CICS® Transaction Server for z/OS™

CICSPlex® SM Managing Workloads

Version 2  Release 1

This edition applies to Version 2 Release 1 of CICS Transaction Server for z/OS, program number 5697–E93, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of product.

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Preface

This book provides administration information for the CICSPlex® SM component of CICS® Transaction Server for z/OS™. It describes how to establish and maintain the CICSPlex SM definitions necessary to perform workload management.

Who this book is for

This book is for the individual responsible for administering the CICS systems in your enterprise.

What you need to know

It is assumed that you have read:

CICSPlex System Manager User Interface Guide
For information about using the ISPF user interface to CICSPlex SM.

CICSPlex System Manager Concepts and Planning
For an introduction to CICSPlex SM.

Note: Many of the views in this book are based on the Starter Set. For useful examples of the definitions and programs described in this book, explore the Starter Set itself, which is described in CICSPlex System Manager Concepts and Planning.

Notes on terminology

In the text of this book, the term CICSPlex SM (spelled with an uppercase letter ‘P’) means the IBM CICSPlex System Manager element of CICS Transaction Server for z/OS, Version 2 Release 1. The term CICSplex (spelled with a lowercase letter ‘p’) means the largest set of CICS systems to be managed by CICSPlex SM as a single entity.

Other terms used in this book are:

CICS The CICS element of CICS TS for z/OS

CICSPlex SM The CICSPlex SM element of CICS TS for z/OS

MVS™ The operating system which is a base element of z/OS.

Requesting region A CICS region that initiates a dynamic routing function.

Routing region A CICS region that routes the request for a dynamic routing function.

Target region A CICS region that receives and executes a dynamic routing function.

BTS-set A set of CICS regions within a CICSplex across which related CICS business transaction services (BTS) processes and activities may execute.

The phrase issue the command is used in this book to mean that a command may be either typed in the COMMAND field of an Information Display panel or invoked
by pressing the PF key to which it is assigned. When the location of the cursor affects command processing, this phrase also means that you can do one of the following:

- Type the command in the COMMAND field, place the cursor on the appropriate field, and press Enter.
- Move the cursor to the appropriate field and press the PF key to which the command is assigned.

### Syntax notation and conventions used in this book

The syntax descriptions of the CICSPlex SM commands use the following symbols:

- Braces {} enclose two or more alternatives from which one must be chosen.
- Square brackets [ ] enclose one or more optional alternatives.
- The OR symbol | separates alternatives.

The following conventions also apply to CICSPlex SM syntax descriptions:

- Commands and keyword parameters are shown in uppercase characters. If a command or parameter may be abbreviated, the minimum permitted abbreviation is in uppercase characters; the remainder is shown in lowercase characters and may be omitted.
- Variable parameters are shown in lowercase characters. You must replace them with your own information.
- Parameters that are not enclosed by braces {} or brackets [ ] are required.
- A default parameter value is shown like this: KEYWORD. It is the value that is assumed if you do not select one of the optional values.
- Punctuation symbols, uppercase characters, and special characters must be coded exactly as shown.

*Note:* A semicolon ; is shown as the command delimiter in examples using multiple commands. For information about using and changing the command delimiter, see the [CICSPlex System Manager User Interface Guide](#).

- The ellipsis ... means that the immediately preceding parameter can be included one or more times.

### CICS system connectivity

This release of CICSPlex SM may be used to control CICS systems that are directly connected to it, and indirectly connected through a previous release of CICSPlex SM.

For this release of CICSPlex SM, the directly-connectable CICS systems are:

- CICS Transaction Server for z/OS 2.1
- CICS Transaction Server for OS/390 1.3
- CICS Transaction Server for OS/390 1.2
- CICS Transaction Server for OS/390 1.1
- CICS for MVS/ESA 4.1
- CICS for OS/2 3.1
- CICS for OS/2 3.0

CICS systems that are not directly connectable to this release of CICSPlex SM are:

- CICS for MVS/ESA 3.3
- CICS for MVS 2.1.2
- CICS/OS2 2.0.1

---

X CICS TS for OS/390: CICSPlex SM Managing Workloads
Note: IBM Service no longer supports these CICS release levels.

You can use this release of CICSPlex SM to control CICS systems that are connected to, and managed by, your previous release of CICSPlex SM. However, if you have any directly-connectable release levels of CICS, as listed above, that are connected to a previous release of CICSPlex SM, you are strongly recommended to migrate them to the current release of CICSPlex SM, to take full advantage of the enhanced management services. See the [CICS Transaction Server for z/OS Migration Guide](https://www.ibm.com) for information on how to do this.

Table 1 shows which CICS systems may be directly connected to which releases of CICSPlex SM.

### Table 1. Directly-connectable CICS systems by CICSPlex SM release

<table>
<thead>
<tr>
<th>CICS system</th>
<th>CICSPlex SM component of CICS TS 2.1</th>
<th>CICSPlex SM component of CICS TS 1.3</th>
<th>CICSPlex SM 1.3</th>
<th>CICSPlex SM 1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS TS 2.1</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>CICS TS 1.3</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>CICS TS 1.2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>CICS TS 1.1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CICS for MVS/ESA 3.3</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CICS for MVS/ESA 4.1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CICS for MVS 2.1.2</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CICS for OS/2 3.1</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>CICS for OS/2 3.0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CICS/OS2 2.0.1</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Summary of changes

This book is based on the CICSPlex SM Release 3 edition of CICSPlex System Manager Managing Workloads, SC33-1807-00.

The information in this book has been updated to incorporate changes made to the CICSPlex SM element of CICS Transaction Server for z/OS, Version 2 Release 1. Changes made since the last edition are indicated by vertical bars to the left of the change.

Changes for CICS Transaction Server for z/OS Version 2 Release 1

The support for the workload management of enterprise beans provided by CICS Transaction Server for z/OS Version 2 Release 1 is covered in the following sections:

- “Balancing the work in a workload” on page 7 includes enterprise bean considerations.
- “Separating by transaction group” on page 14 covers workload separation of enterprise beans.
- “Enterprise bean considerations” on page 16 for transaction affinities.
- “Enterprise bean considerations” on page 29 when customizing the dynamic routing program.
- “Chapter 28. Managing enterprise beans with workload management” on page 157 tells you how to set up and run an enterprise bean workload.

Changes for CICS Transaction Server for OS/390 Version 1 Release 3

The following additions and changes have been made to the functions of CICS Transaction Server for OS/390 Version 1 Release 3.

Dynamic routing

CICS Transaction Server for OS/390 Version 1 Release 3 introduces extensions to the CICSPlex SM dynamic routing program (called the dynamic transaction routing program in previous releases). You can dynamically route:

- Transactions initiated at a terminal
- Eligible EXEC CICS START requests that are associated with a terminal
- Eligible EXEC CICS START requests that are not associated with a terminal
- Dynamic program link (DPL) requests that are received using:
  - The CICS Web support
  - The CICS Transaction Gateway
  - External CICS interface (EXCI) client programs
  - Any CICS client workstation products using the External Call Interface (ECI)
  - Distributed Computing Environment (DCE) remote procedure calls (RPCs)
  - Open Network Computing (ONC) RPCs
  - Internet Inter-Object Request Block Protocol (IIOP)
  - Any function that issues an EXEC CICS LINK PROGRAM request
- Transactions associated with CICS business transaction services (CICS BTS) activities.

These new functions allow you to integrate workload management for requests from all these sources and thereby improve performance and workload throughput.
You specify which transactions and programs may be dynamically routed, and the CICS regions in which they may be run.

The following terms have been introduced to describe the CICS regions involved in dynamic routing:

**Requesting region**
The CICS region in which the dynamic routing request originates. For transactions initiated at a terminal, and inbound client DPL requests, this is typically a TOR. For terminal-related EXEC CICS START commands, for non-terminal-related EXEC CICS START commands, for peer-to-peer DPLs, and for CICS BTS activities, the requesting region is typically an AOR.

**Routing region**
The CICS region in which the decision is taken on where the transaction or program should be run. For transactions initiated at a terminal, for EXEC CICS START commands associated with a terminal, and for inbound client DPL requests, this is typically a TOR. For non-terminal-related EXEC CICS START commands, for peer-to-peer DPL requests, and for CICS BTS activities, the routing region is typically an AOR.

**Target region**
The CICS region in which the transaction or program runs. For all dynamically-routed requests, this is typically an AOR.

**Benefits**
The new dynamic routing function enables more of the work in a CICSpex to be workload balanced, resulting in more consistent response times. You will be able to:

- Route dynamically all program link request types to improve performance and reliability.
- Route a subset of EXEC CICS START commands dynamically to improve performance and reliability of applications that use these commands.

**External control blocks**
In support of this function, CICSpex SM external control blocks have been changed. You should recompile any programs using EYURWTRA, EYURWCOM, EYURCCOM, EYURPCOM, EYURLCOM, and EYU9WRAM. You should also review your dynamic routing exit logic (EYU9WRAM), if you have customized this exit.

For dynamic program link requests, EYU9WRAM can be used to change the transaction id specified on the work request.

**BAS implications**
Dynamic routing for START commands is controlled by the Dynamic and Routable fields in the transaction definition. DPL is controlled by the Dynamic field of the program definition. For details, see [CICSpex System Manager Managing Business Applications](#).

**Operations implications**
For routable START requests, the new Routing Status field in the LOCTRAN view indicates whether or not the current transaction may be dynamically routed. For dynamic DPL requests, the new Dynam Status field in the PROGRAMD view indicates whether or not the current program may be dynamically routed. The TASKD, TASK2, and TASK3 views have been amended to include dynamic routing information. New views TASK4, TASK5, TASK6, TASK7, TASK8, and TASK9 have been introduced to show detailed monitoring information. For details, see [CICSpex System Manager Operations Views Reference](#).
New views
Two new summary views are provided:
• WLMAWAOS, which is a summary form of the WLMAWAOR view, shows summarized information about all target regions that are associated with a workload that is within the CICSp lex identified as the context.
• WLMAWTOS, which is a summary form of the WLMAWTOR view, shows summarized information about all routing regions that are associated with a workload that is within the CICSp lex identified as the context.

CICS business transaction services
CICS business transaction services (BTS) extends the CICS API and provides support services that make it easier to model complex business transactions. Using BTS, each action that makes up the business transaction is implemented as one or more CICS transactions, in the traditional manner. However, a top-level program is used to control the overall progress of the business transaction. The top-level program manages the inter-relationship, ordering parallel execution, commit scope, recovery, and restart of the actions that make up the business transaction.

BTS processes are CICSp lex-enabled, and take full advantage of CICSp lex SM’s workload separation and workload balancing functions. The CICS system group within a CICSp lex, across which related BTS processes and activities may run, is known as a BTS-set. When you define a BTS-set, you do not need to define any new communication links, beyond those already defined for use by CICSp lex SM.

For workload management, BTS is supported by
• A new view, WLMATAFD, which shows a detailed display of the properties of a single BTS activity. This view allows you to look at the contents of the BTS affinity key in hexadecimal format.
• Changes to the TRANGRP and WLMSPEC views to allow you to specify the BTS BAPPL affinity relation, and the BTS ACTIVITY and PROCESS affinity lifetimes.

For full details about BTS, see CICS Business Transaction Services.
Part 1. Implementing workload management
Chapter 1. Introduction to workload management

This chapter introduces the concepts involved with workload management and the dynamic routing of transactions and programs.

Workload management and dynamic routing

CICSPlex SM workload management optimizes processor capacity in your enterprise. Workload management achieves this by dynamically routing transactions and programs to whichever CICS region is the most appropriate at the time, taking into account any transaction affinities that exist. Workload management can dynamically route:

- Transactions invoked at a terminal
- Eligible transactions invoked using EXEC CICS START commands that are associated with a terminal
- Eligible transactions invoked using EXEC CICS START commands that are not associated with a terminal
- Distributed program links, including:
  - The CICS Web support
  - The CICS Transaction Gateway
  - EXCI calls
  - CICS Client ECI calls
  - Distributed Computing Environment (DCE) remote procedure calls (RPCs)
  - Open Network Computing (ONC) remote procedure calls (RPCs)
  - Internet Inter Object Request Broker Protocol (IIOP)
  - Any function that issues an EXEC CICS LINK PROGRAM request
- Transactions associated with CICS business transaction services (BTS) activities.
- Enterprise beans executing in CICS-provided CorbaServers

Alternatively, if you want work to run always in a specified region, you can use static routing.

The CICS systems involved in dynamic routing may act as one of the following:

Requesting region
The CICS system where the request is initiated. For terminal-initiated transactions and for inbound client DPLs, the requesting region is typically a terminal-owning region (TOR); for terminal-related EXEC CICS START commands, for non-terminal-related EXEC CICS START commands, for peer-to-peer DPLs, and for CICS BTS activities, the requesting region is typically an application-owning region (AOR). For enterprise bean invocations, the requesting region is typically the external client code that invokes the enterprise bean.

Routing region
The CICS region that decides where to route the transaction or program. For terminal-initiated transactions and terminal-associated EXEC CICS START commands, the routing region is typically a TOR; for DPLs, for non-terminal-related EXEC CICS START commands, and for CICS BTS activities, the routing region is typically an AOR. For enterprise bean invocations, the routing region is a CICS listener region.

Target region
The CICS system in which the transaction or program will run. For all dynamically-routed transactions, programs, BTS activities and enterprise bean invocations, the target region is typically an AOR.
In order to manage enterprise bean workloads, you need to create a logical EJB server, which will typically consist of a number of cloned enterprise bean listener regions acting as routing regions and cloned target regions. A CICSplex involved in the workload management of enterprise beans may contain one or more logical EJB servers, and regions that are not involved with processing enterprise bean invocations. Each cloned target region may run a number of CorbaServers. A CorbaServer provides the execution environment for enterprise beans and stateless CORBA objects.

If the region is the listener, include the statement:

MASPLTWAIT (YES)

in its EYUPARM file, to ensure that the critical components of the local CICSPlex SM environment initialize before any enterprise bean routing requests are presented.

The routing can be based on:

- User, terminal, process type, and affinity attributes associated with the work requests, which may be the transactions, programs, or BTS processes and activities
- The work requests themselves

When you establish a workload, you are associating the work itself and the CICS systems (acting as requesting, routing, and target regions), to form a single, dynamic entity. Within this entity, you can route the work:

- To a target region selected on the basis of its availability. This type of routing, known as workload balancing, allows you to balance work activity across all of the target regions associated with a workload. See "Balancing the work in a workload" on page 7 for additional information.
- To a subset of the target regions based on specific criteria. This type of routing, known as workload separation, allows you to separate transaction and program occurrences and direct them to different target region subsets, where activity is balanced across the target regions within the subset.

The criteria you use to separate transactions or programs can be based on:

- The terminal id and user id associated with a transaction or program occurrence.
- The process type associated with the CICS BTS activity.
- The transaction group.

See "Separating the work in a workload" on page 10 for additional information.

- To a selected target region based on its affinity relationship and lifetime. This type of routing, based on the transaction affinity of the target region, allows you to route specific transaction occurrences to the same target region for a designated period of time. For additional information, see "Taking affinity relations into consideration" on page 15.

Workload balancing and workload separation can be active concurrently within the same or different workloads associated with a CICSPlex.

Notes:

1. You can use the CICSPlex SM real-time analysis functions to produce data that will help in the selection of a target region during workload management. See "Chapter 22. Using real-time analysis to select a target region for workload balancing" on page 137 for details.
Workload requirements

The conditions that make a work request eligible for dynamic routing are given in the CICS Intercommunication Guide. Any CICS system may act as a requesting region, a routing region, or a target region, as long as:

- All of the CICS systems associated with a workload are either part of the same CICSpex, or, for BTS processes and activities, part of the same BTS-set. They do not need to reside in the same MVS/ESA image.
- For dynamic routing of both terminal-related and non-terminal-related EXEC CICS START commands, requesting, routing, and target regions must be CICS Transaction Server for OS/390 Version 1 Release 3 or above.
- For dynamic routing of DPLs, routing regions must be CICS Transaction Server for OS/390 Version 1 Release 3 or above; target regions may be any level of CICS.
- For enterprise beans, the routing and target regions must be part of the same IIOP server; that is, the same logical EJB server.
- For CICS BTS activities, the routing region (which is also the requesting region) and the target region must be at CICS Transaction Server for OS/390 Release 3 or later. They must also be in the same sysplex.
- For dynamic routing of transactions and static routing, the CICS system acting as the routing region must be running CICS/ESA 3.3 and later. The CICS systems acting as target regions can be running any version of any CICS platform supported by CICSpex SM (CICS/ESA®, CICS/MVS®, or CICS for OS/2®).
- For dynamic routing of enterprise bean-related transactions, the CICS system acting as the routing region and the target region must be running CICS Transaction Server Version 2 Release 1 and later.
- The routing region must be defined as local to a CMAS involved in managing the CICSpex, that is, it cannot be a remote MAS. It must use CICSpex SM facilities to communicate with that CMAS. For additional information, see CICSpex Transaction Server for z/OS Installation Guide.

A CICS system can act as a target region in one or more workloads; however, it can act as a routing region in one and only one workload. Note that a CICS system can act as a routing region and a target region in the same workload.

When a CICS system acting as a target region is combined with other target regions to form a CICS system group, each of the target regions should have access to all of the resources required by any transactions that may be routed to that CICS system group. In the case of a CICS BTS workload, they must all be in the same sysplex.

Before you can implement dynamic and distributed routing, you need to specify Yes in the Routing support active field of the CICS system definition. See CICSpex System Manager Administration.
Chapter 2. Establishing a workload

The criteria used to identify a workload are based on the information provided by a workload specification, one or more workload definitions and their optional transaction groups, and one or more workload groups.

- A **workload specification** identifies the CICS systems or CICS system groups within a CICSpox that are to be treated as routing regions and the default target regions. You can also use a workload specification to identify a default affinity relationship and lifetime.

  The name of a workload specification becomes the name of the workload itself.

- A **workload definition** includes specific or generic terminal and user names, or a specific or generic process type, that are used when attempting to match a transaction occurrence to a workload definition. It also identifies the target region to which transaction occurrences matching the criteria are to be routed.

- A **transaction group** identifies one or more related transaction identifiers and indicates whether the terminal id or the user id specified in the workload definition is to be used as the primary selection criterion in determining which transactions are to be routed to the set of target regions identified in the workload definition. A transaction group is also used to define affinities.

- A **workload group** is a collection of workload definitions that are to be treated as a single entity.

**Note:** When no workload definitions are installed in a workload, all transactions and programs are routed to a target region in the default target scope identified by the workload specification. However, when a workload definition is installed in a workload, all transactions and programs that match the criteria in that workload definition are routed to a target region in the target scope identified by the definition itself. A dynamic routing request that is not associated with any workload definition is routed to a target region in the workload specification’s default target scope.

Balancing the work in a workload

You can have all dynamic transactions and programs initiated from a set of requesting regions routed by a routing region to a specific set of target regions within the same CICSpox. The specific target region to which each request is routed is determined by the activity and availability of all target regions in that set.

To establish workload balancing, you need to define only a workload specification; see [WLMSPEC (Workload specifications)](#) on page 79.

The dynamic routing processes are explained using [Figure 1 on page 8](#), which illustrates the Starter Set configuration. For dynamic transaction routing, any transaction initiated from a terminal associated with the requesting region EYUMAS1A (a TOR) is routed to the most appropriate target region (an AOR) in the CICS system group EYUCSG01.
For dynamic routing of EXEC CICS START TRANSID TERMID commands, any transaction initiated in the requesting region EYUMAS2A (an AOR) is sent to EYUMAS1A (a TOR), the routing region associated with the terminal identified in the TERMID option of the START command. The routing region sends the transaction to the most appropriate target region (an AOR) in the CICS system group EYUCSG01.

For dynamic program linking, there are two possible scenarios. For an inbound client request, the request is received in TOR EYUMAS1A, which acts as the requesting region and the routing region. The target region is any AOR in the CICS system group EYUCSG01. For a peer-to-peer request, the request is initiated by a transaction running in EYUMAS2A (an AOR). EYUMAS2A acts as the routing region, and the target region may be any AOR in the CICS system group EYUCSG01.

The routing processes for the workload balancing of enterprise beans are explained using Figure 2 on page 9. The inbound IIOP work request is received by a routing region (listener) in system group EYUSGEJ1 and is matched to an existing request model definition. The routing region routes the transaction identified in the request model to a target region in the CICS system group. The transaction runs in the CorbaServer identified in the request model definition.
Using the queue algorithm

During workload processing using the queue algorithm, CICSplex SM routes all transactions and programs initiated in the requesting region to the most appropriate target region within the designated set of target regions.

Using the goal algorithm

For systems running MVS/ESA 5.1 and higher, CICSplex SM also supports the goal algorithm. The aim of the goal algorithm is to select the target region that is best able to meet the defined, average response-time goals for all work in a workload.

The goal is defined by associating transactions, via the MVS Workload Manager, to a service class. Service classes are assigned on a transaction, luname, and user ID basis. Service classes can define several types of response-time goals. However, CICSplex SM recognizes only average response-time goals. If transactions are given velocity, percentile or discretionary goals, they are assumed to be meeting their goals. CICSplex SM manages at the service-class level (it has no internal knowledge of the transaction characteristics). By consistently allocating service classes to sets of target regions, it minimizes the amount of resource reallocation by the MVS Workload Manager.

It is important for the Service Level Administrator to define goals that are realistic for the underlying capacity of the target systems. Transactions of like attributes (for
balancing the work in a workload

example, transactions that have similar resource consumption, or pseudoconversational transactions) should be assigned to distinct service classes. (The response-time goals can be the same for several service classes.) CICS statistics should be used to help you define these transaction sets. (See the Performance Guide for your release of CICS for information about CICS statistics.)

In order for the goal algorithm to be used, all requesting regions, routing regions, and target regions must be on MVS/ESA 5.1 or later images running in goal mode. The requesting regions, routing regions, and target regions themselves must be CICS/ESA 4.1 or later regions. Switching any of the images back into System Resource Manager (SRM) mode causes CICSPlex SM to revert to the queue algorithm.

The goal algorithm is best suited to a symmetrical target region/MVS configuration (in terms of the number of target regions per MVS image), with a number of service classes that is comparable to the number of target regions in a given MVS image.

Note: For additional information about the goal algorithm, see the MVS/ESA SP Version 5 Planning: Workload Management book.

Separating the work in a workload

You can separate the work in a workload based on:

- The name of the user, terminal, or both associated with a transaction or program
- The transaction group (or the associated transaction group for DPL and enterprise beans)
- The BTS process-type associated with the transaction, if the transaction is associated with a BTS activity.

Note: You can separate a workload using either luname and userid, or process type. You cannot separate a workload using, for example, a generic process type and a user id. Separation of enterprise bean workloads may be implemented only through the user id.

Separating by terminal or user name

You can create a workload that routes requests from a set of requesting regions to different subsets of target regions based on the name of the terminal, user, or both associated with each occurrence of a transaction. For example, you might want to route all requests initiated by certain individuals from specific terminals to a special subset of target regions.

Figure 3 on page 11 illustrates what such a workload might look like. In this case, if the user and terminal names associated with a transaction begin with SM and NET, respectively, the transaction is routed to the set of target regions identified as EYUCSG05. If either the user or terminal name begins with any other characters, the transaction is routed to the default set of target regions identified as EYUCSG01 on the workload specification.
During workload processing, CICSPlex SM evaluates the terminal and user names associated with each occurrence of a request to determine where the request should be routed.

- If the terminal and user names associated with the transaction match the selection criteria specified in an installed workload definition, the request is routed to the target regions identified in that definition.
- If either the terminal or user name does not match the selection criteria, the request is routed to the default set of target regions identified in the workload specification.

After determining the appropriate set of target regions, CICSPlex SM selects one based on the status of the active target regions in that set.

**Separating by process type**

You can create a CICS BTS workload that routes requests associated with a certain process type to a specific target region or set of target regions. For example, you may wish to route all the requests associated with the STOCK process type to a special subset of target regions.

Figure 4 on page 12 illustrates what such a workload might look like, if the process type associated with a CICS BTS transaction is STOCK, the transaction is routed to a set of target regions identified as EYUCSG05. If the process type is anything other than STOCK, the transaction is routed to the default set of target regions identified as EYUCSG01 in the workload specification.
If you choose to separate a workload by process type, you must set the Luname and Userid fields to *. If you separate a workload by luname and userid, you must set the Process Type field to *. If you want to separate an enterprise bean workload, the Luname and Process Type fields must be set to *. You can separate a workload only either by process type or by luname and userid.

You can specify either a specific or a generic process type. During workload separation processing, CICSPlex SM evaluates the process type supplied by CICS to determine to where the transaction should be routed.

- If the process type matches the selection criteria specified in an installed definition, the request is routed to the target regions identified in the definition.
- If the process type does not match the selection criteria, a match may be found based on the transaction’s associated luname and userid. If a match is found based on these criteria, the request is routed to the target regions identified in the associated definition.
- If no match is found using the process type, luname and userid, the request is routed to the default set of target regions identified in the specification.

**Note:** Separation by process type takes precedence over separation by luname and userid. Thus, if a transaction’s associated process type, luname and userid mean that it satisfies the selection criteria specified in two workload definitions, one specifying separation by process type and the other separation by luname and userid, the transaction is routed to a region in the target scope specified in the workload definition specifying separation by process type.
Separating by transaction

You can also separate the work in a workload based on the transactions themselves. For example, you might want all occurrences of payroll-related transactions initiated from terminals in an accounting department to be routed to a specific set of target regions for processing.

Figure 5 on page 14 illustrates how you might separate the work in a workload based on transaction identifiers. In this case, if the user and terminal names associated with any transaction identified in transaction group EYUWMT01 begin with SM and NET, respectively, the transaction is routed to the target regions identified as EYUCSG05. If the transaction identifier, user name, or terminal name does not match the criteria, the transaction is routed to the default target regions identified as EYUCSG01.

During workload processing, CICSPlex SM evaluates the transaction identifier supplied by CICS to determine which transaction group to use.

- If the transaction is defined to a transaction group, CICSPlex SM notes whether the match key for that group is USERID or LUNAME.
- If the transaction is not part of a transaction group, CICSPlex SM uses the match key from the default transaction group for the specification. (The match key is the value specified with the associated specification. For additional information, see *TRANGRP (Transaction groups)* on page 53.)

CICSPlex SM uses the match key value to establish the order in which the terminal and user names associated with the transaction are to be evaluated. The evaluation is used to determine where the transaction should be directed:

- If the terminal and user names associated with the transaction match the selection criteria specified in an installed workload definition, the request is routed to the target regions identified in that definition.
- If the terminal and user names do not match the selection criteria, the request is routed to the default set of target regions identified in the workload specification.

