue.

MMCT hhhhhhhh - is the address of the MDS control table for the master MDS subtask.

MCTCH hhhhhhhh - is the address of the start of the MDS control table. This chain does not include the master MDS control table.

SAR hhhhhhhh - is the address of the SMS available resource chain.

CURRQ hhhhhhhh - is the address of the current Resqueue.

MDAT hhhhhhhh - is the entry point of the module IATMDAT.

MDRL hhhhhhhh - is the entry point of the module IATMDRL.

ATMW1 hhhhhhhh - is the first word of time of the last MDS subtask attached (STCK value).

DTMW1 hhhhhhhh - is the first word of time the MCT chain was last scanned to determine whether any MDS subtasks needs to be detached.

ECF hh - is the MDSSRS FCT event completion flag (ECF).

The following bits can be set in this flag.

**Value Meaning**

X'80' A job has been placed on the MDS system select queue.

X'40' A job has been placed on the MDS system verify queue.

X'20' An MDS subtask has completed processing.

X'10' An MDS subtask has abended.

X'08' Operator command entered to cancel a job being processed by MDSSRS.

FLG1 hh - is the flag byte of MDSSRS data area.

The following bits can be set in this flag.
## JESMSG Queue Control Area Header

### Value Meaning

- **X'80'** The MDSSRS JESTAE retry routine has been entered.
- **X'40'** FAILDSP dump code was DM045 (RESQUEUE management error) - Do not issue the RQTAPUT macro
- **X'20'** Working with SARs.
- **X'10'** System Select/Verify Queue scanning.

#### FLG2 hh - is the flag byte of MDSSRS data area.

The following bits can be set in this flag.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>Dechained first SCHRE.</td>
</tr>
<tr>
<td>X'40'</td>
<td>Resource dechained.</td>
</tr>
<tr>
<td>X'20'</td>
<td>End of group found.</td>
</tr>
<tr>
<td>X'10'</td>
<td>Search is in group.</td>
</tr>
<tr>
<td>X'04'</td>
<td>JESTAE entered before.</td>
</tr>
<tr>
<td>X'02'</td>
<td>Release all jobs.</td>
</tr>
<tr>
<td>X'01'</td>
<td>Post IATMDSR.</td>
</tr>
</tbody>
</table>

#### FLG3 hh - is the flag byte of MDSSRS data area.

**NOTE:** Currently this flag is not used.

#### MFOOT hh - is the flag used to footprint IATMDRL.

The following bits can be set in this flag.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>X'80'</td>
<td>In FREE_SAR routine.</td>
</tr>
<tr>
<td>X'40'</td>
<td>In FREE_ALL routine.</td>
</tr>
<tr>
<td>X'20'</td>
<td>In DO_SCHRL routine</td>
</tr>
<tr>
<td>X'10'</td>
<td>In CHEK_SAR routine.</td>
</tr>
<tr>
<td>X'08'</td>
<td>SCHRL pointer error.</td>
</tr>
<tr>
<td>X'04'</td>
<td>SAR pointer error.</td>
</tr>
</tbody>
</table>

## MDS Control Tables

The MDS Control Tables contain status information, addresses and work areas used by MDS subtasks, the MDS master task and MDSSRS FCT. It is mapped by the JES3 macro IATYMCT. It is not formatted in FSS dump.

```
MASTER MDS CONTROL TABLE - 057C70A8

<table>
<thead>
<tr>
<th>MECB</th>
<th>MTCB</th>
<th>ATMCT</th>
<th>MFLG1</th>
</tr>
</thead>
<tbody>
<tr>
<td>80707868</td>
<td>00707288</td>
<td>00000000</td>
<td>AO</td>
</tr>
</tbody>
</table>

MDS CONTROL TABLES

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>NEXT</th>
<th>CMTW1</th>
<th>MDSST</th>
<th>ECB</th>
<th>CETXR</th>
<th>TCB</th>
<th>SSOR</th>
<th>SSIA</th>
<th>ACB</th>
<th>RPL</th>
<th>RAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>05965068</td>
<td>059655D8</td>
<td>05962210</td>
<td>05962780</td>
<td>05962780</td>
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<td>00000000</td>
<td>0594D140</td>
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</tbody>
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<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>BLK</th>
<th>SDM</th>
<th>SPAF</th>
<th>RQ</th>
<th>BUFF</th>
<th>CPID</th>
<th>BFSZ</th>
<th>DSSAD</th>
<th>DEBAD</th>
<th>SPSCH</th>
</tr>
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</tbody>
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<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>FLG1</th>
<th>FLG2</th>
<th>ROMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>05965068</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>059655D8</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>05962210</td>
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<tr>
<td>05962780</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>0594D140</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

MECB hhhhhhh - is the MDS master task ECB.

MTCB hhhhhhhh - is the address of the MDS master task TCB.

ATMCT hhhhhhhh - is the address of the MCT of the MDS subtask to be attached.

---

**280 z/OS V1R12.0 JES3 Diagnosis**
MFLG1 hh - is the flag byte of master MCT.
The following bits can be set in this flag.

Value Meaning
X'80' MDS subtask attach is complete.
X'40' MDS master task has abended.
X'20' MDS master task has completed initialization.
X'10' The MDS master task's ESTAE exit has been entered.
X'08' ATTACH processing is being performed.
X'04' ETXR processing is being performed.

ADDRESS hhhhhhhh - is address of the MDS control table entry.
NEXT hhhhhhhh- is the address of the next MCT entry.

CMTW1 hhhhhhhh - is the first word of time the MDS subtask completed its work.
MDST hhhhhhhh - is the address of IATMDST using the MCT.

ECB hh - is the MDS subtask ECB.

CETXR hhhhhhhh - is the address of the common ETXR entry point (in IATMDMT).

TCB hhhhhhhh - is the MDS subtask TCB.

SSOB hhhhhhhh - is the address of the SSOB for MDS subtask's use.

SSSA hhhhhhhh - is the address of the SSOB extension for SMS.

ACB hhhhhhhh - is the address of the access method control block for MDS subtask's use.

RPL hhhhhhhh - is the address of the request parameter list for MDS subtask's use.

RAB hhhhhhhh - is the address of the USAM record allocation block for MDS subtask's use.

BLK hhhhhhhh - is the address of the block spooler parameter list for MDS subtask's use.

SDM hhhhhhhh - is the address of the spool data management parameter list for MDS subtask's use.

SPAF hhhhhhhh - is the address of the JES3 spool access facility parameter list for MDS subtask's use.

RQ hhhhhhhh - is the address of the Resqueue for job MDS subtask is processing.

BUFF hhhhhhhh - is the address of the buffer for block spooler's use.

CPID hhhhhhhh - is the cellpool identifier for block spooler.

BFSZ hhhhhhhh - is the size of buffer in cellpool.

DSSAD hhhhhhhh - is the address of the data set status block.

DEBAD hhhhhhhh - is the address of the data extent block.

SPSCH hhhhhhhhhhhh - is the spool address of the SMS scheduling information spool data set.

FLG1 hh - is the flag byte of MCT.
The following bits can be set in this flag.

Value Meaning
X'80' MDS subtask has abended.
X'40' The MDS subtask associated with the MCT is busy on behalf of a job.
X'20' MDS subtask has completed processing.
X'10' MDS subtask termination request.
X'08' MDS subtask termination processing is complete.
X'04' Invoke SMS request.

FLG2 hh - is the flag byte of MCT.
The following bits can be set in this flag.

Value Meaning
X'80' Operator command to cancel the job being processed by the MDS subtask has been entered.
X'40' Don't take SDUMP (in ESTAE).

ROMD hh - is the MDS subtask's recommendation to MDDSSRS FCT as to the disposition of the job.
The following bits can be set in this flag.

Value Meaning
X'80' Put the job on the MDS allocate queue.
X'40' The job cannot execute. IATUX61 should be invoked to determine whether to put this job on the MDS error queue or to cancel the job.
X'20' Job to remain on MDS system select queue
X'10' Put this job on the MDS breakdown queue
X'08' Put this job on the GMS select queue
X'04' Give the job another try.

**SMS Available Resource Blocks**

The SMS Available Resource Block contains information passed by SMS when SMS signals through ENF (Event Notification Facility) that the status of an SMS managed resource has changed. It is mapped by the JES3 macro IATYSAR. It is not formatted in the FSS dump.

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>NEXT</th>
<th>TYP</th>
<th>OSMST</th>
<th>NSMST</th>
<th>SYSNM</th>
<th>NMLNG</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>04FDCC98</td>
<td>00000000</td>
<td>02</td>
<td>04</td>
<td>E0</td>
<td>SY1</td>
<td>0007</td>
<td>GENERAL</td>
</tr>
</tbody>
</table>

ADDRESS `hhhhhhhh` - is the address of the SMS available resource block entry.

NEXT `hhhhhhhh` - is the address of the next SMS available resource block entry on chain.

TYP `hh` - is the type of SMS resource.

X'01' indicates that resource type is Volume.
X'02' indicates that resource type is Storage Group.
X'FF' used to indicate free all jobs.

OSMST `hh` - is the old SMS status.

NSMST `hh` - is the new SMS status.

SYSNM `ccccccc` - is the system name for status.

NMLNG `hhhh` - is the length of the name of the storage group.

NAME - is the name of the resource for which availability changed.
Chapter 5. JES3 Monitoring Facility

System programmers can use the JES3 Monitoring Facility (JMF) to obtain statistical data of the system.

JES3 tuning and performance diagnosis requires a great deal of JES3 knowledge. JMF can expand the information that is available to the person attempting either of these tasks. It can also provide a great deal of interesting information, some of which has value and some of which is merely information.

Characteristics of JMF

**JMF runs on a local processor** giving the installation the ability to monitor the activity of the JES3 local processor. While running on a local processor, JMF will produce SMF records. There is no interface to create spooled sysout in the local.

**JMF creates SMF 84 records.** The SMF records have the same information as the printed report. The information placed in the SMF records is dependent on what the call options are for JMF and where the JMF data is generated.

If you want to collect the SMF84 records, be certain to update SMFPRMxx (in SYS1.PARMLIB) for started tasks. Otherwise MVS discards the records.

SUBSYS(STC,EXITS(IEFU31,IEFACTRT,IEFU29,IEFU83,IEFUJV), NOINTERVAL,TYPE=(6,26,30,57,70:79,84))

The format of the SMF84 records is described in z/OS MVS System Management Facilities (SMF). If your installation decides to collect JMF data in the SMF84 record, re-evaluate the size of the SYS1.MANx data sets. No formatter is provided for the SMF data.

**JMF creates reports or SMF records** on the global processor. You can have either the JMF reports or SMF records created during the running of JMF. Information that is not available on a local processor but is available on the global processor includes:

- Job related information
- Initiator and group usage information
- JES3-managed device information
- MDS information

JMF does not run in either the C/I FSS or WTR FSS address space. If your installation creates both SMF and printed JMF reports, you should not expect 100% agreement in the reports. Some of the information that JMF produces is obtained at the time the report is generated from active control blocks. Between the time the printed report is created and the SMF record is generated, the contents of these control blocks may change. It is very likely that the SMF and written reports will have slightly different values for certain JES3 measurements.
Getting Started with JMF

You should run JMF regularly and when the system is running normally. When JES3 is running poorly you will have the “historical perspective” necessary to identify deviations from when JES3 is running normally. You must have a base from which you can assess changes, even if the base moves as the configuration and workload evolves over time.

There is workload and capacity information that can be derived from JMF reports:
- Estimates of the total number of jobs in the system and the distribution of this work (for example, CI, MAIN, and OUTSERV)
- Changes in workload (group and initiator use counts)
- Demand for JES3 managed resources (for example, tape drives and spool space)

JMF can be used to look into specific performance problems that the installation is experiencing. JES3 performance problems are rarely solved with only JMF data or only RMF data. At a minimum you will need the JES3 initialization stream. You may also need a dump of global JES3 and the SYSLOG from the interval at the time JMF was run. This still may leave you with incomplete or inconclusive information.

Starting JMF

Enter the *X JMF command from a console associated with the required processor, or use the ROUTE command to direct the *X JMF command to the appropriate processor.

If you are running JMF on a local processor and have to issue a dynamic system interchange (DSI) to that processor, then JMF will disappear on the new global. This is a result of DSI processing. After the new global is connected, you can call JMF. For more information about JES3 commands, see z/OS JES3 Commands.

What To Look For When Finding Problems

This list may help you in determining what to look for in the JMF reports.

1. Task Activity
   - Increase in task activity
   - Increase in non-standard WAIT time

2. Real Storage
   - Paging rate increase
   - Working set decrease

3. FCT activity
   - Look for problem FCTs
   - Increase in FCT posted / active time
   - Increase in non-standard AWAIT time
   - Check JSS

4. Spool Data Management
   - Increase in spool utilization
   - (I/O rate and space)
   - STT overflow
   - Device/path contention
Finding problems is essentially an exercise in observation. When JES3 performance characteristics change, something in the environment has changed.

Therefore, you have a purported JES3 performance problem. At least all the normal signs are the following:

- Consoles aren’t responsive
- Inquiry commands are not coming back promptly
- TSO/E logons are backed-up
- Output processing is slow

This has all the classic symptoms of a JES3 problem. The question is: how does one determine what change occurred in the operating environment and how does one associate the external change with changes in JES3 internal processing so that the observed “abnormal” JES3 behavior can be explained? What is the first thing that you should do? You need to collect several pieces of information. These should include:

- A crisp, clear description of the observed changes in behavior
- When the behavior changed
- Known changes that have occurred in the system before this time including:
  - Configuration changes (for example, DASD movement, Catalog movement)
  - Operational changes (for example, changes in message traffic to different consoles)
  - Known workload changes (for example, additional TSO/E users)
  - Maintenance or software changes

If you are fortunate, you will be able to find the change and then use your knowledge of JES3. Most likely, you will get into the situation where the change is not easily identified, or there were several changes that occurred at the time, or “we didn’t change a thing”. You are going to have to examine the behavior of the system to find the change that no one remembers.

You probably are not going to dive into JMF reports first; but after looking through the normal RMF data and other reports, you have to investigate the JMF data. The JMF data must be examined in relationship to what JMF has reported in the past when the system was healthy. Without reference points, diagnosing the problems is very difficult.

Always start with the easy items and then work into the more difficult ones. For instance:

- Paging
  Has the JES3 working set size increase or decreased? Has paging increased or decreased? If so, why?
- Spool
  Has I/O activity increased? Has spool space utilization increased? Has disconnect time increased? Has someone rearranged the spool packs? Are there
JES3 Monitoring Facility

a lot of allocations to the JCT or STT packs. If so, why? Look at the job report: are there more jobs in the queue and has the distribution of the workload changed?

A great majority of JES3 performance problems will turn out to be spool related. Most of the time, the spool problems will be due to workload changes.

- Buffers

Has JES3's use of buffers changed? Are there shortages of JSAM buffers? If so why? Can you give JES3 more buffers?

- JES3 internal services

Did some FCTs get busy? Is JES3 spending a lot of time in “new” modules? Is some FCT out of capacity? If so, why? This is where you have to delve into the FCT and AWAIT analysis, look at the hot spots, check into the DESTQ backlog. After you get a hunch, you may need to refine the JMF monitoring parameters to attempt to hone in on the FCTs that are causing the problem and the supporting code. The thing to remember is that problems have a cause. Finding the cause may be difficult, but it has to be done before corrective action can be formulated.

Running JMF

JMF should be run under normal conditions. A good sample size is 1000 samples in an interval. Sampling once a second for an hour should be sufficient for normal situations.

A normal situation would be:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYCLE</td>
<td>1 second</td>
</tr>
<tr>
<td>INTERVAL</td>
<td>60 minutes</td>
</tr>
<tr>
<td>FCT</td>
<td>250</td>
</tr>
<tr>
<td>AWAIT</td>
<td>45 entries/FCT</td>
</tr>
<tr>
<td>JOB</td>
<td>1</td>
</tr>
<tr>
<td>SPOT</td>
<td>100</td>
</tr>
<tr>
<td>WIDTH</td>
<td>100</td>
</tr>
</tbody>
</table>

The default number of FCTs is 250 which may not be sufficient in the following cases:

- If you have a great amount of BSC NJE activity
- When JMF is running with a long interval

The default value for JOB will let you track the first 50 jobs in the RESQUEUE and report scheduling information on them. Some reports are jobs in which you are interested. Because there are some jobs dependent on this option being in effect, have JMF track one job.

JMF sampling activity and output can be tailored to your needs by specifying the correct start-up options for your installation.
After generating your JMF reports, there is a lot of data that is not self-explanatory. If you have a good basic knowledge of JES3, JMF can be a great aid in learning more about JES3 and how JES3 reacts under certain constraints and work loads. When you can find differences in JMF reports and explain them, you can identify JES3 performance problems when they occur.

**Note:** You will be able to discover problems using JMF, however it may not be a simple task.

There are seven major reports generated by JMF:
- System report
- FCT and AWAIT report
- Spool data management report
- JES3 control block utilization report
- Job analysis
- Hot spot analysis report
- JES3 function report

The **system** report contains information about IATNUC, IATAUX tasks, and CPU utilization. It also provides information about JES3 storage requirements and configuration data.

The **FCT and AWAIT** report contains information about the activity and location of each FCT at the time it is AWAITing.

The **spool data management** report contains information about the spool rate, space utilization, etc.

**Note:** You will find that this report does **not** match the resource management facility (RMF) reports. The spool data management report is the most accurate.

The **JES3 control block utilization** report contains information about the control block pools (for example, RQ's, JSAM buffers, staging areas, and JQE's) and performance information about the JCT data space.

The **job analysis** report contains information about job flow through the JES3 scheduler elements, JSS work-to-do queue, allocated JES3 managed devices, etc.

The **hot spot analysis** report contains information regarding the utilization of modules and the frequency of use in the JES3 address space.

The **JES3 function** report contains information about internal reader activity, Subsystem Interface (SSI) response time, and JES3 DESTQ lengths.

Only the system report and the JES3 control block report are created with every run of JMF. The remaining reports are optional and can be eliminated. The reports often have overlapping and complimentary information. You will normally have to use two or more of the reports to analyze what the system is doing.
To understand the system report one must know the terminology used throughout the report. A dispatchable unit of work in the JES3 address space is in one of six mutually exclusive states. This unit of work can be either a TCB task (IATNUC, IATAUX, or one of the other subtasks) or a SRB. There is little information available on SRB activity.

The following describes the meaning of each state:

**POSTED - ACTIVE**
The work unit is using the processor when JMF takes a sample. JMF uses this technique to report the CPU utilization of each work unit.

**POSTED - NOT ACTIVE**
The work unit is ready to use the processor; however, the work unit is not dispatched. This is an indication that higher priority work is running at the time JMF takes a sample. If this number is high, it indicates the work unit is not using the processor as much as requested. By increasing the priority of the unit of work, the work will be processed more quickly.

**NOT POSTED**
The work unit is waiting for a condition to be satisfied. If the work unit is an FCT, it is AWAITing. If the work unit is the IATNUC or the IATAUX task, it is the standard MVS WAIT in the WAIT FCT.

**Note:** The MVS WAIT state represents the function giving up control voluntarily.

**IN OS WAIT (IN NONSTANDARD WAIT)**
The work unit gives up control involuntarily by calling an MVS service, which results in an MVS WAIT.

**Note:** If the task takes a page fault, this condition will result.

**SUSPENDED - LOCAL LOCK REQ**
The work unit requests the local lock but is suspended because the lock is currently held by some other function (TASK or SRB).

**SUSPENDED - OTHER**
The work unit is suspended for some reason other than the local lock.

**JES3 Busy**
The IATNUC POSTED - ACTIVE number is a good approximation of the CPU utilization in the JES3 global address space. If your installation's workload produces large amounts of printed output, you may see a significant amount of CPU utilization for the IATAUX task also.

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IATNUC POSTED - ACTIVE</td>
<td>13.69 %</td>
</tr>
<tr>
<td>IATNUC POSTED - NOT ACTIVE</td>
<td>7.37 %</td>
</tr>
<tr>
<td>IATNUC NOT POSTED</td>
<td>72.80 %</td>
</tr>
<tr>
<td>IATNUC IN NONSTANDARD WAIT</td>
<td>.04 %</td>
</tr>
<tr>
<td>IATNUC SUSPENDED - LOCAL LOCK REQ</td>
<td>5.67 %</td>
</tr>
<tr>
<td>IATNUC SUSPENDED - OTHER</td>
<td>.40 %</td>
</tr>
</tbody>
</table>

The example shows the IATNUC task is using the CPU 14% of the time. However, the task is considered to be 20% busy because 6% of the time the task is suspended because of unavailability of the local lock. The task busy time is the sum of the:

- **ACTIVE**
- **IN NONSTANDARD WAIT**
A rule of thumb is to keep the IATNUC CPU utilization below 60%. Going any higher may lead to performance degradation. A few things can be done to reduce CPU utilization. If the global system has multiple engines, use the writer multi-tasking feature. Also, using C/I or writer FSS will off-load some of the CPU processing to other address spaces.

From a performance point of view, the starting and stopping of dynamic writers introduces additional CPU utilization for the IATNUC task. On the other hand, there is overhead associated with using a large number of idle hot writers. This overhead shows up in high multi-function monitor CPU consumption. There are performance and operational trade-offs to be made when making these decisions.

The SUSPENDED - LOCAL LOCK REQ is a popular commodity in the JES3 address space. JES3 attempts to avoid the use of services which would suspend IATNUC because of its unavailability. Some MVS services require the local lock. When the IATNUC or the IATAUX have nothing to do, the WAIT FCT issues an OS WAIT (SVC 1) which requires the local lock. (Even in busy JES3 globals, this does occasionally occur). If the WAIT FCT is the FCT suspended on the local lock there is no reason to be concerned. If other FCTs are often suspended waiting for the local lock, JES3 is being prevented from doing real work.

**Note:** FCTs which are frequently in OS WAIT to determine if this is something that the installation induced. Remember, if one FCT is OS WAITed, then all of IATNUC is OS WAITed.

**Storage**

Most of the work in the JES3 address space is done by the JES3 main task, and it is important to prevent JES3 from paging. You should monitor JES3's working storage size and paging rates. Changes in either one should be investigated. They typically indicate a configuration change, a workload change, or a code problem.
JES3 Working Set

JES3 Working Set

AVERAGE WORKING SET SIZE = 6076K
MINIMUM WORKING SET SIZE = 6076K
MAXIMUM WORKING SET SIZE = 6080K
NUMBER OF FIXED PAGES = 21 = 84K
AUXILIARY SLOT COUNT = 20 = 80K
THE ALLOCATED STORAGE FOR JMF IS 30K

JES3 Paging Counts During JMF Monitoring

PAGE-IN'S = 0
PAGE-OUT'S = 0
PAGE-RECLAIM'S = 0
PAGING RATE = .00 PAGES/SECOND
SYSTEM PAGING RATE (NON-SWAP, NON VIO) PAGING RATE = 1.50 PAGES/SECOND

JES3 Subtasks Posted Concurrently

NUMBER OF SUBTASKS 1 2 3 4 OR MORE CONCURRENTLY POSTED 100.00 % .00 % .00 % .00 %

JES3 Subtasks in Dispatching Sequence

<table>
<thead>
<tr>
<th>SUBTASK</th>
<th>% POSTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 IATNUC</td>
<td>.00 %</td>
</tr>
<tr>
<td>2 IATGRMON</td>
<td>.00 %</td>
</tr>
<tr>
<td>3 IATGRSS</td>
<td>.00 %</td>
</tr>
<tr>
<td>4 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>5 IXIXPE</td>
<td>.00 %</td>
</tr>
<tr>
<td>6 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>7 IATAUX</td>
<td>.00 %</td>
</tr>
<tr>
<td>8 IATLVMT</td>
<td>.00 %</td>
</tr>
<tr>
<td>9 IATLVLC</td>
<td>.00 %</td>
</tr>
<tr>
<td>10 IATLVLC</td>
<td>.00 %</td>
</tr>
<tr>
<td>11 IATLVLC</td>
<td>.00 %</td>
</tr>
<tr>
<td>12 IATLVLC</td>
<td>.00 %</td>
</tr>
<tr>
<td>13 IATLVLC</td>
<td>.00 %</td>
</tr>
<tr>
<td>14 IATISB</td>
<td>.00 %</td>
</tr>
<tr>
<td>15 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>16 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>17 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>18 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>19 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>20 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>21 IATIIST</td>
<td>.00 %</td>
</tr>
<tr>
<td>22 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>23 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>24 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>25 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>26 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>27 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>28 IATGSCI</td>
<td>.00 %</td>
</tr>
<tr>
<td>29 IATGSCI</td>
<td>.00 %</td>
</tr>
</tbody>
</table>
Note:

The JES3 Monitoring Facility (JMF) histogram for the JES3 WORKING SET can map working set sizes in the range of 1000K to 999999K. Working set sizes larger than 999999K are included in the maximum value on the histogram.

To improve JES3 performance you should:
1. Make certain that JES3 is kept out of an APG group.
2. Look at JES3's dispatching priority and the percentage of time that IATNUC is posted but not active. If JES3's dispatching priority is not near the top of the chain and the wait time is long, determine which address space is interfering with JES3's being dispatchable and change the priorities of the address space.
3. Use storage isolation to ensure that JES3's working storage is not constrained to the point that it interferes with responsiveness. Use PPGRT or PPGRTR to keep JES3's paging rate to a maximum of 1 to 2 pages per second. If you use PWSS, use it only for a lower boundary and set the upper boundary to *. This will prevent JES3 from being a prime candidate for page steals if you set the upper boundary too low.

Overhead

The JMF monitoring task places itself as one of the highest priority task in the address space. During portions of JMF sampling, all the other tasks are stopped (including IATNUC). It is important to make certain that JMF does not overly interfere with JES3 and that the performance problems that you see are not due to JMF.

JMF gives two indicators of interference:
1. JMF overhead - This is the time that the JMF sampling task is active. It is reported as a percentage of the cycle time; however, it comes out of the interval instead of the cycle. This is why you will see a 60 minute interval have 59 minutes and some number of seconds or the number of samples is less than expected. Nevertheless, you should keep the percentage of JMF overhead relative to the cycle time low. Less than five percent is desirable.
2. MVS overhead - This is the time delay that the JMF sampling task is to be dispatched. It is indicative of higher priority work in the system. If this number becomes large, an adjustment of JES3's dispatching priority may be in order.
### JES3 Monitoring Facility

<table>
<thead>
<tr>
<th></th>
<th>JMF Overhead</th>
<th>MVS Overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM</td>
<td>.000704 SEC.</td>
<td>.000256 SEC.</td>
</tr>
<tr>
<td>MAXIMUM</td>
<td>.105328 SEC.</td>
<td>.167264 SEC.</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>.001472 SEC.</td>
<td>.000944 SEC.</td>
</tr>
<tr>
<td></td>
<td>.73 % of JMF cycle time</td>
<td>.47 % of JMF cycle time</td>
</tr>
</tbody>
</table>
JES3 Monitoring Facility

JMF will also report on the number of tasks simultaneously active in the JES3 address space. You will also get a chart showing the percent active for each task. The only tasks that you have control over are the C/I subtasks. JES3’s performance is impacted by having a great number of subtasks (there is no TCB ready queue similar to the ASCB ready queue). You should control the number of these tasks. You should consider moving the C/I function to a C/I FSS address space. This will have the added benefit of reducing local lock contention in the JES3 address space.

FCT and AWAIT

<table>
<thead>
<tr>
<th></th>
<th>IATNUC</th>
<th>IATAUX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MULTI-FUNCTION MONITOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTIVE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 %</td>
</tr>
<tr>
<td>SUSPENDED</td>
<td>.00 % OF SAMPLES</td>
<td>.00 %</td>
</tr>
<tr>
<td>IN OS WAIT</td>
<td>.00 % OF SAMPLES</td>
<td>.00 %</td>
</tr>
<tr>
<td><strong>JES3 IRB’S</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRB NAME</td>
<td>ACTIVE</td>
<td>SUSPENDED</td>
</tr>
<tr>
<td>% OF SAMPLES</td>
<td>% OF SAMPLES</td>
<td>% OF SAMPLES</td>
</tr>
<tr>
<td>NO IRB INFORMATION WAS FOUND.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AVERAGE AWAIT DURATION</strong></td>
<td>6.93 SEC.</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL AWAIT DURATION</strong></td>
<td>20.80 SEC.</td>
<td></td>
</tr>
<tr>
<td><strong>MAXIMUM AWAIT DURATION</strong></td>
<td>14.40 SEC.</td>
<td></td>
</tr>
</tbody>
</table>

At the beginning of the FCT and AWAIT report is some information about the multi-function monitor (MFM). The interesting information is the percent of IATNUC that MFM is active. MFM activity is basically dependent on the number of FCTs on the dispatching chain. Installations that have a large BSC NJE work load are highly susceptible to this phenomenon. Having a large number of inactive hot writers also contributes to high MFM activity.

JMF also reports on IRB activity. There are several IRBs that JMF knows by name and they are labelled in the report. These include:

- ATIME
- Channel End Appendage
- Abnormal End Appendage

The IRBs that JMF doesn’t know by name (for example, those used by VTAM) are represented by the IRB entry point address. The pertinent information is the percent of samples where the IRB is in an OS WAIT. If the IRB is in an OS WAIT, then none of the JES3 code running under the RB is being given a chance to run.

**Function Control Table (FCT)**

The FCT and AWAIT report provides information about where an FCT is active. If sufficient FCT entries are specified, JMF will report on each FCT that exists for
some portion of the interval. The state of the FCT is categorized the same way as an IATNUC and IATAUX. Some FCTs can operate under IATAUX as well as IATNUC (for example, Writers) and subsequently have activity reported under both tasks. (Only the activity under IATNUC is shown).

The information that you should look at includes:

1. FCTs which have high “posted and active” as a percentage of IATNUC. The Hot Spot analysis report will assist you in this endeavor.
2. Is the FCT on the chain longer than it should be? Many times spool performance problems begin to manifest themselves as PURGE FCTs taking a long time to process. This requires knowledge of the JES3 DSPs. For more information about JES3 DSPs, see z/OS JES3 Customization.
3. FCTs which are frequently in OS WAIT to determine if this is something that the installation induced. Remember, if one FCT is OS WAITed, then all of IATNUC is OS WAITed.
4. FCTs that spend a large portion of their time in a particular AWAIT (other than the standard FCT AWAIT). For example, FCTs waiting for spool I/O or AENQ resources.

You seldom go through all of the FCTs looking at these indicators. There can be several hundred FCTs; go to the summary report to see all the FCTs that JMF tracked during the interval. You will see the percentage of samples that the FCT is on and the chain in NUC mode or AUX mode. For each mode, the percentage of samples that the FCT was in and which state the FCT was in is also reported. All of the suspended states are grouped together for reporting purposes.

Scan through the summary looking for anomalies. The following example shows a portion of the summary report to give an indication of the information presented. The example shows some of the FCTs and the activity under IATAUX.

```
71 DSP NAME IS DMJA DEVICE NAME IS **NONE** FCT PRTY IS 004
FCT ON FCT CHAIN 100.00 % OF FCT
FCT IN NUC MODE 100.00 % OF FCT
FCT IN AUX MODE .00 % OF FCT
I/O ACTIVITY
SRF READ I/O'S = 85
SRF READ BUFFERS = 85
SRF WRITE I/O'S = 87
SRF WRITE BUFFERS = 87
ACTIVITY UNDER IATNUC TASK
FCT POSTED - ACTIVE 8.51 % OF IATNUC .26 % OF FCT
FCT POSTED - NOT ACTIVE .20 % OF FCT
FCT NOT POSTED 99.46 % OF FCT
FCT IN OS WAIT .00 % OF FCT
FCT SUSPENDED-LOCAL LOCK REQ .06 % OF FCT
FCT SUSPENDED-OTHER .00 % OF FCT
AWAIT IS WAIT FOR WORK OR STANDARD FCT AWAIT
AWAIT IN USE 89.71 % OF FCT
AWAIT POSTED - ACTIVE 2.12 % OF IATNUC .06 % OF FCT
AWAIT POSTED - NOT ACTIVE .00 % OF FCT
AWAIT NOT POSTED 89.65 % OF FCT
AVERAGE AWAIT DURATION 24.25 SEC.
TOTAL AWAIT DURATION 4 MIN. 26.80 SEC.
MAXIMUM AWAIT DURATION 3 MIN. .80 SEC. IATDMJA + 00000082
AWAIT IS ...
AWAIT IN USE ...
```
<table>
<thead>
<tr>
<th>SEQ</th>
<th>DSPNAME</th>
<th>DEVICE</th>
<th>PRI</th>
<th>CHAIN</th>
<th>MODE</th>
<th>AUX</th>
<th>POSTED</th>
<th>POSTED</th>
<th>NOT OR IN OS</th>
<th>POSTED</th>
<th>POSTED</th>
<th>NOT OR IN OS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONCMD</td>
<td><strong>NONE</strong></td>
<td>254</td>
<td>100.00</td>
<td>100.00</td>
<td>.00</td>
<td>.11</td>
<td>.84</td>
<td>99.01</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONSERV</td>
<td><strong>NONE</strong></td>
<td>254</td>
<td>100.00</td>
<td>100.00</td>
<td>.00</td>
<td>.63</td>
<td>2.76</td>
<td>96.38</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIMER</td>
<td><strong>NONE</strong></td>
<td>254</td>
<td>100.00</td>
<td>100.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>100.00</td>
<td>.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>READYQ</td>
<td><strong>NONE</strong></td>
<td>254</td>
<td>100.00</td>
<td>100.00</td>
<td>.00</td>
<td>.00</td>
<td>11.30</td>
<td>86.69</td>
<td>.00</td>
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</tbody>
</table>

Chapter 5. JES3 Monitoring Facility

295
In the previous example, you will notice that on the summary report, DMJA (93) is seldom active (.26 % of the samples) and is AWAITing most of the time (99.46 % of the samples). The question you should ask is: Is the DSP AWAITing because there isn’t any work to do or is the DSP AWAITing the completion of some other JES3 function before it can resume processing a request? To determine if the AWAITing is good or bad, you need to look at the AWAIT table.
At first glance you will notice that there are multiple AWAIT table entries for each FCT. The exact number is dependent on the activity of the FCT and the number of table entries that you specified. The number of table entries will vary from FCT to FCT that perform the same function. Most FCTs (even transient ones) do a few tasks many times during a JMF interval. The AWAIT table, if large enough, will provide you with a snapshot of the major events in the life of the FCT.

Many AWAITs have an AWAIT reason code associated with them. JMF groups these AWAITs together and displays some verbage about the AWAIT. See Description of the DSP Analysis Report on page 329 for a description of the AWAITs.

**Note:** If you have enough AWAIT entries defined per FCT, then all of the times that an FCT is AWAITing or reacting to the posting of a previously issued await should be captured. In other words, if there are six AWAIT entries then the sum of the AWAIT in USE percentages of FCT should add up to 100.

Under the AWAIT IS.... you see four AWAIT items. Within each AWAIT entry, you can get the percentage of FCT activity that is related to that AWAIT. Either the FCT is waiting for a post, waiting to be dispatched after getting the post, or is active. JMF also tells you things about the AWAIT. These include the average, maximum and total duration for this AWAIT. If JMF finds the AWAIT in use (not posted) for at least two cycles in succession, it will attempt to tell the location of the AWAIT. For JES3 modules this is a load module name plus an offset into the module.

In the example, the DMJA FCT is spending most of the interval time at location X'000082' in module IATDMJA. If you assemble the module and look at location X'000082', you can see that this is the work to do AWAIT. Therefore, the answer to the question is that the DSP is doing AWAIT because there is no work to do, or the DSP is doing AWAIT for the completion of some other JES3 function (before it can resume processing a request).

The important thing is to look at the FCTs and determine if they are waiting for work to be passed through their way or if they are waiting for completion of some JES3 service. The amount of time that the FCT is doing AWAIT on its work to do ECF is an indication of the capacity remaining in that FCT. The FCT must wait at its standard AWAIT at least 25% of the time.

**FCT Highlights**

JMF summarizes the FCT and AWAIT analysis into four summary reports. For IATNUC and IATAUX, JMF will identify those FCTs that are the most active, posted but not active, and those most often detected in OS WAITs. In addition JMF will point out the 10 biggest JES3 AWAIT bottlenecks by name. JMF will also report which tasks were impacted. If the installation requested WAIT analysis, the WAIT analysis report will follow the FCT and AWAIT highlights.
### The 5 Most Active FCT's in IATNUC

<table>
<thead>
<tr>
<th>Seq Num</th>
<th>DSP Name</th>
<th>FCT</th>
<th>Posted - Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>DMJA</td>
<td>.26 % of samples</td>
<td>8.51 % of IATNUC</td>
</tr>
<tr>
<td>28</td>
<td>NJE</td>
<td>.20 % of samples</td>
<td>6.38 % of IATNUC</td>
</tr>
<tr>
<td>83</td>
<td>JSS</td>
<td>.20 % of samples</td>
<td>6.38 % of IATNUC</td>
</tr>
<tr>
<td>11</td>
<td>OUTSERV</td>
<td>.13 % of samples</td>
<td>4.25 % of IATNUC</td>
</tr>
<tr>
<td>14</td>
<td>OUTSERV</td>
<td>.13 % of samples</td>
<td>4.25 % of IATNUC</td>
</tr>
</tbody>
</table>

### The 5 Most 'Posted and Not Active' FCT's in IATNUC

<table>
<thead>
<tr>
<th>Seq Num</th>
<th>DSP Name</th>
<th>FCT</th>
<th>Posted - Not Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>JSAM</td>
<td>4.65 % of samples</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>READYQ</td>
<td>3.79 % of samples</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>NJE</td>
<td>3.20 % of samples</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CONSERV</td>
<td>.53 % of samples</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>JSS</td>
<td>.47 % of samples</td>
<td></td>
</tr>
</tbody>
</table>

### The 5 Most 'In OS Wait' FCT's in IATNUC

<table>
<thead>
<tr>
<th>Seq Num</th>
<th>DSP Name</th>
<th>FCT</th>
<th>In OS Wait</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>NJE</td>
<td>.13 % of samples</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>DYNAL</td>
<td>.06 % of samples</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>NJESND</td>
<td>.06 % of samples</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>JSS</td>
<td>.06 % of samples</td>
<td></td>
</tr>
</tbody>
</table>

No more FCTs were in OS wait in IATNUC.

### The 10 Biggest JES3 Await Bottlenecks

<table>
<thead>
<tr>
<th>Seq Num</th>
<th>DSP Name</th>
<th>Task</th>
<th>Total Await Duration</th>
<th>Max Await Duration</th>
</tr>
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<tbody>
<tr>
<td>50</td>
<td>POSTSCAN</td>
<td>IATNUC</td>
<td>27.40 sec.</td>
<td>1.60 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Waiting for a Catalog Locate Request to Complete</td>
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</tr>
<tr>
<td>51</td>
<td>POSTSCAN</td>
<td>IATNUC</td>
<td>25.60 sec.</td>
<td>1.40 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Waiting for a Catalog Locate Request to Complete</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>ISDRVR</td>
<td>IATNUC</td>
<td>23.40 sec.</td>
<td>3.00 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Waiting for exclusive use of an AENQ Resource - JNCBCTL</td>
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</tr>
<tr>
<td>66</td>
<td>ISDRVR</td>
<td>IATNUC</td>
<td>22.20 sec.</td>
<td>2.60 sec.</td>
</tr>
<tr>
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<td>Waiting for exclusive use of an AENQ Resource - JNCBCTL</td>
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</tr>
<tr>
<td>62</td>
<td>ISDRVR</td>
<td>IATNUC</td>
<td>21.20 sec.</td>
<td>3.40 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Waiting for exclusive use of an AENQ Resource - JNCBCTL</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>ISDRVR</td>
<td>IATNUC</td>
<td>20.20 sec.</td>
<td>2.60 sec.</td>
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<td></td>
<td></td>
<td></td>
<td>Waiting for exclusive use of an AENQ Resource - JNCBCTL</td>
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</table>

No more Await Bottlenecks.

### JES3 Wait Analysis

DSP Name is CONSERV  FCT Sequence Number = 2  Task = IATNUC  
FCT in OS Wait .04 %  
SVC 35 (WTO/WTOR) at 0220EB12  IATCNWO + 00000792 COUNT =3  
Page Fault at 02228754  IATGRSV + 000006C  COUNT = 8

JES3 Monitoring Facility
These reports summarize the most active FCTs, those that have something to do but aren't able to be dispatched by MFM, and those FCTs in an OS WAIT (page fault, local lock or other). What do you look for? If you have been doing normal monitoring, you are looking for anomalies. For instance, the addition of a hundred or so logged on, active TSO users would most likely result in TSODRVR showing in the five most active list (since it handles TSO/E STATUS, CANCEL and VALIDATE requests). You might also see PSODRVR showing up on the five most posted but not active list. Changes in the list membership indicate:

- Changes in workload
- Operational changes
- Changes in the installation
- Provided “user extensions” to JES3.

Some of the more active FCTs include:

**JSS - Active**
Many installations with a large number of jobs in the queue will see JSS account for 20 - 25% of IATNUC activity.

**TSODRVR - Active**
This occurred with the split of the WTDDRVR FCT.

**JSAM - Inactive**
JSAM will show up as being ready most of the time if JES3 is doing anything, because most things JES3 does require I/O. JSAM is near the top of the dispatching queue and the only thing that prevents it from being dispatched are the high users of CPU, for example, TSODRVR and JSS. Again if JSAM's waiting is excessive, things will slow down and the operators should notice a degradation in performance.

Remember, there will always be five FCTs on each list regardless of what is going on in JES3. You must know enough about “your JES” to recognize whether something is amiss. An FCT can account for 25% IATNUC activity; if IATNUC CPU busy is 2%, there is not a problem.

The AWAIT bottlenecks are indications of serialization impacting the work flow through FCTs or of the unavailability of resources required by the FCT to continue processing.

**SPOOL Information**
The following is a list of items necessary to view to see how well JES3 Spool is performing.

- Buffer size and usage
- Spool data set and spool partition description
- Spool usage
- STT usage
- Spool I/O activity
- Buffer chaining

For JES3 to be responsive to TSO/E users and operators, good spool response is mandatory. JMF attempts to provide JES3's view of how well spool is performing.
This section shows the information specified in the JES3 initialization stream that is relative to JES3 spool performance. A 4K spool buffer allows for more efficient use of spool space and the processor requirements necessary to retrieve information from spool. For example, a 2K spool buffer will hold four OSEs, while a 4K buffer will hold eleven OSEs. Making buffers larger reduces read or write chained spool records. Obviously, it doesn't help when accessing control blocks that reside in a single buffer (for example, JDAB, JMR). File directory entries are used in WRTCHAIN processing when dealing with OSEs, JSTs, and JDSs. If you run out of file directories, the function waits, regardless of the criticality of the function. There is no indication of how many of these entries are in use currently and there is no high water mark count.

**Note:** File directories are used primarily for multi-record files (MRFs). They are also used by WRTCHAIN requests for JDSs, OSEs, JSTs, and other chained single record files.

JMF reports the number of JSAM buffers defined. (In a later section, the number in use and the high water mark are reported.) You should try to avoid running out of JSAM buffers. If you do, the system tries a few recovery attempts and stops. JES3 allows 1024 buffers to be defined and they should be used.

JMF also reports the location of the protected USAM buffers. (In a later section, the usage is reported.)
The first report is the spool data set description. JMF reports on where the spool data sets reside, their size and organization. This may be the most obvious report in the listing and is only partially shown here. The one interesting thing that JMF reported is that one of the active spool volumes has a bad track. If you see this in a real JMF report, you should obviously investigate it and have it corrected. Purging of track groups is adversely affected by bad tracks.

In the example, there are two partitions defined: MAIN (the default partition) and INISH. INISH consists of a small spool data set that contains the initialization stream. It is only there to illustrate the report. The spool partition report also reports the installation-defined spool minimum and marginal values. The question is: What should these values be in my installation?

One of the all-time great answers is: make certain that the minimum value is large enough to be able to do a restart of JES3. However, exactly how much space this requires is not known and at the very least will be installation dependent. The percentage that you set aside is also dependent on the total spool space in the default partition.

Setting the marginal value is easier to rationalize. Most installations know what normal spool utilization is during peak periods. Set the marginal value to this amount plus 10-20% of the peak percentage. At least the operators will be notified when spool space gets low and can take the appropriate action.

Finally, we get to the spool utilization report for each of the partitions. This report should be reviewed to be certain that spool utilization is within normal limits. As the spool fills, JES3 performance begins to deteriorate. This is particularly true for the default partition, which holds the majority of the spool control blocks for a jobs. Using spool partitioning, some installations find that they can run special purpose partitions at a higher utilization rate and not adversely affect JES3 performance.
**Note:** This report shows the SPOOL5 data set to be 100% used. The entire data set is dedicated to a single track table extent. It also leads into the discussion about the STT.

**Single Track Table (STT)**
The STT is used for various spool resident JES3 control blocks. The intent is to spread the I/O activity to the STT. Loss of a pre-allocated STT extent is no longer cause for a cold start. If the preallocated STT fills, JES3 gets a track group from the default partition and makes it an STT extent.

<table>
<thead>
<tr>
<th>DATA SET NUMBER</th>
<th>DDNAME</th>
<th>LOW CYL</th>
<th>HIGH CYL</th>
<th>DEFINED RECORDS</th>
<th>Allocated RECORDS</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>SPOOL1</td>
<td>000001A</td>
<td>000001A</td>
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</tbody>
</table>

In the previous example, there is only one STT extent. It was defined in the initialization stream. There has never been an overflow of the STT. If the STT expands it never voluntarily contracts. You should pre-allocate enough STT space and enough extents to insure that the STT never expands. Having the STT placed randomly in the default partition is detrimental to good spool performance. The number of STT extents should be in the two to four range, spread across as many paths as are available. Expansion of STT is indicative of spool performance or code problems.

The STT contains:
- DJC net control blocks
- Checkpoint records for:
  - MDS
  - GMS
  - Dynamic allocation
  - Volume unavailable table
  - Online devices
  - FSS status
  - Deadline control blocks
- JESNEWS
- Control blocks for called DSPs
- JOB0 control blocks (for example, JDS and OSE)

**SPOOL I/O Activity**
This report is a sample version of the I/O activity to the spool as seen by JES3 and reported by JMF. The I/O presented in this report arises from USAM I/O or JSAM I/O originating in JES3, an FSS or a user address space.

<table>
<thead>
<tr>
<th>VOLSER</th>
<th>DDNAME</th>
<th>TOTAL LO CYLS</th>
<th>HI CYLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPOOLX</td>
<td>JES3JCT</td>
<td>2.72</td>
<td>2.72</td>
</tr>
<tr>
<td>SPOOL1</td>
<td>SPOOL1</td>
<td>3.86</td>
<td>1.44</td>
</tr>
<tr>
<td>SPOOL2</td>
<td>SPOOL2</td>
<td>2.88</td>
<td>.00</td>
</tr>
<tr>
<td>SPOOL3</td>
<td>SPOOL3</td>
<td>3.52</td>
<td>.00</td>
</tr>
<tr>
<td>SPOOL4</td>
<td>SPOOL4</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>SPOOL5</td>
<td>SPOOL5</td>
<td>.00</td>
<td>.00</td>
</tr>
</tbody>
</table>
This example describes the number of buffers read/written per second on a spool data set and the relative location on the volume of the buffers. The volume containing the spool data set is divided into ten parts (not the spool data set). The report is based on volume not the data set. JES3 allocates spool space from the center of the data set out. To look at this report and infer anything about the activity on this volume, you must know where the spool data set resides. If the data set encompasses the entire volume and you see a great number of buffers read/written at the “ends”, the disconnect time will be high (RMF will verify this) because of increased seek distances. Also, spool response time has increased and JES3 responsiveness has decreased. You will also see that the spool data set space utilization is high (see the previous chart).

Do not confuse number of buffers read/written to spool per second with the number of I/O operations to spool per second; they are not the same. JMF will only tell you about buffers. You must consult RMF for I/O operations per second, disconnect time, and esoteric names used.

This example gives a distribution of the number of chained records per I/O operation on a spool data set basis. JES3 will chain multiple requests together (even order the requests to minimize the seek distances) on a spool extent basis if there are multiple requests outstanding at the termination/initiation of an I/O request. The above report is an example of what you should not see in a healthy spool environment. You should have at least 90% of the I/O requests show up in the first column. This indicates that JES3 is able to schedule the I/O on demand and that the spool is responsive to the point that the request is satisfied before JES3 can generate a subsequent request. You should see 99% of the requests being satisfied in chains of two or three. When you see a report like the one above, it is a good indication that spool is not performing well. JES3 is generating spool requests faster than the spool (for example, DASD, channels, and control units) can respond.

The spool data sets were living on VM mini-disks that were on the same physical volume. Sometimes you will notice quite a few requests to spool that were ten or more buffers. This could be an indication of spool contention. However, the writer FSS address spaces perform full track READs of the spool data sets. When 4K spool buffers are defined, a request of ten buffers will be generated each time the
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writer goes to the spool for data. Hence, seeing eleven or more buffers may merely reflect writer FSS activity. Therefore, you should use RMF to assess device and path contention.

Finally, JMF reports the percentage of time that the JSAM or USAM buffers were all in use and the number of times IATNUC was AWAITed for a JSAM buffer. If these numbers aren't zero, then your buffer definitions are too small, and you should increase the number.

Control Blocks

The Control Block Status report provides information about JES3 control blocks and their utilization. There are “knobs” that the installation can turn which will effect the performance of JES3. However, quite a lot of the information is merely information.

- Resqueue buffers
- FCTs
- Console buffers
- JSAM and USAM buffers
- Job Control Table (JCT) and Job Queue Element (JQE)
- Staging Areas
### Control Block Statics

**RESQUEUE CELL POOL STATISTICS**
- **Total number of CI secondary extents in pool**: 0
- **Total number of CI resqueues in pool**: 112
- **Number of common resqueues in primary extent**: 102
- **Number of common resqueues for secondary extent**: 51

### JQE/JCT Access Method Report

**JCT Data Set Information**
- **JCT size (with SRF prefix)** = 436 bytes
- **Number of JCT read I/O's**: 0
- **Number of JCT write I/O's**: 1057
- **Number of jobs added**: 185
- **Number of jobs deleted**: 200

**JCT Data Space Information**
- **JCT data space size**: 3.10 megabytes
- **Read requests**
  - **Number**
  - **Percent**
    - Page in real storage = 1092 (99.72%)
    - Page not in real storage = 3 (.27%)
- **Write requests**
  - **Number**
  - **Percent**
    - Page in real storage = 1054 (99.71%)
    - Page not in real storage = 3 (.28%)
- **Page allocation**
  - **Number**
  - **Utilization**
    - Minimum = 316 (19.43%)
    - Average = 316 (20.09%)
    - Maximum = 317 (20.81%)
- **Number of pages released**: 1

**JQE Information**
- **JQE0 table size**: .35 kilobytes
- **JQE1 table size**: .89 kilobytes
- **JQE2 table size**: 20.00 kilobytes
- **JQE3 table size**: 56.80 kilobytes
- **JQE4 table size**: 626.46 kilobytes
- **JQE4 allocation**
  - **Number**
  - **Utilization**
    - Minimum = 2547 (81.67%)
    - Average = 2568 (82.35%)
    - Maximum = 2590 (83.05%)
The RESQUE cell pool report cannot be changed and there are no “knobs” to influence the size or number of extents in each RQ cell pool.

The JQE/JCT access method reports provides information about the:
- Size of the JCT
- Number of JCT reads/writes
- JCT data space use

JES3 will disable the JCT and use only the disk resident JCT. If JMF says that the JCT is disabled, you need to figure out why. It takes a hotstart to recover the JCT data space.

All the JCT reads were done from the data space. Look at the number of JCT reads that were satisfied without I/O to the paging subsystem. In this instance, the system performed well. Having to take a trip through the paging subsystem for some critical information may not be preferable to doing I/O to a well tuned spool. To prevent delays in accessing the JCT, use storage isolation. JES3’s data space is essentially an extension of the address space with respect to its real storage requirements.
JMF also reports on the storage reference patterns for the JCT data space. You will receive the number of allocated pages and an indication of how densely packed the active JCTs are into the data space. The JCT utilization is the ratio of the space required by the in use JCTs relative to the space represented by the number of “in use pages” in the data space. Obviously, you would like this number to be close to 100. This is an interesting number, but there is no external mechanism to affect it. Only a hot start, which causes the data space to be rebuilt, will change the density of the JCTs.

The JQE information is there for informational purposes only. There is nothing you can do to influence the packing. The size of the tables is determined by the number of jobs allowed in the system and the range of defined job numbers. The JQE4 utilization numbers represent the density of the active JQE4s among those pages held in storage for JQE4s.

The control block utilization information describes the number of FCTs used and the number of pre-allocated FCTs. The number of FCTs that you specify in the initialization stream should be at least as many as, if not larger than, the average used. You have the choice of having FCT entries available for use or having IATNUC take the trip through GETMAIN each time one is required.

JMF reports on console buffers. JES3 makes all the decisions on console buffers.

Job Analysis

The job monitoring report is produced by JMF in response to specifying JOB=nn. JMF will also record MDS and GMS subqueue information for the ‘nn’ tracked jobs if requested. JSTAT=m requests JMF to keep ‘m’ of these MDS and GMS entries.

MDS and GMS Information

Main device scheduling (MDS) and generalized main scheduling (GMS) report on:

- “Tracked job’s” time on SE
- Jobs in execution by processor
- Jobs in execution by job class
- Allocated JES3 devices by device class
- Allocated JES3 devices by SETNAME
- Length of each RESQUEUE index
- JSS work-to-do queue
- MDS and GMS scheduling analysis

When you run JMF with JOB=25 jobs to be tracked, you will notice that the jobs tracked are not the ones for which you have any interest. This is because JMF will track the first 25 (in this case) jobs that it finds on the resqueue chain. At the time the interval begins, chances are that none of the interesting jobs are in this set of RQs. The jobs of interest may not even have an RQ at the start of the interval.

There is some information of value which will only be produced if you invoke job monitoring. For this reason, specify JOB=1. This also reduces some of the JMF overhead.
Job analysis is included to exhibit the type of information that JMF will provide for the tracked jobs. JMF has included the MDS and GMS scheduling analysis for JOB01254. In this case, the job needed a tape drive that was offline to SY1. SY2 was not online forcing the job to wait. You can tell that this JMF run was from a 2.2.1 level system. The job number is four digits instead of five. You can also tell that this JMF has a problem.

The FCT function summary uses the ‘nn’ jobs tracked (in this case 50) to present the average time these jobs have spent in various phases along with the job that had the minimum and maximum (not shown) time at each point. Following this is the MDS and GMS scheduling analysis. The five lines of information about allocation retries are applicable to the entire allocation queue, not just the tracked jobs. What you are looking for, in this case, are very few allocation attempts rejected after reading the JST. If this is not the case, you should make certain that SETUP has not discontinued the use of the ARLs. This will occur if there has been some type of non-recoverable error. A message will be issued to the operator.
JES3 Monitoring Facility

SETUP is significantly less expensive if the ARLs are working. You should remember that this is for allocation retries only. Jobs that make it through allocation on their first attempt are not recorded.

Job Segment Scheduler (JSS) Queues

The JSS-READY queue is one that requires attention. If you observe the minimum queue length and the average queue length to be large, JSS is backlogged with work. JSS is not getting jobs from ending function on one DSP to the start of the next DSP. This is due to JSS not getting dispatched. Look at the FCT and AWAIT report to determine why.

<table>
<thead>
<tr>
<th>JSS WORK-TO-DO QUEUE REPORT</th>
<th>JSS MINIMUM</th>
<th>MAXIMUM</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSS-READY</td>
<td>0</td>
<td>93</td>
<td>0</td>
</tr>
<tr>
<td>CATALOG-WAIT</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RSQ-WAIT</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PROCLIB-WAIT</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MAIN-WAIT</td>
<td>69</td>
<td>162</td>
<td>161</td>
</tr>
<tr>
<td>DSP-WAIT</td>
<td>9</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>MPLOC-WAIT</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DUPNAME-WAIT</td>
<td>0</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>CI JSAM-WAIT</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

In this case, the maximum value looks quite high. This occurs when a priority is released (as so happened here) or the operator entered an *S JSS command while JES3 is processing. You should seldom see any entries on RSQ-WAIT or PROCLIB-WAIT.

A job will appear on MAIN-WAIT if it cannot be scheduled for main service. This occurs when the initiator class or group is not available on any of the eligible main processors.

CATALOG-WAIT indicates the number of jobs waiting for an SMS-managed catalog to become available to schedule the job for C/I.

DSP-WAIT indicated the number of jobs waiting for DSPs. These jobs are waiting for the DSP use count to be less than the maximum.

MPLOC-WAIT indicates the number of jobs waiting for a main processor to become available to perform LOCATE processing.

DUPNAME-WAIT indicates the number of jobs waiting for the main SE because a job of the same name is already active in main. Two batch jobs with the same name cannot be in main at the same time.

CI JSAM-WAIT queue contains jobs that are waiting for JSAM buffer usage by C/I to decrease below the allowable threshold.
The next report is quite long and yields information about activity in each main for all the initiator classes and groups that are defined in the initialization stream.

Sample reports are not included because they are fairly easy to understand. When looking at one of these reports, observe the number of started initiators and the number in use on a processor. If they differ radically, look through the groups to see if there are a lot of empty initiators. You may have experienced a workload change that requires adjustment of the GMS work load parameters.

The job queue lengths by JES3 function information provides you with a snapshot of where the jobs are located during the interval. Sometimes it is useful detecting bottlenecks in JES3 and for detecting changes in workload.

The jobs in the system are categorized by the RQINDEX function. First, you see jobs active on some JES3 DSPs including:

- Called DSPs
- NJESND DSPs
- INTRDR DSPs
- Jobs scheduled for C/I, PURGE, etc.
The remaining RQINDEX functions are those that one normally associates with
normal jobs moving through the processes of being setup to run, executing, and
sysout disposal and deletion from the system. You get the minimum, maximum, and
average queue lengths.

Look at those phases of processing for which you have control. Is there a large
backlog for CI or POSTSCAN? Is the VOLWAIT queue large and the ALLOCATION
queue empty? Is there a large queue of jobs in GMS select? If you can detect the
bottlenecks, you can improve the work load flow. Most of the time, this report is
useful in showing the distribution of the work in the system.

**High CPU Activity**

JMF has the capability of detecting and recording modules that the IATNUC and
IATAUX tasks are executing during JMF sampling. This report is optional, but is
extremely useful when investigating where certain FCTs or JES3 functions are using
CPU resources. This report compliments the FCT and AWAIT report.
This report has a good deal of useful information. The report shows the hot spots sorted by percent busy, name, and the location of the hot spot. You get the percentage of time that this portion of code was being “run” during the entire interval and as a percentage of IATNUC (or IATAUX) activity.

You can have JMF monitor hot spots on the entire module basis or sections of a module by specifying a WIDTH value. In this instance, we asked for the section to be 100 (in hexadecimal) bytes in length.
Hot spot analysis can be restricted from all modules (the default, taken here) to some subset of JES3 modules. For instance, you can specify NAMES=IATGR and restrict the report to those modules which start with this string. For example, IATGRLD, IATGRCT, IATGRSV, etc.. You can further restrict the analysis by specifying HFCT=name (for example, TSODRVR). In this case, only module activity invoked under the specified FCT will be tracked.

In the process of analyzing a potential or suspected JES3 performance problem, you may have to make several JMF runs. You will need to change the hot spot parameters to determine exactly where a hot FCT is spending time and CPU resources.

Looking at the first chart, we see that IATGRCT shows that 58% of the active IATNUC time was spent in the module between locations x'00000D00' and x'00000DFF'.

**Internal Reader**

The internal readers manage themselves within certain bounds. The installation has control over the maximum number of active internal readers through initialization stream parameters and operator commands. The number of internal readers will range from two to the maximum (20 in this case). When an internal reader finishes a job, it will end if the number of inactive readers would exceed the active readers or if there are internal readers waiting for the DSP use count to decrease. The installation may raise the number of internal readers if enough JSAM buffers exist and internal reader activity warrants. To ensure the readers are fed work, you must make certain that the DMJA FCTs have capacity (you may need more); therefore, check the FCT and AWAIT analysis reports. Installations having a lot of DJC activity may find that increasing the number of internal readers does not help because of AENQs on JNCBCTL or AWAITs for generalized subtasks. In either case, JMF will tell you.