After determining the appropriate set of target regions, one is selected based on the status of the active target regions in that set.
Separating by transaction group

Workload separation of enterprise beans is by the associated transaction group. For example, you might want all enterprise bean-related transactions to be routed to a specific set of target regions for processing.

An incoming IIOP enterprise bean request to CICS includes the bean name, which is matched to a predefined request model definition that is installed in the routing regions (cloned listener regions). The request model identifies, among other things:

- The bean name
- The CICS transaction to be run
- The name of the CorbaServer in the target region in which the transaction is to run.

Figure 6 on page 15 illustrates how you might separate enterprise bean-related transactions. The request definition relates enterprise bean beanname with CICS transaction EJB1, which belongs to transaction group EYUTEJ1. The workload definition identifies the target scope as EYUSGEJ2. The match key is USERID and you can use a specific or generic user id in the transaction group definition. If the user id in the transaction group definition does not match that in the incoming IIOP
request, the enterprise bean-related transaction is routed to the default target region EYUSGEJ2.

An affinity is a relationship that you define between two or more transactions and the duration (or lifetime) of that relationship. When an affinity relationship exists between transactions, those transactions must be processed by the same target region. You can use affinities to route transactions from one or more requesting
adding affinity relations to a workload

regions to a specific target region based on the rules applying to a particular combination of an affinity relation and lifetime. For a list of affinity relation and lifetime values, see Table 8 on page 58.

You can use the IBM CICS Transaction Affinities Utility to detect existing affinities between transactions and between BTS processes and activities. The output from the reporter component of that utility can be used as input to the CICSPlex SM batched repository-update facility. For more information, see the CICS Transaction Affinities Utility Guide.

Note: You cannot use the CICS Transaction Affinities Utility to detect affinities between non-terminal-related EXEC CICS START commands, and between DPLs that are not associated with either a user id or a terminal id. For these request types, you should try to remove or avoid all affinities, and ensure that your applications can honor any remaining affinities.

CICS BTS considerations

Although BTS itself does not introduce any affinities, and discourages programming techniques that do, it does support existing code that may introduce affinities. You must define such affinities to workload management. It is particularly important to specify each affinity’s lifetime. Failure to do this may restrict unnecessarily the workload management routing options.

It is important to note that a given activity can be run both synchronously and asynchronously. Workload management is only able to honour invocations that are made asynchronously. Furthermore, you are strongly encouraged not to create these affinities, particularly activity and process affinities, because these affinities are synchronized across the BTS-set. This could have serious performance impacts on your systems.

You should also note that, with CICSPlex SM, the longest time that an affinity can be maintained is while a CMAS involved in the workload is active; that is, an affinity of PERMANENT. If there is a total system failure, or a planned shutdown, affinities will be lost, but activities in CICS will be recovered from the BTS RLS data set.

Enterprise bean considerations

The CICSPlex SM affinity services have no facilities for the management of affinities between enterprise beans. Transaction affinity relation and lifetime fields in the workload management views should be left blank.

Adding affinities into a workload

Figure 7 on page 17 illustrates how you might separate the work in a workload based on transaction identifiers and then associate an affinity relation and lifetime with those transactions. With this example, the first occurrence of a transaction named PAY1, where the associated terminal and user names are NET1 and SMITH, respectively, is directed to the appropriate target region within the set of target regions identified as EYUCSG05. The specific target region receiving the transaction and the affinity relation and lifetime associated with the transaction group to which PAY1 belongs are noted. All subsequent occurrences of any transaction in the transaction group that meet the terminal and user name criteria are directed to the same target region for the designated period of time.
adding affinity relations to a workload

Note: If you do not specify a default affinity relation and lifetime, then you may use the same workload specification for workload balancing and separation.

Figure 7. Sample definition adding transaction affinity to a workload

Note: During workload processing, CICSplex SM evaluates the transaction identifier supplied by CICS to determine which transaction group to use.

- If the transaction is defined to a transaction group, CICSplex SM notes the match key for that group.
- If the transaction is not part of a transaction group, CICSplex SM uses the match key from the default transaction group for the workload specification.

CICSplex SM uses this value to establish the order in which the terminal and user names associated with the transaction are to be evaluated. The evaluation is to determine where the transaction should be directed:
adding affinity relations to a workload

- If the terminal and user names associated with the transaction match the selection criteria specified in an installed workload definition, CICSPlex SM checks to see if an affinity relation and lifetime are associated with the transaction group.
  - When an affinity relation and lifetime are associated with the transaction group:
    - If it is the first occurrence, CICSPlex SM notes the affinity relation and lifetime. Based on target region availability, CICSPlex SM then selects a target region and directs the transaction to it.
    - If it is not the first occurrence, CICSPlex SM routes the transaction to the previously selected target region. As long as the affinity relation and lifetime are applicable, subsequent occurrences of any transaction in the transaction group are directed to the same target region.
  - When no affinity relation and lifetime are associated with the transaction group, the transaction is routed to the most appropriate target region in the designated set of target regions.
- If the terminal and user names do not match the selection criteria, the transaction is routed to the default set of target regions identified in the workload specification. One is selected based on the status of the active target regions in that set.

Note: When transactions in a series of terminal-initiated transactions are associated with separate transaction groups, affinities for each transaction group follow the rules defined for that transaction group.

Taking abend probabilities into consideration

With CICS/ESA 4.1 and later, CICSPlex SM can evaluate both the health and activity (or load) of each target region identified by the Target Scope. This information, along with the abend probability values you provide when defining transaction groups to CICSPlex SM, is then used in determining to which target region a particular transaction should be routed. That is, it is used as a guide to avoiding target regions where the abend probability is greater than is acceptable for a given transaction or set of transactions within the transaction group.

Note: For any transactions that are not associated with a transaction group, the default abend probability values defined in the workload specification are used.

The probability that a transaction will abend if routed to a particular target region is calculated in one of the following ways:

- When the transaction is associated with a transaction group that either has no defined affinity type and lifetime or uses the default values defined in a workload specification, then the probability of an abend is calculated individually for that transaction.
- When the transaction is associated with a transaction group that has a defined affinity type and lifetime, then the probability of an abend for that transaction is calculated as the probability of an abend for the entire group of transactions.

The abend probability values that you provide cover both the health and load of a potential target region, where:

- If the probability that a given transaction within the set will abend in a specific target region is equal to or greater than the abend health value you specified with
the transaction, then that target region is considered unhealthy. CICSPlex SM attempts to avoid routing the transaction to that target region. However, if there is no healthier target region, then the transaction may be routed to that target region.

- If the probability that a given transaction within the set will abend in a specific target region is greater than 0% but less than the abend load value you specified, CICSPlex SM gradually adjusts the perceived transaction load upward. Once the abend probability reaches the defined load value, the perceived load is doubled, which means the target region is considered to have twice the load that it really has. The target region is still considered healthy, but its perceived load may make it less acceptable as a target for routing. The perceived load continues to increase until the abend probability reaches the defined health value, at which point the target region is considered unhealthy.

**Note:** Once an affinity is active, all subsequent transactions are routed to the same target region for as long as the affinity remains active, regardless of its abend probability.
taking abend probabilities into consideration
Chapter 3. Activating workload management

This chapter contains the steps you need to perform to activate workload management.

For workload management to occur for a particular CICS system, you must:

1. Associate a workload specification with the CICS system, using the WLMSPEC view, as described on page 84.
2. Identify the dynamic routing program EYU9XLOP to the CICS systems acting as requesting regions and target regions.

   If the CICS system is not active, you can make workload management processing available the next time the CICS system starts by modifying the CICS system initialization table (SIT) parameters to include:
   
   DTRPGM=EYU9XLOP

   and, for non-terminal-related EXEC CICS START commands and BTS activities and also for all regions within a logical server:
   
   DSRTPGM=EYU9XLOP

   If the CICS system is active, you can use the CICSRGND view, described in [CICSPlex System Manager Operations Views Reference](#), to set the name of the dynamic routing program and the distributed routing program.

   **Note:** For additional information about this program and dynamic routing, see "Chapter 4. Customizing the dynamic routing program" on page 25.

3. Activate workload management for the CICS system. You can do this using the views:

   **CICSSYS**
   
   To change the CICS system definition in the data repository.

   **MAS**
   
   To activate temporarily workload management for an active CICS system.

When either the first routing region associated with a CICSplex is started, or you use the MAS view to activate workload management for the first routing region in a CICSplex, the appropriate workload specifications are installed automatically. (All CMASs involved in managing the CICSplex are also notified.) All workload definitions and transaction groups, associated with the specification by workload groups, are also installed automatically. As long as the CICS system remains active, additional workload definitions can be installed manually in the CICS system.

   **Note:** When a requesting region associated with a CICSplex, and defined with either DTRPGM=EYU9XLOP or DSRTPGM=EYU9XLOP, is starting, it connects to its target CMAS and workload management is activated. However, if the target CMAS is not active when the routing region is starting, any transactions initiated from that routing region and processed by the EYU9XLOP program will wait indefinitely until the CMAS becomes active and the requesting region fully connects to it. Note that once the requesting region connects to the CMAS and workload management is activated, the CMAS can become inactive and workload management remains active.
Once a workload is active, subsequent changes you make to workload definitions and transaction groups are noted in the data repository. To include these changes in an active workload, you must use action commands to install or discard them.

Installed workload definitions become active immediately and remain active as long as the workload is active or until you discard them. (To verify that the definition is installed in the workload and that all of the CMASs involved in managing the CICSpinx using that workload know about the definition, you can use the WLMAWDEF view, as described in Table 4 on page 49.)

How long a workload remains active depends on the affinity lifetime associated with the workload.

- When an affinity lifetime of PERMANENT is in effect, the workload remains active as long as any CMAS involved in managing the workload is active.
- When any other affinity lifetime, or no affinity lifetime, is associated with the workload, the workload remains active as long as any CICS system that is associated with that workload remains connected to a CMAS that manages the CICSpinx to which that CICS system belongs.

**Important**

Once workload management is active, you should not attempt to deactivate it while any workloads are active. When CICSpinx SM is balancing or separating the work in a workload, unpredictable results may occur if you attempt to deactivate workload management. Unacceptable results occur if you attempt this action when affinity relations are associated with active workloads. For details, see [Chapter 20, Discarding an active transaction from a workload](#) on page 133.
Part 2. Implementing dynamic routing
Chapter 4. Customizing the dynamic routing program

A transaction can be defined to CICS as either local or remote. Local transactions always run in the requesting region; remote transactions can be routed to any CICS system connected to the routing region. Routing of remote transactions can be dynamic, static, or ATI-controlled.

When a remote transaction is initiated, the CICS relay program is invoked. The CICS relay program links to the dynamic routing program EYU9XLOP. EYU9XLOP creates the environment necessary for CICSPlex SM-based dynamic routing and sets up the CICSPlex SM run-time environment. You must specify EYU9XLOP in the system initialization table (SIT) parameter.

- For static routing, ATI, and dynamic routing, you have to set the DTRPGM SIT parameter associated with the requesting region initiating the transaction, and all potential target regions:
  \[
  \text{DTRPGM=\text{EYU9XLOP}}
  \]
- For non-terminal-related EXEC CICS START commands, BTS activities, or enterprise beans, you have to set the DSRTPGM SIT parameter:
  \[
  \text{DSRTPGM=\text{EYU9XLOP}}
  \]

CICS notifies EYU9XLOP of all routing requests. These are:
- Route selection, route selection error, and transaction termination.
- For CICS/ESA 4.1 and later, routed transaction abend and notification.
- For BTS (CICS Transaction Server for OS/390 Version 1 Release 3 and later), transaction initiation, transaction abend, and routing attempt complete.
- For enterprise beans (CICS Transaction Server Version 2 Release 1 and later), transaction initiation, transaction abend, and routing attempt complete.

When CICS links to EYU9XLOP, it passes the CICS communication area named DFHDYPDS to it.

Control then passes to the CICSPlex SM workload management facilities. CICSPlex SM initializes the workload management MAS agent code and engages its routing action process. This process is called internally if any of the following conditions are true:
- The EYU9WRAM user-replaceable module is not defined to CICS
- EYU9WRAM is defined to CICS, but is not available
- EYU9WRAM is defined to CICS, is available, and the load module is the assembler version of the module as distributed with CICSPlex SM.

The internal routing action process produces the same results as executing the assembler version of EYU9WRAM as it is distributed with CICSPlex SM. If no additional dynamic routing control is required at your enterprise, the internal process provides better performance.

The EYU9WRAM module (or its equivalent internal process) receives the CICSPlex SM-based communication area EYURWCOM. (An entry for EYU9WRAM is added to the CICS system definition file, DFHCSD, for each CICS system during installation.) As distributed with CICSPlex SM, EYU9WRAM drives CICSPlex SM workload management processing. EYU9WRAM does this by first obtaining the appropriate list of target region candidates based on the transaction group, and the terminal id, luname, user id, or process type. Then EYU9WRAM selects a target region from the list of candidates.
CICS release requirements

CICS release requirements for dynamic routing

The CICS release requirements for regions involved in dynamic routing are:

- For dynamic transaction routing:

  **Routing regions**
  
  CICS/ESA Version 3.3 and later (but see "CICS system connectivity" on page x)

  **Target regions**
  
  Any release of CICS (but see "CICS system connectivity" on page x)

- For EXEC CICS START commands:

  **Requesting regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

  **Routing regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

  **Target regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

- For CICS BTS:

  **Requesting regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

  **Routing regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

  **Target regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

- For DPL:

  **Routing regions**
  
  CICS Transaction Server for OS/390 Version 1 Release 3 or later

  **Target regions**
  
  Any release of CICS (but see "CICS system connectivity" on page x)

- For enterprise beans:

  **Routing regions**
  
  CICS Transaction Server for OS/390 Version 2 Release 1 or later

  **Target regions**
  
  CICS Transaction Server for OS/390 Version 2 Release 1 or later

Sample source programs and copy books

Following installation, the module EYU9WRAM is loaded into CICSPlex SM. It is an assembler-language, command-level program; its corresponding copy books are:

**EYURWCOM**

Defines the communication area

**EYURWCOD**

Defines literals for EYURWCOM

**EYURWSVE**

Defines each element of a target region scope list

**EYURWSVD**

Defines literals for EYURWSVE

To assist you in your customization effort, sample source programs and copy books for assembler, C/370™, COBOL 2, and PL/I are distributed with CICSPlex SM. The
names of the sample programs and copy books, and the CICSplex SM libraries in which they can be found are shown in Table 2.

Table 2. Sample programs and copy books

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Modifying dynamic routing

You can customize normal CICSplex SM workload management processing by modifying the module EYU9WRAM.

EYU9WRAM uses the CICSplex SM dynamic routing application programming interface (API), which is a special-purpose, call-level interface that provides the mechanism needed to request workload management actions. All calls are constructed using standard CALL statements. The CALL statement generates the linkage between the EYU9WRAM module and the CICSplex SM Workload Manager component. The format of the CALL statement is shown here:

CALL WAPIENPT(DA_TOKEN,function)

where:

DA_TOKEN
Identifies the dynamic routing API token supplied via the EYURWCOM communication area. This token is used by EYU9WAPI and must not be altered.

function
Is the function to be performed, specified as:

SM_SCOPE
Returns a list of eligible target regions.
modifying dynamic routing

**SM_BALANCE**
Selects a target region from the list of eligible target regions.

**SM_ROUTE**
Routes a transaction to a specific target region.

**SM_CREAFF**
Creates an affinity.

**SM_DELAFF**
Deletes an active affinity.

You can use **SM_SCOPE** and **SM_BALANCE** together to obtain a list of target regions and then select the target region to which a transaction is to be routed.

If you know that a transaction is always to be directed to a specific target region, you can use just **SM_ROUTE**.

As distributed, EYU9WRAM issues **SM_SCOPE** and **SM_BALANCE** calls. It does not include any **SM_ROUTE** calls. It includes unexecuted calls to **SM_CREAFF** and **SM_DELAFF**. You can modify the program to issue these calls as desired.

Although all of the examples in this chapter use the assembler language form of the dynamic routing API verbs, you can also use these verbs in programs written in C/370, COBOL 2, and PL/I. Sample programs distributed with CICSPlex SM contain examples of the CALL statements for each of these languages.

---

**Important**
As distributed, EYU9WRAM handles the workload balancing and separation established via the workload management definitions by using the API verbs. Any changes you make to EYU9WRAM, therefore, may adversely impact the CICSPlex SM workload management facilities. For example, if you do not use **SM_SCOPE**, **SM_BALANCE**, or **SM_ROUTE**, each transaction occurrence is routed to the default target region identified when the transaction was defined to CICS. Thus, all CICSPlex SM workload management definitions are bypassed.

---

**Nondynamic transaction considerations**

For CICS/ESA 4.1 and later, you do not need to include any calls through the API if a transaction is statically routed or is started by ATI. In these cases, the target region may not be changed. The routing function in those cases will be route notify. The route notify function is intended to notify the EYU9WRAM program that such a transaction is being routed.

If you do include any of these functions, the following occurs:

- An **SM_SCOPE** call returns a single entry in the SCOP_VECT. The entry is the target region associated with the statically defined transaction when it was defined, or with the destination specified on the EXEC CICS START command for ATI transactions.
- An **SM_BALANCE** call selects the target region associated with the transaction when it was defined to CICS. The CICSPlex SM Workload Manager will not create any affinity for the transaction.
- An **SM_ROUTE** call returns an exception response.

When EYU9WRAM is called for:
modifying dynamic routing

- Notification, any existing affinity relations are ignored and none are created.
- Route selection error, any existing affinity relations are ignored and none are created. In addition, the EYU9WRAM program as delivered will write a terminal message and terminate.
- Routing attempt complete, for CICS BTS transactions only. Any existing affinities are ignored. Any dynamic routing API function call results in a bad response. See "Non-terminal-related STARTs and CICS BTS considerations".
- Transaction initiation, for CICS BTS transactions only. Any existing affinities are ignored. Any dynamic routing API function call results in a bad response. See "Non-terminal-related STARTs and CICS BTS considerations".
- Transaction termination, any existing affinities are ignored. Any dynamic routing API function call results in an error response.
- Transaction abend, any existing affinities are ignored. Any dynamic routing API function call results in an error response.

Non-terminal-related STARTs and CICS BTS considerations

When routing a transaction associated with either a CICS BTS activity or a non-terminal-related EXEC CICS START command, the routing program, identified in the DSRTPGM SIT parameter, is invoked for both static and dynamic routing. In the case of statically routed transactions, the EYU9WRAM program cannot alter the target region; see "Nondynamic transaction considerations" on page 28. In the case of dynamically routed transactions, the EYU9WRAM program may alter the target region; see "Selecting a target region from a set of target regions" on page 30. However, in both cases, the EYU9WRAM program is invoked only for:

- In the requesting region:
  - Notification
  - Route selection
  - Route selection error
  - Route attempt complete
- In the target region:
  - Transaction initiation
  - Transaction termination
  - Transaction abend

For details of the function of route initiation, see CICS Intercommunication Guide.

Enterprise bean considerations

When routing a transaction associated with an enterprise bean invocation, the routing program, identified in the DSRTPGM SIT parameter, is invoked for both static and dynamic routing. In the case of statically routed transactions, the EYU9WRAM program cannot alter the target region; see "Nondynamic transaction considerations" on page 28. In the case of dynamically routed transactions, the EYU9WRAM program may alter the target region; see "Selecting a target region from a set of target regions" on page 30. However, in both cases, the EYU9WRAM program is invoked only for:

- In the routing region:
  - Notification
  - Route selection
  - Route selection error
  - Route attempt complete

- In the target region:
  - Transaction initiation
Selecting a target region from a set of target regions

As distributed, EYU9WRAM uses SM_SCOPE and SM_BALANCE to select a target region from the list of target regions defined for a transaction. Specifically, issuing:

- SM_SCOPE causes a list of target regions to be returned for the current transaction occurrence. The target regions are those that are explicitly or implicitly associated with the requesting region by a workload specification.

- SM_BALANCE causes a target region to be selected from the list of candidate target regions returned by SM_SCOPE.

After an SM_SCOPE or SM_BALANCE call, the result of the operation is indicated in the response and reason fields of the EYURWCOM communication area.

Actions during route selection

A dynamic route selection occurs when a transaction or program is scheduled for routing.

- Issuing SM_SCOPE results in the EYURWCOM communication area Scope Vector pointer being updated with the address of the target region scope list description area, SCOP_VECT. Also, the element count field is updated to contain the count of elements in the scope vector. Each element in the scope vector, as described in EYURWSVE on page 185, identifies a candidate target region and indicates its current status.

- During SM_BALANCE processing, the target region appearing first in the ordered list is selected for routing, unless the scope vector element EYURWSVE is marked ignore.

- When no affinity is associated with the current transaction occurrence, an SM_SCOPE call causes the SCOP_VECT elements to be sorted so that the target region that is the best candidate is placed first in the list.

- During SM_BALANCE processing, the APPLID and SYSID of the most suitable target region are placed in the fields WCOM_SEL_AOR and WCOM_SEL_SYSID, respectively. Typically, this will be the first target region represented in the scope vector. However, if the EYU9WRAM program has marked the WSVE-IGNORE field on some of the SCOP_VECT elements to denote that the target region is to be ignored, the first target region in the scope vector which is not marked to be ignored will be selected.

Notes:

1. If the transaction identifier and the ids of the terminal and user associated with that transaction match a transaction group to which an affinity is defined, the affinity is made active during SM_BALANCE processing.

2. Note that, with DPL, you can update the transaction id before the SM_SCOPE call.

- When an affinity is associated with the current transaction occurrence, an SM_SCOPE call normally causes only the target region with which the affinity exists to be identified in SCOP_VECT. An SM_BALANCE call then selects that target region. If the target region is not available for routing, the SM_BALANCE function will set a warning indicator. It will not attempt to select another target region.

- For CICS/ESA 4.1 and later, if the transaction is defined as a DTRTRAN, the EYURWCOM communication area will contain indicators denoting that the
transaction is a DTRTRAN and that it will not be rejected by the Workload Manager. Processing is generally identical to the normal, non-DTRTRAN, case. Issuing SM_SCOPE returns a SCOP_VECT. Issuing SM_BALANCE selects a target region.

The EYU9WRAM module may opt to reject the transaction prior to issuing the SM_SCOPE call. In this case, the Workload Manager returns to CICS/ESA with the reject indicator set to Y in the DFHDYPDS communication area. The sample EYU9WRAM program causes a DTRTRAN transaction to be rejected only if the transaction identifier is all blanks.

**Actions during notification**

Notification occurs when a static transaction or ATI transaction is being scheduled for routing.

- For CICS/ESA 4.1 and later, for statically routable transactions, ATI transactions, and BTS static routing requests, issuing SM_SCOPE causes the scope vector to contain a single target region. This is the target region associated with the transaction.

**Actions during routing attempt complete**

None, but you can tidy up and release any resources at this stage.

**Actions during route selection error**

A route selection error call occurs if the CICS link between the requesting region and target region is not available or is not defined.

- When no affinity is active: issue SM_SCOPE again. The candidate target regions identified by the SCOP_VECT it returns will not include the target region that caused the error. You can then use SM_BALANCE to select a new target region.

- When affinity became active as a result of the previous route selection:
  - If the lifetime associated with the affinity is PERMANENT, SYSTEM, ACTIVITY, or PROCESS, the target region causing the error will be included in scope list returned by SM_SCOPE. SM_BALANCE is required by affinity rules to select that target region. It also returns a warning to EYU9WRAM. EYU9WRAM should then notify the user that an error has occurred.
  - If the lifetime associated with the affinity is SIGNON, LOGON, DELIMIT, or PCONV, the active affinity status is removed before control returns to EYU9WRAM. When you reissue SM_SCOPE, the target region causing the error will not be included in the scope list. If the workload specification is defined with Create Affinity YES for the transaction group, EYU9WRAM is notified that an affinity is defined and will be activated when you issue SM_BALANCE.

- When affinity was activated by a previous transaction instance, and you issue SM_SCOPE again, the scope list returned contains the previously selected target region. Since SM_BALANCE is required by affinity rules to select that target region, a warning is returned to EYU9WRAM. EYU9WRAM should then notify the user that an error has occurred.

**Actions during transaction termination**

Transaction termination occurs when a transaction has terminated normally.

- EYU9WRAM should release any resources it may have acquired.
- Issuing SM_SCOPE or SM_BALANCE or SM_ROUTE causes an exception response to be returned.

**Actions during transaction abend**

Transaction abend occurs when a transaction has terminated abnormally.

- EYU9WRAM should release any resources it may have acquired.
modifying dynamic routing

- Issuing SM_SCOPE or SM_BALANCE or SMROUTE causes an exception response to be returned.

**Actions during transaction initiation**

Transaction initiation occurs when a CICS BTS-related transaction, or an enterprise bean-related transaction, has been routed to the target region. No specific action is taken. The call is issued for information purposes only.

**Selecting a specific target region**

SM_ROUTE requests that a specific target region be selected for routing. Use SM_ROUTE when you have application- or data-dependent requirements for explicit routing. For example, you might want to route a transaction associated with a specific user ID to a specific target region.

After an SM_ROUTE call, the result of the operation is stored in the response and reason fields of the EYURWCOM communication area.

A sample SM_ROUTE call is show here:

```
CALL WAPIENPT(DA_TOKEN,SM_ROUTE)
```

DA_TOKEN identifies the dynamic routing API token supplied via the EYURWCOM communication area. This token is used by EYU9WAPI and must not be altered.

**Actions during route selection**

The actions during route selection are:

- If there is only one connection between a requesting region and the target region, you can supply either the SYSID or the APPLID of the target region (CICSPlex SM will determine the appropriate, corresponding ID). Place the APPLID in the WCOM_SEL_AOR field of the EYURWCOM communication area. Place the SYSID in the WCOM_SEL_SYSID field.

- If there are multiple connections between a requesting region and the target region, supply both the SYSID and the APPLID, as described previously, to ensure that the correct target region is selected. Note that when both the SYSID and APPLID are supplied, they are not validated.

The target region need not be defined to CICSPlex SM. The affinity status is not checked. Thus, no affinity is established as a result of this call and, if an affinity was in effect, it is ignored.

- For CICS/ESA 4.1 and later, issuing SM_ROUTE during Route Notify processing causes an exception response to be returned.

**Actions during routing attempt complete**

None, but you can tidy up and release any resources at this stage.

**Actions during route selection error**

The EYU9WRAM program may issue a message and terminate. You may then issue SM_ROUTE again specifying a different target region, or issue SM_SCOPE and SM_BALANCE.

**Actions during transaction termination**

- EYU9WRAM should terminate any resources it may have acquired.
- Calling any API function causes an exception response to be returned.