```
JES3 INTERNAL READER DSP ANALYSIS REPORT
MAXIMUM ACTIVE INTERNAL READER DSPS ALLOWED     20
MINIMUM NUMBER OF ACTIVE INTRDRS               2
MAXIMUM NUMBER OF ACTIVE INTRDRS               5
AVERAGE NUMBER OF ACTIVE INTRDRS               2
AVERAGE NUMBER OF IDLE INTERNAL READER DSPS    1
AVERAGE LENGTH OF INTERNAL READER QUEUE        0
% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT MAXIMUM .00 %
% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT ZERO   .00 %
```
### SSI Response Time

The SSI response report gives you an indication of how well JES3 is processing requests for JES3 global services. You get the number of requests that JES3 sees and the amount of time it takes to process the staging area. The number is in milliseconds and the information is only for requests originating on the global processor.

<table>
<thead>
<tr>
<th>SSOB FUNCTION</th>
<th>NUMBER REQUESTS RECEIVED</th>
<th>NUMBER RESPONSES RECEIVED</th>
<th>MINIMUM RESPONSE TIME</th>
<th>MAXIMUM RESPONSE TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTO/WTOR</td>
<td>1</td>
<td>1</td>
<td>22.868</td>
<td>22.868</td>
</tr>
<tr>
<td>JOB TERM</td>
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<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>MDS DYNAI</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>MDS UNALLOC</td>
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<td>.000</td>
</tr>
<tr>
<td>MDS CHGDD</td>
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<td>0</td>
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</tr>
<tr>
<td>MDS CHGNQ</td>
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<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>JDS ACCESS</td>
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<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>SPOOL ALLOC</td>
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<td>DYNAL DYN</td>
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</tr>
<tr>
<td>DYNAL UNAL</td>
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<td>.000</td>
</tr>
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<td>DYNAL CHGD</td>
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</tr>
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</table>
### Outstanding Requests

**SSI DESTINATION QUEUE REPORT**

<table>
<thead>
<tr>
<th>DESTINATION QUEUE NAME</th>
<th>FSS NAME</th>
<th>FSA NAME</th>
<th>MINIMUM QUEUE LENGTH</th>
<th>MAXIMUM QUEUE LENGTH</th>
<th>AVERAGE QUEUE LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN SERVICE</td>
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<td>GENERALIZED MAIN SCHEDULING</td>
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<td>VERIFY</td>
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<td>LOCATE</td>
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<tr>
<td>JES DATA MANAGEMENT</td>
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<td>USER TRACK ALLOCATION</td>
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<tr>
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<td>MODIFY DRIVER</td>
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<td>INQUIRY DRIVER</td>
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<td>PROCESS SYSOUT</td>
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</tr>
<tr>
<td>RESERVED</td>
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<td></td>
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<tr>
<td>DYNAL - ALLOCATION</td>
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<tr>
<td>DYNAL - UNALLOCATION</td>
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<tr>
<td>COMMUNICATION FROM AN FSS</td>
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<tr>
<td>SYSOUT APPL PROG INTERFACE</td>
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<td></td>
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<tr>
<td>ENHANCED STATUS</td>
<td>00</td>
<td>00</td>
<td>00</td>
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</tr>
</tbody>
</table>

JMF will report on the outstanding requests that JES3 must process that have arrived through staging areas. This report is useful when diagnosing problems where JES3 is “not responding”. Without this information, you cannot determine if JES3 is not responding because it is hung somewhere or there is no work to do. For example, TSO/E logons may be slow because MSGC cannot process the outstanding requests or the logon request is doing not get to the global for processing because of some other delay. To the TSO/E user, there is no difference in the symptoms. Without this report, you may not be able to determine where the problem lies.
JES3 Monitoring Facility

This report should be used in conjunction with the FCT - AWAIT and hot spot reports to assist in determining where the bottleneck lies.

There is some misleading information in this report. The remaining queue values reflect real work that JES3 must do. It takes considerable JES3 knowledge to know which FCT, which queue, or why a request is placed on one queue versus another. Start by looking at queues that seem to have a high residency and determine which FCT is not processing the requests and why.
Chapter 6. Reading a JMF Hard-Copy Report

The job monitor facility (JMF) hard-copy report is divided into the following six major reports:

- **System Report** consists of the:
  - General Information Section
  - Working Set Section
  - JES3 Subtask Section
  - Global Processor Description Section

  You can use these sections to obtain information on the CPU utilization of the nucleus and auxiliary task. It also describes JES3's real storage requirements and configuration information for your installation.

- **FCT and AWAIT Report** consists of the:
  - FCT and AWAIT Report Section
  - DSP Analysis Report
  - FCT and AWAIT Highlight Report Section
  - DMJA FCT Summary Section
  - JES3 WAIT Analysis Section

  You can use these sections to obtain information on the workload distribution in your installation.

- **Spool Data Management Report** consists of the:
  - SDM Parameters Section
  - Spool Data Set Description Section
  - Spool Partition Description Section
  - Spool Space Utilization Snapshot Section
  - Single Track Table Space Allocation Section
  - Spool I/O Activity Section
  - Buffer Chaining by Spool Data Set Section
  - SDM Exceptional Conditions Section

  You can use these sections to determine if JES3 is accessing your installation's spool environment efficiently.

- **Resqueue Cell Pool Usage Report** describes the utilization of your installation's resqueue cell pools.

- **JES3 Control Block Utilization Report** contains information on the status of your installation's buffer, staging area, and FCT usage.

- **JQE/JCT Access Method Report** contains information on the JCT data space and the JCT data set. You can use this section tune the JCT access method.

- **Job Analysis Report** consists of the:
  - Job Analysis Section
  - JSS Work-to-Do Queue Report
  - JES3 Function Summary Section
  - Jobs in Execution by Main Processor Section
  - Jobs in Execution by Job Class Section
  - Allocated JES3 Devices by SETNAMEs Section
  - Job Queue Lengths Section

  You can use these sections to determine the distribution of work in your installation.

- **SSI Report** consists of the:
  - SSI Response Report Section
  - SSI Destination Queue Report Section
You can use the SSI Report to determine if JES3 is handling requests from other address spaces efficiently.

**Workload Manager Information** consists of the:
- Service class information
- SYSPLEX/SYSTEM level job eligibility information

You can use the SSI Report to determine if JES3 is handling requests from other address spaces efficiently.

---

**Usage**

To get the results you expect from JMF, you will need to determine:

- The number of reports and samples you need to ensure the results of your analysis are correct.
- The number of functional control tables (FCTs) you need to monitor to either obtain information for the appropriate FCT or give enough information for analysis.

**Determining the Number of Reports**

JMF generates one or more reports depending on the values specified in the INTERVAL and TIME parameters on the modify command. To determine the number of reports that will be generated, use the following formula:

\[
\text{Number of reports} = \frac{\text{TIME}}{\text{INTERVAL}}
\]

If a remainder exists, JMF will round up. For example, if a *X JMF,TIME=70,INTERVAL=15 command is entered, the number of reports that JMF generates equals 70 divided by 15; five reports will be generated. The final report is generated even though an entire interval has not been completed.

**Determining the Number of Samples**

JMF generates one or more samples for a report depending on the values specified in the INTERVAL and CYCLE parameters on the modify command. IBM suggests generating at least 1000 samples for each report. To determine values to specify on the INTERVAL and CYCLE parameters, use the following formula:

\[
\text{Number of samples} = \frac{\text{INTERVAL} \times 60}{\text{CYCLE}}
\]

For example, if 1000 samples and 4 reports should be generated in 60 minutes, the operator should enter a *CALL JMF,CYCLE=.9,TIME=60,INTERVAL=15 command to generate the results.

**Note:** The formula provides a method for estimating the number of samples. It is not an exact calculation and varies based upon your system overhead.

**Determining the Number of FCTs**

JMF can report on its use of FCTs and use an FCT report to identify how the work is distributed across JES3 functions. An FCT report contains information on the first 250 FCTs in the FCT chain. If you require information for a specific FCT, you will need to determine the number of FCTS on the FCT chain that precede the required FCT. The last entry in the report will be the requested FCT. Use the following formula to approximate the number of FCTs in your installation.

\[
\text{Number of FCTs} = \frac{\text{Number of permanently resident FCTs}}{2} + \text{the number of MAINPROC statements}
\]
Description of the JMF Hardcopy Report

The General Information Section provides you with a description of:
- The job monitor facility (JMF) command you issued to generate the report
- The nucleus (NUC) and auxiliary (AUX) task

It allows you to evaluate the activity in the nucleus and auxiliary task.

Notes for the General Information Section:

Work in the JES3 address space can be processed under the NUC or AUX task. The work processed under each task causes the task to be placed in one of six mutually exclusive states. The task can be one of the following:
- Posted and using the CPU
- Posted but not using the CPU
- In a normal MVS wait state
- In a nonstandard MVS wait
- In a suspended state because a local lock is required
- In a suspended state for some other reason

The nucleus or auxiliary task can be in only one of the states at a time. For the NUC and AUX task associated with JES3, JMF reports the percentage of sample time the task was in a state.

Description of the General Information Section:

DATE = mm/dd/yy - the date JMF generated the report.
TIME = hhmmss - the time of day that JMF generated the report.
System Report

SAMPLING CYCLE = nn.nn SECONDS - is the time that elapsed between samples.

SAMPLES TAKEN = nnnnnnnn - is the number of samples that JMF took before generating the report.

JMF CALL COMMAND: *CALL JMF ... - is the *CALL command that you issued to generate the report.

task POSTED - ACTIVE nn.nn% - is the percentage of time the NUC or AUX task was using the CPU during the JMF sampling period.

task POSTED - NOT ACTIVE nn.nn% - is the percentage of time the NUC or AUX task was posted but was not using the CPU during the JMF sampling period.

task NOT POSTED nn.nn% - is the percentage of time the NUC or AUX task spent in a normal MVS WAIT state during the sampling period. The nucleus or auxiliary task is not posted when none of the JES3 functions under the nucleus or auxiliary task are ready to use the CPU.

task IN NONSTANDARD WAIT nn.nn% - is the percentage of time the NUC or AUX task spent in a wait state other than the normal MVS WAIT state during the sampling period. Page faults is an example of a nonstandard wait.

task SUSPENDED - LOCAL LOCK REQUIRED nn.nn% - is the percentage of time the NUC or AUX task was suspended while waiting for a local lock during the sampling period.

task SUSPENDED - OTHER nn.nn% - is the percentage of time the task was suspended for a reason other than waiting for a local lock during the sampling period.

Tuning Information:

The task information allows you to determine how much JES3 is utilizing the CPU. Use the percentage provided in POSTED - ACTIVE to determine the CPU utilization for the task.

The amount of CPU utilization for the NUC task should not exceed 60%. The amount of CPU utilization for the AUX task should not exceed 75%. If the CPU utilization goes over the recommended percentages, it may lead to performance degradation. If your installation is over the recommended amount of CPU utilization, you can:
- Use multi-tasking to offload some of the responsibilities of the NUC task
- Offload CI processing to a CI FSS address space
- Reduce the number of jobs in the system
- Avoid using dynamic writers.
The Working Set Section provides you with information on the real storage requirements of the JES3 global address space. The Working Set Section gives you an approximation of JES3’s real storage requirement.

Notes for the Working Set Section:
JMF illustrates how real storage is used in a histogram. Each asterisk in the histogram represents 2.5% of the sampling time JMF found JES3 using the specified amount of real storage. The amount of time JES3 used real storage should total 100%. For example, for the graph shown above:

- 10% of the time JMF was taking samples, JES3 used 8900 kilobytes of real storage.
- 15% of the time JMF was taking samples, JES3 used 9000 kilobytes of real storage.
- 12.5% of the time JMF was taking samples, JES3 used 9100 kilobytes of real storage.
- 22.5% of the time JMF was taking samples, JES3 used 9200 kilobytes of real storage.
- 12.5% of the time JMF was taking samples, JES3 used 9300 kilobytes of real storage.
- 22.5% of the time JMF was taking samples, JES3 used 9400 kilobytes of real storage.
- 2.5% of the time JMF was taking samples, JES3 used 9500 kilobytes of real storage.

The JES3 Monitoring Facility (JMF) histogram for the JES3 WORKING SET can map working set sizes in the range of 1000K to 999999K. Working set sizes larger than 999999K are included in the maximum value on the histogram.

**Description of the Working Set:**

- **AVERAGE WORKING SET SIZE** = nnnnK - is the average of amount of real storage JES3 used
- **MINIMUM WORKING SET SIZE** = nnnnK - is the least amount of real storage JES3 used
- **MAXIMUM WORKING SET SIZE** = nnnnK - is the largest amount of real storage JES3 used
- **NUMBER OF FIXED PAGES** = nn = nnK - the number of fixed pages of real storage JES3 used.
- **AUXILIARY SLOT COUNT** = nn = nnK FOR JMF - is the number of slots that JES3 used on your installation’s auxiliary paging devices.
- **THE ALLOCATED STORAGE FOR JMF nnn K** - indicates the amount of storage JMF used while monitoring JES3. This number is based on the amount of virtual storage used instead of the amount of real storage.

**JES3 PAGING COUNTS DURING JMF MONITORING** indicates the number of times JES3 pages were paged in and out of storage.

- **PAGE-IN'S** = nn - indicates the number of times the system brought a JES3 page from auxiliary storage into real storage.
- **PAGE-OUT'S** = nn - indicates the number of times the system moved a page of real storage to auxiliary storage.
- **PAGE-RECLAIMS** = nn - indicates the number of JES3 pages in real storage that were either marked to be release or released and later reclaimed by JES3.
- **PAGING-RATE** = .nn % PAGE/SECOND - indicates the number of JES3 pages that were paged in and out per second. See the tuning information for this section if the paging rate is above 5%.
SYSTEM PAGING RATE = nn PAGES/SECOND - indicates the number of pages of storage the system paged per second.

**Tuning Information:**

If the paging rate is less than 5 pages/second, JES3 is able to obtain enough real storage. If the paging rate is above 5 pages/second, JES3 cannot obtain enough real storage and you may be experiencing a degradation in JES3's performance.

If you are experiencing a problem with the amount of real storage JES3 is able to use, use storage isolation to ensure JES3 has enough real storage for its operation. See [z/OS MVS Initialization and Tuning Guide](#) for additional information on storage isolation.
The JES3 Subtask Section contains information that describes the number of times JMF found a JES3 subtask posted during the JMF sampling period. The JES3 Subtask Section does not contain any information that you can use to diagnose or tune JES3, it provides only information.

Notes for the JES3 Subtask Section:

A subtask exists for each of the following JES3 functions:
- Processing that occurs under the JES3 main (Nuc) task
System Report

- Processing that occurs under the JES3 auxiliary (Aux) task
- Converter/Interpreter processing
- General routines for JES3 processing
- Locate processing used during C/I processing
- Main device scheduler (MDS) processing
- JESXCF communication
- SNA/RJP processing.

Description of the JES3 Subtask Section:

JES3 SUBTASKS POSTED CONCURRENTLY - indicates the number of JES3 subtasks that were found posted at the same time.

JES3 SUBTASKS IN DISPATCHING SEQUENCE - identifies the JES3 subtasks that run in the JES3 global address space. Each JES3 subtask is listed in the dispatching order with the percentage of time JMF found the subtask posted during the sampling time.

IATNUC POSTED BUT NO FCT POSTED = nn.nn% - provides the percentage of time JMF found the nucleus task posted but could not find an FCT posted that runs under the nucleus task.

IATAUX POSTED BUT NO FCT POSTED = nn.nn% - provides the percentage of time JMF found the auxiliary task posted but could not find an FCT posted that runs under the auxiliary task.
The JES3 Global Processor Description section contains information for JES3 running on the global in your installation. It also describes the attributes of the JES3 global address space.

### Notes for the JES3 Global Processor Section:

The amount of real storage available on the global is provided in this section. JMF describes the amount of real storage JES3 uses in the Working Set Section. The amount of real storage JES3 uses should not approach the amount of storage allocated to the global.

### Description of the JES3 Global Processor Section:

- **CPU MODEL = modelno** - identifies the model number of the central processing unit (CPU).

- **REAL STORAGE SIZE = nn.nn MEGS** - is the amount of real storage for the CPU.

---

<table>
<thead>
<tr>
<th>CPU MODEL = 3090</th>
<th>REAL STORAGE SIZE = 63.5 MEGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOBAL PROCESSOR CPU SERIAL NUMBER: 140410 (1)</td>
<td></td>
</tr>
<tr>
<td>240410 (2)</td>
<td></td>
</tr>
<tr>
<td>JES3 CPU ID (FROM MAINPROC CARD): JULLIET</td>
<td></td>
</tr>
<tr>
<td>MVS RELEASE = SP3.1.0</td>
<td></td>
</tr>
<tr>
<td>JES3 RELEASE = SP311</td>
<td></td>
</tr>
<tr>
<td>JES3 IS NOT IN THE APG PRIORITY LEVEL</td>
<td></td>
</tr>
<tr>
<td>JES3 IS NON-SWAPPABLE</td>
<td></td>
</tr>
<tr>
<td>JES3 DISPATCHING PRIORITY = 255</td>
<td></td>
</tr>
</tbody>
</table>

#### JMF OVERHEAD

- **MINIMUM = 0.001232 SEC.**
- **MAXIMUM = 0.026496 SEC.**
- **AVERAGE = 0.004736 SEC. 2.36 % OF JMF CYCLE TIME**

#### MVS OVERHEAD

- **MINIMUM = 0.000224 SEC.**
- **MAXIMUM = 0.012176 SEC.**
- **AVERAGE = 0.000368 SEC. .18 % OF JMF CYCLE TIME**
GLOBAL PROCESSOR CPU SERIAL NUMBER: sernum - identifies the serial number of the CPU.

JES3 CPU ID: sysname - provides the identifier your installation assigned to the global.

MVS RELEASE n.n - identifies the release level of MVS that is running on this main.

JES3 RELEASE SPnnn - identifies the release level of JES3 that is running on the main.

JES3 {IS NOT | IS } IN THE APG PRIORITY LEVEL - JES3 should be in the APG priority level. If it is not in the APG priority level, your installation may experience a performance degradation problem.

JES3 IS { SWAPPABLE | NON-SWAPPABLE } - indicates whether the JES3 address space is swappable.

JES3 DISPATCHING PRIORITY nnn - gives the dispatching priority MVS assigns to JES3.

JMF OVERHEAD provides the percentage of CPU time required by JMF to take samples.
  MINIMUM= .nnnn SEC - is the minimum amount of time JMF took to take a sample.
  MAXIMUM= .nnnn SEC - is the maximum amount of time JMF took to take a sample.
  AVERAGE= .nnnn SEC - is the average amount of time JMF took to take a sample.
  nn.nn% OF JMF INTERVAL TIME - is the percentage of time of the interval you specified on the *CALL JMF command.

MVS OVERHEAD gives the percentage of CPU time required by MVS to dispatch JMF. The amount of time required by MVS to dispatch JMF is from the time JMF is posted to the time MVS dispatches JMF.
  MINIMUM .nnnn SEC - is the minimum amount of time MVS took to dispatch JMF.
  MAXIMUM .nnnn SEC - is the maximum amount of time MVS took to dispatch JMF.
  AVERAGE .nnnn SEC - is the average amount of time MVS took to dispatch JMF.
  nn.nn% OF JMF CYCLE TIME - is the percentage of time MVS took to dispatch JMF. If the percentage of JMF cycle time is above 10%, you should adjust the cycle time and interval level on the *CALL JMF command so that it is within the acceptable range.

Tuning Information:

The amount of overhead for JMF and MVS should be less than 10%. If the amount of overhead for either MVS or JES3 is greater than 10%, you should adjust the INTERVAL and CYCLE parameter on the *CALL JMF command so that the amount of overhead is within the acceptable range.
### Description of the FCT and AWAIT Report:

**MULTI-FUNCTION MONITOR** - provides information for JES3's dispatcher the multi-function monitor (MFM).

- **ACTIVE nn.nn% of SAMPLES** nn.nn% - provides the percentage of time during the JMF run that the MFM was active.
- **nn.nn% of IATNUC** - provides the amount of CPU time the MFM used.
- **SUSPENDED nn.nn% of SAMPLES** - is the percentage of time during the JMF run that the MFM was suspended.
- **IN OS WAIT nn.nn% of SAMPLES** - provides the percentage of time during the JMF run that the MFM was waiting to be posted.

**JES3 IRB's** - provides a table of information for the interrupt request blocks (IRB's) that JES3 uses.

- **IRB NAME** identifies the name of the IRB. JES3 uses the following IRBs:
  - **ATIME** - is the ATIME service
  - **CE APG** - is the channel-end appendage
  - **AE APG** - is an abnormal appendage
  - **An address** - indicates JMF was unable to identify the IRB

- **ACTIVE % OF SAMPLES** - is the percentage of time the IRB was using the CPU during the JMF sampling period.

- **SUSPENDED % OF SAMPLES** - is the percentage of time the IRB spent in a normal MVS WAIT state during the JMF sampling period.
OS WAIT % OF SAMPLES - is the percentage of time the IRB spent in a wait state other than a normal MVS WAIT period.

The DSP Analysis Report detailed CPU utilization information for each DSP that runs under control of the JES3 or auxiliary task.

### Notes for the DSP Analysis Report:

The DSP Analysis Report provided information for resident and nonresident DSPs on the FCT chain. JMF reports on each DSP as it is found on the FCT chain. The activity for resident DSPs should be 100%. Because nonresident DSPs are not always on the FCT chain, JMF reports on a nonresident DSPs only while the DSP is on the FCT chain.

### Description of the DSP Analysis Report:

<table>
<thead>
<tr>
<th>DSP Name</th>
<th>Device Name</th>
<th>FCT Priority</th>
<th>Activity Under IATNUC Task</th>
<th>Average Await Duration</th>
<th>Total Await Duration</th>
<th>Maximum Await Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCMO</td>
<td><strong>NONE</strong></td>
<td>254</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 DSP</td>
<td>CONCMO</td>
<td><strong>NONE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT ON FCT CHAIN</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT IN NUC MODE</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT IN AUX MODE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTIVITY UNDER IATNUC TASK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT POSTED - ACTIVE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT POSTED - NOT ACTIVE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT NOT POSTED</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT IN OS WAIT</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT SUSPENDED-LOCAL LOCK REQ</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVOID IS WAIT FOR WORK OR STANDARD FCT AVOID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVOID IN USE</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVOID POSTED - ACTIVE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVOID POSTED - NOT ACTIVE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVOID NOT POSTED</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVERAGE AVOID DURATION</td>
<td>6.93 SEC.</td>
<td>6.93 SEC.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>TOTAL AVOID DURATION</td>
<td>20.80 SEC.</td>
<td>20.80 SEC.</td>
<td></td>
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</tr>
<tr>
<td>MAXIMUM AVOID DURATION</td>
<td>14.40 SEC.</td>
<td>14.40 SEC.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>2 DSP</td>
<td>CONSERV</td>
<td><strong>NONE</strong></td>
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<td></td>
</tr>
<tr>
<td>2 DSP</td>
<td>CONSERV</td>
<td><strong>NONE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT ON FCT CHAIN</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT IN NUC MODE</td>
<td>100.00 % OF SAMPLES</td>
<td>100.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCT IN AUX MODE</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF SAMPLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTIVITY UNDER IATNUC TASK</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>FCT POSTED - ACTIVE</td>
<td>.05 % OF SAMPLES</td>
<td>1.05 % OF IATNUC</td>
<td>.05 % OF FCT</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>FCT POSTED - NOT ACTIVE</td>
<td>.50 % OF SAMPLES</td>
<td>.50 % OF FCT</td>
<td></td>
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<tr>
<td>FCT NOT POSTED</td>
<td>99.40 % OF SAMPLES</td>
<td>99.40 % OF FCT</td>
<td></td>
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</tr>
<tr>
<td>FCT IN OS WAIT</td>
<td>.00 % OF SAMPLES</td>
<td>.00 % OF FCT</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>FCT SUSPENDED- LOCAL LOCK REQ</td>
<td>.03 % OF SAMPLES</td>
<td>.03 % OF FCT</td>
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<tr>
<td>AVOID IS WAIT FOR WORK OR STANDARD FCT AVOID</td>
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<tr>
<td>AVOID IN USE</td>
<td>99.96 % OF SAMPLES</td>
<td>99.96 % OF FCT</td>
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<td></td>
</tr>
<tr>
<td>AVOID POSTED - ACTIVE</td>
<td>.05 % OF SAMPLES</td>
<td>1.05 % OF IATNUC</td>
<td>.05 % OF FCT</td>
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<tr>
<td>AVOID POSTED - NOT ACTIVE</td>
<td>.50 % OF SAMPLES</td>
<td>.50 % OF FCT</td>
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</tr>
<tr>
<td>AVOID NOT POSTED</td>
<td>99.40 % OF SAMPLES</td>
<td>99.40 % OF FCT</td>
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<tr>
<td>AVERAGE AVOID DURATION</td>
<td>.25 SEC.</td>
<td>.25 SEC.</td>
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<tr>
<td>TOTAL AVOID DURATION</td>
<td>29 MIN. 17.20 SEC.</td>
<td>29 MIN. 17.20 SEC.</td>
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</tr>
<tr>
<td>MAXIMUM AVOID DURATION</td>
<td>7.80 SEC.</td>
<td>7.80 SEC.</td>
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</tr>
</tbody>
</table>
seq number - is a number JMF assigns to the DSP.

DSP NAME IS dspname - is the name of the DSP.

DEVICE NAME IS devname - is the name of the device that the DSP controls. If **NONE** appears as the device name, the DSP is not used to control a device.

FCT PRTY IS nnn - specifies the priority number assigned to the FCT that the DSP runs under.

FCT ON FCT CHAIN nnn.nn% - identifies the amount of time JMF found the FCT on the FCT chain during the sampling time.

FCT IN NUC MODE nnn.nn% - identifies the amount of time JMF found the DSP executing under control of the nucleus task.

FCT IN AUX MODE nnn.nn% identifies the amount of time JMF found the DSP executing under control on the auxiliary task.

ACTIVITY UNDER IATNUC TASK provides information on the FCT that the DSP runs under.

FCT POSTED - ACTIVE nn.nn% OF SAMPLES - identifies the amount of time JMF found the FCT posted and processing work.

FCT POSTED - NOT ACTIVE nn.nn% OF SAMPLES - identifies the amount of time JMF found the FCT not processing any work. This represents the amount of time the FCT may have be waiting for a resource or it may be an indication the FCT is in an infinite loop.

FCT NOT POSTED nn.nn% OF SAMPLES - is the amount of time JMF found the FCT not posted for work.

FCT IN OS WAIT nn.nn% OF SAMPLES - identifies the amount of time JMF found the FCT to be waiting for the completion of a request. The FCT could have been for waiting for spool I/O to complete or for a resource to be obtained.

FCT SUSPENDED-LOCAL LOCK REQ nn.nn% OF SAMPLES - is the percentage of time the FCT was suspended while waiting for a local lock during the JMF sampling period.

JMF provides an AWAIT description when a JES3 DSP enters a wait state. JMF identifies each wait state and provides the percentage of samples JMF found the DSP to be in that wait state. The following is a list of some of the AWAIT descriptions that can appear in a JMF report. Macro IATYAWR contains a complete list of AWAIT reason codes and their associated descriptions.

**AWAIT IS WAIT FOR WORK OR STANDARD FCT AWAIT**

This AWAIT indicates the FCT is waiting for work. An FCT is busy when a FCT issues an AWAIT macro that causes the FCT to enter a wait state and the MFM to scan the FCT chain for a posted FCT. If an FCT is waiting for some event to complete, such as I/O completion, the FCT is considered to be busy because the FCT cannot process other requests.

If you subtract this percentage from 100%, the resulting percentage is the amount of time the FCT was busy processing a request or job.

**AWAIT IS WAITING FOR JESREAD I/O COMPLETION - blockid**

**AWAIT IS WAITING FOR AWRITE I/O COMPLETION - blockid**

**AWAIT IS WAITING FOR WRTCHAIN I/O COMPLETION - blockid**

These AWAITS indicate that the FCT is waiting for I/O activity for a single record file (SRF) to complete. It is the result of a JESREAD, AWRITE, or
WRTCHAIN request. The JESREAD macro is used to read an SRF; the AWRITE and WRTCHAIN macro are used to write SRF's. If a control block id was specified on the JESREAD, AWRITE, or WRTCHAIN request, it will appear in the "blockid" portion of the description text.

Await is waiting for multi-record file (MRF) input I/O to complete
Await is waiting for multi-record file (MRF) output I/O to complete

These Await's indicate that the FCT is waiting for I/O activity for a multi-record file (MRF) to complete. It is the result of an AOPEN, ALOCATE, ABLOCK, ADEBLOCK, ACLOSE, or ABACKR request.

Await is waiting for a JobTAT read to complete (FDBCLOSE)
Await is waiting for a JobTAT write to complete (FDBCLOSE)

These Await's indicate that the FCT is waiting for the JOBTAT to be read or written because of a spool space allocation request.

Await is waiting for spool space to become available

This Await indicates that there is not enough spool space available to process a spool space allocation request. If the total Await duration is high, you may need to make more spool space available. This can be accomplished as follows:

- Use the AGE parameter on the *MODIFY,U command to cancel jobs that have held output on the queue for a specified number of days.
- Use the *MODIFY,Q,DD= to assign another volume to the spool partition that does not have enough spool space available.
- Use the *MODIFY,Q,SP= to assign an overflow spool partition to the spool partition that does not have enough spool space available.
- Perform a warm start and add a new spool data set.

Await is waiting for a generalized subtask to become available or to finish processing a request - function

This Await indicates that the FCT is waiting for a generalized subtask to become available or for it to finish processing a request. There are only a limited number of generalized subtasks available. When they are all busy, the FCT will have to wait for its request to be processed. An FCT uses the IATXCSF macro to perform a function under a generalized subtask. The DESC parameter on the IATXCSF macro specifies a description of the function being subtasked. If the DESC was specified on the IATXCSF macro, it will appear in the "function" portion of the description text.

The following are examples of some of the functions that may appear in the Await description:

- ALOAD-modname - The FCT is waiting for the specified module to be ALOADed.
- IATXSEC-index - The FCT is waiting for an IATXSEC (security) request to complete. The index value that appears after "IATXSEC" is the hexadecimal SSXINDEX value (from macro IATYSSX) that was specified on the IATXSEC request. The index value helps to determine what type of security related request was being performed. See macro IATYSSX for the meanings of the different SSXINDEX values.
- SYNCH IATXSMF - The FCT is writing an SMF record through the IATXSMF macro. The request is synchronous. That is, control will not be returned to the FCT until the subtask has processed the request.
AWAIT IS WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - resource

AWAIT IS WAITING FOR SHARED USE OF AN AENQ RESOURCE - resource
These AWAITs indicate that the FCT has issued an AENQ macro and is waiting for shared or exclusive use of the specified resource. One of the following resources will appear in the description:

• RQ
• DLQ
• JNCBCTL
• SYSUNIT
• CHKPNT
• WTD
• FCT
• PRO
• SNARMVCB
• ICT
• LCLJNEWS
• RJPJNEWS
• TSOJNEWS
• FSSCKPT

AWAIT IS WAITING FOR A CATALOG LOCATE REQUEST TO COMPLETE
This AWAIT indicates the FCT is waiting because JES3 is attempting to locate information in the catalog for a data set. If the AVERAGE AWAIT DURATION is high, you may have not set up your installation's catalogs efficiently. See \textit{z/OS JES3 Initialization and Tuning Guide} for information on setting up catalogs for JES3-managed data sets.

AWAIT IS WAITING FOR JOB NUMBERS TO BECOME AVAILABLE FOR AN AJOBNUM REQUEST (TVTJNMSK)
This AWAIT indicates that the FCT has issued an AJOBNUM macro to allocate a job number and there are no job numbers available.

AWAIT IS WAITING FOR A JDS TO BECOME AVAILABLE FOR A JDS RELATED MACRO REQUEST (RQJDSFCT)

AWAIT IS WAITING FOR ANOTHER FCT TO RELEASE CONTROL OF A JDS ENTRY (JDSDSPH)
These AWAITs indicate that the FCT has issued a JDS related macro such as JDSGET, JDSHOLD, or JESMSG and another FCT has control of the JDS.

AWAIT IS WAITING FOR A CELL WITHIN A CELLPOOL TO BECOME AVAILABLE
This AWAIT indicates that the FCT has issued an IATXGCL request to obtain a cell from a cellpool, but there are no cells available.

AWAIT IS WAITING FOR FILE DIRECTORY ENTRIES TO BECOME AVAILABLE
This AWAIT indicates that there are no file directory entries available for the FCT to perform a spool I/O request. A file directory entry is needed typically when an FCT issues an AOPEN or WRTCHAIN request. If the TOTAL AWAIT DURATION is high, you may need to increase the number of file directory entries on the FD parameter of the BUFFER statement.

AWAIT IS WAITING FOR JSAM BUFFERS TO BECOME AVAILABLE
This AWAIT indicates that there are no JSAM buffers available for the FCT to perform a spool I/O request. A JSAM buffer is needed anytime an FCT wants to read or
write a Single Record File or Multi-Record File. If the TOTAL AWAIT DURATION is high, you may need to increase the number of JSAM buffers on the PAGES parameter of the BUFFER statement.

**AWAIT IS WAITING FOR ANOTHER FCT TO FINISH USING THE JNC B FOR A JNCBHLD REQUEST**
This AWAIT indicates that a JNCBHLD request was issued to hold the JNCB for a DJC net, but another FCT has control of the JNCB. A JNCBHLD request is issued before accessing the information associated with the DJC net.

**AWAIT IS FCT IN SPECIALIZED RESCHEDULE AND IS WAITING FOR DEVICES TO BECOME AVAILABLE OR TO BE CANCELLED**
This AWAIT indicates that the DSP is waiting because it was put into a specialized rescheduling state. For example, if the operator issues a command to start an unavailable device as a writer, JES3 places the writer in a specialized rescheduling state.

**AWAIT IS X'nn' AT address**
This AWAIT indicates JMF could not identify why the FCT is AWAITing.

- X'nn' identifies the ECF mask for the AWAIT
- address provides the address of the AWAIT

For each AWAIT description, JMF provides the following:

- **AWAIT IN USE nn.nn% OF SAMPLES nn.nn% OF FCT** - is the percentage of time the DSP was in a JES3 wait state.
- **AWAIT POSTED - ACTIVE nn.nn% OF SAMPLES nn.nn% of IATNUC nn.nn% OF FCT** - is the percentage of time the DSP was using the CPU during the JMF sampling period.
- **AWAIT POSTED - NOT ACTIVE nn.nn% OF SAMPLES nn.nn% OF FCT** - is the percentage of time the DSP was posted by not using the CPU during the JMF sampling period.
- **AWAIT NOT POSTED nn.nn% OF SAMPLES nn.nn% OF FCT** - is the percentage of time the DSP spent in a JES3 wait state during the sampling period.
- **AVERAGE AWAIT DURATION nn MIN. nn.nn SEC.** - is the average amount of time the FCT waited for each JES3 wait state to end.
- **TOTAL AWAIT DURATION nn MIN. nn.nn SEC.** - is the total amount of time the FCT waited for all the JES3 wait states to complete.
- **MAXIMUM AWAIT DURATION nn MIN. nn.nn SEC.** - is the longest amount of time the FCT waited for a JES3 wait state to end.
- **mod + adr ECF** - identifies the module that issued the AWAIT macro and the displacement into the module to the AWAIT return address.
System Report

ALL VALUES ARE % OF SAMPLES
SEQ
NUM

DSPNAME

DEVICE

FCT
PRI

FCT ON
CHAIN

NUC
MODE

AUX
MODE

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CONCMD
CONSERV
TIMER
READYQ
JSAM
CONSDM
RJPCONS
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DYNAL
ARMDRVR
CIDRVR
OUTSERV
VERIFY
SETUP
OUTSERV
OUTSERV
OUTSERV
OUTSERV
PURGE

**NONE**
**NONE**
**NONE**
**NONE**
**NONE**
**NONE**
**NONE**
C00
C70
A1
C50
CD0
C20
A5
A3
CA0
C60
A7
A6
A0
C10
CE0
A4
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Z0
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CC0
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CB0
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z/OS V1R12.0 JES3 Diagnosis

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NOT OR IN OS
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POSTED POSTED
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The FCT Summary Report summarizes the information provided in DSP Analysis Report in a chart. You can use this chart to obtain an overview of the work distribution in your complex.
The FCT Summary Report contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Notes for the FCT Summary Report:

You can use this report with the FCT and AWAIT Highlight Report to get a quick overview of the distribution of the JES3's work and potential problem areas in your installation. For more detailed information on each DSP, see to the DSP Analysis Report.

Description of the FCT Summary Report:

SEQ NUM nn - is the sequence number assigned by JMF to the FCT on the FCT chain. This sequence number matches the DSP sequence number in the DSP Analysis Report.

DSPNAME ds pname - is the name of DSP that runs under the control of the FCT.

DEVICE dev - is the device or main associated with the FCT.

FCTPRI nnn - is the priority of the FCT on the FCT chain.

FCT ON CHAIN nnn.nnn - is the amount of time the FCT remained on the FCT chain. 100.00% should appear for all the permanently resident FCTs in your installation.

NUC MODE nnn.nn - is the percentage of time the FCT executed in the JES3 nucleus task.

AUX MODE nnn.nn - is the percentage of time the FCT executed in the auxiliary task.

IATNUC and IATAUX ACTIVITY nn.nn - provides detailed summary information of the processing in the nucleus (IATNUC) or auxiliary (IATAUX) task.

POSTED ACTIVITY nnn.nn - is the percentage of time the FCT was using the CPU while executing in the nucleus or auxiliary task during the JMF sampling period.

POSTED NOT ACT nnn.nn - is the percentage of time the FCT was posted by not using the CPU while running under the nucleus or auxiliary task during the JMF sampling period.

NOT POSTED nnn.nn - is the percentage of time the FCT spent in a normal MVS wait while running under the nucleus or auxiliary task during the JMF sampling period.

SUSPENDED OR IN OS WAIT nnn.nn is the percentage of time the FCT was spent in a wait state other than the normal MVS wait state while running under the nucleus or auxiliary task during the JMF sampling period.
### The 5 Most Active FCT's in IATNUC

<table>
<thead>
<tr>
<th>SEQ</th>
<th>DSP NAME</th>
<th>FCT POSTED - ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>CONSDM</td>
<td>.60 % of samples</td>
</tr>
<tr>
<td>4</td>
<td>JSAM</td>
<td>.51 % of samples</td>
</tr>
<tr>
<td>2</td>
<td>CONSERV</td>
<td>.42 % of samples</td>
</tr>
<tr>
<td>19</td>
<td>MAIN</td>
<td>.29 % of samples</td>
</tr>
<tr>
<td>64</td>
<td>DMJA</td>
<td>.25 % of samples</td>
</tr>
</tbody>
</table>

**THE 5 Most Active FCT'S IN IATAUX**

**NO FCTS WERE EVER ACTIVE IN IATAUX**

### The 5 Most 'Posted and Not Active' FCT's in IATNUC

<table>
<thead>
<tr>
<th>SEQ</th>
<th>DSP NAME</th>
<th>FCT POSTED - NOT ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>READYQ</td>
<td>3.59 % of samples</td>
</tr>
<tr>
<td>4</td>
<td>JSAM</td>
<td>3.20 % of samples</td>
</tr>
<tr>
<td>5</td>
<td>CONSDM</td>
<td>1.41 % of samples</td>
</tr>
<tr>
<td>64</td>
<td>DMJA</td>
<td>1.19 % of samples</td>
</tr>
<tr>
<td>19</td>
<td>MAIN</td>
<td>1.09 % of samples</td>
</tr>
</tbody>
</table>

**THE 5 MOST 'POSTED AND NOT ACTIVE' FCT'S IN IATAUX**

**NO FCTS WERE EVER POSTED - NOT ACTIVE IN IATAUX**

### The 5 Most 'In OS Wait' FCT's in IATNUC

**NO FCTS WERE EVER IN OS WAIT IN IATNUC**

### The 5 Most 'In OS Wait' FCT's in IATAUX

**NO FCTS WERE EVER IN OS WAIT IN IATAUX**
The FCT and AWAIT Highlight section quickly identifies for you the FCTs that potentially cause problems in your installation. JMF identifies at the most 5 FCTs that:

- Were the most active
- Were posted but were in a normal MVS wait state
- Were posted but in a state other than a normal MVS wait state

The FCT and AWAIT Highlight Report also identifies the ten areas that might be experiencing a backlog of jobs.

Notes for the FCT AWAIT Highlight Report:

You can use this report with the FCT and AWAIT Highlight Report to get a quick overview of the distribution of the JES3's work and potential problem areas in your installation. For more detailed information on each DSP, see the DSP Analysis Report.

Description of the FCT and AWAIT Highlight Report:

SEQ NUM nn - is the sequence number JMF assigned to the DSP. This is the same number that identifies the DSP in the DSP Analysis Report and the FCT Summary Report.

DSP NAME dspname - identifies the DSP by its name.

FCT POSTED - ACTIVE nn.nn % OF SAMPLES nn.nn% OF TASK - is the percentage of time the FCT used the CPU during the JMF sampling period. nn.nn% OF SAMPLES is the percentage of time the FCT was using the CPU while running under the nucleus or auxiliary task during the JMF sampling period. nn.nn% of TASK is the percentage of time the FCT was using the CPU while running under the nucleus or auxiliary task while the task was active.

FCT POSTED - NOT ACTIVE nn.nn % OF SAMPLES nn.nn% OF TASK - is the percentage of time the FCT spent in a normal MVS wait state during the JMF...
sampling period. nn.nn% OF SAMPLES is the percentage of time the FCT spent in a normal MVS wait state while running under the nucleus or auxiliary task during the JMF sampling period. nn.nn% of TASK is the percentage of time the FCT spent in a wait state while running under the nucleus or auxiliary task while the task was active.

Description for The 10 Biggest JES3 AWAIT Bottlenecks Section:

SEQ NUM nn - is the sequence number JMF assigned to the DSP. This is the same number that identifies the DSP in the DSP Analysis Report and the FCT Summary Report.

DSP NAME dspname - identifies the DSP by its name.

TASK taskname - identifies either the nucleus or auxiliary task as the task the FCT was running under.

REASON rsn - identifies the resource that caused the FCT to be in a normal MVS wait state.

TOTAL AWAIT DURATION nn.nn SECS - is the total amount of time the FCT spent in a normal MVS wait state before JES3 obtained the resource for the FCT.

MAX WAIT DURATION nn MIN. nn.nn SEC. - is the maximum amount of time the FCT spent in a normal MVS wait state before JES3 obtained the resource for the FCT.

The DMJA FCT Summary provides information on the activity of the DMJA FCTs in your installation. The DMJA FCT receives control to process a job's SYSIN or SYSOUT data sets.

Description of the DMJA FCT Summary Report:

MAXIMUM ACTIVE DMJA FCTS ALLOWED nn - is the maximum number of DMJA FCTs that can be active concurrently in your system. The maximum number of FCTs allowed in your installation is defined in the DSP dictionary, IATGRPT. You can issue a "*I,X,D=DMJA command to determine the maximum number of DMJA FCTs that can be active concurrently in your system.

If you need to increase the number of DMJA FCTs that can run concurrently in your system, you can use the "*F,X,D=DMJA,MC=nn to increase the maximum count for the DMJA FCT.

MINIMUM NUMBER OF ACTIVE DMJA FCTS nn - is the least number of DMJA FCTs that were active concurrently in your system.
MAXIMUM NUMBER OF ACTIVE DMJA FCTS nn - is the most number of DMJA FCTs that were active concurrently in your system.

AVERAGE NUMBER OF ACTIVE DMJA FCTS nn - is the average number of DMJA FCTs that were active concurrently in your system.

**Tuning Information:**

If the average number of active DMJA FCTs is close to the maximum number of DMJA FCTs allowed in your installation, your installation may be experiencing a bottleneck processing the SYSIN and SYSOUT data sets created in your installation. You may want to:

- Locate any jobs that are creating large number of SYSOUT data sets and determine if the data sets are necessary.
- Consider altering the maximum number of DMJA FCTs allowed in your installation. You can alter the number of DMJA FCTs that can run concurrently in your system by entering an *F,X,D=DMJA,MC=nn command.

The JES3 WAIT Analysis Section identifies the reasons for a nonstandard MVS wait occurrences for each DSP within JES3. The DSP Analysis Report contains summary information for the DSP's wait occurrences. You may find a JES3 formatted dump useful when using this section of the JMF report.

**Description of the JES3 Wait Analysis Section:**

DSP NAME IS dspname - identifies the DSP that encountered a nonstandard MVS WAIT.

FCT SEQUENCE NUMBER = nn - identifies the FCT that the DSP was running under. The FCT sequence number matches the sequence number JMF assigned to the FCT in the DSP Analysis Report.

TASK = {IATNUC | IATAUX } - identifies the task the FCT was running under.

FCT IN OS WAIT nn% - provides the percentage of time the DSP caused the FCT to enter a nonstandard MVS wait state for a required resource.

PAGE FAULT AT adr1 module + adr2 - identifies the location in JES3 where the nonstandard MVS wait state occurred. adr1 is the base address of the module. module identifies the name of the module that was running under the FCT when the nonstandard MVS wait state occurred. If JMF is unable to identify where the module resides, it assigns a base address of X'00'. adr2 is the offset into the module.

COUNT= nn - indicates the number of times the DSP entered a nonstandard MVS wait state at that point in JES3 processing.
The SDM Parameters Section summarizes all the spool-related information that your installation specified in the JES3 initialization stream.

The SDM Parameters Section contains information for your installation. It does not contain any information you can use to tune or diagnose your system.

**Description of the SDM Parameters Section:**

**SPOOL BUFFER SIZE = nnnn BYTES** - is the size of the JSAM and USAM spool buffers. Your installation specifies the buffer size by using the BUFFER statement.

**NUMBER OF BUFFERS PER 4K PAGE = n** - is the number of buffers that can be contained in a page of memory. JES3 calculates this number. 2 or 1 are the only acceptable values.

**FILE DIRECTORY ENTRIES = nnn** - is the number of file directory entries that your installation has allocated. File directories are used to represent any open multi-record files (MRFs). Your installation specifies the number of file directory entries on the FD parameter of the BUFFER statement.

**NUMBER OF SPOOL DATA SETS IN USE = n** - is the number of spool data sets JES3 has opened to perform spool I/O. 0 and 1 are unacceptable values because JES3 always opens the JCT data set.

**NUMBER OF JSAM BUFFERS = nnn** - is the number of JSAM buffers allocated in your installation.

**THRESHOLD FOR JSAM MINBUF CONDITION = nn BUFFERS** - is the number of buffers your installation specified as the minimal buffer condition. Your installation specifies this number on the MINBUF initialization statement.
NUMBER OF PROTECTED USAM BUFFERS = nn IN CSA + nn IN AUX - specifies the number of buffers JES3 has allocated for the installation in CSA and the JES3 auxiliary address space. You used the PRTPAGE parameter on the MAINPROC statement to identify the number of protected USAM buffers to allocate in CSA and in the auxiliary address space.

NUMBER OF UNPROTECTED USAM BUFFERS PER OPEN USAM DATA SET = nn - is the number of unprotected USAM buffers that are opened for each SYSIN and SYSOUT data set.

MAX DATA BYTES IN A USAM BUFFER = nnnn - is the number of bytes of the user's data that can be placed in a USAM buffer. JES3 always reserves some space in a USAM buffer for single record file (SRF) prefix.

The Spool Data Set Description Section provides information on all the open data sets in JES3 spool except for the JCT data set.

The Spool Data set Description Section contains information for your installation. It does not contain any information that you can use to tune or diagnose JES3.

Description of the Spool Data set Description Section:

DATA SET NUMBER nn - is the number JES3 assigned to identify the data set.

DDNAME ddname - is the name your installation assigned to the data set.

PARTITION NAME partname - is the name of the partition that contains the data set.

STATUS status - provides the status of the data set. Possible states for the data set are IN USE or UNAVAIL.

DEVICE ADDRESS adr - is the address assigned to DASD.

VOLSER volser - is the serial identifier of the spool data set.

DEVICE TYPE devtype - is the device type of the spool data set.

RANGE - identifies the valid range of CCHH addresses for the spool data set. JMF expresses the CCHH addresses in hex.

RECS PER TRACK nn - identifies the number of records that can be contained on a track on the spool volume.