**Actions during transaction abend**

- Calling any API function causes an exception response to be returned.
**Actions during transaction initiation**

At transaction initiation:

- EYU9WRAM should terminate any resources it may have acquired.
- Calling any API function causes an exception response to be returned.

**Creating an affinity**

You can use SM_CREAFF to create an affinity if one does not already exist in the transaction group established for the transaction. The transaction group must be defined with an affinity type and lifetime. The affinity created will have the same affinity type and lifetime as defined in the transaction group.

You should review [Affinity considerations](#) before using SM_CREAFF.

Prior to calling SM_CREAFF, you must first call SM_SCOPE to obtain a scope list. SM_CREAFF will not create an affinity to a target region that is not in the scope list. In addition, you should set the EYUWRCOM communication area fields WCOM_SEL_AOR and WCOM_SEL_SYSID to the APPLID and SYSID, respectively, of the target region for which you want the affinity created.

EYU9WRAM contains a fragment of unexecuted code that you can use as a template for implementing the SM_CREAFF function.

The SM_CREAFF function cannot be called during:
- Route termination
- Route abend
- Route notify
- Route initiate
- Route complete

**Deleting an affinity**

You can use SM_DELAFF to delete an active affinity.

You should review [Affinity considerations](#) before using SM_DELAFF.

Prior to calling SM_DELAFF, you must first call SM_SCOPE to obtain a scope list. The WCOM_AFF_STAT field in the EYUWRCOM communication area contains a value indicating whether an affinity is active or committed. An active affinity can be deleted using SM_DELAFF. A committed affinity has a lifetime of SYSTEM or PERMANENT and cannot be deleted using SM_DELAFF.

EYU9WRAM contains a fragment of unexecuted code that you can use as a template for implementing the SM_DELAFF API function.

The SM_DELAFF function cannot be called during:
- Route notify
- Route initiate
- Route complete

**Affinity considerations**

Once created, an affinity normally exists until the lifetime of the affinity has expired. The expiration for each lifetime is as follows:

**Permanent**

When the workload of which the target region is a part terminates.
modifying dynamic routing

System
   When the target region terminates.

Logon
   When the terminal user logs off.

Signon
   When the terminal user signs off.

Pconv
   When a transaction uses EXEC CICS RETURN specifying no NEXTTRANSID or the PCONV mode of the transaction is END.

   CICS does not support pseudoconversations for APPC (LUTYPE6.2) devices.

Delimit
   When the PCONV mode of the transaction is END.

Activity
   When the CICS BTS activity ends.

Process
   When the CICS BTS process ends.

There are circumstances when SM_SCOPE generates a scope list containing a single affinity target region, but the target region is not available for routing. This happens when:

- The target region is down.
- The CICS link to the target region is down.
- The target region is currently active but it was shutdown and restarted after the affinity was created.

In these cases, the EYU9WRAM default processing issues a terminal message indicating that the affinity target region is not available and causes the transaction to terminate. If the affinity lifetime is PCONV (pseudoconversation), CICSPlex SM automatically deletes the affinity because it has expired (there is no NEXTTRANSID). However, the default EYU9WRAM processing does not delete any other affinities because the characteristics of the actual affinity to the target region are unknown. For example, a LOGON affinity may involve the use of the TCTUA to pass information to the target region. If the affinity is deleted when the target region is not available, the next transaction for the transaction group would cause a new target region to be selected. The transaction might fail upon using the TCTUA contents when routed to the new target region.

The sample EYU9WRAM program, which implements the default processing, contains a subroutine that checks on affinity status after a call to SM_SCOPE. When an affinity is active to a target region, but not committed, and the affinity target region status is not OK, the subroutine sends a message to the terminal user and then exits so that the EYU9WRAM program terminates. The subroutine contains an unexecuted code fragment that can be used to delete the affinity using the SM_DELAFF call. Prior to the unexecuted code fragment is a series of tests for the affinity lifetime of the active affinity. One or more of the branches can be changed to jump to the code fragment. The code fragment itself deletes the affinity, issues a message, and then returns so that the EYU9WRAM program exits, thereby causing the transaction to terminate. This processing can be modified so that the affinity is deleted, no message is issued, and the subroutine exits causing the mainline process to reexecute the SM_SCOPE call. In that case, a new set of target regions is received for use by SM_BALANCE.
The same subroutine also contains an unexecuted code fragment that can be enabled to create an affinity. In this case, the subroutine has determined that an affinity is defined but not active. It then checks the WCOM_AFF_AUTO indicator to determine whether CICSPlex SM should automatically create affinities during SM_BALANCE. The subroutine exits normally no matter what the answer is. You can enable the SM_CREAFF fragment in order to cause an affinity to be created. The SM_CREAFF call may be used regardless of whether WCOM_AFF_AUTO does or does not indicate the automatic creation of affinities during SM_BALANCE. The SM_CREAFF call can therefore be used to:

- Create an affinity when CICSPlex SM will not.
- Create an affinity to a target region that CICSPlex SM would ordinarily not select.

The SM_CREAFF code fragment creates an affinity to the target region that appears first in the scope list returned by SM_SCOPE.

The following fields in the EYURWCOM communication area provide information regarding CICSPlex SM affinity processing.

- WCOM_AFF_STAT
- WCOM_AFFAOR_STAT
- WCOM_AFF_TYPE
- WCOM_AFF_LIFE
- WCOM_AFF_AUTO
- WCOM_WORK_NAME
- WCOM_TGRP_NAME

These fields are described in [EYURWCOM on page 177].

CICSPlex SM data areas

The EYU9WRAM program uses the following data areas:

- Communication area EYURWCOM. Literals for EYURWCOM are defined in EYURWCOD.
- Scope vector element EYURWSVE. Literals for EYURWSVE are defined in EYURWSVD.

The names of the copy books that you can use to map these data areas are identified in [Table 2 on page 27].

The format of EYURWCOM is shown in [Figure 70 on page 178].

The scope vector element, EYURWSVE, contains information about the individual target regions associated with the list of candidate target regions returned by SM_SCOPE. The format of the SCOP_VECT element is shown in [Figure 71 on page 183].

Creating a user-replacement module for EYU9WRAM

You can use the sample procedures provided in CICSTS21.CPSM.SEYUPROC to create replacement modules for EYU9WRAM.

NOTE TO REVIEWERS: The HLQ will be changed globally for all books at some future date.

The procedure members are:

Assembler

EYUEITAL
creating a user-replacement for EYU9WRAM

Samples may be found in "Sample user-replacement modules" on page 195. Copy these procedures to a cataloged system procedure library. Next, use the JCL samples to execute the procedure and create the replacement module for EYU9WRAM. Note that lower case values shown in the sample JCL should be replaced with the appropriate values for your site.

Note: The CICSPlex SM API cannot be used from within EYU9WRAM.
Chapter 5. Requesting additional dynamic routing support

This chapter contains Product-sensitive Programming Interface Information.

Note

If you are running CICS Transaction Server for OS/390 Version 1 Release 3 and later, it is recommended that you use the CICSPlex SM-supplied program EYU9XLOP for all your dynamic routing requirements. You need the information in this chapter only if you wish to continue to use this function during migration to CICS Transaction Server for OS/390 Version 1 Release 3.

If your routing regions are CICS Transaction Server for OS/390 Version 1 Release 3 and later, or if you are using CICS BTS or enterprise beans, you should use the dynamic routing facilities described in "Chapter 4. Customizing the dynamic routing program" on page 25, in order for CICSPlex SM to manage your work requests more effectively.

This chapter describes how to access the CICSPlex SM workload management facilities directly from an application program. To write such a program, you should be familiar with:

• The interface between the CICS relay program and the defined dynamic routing program.
• CICSPlex SM workload management processing, as described in "Chapter 1. Introduction to workload management" on page 3.
• The CICSPlex SM workload management routing action module (EYU9WRAM), as described in "Chapter 4. Customizing the dynamic routing program" on page 25.

The primary method of invoking CICSPlex SM workload management is by defining module EYU9XLOP to CICS as the dynamic routing program. This causes EYU9XLOP to be invoked by the CICS relay program, allowing CICSPlex SM workload management to make a routing decision about each work request that can be sent to another CICS system.

If necessary, CICSPlex SM workload management can be invoked directly from an application program, without going through the CICS relay program. You can use this interface, from CICS releases before CICS Transaction Server for OS/390 Version 1 Release 3, to workload management to determine the best target region for a dynamic program load (DPL) from a requesting region. The application program you write must follow certain guidelines:

• The program must run in a CICS system that is defined and running as a routing region. You cannot access CICSPlex SM workload management from a target region.
• The program must issue its INIT and TERM calls from the same task. CICSPlex SM expects the program to imitate the processing done by the CICS relay program, which always calls at route initiation and route termination.

Note: Accessing workload management through a program that issues an EXEC CICS START command is not recommended with an asynchronous transaction start. Furthermore, EXEC CICS START commands that are not
related with either a terminal or a user should not be used for transactions that have affinity relationships, as those relationships cannot be correctly resolved using this interface.

Accessing workload management from a program using a dynamic program load is not supported. CICSPlex SM workload management uses the CICS application programming interface to gather information about the current environment in which it is running. Due to DPL restrictions some of that information will not be available, and unpredictable results may occur.

In order to make a routing decision, CICSPlex SM workload management needs certain information that is normally supplied by the CICS relay program. (The CICS relay program derives the information from data available to CICS for the instance of the transaction being relayed.) When you invoke CICSPlex SM workload management directly, you need to provide this information, including terminal-oriented data and the equivalent of a transaction name to identify the work to be routed.

How to invoke CICSPlex SM workload management

To invoke the CICSPlex SM workload management facilities, use an EXEC CICS LINK command, specifying EYU9XLOP as the program and identifying EYURWTRA as the communication area. The format of the command is:

```
EXEC CICS LINK
  PROGRAM(EYU9XLOP)
  COMMAREA(EYURWTRA)
  LENGTH(=AL2(WTRA_LENGTH))
```

Much of the data normally passed from the CICS relay program to the dynamic routing program in the DFHDYPDS communication area must be generated by your program and passed to CICSPlex SM workload management. Other data that is normally derived by CICSPlex SM workload management from a transaction- and terminal-oriented environment must also be provided by your program. The assembler copy book EYURWTRA provides a map of the communication area to be passed to CICSPlex SM workload management.

The corresponding copy books and the CICSPlex SM libraries in which they can be found are:

<table>
<thead>
<tr>
<th>Language</th>
<th>Member name</th>
<th>Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembler</td>
<td>EYUAWTRA</td>
<td>SEYUMAC</td>
</tr>
<tr>
<td>COBOL</td>
<td>EYULWTRA</td>
<td>SEYUCOB</td>
</tr>
<tr>
<td>PL/1</td>
<td>EYUPWTRA</td>
<td>SEYUPL1</td>
</tr>
<tr>
<td>C</td>
<td>EYUCWTRA</td>
<td>SEYUC370</td>
</tr>
</tbody>
</table>

Prior to invoking CICSPlex SM workload management, you must initialize the EYURWTRA communication area. The format of EYURWTRA is shown in Figure 72 on page 188.

For a list of the possible response and reason code values that can be returned in WTRA_API_RESP and WTRA_API_REAS, refer to the assembler copy book member EYURWCOD.
Processing considerations

After CICSPlex SM workload management processing, the WTRA_RESPONSE field contains a return code of either zero (0) or 8. If the return code is 0, WTRA_SYSID contains the SYSID of the selected target region, and WTRA_APPLID contains its APPLID. With that information, you can proceed to route the unit of work to the target region.

If the return code is 8, you should inspect the WTRA_API_RESP and WTRA_API_REAS fields for more information. These fields contain the last response and reason codes returned to the CICSPlex SM workload management routing action module (EYU9WRAM). In most cases, the response and reason codes describe what caused CICSPlex SM workload management to generate the return code of 8. Based on that information, you can decide how to proceed.

In some cases, however, the WTRA_RESPONSE field may contain a return code of 8, while the WTRA_API_RESP and WTRA_API_REAS fields have not been set by CICSPlex SM workload management. In those cases, an error was detected prior to invoking the routing action process. CICSPlex SM user trace records are written to the CICS trace data set for those types of errors. When this happens, your program should terminate processing.

When the return code is 8, you should also inspect the WTRA_OPTER field. If its value is WTRA_CALLYES:
1. Set the WTRA_FUNC field to WTRA_FUNCTRM for route termination.
2. Reinvoke CICSPlex SM workload management.
3. Terminate processing for the proposed unit of work.

If the WTRA_OPTER field contains a value of WTRA_CALLNO, terminate further processing for the proposed unit of work.

After the unit of work has completed in the target region, set the WTRA_FUNC field according to how the unit of work completed. If the unit of work completed successfully:
1. Set the WTRA_FUNC field to WTRA_FUNCTRM for route termination.
2. Optionally, set the WTRA_NEXTTRAN field to the ID of the next transaction to be used in the process. If there is no next transaction, set the field to all blanks.
3. Reinvoke CICSPlex SM workload management to request termination processing for the transaction.

If the unit of work abended or generated an error that you consider abnormal:
1. Set the WTRA_FUNC field to WTRA_FUNCABD to notify CICSPlex SM workload management that the routed transaction abended.
2. Reinvoke CICSPlex SM workload management to request abnormal termination processing for the transaction.

Route error considerations

After you receive the SYSID and APPLID of a target region, you can attempt to route the unit of work to the target region. However, the routing attempt may result in an error condition if the system is unavailable. When this happens, you should:
1. Set the WTRA_FUNC field to WTRA_FUNCERR to indicate a routing error.
2. Specify the reason for the error in the WTRA_ERR field.
3. Reinvoke CICSPlex SM workload management.
processing considerations

CICSPlex SM workload management provides another target from the scope list, if possible. If no other systems are available, the WTRA_RESPONSE field is set to 8 and the WTRA_API_RESP and WTRA_API_REAS fields describe the reason for the failure. You may have to invoke CICSPlex SM workload management more than once for routing errors until you receive a valid target region.

Transaction affinity considerations

If the WTRA_TRANID, WTRA_USERID and WTRA_LUNAME fields cause CICSPlex SM workload management to select a transaction group that includes an affinity, the rules of transaction affinities are obeyed. In this case, you should ensure that the WTRA_NEXTTRAN field is initialized with the ID of the next transaction before calling the route termination function.

If your units of work, or any subset of them, have an affinity relation defined, be careful in how you define that affinity. Since your program cannot provide SIGNOFF or LOGOFF processing, an affinity lifetime of SIGNON or LOGON, though valid, may cause an affinity relation to be built that is not removed until either the requesting region or the target region terminates.

The WTRA_NEXTTRAN field is most useful for pseudoconversation affinities. For this affinity lifetime, CICSPlex SM workload management normally issues the EXEC CICS ASSIGN NEXTTRANSID command to retrieve the next transaction ID, if any, for the facility. Since that command is not available when CICSPlex SM workload management is invoked by your program, it is your responsibility to provide the ID of the next transaction.

For a description of CICSPlex SM workload management affinity processing, see "Taking affinity relations into consideration" on page 15. For details on specifying affinity relation and lifetime values, see "Creating a transaction group" on page 54.

Abend compensation considerations

If the target region is running CICS/ESA 4.1 and later, transactions initiated by your program can participate in abend compensation processing, provided that the active CICSPlex SM workload specifies it. You should note that, if the work requests are either non-terminal-related EXEC CICS START commands, or BTS activities, the routing and target regions must be within the same MVS image for the routing region to detect that an abend has occurred.

Your program should notify CICSPlex SM workload management that a particular unit of work abended by specifying WTRA_FUNCABD in the WTRA_FUNC field. Then, if possible, CICSPlex SM workload management will tend to avoid selecting the same target region for the transaction (or set of transactions, if an affinity is defined) on subsequent route select functions.

For a description of CICSPlex SM workload management abend compensation processing, see "Taking abend probabilities into consideration" on page 18. For details on requesting abend compensation, see "Creating a workload specification" on page 81.

MVS/ESA workload management considerations

If the MVS/ESA image where your program is running operates in GOAL mode, transactions initiated by your program can be processed using the goal algorithm, provided the active CICSPlex SM workload specifies it. Because the service class token is not known and may not exist for a specific route select function,
CICSPlex SM workload management uses a pseudo-service class token for all transactions initiated by your program. CICSPlex SM assumes that transactions in that service class always meet their goal.

For details on requesting the GOAL algorithm, see Creating a workload specification on page 81.

**CMAS availability considerations**

If your program issues an EXEC CICS LINK for EYU9XLOP, but the requesting region in which your program is running has not yet fully connected to its target CMAS, you will see message EYUXL0020I, indicating that an ESSS connection is in progress. Your program will wait indefinitely until the CMAS becomes available and the requesting region is joined to a workload. If you have connected successfully to the CMAS and the MAS, but the CMAS has not installed any workload definitions to the MAS, you will see a message indicating that the requesting region is waiting for a workload. You may need to set up and install workloads to rectify this situation. Note that, once the requesting region has successfully connected to the CMAS, the CMAS can become inactive and workload management remains active.

**Sample calling sequence**

Figure 73 on page 193 illustrates a sample calling sequence for a program that will access CICSPlex SM workload management facilities. It is not intended to be used as a sample program and is, therefore, not complete in every detail.
Part 3. Managing workloads
Chapter 6. Workload management definitions and their related views

You can use the workload management administration views to define a variety of workload management attributes. Figure 8 on page 46 provides an overview of the workload management views from the perspective of the CICSplex SM object model. In addition to these views, you can use the views described in Table 4 on page 49 to display information about and manage active workloads. You can also display a visual map of your workload management definitions by using the MAP action command, as described in CICSplex System Manager User Interface Guide.

Figure 9 on page 47 illustrates the relationship between the components of a workload in a CICSplex and the views used to establish the workload.
workload management definitions and their views

Figure 8. Views for creating workload management objects and associations
Table 3 shows the views you can use to create workload management definitions. It also indicates the information you can display and the actions you can perform using these views.

Table 3. Views to create and maintain workload management definitions

<table>
<thead>
<tr>
<th>Display</th>
<th>Actions Supported</th>
<th>View</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS systems and CICS system groups associated with workload specification</td>
<td>Change or remove the association between a routing scope and a workload specification.</td>
<td>WLMSCOPE</td>
<td>75</td>
</tr>
</tbody>
</table>
### Table 3. Views to create and maintain workload management definitions (continued)

<table>
<thead>
<tr>
<th>Display</th>
<th>Actions Supported</th>
<th>View</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction groups</td>
<td>• Create, browse, change, remove, or update a transaction group.</td>
<td>TRANGRP</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>• Add a transaction to a transaction group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transactions in transaction groups</td>
<td>• Remove a transaction from a transaction group.</td>
<td>DTRINGRP</td>
<td>51</td>
</tr>
<tr>
<td>Workload definitions</td>
<td>• Create, change, or remove a workload definition.</td>
<td>WLMDEF</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>• Add an association between a workload definition and a workload group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Install a workload definition into a workload.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload groups</td>
<td>• Create, change, or remove a workload group.</td>
<td>WLMGROUP</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>• Add an association between a workload group and a workload specification.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Install workload definitions associated with a workload group into a CICS system or CICS system group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload groups with their workload definitions</td>
<td>• Add or remove the association between a workload definition and a workload group.</td>
<td>WLMINGRP</td>
<td>72</td>
</tr>
<tr>
<td>Workload specifications</td>
<td>• Create, browse, change, or remove a workload specification.</td>
<td>WLMSPEC</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>• Add an association between a workload specification and a scope identified as one or more routing regions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload specifications with their workload groups</td>
<td>• Add or remove the association between a workload group and a workload specification.</td>
<td>WLMINSPC</td>
<td>73</td>
</tr>
</tbody>
</table>
Chapter 7. Views for managing definitions

When a CICS system is active, you can use the views identified in Table 4 to display information about and control its use of workload management.

Table 4. Views to manage active workload management definitions

<table>
<thead>
<tr>
<th>Display</th>
<th>Actions Supported</th>
<th>View</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction affinities</td>
<td>• Display detailed information about the properties if a single active CICS BTS activity. This view allows you to look at the contents of the CICS BTS affinity key in hexadecimal format.</td>
<td>WLMATAFD</td>
<td>95</td>
</tr>
<tr>
<td>Target regions</td>
<td>• Display information about all target regions associated with a specific workload. • Change the status of a target region to active or quiesced.</td>
<td>WLMAWAOR</td>
<td>95</td>
</tr>
<tr>
<td>Summary of target regions</td>
<td>• Display summary information about all target regions associated with a specific workload.</td>
<td>WLMAWAOS</td>
<td>97</td>
</tr>
<tr>
<td>Routing regions</td>
<td>• Display information about active routing regions associated with a specific workload.</td>
<td>WLMAWTOR</td>
<td>102</td>
</tr>
<tr>
<td>Summary of routing regions</td>
<td>• Display summary information about active routing regions associated with a specific workload.</td>
<td>WLMAWTOS</td>
<td>103</td>
</tr>
<tr>
<td>Transactions</td>
<td>• Display information about all active transactions associated with a specific workload. • Discard a transaction from a transaction group.</td>
<td>WLMATRAN</td>
<td>93</td>
</tr>
<tr>
<td>Transaction affinities</td>
<td>• Display information about the active transaction affinities for a transaction group associated with a specific workload. • Discard an affinity entry.</td>
<td>WLMATAFF</td>
<td>89</td>
</tr>
<tr>
<td>Summary of transaction affinities</td>
<td>• Display summary information about the active transaction affinities for a transaction group associated with a specific workload. • Discard an affinity entry.</td>
<td>WLMATAFS</td>
<td>91</td>
</tr>
<tr>
<td>Transaction groups</td>
<td>• Display information about transaction groups associated with a specific workload. • Change the status of a transaction group to active or dormant.</td>
<td>WLMATGRP</td>
<td>91</td>
</tr>
<tr>
<td>Workloads</td>
<td>• Display information about active workloads.</td>
<td>WLMAWORK</td>
<td>100</td>
</tr>
<tr>
<td>Workload definitions</td>
<td>• Display information about active workload definitions associated with a specific workload. • Discard an active workload definition.</td>
<td>WLMAWDEF</td>
<td>97</td>
</tr>
</tbody>
</table>
Chapter 8. Creating workload management definitions

This chapter contains detailed descriptions of the views used to create and maintain workload management definitions. You can access these views by:

- Issuing the appropriate workload management view command.
- Issuing the MENU ADMWLM command and selecting a view from the menu. (An example of this menu is shown in Figure 10.)
- Initiating a hyperlink from one view to another by placing the cursor on a hyperlink field and pressing Enter.

For additional information about accessing views, see CICSPlex System Manager User Interface Guide. Unless noted otherwise, only the context is recognized when you are creating and maintaining workload management definitions. For additional information about setting the context, see CICSPlex System Manager User Interface Guide.

The remainder of this chapter contains detailed descriptions of the workload management views.

DTRINGRP (Transactions in transaction groups)

To display information about the transactions associated with one or more transaction groups, issue the command:

```plaintext
DTRINGRP [trangroup]
```

where trangroup is a specific or generic transaction group name. If you omit this parameter, the view, illustrated in Figure 11 on page 52, includes information about all existing transaction groups within the current context.
creating workload management definitions

Table 5 summarizes the action commands you can use with the DTRINGRP view.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>MAP</td>
<td>Display a visual map of workload management definitions using the specified transaction group as a starting point.</td>
</tr>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove a transaction from a transaction group.</td>
</tr>
<tr>
<td>TEMPMP cmasid</td>
<td>n/a</td>
<td>Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID.</td>
</tr>
</tbody>
</table>

Hyperlink fields

There are no hyperlink fields on the DTRINGRP view.

TRANGRP (Transaction groups)

A transaction group is an association of logically similar transactions. The similarity may be based on affinity requirements, common shared processing requirements, or any other user-determined characteristic.

Examples of how to use this view can be found in:

- "Chapter 15. Routing a specific transaction to a specific target region" on page 117
- "Chapter 16. Routing particular transactions from a given user to a specific target region" on page 121
- "Chapter 17. Honoring a pseudoconversational transaction" on page 125

By including transaction groups as part of a workload definition, you can identify one or more transactions that are to be routed to a specific set of target regions. For example, suppose you want to route only occurrences of the transaction PAY that are initiated from certain terminals to a target region in the CICS system group EYUCSG99. To do this, create a transaction group that contains the transaction identifier PAY and indicates the order in which the user and terminal names...
creating workload management definitions

associated with that transaction are to be evaluated. Then associate the transaction
group with a workload definition, where the workload definition identifies
EYUCSG99 as the target region scope.

Any transaction may be identified in a transaction group, but CICSPlex SM routes
only eligible transactions. The conditions that need to be fulfilled for a transaction to
be eligible for dynamic routing are in [CICS Intercommunication Guide].

Transactions scheduled as a result of automatic transaction initiation (ATI) and
transactions defined as static are routed to the target region identified in their
resource definitions.

Default transaction group

Any transaction that is not explicitly associated with a user-defined transaction
group is routed according to the default transaction group. The default
transaction group ($$DTGA$$) is based on the attributes of the workload
specification that is associated with the CICS system. If the default transaction
group is not associated with any workload definitions, the names of the
terminal and user associated with such a transaction are not evaluated.

To display information about existing transaction groups, issue the command:

```
TRANGRP [trangroup]
```

where trangroup is a specific or generic transaction group name. If you omit this
parameter, the view, illustrated in Figure 12, includes information about all existing
transaction groups within the current context.

<table>
<thead>
<tr>
<th>26FEB2001 21:41:53</th>
<th>INFORMATION DISPLAY</th>
</tr>
</thead>
</table>
| COMMAND ===>
| SCROLL ===>
| PAGE |
| Curr Win ===>
| Alt Win ===>

CMD Trangrp Affinity Affinity Cre Match State Event Description
--- Name---- Relation Lifetime- Aff Key---- -------- Name---- -----------------
--- EYUTRG01 NO USERID ACTIVE EYURTD20 SSet - Related to
--- EYUTRG05 NO USERID ACTIVE EYURTD20 SSet - Application
--- EYUTRG06 USERID PCONV NO USERID ACTIVE SSet - Existing a

Figure 12. The TRANGRP view

Action commands

Table 6 summarizes the action commands you can use with the TRANGRP view.