<table>
<thead>
<tr>
<th>DATA SET NUMBER</th>
<th>DDNAME</th>
<th>PARTITION NAME</th>
<th>STATUS</th>
<th>DEVICE ADDRESS</th>
<th>VOLSER</th>
<th>DEVICE TYPE</th>
<th>RANGES</th>
<th>RECS PER TRACK</th>
<th>RECS PER TRACK</th>
<th>RECS PER TRACK</th>
<th>RECS PER TRACK</th>
<th>BUFFER SIZE (BYTES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>SPOOL1</td>
<td>PART1</td>
<td>IN USE</td>
<td>0982</td>
<td>SPOOL1</td>
<td>3390</td>
<td>0000009</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>SPOOL2</td>
<td>PART2</td>
<td>IN USE</td>
<td>0483</td>
<td>SPOOL2</td>
<td>3390</td>
<td>0000001</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>SPOOL3</td>
<td>PART3</td>
<td>IN USE</td>
<td>0484</td>
<td>SPOOL3</td>
<td>3390</td>
<td>0000001</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>SPOOL4</td>
<td>PART1</td>
<td>IN USE</td>
<td>0485</td>
<td>SPOOL4</td>
<td>3390</td>
<td>0000001</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>SPOOL5</td>
<td>PART5</td>
<td>IN USE</td>
<td>0486</td>
<td>SPOOL5</td>
<td>3390</td>
<td>0000001</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>
RECS PER TRACK GROUP nn - identifies the number of records that can be contained in a track group.

BUFFER SIZE (BYTES) nnnn - identifies the size of the spool buffer. This number should be the same as the number specified in SPOOL BUFFER SIZE in the SDM Parameters section.

Spool Partition Description Section provides information for each spool partition in the spool environment. Your installation defines the characteristics of each spool partition by using the SPART initialization statement.

The Spool Partition Description Section contains information for your installation. It does not contain any information you can use to tune or diagnose JES3.

Description of the Spool Partition Description Section:

PARTITION NAME cccccccc - specifies the name of the spool partition. You used the NAME= parameter on the SPART statement to assign a name to the spool partition.

SPLIM - specifies the minimal and marginal percentage of spool space. You used the SPLIM= parameter to assign the minimal and marginal percentages to the spool partition. JES3 uses these percentages to

- Alert the operator a spool partition is reaching the limits you set.
- Determine when data should be written to a overflow partition.

OVERFLOW PARTITION cccccc - identifies the spool partition that data will be written to if the specified partition becomes full or reaches the marginal condition. You used the OVRFL= parameter to specify the overflow partition.

<table>
<thead>
<tr>
<th>PARTITION</th>
<th>SPLIM</th>
<th>OVERFLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME</td>
<td>MIN</td>
<td>MARG</td>
</tr>
<tr>
<td>PART1</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>PART2</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>PART3</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>PART5</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>PART6</td>
<td>3%</td>
<td>5%</td>
</tr>
</tbody>
</table>
The Spool Space Utilization Snapshot Section provides information on how the spool space is being used in each spool partition.

The Spool Space Utilization Snapshot Section contains information for your installation. It does not contain any information that you can use to tune or diagnose JES3.

**Description of the Spool Space Utilization Snapshot Section:**

**PARTITION NAME** cccccccc - is the name of the spool partition. You used the **NAME=** parameter on the **SPART** initialization statement to name the spool partition.

**DDNAME ddname** - is the name of the spool data set associated with the spool partition.

**TRACK GROUPS** - indicates the:
- Amount of a amount of available spool space assigned to the spool data set.
- Amount of spool space allocated.
- Percentage of spool space allocated in the partition.
The Single Track Table Space Allocation Snapshot Section describes JES3’s use of the single track allocation tables. The single track tables (STTs) maintain a record of the space allocated to single record files (SRF). An example of an SRF is a JES3 control block. Spool space for the STT is defined on the STT or STTL parameter of the TRACK or FORMAT statement.

The Single Track Table Space Allocation Snapshot Section contains information that you can use to tune JES3.

**Description of the Single Track Table Space Allocation Snapshot Section:**

DATA SET NUMBER nn - identifies the spool data set where the SST spool space is allocated.

DDNAME cccccccc - is the name of the data set.

RANGE CCHH - is the spool address allocated for the STT.

RECORDS DEFINED nnnn - is the number of records allocated as STT records.

RECORDS ALLOCATED nnnn nn% - is the number of records already allocated and the percentage of allocated records.

---

The Spool I/O Activity Section contains information on how JES3 distributed the data across spool.

The Spool I/O Activity Section contains information for your installation. It does not contain any information you can use to tune or diagnose JES3.

**Notes for the Spool I/O Activity Section:**
The Spool I/O Activity Section describes the amount of spool I/O JES3 performs to
the installation's spool data sets. JMF sections the available portion of the spool
data set into ten sections. JMF reports the spool I/O activity for each section of the
spool data set. Additional information is also provided for the data sets in the
Buffers Chaining By Spool Data Set Section.

**Description of the Spool I/O Activity Section:**

VOLSER volser - is the serial name given to the spool volume.

DDNAME ddname - is the name of the data set.

TOTAL nn.nn - is the number of buffers read or written to the data set per second.

LO # CYLS nn.nn - is the amount of time JES3 spent writing to the data set on
extents numbered 0-1.

2 - 9 nn.nn - is the amount of time JES3 spent writing to the data set on extents
numbered 2, 3, 4, ....

HI # CYLS nn.nn - is the amount of time JES3 spent writing to the data set on
extents numbered 10 or higher.

<table>
<thead>
<tr>
<th>DATA SET NUMBER</th>
<th>TOTAL BUFFERS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11 OR M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8,955</td>
<td>8,891</td>
<td>54</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>99%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>19,896</td>
<td>15,433</td>
<td>2,866</td>
<td>828</td>
<td>356</td>
<td>115</td>
<td>72</td>
<td>28</td>
<td>16</td>
<td>27</td>
<td>10</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td></td>
<td>77%</td>
<td>14%</td>
<td>4%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>3</td>
<td>17,878</td>
<td>13,521</td>
<td>2,800</td>
<td>798</td>
<td>276</td>
<td>110</td>
<td>66</td>
<td>35</td>
<td>40</td>
<td>18</td>
<td>10</td>
<td>204</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75%</td>
<td>15%</td>
<td>4%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
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<tr>
<td></td>
<td></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>5</td>
<td>22,275</td>
<td>17,638</td>
<td>2,766</td>
<td>912</td>
<td>440</td>
<td>130</td>
<td>84</td>
<td>42</td>
<td>0</td>
<td>36</td>
<td>10</td>
<td>217</td>
</tr>
</tbody>
</table>

The Buffers Chaining by Spool Data set Section provides the number of buffers that
were written to a spool data set.

**Description of the Buffers Chaining By Spool Data set Section:**

DATA SET NUMBER nn - is the number JMF assigns to identify a spool data set.

TOTAL BUFFERS nn - is the number of buffers that were written to or read from the
spool data set.

1 - 11 or M n and n% - each number indicates the number of buffers on the chain
that were written to the spool data set.
The SDM Exceptional Conditions Section identifies the percentages of times a resource required to perform spool I/O was not available.

The SDM Exceptional Conditions Section contains information for your installation. It does not contain any information that you can use to tune or diagnose JES3.

**Description of the SDM Exceptional Conditions Section:**

JSAM BUFFERS NOT AVAILABLE = nn% - is the percentage of time during a JMF interval that a JSAM buffer was not available for spool I/O.

USAM BUFFERS NOT AVAILABLE = nn% - is the percentage of time during a JMF interval that a USAM buffer was not available for spool I/O.

MINIMAL/MARGINAL CONDITION = nn% - is the percentage of time during a JMF interval that JES3 could not perform spool I/O because the spool partition was in a minimal or marginal condition.

<table>
<thead>
<tr>
<th>SDM EXCEPTIONAL CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSAM BUFFERS NOT AVAILABLE = 0%</td>
</tr>
<tr>
<td>USAM BUFFERS NOT AVAILABLE = 0%</td>
</tr>
<tr>
<td>MINIMAL/MARGINAL TRACK CONDITIONS DID NOT OCCUR IN ANY PARTITION</td>
</tr>
<tr>
<td>AWAITS FOR BUFFERS DURING MONITORING 0 EVER = 00000000</td>
</tr>
</tbody>
</table>

The SDM Exceptional Conditions Section identifies the percentages of times a resource required to perform spool I/O was not available.
The RQ Cellpool Usage Section summarizes the status of JES3's resqueue cell pools.

Each scheduler element (SE) that processes jobs requires its own resqueues to process a job. During initialization, JES3 builds the C/I resqueue, MAIN resqueue, OUTSERV resqueue, and the COMMON resqueue cell pools. To process a job an SE obtains a resqueue from one or more of the resqueue cell pools. For example, if a job is being processed by the C/I SE, a resqueue is obtained from the C/I, OUTSERV, and COMMON resqueue cell pools. If JES3 uses all the available resqueues in a resqueue cell pool, JES3 allocates another resqueue cell pool. JMF summarizes extending the cell pools in the secondary extents description.

The RQ Cellpool Usage Section provides your installation with information. You cannot use the information in the RQ Cellpool Usage Section to tune or diagnose JES3.

Description of the RQ Cellpool Usage Section:

TOTAL NUMBER OF CI SECONDARY EXTENTS IN POOL = nn - identifies the number of times JES3 had to extend the cell pool so that additional RESQUEUE could be obtained.

TOTAL NUMBER OF CI RESQUEUES IN POOL = nn - specifies the total number of RESQUEUEs in the pool.

TOTAL NUMBER OF CI RESQUEUES USED IN POOL = nn - is the number of RESQUEUEs that have been allocated from the cell pool.
NUMBER OF RESQUEUEs IN PRIMARY EXTENT = nn - is the number of RESQUEUEs in the primary extent.

NUMBER OF RESQUEUEs FOR SECONDARY EXTENT = nn - is the number of RESQUEUEs in the secondary extent.

The JQE/JCT Access Method Report provides information for the storage used by the JQE/JCT access method and is divided into the following sections:
- JCT Data Set Information
- JCT Data Space Information
- JQE Information

The JQE/JCT provides you with information that you can use to tune your installation.

Notes for the JQE/JCT Access Method Report:
JES3 obtains information from the JCT data space if the data space is active. If JES3 is not using the JCT data space, **THE JCT DATA SPACE IS DISABLED** appears under the heading for JCT Data Space Information. The number of read requests for the JCT data set should be 0 whenever JES3 is using the JCT data space.

See the Spool I/O Activity Report for information on the amount of I/O activity JMF recorded for the JCT data set.

**Description of the JQE/JCT Access Method Report:**

**JCT DATA SET INFORMATION** - provides information for your installation's JCT data set.
- **JCT SIZE (WITH SRF PREFIX) = nn BYTES** - is the size of the fixed portion of a job control block (JCT) including the single record file (SRF) for the JCT.
- **NUMBER OF JCT READ I/O'S = nn** - is the number of times JES3 has read from the JCT data set during the JMF interval. If JES3 is using the JCT data space, the value should be 0 because JES3 should be reading JCTs from the JCT data space.
- **NUMBER OF JCT WRITE I/O'S = nn** - is the number of times JES3 has updated the JCT data set during the JMF sample interval.

**NUMBER OF JOBS ADDED = nnnnnn** - is the number of jobs that JES3 accepted into the system during the sample interval. When JES3 accepts a job into the system it creates a JCT for the job by issuing an IATXJCT TYPE=ADD macro. The number of jobs added indicates the number of times JES3 issued an IATXJCT TYPE=ADD macro.
- **NUMBER OF JOBS DELETED = nnnnnn** - is the number of jobs that were removed from the system. When JES3 removes a job from the system issuing an IATXJCT TYPE=DEL macro. The number of jobs deleted indicates the number of times JES3 issued a IATXJCT TYPE=DEL macro.

**JCT DATA SPACE INFORMATION** - provides information on your installation's JCT data space. JMF provides information for the JCT data space only if the JCT data space is being used.
- **JCT DATA SPACE SIZE = .nn MEGABYTES** - is the size of the JCT data space. See [z/OS JES3 Initialization and Tuning Guide](https://www.ibm.com/support/knowledgecenter/SSSHTQ_12.0.0/com.ibm.jes3.doc/i12jct.txt) for information on how JES3 calculates the size of the JCT data space.
- **READ REQUESTS** - summarizes the number and the percentage of times JES3 read a JCT from the JCT data space during the JMF sample time.
- **WRITE REQUESTS** - summarizes the number and the percentage JES3 wrote a JCT to the JCT data space during the JMF sample time.
- **PAGE IN REAL STORAGE** - is the number and percentage of times during a JMF sampling period that JES3 could obtain information from a page in real storage.
- **PAGE NOT IN REAL STORAGE** - is the number and percentage of times during a JMF sampling period that JES3 could not obtain information from a page in real storage.
- **PAGE ALLOCATION** - indicates, by a number and a percentage, how well JES3 utilizes the pages allocated for the JCT data space.
MINIMUM - is the least number of pages JES3 allocated for the JCT data space.
AVERAGE - is the average number of pages JES3 allocated for the JCT data space.
MAXIMUM - is the greatest number of pages JES3 allocated for the JCT data space.
NUMBER OF PAGES RELEASED = nn - is the number of pages of the JCT data space that were released from real storage.

JQE INFORMATION - describes the storage requirements for the job queue elements (JQE).
JQEm TABLE SIZE = nnn.nn KILOBYTES - is the amount of real storage allocated for the JQE table. m is a number between 0 and 4 that identifies the JQE table.
JQE4 ALLOCATION - is the amount of storage allocated for the JQE4. The JQE4 table contains summary information from each job's JCT.
MINIMUM - is the least amount of storage allocated for JQE4.
AVERAGE - is the average amount of storage allocated for JQE4.
MAXIMUM - is the most amount of storage allocated for JQE4.

The JES3 Control Block Utilization Section provides information for your installation's FCT, buffer, and staging area usage.

JES3 CONTROL BLOCK UTILIZATION

FCT ENTRY USAGE
PREALLOCATED = 50 + 35 PERMANENT FCT'S
MINIMUM = 55
MAXIMUM = 87
AVERAGE = 58

CONSOLE BUFFER USAGE
PREALLOCATED = 100
MINIMUM = 0
MAXIMUM = 412
AVERAGE = 80
SIZE OF PRIMARY EXTENT = 100 BUFFERS
SIZE OF SECONDARY EXTENT = 100 BUFFERS
SECONDARY EXTENT LIMIT = 0
NUMBER OF RESERVED BUFFERS = 20
NUMBER OF SECONDARY EXTENTS CURRENTLY IN USE = 1, 0, 0
MAXIMUM NUMBER OF SECONDARY EXTENTS EVER USED = 4
SECONDARY CONSOLE BUFFER EXTENTS EXCEEDED = 0%

JSAM BUFFER USAGE
TOTAL DEFINED = 768
MINIMUM = 7
MAXIMUM = 117
AVERAGE = 14

USAM (PROTECTED) BUFFER USAGE
TOTAL DEFINED = 1536
MINIMUM = 0
MAXIMUM = 53
AVERAGE = 3
You can use the information in this section to tune your installation. It does not contain any information you can use to diagnose JES3.

**Description of the JES3 Control Block Utilization Section:**

**FCT Entry Usage** - provides information for your installation's FCT chain.
- `PREALLOCATED = nn + nn PERMANENT FCT's` - identifies the number of nonresident and resident FCTs that your installation uses.
- `MINIMUM = nn` - is the lowest number of resident and nonresident FCTs JMF found on the FCT chain during the JMF sampling period.
- `MAXIMUM = nn` - is the highest number of resident and nonresident FCTs JMF found on the FCT chain during the JMF sampling period.
- `AVERAGE = nn` - is the average number of resident and nonresident FCTs JMF found on the FCT chain during the JMF sampling period.

**CONSOLE BUFFER USAGE** - identifies the number of console buffers JES3 used during the JMF sampling period.
- `MINIMUM = nn` - is the lowest number of console buffers JMF was using during the JMF sampling period.
- `MAXIMUM = nn` - is the highest number of console buffers JMF was using during the JMF sampling period.
- `AVERAGE = nn` - is the average number of console buffers JMF used during the JMF sampling period.

**SIZE OF PRIMARY EXTENT = nnnn BUFFERS** - is the number of buffers that are defined in the primary extent.

**SIZE OF SECONDARY EXTENT = nnnn BUFFERS** - is the number of buffers that are defined in the secondary extent.

**SECONDARY EXTENT LIMIT = nn** - is the number of times JES3 can expand the buffer pool.

**NUMBER OF RESERVED BUFFERS = nn** - is the number of reserved console buffers in real storage.

**NUMBER OF SECONDARY EXTENTS CURRENTLY IN USE = nn, nn, nn** - identifies the number of secondary extents JES3 had to use.

**MAXIMUM NUMBER OF SECONDARY EXTENTS EVER USED = nn** - identifies the number of secondary extents JES3 had to use.

**MAXIMUM NUMBER OF RESERVED BUFFERS EVER USED = nn** - identifies the number of reserved buffers JES3 had to use.

**JSAM BUFFER USAGE** - describes how your installation utilizes JSAM buffers.
- `TOTAL DEFINED = nnn` - is the total number of JSAM buffers that are defined to your installation.
- `MINIMUM = nn` - is the least number of JSAM buffers JES3 used during the JMF sampling period.
- `MAXIMUM = nn` - is the most number of JSAM buffers JES3 used during the JMF sampling period.
- `AVERAGE = nn` - is the average number of JSAM buffers JES3 used during the JMF sampling period.

**USAM (PROTECTED) BUFFER USAGE** - describes how your installation utilizes USAM buffers.
- `TOTAL DEFINED = nnn` - is the total number of USAM buffers that are defined to your installation.
- `MINIMUM = nn` - is the least number of USAM buffers JES3 used during the JMF sampling period.
- `MAXIMUM = nn` - is the most number of USAM buffers JES3 used during the JMF sampling period.
AVERAGE = nn - is the average number of USAM buffers JES3 used during the JMF sampling period.

STAGING AREA USAGE - describes the JES3's utilization of your installation's staging areas. Staging areas are used to send requests to other subsystems defined to your installation.

### Description of the Staging Area Usage Section:

- **ACTIVE STAGING AREA COUNT FROM SVT(SVTSACNT) = 28**
- **MAXIMUM STAGING AREAS EVER USED = 144**

#### TOTAL ACTIVE STAGING AREAS

- **MINIMUM = 24**
- **MAXIMUM = 62**
- **AVERAGE = 33**

STAGING AREA USAGE - describes the JES3's utilization of your installation's staging areas. Staging areas are used to send requests to other subsystems defined to your installation.

**ACTIVE STAGING AREA COUNT FROM SVT(SVTSACNT) = nnn** - is the number of staging areas JES3 is currently using. The number is obtained from SVTSACNT in IATYSVT.

**MAXIMUM STAGING AREAS EVER USED = nnn** - is the most staging areas JES3 used during the JMF sampling period.

**TOTAL ACTIVE STAGING AREAS** - describes the number of staging areas JES3 used during the JMF sampling period.

- **MINIMUM = nn** - is the least number of staging areas JES3 used during the JMF sampling period.
- **MAXIMUM = nn** - is the most number of staging areas JES3 used during the JMF sampling period.
- **AVERAGE = nn** - is the average number of staging areas JES3 used during the JMF sampling period.
The Job Analysis Section identifies the jobs JES3 was processing during the JMF sampling period. The Job Analysis Section provides summary information on the amount of time each job spent in each scheduler element (SE) during the JMF sampling period.

The Job Analysis Sections provides you information for the jobs in your system. It does not contain information that you can use to tune or diagnose your system.

<table>
<thead>
<tr>
<th>JOB NAME</th>
<th>RQPTY</th>
<th>CLASS</th>
<th>GROUP</th>
<th>ON MAIN</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG90J1 (JOB01482)</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>18 MIN. 46.00 SEC.</td>
</tr>
<tr>
<td>VTAM (JOB00163)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>LOG90J1 (JOB01481)</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>18 MIN. 46.00 SEC.</td>
</tr>
<tr>
<td>LOG90J1 (JOB01497)</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>18 MIN. 46.00 SEC.</td>
</tr>
<tr>
<td>SYSLOG (JOB00160)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00168)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00170)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00174)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00176)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00172)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00179)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00180)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00171)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00181)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>JES3CI (JOB00173)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00175)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00177)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>INITJES3(JOB00178)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>TCAS (JOB00203)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
<tr>
<td>RTXA (JOB00193)</td>
<td>15</td>
<td></td>
<td>JES3TEST</td>
<td></td>
<td>29 MIN. 18.00 SEC.</td>
</tr>
</tbody>
</table>
Notes for the Job Analysis Section:

JMF obtains the information for the Job Analysis Section from the resqueue. JMF reports on the first 50 jobs in the system if you did not change the default value for the JOB= parameter when you called JMF. Because the jobs at the top of the resqueue are the oldest jobs in the complex and are typically the longest running jobs, such as RMF and initiators, the Job Analysis Report provides information that you cannot use to tune JES3. To make the report more useful, you should specify a larger number of jobs on the JOB= parameter when you invoke JMF.

The Job Analysis Section uses the term JES3 DSP’s throughout the JMF Job Report Section. When an operator issues a command to call a DSP, JES3 assigns a job number to the DSP. JMF identifies jobs that are callable DSP’s as JES3 DSP’S.

Description of the Job Analysis Section:

jobname - is the name assigned to the job.

(JOBnnnn) - is the job identifier JES3 assigned to the job.

RQPRTY = nnnnn - is the resqueue priority which is obtained from the priority assigned to the job.

CLASS = c - is the class assigned to the job.

GROUP = c - is the group assigned to the job.

state nnn.nn SEC. - identifies the amount of time the job spent in a JES3 state during the JMF sampling period. state identifies the scheduler element (SE) that was processing the job when JMF took the sample. The term JES3 DSP’s identifies the amount of time the callable DSP was active under the task. nn.nn SEC. identifies the amount of time JES3 spent in the state.

<table>
<thead>
<tr>
<th>JSS WORK-TO-DO QUEUE REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSS QUEUE NAME</td>
</tr>
<tr>
<td>JSS-READY</td>
</tr>
<tr>
<td>CATALOG-WAIT</td>
</tr>
<tr>
<td>RSQ-WAIT</td>
</tr>
<tr>
<td>PROCLIB-WAIT</td>
</tr>
<tr>
<td>MAIN-WAIT</td>
</tr>
<tr>
<td>DSP-WAIT</td>
</tr>
<tr>
<td>MPLOC-WAIT</td>
</tr>
<tr>
<td>DUPNAME-WAIT</td>
</tr>
</tbody>
</table>

The JSS Work-to-do Queue Report provides information for the queues the job segment scheduler (JSS) uses to keep track of the jobs JES3 needs to process. If JES3 is not processing a job, JES3 places the job on one of several queues. JSS uses the following queues to keep track of the jobs JES3 needs to process:

- JSS-Ready queue contains jobs that are ready for JES3 to schedule them for their scheduler element (SE).
**System Report**

- Catalog-wait queue contains jobs that are waiting for an SMS-managed catalog to become available before JES3 can schedule the jobs for C/I.
- RSQ-Wait queue contains jobs that are waiting for a resqueue. These jobs require a resqueue or a DSP before JES3 can schedule them for additional processing.
- Proclib-Wait queue contains jobs that require access to a proclib but cannot gain access because another job is using the proclib.
- Main-Wait queue contains jobs that are waiting for a main, class or a group to become available.
- DSP-Wait queue contains the jobs that are waiting for a SE to become available.
- MPLOC-wait queue contains jobs that are waiting for a main processor to become available to perform LOCATE processing.
- Dupname-wait queue contains jobs that are waiting for a job with a duplicate name to end so that these jobs can be scheduled for main.

The JSS Work-To-Do Queue Report does not contain any tuning information but it can help you to diagnose a problem your installation may experiencing scheduling jobs.

**Description for the JSS Work-to-do Queue Report:**

JSS QUEUE NAME cccccc - identifies the name of the queue used by JSS.

MINIMUM QUEUE LENGTH nnn - is the minimum number of jobs JES3 placed on the queue during the JMF sampling period.

MAXIMUM QUEUE LENGTH nnn - is the maximum number of jobs JES3 placed on the queue during the JMF sampling period.

AVERAGE QUEUE LENGTH nnn - is the average of the minimum and maximum number of jobs JES3 placed on the queue during the JMF sampling period.

**Diagnostic Information:**

Examine the average queue length for each queue in the JSS Work-To-Do Queue Report. If there are a large number of jobs on the:

- CATALOG-WAIT queue, an SMS catalog volume might have been varied offline or its SMS storage group might have been disabled.
- RSQ-WAIT queue, your installation may be experiencing a problem obtaining a resqueue from a resqueue cell pool for the job. Your installation may not have enough available virtual storage. The Resqueue Cell Pool Statistics Section of the JMF report may provide you with more information on the availability of the resqueues in your installation.
- PROCLIB-WAIT queue, your installation may be experiencing accessing a proclib. Enter a *I,PROCLIB command to obtain additional information for the status of your installation's proclibs.
- MAIN-WAIT queue
  - A main has been varied offline or has disconnected
  - A group has been disabled (*F,G,main,G,group,OFF)
  - A class has been disabled (*F,G,main,C,class,OFF)
- DSP-WAIT queue, one or more of JES3's DSPs may have reached the maximum number of copies of the DSP that can run concurrently in your installation. Identify the DSP that has reached its maximum use count and issue a
System Report

*F,X,D=dspname,MC=nn to increase the number of copies that your installation can run concurrently in your installation. Also the FCT Summary Report may provide you with additional helpful information.

- MPLOC-WAIT queue, a main might have been varied offline or disconnected.
- DUPNAME-WAIT queue, this might indicate a problem; for example a loop could cause jobs with the same name to be submitted. Use the "* I J=jobname command to list all jobs of a specified name.

The JES3 Function Summary Section summarizes the information JMF provided in the Job Analysis Section. It provides a list of the jobs that were active during the JMF sampling period and the maximum, minimum, and average amount of time required by each job.

The JES3 Function Summary Section contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

**Description of the JES3 Function Summary Section:**

**JES3 FUNCTION SUMMARY SECTION** - provides summary information for each active job in your installation.

- **FUNCTION cccccccc** - identifies the state of the job. This name matches the RQ index value. If the RQ index value is RQNOSUB then the DSP name is formatted and is displayed under "JES3 DSP’s”.
- **AVERAGE TIME nnn.nn SEC.** - is the least amount of time one of the jobs took to execute in the JES3 function during the JMF sampling period.
- **JOBS nnnn** - is the average number of jobs that the SE processed during the JMF sampling period.
- **MINIMUM TIME nnn.nn SEC.** - is the least amount of time one of the jobs took to execute in the function during the JMF sampling period.
- **JOBID (JOBnnnn)** - is the job identifier of the job that took the least amount of time to execute in the JES3 function.
- **MAXIMUM TIME nnn.nn SEC.** - is the most amount of time one of the jobs took to execute in the function during the JMF sampling period.
- **JOBID (JOBnnnn)** - is the job identifier of the job that took the most amount of time to execute in the JES3 function.

**MDS AND GMS SCHEDULING ANALYSIS** - Main device scheduling (MDS) is the JES3 function responsible for scheduling resources to a job. All the resources required by a job must be available in order for JES3 to schedule the job for execution. It may take MDS one or several attempts to allocate the required resources to a job. Resources required by a job are kept in a job summary table (JST). Any resources that MDS cannot allocate to a job are kept in an list called the allocation resource list (ARL). The ARL is provided in the in the MDS Allocate section of the JES3 formatted dump. See Chapter 4, “JES3 Formatted Dump,” on page 149 for additional information.
System Report

After the first attempt to allocate resources to a job, MDS must obtain the list of resources from the ARL and JST to ensure all the resources required by the job are available. During subsequent attempts to schedule a job for execution, MDS reads the ARL that contains a list of resources it was previously unable to allocate from storage.

1. If resources that were previously unavailable are still unavailable, MDS fails the allocation attempt.
2. If all the previously unavailable resources are available, MDS reads the JST to determine if resources that were previously available can still be allocated to the job.
   a. If the previously available resources are no longer available MDS fails the allocation attempt and later attempts to reschedule the job for execution.
   b. If the previously available resources are still available, MDS allocates the resources to the job and allows JES3 to schedule the job for execution.

Description for the MDS and GMS Scheduling Analysis Report:

TOTAL NUMBER OF ALLOCATION RETRIES DURING JMF INTERVAL: nnn - is the total number of attempts MDS made to allocate the required resources to a job. See steps 1 and 2 for a description of the processing for this number.

NUMBER OF ALLOCATION ATTEMPTS REJECTED WITHOUT READING JST: nnn - is the number of times MDS attempted to allocation when previously unavailable resources were still unavailable. See step 1 for a description of the processing for this number.

NUMBER OF ALLOCATION ATTEMPTS ALLOWED TO READ JST: nnn - is the number of times MDS found previously unavailable resources were available and MDS read the JST to determine if previously available resources were still available. See step 2 for a description of the processing for this number.

NUMBER OF ALLOCATION ATTEMPTS REJECTED AFTER READING JST: nnn - is the number of times MDS found a job could not be scheduled for execution because resources that were previously available were no longer available. See step 2a for a description of the processing for this number.

NUMBER OF SUCCESSFUL ALLOCATIONS: nnn - is the number of times MDS successfully allocated all the resources to a job so that JES3 could schedule the job for execution during the JMF sampling period. See step 2b for a description of the processing for this number.
The Jobs in Execution Section By Main Processor Section identifies the number of initiators are active on each main in your complex. An initiator creates an environment so that the job can execute.

The Jobs in Execution Section By Main Processor can be used to help tune your installation.

**Description of the Jobs in Execution Section:**

**JOBS IN EXECUTION** on main - identifies the main JMF is describing.

**(JES3 GLOBAL | JES3 LOCAL )** - indicates whether the main is a JES3 global or local.

**STARTED INITIATORS = nn** - indicates the number of initiators JES3 has started.

**Tuning Information:**

Use the Jobs In Execution By Main Processor Section to determine if the workload is correctly distributed across your installation. Compare the number of initiators JES3 has started on the global and each of the locals. The global typically has the largest number of started initiators, however, it can vary based on the configuration of your installation.
The Jobs in Execution by Job Class Group on main Section identifies the number of initiators JES3 has started for each job class group for each main in your complex. An initiator creates an environment so that the job can execute.

The Jobs in Execution Section By Main Processor can be used to help tune your installation.

Description of the Jobs in Execution by Job Class Group Section:

JOBS IN EXECUTION on main - identifies the main JMF is describing.

IN GROUP group - is the job class group. You assigned job class groups to the specified main by using GROUP statement in your JES3 initialization stream.

STARTED INITIATORS = nn - indicates the number of initiators JES3 has started.

Tuning Information:

Use the Jobs in Execution by Job Class Group Section with reports generated by the Resource Measurement Facility (RMF) to determine if the jobs are evenly distributed across the job classes defined to your installation.
The Allocated JES3 Devices by SETNAME on main describes the number of devices are currently allocated for each SETNAME group defined to the specified main. During initialization, you use the SETNAME initialization statement to group device types together.

The Allocated JES3 Devices by SETNAME Section contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Description of the Allocated JES3 Devices by SETNAME Section:

ALLOCATED JES3 DEVICES ON main - identifies the main JMF is describing.

FOR SETNAME XTYPE: xtype - is the name for the group of devices with compatible characteristics. You assigned the name to the group by using the XTYPE parameter on the DEVICE statement.

TOTAL DEVICES = nnn - is the total number of devices assigned to the specified XTYPE.

AVERAGE = nn - is the average number of devices that JES3 has started in the specified group.

MINIMUM = nn - is the least number of devices JES3 started in the specified group.

MAXIMUM = nn - is the most number of devices JES3 started in the specified group.

{J | X | M} - indicates the device class.
The Job Queue Lengths by JES3 Function Section summarizes the number of jobs found on each resqueue index.

The Job Queue Lengths by JES3 Function Section contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Notes for the Job Queue Lengths by JES3 Function Section:

JMF produces a histogram when there are jobs on the queue. If the queue does not contain any jobs, JMF does not produce a histogram.

Description of the Job Queue Lengths by JES3 Function Section:

JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: rqindex - identifies the name of the resqueue index.

histogram - is present only if JMF found jobs waiting on the resqueue index during the JMF sampling period.

AVERAGE = nn - is the average number of jobs JMF found on the resqueue index during the JMF sampling period.

MINIMUM = nn - is the lowest number of jobs JMF found on the resqueue index during the JMF sampling period.

MAXIMUM = nn - is the largest number of jobs JMF found on the resqueue index during the JMF sampling period.
The Hot Spot Analysis Report Section provides the percentage of CPU time JES3 spent in each csect while JMF was executing.

The Hot Spot Analysis Report Section contains information for your installation. It does not contain any information you can use to tune or diagnose JES3.

**Notes for the Hot Spot Analysis Report Section:**

Generally, the csect name refers to a JES3 module. JMF creates two hot spot reports. In the first report, JMF orders the entries by the csects where JMF reported csects that had the highest percentage of CPU time. In the second report, JMF orders the entries by csect name. For each csect name, JMF may generate more
than one entry. An entry under a csect name represents an instance where JMF found JES3 executing. The percentages reveal the number of occurrences for each instance.

The start and end addresses of FCT-code are not meaningful, because FCT-code entries indicate that JES3 is processing in MFM (Multi Function Monitor). MFM dispatches code that is resident in each FCT (IATYFCT) control block.

**Description for the Hot Spot Analysis Report Section:**

CSECT csect name - provides the name of the csect. The csect name generally refers to a JES3 module. FCT-code refers to code in any of the JES3 FCTs. MFM executes code in an FCT when the MFM dispatches an FCT. MVS NUCL refers to the number of instances JMF found the system executing in an MVS module. UNKNOWN refers to an instance where JMF could not categorize the location that had control when the sample was taken.

**TYPE type** - indicates where the csect resides. A type of:

- **C** indicates the csect resides in CSA.
- **N** indicates the csect resides in the JES3 nucleus (IATNUC).
- **P** indicates the csect resides in pageable link pack area (PLPA).
- **L** indicates the csect resides in the modified link pack area (MLPA).
- **J** indicates the csect resides in the JES3 private area.
- **M** indicates the csect resides in the MVS nucleus.
- **R** indicates the csect is a RJP load module.
- **EC** indicates the csect resides in extended CSA.
- **EJ** indicates the csect resides in extended JES3 Private.
- **EP** indicates the csect resides in the extended PLPA.
- **EL** indicates the csect resides in extended MLPA.

**START adr** - specifies the beginning address of the monitored section in the csect.

**END adr** - specifies the end of the monitored section in the csect.

**% OF RUN ACTIVE** -

- **OVERALL nn.nn%** - is the percentage of JMF samples that JMF found the csect active.
- **IN IATNUC nn.nn%** - is the percentage of JMF samples that JMF found the csect active in the nucleus.
- **IN IATAUX nn.nn%** - is the percentage of JMF samples that JMF found the csect active in the auxiliary address space.

**% OF TASK ACTIVE** -

- **IATNUC nn.nn%** - is the percentage of JMF samples that JMF found the csect active in the nucleus.
- **IATAUX nn.nn%** - is the percentage of JMF samples that JMF found the csect active in the auxiliary address space.
The JES3 Internal Reader DSP Analysis Report provides information on the internal readers that are active in your system. JES3 automatically starts INTRDR DSPs to process data sets that contain job streams. After JES3 starts an internal reader, input service can process the data set as an input stream.

The JES3 Internal Reader DSP Analysis Report contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

**Description of the JES3 Internal Reader DSP Analysis Report:**

- **MINIMUM NUMBER OF ACTIVE INTRDRS nn** - is the minimum number of INTRDR DSPs that JMF found active during the JMF sampling period.
- **MAXIMUM NUMBER OF ACTIVE INTRDRS nn** - is the maximum number of INTRDR DSPs that JMF found active during the JMF sampling period.
- **AVERAGE NUMBER OF ACTIVE INTRDRS nn** - is the average number of INTRDR DSPs that JMF found active during the JMF sampling period.
- **AVERAGE NUMBER OF IDLE INTERNAL READER DSPS nn** - is the average number of INTRDR DSPs that were posted but were not processing any work during the JMF sampling period.
- **AVERAGE LENGTH OF INTERNAL READER QUEUE nn** - is the average number of INTRDR DSPs that JMF found on the internal reader queue during the JMF sampling period.
- **% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT MAXIMUM nn. %** - is the percentage of times that the internal reader count was found to be at maximum during the JMF sampling period.
- **% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT ZERO nn. %** - is the percentage of times that the internal reader count was found to be at zero during the JMF sampling period.

<table>
<thead>
<tr>
<th>JES3 INTERNAL READER DSP ANALYSIS REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXIMUM ACTIVE INTERNAL READER DSPS ALLOWED</td>
</tr>
<tr>
<td>MINIMUM NUMBER OF ACTIVE INTRDRS</td>
</tr>
<tr>
<td>MAXIMUM NUMBER OF ACTIVE INTRDRS</td>
</tr>
<tr>
<td>AVERAGE NUMBER OF ACTIVE INTRDRS</td>
</tr>
<tr>
<td>AVERAGE NUMBER OF IDLE INTERNAL READER DSPS</td>
</tr>
<tr>
<td>AVERAGE LENGTH OF INTERNAL READER QUEUE</td>
</tr>
<tr>
<td>% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT MAXIMUM</td>
</tr>
<tr>
<td>% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT ZERO</td>
</tr>
</tbody>
</table>
The SSI Response Report identifies the number of requests for JES3 global services.

You can use the SSI Response Report diagnostic information to determine if your installation is efficiently processing messages and commands.

Notes for the SSI Response Report:

The SSI Response Report provides information on the amount of time it took JES3 to process a request for JES3 global service.

Description of the SSI Response Report:

SSOB FUNCTION CODE cccccccc - identifies the type of SSI request.

NUMBER REQUESTS RECEIVED nnnn - is the number of requests the main processed during the JMF sampling period.

NUMBER RESPONSES RECEIVED nnnn - is the number of responses the main sent to other mains during the sampling period.

MINIMUM RESPONSE TIME nnnn - is the least amount of time in milliseconds JES3 took to process the request during the JMF sampling period.

MAXIMUM RESPONSE TIME nnnn - is the greatest amount of time in milliseconds JES3 it took to process the request during the JMF sampling period.

AVERAGE RESPONSE TIME nnnn - is the average amount of time in milliseconds JES3 took to process the request during the JMF sampling period.
The SSI Destination Queue Report identifies the number of staging areas JMF processed during the JMF sampling period. MVS uses a staging area to pass a request for information between address spaces in your system. JES3 on the global receives the staging area and places it on an SSI destination queue. JES3 has a destination queue for each type of request it processes.

The SSI Destination Queue Report provides information for the number of staging areas JMF processes during the JMF sampling period. It does not provide you with information you can use to diagnose or tune JES3.

**Description of the SSI Destination Queue Report:**

DESTINATION QUEUE NAME cccccc - specifies the name of the destination queue.

FSSID nnnn - identifies the address space id of the FSS address space.

FSAID nnnn - identifies the FSAID of the FSA.

MINIMUM QUEUE LENGTH nnnn - is the lowest number of staging areas JMF found on the destination queue during the JMF sampling period.

<table>
<thead>
<tr>
<th>DESTINATION QUEUE NAME</th>
<th>FSS NAME</th>
<th>FSA NAME</th>
<th>MINIMUM QUEUE LENGTH</th>
<th>MAXIMUM QUEUE LENGTH</th>
<th>AVERAGE QUEUE LENGTH</th>
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</thead>
<tbody>
<tr>
<td>MAIN SERVICE</td>
<td>00</td>
<td>29</td>
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<td></td>
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<tr>
<td>GENERALIZED MAIN SCHEDULING</td>
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<td>07</td>
<td>07</td>
<td></td>
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</tr>
<tr>
<td>VERIFY</td>
<td>00</td>
<td>00</td>
<td>00</td>
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<tr>
<td>LOCATE</td>
<td>00</td>
<td>01</td>
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<tr>
<td>JES DATA MANAGEMENT</td>
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<tr>
<td>USER TRACK ALLOCATION</td>
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<td>03</td>
<td>00</td>
<td></td>
<td></td>
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<tr>
<td>SVC 34</td>
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<td>01</td>
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<tr>
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<tr>
<td>COMMON UNALLOCATION</td>
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<tr>
<td>VERIFY RESPONSE</td>
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</tr>
<tr>
<td>CHANGE DDNAME</td>
<td>00</td>
<td>00</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>WORK TO DO DRIVER</td>
<td>00</td>
<td>01</td>
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<tr>
<td>SSICS QUEUE 1</td>
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<tr>
<td>SSICS QUEUE 2</td>
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</tbody>
</table>
System Report

MAXIMUM QUEUE LENGTH nnnn - is the greatest number of staging areas JMF found on the destination queue during the JMF sampling period.

AVERAGE QUEUE LENGTH nnnn - specifies the average number of staging areas JMF found on the destination queue during the JMF sampling period.

Description of the Workload Manager Information: When WLM information is requested, the following information will be reported for each service class that is detected during the sampling interval. Information will be reported only for those jobs in WLM managed groups.

The number of jobs waiting to be scheduled for main service.

The number of jobs is MDS processing.

The number of jobs waiting to be selected by an initiator (GMS Select).

The number of jobs that were eligible to execute somewhere in the SYSPLEX.

The number of jobs that were not eligible to execute anywhere in the SYSPLEX because of operator hold, resource delay, class/group unavailable etc.

The number of jobs that were not eligible to execute anywhere in SYSPLEX because of class limits (e.g. TDEPTH, TLIMIT, MDEPTH, MLIMIT).

The number of jobs in the SYSPLEX that are using the service class that are in execution and are in a WLM managed group.

For each system, the number of jobs that were eligible to execute on a particular system.
For each system, the number of jobs that were not eligible to execute on a particular system.

For each system, the number of jobs in the service class that are in execution and are in a WLM managed group.

For each system, the number of jobs in the service class that are eligible only on this system when this system is constrained.

For each system, the percentage of time system is constrained. This is calculated by the following formula:

Constraint Count: Each time JMF sampling is done, if the system is found to be constrained, the count is incremented.

\[
\text{(Constraint Count*100)/(No. of JMF Samples)}
\]
Chapter 7. JES3 Recovery

Recovery procedures minimize system reinitialization time that may result from hardware and software failures. The following recovery procedures are discussed:

- JES3 and C/I Functional Subsystem Failsoft
- Alternate CPU Recovery
- Reconfiguring a Processor Complex
- Checkpoint/Restart
- Restarting JES3 After a Failure
- JES3 Checkpoint Data Sets
- Dynamic System Interchange
- BSC RJP Recovery
- Recovering from Output Writer Functional Subsystem Failures
- Recovering from SAPI Failures
- Recovering an IBM 3480 Tape Drive for a Stand-Alone Dump
- Recovering from Spool I/O Errors
- Recovering from C/I Functional Subsystem Address Space Failures

JES3 and C/I Functional Subsystem Failsoft

JES3 failsoft provides recovery facilities to avoid JES3 restarts whenever possible. JES3 failsoft in C/I functional subsystem (FSS) address spaces provides the same facilities to avoid C/I FSS abnormal ending whenever possible.

- For jobs, the process of restarting is determined by installation- and programmer-supplied restart parameters.
- For failing functions or DSPs, the system recovery facility and the JES3 JESTAE and failsoft facilities allow the function or DSP to recover, if possible, or be ended. The failure is recorded in the logrec data set. The values specified for the DUMP parameter and the WANTDUMP parameter on the OPTIONS initialization statement determine when and where JES3 takes a dump. When a critical function cannot recover, JES3 or the C/I FSS address space terminates.

JES3 retains the Failsoft Logout across a JES3 restart. You can retrieve the Failsoft Logout using the MV S D R command. This applies only to the JES3 address space (not for C/I or Output Service FSSs. JES3 retains only the most recent logout on subsequent failures.

Job Recovery

Jobs active on processors at the time of system failure are restarted according to installation- and programmer-supplied restart parameters. The action that JES3 takes for jobs affected by the failure depends upon the options specified on the FAILURE parameter. The user can specify the FAILURE parameter on the //*MAIN JES3 control statement. You (the system programmer) can specify it on the CLASS or STANDARDS initialization statements.

The order of overrides for the FAILURE parameter are: //*MAIN overrides CLASS or STANDARDS; CLASS overrides STANDARDS.

Valid options for the FAILURE parameter and the action JES3 takes for each affected job are:

- **CANCEL**: Print any job output that is in a SYSOUT class that is specified as TYPE=PRINT. After printing the output, JES3 cancels the job.
- **HOLD**: Place the job into the hold queue.
**JES3 Recovery**

- **PRINT**: Print any job output that is in a SYSOUT class that is specified as TYPE=PRINT. Then place the job into the hold queue.

- **RESTART**: Restart the job from the first job step. The job will be restarted on the processor on which it was active.

Whenever a processor fails in an MVS system, the MVS checkpoint/restart facility (or warm start facility, if applicable) is invoked before the failure options are examined:

- The checkpoint/restart facility is used to record information about a job at programmer-designated checkpoints so that, if necessary, the job can be restarted at one of these checkpoints or at the beginning of a job step. Restarts can take place immediately (initiated by the console operator) or be deferred until the job is resubmitted.

- Any job with a journal data set will attempt warm start. The warm-start facility will ensure cleanup of any scratch VIO data sets for the job.

**Job Journal Data Set Usage**

The job journal is a sequential data set that resides on a spool volume of JES3. Unique to MVS, its function is to contain a set of selected job-related control blocks that are critical to automatic restart processing.

The job journal is necessary because MVS maintains its scheduler control blocks in the scheduler work area (SWA) in pageable storage, rather than on a job queue on external storage. When a job or the system fails, there is a resultant loss of the address space that contains the SWA and its job control blocks. Because it preserves up-to-date copies of certain critical control blocks, the job journal makes it possible to reconstruct the SWA. SWA control blocks will be reconstructed to their state just before the failing step for automatic step restart. For automatic checkpoint restart they will be reconstructed as they appeared at the most recently issued CHKPT macro in the job step. This capability is available for the following kinds of restart:

- Automatic step restart
- Automatic checkpoint restart
- System restart (including completion of job or step ending)

Therefore, if a job does not have job journaling, automatic restarts cannot be used.