Table 6. TRANGRP view action commands

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>ADD</td>
<td>Add a transaction to a transaction group, as described on page 53</td>
</tr>
</tbody>
</table>
Table 6. TRANGRP view action commands (continued)

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>BRO</td>
<td>Browse a transaction group definition in the data repository. The format of the resulting panel is similar to that shown in Figure 13 on page 55. The panel fields are not modifiable.</td>
</tr>
<tr>
<td>CREate</td>
<td>CRE</td>
<td>Create a transaction group definition and add it to the data repository, as described in &quot;Creating a transaction group&quot;. When you use the primary command CREate, some fields in the new view may contain values supplied by CICSPlex SM; you may change these values. When you enter the line command CRE next to the name of a transaction group definition, fields in the new view contain values to be modelled (from the existing transaction group definition).</td>
</tr>
<tr>
<td>n/a</td>
<td>MAP</td>
<td>Display a visual map of workload management definitions using the specified transaction group as a starting point.</td>
</tr>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove a transaction group definition from the data repository. <strong>Note:</strong> Removing a transaction group causes all transactions associated with it to be removed also.</td>
</tr>
<tr>
<td>TEMPMP cmasid</td>
<td>n/a</td>
<td>Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID.</td>
</tr>
<tr>
<td>n/a</td>
<td>UPD</td>
<td>Update a transaction group definition in the data repository. The format of the resulting input panel is similar to that shown in Figure 13. You can change the contents of any field in the panel except Trangroup Name.</td>
</tr>
</tbody>
</table>

Hyperlink fields

Table 7 shows the hyperlink field on the TRANGRP view.

Table 7. TRANGRP view hyperlink fields

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trangrp Name</td>
<td>DTRINGRP</td>
<td>Detailed information about the transactions comprising the designated transaction group.</td>
</tr>
</tbody>
</table>

Creating a transaction group

Figure 13 on page 55 shows the format of the panel produced when you use the create primary (CREate) or line (CRE) action command from the TRANGRP view.
Figure 13. Creating a transaction group

Provide the following information, as appropriate:

**Trangroup Name**
Specify a 1- to 8-character name for the transaction group. The name can contain alphabetic, numeric, or national characters. However, the first character must be alphabetic.

**Description**
(Optional.) Specify a 1- to 30-character description of the transaction group.

**Status**
Specify whether the affinity relation and lifetime values are to be used when processing a transaction associated with this transaction group:

- **ACTIVE**
  - Recognize the affinity relation and lifetime settings.

- **DORMANT**
  - Recognize the affinity settings only when the lifetime is pseudoconversation (PCONV). Otherwise, do not recognize the affinity relation and lifetime settings.

**Match Key**
Designate whether a user name (USERID) or logical unit name (LUNAME) is to be used as the search criteria for the transaction group. This field is ignored if the associated workload definition specifies separation by process type rather than by luname and user id.

**Note:** The specific or generic user and terminal names that are to be used as the search criteria are defined as part of the workload definition to which this transaction group is associated.

**Affinity Relation**
(Optional.) Indicate the affinity relation that is to be used when processing the transactions associated with this transaction group. Specify:

- **USERID**
  - Base transaction affinity on the user ID.
creating workload management definitions

LUNAME
Base transaction affinity on the terminal logical unit name.

GLOBAL
Base transaction affinity on all users at all terminals.

BAPPL
Base transaction affinity on the CICS BTS application.

If you do not specify a value, no affinity relation is recognized for transactions associated with this transaction group. All dynamic transactions in the group that are initiated from any routing region by any user can be routed to any CICS system associated with the target scope.

Affinity Lifetime
(Required when you specify a value in the Affinity Relation field.) Indicate the affinity lifetime to be used when processing transactions associated with this transaction group. Specify:

DELIMIT
Maintain transaction affinity until a transaction with a pseudoconversation mode of END is encountered.

LOGON
Maintain transaction affinity for the duration of the terminal session.

PCONV
Maintain transaction affinity for the duration of the pseudoconversation. That is, as long as each transaction ends with an EXEC CICS RETURN TRANSID command to invoke the next transaction in the sequence and no pseudoconversation mode of END is encountered.

CICS does not support pseudoconversations for APPC (LUTPE6.2) devices.

PERMANENT
Maintain transaction affinity as long as the workload containing this transaction group is active.

SIGNON
Maintain transaction affinity as long as the user’s session is active.

SYSTEM
Maintain transaction affinity as long as the target region to which transactions are directed remains active.

ACTIVITY
Maintain transaction affinity until the associated BTS activity ends.

PROCESS
Maintain transaction affinity until the associated BTS process ends.

Note: The Affinity Relation and Affinity Lifetime fields are related. If you specify a value in the Affinity Relation field, you must specify a value in the Affinity Lifetime field. See Table 8 on page 58 for valid affinity and lifetime combinations.

Create Affinity
(Optional.) Indicate whether CICSPlex SM should automatically create an affinity relationship for transactions associated with this transaction group.
YES (or blank)
CICSPlex SM creates an affinity using the values specified in the Affinity Relation and Affinity Lifetime fields.

NO
CICSPlex SM does not automatically create an affinity. However, you can create one by using the SM_CREAFF function in the dynamic routing program (EYU9WRAM). The SM_CREAFF function provides greater control over the creation of affinities. For example, you can create an affinity to a target region that CICSPlex SM might not ordinarily select for dynamic routing. Refer to Chapter 4, Customizing the dynamic routing program on page 25 for details on EYU9WRAM and SM_CREAFF.

N/A Affinity not defined (Affinity Relation and Affinity Lifetime fields are blank).

Event Name
(Optional.) Enter the specific or generic name of an analysis definition (RTADEF) or status definition (STATDEF) that may affect transactions associated with this transaction group. If you enter a generic value, a list of valid definitions is displayed.

If a real-time analysis event is generated by this definition during the target region selection process, the severity level, if any, associated with the definition is used as part of the criteria in selecting a target region.

Abend Health
(For CICS/ESA 4.1 or later.) Specify the abend probability for a transaction associated with this group that should cause a target region to be considered unhealthy:

0 Ignore target region abend probability calculations.

value Specify a value between 1 and 99 (inclusive) that indicates an unacceptable abend probability. For example, if you specify 25, a target region with a 25% or greater probability of abending for a transaction associated with this group is considered unhealthy and is avoided, if possible.

Abend Load
(For CICS/ESA 4.1 or later.) Specify the abend probability for a transaction associated with this group that should cause a target region's load level to be doubled:

0 Required when the Abend Health field is set to 0.

value Specify a value that is greater than 1 and less than the Abend Health value.

For example, if you specified 25 as the Abend Health value, you must specify a value, x, between 2 and 24 (inclusive) as the Abend Load value. Then, if the probability of abend for a transaction being routed to a given target region is between 0% and x%, the perceived load on that target region is adjusted upward. Once the abend probability reaches x%, the perceived load is doubled, which means the target region is considered to have twice the load that it really has. This loading factor makes the region less desirable as a target for routing.
creating workload management definitions

Notes:
1. Once an affinity is active, all subsequent transactions are routed to the same target region for as long as the affinity remains active, regardless of its abend probability.
2. For additional information about specifying abend health and abend load values, see "Taking abend probabilities into consideration" on page 18.

Press Enter to add the transaction group definition to the data repository.

Table 8. Valid relation and lifetime combinations and their meanings

<table>
<thead>
<tr>
<th>Affinity Relation and Meaning</th>
<th>Lifetime and Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>USERID</td>
<td>SIGNON</td>
</tr>
<tr>
<td>All dynamic requests identified in the transaction group that are both:</td>
<td></td>
</tr>
<tr>
<td>• Initiated from a terminal, by an EXEC CICS START command associated with a terminal, or by a BTS activity</td>
<td></td>
</tr>
<tr>
<td>• Associated with the same user</td>
<td></td>
</tr>
<tr>
<td>are to be directed to the same target region.</td>
<td>The affinity continues as long as the user’s terminal session is active.</td>
</tr>
<tr>
<td></td>
<td>DELIMIT</td>
</tr>
<tr>
<td></td>
<td>The affinity continues until a transaction with a pseudoconversation mode of END is encountered.</td>
</tr>
<tr>
<td></td>
<td>PCONV</td>
</tr>
<tr>
<td></td>
<td>The affinity continues as long as the pseudoconversation transaction is active. That is, as long as each transaction ends with an EXEC CICS RETURN TRANSID and no pseudoconversation mode of END is encountered.</td>
</tr>
<tr>
<td></td>
<td>SYSTEM</td>
</tr>
<tr>
<td></td>
<td>The affinity continues as long as that target region is active.</td>
</tr>
<tr>
<td></td>
<td>PERMANENT</td>
</tr>
<tr>
<td></td>
<td>The affinity continues as long as any CMAS involved in managing the CICSpex using the workload is active.</td>
</tr>
<tr>
<td>LUNAME</td>
<td>LOGON</td>
</tr>
<tr>
<td>All dynamic requests identified in the transaction group that are either initiated from, or associated with (using the EXEC CICS START command), the same terminal, are to be directed to the same target region.</td>
<td>The affinity continues as long as the terminal session is active.</td>
</tr>
<tr>
<td></td>
<td>DELIMIT</td>
</tr>
<tr>
<td></td>
<td>The affinity continues until a transaction with a pseudoconversation mode of END is encountered.</td>
</tr>
<tr>
<td></td>
<td>PCONV</td>
</tr>
<tr>
<td></td>
<td>The affinity continues as long as the pseudoconversation transaction is active. That is, as long as each transaction ends with an EXEC CICS RETURN TRANSID and no pseudoconversation mode of END is encountered.</td>
</tr>
<tr>
<td></td>
<td>SYSTEM</td>
</tr>
<tr>
<td></td>
<td>The affinity continues as long as that target region is active.</td>
</tr>
<tr>
<td></td>
<td>PERMANENT</td>
</tr>
<tr>
<td></td>
<td>The affinity continues as long as any CMAS involved in managing the CICSpex using the workload is active.</td>
</tr>
</tbody>
</table>
Table 8. Valid relation and lifetime combinations and their meanings (continued)

<table>
<thead>
<tr>
<th>Affinity Relation and Meaning</th>
<th>Lifetime and Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOBAL</td>
<td>SYSTEM</td>
</tr>
<tr>
<td>Global affinity continues as long as that target region is active.</td>
<td></td>
</tr>
<tr>
<td>BAPPL</td>
<td>ACTIVITY</td>
</tr>
<tr>
<td>Activity affinity continues as long as the associated activity exists.</td>
<td></td>
</tr>
<tr>
<td>SYSTEM</td>
<td>PROCESS</td>
</tr>
<tr>
<td>Process affinity continues as long as the associated process exists.</td>
<td></td>
</tr>
<tr>
<td>PERMANENT</td>
<td>SYSTEM</td>
</tr>
<tr>
<td>Permanent affinity continues as long as any CMAS involved in managing the CICSpex using the workload is active.</td>
<td></td>
</tr>
<tr>
<td>PERMANENT</td>
<td>PERMANENT</td>
</tr>
<tr>
<td>Permanent affinity continues as long as any CMAS involved in managing the CICSpex using the workload is active.</td>
<td></td>
</tr>
</tbody>
</table>

Adding a transaction to a transaction group

Figure 14 illustrates the panel produced when you use the add (ADD) line action command from the TRANGRP view.

------------- Add Transaction to Trangroup for EYUPLX01 -------------
COMMAND ===>
Trangroup ===>
Transaction  PCONV Mode  Error
=====> INV1  ====> START  
=====> INV2  ====> END  
=====> PAY1  ====> 
=====> PAY2  ====> 
=====> 
=====> 
=====> 
=====> 
=====> 
=====> 

Press Enter to add Transaction to Trangroup.
Type END or CANCEL to cancel without adding.

Figure 14. Adding a transaction to a transaction group
creating workload management definitions

Provide the following information, as appropriate:

**Transaction**

Specify a 1- to 4-character transaction identifier. The transaction ID is automatically converted to upper case characters. To add a transaction ID in mixed or lower case characters, you must use the batched repository-update facility, as described in CICSPlex System Manager Administration.

**PCONV Mode**

(Required for only the first or last transaction participating in a pseudoconversation.) Identify the location of the transaction in the pseudoconversation. Specify:

- **START**
  Identifies the transaction as starting a new pseudoconversation and ending any previous pseudoconversation.

- **END**
  Identifies the transaction as ending the current pseudoconversation.

Press Enter. Before adding the transactions to the transaction group definition in the data repository, the group is checked to determine if either of the following conditions is true:

- **Tran already in a group**
- **Tran already in group**
- **Group no longer exists**

If either condition is true, the appropriate message is displayed in the panel. Correct the condition before continuing.

**Notes:**

1. To include more than ten transactions in a transaction group, reissue the ADD action command.
   Although there is no limit to the number of transactions you can associate with a transaction group, a transaction can be associated with only one transaction group in a single CICSPlex.

2. Although you can include static transactions and transactions scheduled as a result of ATI, only transactions defined to CICS as dynamic are eligible for routing.

Pseudoconversational transaction considerations:

- If the affinity lifetime for a transactions group is pseudoconversation and no PCONV Mode value is specified, the current affinity status is honored.
- If one of the transactions in the group issues an EXEC CICS RETURN without identifying the next transaction, the pseudoconversation is ended.

---

**WLMDEF (Workload definitions)**

You can use workload definitions to route work requests to a specific set of target regions based on the terminal and user names, or the process types, associated with those work requests. The terminal and user names may be either specific or generic. For example, you can create a workload definition that causes all transactions initiated by any user from terminals with logical unit names starting with NET to be routed to the target scope identified as EYUCSG01.

Examples of how to use this view can be found in:

- “Chapter 15. Routing a specific transaction to a specific target region” on page 117
creating workload management definitions

- “Chapter 16. Routing particular transactions from a given user to a specific target region” on page 121
- “Chapter 17. Honoring a pseudoconversational transaction” on page 125
- “Chapter 19. Updating an active workload definition” on page 131

To display information about existing workload definitions, issue the command:

```
WLMDEF [wlndef]
```

where `wlndef` is a specific or generic workload definition name. If you omit this parameter, the view, illustrated in Figure 15, includes information about all existing workload definitions within the current context.

```
26FEB2001 22:02:37 ----------- INFORMATION DISPLAY ------------------------------
COMMAND ===> SCROLL ===> PAGE
CURR WIN ===> 1 ALT WIN ===> >W1 =WLMDEF=**************EYUPLX01=EYUPLX01=26FEB2001=22:02:37=CPSM=***********3==
CMD Def Trangrp Luname Userid Process Target Description
--- Name---- Name---- ----------------- -------- Type---- Scope---- --------------
EYUWL01 EYUTRG01 * * * EYUCSG04 SSet - Separ
EYUWL05 EYUTRG05 * * * EYUCSG03 SSet - Applic
EYUWL06 EYUTRG06 * * * EYUMAS18 SSet - Existn
```

**Figure 15. The WLMDEF view**

**Note:** Scroll to the right in the view to see all of the Description field.

**Action commands**

Table 9 summarizes the action commands you can use with the WLMDEF view. Table 10 on page 62 identifies the overtype fields you can modify when you use the SET action command.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a ADD</td>
<td>n/a</td>
<td>Add an association between a workload definition and a workload group, as described on page 52.</td>
</tr>
<tr>
<td>n/a BRO</td>
<td>n/a</td>
<td>Browse a workload definition in the data repository. The format of the resulting panel is similar to that shown in Figure 16 on page 63. The panel fields are not modifiable.</td>
</tr>
<tr>
<td>CREate CRE</td>
<td>n/a</td>
<td>Create a workload definition and add it to the data repository, as described on page 62.</td>
</tr>
<tr>
<td>n/a INS</td>
<td>n/a</td>
<td>Install a workload definition into a workload, as described on page 62.</td>
</tr>
<tr>
<td>n/a MAP</td>
<td>n/a</td>
<td>Display a visual map of workload management definitions using the specified definition as a starting point.</td>
</tr>
</tbody>
</table>
creating workload management definitions

Table 9. WLMDEF view action commands (continued)

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove a workload definition from the data repository.</td>
</tr>
</tbody>
</table>
| n/a             | SET          | Change a workload definition using overtype fields (see Table 10.)  
**Note:** The value you specified in the Require Set field on the CICSPlex System Manager entry panel determines whether or not you must use the SET command when you overtype a field. |
| TEMPMP cmasid   | n/a          | Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID. |
| n/a             | UPD          | Update a workload definition in the data repository.  
The format of the resulting input panel is similar to that shown in Figure 16 on page 63. You can change the contents of any field in the panel except Entry Name. |

Table 10. WLMDEF view overtype fields

<table>
<thead>
<tr>
<th>Field name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trangrp Name</td>
<td>1- to 8-character name of a transaction group.</td>
</tr>
<tr>
<td>Luname</td>
<td>Specific or generic logical unit name.</td>
</tr>
<tr>
<td>Userid</td>
<td>Specific or generic user ID.</td>
</tr>
<tr>
<td>Process type</td>
<td>Specific or generic process type.</td>
</tr>
<tr>
<td>Target Scope</td>
<td>Name of a CICS system or CICS system group.</td>
</tr>
<tr>
<td>Description</td>
<td>1- to 30-character description of the workload definition.</td>
</tr>
</tbody>
</table>

Hyperlink fields

Table 11 shows the hyperlink field on the WLMDEF view.

Table 11. WLMDEF view hyperlink fields

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trangrp Name</td>
<td>DTRINGRP</td>
<td>Detailed information about the transactions in the specified transaction group.</td>
</tr>
</tbody>
</table>

**Note:** The Trangrp Name field is recognized as a hyperlink field only when it contains a value.

Creating a workload definition

Figure 16 on page 63 shows the format of the panel produced when you use the create primary (CREate) or line (CRE) action command from the WLMDEF view.
### Definition Name
Specify a 1- to 8-character name for the workload definition. The name can contain alphabetic, numeric, or national characters. However, the first character must be alphabetic.

### Description
(Optional) Specify a 1- to 30-character description of the definition.

### Trangroup Name
(Optional) Enter the specific or generic name of a transaction group. If you enter a generic value, a list of valid transaction groups is displayed.
If you do not identify a transaction group, the default transaction group for the specification is assumed. (For a description of this transaction group, see "TRANGRP (Transaction groups)" on page 53.)

### Terminal Luname
Enter a specific logical unit name or a pattern, using the format:

```
[network_qualifier_name.]luname
```

where both the network_qualifier_name and the luname are between 1 and 8 characters in length.

A pattern can include the characters + (plus sign), * (asterisk), or both.

### User ID
Enter a specific user ID or a pattern. A pattern can include the characters + (plus sign), * (asterisk), or both.

**Note:** The Terminal Luname and User ID values are used when CICSPlex SM attempts to match a transaction with this definition. (See page **Transaction match criteria** for additional information.)

### Process Type
Enter a specific process type or a pattern. A pattern may include + (plus sign), * (asterisk), or both.

**Note:** If you specify anything other than an * in this field, the luname and user id fields must be set to an *. Similarly, if there is anything other than a * in the Process Type field, the luname and user id fields must be set to an *.

---

**Figure 16. Creating a workload definition**

Provide the following information, as appropriate:

**Definition Name**
Specify a 1- to 8-character name for the workload definition. The name can contain alphabetic, numeric, or national characters. However, the first character must be alphabetic.

**Description**
(Optional) Specify a 1- to 30-character description of the definition.

**Trangroup Name**
(Optional) Enter the specific or generic name of a transaction group. If you enter a generic value, a list of valid transaction groups is displayed.
If you do not identify a transaction group, the default transaction group for the specification is assumed. (For a description of this transaction group, see "TRANGRP (Transaction groups)" on page 53.)

**Terminal Luname**
Enter a specific logical unit name or a pattern, using the format:

```
[network_qualifier_name.]luname
```

where both the network_qualifier_name and the luname are between 1 and 8 characters in length.

A pattern can include the characters + (plus sign), * (asterisk), or both.

**User ID**
Enter a specific user ID or a pattern. A pattern can include the characters + (plus sign), * (asterisk), or both.

**Note:** The Terminal Luname and User ID values are used when CICSPlex SM attempts to match a transaction with this definition. (See page **Transaction match criteria** for additional information.)

**Process Type**
Enter a specific process type or a pattern. A pattern may include + (plus sign), * (asterisk), or both.

**Note:** If you specify anything other than an * in this field, the luname and user id fields must be set to an *. Similarly, if there is anything other...
than an * in either luname and user id, this field must be set to *. You cannot separate a workload by process type, luname and user id.

**Target Scope**

Enter the specific or generic name of a CICS system or CICS system group to be used as target regions for dynamic routing requests. If you enter a generic value, a list of valid CICS systems and CICS system groups is displayed.

**Note:** The specified CICS system or CICS system group must be accessible to the CICS systems identified as the routing scope with the workload specification to which this definition is associated. Therefore, you should verify that the appropriate CICS connections exist between each routing region and all of the CICS systems identified here as the target scope.

Press Enter to add the workload definition to the data repository.
Transaction match criteria

The criteria CICSPlex SM uses to determine if a transaction should be routed are:

- Is the transaction identifier part of a transaction group associated with the workload definition?
- Is there a definition specifying separation by process type? Is there a match? If so, use this definition. If not, is there a definition specifying separation by luname and user id?
- In what order should the terminal and user names associated with the transaction be evaluated; that is, which name is to be used as the primary filter?
- Do the user and terminal names associated with the transaction match the name patterns specified with the workload definition.

The rules for establishing terminal and user name patterns are:

1. When there are multiple workload definitions, the field containing the name identified as the primary filter can contain the same specific or generic pattern; the contents of the field used as the secondary filter must always be unique. For example, the following definitions are valid when USERID is the primary filter and LUNAME is the secondary filter. They are not valid, however, when LUNAME is the primary filter because the user identifiers are not unique.

   Entry Name: EYUWMD01  EYUWMD02  EYUWMD03
   Trangroup Name: EYUTNG01  EYUTNG01  EYUTNG01
   Terminal Luname: LUR*  LUL*  LUT*
   User ID: PIE*  PIE*  PIE*

2. When a generic name is specified, the pattern with the most matching leading characters has precedence. For example, with the patterns:

   A37AR*
   A37+R*

   Pattern A37AR* is selected when the input is A37AR123. Pattern A37+R* is selected when the input is A37RTAP.

3. Luname patterns are matched on the concatenated values of network name and luname. The following are valid luname patterns:

   NETWORK1.LU12345678 - A specific luname
   NETWORK1.LU1* - Generic lunames in the network
   NETWORK1.* - All lunames in the network
   NET* - All lunames in a generic network
   .LU12345678 - A specific luname within all networks
   .* or * - All lunames within all networks

Adding an association to a workload group

Figure 17 on page 66 illustrates the panel produced when you use the add (ADD) line action command from the WLMDEF view.
creating workload management definitions

![Figure 17. Adding an association between a workload definition and a workload group](image)

Provide the following information:

**Workload Group**

Enter the specific or generic name of an existing workload group. If you enter a generic value, a list of valid workload groups is displayed.

Press Enter to add the workload group to the designated workload definition.

To remove a workload definition from a workload group, use the WLMINGRP view, as described on page 72.

**Note:** If an appropriate workload group does not currently exist, you must first create the group, as described on page 69. Then add the workload definition to the workload group using either this action command or the one described on page 73.

### Installing a workload definition in a workload

You can install a workload definition into the workloads in one or more active CICS systems that are within the CICSplex identified as the context.

**Note:** A workload definition can be automatically installed in a workload when the CICS system using that workload starts. For this to occur, associate the definition with a workload group. Then associate that workload group with a workload specification that is associated with a CICS system.

![Figure 18 on page 67](image) illustrates the panel produced when you use the install (INS) line action command from the WLMDEF view.
Figure 18. Installing a workload definition

Provide the following information:

**Workload**
Enter the specific or generic name of an active workload into which the workload definition is to be installed. If you enter a generic value, a list of valid workloads is displayed.

**Owner**
Enter a 1- to 4-character, specific or generic SYSID of the system on which the workload was initially created. If you enter a generic value, a list of valid SYSIDs is displayed.

Press Enter to install the workload definition into the CICS system or CICS system group associated with the designated workload specification.

For information about workload management requirements that must be met in order for an installation to succeed, see Chapter 3, Activating workload management on page 21.

To deactivate an installed workload definition, use the WLMAWDEF view, as described in Table 4 on page 49.

**WLMGROUP** (Workload groups)

A workload group is used to associate one or more related workload definitions. An example of how to use this view can be found in Chapter 15, Routing a specific transaction to a specific target region on page 117.

To display information about workload groups, issue the command:

```
WLMGROUP [wlmgroup]
```

where wlmgroup is a specific or generic name of a workload group. If you omit this parameter, the view, illustrated in Figure 19 on page 68, includes information about all workload groups within the current context.
creating workload management definitions

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>ADD</td>
<td>Add an association between a workload group and a workload specification, as described on page 68.</td>
</tr>
<tr>
<td>n/a</td>
<td>ASC</td>
<td>Add an association between a workload definition and a workload group, as described on page 70.</td>
</tr>
<tr>
<td>n/a</td>
<td>BRO</td>
<td>Browse a workload group in the data repository. The format of the resulting panel is similar to that shown in Figure 20 on page 69. The panel fields are not modifiable.</td>
</tr>
<tr>
<td>CREate</td>
<td>CRE</td>
<td>Create a workload group and add it to the data repository, as described on page 68.</td>
</tr>
<tr>
<td>n/a</td>
<td>INS</td>
<td>Install the workload definitions associated with a workload group into a workload, as described on page 71.</td>
</tr>
<tr>
<td>n/a</td>
<td>MAP</td>
<td>Display a visual map of workload management definitions using the specified group as a starting point.</td>
</tr>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove a workload group from the data repository. Note: Any associations that exist between the workload group and its workload definitions are also removed when you perform this action.</td>
</tr>
<tr>
<td>n/a</td>
<td>SET</td>
<td>Change a workload group description using an overtype field. (See Table 13). Note: The value you specified in the Require Set field on the CICSplex System Manager entry panel determines whether or not you must use the SET command when you overtype a field.</td>
</tr>
<tr>
<td>TEMPMP cmasid</td>
<td>n/a</td>
<td>Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID.</td>
</tr>
<tr>
<td>n/a</td>
<td>UPD</td>
<td>Update a workload group in the data repository. The format of the resulting input panel is similar to that shown in Figure 20. You can change the Description field.</td>
</tr>
</tbody>
</table>

Table 12 summarizes the action commands you can use with the WLMGROUP view. Table 13 on page 68 identifies the overtype field you can modify when you use the SET action command.

Figure 19. The WLMGROUP view
Table 13. WLMGROUP view overtype field

<table>
<thead>
<tr>
<th>Field name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>1- to 30-character description of the workload group.</td>
</tr>
</tbody>
</table>

Hyperlink fields

Table 14 shows the hyperlink field on the WLMGROUP view.

Table 14. WLMGROUP view hyperlink field

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload Group</td>
<td>WLMINGRP</td>
<td>Detailed information about the associations that exist between the designated workload group and workload definitions.</td>
</tr>
</tbody>
</table>

Creating a workload group

Figure 20 shows the format of the panel produced when you issue the create primary (CREate) or line (CRE) actions command from the WLMGROUP view.