Job journaling is provided to a job in JES3 in one of three ways:

1. The job class of the job has requested journaling (JOURNAL=YES on the CLASS initialization statement).
2. The job has a //MAIN statement with JOURNAL=YES overriding the job class table.
3. The job’s JCL has either RESTART= on the JOB statement or RD= on the JOB or EXEC statement.

After a system failure and JES3 restart of the failing main processor, those jobs in execution that had requested job journaling will be MVS system restarted (or warm started). If a job is eligible for MVS automatic restart, the system will issue message IEF225D asking if the job should restart. If the job is not eligible for restart, or the operator indicates that restart should not be attempted, any scratch or VIO data sets the job had allocated will be deleted and the job will be terminated. Therefore it may be desirable for certain classes of jobs which make a significant use of scratch or VIO data sets to request job journaling.
Function or DSP Recovery

When JES3 or a C/I FSS address space abnormally terminates, the JES3 ESTAE recovery processing routines in the terminating address space are given control. These routines examine the function control table active at the time of termination to determine which function or DSP has failed.

JES3 uses two levels of ESTAE recovery processing. The lower level ESTAE receives control whenever JES3 abnormally terminates. The higher level ESTAE is entered only if ESTAE percolation occurs, either because of a failure in the lower level ESTAE or because the lower level ESTAE returned to the control program indicating that termination continue. When the higher level ESTAE is given control, JES3 will be ended.

The JES3 ESTAE retry routines pass control to the JESTAE exit routine of the failing function or DSP. JESTAE then diagnoses the error, starts end processing, and informs JES3 whether the failing function or DSP can recover or has to be ended (quiesced). All other functions or DSPs remain in execution.

If a function or DSP has to be terminated, system resources are returned, all units listed in the function control table for the failing function or DSP are returned, and the function or DSP is placed in a permanent (nondispatchable) AWAIT state.

There are certain functions that are critical to JES3 operation:
- Console service
- Spool space allocation (in a JES3 local address space or a C/I FSS address space)
- Initialization
- Job segment scheduler (in the JES3 global address space)
- FSSDRVR (in a C/I FSS address space)
- JES3 lower level ESTAE

If one of these functions fails, the ESTAE routine abnormally ends JES3. It is then the responsibility of the operator to restart JES3.

For a JES3 local address space or a C/I FSS address space, the spool space allocation function is critical. If that function fails, the address space terminates and the operator must restart it.

Alternate CPU Recovery

Alternate CPU recovery (ACR) provides a tightly-coupled multiprocessing system with the ability to recover system operation on the operational processor after one processor fails. ACR recovers as much work from the failing processor as possible, and ends work it cannot recover.

If JES3 was active on the failing processor, JES3 analyzes the function active at the time of the hardware failure (for example, the device path might be analyzed):
- If a critical JES3 function was active and cannot recover, JES3 is ended. The operator must restart JES3.
- If a noncritical JES3 function was active and cannot recover, the function is either ended or quiesced.
If the global processor is a tightly-coupled multiprocessor and a failure occurs on one of the processors, ACR attempts recovery on the other processor.

Reconfiguring a Processor Complex

Reconfiguring a processor complex without restarting JES3 is possible if you initially define your JES3 complex to permit partitioning. During initialization, MAINPROC statements should be included for all configurations of mains that your complex might choose to use. A processor complex can be reconfigured from a single-image main into two partitioned mains; or the reverse, two partitioned mains into a single-image main. A single-image main also can have one side partitioned off, while still maintaining its single image name. The partitioned side can then be IPLed as a separate main.

Reconfiguration requires careful planning of your hardware environment. For information about planning an I/O configuration that supports reconfiguring and for instructions on the reconfiguration process, see z/OS JES3 Commands.

With the appropriate main definitions, you can use partitioning and reconfiguration to:
- Remove a failed partition
- Perform scheduled preventive maintenance on a partition
- Reinstate a previously inactive partition
- Provide a backup main for another system in the JES3 complex or a system outside the JES3 complex

Adding or removing a JES3 main affects the job selection environment. When a processor complex is running in single-image mode, more processing power and storage resources are available than when running in partitioned mode. Consider the resources available for each main that will be active in the complex, and define your job selection modes appropriately. You may need to dynamically modify the selection modes for a main by using the *F,G,main,S,selectname command.

With the /*MAIN SYSTEM= facility, users can specify the mains on which they want their jobs to execute. Also, users can specify the job class or group (which may be associated with a certain main) in which they want their jobs to be processed. Jobs directed to a main that is removed will not execute. Similarly, jobs requiring resources only attached to a partitioned-off main will not run. If the main is not going to be returned to the complex, these jobs should be restarted in the SETUP phase.

Checkpoint/Restart

The checkpoint/restart technique provided under MVS/ESA is supported by JES3.

Checkpoint/restart is a technique for recording information about a job at programmer-designated checkpoints so that, if necessary, the job can be restarted at one of these checkpoints or at the beginning of a job step.

A checkpoint is taken when a user program issues the CHKPT macro instruction. For more information concerning the CHKPT macro, see MVS/DFP Checkpoint/Restart. This macro causes the contents of the program's virtual-storage area and certain system control information to be written as a series of records in a checkpoint data set. These records can then be retrieved from the data set if the job ends abnormally or produces erroneous output, and the job can be restarted.
Restart can take place immediately (initiated by the operator at the console) or be deferred until the job is resubmitted. In either case, the time-consuming alternative of rerunning an entire job is eliminated.

Restarting A Job

There are three types of restarts:

1. **Step restart**: from the beginning of a step.
2. **Checkpoint restart**: from a checkpoint within a job step. Checkpoints are established in a job step by coding the CHKPT macro for each checkpoint required. This macro writes the contents of the virtual storage area and specific system control information of the program, as a series of records, to a data set. These records can be retrieved from the data set if the job ends abnormally or produces erroneous output, and the job can be restarted. Restart can take place immediately (initiated by the operator) or be deferred until the job is resubmitted.
3. **System failure restart**: by specifying the FAILURE=RESTART parameter on the //*MAIN control statement. In the event that the job cannot complete execution because of a system failure and the job is not eligible for automatic restart, JES3 will automatically reschedule the job from the beginning. See [z/OS MVS JCL User's Guide](https://www.ibm.com) for more information on the //*MAIN statement.

**Automatic Restart**: To use automatic restart, code the RD (restart definition) parameter on the JOB or EXEC control statement. JES3 creates a job journal for any job specifying the RD parameter. A job journal is established to hold restart information for each program in execution.

When a system failure occurs or a job step abnormally ends and RD=R is specified on the JOB or EXEC statement, MVS attempts to restart the job. If checkpoints are taken, an automatic restart is attempted at the last checkpoint regardless of the RD parameter. When a job step abnormally ends or a system failure occurs while the job is executing, and the installation has not implemented job journaling, these jobs are ineligible for automatic restart.

You can also use automatic restart management to automatically restart batch jobs and started tasks. If the job is registered with automatic restart management, it will be restarted when either:
- The executing job unexpectedly ends.
- The system on which the job is executing unexpectedly ends or leaves the sysplex.

Any jobs registered with automatic restart management can be restarted only within a single complex (we recommend only one complex within a sysplex). See [z/OS MVS MVS Setting Up a Sysplex](https://www.ibm.com) for information about setting up and using automatic restart management.

**Deferred Restart**: To use deferred restart, the RESTART parameter on the JOB statement must be specified. This parameter causes the job to restart at the beginning of the specified step of checkpoint. The SYSCHK DD statement is required when a job is submitted for deferred checkpoint restart. This statement must immediately follow the JOBLIB DD statement.

**Operator Restart Considerations**

A job may abnormally end as a result of a hardware, programming, or system error. Such an error can occur any time during execution and could cost the loss of valuable machine time. The checkpoint/restart feature of the system is provided to
allow a restart of an abnormally ended job either at the beginning of a job or at a checkpoint within a step. The programmer determines whether an automatic restart or a deferred restart is to be performed.

**Automatic Restart**

If the programmer provides for an automatic restart and the job abnormally ends, message IEF255D is issued asking if the indicated job should restart. The message may indicate the checkpoint id, thus allowing you to prevent repeated restarts at the same checkpoint or job step. When requested to authorize an automatic restart, the operator should reply YES, HOLD, or NO.

- Reply YES if the restart is to be performed at a specific checkpoint or job step for the first time. If a step restart is to occur and the step to be restarted used a card input data set that was not part of the SYSIN stream, you must return all cards read by the job step before it ended abnormally to the appropriate card readers. If a checkpoint restart is to occur, follow the programmer’s instructions for replacing the input cards.

- Reply HOLD to defer the restart; for example, to permit another job to be run first. Enter the *MODIFY command with the release operand when you are ready to restart the job. Also, if desired, you may cancel the job. However, canceling the job may result in unrecoverable paging space or the failure of certain data sets to be deleted if virtual I/O is being used.

- Reply NO if no restart is to be performed. When you reply NO, and the programmer wants a restart to be performed, the job must be resubmitted for a deferred restart.

When V=R is specified, the restart may be delayed by the system waiting for the allocation of storage. If another job is using the required storage, you will not receive a message—only a delay. Enter a DISPLAY A command to see if a system task or other job is using the storage required by a job with a V=R region. You may stop or cancel the conflicting task or job. The system may ask you to mount data volumes other than those required at the beginning of the job. The job’s I/O will be set up by JES3 for the first job step, not the step being restarted. Canceling a job in a dependent network will prevent successor jobs from running if they are dependent upon successful completion of the canceled job.

**Note:** Any operator commands in the input stream of the job step being restarted will not be executed.

**Deferred Restart**

If the programmer provides for a deferred restart and the job abnormally ends, the job must be resubmitted to have this restart performed. To restart the job, the programmer must provide a restart stream for submission to the system through the system input reader. The JCL statements to be included are described in detail in the publication [z/OS MVS JCL User’s Guide](https://www.ibm.com/support/knowledgecenter/SCK4T8_1.10.0/com.ibm.zos.v1r10.jes3diag.doc/tz9jclusc.htm).

The device configuration of the system at the time of restart need not be the same as it was when the job abnormally ended. However, enough devices must be available to satisfy the needs of the job step being restarted. The system under which a step restart is run need not be the same as it was for the job’s original execution. However, a checkpoint/restart should be run under the original system unless the alternate system can meet the following restrictions:

- The release number is the same.
- The link pack area modules in use at the checkpoint must reside in the same storage locations.
- Jobs specifying V=R require an area of storage identical to the original area.
If the required storage is not available, the system will cancel the restart and you will receive message IEF2091 which states that virtual storage is unavailable for the job.

If the required storage is not available, it is for one of the following reasons:

- The link pack area expands into the required storage. This may occur if an initial program loading (IPL) has been performed after the original execution of the job and before the restart. If this does occur, contact the system programmer for a respecification of the system parameters and repeat initial program loading using the new values.
- The system queue area expands into the required storage. When this occurs, contact the system programmer for a respecification parameter and repeat initial program loading using the new SQA value.

When a job restarts correctly, you will receive two messages: IHJ0061 and IHJ0081. If, for V=R jobs, these messages do not appear, enter the DISPLAY A command to see if a system task or other job is using the required storage. You can then stop or cancel the conflicting job.

The system may ask that you mount volumes other than those required at the beginning of the job. The job's I/O will be initially set up by JES3 for the first job step, not the step being restarted. In addition, any card input data sets that have been used by the failing job step must again be made available to the system.

Restart of JES3-controlled jobs may be accompanied by messages IAT2006, IAT2575, or both. See z/OS JES3 Messages for responses to the messages.

### Restarting JES3 After a Failure

After an MVS failure or a JES3 failure, you must restart JES3. After an MVS failure, you must also perform an MVS IPL. When restarting JES3, use the type of JES3 start that causes the least amount of disruption to your system.

### Restarting the Global Processor

After an MVS failure on the global processor, you must perform an MVS IPL before restarting JES3. For a JES3 failure including abnormal ending of the JES3 address space, you need not perform the IPL, just restart JES3.

To restart JES3, if you do not suspect problems with the job queue, perform a hot start. If, however, you suspect problems with the job queue, perform a hot start with analysis.

If either type of hot start fails, perform a warm start. If you suspect problems with the job queue, perform a warm start with analysis. You should also perform a warm start with analysis, after an equipment failure causes JES3 to terminate.

If a permanently damaged spool data set or spool device causes a JES3 failure, you can reallocate the spool data set on the same device or on a different device. After realocating the spool data set, you must perform a warm start to replace a spool data set.

If you also suspect problems with the JES3 job queue, perform a warm start with analysis to replace a spool data set. For an explanation of how to replace a spool data set, see Recovering from Spool I/O Errors.
JES3 Recovery

If you cannot restart JES3 with any type of hot start or warm start, perform an MVS IPL and then a cold start.

After any type of warm start or a cold start, you must perform an MVS IPL and then a local start on each local processor.

For additional information about each type of start and to determine the disposition of jobs after a restart, see the z/OS JES3 Initialization and Tuning Reference. For information about the sequence of commands you must specify to restart JES3, see the z/OS JES3 Commands.

Assigning Global Processor Functions to a Local Processor

If you cannot restart the global processor, assign the functions of the global processor to a local processor. This local processor then becomes the global processor. For information on how to assign the global processor functions to a local processor, see “Dynamic System Interchange”.

Restarting a Local Processor

You must restart a local processor after an MVS failure or a JES3 failure on the local processor. You must restart all local processors after performing a cold start or any type of warm start on the global processor.

After an MVS failure on a local processor, perform an MVS IPL and then a local start. After a JES3 failure, you need not perform the IPL, just the local start.

After an IPL on a local processor, JES3 processes jobs that were previously running on the local processor according to their failure options.

If JES3 cannot be restarted on a local processor, logically remove the processor from the complex. To do this, the operator must enter the command *S,main,FLUSH.

JES3 Checkpoint Data Sets

The JES3 checkpoint data sets, allocated using the JES3 cataloged procedure, provide the capability to warm start or hot start the JES3 system with minimum or no loss of system information.

The JES3 checkpoint facility writes job-related control block information to the one or more JES3 checkpoint data sets at appropriate points in time during system processing; that is, as information changes in the system. This control block information is restored to the system after performing a hot or warm start. All other information is lost.

The JES3 checkpoint data set contains the information required to initialize either a global or local JES3 processor. This information consists of the following data areas:

- JES3 complex status record (IATYCSR), containing the last known status of each processor in the JES3 complex.
- Initialization dynamic allocation checkpoint record (IATYS99), identifying the data sets that must be dynamically allocated during JES3 initialization.
Spool volume checkpoint record (IATYVOL), spool partition checkpoint record (IATYSPR), BADTRACK checkpoint record (IATYBTR), partition track allocation table checkpoint record (IATYPTC), containing the initialization data required for accessing the JES3 spool.

Initialization checkpoint record (IATYICP), containing other initialization data and the spool record addresses of multirecord files that contain the remaining initialization data.

Checkpoint data area (IATYCKP), containing the spool record addresses of single record files and multirecord files that checkpoint the status of individual functions within JES3. These individual functions and the files related to them (whose addresses are contained in IATYCKP) are described below.

- **Main Device Scheduler (MDS):** the MDS volume unavailable table, which contains the volume serial numbers of volumes unavailable to MDS processing, and the data areas indicating the online/offline status of real devices eligible for setup.

- **Output Service:** the job data accounting block (IATYJDA or JDAB), job data set control block (IATYJDS), and output scheduling element (IATYOSE) data areas, which contain the checkpoint data for the output service driver module.

- **Deadline Scheduling:** the deadline scheduling queue data areas.

- **JESNEWS:** the JESNEWS data set.

- **TSONEWS:** the TSONEWS data set.

- **RJPNEWS:** the RJPNEWS data set.

- **Generalized Main Scheduling:** data areas containing information about GMS selection modes, execution resources and various GMS parameters.

- **Device Fencing:** the device fencing data areas.

- **Dependent Job Control (DJC):** the checkpointed net control block (IATYNCK), which contain entries for each DJC network in the complex.

- **Functional Subsystems:** the FSS/FSA table checkpoint (IATYFCK) data area, which checkpoints functional subsystem and functional subsystem applications information.

- **JES3 Dump Suppression:** the JES3 dump suppression record (IATYDMP) that contains the list of JES3 failsoft codes whose dumps are suppressed automatically when the WANTDUMP=YES parameter is coded on the OPTIONS initialization statement.

- **TCP/IP Checkpoint:** checkpointed TCP/IP information (IATYTCK) that contains information about Netservs, sockets, and nodes defined with TYPE=TCPIP.

IATYCKP also contains the range of job numbers assigned in the system and the JCT priority hold flags.

The JES3 checkpoint area is allocated to either one unique data set or two duplicate data sets. You can cause information to be checkpointed in the IATYCKP control block by issuing the JESCKPNT macro.

**Recovering from Permanent Errors on the JES3 Checkpoint Data Sets**

If a permanent I/O error occurs on one of the JES3 checkpoint data sets, your recovery options depend on whether you have allocated one or both checkpoint data sets. If you have allocated only one checkpoint data set and it develops a permanent I/O error, you must perform a cold start. If you have allocated both checkpoint data sets, then you may replace the data set having the I/O error over a hot or warm start.
**JES3 Recovery**

If you replace one checkpoint data set with a new checkpoint data set during a warm or hot start, JES3 copies the checkpoint records it finds on the older checkpoint data set over to the new checkpoint data set. When the hot or warm start is finished, JES3 has two complete checkpoint data sets once again.

When you replace a checkpoint data set, be sure that the checkpoint data set you are not replacing contains a complete copy of all active checkpoint records. If you are not sure whether that data set is complete, use the MVS display command to see if there are any messages indicating problems with it. If it has any problems, you may have to perform a cold start.

**Recovering from a Checkpoint Data Set Out-of-Space Condition**

If either checkpoint data set runs out of space, the data set must be replaced. Recalculate the amount of space the checkpoint data set needs and allocate a new checkpoint data set that is larger than the old one. See [z/OS JES3 Initialization and Tuning Reference](#) for the method to calculate checkpoint data set size.

**Dynamic System Interchange**

Dynamic system interchange (DSI) is a process by which the JES3 global function can be assigned to a JES3 local processor, which then becomes the new JES3 global processor. DSI can be used when:
- The global processor is not active.
- The installation wants a local processor to assume the role of the global processor.

If the global processor is not active, the operator can invoke DSI to keep the complex running. When DSI is complete, JES3 on the old global processor can be reinitialized as a local processor without an intervening IPL, when it becomes available for reinitialization.

If the global processor is active but the installation requires that another processor be assigned as the global processor, the operator can invoke DSI. This procedure could be used for such reasons as scheduled preventive maintenance or for alternate processor utilization.

**Disabling the Old Global Processor**

When your global is inactive and you need to perform a DSI, you should disable the global by performing a system reset. A system reset causes MVS and JES3 to terminate. All jobs that were executing on the global are lost; JES3 will reschedule them.

All FSS address spaces on the global are also lost. You must restart all FSS address spaces that were executing at the time of the system reset. (For instructions on how to restart FSS address spaces, see [z/OS JES3 Commands](#))

If your global is active but you want another main to become the global, you must disable the old global by entering a "CALL,DSI and "START,DSI command on the MCS console attached to the old global. Before entering the "CALL,DSI command, you must complete all reconfiguration tasks that require JES3, such as stopping RJP to disable communication lines.

If you disable the global using a "CALL,DSI command, then any output writer FSSs that were active on the old global remain active when the new global attempts to
connect to the old global. However, if the old global fails as a result of an IPL or system reset, all output writer FSSs that were active on the old global terminate.

When you complete the DSI, you can reinitialize the old global as a local main, without an intervening IPL.

**Starting a Local Processor as a Global Processor**

DSI is started by entering the `CALL,DSI` command on the master console of the local main that you want to make the new global. All FSSs that were executing on local mains at the time of the DSI, including the local that is to become the new global, continue processing during and after the DSI.