Figure 20. Creating a workload group

Provide the following information, as appropriate:

**Group Name**
Specify a 1- to 8-character name for the workload group. The name can contain alphabetic, numeric, or national characters. However, the first character must be alphabetic.

**Description**
(Optional.) Specify a 1- to 30-character description of the workload group.

To add the workload group to the data repository, press Enter.

Adding a workload group to a workload specification

Figure 21 on page 70 illustrates the panel produced when you use the add (ADD) line action command from the WLMGROUP view.
creating workload management definitions

--- Add WLM Group to Workload Specification for EYUPLX01 ---

Command: WLMGROUP

Workload Group: EYUWGM01
Description: Test workload group
Specification Name: Specification Name or Generic

Press Enter to add WLM Group to WLM Specification.
Type END or CANCEL to cancel without adding.

--- Add Workload Definition to Group for EYUPLX01 ---

Command: WLMGROUP

Workload Group Name: EYUWGM01
Description: Sample workload group
Workload Definition Name: EYUMOD01 Workload Definition or Generic

Press Enter to add Workload Definition to Group.
Type END or CANCEL to cancel without adding.

Figure 21. Associating a workload group with a workload specification

Provide the following information:

**Specification name**
Enter the specific or generic name of an existing workload specification. If you enter a generic value, a list of valid workload specifications is displayed.

Press Enter to add the workload group to the designated workload specification in the data repository.

If a workload specification appropriate for this workload group does not currently exist, you must first create one, as described on page 81. You can then use either this ADD action command or the ADD action command described on page 73 to associate the workload group with a workload specification.

**Associating a workload definition with a workload group**
Figure 22 illustrates the panel produced when you use the associate (ASC) line action command from the WLMGROUP view.

--- Add Workload Definition to Group for EYUPLX01 ---

Command: WLMGROUP

Workload Group Name: EYUWGM01
Description: Sample workload group
Workload Definition Name: EYUMOD01 Workload Definition or Generic

Press Enter to add Workload Definition to Group.
Type END or CANCEL to cancel without adding.

Figure 22. Associating a workload definition with a workload group

Provide the following information, as appropriate:

**Workload Definition Name**
Enter the specific or generic name of an existing workload definition that is to be associated with the workload group. If you specify a generic value, a list of valid workload definitions is displayed.

Press Enter to associate the workload definition with the workload group in the data repository.
Installing a workload group

When you install a workload group, all of the workload definitions associated with that group are installed in the designated workload.

The workload definitions associated with a workload group can be automatically installed in a workload when the CICS system using that workload starts. For this to occur, the workload group must be associated with a workload specification that is defined to the CICS system.

Figure 23 illustrates the panel produced when you use the install (INS) line action command from the WLMGROUP view.

Provide the following information:

Workload
Enter the specific or generic name of an active workload into which the workload definitions associated with this workload group are to be installed. If you enter a generic value, a list of valid workloads is displayed.

Owner
Enter a 1- to 4-character, specific or generic SYSID of the system on which the workload was initially created. If you enter a generic value, a list of valid SYSIDs is displayed.

Press Enter to install definitions. Type END or CANCEL to cancel without installing.

Figure 23. Installing a workload group

For information about workload management requirements that must be met in order for an installation to succeed, see Chapter 3. Activating workload management on page 21.

To deactivate an installed workload definition, use the WLMAWDEF view, as described in Table 4 on page 49.
creating workload management definitions

WLMINGRP (Workload definitions in workload groups)

To display the names of workload groups and the workload definitions associated with them, issue the command:

```
WLMINGRP [wlmgroup [wlmdef]]
```

where:

- **wlmgroup**: Is a specific or generic name of a workload group, or a blank or an * (asterisk) for all workload groups.

- **wlmdef**: Is a specific or generic name of a workload definition. If you omit this parameter, the view includes information about all workload definitions associated with the designated workload group.

If you do not specify any parameters, the view, illustrated in Figure 24, includes information about all workload groups and their associated workload definitions within the current context.

![Figure 24. The WLMINGRP view](image)

### Action commands

Table 15 summarizes the action commands you can use with the WLMINGRP view.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>ADD</td>
<td>Add an association between a workload definition and a workload group, as described on page 73.</td>
</tr>
<tr>
<td>n/a</td>
<td>BRO</td>
<td>Browse the association between a workload definition and a workload group. The format of the resulting panel is similar to that shown in Figure 25 on page 73. The panel fields are not modifiable.</td>
</tr>
<tr>
<td>n/a</td>
<td>MAP</td>
<td>Display a visual map of workload management definitions using the specified group as a starting point.</td>
</tr>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove the association between a workload definition and a workload group.</td>
</tr>
<tr>
<td>TEMPMP cmasid</td>
<td>n/a</td>
<td>Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID.</td>
</tr>
</tbody>
</table>
Hyperlink fields

Table 16 shows the hyperlink fields on the WLMINGRP view.

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Name</td>
<td>WLMGROUP</td>
<td>Detailed information about the designated workload group.</td>
</tr>
<tr>
<td>Def Name</td>
<td>WLMDEF</td>
<td>Detailed information about the designated workload definition.</td>
</tr>
</tbody>
</table>

Adding a workload definition to a workload group

Figure 25 illustrates the panel produced when you use the add (ADD) line action command from the WLMINGRP view.

```
COMMAND ===>
Workload Group ===> EYUWMG01  Workload Group or Generic
Workload Definition ===> EYUWMD01  Workload Definition or Generic
```

Press Enter to add WLM Definition to Workload Group.
Type END or CANCEL to cancel without adding.

Figure 25. Adding a workload definition to a workload group

Provide the following information:

Workload Group
Enter the specific or generic name of an existing workload group. If you enter a generic value, a list of valid workload groups is displayed.

Workload Definition
Enter the specific or generic name of an existing workload definition that is to be associated with the workload group. If you enter a generic value, a list of valid workload definitions is displayed.

Press Enter to add the workload definition to the workload group.

WLMINSPC (Workload groups in workload specifications)

To display the names of workload specifications and the workload groups associated with them, issue the command:

```
WLMINSPC [wlmspec [wlmgroup]]
```

where:

wlmscope
Is a specific or generic name of a workload specification or * (asterisk) for all workload specifications.

wlmgroup
Is a specific or generic name of a workload group. If you omit this
creating workload management definitions

parameter, the view includes information about all workload groups associated with the designated workload specifications.

If you do not specify any parameters, the view, illustrated in Figure 26, includes information about all workload specifications and their associated workload groups within the current context.

| 26FEB2001 | 22:03:22 | -------------- INFORMATION DISPLAY ------------------------------- |
| COMMAND ====> | SCROLL ===> | PAGE |
| CURR WIN ===> 1 | ALT WIN ===> |
| W1 =WLMINSPC=-------EYUPLX01=EYUPLX01=26FEB2001==22:03:22=CPSM=---------3== |
| CMD Spec Group |
| +++ Name---- Name---- |
| EYUWLS01 EYUWL01 |
| EYUWLS01 EYUWL04 |
| EYUWLS01 EYUWL05 |

Figure 26. The WLMINSPC view

Action commands

Table 17 summarizes the action commands you can use with the WLMINSPC view.

<p>| Table 17. WLMINSPC view action commands |</p>
<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>ADD</td>
<td>Add an association between a workload group and a workload specification, as described on page 75.</td>
</tr>
<tr>
<td>n/a</td>
<td>BRO</td>
<td>Browse the association between a workload group and a workload specification. The format of the resulting panel is similar to that shown in Figure 27 on page 75. The panel fields are not modifiable.</td>
</tr>
<tr>
<td>n/a</td>
<td>MAP</td>
<td>Display a visual map of workload management definitions using the designated specification as a starting point.</td>
</tr>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove the association between a workload group and a workload specification. Note: Any associations that exist between the workload group and its the workload definitions are also removed when you perform this action.</td>
</tr>
<tr>
<td>TEMPMP cmasid</td>
<td>n/a</td>
<td>Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID.</td>
</tr>
</tbody>
</table>

Hyperlink fields

Table 18 shows the hyperlink fields on the WLMINSPC view.

<p>| Table 18. WLMINSPC view hyperlink fields |</p>
<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec Name</td>
<td>WLMSPEC</td>
<td>Detailed information about the designated workload specification.</td>
</tr>
</tbody>
</table>
Adding a workload group to a workload specification

Figure 27 illustrates the panel produced when you use the add (ADD) line action command from the WLMINSPC view.

Provide the following information:

**Specification Name**
Enter the specific or generic name of an existing workload specification. If you enter a generic value, a list of valid workload specifications is displayed.

**WLM Group Name**
Enter the specific or generic name of an existing workload group. If you enter a generic value, a list of valid workload groups is displayed.

Press Enter to add the workload group to the designated workload specification in the data repository.

**WLMSCOPE (Workload specifications assigned a scope)**

To display information about the CICS systems or CICS system groups acting as routing regions that are associated with a workload specification, issue the command:

```
WLMSCOPE [wlmspec]
```

where *wlmspec* is a specific or generic name of a workload specification. If you omit this parameter, the view, illustrated in Figure 28 on page 76, includes information about all workload specifications, and the associated routing scope information, within the current context.
Action commands

Table 19 summarizes the action commands you can use with the WLMSCOPE view. Table 20 on page 77 identifies the overtype fields you can modify when you use the SET action command.

Table 19. WLMSCOPE view action commands

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
</table>
| n/a             | BRO          | Browse the association between a routing region scope and a workload specification.  
|                 |              | The format of the resulting panel is similar to that shown in Figure 29 on page 77. The panel fields are not modifiable. |
| n/a             | MAP          | Display a visual map of workload management definitions using the designated specification as a starting point. |
| n/a             | REM          | Remove the association between a routing region scope and a workload specification, as described on page 77. |
| n/a             | SET          | Change the association between a routing scope and a workload specification using overtype fields (see Table 13 on page 63). Note: The value you specified in the Require Set field on the CICSPlex System Manager entry panel determines whether or not you must use the SET command when you overtype a field. |
| TEMPMEMP cmasid | n/a          | Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID. |
| n/a             | UPD          | Update the association between a routing scope and a workload specification, as described in "Updating a scope-to-workload specification association" on page 77. |

When you change or remove the workload specification associated with a CICS system group, you must indicate how the CICS systems comprising that group are to be affected.

Based on the value you specify, the number of entries shown in the WLMSCOPE view may increase or decrease. For example, you might specify a value that causes a CICS system within a CICS system group to be explicitly associated with a
creating workload management definitions

specification rather than inherit it from its CICS system group. When this happens, the resulting WLMSCOPE view still contains a line identifying the CICS system group (which retains its association with a specification) and a new line identifying the CICS system that is now explicitly associated with a specification (which may be the same as or different from the specification with which the CICS system group is associated).

Table 20. WLMSCOPE view overtype fields

<table>
<thead>
<tr>
<th>Field name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLM Spec</td>
<td>1- to 8-character name of an existing workload specification that is to be associated with the CICS system or CICS system group.</td>
</tr>
<tr>
<td>Update Option</td>
<td>FORCE</td>
</tr>
</tbody>
</table>

Notes:

1. When the scope of the workload specification is a CICS system group, you must indicate how the CICS systems comprising the CICS system group are to use the specification by overtyping the contents of the Update Option field.
   
   If the CICS system group includes other CICS system groups, all of the CICS systems, including those in the subordinate CICS system groups, are affected by the value specified in the Update Option field.

2. If you update the workload specification for a CICS system that is already active, you must restart the CICS system for the new specification to become active.

Hyperlink fields

Table 21 shows the hyperlink field on the WLMSCOPE view.

Table 21. WLMSCOPE view hyperlink fields

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLM Spec</td>
<td>WLMSPEC</td>
<td>Detailed information about the designated workload specification.</td>
</tr>
</tbody>
</table>

Updating a scope-to-workload specification association

Figure 29 illustrates the panel produced when you use the update (UPD) line action command from the WLMSCOPE view.

Figure 29. Updating the association between a scope and a workload specification

The Option field does not appear on this panel when the scope is a CICS system (CICSSYS).

Change the following information, as appropriate:
**creating workload management definitions**

**Specification Name**

Enter the specific or generic name of an existing workload specification. If you enter a generic value, a list of valid workload specifications is displayed.

**Option**

When the scope of the workload specification is a CICS system group, you must indicate how the CICS systems comprising the CICS system group are to use the specification. To do this, specify one of the following:

- **FORCE**
  
  All CICS systems in the CICS system group are to inherit the new specification.

- **KEEP**
  
  Any CICS system that inherited a specification from the CICS system group is to be explicitly assigned the old specification; all other CICS systems in the group are to be unaffected.

- **NAME**
  
  Any CICS system that inherited a specification from the CICS system group is to be explicitly assigned the new specification; all other CICS systems in the group are to be unaffected.

- **NULL**
  
  Any CICS system in the CICS system group that is not explicitly associated with a specification is to inherit the new specification; all other CICS systems in the group are to be unaffected.

**Notes:**

1. If the CICS system group includes other CICS system groups, all of the CICS systems, including those in the subordinate CICS system groups, are affected by the value specified in the Option field.

2. For the new specification to become active, you must restart the CICS systems with which it is associated.

**Removing a scope-to-workload specification association**

Figure 30 illustrates the panel produced when you use the remove (REM) line action command from the WLMSCOPE view.

```
--------- Confirm Removal of WLM Spec to Scope from EYUPLX01 ---------
COMMAND ===>          
Specification Name    EYUWMS01
Scope                  EYUCSG01
Scope Type             SYSGROUP
Option ===>           KEEP or Blank

WARNING: For this definition type, removal will cascade through related associations.

Press ENTER to remove.
Type END or CANCEL to cancel without removing.
```

*Figure 30. Removing the association between a scope and a workload specification*

The Option field does not appear on this panel when the scope is a CICS system (CICSSYS).

Provide the following information when the scope is a CICS system group:
Option

Indicate how the CICS systems comprising the CICS system group are to use the workload specification associated with that CICS system group.

Specify:

**KEEP**  Those CICS systems that inherited the specification from the CICS system group are explicitly assigned that specification.

**blank**  Those CICS system that inherited the specification from the CICS system group are not to use that specification.

If the CICS system group includes other CICS system groups, all of the CICS systems, including those in the subordinate CICS system groups, are affected by the value specified in this field.

Press Enter to remove the scope from the designated workload specification in the data repository.

**WLMSPEC (Workload specifications)**

A workload specification identifies a workload and one or more CICS systems acting as target regions. It also defines the attributes of the default transaction group. The default transaction group ($$DTGA$$) is used for routing any transaction that is not explicitly associated with a user-defined transaction group. Once the workload specification is associated with a routing scope, it is automatically activated when the first routing region in the scope connects to the CICSplex.

Examples of how to use this view can be found in:

- “Chapter 10. Balancing a workload” on page 105
- “Chapter 13. Adding a routing region to an active workload” on page 113
- “Chapter 21. Updating a workload specification” on page 135
- “Chapter 22. Using real-time analysis to select a target region for workload balancing” on page 137

To display information about existing workload specifications, issue the command:

```
WLMSPEC [wlmscope]
```

where *wlmscope* is a specific or generic workload specification name. If you omit this parameter, the view, illustrated in [Figure 31](#), includes information about all existing workload specifications within the current context.

---

**Figure 31. The WLMSPEC view**
Action commands

Table 22 summarizes the action commands you can use with the WLMSPEC view.

Table 22. WLMSPEC view action commands

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>ADD</td>
<td>Add an association between a workload specification and a scope identified as one or more routing regions, as described on page 84.</td>
</tr>
<tr>
<td>n/a</td>
<td>BRO</td>
<td>Browse a workload specification in the data repository. The format of the resulting panel is similar to that shown in Figure 32 on page 81. The panel fields are not modifiable.</td>
</tr>
<tr>
<td>CREate</td>
<td>CRE</td>
<td>Create a workload specification and add it to the data repository, as described in Creating a workload specification. When you use the primary command CREate, some fields in the new view may contain values supplied by CICSPlex SM; you may change these values. When you enter the line command CRE next to the name of a workload specification, fields in the new view contain values to be modelled (from the existing workload specification).</td>
</tr>
<tr>
<td>n/a</td>
<td>MAP</td>
<td>Display a visual map of workload management definitions using the designated specification as a starting point.</td>
</tr>
<tr>
<td>n/a</td>
<td>REM</td>
<td>Remove a workload specification from the data repository. When you remove a workload specification, associations with workload groups and the CICS system and CICS system group identified as the scope are also removed.</td>
</tr>
<tr>
<td>TEMPMP cmasid</td>
<td>n/a</td>
<td>Change the temporary maintenance point CMAS to a specific CMAS or display a selection list based on a generic CMAS ID.</td>
</tr>
<tr>
<td>n/a</td>
<td>UPD</td>
<td>Update a workload specification in the data repository. The format of the resulting panel is similar to the panel shown in Figure 32 on page 81. You can change the contents of any field in the panel except WLM Spec Name.</td>
</tr>
</tbody>
</table>

Hyperlink fields

Table 23 shows the hyperlink field on the WLMSPEC view.

Table 23. WLMSPEC view hyperlink field

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>WLMINSPC</td>
<td>Detailed information about the associations that exist between the designated workload specification and its workload groups.</td>
</tr>
</tbody>
</table>
Creating a workload specification

Figure 32 shows the format of the panel produced when you use the create primary (CREate) or line (CRE) action command from the WLMSPEC view.

--- Create WLM Specification for EYULXO1 -------------------
COMMAND ===>
WLM Spec Name ===>
Description ===> SSet - Basic Workload
Affinity Relation ===> Default Affinity Relation
(USERID, LUNAME, GLOBAL,BAPPL)
Affinity Lifetime ===> Default Affinity Lifetime
(SIGNON, LOGON, SYSTEM, PERMANENT, PCONV,DELIMIT, ACTIVITY, PROCESS)
Match Key ===> USERID Default Primary search criterion
(USERID,LUNAME)
Create Affinity ===> Create Auto Affinity (YES, NO, N/A)
Target Scope ===> EYUCSG03 Default CICS System,Group or Generic
Event Name ===> RTADEF, STATDEF, or Generic
Abend Health ===> 0 Target ABEND Health Factor (0 - 99)
Abend Load ===> 0 Target ABEND Load Factor (0 - 99) - 99)
Algorithm Type ===> Queue Algorithm Type (GOAL, QUEUE)

Press Enter to create WLM Specification.
Type END or CANCEL to cancel without creating.

Figure 32. Creating a workload specification

Provide the following information, as appropriate:

**WLM Spec Name**
Specify a 1- to 8-character name for the workload specification. This name also becomes the name of the workload. The name can contain alphabetic, numeric, or national characters. However, the first character must be alphabetic. This name becomes the name of the workload and must be unique within the CICSplex.

**Description**
Specify a 1- to 30-character description of the workload specification.

**Affinity Relation**
(Optional.) Indicate the default affinity relationship that is to be used if a transaction cannot be matched to a transaction group. Specify:

**USERID**
Base transaction affinity on the user ID.

**LUNAME**
Base transaction affinity on the terminal logical unit name.

**GLOBAL**
Base transaction affinity on all users at all terminals.

**BAPPL**
Base transaction affinity on the CICS BTS application.

If you do not specify a value, no affinity relation is recognized for transactions associated with the default transaction group.

For workload management of enterprise beans, this field must be blank.
creating workload management definitions

**Affinity Lifetime**
(Required when you specify a value in the Affinity Relation field.) Indicate the default affinity lifetime that is to be used when a transaction cannot be matched to a transaction group. Specify:

- **DELIMIT**
  Maintain transaction affinity until a transaction with a pseudoconversation mode of END is encountered.
  Because an END pseudoconversation mode cannot be assigned to a transaction by default, using DELIMIT as a default is comparable to specifying a lifetime of SIGNON or LOGON.

- **LOGON**
  Maintain transaction affinity for the duration of the terminal session.

- **PCONV**
  Maintain transaction affinity for the duration of the pseudoconversation. That is, as long as each transaction ends with an EXEC CICS RETURN TRANSID command to invoke the next transaction in the sequence and no pseudoconversation mode of END is encountered.

CICS does not support pseudoconversations for APPC (LUTYPE6.2) devices.

- **PERMANENT**
  Maintain transaction affinity as long as the workload containing the default transaction group is active.

- **SIGNON**
  Maintain transaction affinity as long as the user’s session is active.

- **SYSTEM**
  Maintain transaction affinity as long as the target region to which transactions are directed remains active.

- **ACTIVITY**
  Maintain transaction affinity until the BTS activity ends.

- **PROCESS**
  Maintain transaction affinity until the BTS process ends.

For workload management of enterprise beans, this field must be blank.

**Note:** The Affinity Relation and Affinity Lifetime fields are related. If you specify a value in the Affinity Relation field, you must specify a value in the Affinity Lifetime field. See Table 8 on page 58 for valid affinity and lifetime combinations.

**Match Key**
Designate whether the user name (USERID) or logical unit name (LUNAME) is to be used as the default primary search criterion for a transaction that cannot be matched to a transaction group.

**Create Affinity**
(Optional.) Indicate whether CICSPlex SM should automatically create an affinity relationship for transactions that cannot be matched to a transaction group.
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YES (or blank)
CICSPlex SM creates an affinity using the values specified in the Affinity Relation and Affinity Lifetime fields.

NO
CICSPlex SM does not automatically create an affinity. However, you can create one by using the SM_CREAFF function in the dynamic transaction routing program (EYU9WRAM). The SM_CREAFF function provides greater control over the creation of affinities. For example, you can create an affinity to a target region that CICSPlex SM might not ordinarily select for dynamic routing. Refer to [Chapter 4, Customizing the dynamic routing program](#) on page 25 for details on EYU9WRAM and SM_CREAFF.

N/A Affinity not defined (Affinity Relation and Affinity Lifetime fields are blank).

Target Scope
Enter the specific or generic name of a CICS system or CICS system group that is to be used as target regions for dynamic routing requests. The CICS system or CICS system group must be within the CICSplex identified as the current context. If you enter a generic value, a list of valid CICS systems and CICS system groups is displayed.

Event Name
(Optional.) Enter the specific or generic name of an analysis definition (RTADEF) or status definition (STATDEF) that may affect transactions associated with the default transaction group. If you enter a generic value, a list of valid definitions is displayed.

If a real-time analysis event is generated by this definition during the target region selection process, the severity level, if any, associated with the definition is used as part of the criteria for selecting a target region.

Abend Health
(For CICS/ESA 4.1 or later.) Specify the abend probability for a transaction associated with the default transaction group that should cause a target region to be considered unhealthy:

0 Ignore target region abend health calculations.

value Specify a value between 1 and 99 (inclusive) that indicates an unacceptable abend probability. For example, if you specify 25, a target region with a 25% or greater probability of abending for a transaction associated with the default transaction group is considered unhealthy and is avoided, if possible.

Abend Load
(For CICS/ESA 4.1 and later.) Specify the abend probability for a transaction associated with the default transaction group that should cause a target region’s load level to be doubled:

0 Required when the Abend Health field is set to 0.

value Specify a value that is greater than 1 and less than the Abend Health value.

For example, if you specified 25 as the Abend Health value, you must specify a value, $x$, between 2 and 24 (inclusive) as the Abend Load value. Then, if the probability of abend for a transaction being routed to a given target region is between 0% and $x\%$, the perceived load on that target region is adjusted upward. Once the abend probability reaches $x\%$, the perceived load is doubled, which
creating workload management definitions

means the target region is considered to have twice the load that it really has. This loading factor makes the region less desirable as a target for routing.

Notes:
1. For additional information about specifying abend health and abend load values, see "Taking abend probabilities into consideration" on page 18.
2. Once an affinity is active, all subsequent transactions are routed to the same target region for as long as the affinity remains active, regardless of its abend probability.

Algorithm Type
Identify the algorithm to be used when selecting the best target region in the Target Scope to which a transaction should be routed. Specify:

QUEUE
Route the transaction to the target region that:
- Is the healthiest
- Has the least queue depth (or load)
- Has the fastest CICS link from the routing region
- Has the least transaction abend probability, when calculated

GOAL
Supported in MVS/ESA 5.1 and higher where the MVS Workload Manager (MVS/WLM) is also supported. Additionally, the CICS system(s) specified in the target region Scope field must be CICS/ESA 4.1 and later. Route the transaction to the target region that:
- Is the healthiest
- Has the least load
- Has the fastest CICS link from the routing region
- Has the least transaction abend probability, when calculated
- Is the most likely to allow the transaction to meet the response time goal set for it and other transactions in its MVS workload management class

For additional information about this type of algorithm, see the MVS/ESA SP Version 5 Planning: Workload Management book.

Press Enter to add the workload specification to the data repository.

Adding a scope to a workload specification
Each workload specification has a target and routing scope associated with it. The target scope is identified when you create the specification; the routing scope is identified when you add the routing region to the specification.

Note: While WLMSPEC is active, you cannot directly modify the default target scope. However, you can create a new WLMDEF with an luname of * (asterisk), a user id of * (asterisk), a process type of * (asterisk), no transaction group name, and a new target scope. If you then install the new WLMDEF, transactions will be routed according to the default transaction group for the new target scope.

Once you add a routing scope to a workload specification, the specification is automatically installed whenever a CICS system associated with that scope is started. Any workload definitions associated with the specification through workload groups are also automatically installed.
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However, if you associate the workload specification with a CICS system that is already active, the new specification is not immediately available. To turn workload management on, you must display the MAS view and use the UPD action command. Specify YES in the WLM Active field and press Enter; workload management becomes active using the new workload specification.

Figure 33 illustrates the panel produced when you use the add (ADD) line action command from the WLMSPEC view.

--- Add Scope for Specification for EYUPLX01 ---

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>Add Scope for Specification for EYUPLX01</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLM Spec Name</td>
<td>EYUWMS04</td>
</tr>
<tr>
<td>Description</td>
<td>Test workload specification</td>
</tr>
<tr>
<td>Scope</td>
<td>CICS System, Group or Generic</td>
</tr>
<tr>
<td>Option</td>
<td>FORCE, NULL, or NONE for System Group</td>
</tr>
</tbody>
</table>

Press Enter to add Workload Specification Scope. Type END or CANCEL to cancel without adding.

Figure 33. Adding a scope to a workload specification

Provide the following information, as appropriate:

**Scope**

Enter the specific or generic name of an existing CICS system or group that represents one or more routing regions. If you enter a generic value, a list of valid CICS systems and CICS system groups is displayed.

All routing regions represented by the specified CICS system or group must be local MASs. That is, they must be running on an MVS image on which there is a CMAS.

A CICS system or CICS system group acting as a routing region can be associated with only one workload specification at a time. A specification, however, can be associated with any number of CICS systems and CICS system groups.

**Option**

(Required when the scope is a CICS system group.) Indicate how the CICS systems that make up the CICS system group are to use the workload specification associated with the CICS system group. Specify:

**FORCE**

All CICS systems in the CICS system group are to use the workload specification. (The workload specification attribute for each CICS system changes to INHERIT, indicating that the specification was acquired from the CICS system group.)

**NULL**

Those CICS systems in the CICS system group that are not associated with a workload specification are to use this workload specification. (The workload specification attribute for those CICS systems changes to INHERIT, indicating that the specification was acquired from the CICS system group.)

**NONE**

Only the CICS system group is to be associated with the workload specification. The CICS systems in the CICS system group are not affected. That is, if there is no association between a CICS system and a workload specification, none is established; if there is an
creating workload management definitions

association, either explicitly established or inherited from another CICS system group, it is unchanged.

Notes:
1. If the CICS system group identified as the scope includes other CICS system groups, all of the CICS systems, including those in subordinate CICS system groups, are affected by the value specified in this field. Press Enter to add the scope to the designated workload specification in the data repository.

2. The CICS systems designated as the target scope when you created the workload specification must be accessible to the CICS systems identified as the routing scope. Therefore, you should verify that the appropriate CICS connections exist between each routing region and all of the CICS systems in the target scope identified here.
Chapter 9. Managing workloads

This chapter describes how you can obtain information about active workloads and the transactions and transaction groups comprising those workloads.

While the views described in this chapter are presented in alphabetical order, they can be subdivided into the following categories:

- **Active workloads**
  - **WLMAWORK**
    Displays information about active workloads.
  - **WLMAWORD**
    Displays detailed information about an active workload.
  - **WLMAWTOR**
    Displays information about active routing regions within a workload.
  - **WLMAWTOS**
    Displays summary information about active routing regions within a workload.
  - **WLMAWAOR**
    Displays information about active target regions within a workload.
  - **WLMAWAOS**
    Displays summary information about active target regions within a workload.
  - **WLMAWDEF**
    Displays information about active workload definitions.

- **Transactions and transaction groups comprising an active workload**
  - **WLMATGRP**
    Displays information about transaction groups associated with a workload.
  - **WLMATAFD**
    Displays a detailed view of the properties of a single active CICS BTS affinity.
  - **WLMATAFF**
    Displays information about transaction affinities for a transaction group or the affinities created using the default workload affinity.
  - **WLMATAFS**
    Displays a summary view of transaction affinities for a transaction group or the affinities created using the default workload affinity.
  - **WLMA TRAN**
    Displays information about transactions associated with a workload.

**Note:** Workload management is performed on a CICSplex-wide basis. These views ignore any scope that may be in effect.

You access the workload management operations views by:

- Issuing the appropriate workload management operations view command.
- Issuing the MENU WORKLOAD command and selecting a view from the menu. (An example of this menu is shown in Figure 34 on page 88.)
managing workloads

- Initiating a hyperlink from one view to another by placing the cursor in the hyperlink field and pressing Enter.

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SCROLL</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURR WIN</td>
<td>AUTOMATIC</td>
<td>1</td>
</tr>
</tbody>
</table>

WLMATAFD (Transaction affinities for an active workload)

The WLMATAFD view provides a detailed display of the properties of a single active CICS BTS affinity. This is useful when you need to view the contents of the CICS BTS affinity key in hexadecimal format.

Access

Issue command:

```
WLMATAFD workload owner trangroup key
```

workload

Is the name of an active workload.

owner

Is the specific or generic 4-character CICS system ID of a CMAS that created the workload.

trangroup

Is the name of a specific transaction group or $$DTGASS$$. $$DTGASS$$ is the name of the default transaction group created by CICSPlex SM and used by any transaction that is not explicitly assigned to a user-created transaction group.

key

Is the affinity key of the item to be detailed.

Hyperlink from:

The Key field of the WLMATAFF view.
**Figure 35** is an example of the WLMATAFD view.

### Action commands

None.

### Hyperlink fields

None.

### WLMATAFF (Transaction affinities for an active workload)

The WLMATAFF view shows information about the active affinities for a transaction group associated with a workload within the CICSplex identified as the context. An affinity becomes active when the first transaction associated with the transaction group is routed to a target region.

### Access

#### Issue command:

```
WLMATAFF workload owner trangroup
workload
```

- *workload* is the name of an active workload.
- *owner* is the specific or generic 4-character CICS system ID of a CMAS that created the workload.
- *trangroup* is the name of a specific transaction group or $$DTGA$$. $$DTGA$$ is the name of the default transaction group created by CICSPlex SM and used by any transaction that is not explicitly assigned to a user-created transaction group.

#### Select:

WLMATAFF from a menu of WORKLOAD views, being sure to specify the required parameters.

#### Hyperlink from:

The Affinity field of the WLMATGRP, WLMAWORD or WLMAWORK view.
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Figure 36 is an example of the WLMATAFF view.

Note: The Key field contains either:

- A combination of user ID, logical unit name, routing region ID, and requesting region ID that matches the search criteria. This value is presented in the form:
  
  userid.luname.route_id.request_id

If one or more components do not apply to the affinity, that portion of the key is blank.

For BAPPL affinities, this field contains the activity id of the CICS BTS activity.

- $$$$GA$$$, when the affinity is GLOBAL.

Since a key can be up to 52 characters in length, you may have to scroll the view to the right to see the entire key.

Action commands

Table 24 shows the action command you can issue from the WLMATAFF view.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>FOR</td>
<td>Discard an affinity entry.</td>
</tr>
</tbody>
</table>

The affinity is reestablished when the next transaction within the affected transaction group is encountered.

Hyperlink fields

Table 25 shows the hyperlink fields on the WLMATAFF view.

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload</td>
<td>WLMAWORK</td>
<td>Detailed information about the specified workload.</td>
</tr>
<tr>
<td>Trangrp</td>
<td>WLMATGRP</td>
<td>Detailed information about the specified transaction group.</td>
</tr>
<tr>
<td>Key (valid for CICS BTS affinities only)</td>
<td>WLMATAFD</td>
<td>Detailed information about the properties of a single active CICS BTS affinity.</td>
</tr>
</tbody>
</table>
WLMATAFS (Summary of transaction affinities)

The WLMATAFS view shows summarized information about the active affinities for a transaction group associated with a workload within the CICSplex identified as the context. WLMATAFS is a summary form of the WLMATAFF view.

Access

**Issue command:**

```
WLMATAFS workload owner trangroup
```

Where the parameters are the same as those for WLMATAFF on page 89.

**Select:**

WLMATAFS from a menu of WORKLOAD views, being sure to specify the required parameters.

**Summarize:**

Issue the SUM display command from a WLMATAFF view.

The WLMATAFS view looks like the WLMATAFF view shown in Figure 36 on page 90 with one addition: the Count field. This field appears next to the CICS System field, and indicates how many resources were combined to form each line of summary data.

By default, the view is summarized by CICS system. If you place the cursor on a field of data and issue the SUM display command, the view is summarized by the data in that field.

Action commands

Table 26 shows the action command you can issue from the WLMATAFS view. This action command affects all of the affinities that were combined to form the summary line of data.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>FOR</td>
<td>Discard an affinity entry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The affinity is reestablished when the next transaction within the affected transaction group is encountered.</td>
</tr>
</tbody>
</table>

CAUTION:
Unacceptable results may occur if you attempt to discard an affinity when it is in effect.

Hyperlink fields

From the WLMATAFS view, you can hyperlink from the Count field to the WLMATAFF view to expand a line of summary data. The WLMATAFF view includes only those resources that were combined to form the specified summary line.

WLMATGRP (Transaction groups associated with an active workload)

The WLMATGRP view shows information about transaction groups associated with a workload that is within the CICSplex identified as the context.

---

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managing workloads

Access

**Issue command:**

```plaintext
WLMATGRP workload [owner[ACTIVE|DORMANT]]
```

*workload*

Is the name of an active workload.

*owner*

Is the specific or generic 4-character CICS system ID of a CMAS that created the workload.

*ACTIVE|DORMANT*

Limits the view to either active or dormant transaction groups. If you omit this parameter, transaction groups are included in the view regardless of their status.

**Select:**

WLMATGRP from a menu of WORKLOAD views, being sure to specify the required parameters.

**Hyperlink from:**

The Trangrp field of the WLMATAFF, WLMATRAN, or WLMAWDEF view.

*Figure 37* is an example of the WLMATGRP view.

<table>
<thead>
<tr>
<th>26FEB2001</th>
<th>22:11:06</th>
<th>INFORMATION DISPLAY</th>
<th>--------------------------</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND</td>
<td>SCROLL</td>
<td>PAGE</td>
<td></td>
</tr>
<tr>
<td>CURR WIN</td>
<td>ALT WIN</td>
<td>CM Trangrp Workload Owner Status Cre Match Affinity Lifetime Event --- Abe</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EYUTRG02</td>
<td>EYUWLS02</td>
<td>CM1B</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>EYUTRG03</td>
<td>EYUWLS02</td>
<td>CM1B</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>EYUTRG04</td>
<td>EYUWLS02</td>
<td>CM1B</td>
<td>ACTIVE</td>
</tr>
<tr>
<td>EYUTRGTS</td>
<td>EYUCBTS1</td>
<td>CM1B</td>
<td>ACTIVE</td>
</tr>
</tbody>
</table>

*Figure 37. The WLMATGRP view*

**Note:** $$DTGA$$ is the name of the default transaction group created by CICSPlex SM. This transaction group is used by any transaction that is not explicitly assigned to a user-created transaction group.

**Action commands**

*Table 27 on page 93* shows the action command you can issue from the WLMATGRP view. The overtype field is shown in *Table 28 on page 93*.  

92 CICS TS for OS/390: CICSPlex SM Managing Workloads
Table 27. WLMATGRP view action commands

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
</table>
| n/a SET         |              | Changes the status of a transaction group according to the value you specify in the overtype field (see Table 28). **Note:** The value you specified in the Require Set field on the CICSPlex System Manager entry panel determines whether or not you must use the SET command when you overtype a field.

Table 28. WLMATGRP view overtype field

<table>
<thead>
<tr>
<th>Field name</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>ACTIVE</td>
</tr>
</tbody>
</table>

where:

**ACTIVE**
Select a target region from the target region scope identified with the associated workload definition.

**DORMANT**
Use the target region associated with the transaction when it was defined to CICS. Recognize the affinity settings only when the lifetime is pseudoconversation (PCONV). Otherwise, do not recognize the affinity relation and lifetime settings.

**Hyperlink fields**

Table 29 shows the hyperlink fields on the WLMATGRP view.

Table 29. WLMATGRP view hyperlink fields

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload</td>
<td>WLMAWORK</td>
<td>Detailed information about the specified workload.</td>
</tr>
<tr>
<td>Affinity</td>
<td>WLMATAFF</td>
<td>Detailed information about the specified affinity.</td>
</tr>
<tr>
<td>Event Name</td>
<td>EVENT</td>
<td>Detailed information about a real-time analysis event that may affect the routing of transactions in the workload.</td>
</tr>
</tbody>
</table>

**Notes:**

- The Affinity field can be used as a hyperlink field only when it contains a value.
- The Event Name field displays the EVENT view only if an event of the specified type has occurred. If no event is outstanding, the following message is displayed:

`BBMXX015I`
There is no data that satisfies your request.

---

**WLMATRAN (Transactions associated with an active workload)**

The WLMATRAN view shows information about all active transactions associated with a workload that is within the CICSpex identified as the context.
Access

Issue command:

```plaintext
WLMATRAN workload owner
workload
```

Is the name of an active workload.

```plaintext
owner
```

Is the specific or generic 4-character CICS system ID of a CMAS that created the workload.

Select:

WLMATRAN from a menu of WORKLOAD views, being sure to specify the required parameters.

Figure 38 is an example of the WLMATRAN view.

### Action commands

Table 30 shows the action command you can issue from the WLMATRAN view.

**Table 30. WLMATRAN view action commands**

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiSCard tran</td>
<td>DSC</td>
<td>Discard a transaction from a transaction group.</td>
</tr>
<tr>
<td>tran workload</td>
<td>owner</td>
<td>Is the specific or generic name of a transaction.</td>
</tr>
<tr>
<td>workload owner</td>
<td></td>
<td>Is the specific or generic name of an active workload.</td>
</tr>
<tr>
<td>owner</td>
<td></td>
<td>Is the specific or generic CICS system ID of a CMAS that created the workload.</td>
</tr>
</tbody>
</table>

**Note:** Discarding a transaction that is part of a pseudoconversation (as indicated by the PCONV Mode field); could have an adverse effect on the pseudoconversation.
Hyperlink fields

Table 31 shows the hyperlink fields on the WLMATRAN view.

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload</td>
<td>WLMWORK</td>
<td>Detailed information about the specified workload.</td>
</tr>
<tr>
<td>Trangrp</td>
<td>WLMATGRP</td>
<td>Detailed information about the specified transaction group.</td>
</tr>
</tbody>
</table>

WLMAWAOR (Target regions in an active workload)

The WLMAWAOR view shows information about all target regions that are associated with a workload that is within the CICSplex identified as the context.

Access

Issue command:

```
WLMAWAOR workload [owner]
```

workload

Is the name of an active workload.

owner

Is the specific or generic 4-character CICS system ID of a CMAS that created the workload.

Select:

WLMAWAOR from a menu of WORKLOAD views, being sure to specify the required parameters.

Hyperlink from:

The Target Scope field of the WLMAWORK view or the Target Count field of the WLMAWORD view.

Figure 39 is an example of the WLMAWAOR view.

```
26FEB2001 22:04:37 ----------- INFORMATION DISPLAY ----------------------------
COMMAND ===> SCROLL ===> PAGE
CURR WIN ===> 1 ALT WIN ===>
W1 =WLMAWAOR= EYUPLX01=EYUPLX01=26FEB2001=22:04:37=CPSM=2==-
CMD Workload Ownr Target Status Connection
--- -------- ---- -------- --------- Lost------
EYUWL501 CM1A EYUMAS2A ACTIVE
EYUWL501 CM1A EYUMAS3A ACTIVE
```

Figure 39. The WLMAWAOR view

The Status field shows the current condition of each target region within the workload and reflects a subset of the possible status conditions for a CICS system. To determine the current status of all CICS systems, use the MAS view, as described in [CICSPlex System Manager Operations Views Reference](#).
managing workloads

Action commands

Table 32 shows the action command you can issue from the WLMAWAOR view. The overtype field is shown in Table 33.

Table 32. WLMAWAOR view action commands

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>SET</td>
<td>Change target region routing activity according to the value you specify in the overtype field (see Table 33).</td>
</tr>
</tbody>
</table>

Note: The value you specified in the Require Set field on the CICSPlex System Manager entry panel determines whether or not you must use the SET command when you overtype a field.

Table 33. WLMAWAOR view overtype field

<table>
<thead>
<tr>
<th>Field name</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>ACTIVE</td>
</tr>
</tbody>
</table>

where:

ACTIVE
Causes the specified target region to be recognized so that it can participate in workload management.

QUIESCED
Causes the specified target region to be removed from workload management.

This means that no further transactions are routed to the target region unless they share an affinity with earlier transactions. For example, if you are engaged in a pseudoconversation when a target region begins quiescing, the transactions that constitute the pseudoconversation continue to be routed to the same target region until the end of the affinity lifetime. When the affinity is no longer active, the target region is fully quiesced and subsequent transactions are routed to a different target region in the target scope.

Hyperlink fields

Table 34 shows the hyperlink field on the WLMAWAOR view.

Table 34. WLMAWAOR view hyperlink field

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>CICSRGND</td>
<td>Detailed information about the specified target region.</td>
</tr>
</tbody>
</table>

Note: The CICSRGND view requires a scope. If there is either no scope in effect or the target region is not part of the specified scope, there will be no data for the CICSRGND view. Make sure an appropriate scope is in effect before you hyperlink to CICSRGND.
WLMAWAOS (Target regions in an active workload summary)

The WLMAWAOS view shows summarized information about all target regions that are associated with a workload that is within the CICSplex identified as the context. WLMAWAOS is a summary form of the WLMAWAOR view.

Access

**Issue command:**

WLMAWAOS workload owner

Where the parameters are the same as those for WLMAWAOR on page [Access on page 95](#).

**Select:**

WLMAWAOS from a menu of WORKLOAD views, being sure to specify the required parameters.

**Summarize:**

Issue the SUM display command from a WLMAWAOR view.

The WLMAWAOS view looks like the WLMAWAOR view shown in Figure 39 on page 95 with one addition: the Count field. This field appears next to the Ownr field, and indicates how many resources were combined to form each line of summary data.

By default, the view is summarized by CICS system. If you place the cursor on a field of data and issue the SUM display command, the view is summarized by the data in that field.

Action commands

Table 35 shows the action command you can issue from the WLMAWAOS view.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>SET</td>
<td>Change target region routing activity according to the value you specify in the overtype field (see Table 33 on page 96).</td>
</tr>
</tbody>
</table>

**Note:** The value you specified in the Require Set field on the CICSpLex System Manager entry panel determines whether or not you must use the SET command when you overtype a field.

Hyperlink fields

From the WLMAWAOS view, you can hyperlink from the Count field to the WLMAWAOR view to expand a line of summary data. The WLMAWAOR view includes only those resources that were combined to form the specified summary line.

WLMAWDEF (Active workload definitions)

The WLMAWDEF view shows information about active workload definitions associated with a workload that is within the CICSpLex identified as the context.
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Access

**Issue command:**

```
WLMAWDEF workload [owner [wlmdef]]
```

**workload**

Is the name of an active workload.

**owner**

Is the specific or generic 4-character CICS system ID of a CMAS that created the workload.

**wlmdef**

Is the specific or generic name of a workload definition. If you omit this parameter, the view includes information about all definitions currently active in the specified workload.

**Select:**

WLMAWDEF from a menu of WORKLOAD views, being sure to specify the required parameters.

**Hyperlink from:**

The Ownr field of the WLMAWORK view.

*Figure 40* is an example of the WLMAWDEF view.

**Note:** A description can be 30 characters in length. You may have to scroll the view to the right to see the entire description.

**Action commands**

*Table 36* shows the action command you can issue from the WLMAWDEF view.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discard</td>
<td>Discard an active definition.</td>
</tr>
</tbody>
</table>

Where:

**defname workload owner**

**defname**

Is the specific or generic name of an active workload definition.

**workload**

Is the specific or generic name of an active workload.

**owner**

Is the specific or generic CICS system ID of a CMAS that created the workload.

*Figure 40. The WLMAWDEF view*

*Table 36. WLMAWDEF view action commands*

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discard</td>
<td>DSC</td>
<td>Discard an active definition.</td>
</tr>
</tbody>
</table>
**Important**

When you discard a workload definition, the transaction groups associated with that definition are also discarded if not referenced by any other workload definition. This means that any affinity relation and lifetime currently in effect for transactions associated with the transaction groups are lost. Thus, discarding a workload definition could have an unpredictable affect on active transactions that are associated with these transaction groups.

Before discarding a workload definition, you should use the WLMATGRP view, as described on page 61, to determine the status of transaction groups associated with the definition. You may want to set a transaction group dormant so that the target region associated with the transaction is recognized. Otherwise, the transaction will be routed to a target region associated with the default transaction group $\$DTGAS$$.

---

**Hyperlink fields**

Table 37 shows the hyperlink fields on the WLMAWDEF view.

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload</td>
<td>WLMAWORK</td>
<td>Detailed information about the specified workload.</td>
</tr>
<tr>
<td>Trangrp</td>
<td>WLMAWDEF</td>
<td>Detailed information about the specified transaction group.</td>
</tr>
</tbody>
</table>

**Note:** The Trangrp field can be used as a hyperlink field only when it contains a value.

---

**WLMAWORD (Details of an active workload)**

**Access**

**Issue command:**

```
WLMAWORD workload
workload
```

Is the name of an active workload.

**Select:**

WLMAWORD from a menu of WORKLOAD views, being sure to specify the required parameters.

**Hyperlink from:**

The Name field of the WLMAWORK view.

Figure 41 on page 100 is an example of the WLMAWORD view.
managing workloads

Figure 41. The WLMAWORD view

Note: A description can be 30 characters in length. You may have to scroll the view to the right to see the entire description.

Action commands

None.

Hyperlink fields

Table 38 shows the hyperlink fields on the WLMAWORD view.

Table 38. WLMAWORD view hyperlink fields

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affinity</td>
<td>WLMATAFF</td>
<td>Detailed information about the specified affinity.</td>
</tr>
<tr>
<td>Router Count</td>
<td>WLMAWTOR</td>
<td>The number of active CICS systems, identified as routing regions, associated with the workload.</td>
</tr>
<tr>
<td>Target Count</td>
<td>WLMAWAOR</td>
<td>The number of active CICS systems, identified as target regions, associated with the workload.</td>
</tr>
</tbody>
</table>

WLMAWORK (Active workloads)

The WLMAWORD view shows information about an active workload within the CICSp lex identified as the context. A workload is active within a CICSp lex as long as:

- A CICS system that is acting as a routing or target region and is participating in the workload is connected to that CICSp lex.
- Any transaction causes an affinity lifetime of PERMANENT to be established.

Access

Issue command:

```
WLMAWORK [workload]
```

workload
managing workloads

Is the specific or generic name of an active workload. If you omit this parameter, the view includes information about all active workloads within the context.

Select:
WLMAWORK from a menu of WORKLOAD views.

Hyperlink from:
The Workload field of the WLMATAFF, WLMATGRP, WLMATRAN, or WLMAWDEF view.

Figure 42 is an example of the WLMAWORK view.

<table>
<thead>
<tr>
<th>26FEB2001 22:09:30</th>
<th>INFORMATION DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND &gt;&gt;&gt;&gt; 1</td>
<td>SCROLL &gt;&gt;&gt;&gt; PAGE</td>
</tr>
<tr>
<td>CURR WIN &gt;&gt;&gt;&gt; 1</td>
<td>ALT WIN &gt;&gt;&gt;&gt;</td>
</tr>
<tr>
<td>&gt;W1 =WLMAWORK=------EYUPLX02=EYUPLX02=26FEB2001=22:09:30=CPN=----------1=</td>
<td></td>
</tr>
<tr>
<td>CMD Name Ownr Rout Targ Affinity Lifetime Scope Event Status Cre Alg</td>
<td></td>
</tr>
<tr>
<td>--- -------- ---- Cnt- Cnt- -------- --------- -------- Name---- ------ Aff --</td>
<td></td>
</tr>
<tr>
<td>EYUWL02 CM1B 1 1 NONE NONE EYUCG06 ACTIVE NO QUE</td>
<td></td>
</tr>
</tbody>
</table>

Figure 42. The WLMAWORK view

Note: Scroll to the right to see the description associated with each workload.

Action commands
None.

Hyperlink fields
Table 39 shows the hyperlink fields on the WLMAWORK view.

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>WLMAWORD</td>
<td>Detailed information about the specified workload.</td>
</tr>
<tr>
<td>Ownr</td>
<td>WLMAWDEF</td>
<td>Lists of the workload definitions associated with the workload.</td>
</tr>
<tr>
<td>Rout Cnt</td>
<td>WLMAWTOR</td>
<td>Number of active CICS systems, identified as routing regions, that are associated with the workload.</td>
</tr>
<tr>
<td>Targ Cnt</td>
<td>WLMAWAOR</td>
<td>Number of active CICS systems, identified as target regions, that are associated with the workload.</td>
</tr>
<tr>
<td>Affinity</td>
<td>WLMATAFF</td>
<td>Detailed information about the specified affinity.</td>
</tr>
<tr>
<td>Event Name</td>
<td>EVENT</td>
<td>Detailed information about a real-time analysis event that may affect the routing of transactions in the workload.</td>
</tr>
</tbody>
</table>

Notes:
- Affinity can be used as a hyperlink field only when it contains a value.
- Event Name displays the EVENT view only if an event of the specified type has occurred. If no event is outstanding, the following message is displayed:

BBMXBD15I
There is no data that satisfies your request.
WLMAWTOR (Routing regions in an active workload)

The WLMAWTOR view shows information about all active routing regions that are associated with a workload that is within the CICSpelix identified as the context.

Access

**Issue command:**

```
WLMAWTOR workload [owner]
workload
```

Is the name of an active workload.

```
owner
```

Is the specific or generic 4-character CICS system ID of a CMAS that created the workload.

**Select:**

WLMAWTOR from a menu of WORKLOAD views, being sure to specify the required parameters.

**Hyperlink from:**

The Routing field of the WLMAWORK view or the Rout Cnt field of the WLMAWORD view.

**Figure 43** is an example of the WLMAWTOR view.

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router</td>
<td>CICSRGND</td>
<td>Detailed information about the specified routing region.</td>
</tr>
</tbody>
</table>

**Note:** The CICSRGND view requires a scope. If there is either no scope in effect or the target region is not part of the specified scope, there will be no data for the CICSRGND view. Make sure an appropriate scope is in effect before you hyperlink to CICSRGND.

**Action commands**

None.

**Hyperlink fields**

Table 40 shows the hyperlink field on the WLMAWTOR view.

Table 40. WLMAWTOR view hyperlink field

<table>
<thead>
<tr>
<th>Hyperlink field</th>
<th>View displayed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router</td>
<td>CICSRGND</td>
<td>Detailed information about the specified routing region.</td>
</tr>
</tbody>
</table>

**Figure 3. The WLMAWTOR view**
WLMAWTOS (Routing regions in an active workload summary)

The WLMAWTOS view shows summarized information about all routing regions that are associated with a workload that is within the CICSplex identified as the context. WLMAWTOS is a summary form of the WLMAWTOR view.

Access

Issue command:

```
WLMAWTOS workload owner
```

Where the parameters are the same as those for WLMAWTOR on page 102.

Select:

WLMAWTOS from a menu of WORKLOAD views, being sure to specify the required parameters.

Summarize:

Issue the SUM display command from a WLMAWTOR view.

The WLMAWTOS view looks like the WLMAWTOR view shown in Figure 43 on page 102 with one addition: the Count field. This field appears next to the Ownr field and indicates how many resources were combined to form each line of summary data.

By default, the view is summarized by CICS system. If you place the cursor on a field of data and issue the SUM display command, the view is summarized by the data in that field.

Action commands

Table 41 shows the action command you can issue from the WLMAWTOS view.

<table>
<thead>
<tr>
<th>Primary command</th>
<th>Line command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>SET</td>
<td>Change target region routing activity according to the value you specify in the overtype field (see Table 33 on page 96).</td>
</tr>
</tbody>
</table>

Note: The value you specified in the Require Set field on the CICSPlex System Manager entry panel determines whether or not you must use the SET command when you overtype a field.