If you disable the global using a `CALL,DSI` command, then any output writer FSSs that were active on the old global remain active when the new global attempts to connect to the old global. However, if the old global fails as a result of an IPL or system reset, all output writer FSSs that were active on the old global end.

If a failure occurs during DSI, you must perform a warm start.

**Defining Dynamic System Interchange Procedures**

During DSI, messages are issued calling for review of the installation-defined local and global processor DSI procedures. When defining these procedures, you should take the following restrictions and recommendations into consideration:

- The old global processor must be disabled. If it is not, job spool damage may occur and a cold start may be required. Your procedures should indicate the way in which the global processor is to be disabled.
- DSPs that were called from a console on the old global processor and issue input commands to that console should be canceled if the calling console will not be valid on the new global processor.
- Those global devices (devices defined through the JUNIT parameter on the DEVICE statement) that the user requires on the new global processor must be switched from the old global to the new global processor (if they are not already shared). Your procedure should indicate the way in which devices are to be switched to the new global processor.
- Functions using devices that cannot be shared with all processors or switched to the new global processor cannot continue after DSI. For example, if the old global processor and the new global processor are different processor models, they may not support the same set of devices. These functions should be specified in your procedure as nontransferable.
- If the global has special MPF processing requirements, ensure that the MPF options on the new global are set up correctly. Use the SET MPF operator command to change the MPF options for a system.
- After a DSI, FSS address spaces continue operating on the same processor as before. FSS address spaces defined to operate on a specific processor depending on which processor is the global processor (that is, specifying paired system names on the SYSTEM parameter of the FSSDEF statement) change location, if necessary, the next time the FSS is restarted.
- Changes to the definition of an FSS address space brought about by using the `MODIFY` command before the DSI remain in effect across the DSI.
- Jobs queued as a result of the SYSTEM=GLOBAL or SYSTEM=LOCAL parameters on `//*MAIN` statements before DSI are not requeued to the new
JES3 Recovery

global or local processor after the DSI. The jobs remain queued on the processor on which they were previously queued. If that processor becomes available, the jobs can execute.

- If you do not expect to re-IPL JES3 on the old global processor immediately after a DSI, to ensure jobs registered with automatic restart management on the old global processor are restarted on either the new global processor or another active local processor, you must issue the "S,main,FLUSH command.

- When SNA RJP is active on the old global processor, you must perform the following VTAM operations before starting SNA RJP on the new global:
  1. Start VTAM
  2. Vary the application definition (which contains the JES3 application) online to VTAM.
  3. Vary the required network online to VTAM.
  4. Enter the *CALL,SNARJP command.

After DSI completes, determine the status of the writer output multitasking facility by issuing the command *INQUIRY,MT. Then:

- If the new global processor is a multiprocessor and the multitasking facility is off, turn it on by issuing the command *MODIFY,MT=ON.
- If the new global processor is a uniprocessor and the multitasking facility is on, turn it off by issuing the command *MODIFY,MT=OFF.

BSC RJP Recovery

The BSC remote job processing (RJP) facility attempts to automatically recover from errors and suspended operations that might normally require system restarts. If failures occur, BSC RJP permits analysis and selective termination of specific functions or lines rather than the entire BSC RJP function.

If a system failure occurs while the BSC RJP function is processing, the BSC RJP JESTAE exit routine initializes its retry registers and indicates to the abend function that BSC RJP is to be reinstated. The retry routine that is given control issues a message explaining the reason for the abend, and then attempts to recover from the error condition:

- If the error is associated with a line I/O event or timer event, the corresponding line is canceled immediately.
- If the error occurred during line starting, the line is varied offline and cannot be started until the operator varies the line online again.
- If the error occurred during line canceling, the line is lost to the JES3 system; BSC RJP continues to service the rest of the lines.
- If the error occurred while processing an operator message, the message is ignored.

If an error occurs during remote terminal access method (RTAM) processing, a message is issued explaining the reason for the abend, and the corresponding line is canceled immediately.

Recovering from Output Writer Functional Subsystem Failures

JES3 tracks each data set sent to an output writer functional subsystem (FSS) until the FSS notifies JES3 that it has printed the data set. If an FSS fails, JES3 reschedules all data sets that were printing at the time of the failure.

An output writer FSS can fail under any of the following conditions:
JES3 Recovery

- You perform an IPL.
- You cancel an FSS using operator commands.
- The last active writer in the JES3 global address space fails, in which case the output writer FSS associated with it also terminates.

If an FSS fails, JES3 also fails all of the writers in the JES3 global address space that send work to the FSS.

In all of the above cases, JES3 recovers the work the FSS was processing and reschedules it. You can, in effect, restart an FSS by using operator commands that start a writer dynamic support program (DSP) for a page mode device. The writer DSP restarts the output writer FSS.

If you define more than one device to run under the control of a single output writer FSS, and one of those devices fail, the FSS remains active and the remaining devices continue processing work. However, if the device that fails is the last active device running under control of an output writer FSS, then JES3 cancels the FSS.

If you perform a hot start, output writer FSSs continue running in their own address spaces unless you specified the TERM=YES keyword on the FSSDEF initialization statement or unless you IPL the main on which the FSSs were operating. (You use the TERM= keyword to specify whether you want JES3 to terminate an FSS when you enter a *RETURN command). If the output writer FSS runs out of work before the JES3 global address space restarts, the output writer FSS remains idle until the restart. After the hot start, JES3 restarts the writer DSPs, both hot writers and dynamic writers, that were associated with output writer FSSs active before the hot start. The writer DSPs reestablish contact with the output writer FSSs and work continues as before the hot start. For information about the effects of a dynamic system interchange on output writer FSSs see Dynamic System Interchange.

Recovering from SAPI Failures

JES3 tracks each data set scheduled to a SYSOUT Application Programming Interface (SAPI) thread (a 'thread' being a separate, independent 'session' between the SAPI application and JES3). Each SAPI thread indicates the disposition processing to occur for the data set (for example, delete, change class, and so on). See z/OS MVS Using the Subsystem Interface for details on using SSI 79.

If a SAPI thread fails, task termination processing in IATSIJS obtains control. The job's MEM (IATYMEM) entry is checked for a COW (Client Output Work area) chain. If one exists, the COW for the failing thread is found. The COW contains information about the OSE scheduled to the thread. Following the COW is the JES3 copy of the thread's SSOB/SSS2. IATSIJS sets the data set disposition section in the SSS2 to keep (SSS2DKPE). All three control blocks are passed in the SSISERV for IATOSSO use. IATOSSO uses this to unschedule the OSE. Upon return to IATSIJS, the COW is removed from the application's MEM COW chain.

If a SAPI application fails, IATMSJT receives control to process the failing job. IATMSJT invokes IATOSCSW to build a SAPI Application Termination Entry (SATE) on the SAPI JOBTERMQ, a single threaded queue pointed from the Output Service Resident Data area (OSDSAPTO in IATYO3D). The SATE is updated with the job number and name of the failing job. This is done for each SAPI application going through job termination. When all are processed, IATOSSR is posted (flag TVTSAPTR is set) to process the OSEs that may be scheduled to each of the threads running in the application address space. IATOSSR obtains a SAPI DSP to
perform the actual cleanup. IATOSSD gets control and finds each COW in the COW dataspace pertaining the SATE. Storage is obtained for a COW/SSOB/SSS2. The dataspace COW/SSOB/SSS2 is copied into the obtained storage. IATOSSO sets the data set disposition section in the SSS2 to keep (SSS2DKPE). IATOSSO is given control to unschedule the OSE. This process continues for each COW in the dataspace pertaining to this SATE. Each COW in the dataspace is deleted. When all the COWs for the SATE are processed, storage for the SATE is returned. The next SATE is obtained and processing continues. When all of the SATEs are processed, storage obtained for our copy of the COW/SSOB/SSS2 is returned.

If a hotstart of JES3 is performed, IATOSDR checks each scheduled OSE to determine if it is scheduled to a SAPI application. If it does and the application no longer exists, the OSE is unscheduled. If the application exists, an Output Service Restart Records (OSRs) is created similar to current FSS processing. The OSR for SAPI contains the OSE variable section offset, the OSE data set section offset, the thread identifier (count), the application job number and the application's RQ address. This occurs for each OSE scheduled to a SAPI application. The SAPIFCT (IATOSSR) is given control after IATOSDR has completed this processing. When IATOSSR obtains control, it's initialization routine determines if OSRs exist. If they do not, the COW dataspace is created with no COW entries. If OSRs do exist, the COW dataspace is created with a COW entry for each OSR. IATOSSR invokes IATOSRS to return the OSR storage.

If a warm start of JES3 is performed, current processing of unscheduling all scheduled OSEs remains in effect.

Recovering an IBM 3480 Tape Drive for a Stand-Alone Dump

You may need to recover an IBM 3480 tape drive when you want to use it for a stand-alone dump. The stand-alone dump program (SADMP) is an MVS service aid that you can use to dump the contents of storage from a system that has failed. For more information about the SADMP service aid, see z/OS MVS Diagnosis: Tools and Service Aids. You need to recover an IBM 3480 tape drive when all of the following conditions exist:

- The global has failed.
- You want the IBM 3480 to receive the stand-alone dump from the global.
- The IBM 3480 is assigned to more than one main (multi-system assigned).

JES3-managed IBM 3480s are always multi-system assigned. A multisystem assigned IBM 3480 belongs to one or more local mains in your complex, as well as to the JES3 global. You must issue operator commands to give the global sole possession of the IBM 3480 tape drive.

You can determine if an IBM 3480 is assigned to a local main by entering the MVS DISPLAY U.,devnum (or/devnum), where devnum (or /devnum) specifies the three- or four-digit hexadecimal device number of the IBM 3480. A slash (/) preceding the device number is not required. Device numbers can be specified by any of the following formats:

\[
\begin{align*}
\text{ddd} \\
\text{dddd} \\
/\text{ddd} \\
/\text{dddd}
\end{align*}
\]

where ddd and dddd represent the device numbers. You must issue this command from a locally-attached MCS console.
When you have determined which JES3 local mains are assigned to the IBM 3480, use the VARYL DSP to unassign the IBM 3480 from each JES3 local. For example, if you need to take a stand-alone dump on a device that is multi-system assigned at address 560, you would enter the following commands:

*X,VARYL
*S,VARYL,560,OFF
*C,VARYL

If a local processor has failed and you want to use the IBM 3480 for a stand-alone dump for that processor, enter a *VARY,devnum (or /devnum),offline command (where devnum or /devnum specifies the 3- or 4-digit hexadecimal device number) from the JES3 global.

Local connect processing resynchronizes the JES3 and MVS device tables when you have completed running the stand-alone dump program and you have restarted the global.

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**Recovering from Spool I/O Errors**

It is possible to recover from many kinds of spool I/O errors without the need to perform a cold start. This includes, for example, errors caused by defective tracks on a spool volume or errors caused by a failing I/O device or control unit. The type of error indications you receive from JES3 can help you to determine the corrective action to take.

When an I/O error occurs on a spool data set, JES3 adds an entry to the BADTRACK table. Entries in the BADTRACK table prevent JES3 from allocating the track group containing the track with the I/O error. JES3 does not, however, create BADTRACK table entries for the following types of I/O errors:

- Read errors
- I/O error retry failures
- Write errors that can be attributed to some cause other than failure of the spool device (for example, channel errors and machine checks)
- temporary I/O errors

If the error caused JES3 to create a BADTRACK entry, use the *INQUIRY,Q,BT operator command to display:

- the location of the track having the error
- the exact time JES3 found the error, if JES3 found the error while performing I/O to the track
- whether the BADTRACK entry for the track having the error was added to the BADTRACK table during formatting of the spool data set or by a BADTRACK statement during initialization.

BADTRACK table entries that JES3 adds dynamically are lost during a warm start. To avoid further allocation of these tracks, operators must inform you of I/O errors. Operators should also save the track address information given in the message stating that JES3 has added an entry to the BADTRACK table. Then, before performing a warm or cold start, update the initialization stream with BADTRACK statements as appropriate.
**JES3 Recovery**

**Intermittent I/O Errors**

If you receive one or a few I/O error messages and DM711 or DM725 abend codes and JES3 continues to execute, the error is probably intermittent. Such an error might be caused by a defective track on a spool volume.

If a defective track caused the error, JES3 dynamically adds an entry to the BADTRACK table identifying the defective track. JES3 also issues a message indicating the ddname, cylinder, and track described by the new entry. As stated above, the system operator should save the information in the message. (The operator can also get this information at a later time using the *I,Q,BT command, if JES3 is active.) Then you must update the initialization stream with a BADTRACK statement for each I/O error before the next warm or cold start. The operator should also keep track of the frequency of errors. Frequent I/O errors suggest that the spool data set needs replacing.

**Permanent I/O Errors**

If you receive DM711 or DM725 abend codes, several I/O error messages, and JES3 functions no longer execute, the I/O error is probably permanent. (You can tell when JES3 functions no longer execute because you will no longer receive any JES3 messages.) To try recovery, use the following procedure:

1. Enter the command *F,Q,DD=ddname,STOP. This command requests that JES3:
   - Suspend scheduling of jobs that have track groups allocated to the affected spool data set
   - Stop jobs that are executing and have track groups allocated to the affected spool data set
   - Stop all JES3 writers that are writing on the affected spool data set and reschedule them for later processing, beginning from the last checkpoint.
   - Stop allocating track groups to the affected spool data set

2. If JES3 accepts the command, you can try to correct the problem that caused the I/O error.

3. If you correct the problem, issue the *F,Q,DD=ddname,RELEASE command. This command requests that JES3:
   - Resume scheduling of jobs that have track groups allocated to the affected spool data set
   - Resume allocating track groups to the affected spool data set

   JES3 uses the job failure options to determine how to process jobs that were executing at the time you issued the command *F,Q,DD=ddname,STOP.

4. If JES3 does not accept the *MODIFY,Q,DD=ddname,STOP command, or if you cannot quickly correct the problem that caused the I/O error, let JES3 continue execution without the affected spool data set.
   - If you used a DD statement in the JES3 cataloged procedure to allocate the affected spool data set, remove that DD statement from the procedure and perform a hot start.
   - If you used a DYNALLOC statement in the initialization stream to allocate the affected spool data set, issue the MVS VARY command on the global to vary offline the volume that contains the affected spool data set and perform a hot start.

**Note:** If you want to change the JES3 spool configuration, you must enter a special operator dialog to complete JES3 initialization. [z/OS JES3 Commands](#) describes the operator dialog to remove and reinstate a...
spool data set during a warm or hot start. If JES3 issues message IAT4102 during a hot start, the spool data set that you are attempting to remove contains the checkpointed initialization stream. You must perform a warm start to recreate the checkpointed initialization data.

If you continue having problems because of the data set on the local processors, issue the MVS VARY command on the local processors. Perform a local start for each processor.

If you need to restart JES3 before you can restore the spool data set, reissue the MVS VARY command on every processor to which you want the volume offline. If you cannot repair the volume quickly, you may want to remove the DYNALLOC statement for that spool data set from the initialization stream, perform a warm start on the global processor, and restart the local processors.

5. JES3 is now executing without the spool data set that caused the I/O errors. JES3 maintains information about the spool data set, including its size, its device characteristics, and the volume serial number of the volume on which it resides. However, JES3 considers the spool data set unavailable for use. Removing the spool data set in this manner does not release the spool space of jobs with data on the unavailable data set, unless the jobs have been canceled. You may now repair the spool data set.

To restore the repaired data set to the JES3 complex:
1. If you removed a DD statement from the JES3 cataloged procedure, reinsert it and perform a hot start.
2. If you entered the VARY command on one or more processors to take the volume offline, enter the VARY command on those processors to bring the volume online. Perform a hot start on the global processor and a local start on the appropriate local processors.
3. If you removed the DYNALLOC statement from the initialization stream, reinsert the statement and perform a warm start.
4. Enter command *F,Q,DD=ddname,RELEASE. This command requests that JES3 resume scheduling of jobs that have track groups allocated to the affected spool data set. JES3 will use the job failure options to determine how to handle the jobs that were executing on a processor when you issued the command *F,Q,DD=ddname,STOP.

Replacing a Spool Data Set
If a permanent I/O error occurs on a spool data set and you cannot recover the data (for example, there is a head crash on a direct access device), you can replace the affected spool data set. To replace the data set, perform a warm start and follow the procedures outlined below. You may create the new data set on a volume or device type different from the one being replaced. You may also change the size of the data set and redefine the single track table (STT) range using the STT or STTL parameter on the TRACK or FORMAT initialization statement.

Be aware that when you replace a spool data set, JES3 cancels all jobs with data on the replaced spool data set. Other risks include the possible loss of JES3 control blocks, STT extents, checkpoint records, and the JESNEWS data set, which may have been on the damaged spool data set. If these losses occur, the system will issue messages giving you the opportunity to take appropriate actions.

If you cannot immediately perform a warm start (for example, if it takes some time for you to make the changes needed to replace the spool data set), you can cancel jobs that have track groups allocated on the spool data set being replaced. To
cancel the jobs, issue the command *F,Q,DD=ddname,CANCEL. After you cancel the jobs, the user can resubmit them. You can then replace the spool data set at the time most convenient for your installation.

When you replace the spool data set, you must use the same ddname for the new spool data set as for the old.

To replace a spool data set, use the following procedure:
1. If you allocated the old spool data set by using a JES3 cataloged procedure, update the DD statement in the cataloged procedure to reflect information about the new data set. You may need to change the data set name, device number, device type, or volume serial number. Do not change the ddname.
   If you allocated the old spool data set by including a DYNALLOC statement in the initialization stream, update the optional parameters as necessary. Do not change the ddname.
2. If the old spool data set is cataloged, replace its catalog entry with an entry for the new spool data set.
3. If the new spool data set is unformatted and your initialization stream currently includes a TRACK statement for the old spool data set, replace it with a FORMAT statement. Otherwise, leave your TRACK or FORMAT statement alone.
4. Perform a warm start. Specify WR or WAR as the restart mode. JES3 will prompt you to enter the ddnames of replaced spool data sets (message IAT4009 for unformatted spool data sets and message IAT4008 for formatted spool data sets). JES3 will then cancel all jobs that have track groups allocated to the spool data sets being replaced.

Moving a Spool Data Set to Another DASD Volume

If you must move the contents of a spool data set to another DASD volume, perform a hot start with the data set not allocated or the DD statement for the data set removed from the JES3 start procedure. During JES3 initialization, JES3 considers the spool data set unavailable. After moving the data to the new DASD volume, perform a hot start with the data set (on the new volume) allocated or with the DD statement for the data set included in the JES3 start procedure. JES3 now considers the data set available.

Recovering from C/I Functional Subsystem Address Space Failures

Failure of a C/I functional subsystem (FSS) address space does not cause any JES3 address space or other C/I FSS address spaces to fail. If a C/I FSS address space encounters an error and is able to recover, no other address spaces, including JES3, even become aware of the problem. For recoverable errors, the system operator sees messages from the C/I FSS failsoft routines. The messages are similar to those the operator sees if a JES3 address space encounters an error.

If a C/I FSS address space does fail, there are two ways the JES3 global address space becomes aware of the failure:
- The C/I FSS address space disconnects through the functional subsystem interface (FSI).
- If the C/I FSS address space fails without ending communication with JES3, JES3 becomes aware of the failure when the job ends. (The C/I FSS runs as a demand select job.)
JES3 never automatically restarts a C/I FSS address space that ends. (When a C/I FSS address space abnormally ends, JES3 changes the START value, defined by the FSSDEF statement, to NO.) However, JES3 automatically reschedules all jobs that were active in the C/I FSS address space at the time of failure. Jobs restart at the beginning of C/I service.

To restart the address space, use the *F,F,FSS=fssname,ST=Y operator command.

If the JES3 global address space abnormally ends, all C/I FSS address spaces continue operating until they run out of work. Then they are idle until the JES3 global address space restarts. If the FSSDEF statement for the C/I FSS address space specifies TERM=YES, a *RETURN command for the JES3 global address space ends the C/I FSS address space.

If a C/I FSS address space ends during an IPL of a processor, JES3 will restart the C/I FSS provided:

- The processor is connected and online
- The DSPCNT is not zero
- The START option is specified as YES

If a C/I FSS hangs because of a minimal spool condition, and it is defined (or was modified with) TERM=YES, it will not be possible to automatically bring it down by ending the global address space. Therefore exercise care when restarting JES3 during a minimal spool condition.
Accessibility

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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 and z/OS ISPF User's Guide Vol I 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 BookServer or Library Server versions of z/OS books in the Internet library at:

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