Hyperlink fields

From the WLMAWTOS view, you can hyperlink from the Count field to the WLMAWTOR view to expand a line of summary data. The WLMAWTOR view includes only those resources that were combined to form the specified summary line.
Chapter 10. Balancing a workload

All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

This example shows what you have to do to get CICSpex SM to balance a workload—that is, to route all work from a single routing region to a suitable target region. For this task, a “suitable” target region is going to be the one with the shortest queue of work requests. The TOR (CICSPT01) is the requesting region and the routing region, and the three AORs (CICSPA01, CICSPA02, and CICSPA03) are all target regions. None of the CICS regions are currently running.

If some of your work requests can’t be routed freely (perhaps you want work requests from a particular user always to go to the same target region, for example), don’t worry. You’ll see how to add that requirement in a later example task (Chapter 15. Routing a specific transaction to a specific target region on page 117).

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.
2. Create a CICS system group.
   The group will include all of the target regions among which the work requests (“the workload”) can be routed dynamically.
   From the current view, issue the command CICSGRP. From the CICSGRP view, issue the command CRE. Complete the Create System Group panel as shown here, and press Enter:

   ----------------------- Create System Group for PLXPROD1 -----------------------
   COMMAND ===> 
   System Group name ===> CSGTGTS1
   Description ===> All target regions in CICSpex PLXPROD1
   Press Enter to Create System Group.
   Type END or CANCEL to cancel without creating.

   The CICSGRP view is redisplayed, this time showing an entry for CICS system group CSGTGTS1.

   At this point, the group CSGTGTS1 exists, but is empty. The next step is to tell CICSpex SM which target regions belong to the group.

3. Add target regions to CICS system group CSGTGTS1.
   Tab to the CSGTGTS1 entry in the CICSGRP view, and issue ADD from the line-command field. Complete the Add Member to System Group panel as shown here, and press Enter:
(You'll find that the System Group Name and Description fields are filled in already. The Member name field is the only one you need to complete. You can ignore the rest of the panel.)

Repeat this step for target regions CICSPA02 and CICSPA03.

4. Create a workload specification.

Issue the command WLMSPEC from the current view. From the WLMSPEC view, issue the command CRE. Complete the Create WLM Specification panel as shown here, and press Enter:

You must supply:

- A name for the specification (WLSPAY01 in this example).
- A Match Key value. USERID is shown in this example, though in fact it doesn't matter whether you specify USERID or LUNAME, because the Match Key value has no effect on simple workload balancing. It's used only for some kinds of workload separation, which is the subject of a later example. You have to supply a value because CICSp1ex SM doesn't know, at this stage, that you aren't going to use this workload specification for workload separation.
- A Target Scope value, which is the name of the single target region, or group of target regions, to which work requests can be routed.
• An Algorithm Type value. (For this example, use QUEUE, which tells CICSPlex SM to select the target region that has the shortest queue of work requests.)

You should also provide a Description value. This is optional, but it’s worth providing. (When you’re confronted with a list of specification names, and have no way of telling one from another, you’ll appreciate its value.)

When you press Enter, the WLMSPEC view is redisplayed, this time showing an entry for the new WLM Specification, WLSPAY01.

**Note:** For a complete description of the WLMSPEC view, see "WLMSPEC (Workload specifications)" on page 79.

5. Associate the workload specification with a routing region.

The next step is to tell CICSPlex SM about the region that’s going to be routing the work requests to the target regions in group CSGTGTS1.

a. In the WLMSPEC view, tab to the entry for the WLSPAY01 specification, and issue ADD from the line-command field.

b. In the Scope field of the Add Scope for Specification panel, enter the name of the routing region (CICSPT01, in this example). You can ignore the Option field, which must be completed only when the Scope field contains the name of a CICS system group of routing regions.

You can check that the association between the routing region and the workload specification has worked by looking at the WLMSCOPE view. Issue the command WLMSCOPE WLSPAY01 from the current view.

6. Activate workload balancing in the routing region.

Issue the command CICSSYS from the current view. In the CICSSYS view, tab to the line-command field for the CICSPT01 entry and issue the UPD command. Page forward until you see the Update System - Workload Attributes panel. In the Routing support active field, enter YES. This change takes effect when CICSPT01 is next started.

7. Activate workload balancing in the target regions.

In the CICSSYS view, tab to the line-command field for the CICSPA01 entry and issue the UPD command. Page forward until you see the Update System - Workload Attributes panel. In the Target routing at startup field, enter YES. This change takes effect when the target region CICSPA01 is next started. Repeat this step for target regions CICSPA02 and CICSPA03.

When the routing region and the target regions have been started, you can check that the workload is active by issuing the command WLMAWORK WLSPAY01 from the current view. The WLMAWORK view is displayed, showing the workload specification WLSPAY01 as active.

To see which target regions are being routed to, issue the command WLMAWAOR WLSPAY01 from the current view. The WLMAWAOR view is displayed, showing all active target regions being routed to within workload WLSPAY01. All of the target regions listed belong to the CICS system group CSGTGTS1. If you’re interested in knowing how work is being shared out among the target regions in CSGTGTS1, change the scope to CSGTGTS1 and look at the LOCTRAN view.
Chapter 11. Adding a region to an existing target region scope

All the workload management examples are based on the same configuration. The CICSp rex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSp lex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSp lex, the data relates to every system in that CICSp lex. For all of the examples in this chapter, the initial scope is CICSp lex PLXPROD1.

This example task shows how you can increase the number of regions in an existing target scope without disrupting an existing workload. Assume that you have implemented workload balancing in CICSp lex PLXPROD1, via workload specification WLSPAY01, and that work requests are being routed among target regions CICSPA01, CICSPA02, and CICSPA03. These target regions all belong to CICS system group CSGTGTS1. Now you want to add a fourth region—CICSPA04—to group CSGTGTS1. Region CICSPA04 has been defined to CICSp lex PLXPROD1 (via the CICSSYS panels) and is running.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.
2. Add target region CICSPA04 to CICS system group CSGTGTS1.
   From the current view, issue the command CICSGRP. The CICSGRP view is displayed. Move the cursor to the entry for CSGTGTS1, and issue ADD from the line-command field. The Add Member to System Group panel is displayed. In the Member field, enter the name CICSPA04.
3. Update the CICSp lex SM definition of target region CICSPA04.
   From the current view, issue the command CICSSYS. In the CICSSYS view, type UPD in the line-command field against the entry for CICSPA04. Then, page forward (using PF8) until you see the Update System - Workload Attributes panel. In the Target routing at startup field, enter YES. The CICSSYS view is redisplayed. This change takes effect when the target region CICSPA04 is next started.

When the target region CICSPA04 has been restarted, you can verify that CICSPA04 can be routed to by issuing the command WLMAWAOR WLSPAY01 from the current view. The WLMAWAOR view is displayed, showing all target regions (including CICSPA04) to which work requests in this workload can be routed.
Chapter 12. Removing a region from a target region scope

All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

CICS system group CSGTGTS1 contains four target regions (CICSPA01, CICSPA02, CICSPA03, and CICSPA04) in CICSpex PLXPROD1. Work requests are balanced among these target regions, and the routing is controlled by workload specification WLSPAY01. Now you want to remove region CICSPA04 from the group CSGTGTS1, without disrupting the active workload.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.
2. Remove target region CICSPA04 from CICS system group CSGTGTS1.
   From the current view, issue the command SYSGRPC CSGTGTS1. The SYSGRPC view is displayed, showing all target regions in the group. Tab to the entry for CICSPA04, and issue REM from the line-command field. The Remove System from System Group panel is displayed. To confirm that CICSPA04 should be removed from the group, simply press Enter.
3. To check that CICSPA04 has indeed been removed, issue the command WLMAWAOR WLSPAY01 from the current view. The WLMAWAOR view is displayed, showing target regions to which the workload can be routed. CICSPA04 does not appear in the list.
All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

This example task shows how to add a routing region to an active workload, without disrupting that workload. Assume that you are still balancing the workload in CICSpex PLXPROD1, via workload specification WLSPAY01, and that work requests are being routed by CICSPT01 among the target regions in CICS system group CSGTGTS1. Now you want to add a second routing region—CICSPT02—to the workload. Region CICSPT02 has been defined to CICSpex PLXPROD1 (via the CICSSYS panels) and is running.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.

2. Update the CICSpex SM definition for CICS system CICSPT02.
   From the current view, issue the command CICSSYS. In the CICSSYS view, type UPD in the line-command field against the entry for CICSPT02. Then, page forward (using PF8) until you see the Update System - Workload Attributes panel. In the field Routing support active, type YES and press Enter. The CICSSYS view is redisplayed. This change takes effect when routing region CICSPT02 is next started.

3. Associate CICSPT02 with workload specification WLSPAY01.
   From the current view, issue the command WLMSPEC. In the WLMSPEC view, move the cursor to the entry for WLSPAY01 and issue ADD from the line-command field. The Add Scope for Specification panel is displayed. Enter CICSPT02 in the Scope field. The WLMSPEC view is redisplayed.

   **Note:** For a complete description of the WLMSPEC view, see [WLMSPEC](#) on page 79.

When CICSPT02 has been restarted, you can verify that it has been added to WLSPAY01 by issuing the command WLMSCOPE WLSPAY01 from the current view. The WLMSCOPE view, showing both CICSPT01 and CICSPT02 in the Scope Name field, is displayed.

To check that CICSPT02 is part of the active workload, issue the command WLMAWTOR WLSPAY01 from the current view. The WLMAWTOR view, showing entries for both CICSPT01 and CICSPT02, is displayed.
Chapter 14. Quiescing a target region in an active workload

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSplex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSplex. For all of the examples in this chapter, the initial scope is CICSplex PLXPROD1.

This example task shows you how to quiesce the target region CICSPA03, which belongs to the active workload WLSPAY01. You might need to do this so that you can apply maintenance to a region, for example. The regions CICSPT01 and CICSPT02 are routing work requests among three target regions (CICSPA01, CICSPA02, and CICSPA03) when you perform this task.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. List the target regions associated with workload WLSPAY01.
   From the current view, issue the command WLMAWAOR WLSPAY01. The WLMAWAOR view for workload specification WLSPAY01 is displayed:

   | 26FEB2001 22:04:37 | INFORMATION DISPLAY |
   | COMMAND ===> SCROLL ===> PAGE |
   | CURR WIN ===> 1 ALT WIN ===> |
   | WLMAWAOR =WLSPAY01=PLXPROD1=26FEB2001=22:04:37=CPSM=3 |
   | CMD Workload Ownr Target Status Connection |
   | --- -------- ---- -------- --------- Lost------ |
   | WLSPAY01 CM1A CICSPA01 ACTIVE |
   | WLSPAY01 CM1A CICSPA02 ACTIVE |
   | WLSPAY01 CM1A CICSPA03 ACTIVE |

3. Quiesce target region CICSPA03.
   Tab to the entry for target region CICSPA03, overtype the Status value ACTIVE with QUIESCED, and press Enter. (If simple overtyping of values is not possible in your CICSplex SM environment, you have to type SET in the line-command field of the entry for CICSPA03 before you overtype ACTIVE with QUIESCED.) The Target Status value changes to QUIESCED. No new work requests are routed to the target region, though any work already running there is allowed to complete.
Chapter 15. Routing a specific transaction to a specific target region

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSplex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSplex. For all of the examples in this chapter, the initial scope is CICSplex PLXPROD1.

The example tasks described so far in this chapter have all been concerned with workload balancing. This example shows how to define some workload separation requirements to CICSplex SM. Specifically, you want CICSplex SM always to route the transaction PAY1 to the target region CICSPA02, which belongs to CICS system group CSGTGTS1. Note that you are still working in CICSplex PLXPROD1, and that workload balancing, from a single CICSPT01 among target regions in the group CSGTGTS1, is in effect.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.
2. Create a transaction group.
   a. From the current view, issue the command TRANGRP. The TRANGRP view is displayed, listing any transaction groups already created in PLXPROD1.
   b. From the TRANGRP view, issue the command CRE. The Create Trangroup panel is displayed. Complete the panel as shown here:

   -- Create Trangroup for PLXPROD1 ----------------------------
   COMMAND ==> TRANGRP
   Trangroup name ===> TRGPAY01
   Description ===> Send PAY1 to CICSPA02
   Status ===> ACTIVE
   Match Key ===> USERID
   Affinity Relation ===> Optional affiliation relationship may be:
   Affinity Lifetime ===> Optional affiliation lifetime may be:
   Create Affinity ===> Create Auto Affinity (YES, NO, N/A)
   Event Name ===> RTADEF/STATDEF, or Generic
   Abend Health ===> 0
   Abend Load ===> 0

   Press Enter to create Trangroup.
   Type END or CANCEL to cancel without creating.

Press Enter. The TRANGRP view is redisplayed, now showing the name of the transaction group TRGPAY01.

Note: For a complete description of the TRANGRP view, see TRANGRP (Transaction groups) on page 52.
3. Add transaction PAY1 to transaction group TRGPAY01.
   In the TRANGRP view, tab to the entry for TRGPAY01, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Type the name PAY1 in the Transaction Name field, and press ENTER. The TRANGRP view is redisplayed.

4. Create a workload definition.
   a. From the command line of the current view, issue the command WLMDEF. The WLMDEF view is displayed, listing any workload definitions already created in PLXPROD1.
   b. From the WLMDEF view, issue the command CRE. The Create Workload Definition panel is displayed. Complete the panel as shown here:

   ----------------------- Create Workload Definition for PLXPROD1 -----------------------
   COMMAND ===>
   Definition Name ===> WLDPAY01
   Description ===> Separate TRGPAY01 to CICSPA02
   Trangroup Name ===> TRGPAY01 Specific Trangroup, Generic, or Blank
   Terminal Luname ===> * Specific or pattern Luname
   User Id ===> * Specific or pattern Userid
   Process Type ===> * Specific or pattern Process Type
   Target Scope ===> CICSPA02 CICS System, Group, or Generic

   Press Enter to create definition.
   Type END or CANCEL to cancel without creating.

   The Target Scope value is the name of the target region to which you want transactions in group TRGPAY01 to be routed.

   Press Enter. The WLMDEF view is redisplayed.

   Note: For a complete description of the WLMDEF view, see "WLMDEF (Workload definitions)" on page 60.

5. Create a workload group.
   (A workload group is essential if you want a workload definition to be installed automatically when the routing region that's routing the transactions is started.)
   a. Issue the command WLMGROUP from the current view. The WLMGROUP view is displayed, listing any workload groups already created in PLXPROD1.
   b. From the WLMGROUP view, issue the command CRE. The Create WLM Group panel is displayed. Complete the panel as shown here:

   --------------------- Create WLM Group for PLXPROD1 ---------------------
   COMMAND ===>
   Group Name ===> WLGPAY01
   Description ===> Workload Group for WLDPAY01

   Press Enter to create Workload Group.
   Type END or CANCEL to cancel without creating.

   Press Enter. The WLMGROUP view is redisplayed.
Note: For a complete description of the WLMGROUP view, see "WLMGROUP (Workload groups)" on page 67.

6. Add the workload group WLGPAY01 to the existing workload specification WLSPAY01.
   a. In the WLMGROUP view, move the cursor to the entry for WLGPAY01, and
      issue ADD from the line-command field. The Add WLM Group to Workload
      Specification panel is displayed.
   b. In the Specification Name field, enter the name of the existing workload
      specification, WLSPAY01. The WLMGROUP view is redisplayed.

7. Add the workload definition to the workload group.
   a. From the current view, issue the command WLMDEF WLDPAY01. The
      WLMDEF view is displayed.
   b. Move the cursor to the entry for WLDPAY01, and issue ADD from the
      line-command field. The Add WLM Definition to Workload Group panel is
      displayed. In the Workload Group Name field, type WLGPAY01 and press
      Enter. The WLMDEF view is redisplayed.

8. Install the workload group into the active workload.
   Because the workload WLSPAY01 is already active, you have to install the new
   workload group WLGPAY01 explicitly. If you did not install WLGPAY01, it
   wouldn't take effect until the routing region CICSPT01 and the target regions in
   CICS system group CSGTGTGTS1, were next started.

   From the current view, issue the command WLMGROUP. In the WLMGROUP
   view, tab to the entry for WLGPAY01 and issue INS from the line-command
   field. Complete the Install WLMGROUP panel as shown here, and press Enter.

   ----------------------- Install WLMGROUP for PLXPROD1--------------------------
   COMMAND ===> 
   Name     WLGPAY01
   Description Workload Group for WLDPAY01
   Type      WLMGROUP
   Workload ===> WLSPAY01 Active Workload in which to install the WLMGROUP
   Or Generic
   Owner ===> * Owner of the Workload in which to install the WLMGROUP
   Or Generic

   Press Enter to install definitions.
   Type END or CANCEL to cancel without installing.

   The Owner value is the SYSID of the system on which the workload
   specification WLSPAY01 was created. If you enter a generic value in this field,
   CICSplex SM presents a list from which you can select the correct value.

   Because you are reusing a workload specification that is already active in CICSplex
   PLXPROD1, and have installed the workload group the workload separation you
   have defined in this example takes immediate effect.

   You can check that the new workload definition WLDPAY01 is active by issuing the
   command WLMAWDEF WLSPAY01 from the current view. The WLMAWDEF view,
   showing an entry for WLDPAY01 in workload WLSPAY01 with a Target Scope field
   value of CICSPA02, is displayed. When transaction PAY1 is next started, by any
   user and from any terminal, CICSplex SM will route it to target region CICSPA02.
Chapter 16. Routing particular transactions from a given user to a specific target region

All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

This example task is a refinement of the previous example ("Chapter 15. Routing a specific transaction to a specific target region" on page 117). This time, the user ID value is to be an additional factor in determining where transactions are to be routed: transactions PAY6, PAY7, PAY8, and PAY9, when started from user ID USRPAY03, must be routed to target region CICSPA03 in CICSpex PLXPROD1.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.

2. Create a transaction group.
   a. From the current view, enter TRANGRP. The TRANGRP view is displayed, listing any transaction groups already defined in PLXPROD1.
   b. From the TRANGRP view, enter CRE. The Create Trangroup panel is displayed. Complete the panel as shown here:

   ---------------------- Create Trangroup for PLXPROD1 ----------------------
   COMMAND ==> TRGPAY02
   Description ==> Send USRPAY03's transactions to CICSPA03
   Status ==> ACTIVE
   Match Key ==> USERID
   Affinity Relation ==> Optional affinity relation may be:
   Affinity Lifetime ==> Optional affinity lifetime may be:
   Create Affinity ==> Create Auto Affinity (YES, NO, N/A)
   Event Name ==> RTADEF/STATDEF, or Generic
   Abend Health ==> 0
   Abend Load ==> 0

   Press Enter to create Trangroup.

   You can ignore any fields that have been left blank. Press Enter. The TRANGRP view is redisplayed, now showing the name of the transaction group TRGPAY02.

   Note: For a complete description of the TRANGRP view, see "TRANGRP (Transaction groups)" on page 52.

3. Identify the transactions that belong to group TRGPAY02.
In the TRANGRP view, tab to the entry for TRGPAY02, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Complete four of the Transaction fields with the values PAY6, PAY7, PAY8, and PAY9 respectively, and press Enter. The TRANGRP view is redisplayed.

4. Create a workload definition.
   a. From the command line of the current view, issue the command WLMDEF. The WLMDEF view is displayed.
   b. From the WLMDEF view, issue the command CRE. The Create Workload Definition panel is displayed. Complete the panel as shown here:

```
----------------------- Create Workload Definition for PLXPROM1 -----------------------
COMMAND ===> WLMDEF
Definition Name ===> WLDPAY02
Description ===> Separate TRGPAY02 to CICSPA03
Trangroup Name ===> TRGPAY02 Specific Trangroup, Generic, or Blank
Terminal Luname ===> * Specific or pattern Luname
User Id ===> USRPAY03 Specific or pattern Userid
Process Type ===> * Specific or pattern Process Type
Target Scope ===> CICSPA03 CICS System, Group, or Generic
```

Press Enter to create definition.
Type END or CANCEL to cancel without creating.

These values tell CICSPlex SM that transactions in group TRGPAY02 and initiated by user USRPAY03 must be routed to target region CICSPA03.

Press Enter. The WLMDEF view is redisplayed.

**Note:** For a complete description of the WLMDEF view, see “WLMDEF (Workload definitions)” on page 60.

5. Add the workload definition to the existing workload group.
   In the WLMDEF view, move the cursor to the entry for WLDPAY02, and issue ADD from the line-command field. The Add WLM Definition to Workload Group panel is displayed. In the Workload Group Name field, type WLGPAY01 (the name of the workload group you created in the previous example). Workload group WLGPAY01 is already associated with the active workload specification WLSPAY01. When you press Enter, the WLMDEF view is redisplayed.

6. Install the new workload definition into the active workload.
   Because group WLGPAY01 is already associated with the active workload WLSPAY01, changes you make to that group will not take effect until the routing region CICSPRT01, and the target regions in CICS system group CSGTGT1, are next started. To make the new workload definition take effect immediately, you must install it explicitly in WLSPAY01.

   In the WLMDEF view, tab to the entry for WLDPAY02 again and issue INS from the line-command field. The Install WLMDEF panel is displayed. Complete the panel as shown here, and press Enter.
The Owner value is the SYSID of the system on which the workload specification WLSPAY01 was created. If you enter a generic value in this field, CICSPlex SM presents a list from which you can select the correct value.

Because you have explicitly installed the workload definition WLDPAY02 in the active workload WLSPAY01, the workload separation requirements you have defined in this example take immediate effect. You can check that the new workload definition WLDPAY02 is active by issuing the command WLMAWDEF WLSPAY01 from the current view. The WLMAWDEF view, showing an entry for WLDPAY02 in workload WLSPAY01 with a Target Scope field value of CICSPA03, is displayed.
Chapter 17. Honoring a pseudoconversational transaction

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSPlex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSpelix. For all of the examples in this chapter, the initial scope is CICSpelix PLXPROD1.

In this example, you’ll learn how to ensure that multiple transactions, among which there is an affinity, are routed to the same target region. As before, you are working in CICSpelix PLXPROD1 and are routing transactions from CICSPT01 to the target regions in CICS system group CSGTGTS1.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.

2. Create a transaction group.
   a. From the current view, issue the command TRANGRP. The TRANGRP view is displayed, listing any transaction groups already defined in PLXPROD1.
   b. From the TRANGRP view, issue the command CRE. The Create Trangroup panel is displayed. Complete the panel as shown here:

   ----------------------------------- Create Trangroup for PLXPROD1 -----------------------------------
   COMMAND ===> 
   Trangroup name ===> TRGPAY03
   Description ===> Pseudoconversational transaction
   Status ===> ACTIVE
   Match Key ===> USERID
   Affinity Relation ===> USERID
   Affinity Lifetime ===> PCONV
   Create Affinity ===> 
   Event Name ===> 
   Abend Health ===> 0
   Abend Load ===> 0
   Press Enter to create Trangroup.
   Type END or CANCEL to cancel without creating.

   Notice that the Affinity Relation and Affinity Lifetime fields must be completed. These values tell CICSpelix SM that the transactions in this group constitute a pseudoconversational transaction (PCONV), and that this affinity lasts while those transactions are coming from the same user ID (USERID). If one of them is initiated from a different user ID, CICSpelix SM can select a different target region. Of course, the same type of affinity will then come into play in that second target region. You can ignore any fields that have been left blank. Press Enter. The TRANGRP view is redisplayed, now showing the name of the transaction group TRGPAY03.
3. Identify the transactions in group TRGPAY03.

From the TRANGRP view, move the cursor to the entry for TRGPAY03, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Complete the panel as shown here:

```
---------------------------------- Add Transaction to Trangroup for PLXPROD1 ----------------------------------

COMMAND ===> Add Transaction to Trangroup
Trangroup TRGPAY03
Transaction PCONV Mode Error
  ====> PAY2 ====> START
  ====> PAY3
  ====> PAY4
  ====> PAY5 ====> END
  ====>
  ====>
  ====>
  ====>
  ====>
  ====>

Press Enter to add Transaction to Trangroup.
Type END or CANCEL to cancel without adding.
```

As you can see from this panel, there are four transactions in this group (PAY2, PAY3, PAY4, and PAY5). PAY2 starts the pseudoconversation, and PAY5 ends it. Press Enter. The TRANGRP view is redisplayed.

4. Create a workload definition.

a. From the command line of the current view, issue the command WLMDEF. The WLMDEF view is displayed.

b. From the WLMDEF view, issue the command CRE. The Create Workload Definition panel is displayed. Complete the panel as shown here:

```
----------------------- Create Workload Definition for PLXPROD1 -----------------------

COMMAND ===> Create Workload Definition
Definition Name ===> WLDPAY03
Description ===> TRGPAY03 to the same target region
Trangroup Name ===> TRGPAY03 Specific Trangroup, Generic, or Blank
Terminal Luname ===> * Specific or pattern Luname
User Id ===> * Specific or pattern Userid
Process Type ===> * Specific or pattern Process Type
Target Scope ===> CSGTGT1 CICS System, Group, or Generic

Press Enter to create definition.
Type END or CANCEL to cancel without creating.
```

These values tell CICSPlex SM that transactions in group TRGPAY03, initiated by any user and from any terminal, must go to a target region in group CSGTGT1. CICSPlex SM can select the most appropriate target region at the time the transaction is initiated.

Press Enter. The WLMDEF view is redisplayed.

5. Add the workload definition to the workload group.
In the WLMDEF view, move the cursor to the entry for WLDPAY03, and issue ADD from the line-command field. The Add WLM Definition to Workload Group panel is displayed. In the Workload Group Name field, type WLGPAY01 and press Enter. The WLMDEF view is redisplayed.

6. Install the new workload definition into the active workload.

Because group WLGPAY01 is already associated with the active workload WLSPAY01, changes you make to that group will not take effect until the routing region CICSPT01, and the target regions in CICS system group CSGTGTS1, are next started. To make the new workload definition take effect immediately, you must install it explicitly in WLSPAY01.

In the WLMDEF view, tab to the entry for WLDPAY03 again and issue INS from the line-command field. The Install WLMDEF panel is displayed. Complete the panel as shown here, and press Enter.

```
---------------------------- Install WLMDEF for PLXPROD1 ----------------------
COMMAND ===> 
NameWLDPAY03
DescriptionTRGPAY03 to the same target region
TypeWLMDEF
Workload ===> WLSPAY01 Active Workload in which to install the WLMDEF
Or Generic
Owner ===> * Owner of the Workload in which to install the WLMDEF
Or Generic
Press Enter to install Workload Definition.
Type END or CANCEL to cancel without installing.
```

The Owner value is the SYSID of the system on which the workload specification WLSPAY01 was created. If you enter a generic value in this field, CICSPlex SM presents a list from which you can select the correct value.

Because you have explicitly installed the workload definition WLDPAY03 in the active workload WLSPAY01, CICSPlex SM is able to honor this pseudoconversational transaction immediately. Be aware that you are able to use the single workload specification WLSPAY01 for both workload balancing and workload separation because you did not specify default Affinity Relation and Affinity Lifetime values in WLSPAY01. Had you done so, you would have had to create different workload specifications for workload balancing and workload separation.
Chapter 18. Deactivating a workload definition

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSplex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSplex. For all of the examples in this chapter, the initial scope is CICSplex PLXPROD1.

This example task shows you how to deactivate the workload definition WLDPAY02, which you created in the example "Chapter 16. Routing particular transactions from a given user to a specific target region" on page 121.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.

2. Display active workload definitions.

From the current view, issue the command WLMAWDEF WLSPAY01. The WLMAWDEF view, showing active workload definitions associated with workload specification WLSPAY01, is displayed.

3. Discard workload definition WLDPAY02.

In the WLMAWDEF view, move the cursor to the entry for WLDPAY02, and issue DSC from the line-command field. The Discard Active Workload Definition panel is displayed. To confirm the deactivation of WLDPAY02, press Enter. The WLMAWDEF view is displayed, minus the entry for WLDPAY02.

Be aware that, when you deactivate an active workload definition, you also deactivate any transaction groups associated with it if they aren’t referenced by another workload definition in the same workload.
Chapter 19. Updating an active workload definition

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSPlex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

In this example, you’ll see how to update an active workload definition and then reinstall it in the active workload. In the example [Chapter 16. Routing particular transactions from a given user to a specific target region” on page 121, you created the transaction group TRGPAY02 and named it in the workload definition WLDPAY02. In this example, you’ll see how to remove TRGPAY02 and replace it with a new transaction group, TRGPAY04, which has already been created.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.

2. Display active workload definitions.

From the current view, issue the command WLMAWDEF WLSPAY01. The WLMAWDEF view, showing all active definitions associated with workload specification WLSPAY01, is displayed. WLDPAY02 appears in this list:

```
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Information Display</th>
<th>Command</th>
<th>Scroll</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>26FEB2001</td>
<td>22:10:58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Make a note of the value in the Ownr field for WLDPAY02 (CM1B, in this example).

3. Update workload definition WLDPAY02.

From the current view, issue the command WLMDEF WLDPAY02. The WLMDEF view, containing the entry for WLDPAY02, is displayed:

```
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Information Display</th>
<th>Command</th>
<th>Scroll</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>26FEB2001</td>
<td>22:02:37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Tab to the entry for WLDPAY02. Overtype TRGPAY02 with TRGPAY04 and overtype the Description text with the string “Separate TRGPAY04 to CICSPA03”. Press Enter. The WLMDEF view is redisplayed. (Depending on
4. Install the updated workload definition in WLSPAY01.
   In the WLMDEF view, move the cursor to the entry for WLDPAY02 again, and issue INS from the line-command field. The Install WLMDEF panel is displayed. In the Workload field, type WLSPAY01. In the Owner field, type the 4-character ID of the workload owner that you made a note of in step 2 on page 131. Press Enter. The updated workload definition is installed in workload WLSPAY01.

5. Check that the updated workload definition has been installed.
   Issue the command WLMAWDEF WLSPAY01. The WLMAWDEF view is displayed, showing the updated definition.

   26FEB2001 22:10:58 ----------- INFORMATION DISPLAY ---------------------------
   COMMAND ===> SCROLL ===> PAGE
   CURR WIN ===> 1 ALT WIN ===>>
   >W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=26FEB2001==22:10:58=CPSM==========3===
   CMD Name Workload Ownr Trangrp Luname Userid Process Target
   --- -------- -------- ---- -------- ----------------- -------- Type--- Scope---
   WLDPAY01 WLSPAY01 CM1B TRGPAY01 * * * CICSPA02
   WLDPAY02 WLSPAY01 CM1B TRGPAY04 * USRPAY03 * CICSPA03
   WLDPAY03 WLSPAY01 CM1B TRGPAY03 * * * CSGTGTS1

6. You can check that transaction group TRGPAY02 is inactive, and that transaction group TRGPAY04 is now active, by looking at the WLMATGRP view. To do this, issue the command WLMATGRP WLSPAY01 from the current view.
Chapter 20. Discarding an active transaction from a workload

All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

This example shows you how to discard an active transaction from a workload.
1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Display active transactions.
   From the current view, issue the command WLMATRAN EYUWLS02. The WLMATRAN view, showing active transactions associated with workload specification EYUWLS02, is displayed:

   26FEB2001 22:11:42 ----------- INFORMATION DISPLAY ---------------------------
   COMMAND ===> SCROLL ===> PAGE
   CURR WIN ==> 1 ALT WIN ==>
   W1 =WLMATRAN==========PLXPROD1=PLXPROD1=26FEB2001==22:11:42=CPSM==========9===
   CMD Transid PCONV Trangrp Workload Ownr
   --- -------- Mode- -------- -------- ----
   PAY1 EYUTRG04 WLDPAY01 CM1B
   PAY2 EYUTRG04 WLDPAY01 CM1B
   PAY3 EYUTRG04 WLDPAY01 CM1B
   PAY4 EYUTRG04 WLDPAY01 CM1B
   PZY1 EYUTRG03 WLDPAY01 CM1B
   PZY2 EYUTRG03 WLDPAY01 CM1B
   PZY3 EYUTRG03 WLDPAY01 CM1B

3. Discard transaction PAY2.
   In the WLMATRAN view, move the cursor to the entry for PAY2, and issue DSC from the line-command field. The Discard Active Workload Transaction panel is displayed. To confirm the discard, press Enter. The WLMATRAN view is displayed, minus the entry for PAY2.
Chapter 21. Updating a workload specification

All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

In this example, you’ll see how to update the workload specification WLSPAY01, which you created in the example [Chapter 10. Balancing a workload](#) on page 105. Be aware that, although this task is a very simple one, its effects need to be considered carefully. In particular, the updated workload specification cannot take effect immediately unless you also stop and then restart both the routing region with which the workload specification is associated and the target regions to which the routing region routes transactions.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1.
2. Update workload specification WLSPAY01.
   a. Issue the command WLMSPEC from the current view. The WLMSPEC view, showing all workload specifications in the CICSpex PLXPROD1, is displayed.
   b. Tab to the entry for WLSPAY01, and issue UPD from the line-command field. The Update WLM Specification panel is displayed. Change the Algorithm Type to GOAL.

```
-------------------- Update WLM Specification for PLXPROD1 ---------------------

COMMAND ==>                        WLM Spec Name ==> WLSPAY01
Description ==> Separate transactions for USRPAY03 to CICSPA03
Affinity Relation ==> Default Affinity Relation
                      (USERID, LUNAME, GLOBAL, BAPPL)
Affinity Lifetime ==> Default Affinity Lifetime
                     (SIGNON, LOGON, SYSTEM, PERMANENT, PCONV, DELIM
                      ACTIVITY, PROCESS)
Match Key ==> USERID Default Primary search criterion
                    (USERID, LUNAME)
Create Affinity ==> Create Auto Affinity (YES, NO, N/A)
Target Scope ==> CSGTGTSl Default CICS System,Group or Generic
Event Name ==> RTADEF, STATEDEF, or Generic
Abend Health ==> 0 Target ABEND Health Factor (0 - 99)
Abend Load ==> 0 Target ABEND Load Factor (0 - 99)
Algorithm Type ==> GOAL Algorithm Type (GOAL, QUEUE)

Press Enter to update WLM Specification.
Type END or CANCEL to cancel without updating.
```

Press Enter. The WLMSPEC view is redisplayed showing the updated entry for WLSPAY01.
Note: For a complete description of the WLMSPEC view, see \textit{WLMSPEC (Workload specifications)} on page 79.

3. Display the WLMAWORK view.

Issue the command WLMAWORK WLSPAY01 from the current view. You'll see that the Algorithm Type is still QUEUE. This is because region CICSPT01 doesn't know about the changes you've made. If you want the updated workload specification to take effect immediately, you have to stop the routing regions and the target regions to which they route, and then restart them. (If you don't know which routing regions and target regions are involved, you can hyperlink to a list of names for either type of region from the WLMAWORK view.) When you've restarted the routing regions and target regions (using the CICSRGN command), issue the command WLMAWORK WLSPAY01 from the current view. This time, you'll see that the Algorithm Type value has been updated.
Chapter 22. Using real-time analysis to select a target region for workload balancing

All the workload management examples are based on the same configuration. The CICSp lex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSp lex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSp lex, the data relates to every system in that CICSp lex. For all of the examples in this chapter, the initial scope is CICSp lex PLXPROD1.

In this example, you’ll see how to use CICSp lex SM’s real-time analysis functions to produce data that will help in the selection of a target region during workload balancing. In particular, the number of items on the temporary storage queue will be monitored for each target region to which work can be routed. When the number of items goes above 50, a real-time analysis event notification (severity HS) and an external message will be issued. When an event notification is issued, CICSp lex SM’s workload-balancing function is notified and uses the information, in addition to the standard queue algorithm criteria, in selecting the best target region.

Note: For a complete description of the real-time analysis views used in this example, see CICSp lex System Manager Managing Resource Usage.

A CICS system group CSGTGTS3 has already been created and contains four target regions (CICSPA01, CICSPA02, CICSPA03, and CICSPA04). The target regions are currently running. Work is currently being balanced among these target regions by the routing region CICSPT03.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.

2. Create a real-time analysis evaluation definition.
   From the current view, issue the command EVALDEF. From the EVALDEF view, issue the command CRE. Complete the first Create Evaluation Definition panel as shown here, and press Enter:
### Create Evaluation Definition for PLXPROD1

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>RTEPAY15</td>
</tr>
<tr>
<td>Description</td>
<td>TSQ NUMITEMS &gt; 50</td>
</tr>
<tr>
<td>Sample Interval</td>
<td>300 Interval between samples in seconds</td>
</tr>
<tr>
<td>TableName</td>
<td>MTSQGBL Resource Table Name or *</td>
</tr>
<tr>
<td>Instance Pattern</td>
<td>Specific or generic pattern</td>
</tr>
<tr>
<td>Result Set Action</td>
<td>ANY Operation(ALL,ANY,MAX,MIN,AVG,CNT)</td>
</tr>
<tr>
<td>Separate Task</td>
<td>NO Run as a separate task (YES, NO)</td>
</tr>
<tr>
<td>Evaluation Column</td>
<td>PUTQAUX Column name to evaluate or *</td>
</tr>
<tr>
<td>either Operator</td>
<td>GT (EQ,NE,LT,GT,LE,GE)</td>
</tr>
<tr>
<td>Value</td>
<td>50</td>
</tr>
<tr>
<td>Severity</td>
<td>HS (VLS,LS,LW,HW,HS,VHS)</td>
</tr>
<tr>
<td>VLS LS LW</td>
<td>Provide 3 low and/or 3 high values, N=Normal</td>
</tr>
<tr>
<td>View</td>
<td>MTSQGBL View invoked for this Evaluation</td>
</tr>
</tbody>
</table>

Type DOWN or UP to view other Evaluation Definition screens.
Press Enter to create Evaluation Definition.
Type END or CANCEL to cancel without creating.

---

3. Create a real-time analysis action definition. From the current view, issue the command ACTNDEF. From the ACTNDEF view, issue the command CRE. Complete the Create Action Definition panel as shown here, and press Enter:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action Name</td>
<td>RTAPAY15</td>
</tr>
<tr>
<td>Description</td>
<td>NUMITEMS IN TSQ &gt; 50</td>
</tr>
<tr>
<td>Event</td>
<td>YES Generate Event (Yes/No)</td>
</tr>
<tr>
<td>Event View</td>
<td>TSQ View for Event</td>
</tr>
<tr>
<td>Priority</td>
<td>255 Event Priority (1 to 255)</td>
</tr>
<tr>
<td>Event Text</td>
<td>AUX TSQUEUE PUTQ ITEMS &gt; 50</td>
</tr>
<tr>
<td>External Msg</td>
<td>YES Generate External Message (Yes/No)</td>
</tr>
<tr>
<td>Enter Msg</td>
<td>AUX TSQUEUE PUTQ ITEMS &gt; 50</td>
</tr>
<tr>
<td>Exit Msg</td>
<td>AUX TSQUEUE PUTQ ITEMS &lt; 50</td>
</tr>
<tr>
<td>Alert</td>
<td>NO Generate Alert (Yes/No)</td>
</tr>
<tr>
<td>CMAS Name</td>
<td>CMAS to Issue Alert</td>
</tr>
<tr>
<td>Enter Text</td>
<td></td>
</tr>
<tr>
<td>Exit Text</td>
<td></td>
</tr>
<tr>
<td>Restart</td>
<td>NO Cancel for ARM Restart (Yes/No)</td>
</tr>
</tbody>
</table>

Press Enter to create the Action Definition.
Type END or CANCEL to cancel without creating.

---

4. Create an analysis definition. From the current view, issue the command RTADEF. From the RTADEF view, issue the command CRE. Complete the Create Analysis Definition panel as shown here, and press Enter:
5. Create an analysis group.

From the current view, issue the command RTAGROUP. From the RTAGROUP view, issue the command CRE. Complete the Create Analysis Group panel as shown here, and press Enter.

```
------------------------- Create Analysis Group for PLXPROD1-----------
COMMAND ===>
Group Name ===> RTGPAY09
Description ===> RTA/WLM Group

Press Enter to create Analysis Group.
Type END or CANCEL to cancel without creating.
```

The RTAGROUP view is redisplayed.

6. Add the analysis definition to the analysis group.

From the current view, issue the command RTADEF. In the RTADEF view, tab to the entry for RTDPAY15 and issue ADD in the line-command field. The Add RTADEF to Analysis Group panel is displayed. Complete the panel as shown here, and press Enter.

```
------------------ Add RTADEF to Analysis Group for PLXPROD1 -----------------
COMMAND ===>
Name RTDPAY15
Description TSQ NUMITEMS FOR WLM/RTA
Analysis Group ===> RTGPAY09 Analysis Group or Generic
Active Period ===> Period Name or Generic

Press Enter to add RTADEF to Analysis Group.
Type END or CANCEL to cancel without adding.
```

The RTADEF view is redisplayed.

7. Create an analysis specification.
From the current view, issue the command RTASPEC. From the RTASPEC view, issue the command CRE. Complete the Create Analysis Specification panel as shown here, and press Enter.

```
----------------------- Create Analysis Specification for PLXPROD1 ------------
COMMAND ===>
RTA Spec Name ===> RTSPAY09
Description ===> Workload balancing with RTA

System availability management:
<table>
<thead>
<tr>
<th>Action or Generic</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAM</td>
<td>=&gt;</td>
</tr>
<tr>
<td>SOS</td>
<td>=&gt;</td>
</tr>
<tr>
<td>SYSdump</td>
<td>=&gt;</td>
</tr>
<tr>
<td>TRANDUMP</td>
<td>=&gt;</td>
</tr>
<tr>
<td>MAXTASK</td>
<td>=&gt;</td>
</tr>
<tr>
<td>STALL</td>
<td>=&gt;</td>
</tr>
</tbody>
</table>

Press Enter to create the RTA Specification.
Type END or CANCEL to cancel without creating.
```

You can ignore the System availability management fields.

8. Add the analysis group to the analysis specification.

From the current view, issue the command RTAGROUP. In the RTAGROUP view, tab to the entry for RTGPAY09 and issue ADD from the line-command field. Complete the panel as shown here and press Enter.

```
-------------Add Analysis Group to Analysis Specification for EYUPLX01 ---------
COMMAND ===>
Analysis Group RTGPAY09
Description RTA/WLM Group
Specification Name ===> RTSPAY09 Specification Name or Generic

Press Enter to add RTA Group to RTA Specification.
Type END or CANCEL to cancel without adding.
```

9. Set the scope of the analysis specification.

Tab to the entry for RTSPAY09 in the RTASPEC view and issue the command ADD from the line-command field. In the Scope field of the Add Scope for Specification panel, type CSGTGTS3. In the Option field, type FORCE. Press Enter. The RTASPEC view is redisplayed.

10. Activate real-time analysis in the target regions in CSGTGTS3.

From the current view, issue the command CICSSYS. In the CICSSYS view, tab to the entry for CICS system CICSPA01 and issue UPD from the line-command field. Page forward to the Update system - Analysis Attributes panel. Complete the panel as shown here, and press Enter:
When you press Enter, the CICS system definition is updated and the change, which is permanent, takes immediate effect. You do not have to restart CICS system CICSPA01. Repeat this step for the target regions CICSPA02, CICSPA03, and CICSPA04.

11. Update the workload specification.

The workload specification WLSPAY02 is already being used for workload balancing among the target regions in CSGTGTS3. You have to update the specification to add the real-time analysis data to the standard target region-selection criteria.

Issue the command WLMSPEC from the current view. On the WLMSPEC view, tab to the entry for WLMPAY02. From the WLMSPEC view, issue the command UPD. Complete the Update WLM Specification panel as shown here, and press Enter:

When you press Enter, the CICS system definition is updated and the change, which is permanent, takes immediate effect. You do not have to restart CICS system CICSPA01. Repeat this step for the target regions CICSPA02, CICSPA03, and CICSPA04.

11. Update the workload specification.

The workload specification WLSPAY02 is already being used for workload balancing among the target regions in CSGTGTS3. You have to update the specification to add the real-time analysis data to the standard target region-selection criteria.

Issue the command WLMSPEC from the current view. On the WLMSPEC view, tab to the entry for WLMPAY02. From the WLMSPEC view, issue the command UPD. Complete the Update WLM Specification panel as shown here, and press Enter:

When you press Enter, the CICS system definition is updated and the change, which is permanent, takes immediate effect. You do not have to restart CICS system CICSPA01. Repeat this step for the target regions CICSPA02, CICSPA03, and CICSPA04.

11. Update the workload specification.

The workload specification WLSPAY02 is already being used for workload balancing among the target regions in CSGTGTS3. You have to update the specification to add the real-time analysis data to the standard target region-selection criteria.

Issue the command WLMSPEC from the current view. On the WLMSPEC view, tab to the entry for WLMPAY02. From the WLMSPEC view, issue the command UPD. Complete the Update WLM Specification panel as shown here, and press Enter:
Notice that the Event Name value is the name of the analysis definition you created in step 4 on page 138.

**Note:** For a complete description of the WLMSPEC view, see WLMSPEC (Workload specifications) on page 79.

When the routing region CICSPT03 and the target regions in CICS system group CSGTGTS3 are next started, the routing region routes transactions among the target regions using both the standard queue algorithm criteria and the analysis definition RTDPAY15 to select a target region.
Chapter 23. Dynamic routing an EXEC CICS START TERMID command

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSplex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSplex. For all of the examples in this chapter, the initial scope is CICSplex PLXPROD1.

This example shows you how to set up dynamic routing capability for a transaction started by an EXEC CICS START command, that specifies a terminal id and a transaction id, and to use the goal algorithm to select the target region.

**Note:** You should check the system requirements before trying to dynamically route EXEC CICS START TERMID commands. See "Workload requirements" on page 5.

In this example, a program running in CICSPA01 issues an EXEC CICS START command, which is associated with terminal TRM1, to run transaction PAY1, for which you require a 2-second response time. Terminal TRM1 is associated with region CICSPT01. Transaction PAY1 may execute in any region connected to CICSPT01, that is, in CICSPA01–CICSPA03.

This example uses the environment that has already been created as part of earlier examples. You are working in CICSplex PLXPROD1, which comprises TOR CICSPT01 and AORs CICSPA01, CICSPA02, and CICSPA03 in CICS system group CSGTGS1. Transaction group TRGPAY03 has transactions PAY1, PAY2, PAY3, and PAY4 associated with it. Workload definition WLDPAY03 was defined to tell CICSpex SM that transactions in group TRGPAY03 must go to a target region in CICS system group CSGTGS1.

As you wish to use the goal algorithm, you need to define, in MVS Workload Manager, a Service Class with the required response time and allocate that Service Class to transaction PAY1. For example, you could specify:

- A Service Class of Fast that has an average response time of 2 seconds.
- A classification rule that associates Classification Subsystem CICS with transaction id PAY1 and Service Class Fast.

For more information about Service Classes, see page "Service classes" on page 9.

In CICSplex SM:

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.
2. Create a workload specification.

   Issue the command WLMSPEC from the current view. From the WLMSPEC view, issue the command CRE. Complete the Create WLM Specification panel as shown here, and press Enter:
You must supply:

- A name for the specification (WLSDYN01 in this example).
- A Match Key value. USERID is shown in this example, though in fact it doesn’t matter whether you specify USERID or LUNAME, because the Match Key value has no effect on simple workload balancing. It’s used only for some kinds of workload separation, but you have to supply a value because CICSPlex SM doesn’t know, at this stage, that you aren’t going to use this workload specification for workload separation.
- A Target Scope value, which is the name of the single target region, or group of target regions, to which transactions can be routed.
- An Algorithm Type value. For this example, use GOAL, because the criteria for selecting the target region are based on the requirement that the transaction has a response time of 2 seconds.

When you press Enter, the WLMSPEC view is redisplayed, this time showing an entry for the new workload specification, WLSDYN01.

**Note:** For a complete description of the WLMSPEC view, see [WLMSPEC](#) on page 79.

3. Associate the workload specification with a routing region.

The next step is to tell CICSPlex SM about the region that’s going to be routing the work requests to the target regions in group CSGTGTS1.

a. In the WLMSPEC view, tab to the entry for the WLSDYN01 specification, and issue ADD from the line-command field.

b. From the current view, issue the command WLMSCOPE WLSDYN01 to check that the association between the routing region and the workload specification has worked.

4. Activate workload balancing in the routing region.

Issue the command CICSSYS from the current view. In the CICSSYS view, tab to the line-command field for the CICSPT01 entry and issue the UPD command.
Page forward until you see the Update System - Workload Attributes panel. In the Routing support active field, enter YES. This change takes effect when CICSPT01 is next started.

5. Activate workload balancing in the target regions.

In the CICSSYS view, tab to the line-command field for the CICSPA01 entry and issue the UPD command. Page forward until you see the Update System - Workload Attributes panel. In the Target routing at startup field, enter YES. This change takes effect when the target region CICSPA01 is next started.

Repeat this step for target regions CICSPA02, CICSPA03, and CICSPA04.

6. Install transaction definitions.

- Install the transaction definition for PAY1 in each potential requesting region CICSPA01, CICSPA02, CICSPA03, and CICSPA04, with attributes of not dynamic and routable.
- Install the transaction definition for PAY1 in routing region CICSPT01, with the dynamic attribute specified.

You can either update the transaction definitions to specify these attributes, or you can specify override values when you install the transaction definitions. For details, see [CICSPlex System Manager Managing Business Applications](#).

In this example task, a program running in CICSPA01, the requesting region, issues an EXEC CICS START command that specifies a transaction id of PAY1 and a terminal id TRM1. The START command is function shipped to CICSPT01, the TOR that owns the specified terminal. CICSPT01 acts as the routing region and invokes the dynamic routing exit, which selects the target region. All the AORs in CICS system group CSGTGS1 are possible target regions; the actual target region is selected on the basis of the goal criterion of a response time of 2 seconds. CICSPlex SM obtains the Service Class of transaction PAY1 and the identity of the target region to which that Service Class is allocated, from a CICSPlex SM-maintained table.
Chapter 24. Dynamic routing of an inbound client DPL request

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSplex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSplex, the data relates to every system in that CICSplex. For all of the examples in this chapter, the initial scope is CICSplex PLXPROD1.

This example shows you how to set up dynamic routing capability for a DPL request from a CICS client, and to use the goal algorithm to select the target region.

Note: You should check the system requirements before trying to dynamically route inbound client DPL requests. See "Workload requirements" on page 5.

In this example, a request is received to run transaction PAY1 to invoke client program PAYPROG1. PAYPROG1 issues an EXEC CICS LINK command to server program PAYPROG2. You require transaction PAY1 to have a 2-second response time.

This example uses the environment that was used for "Chapter 23. Dynamic routing an EXEC CICS START TERMID command" on page 143.

As you wish to use the goal algorithm, you need to define, in MVS Workload Manager, a Service Class with the required response time and allocate that Service Class to the transaction. For example, you could specify:

- A Service Class of Fast with an average response time of 2 seconds.
- A classification rule that associates Classification subsystem CICS with transaction id PAY1 and Service Class Fast.

For more information about Service Classes, see page "Service classes" on page 9.

In CICSPlex SM:
1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.
2. Install program definitions.
   Install the program definition for PAYPROG1 in the routing region with the Dynamic attribute set to Yes, and in each target region with the Dynamic attribute set to No.
   For details of defining and installing program definitions, see CICSPlex System Manager Managing Business Applications.
3. Install transaction definitions.
   Install the transaction definition for PAY1 in each target region; the transaction definition should point to the mirror program DFHMIRS.
   For details of defining and installing transaction definitions, see CICSPlex System Manager Managing Business Applications.
dynamically route inbound client DPL
Chapter 25. Dynamic routing of a peer-to-peer DPL request

This example shows you how to set up dynamic routing for a peer-to-peer DPL request, and to use the goal algorithm to select the target region.

Note: You should check the system requirements before trying to dynamically route peer-to-peer DPL requests. See “Workload requirements” on page 5.

In this example, transaction PAY1 runs program PAYPROG1, which issues an EXEC CICS LINK command to program PAYPROG2. You require transaction PAY1 to have a response time of 4 seconds.

This example uses the environment that was used for “Chapter 23. Dynamic routing an EXEC CICS START TERMID command” on page 143. However, because this is a peer-to-peer dynamic linking request, only the AORs are involved and each AOR may act as a requesting, routing, or target region.

As you wish to use the goal algorithm, you need to define, in MVS Workload Manager, a Service Class with the required response time and allocate that Service Class to the transaction. For example, you could specify:

• A Service Class of Medium with an average response time of 4 seconds.
• A classification rule associating Classification Subsystem CICS with transaction id PAY1 and Service Class Medium.

For more information about Service Classes, see page “Service classes” on page 9.

In CICSPlex SM:

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.
2. Install transaction definitions.
   Install the transaction definition for PAY2 in all regions with the Dynamic and Routable attributes set to No. The transaction definition should point to the mirror program DFHMIRS.
3. Install program definitions.
   You don’t need to install program definition PAYPROG2 in the regions, but if you do, PAYPROG2 should be defined as dynamic.
dynamically route peer-to-peer DPL
Chapter 26. Balancing CICS BTS activities

All the workload management examples are based on the same configuration. The CICSpex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpex SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpex, the data relates to every system in that CICSpex. For all of the examples in this chapter, the initial scope is CICSpex PLXPROD1.

This example shows you how to balance a CICS BTS-related workload. This example uses the configuration that has been used for earlier examples. You are working in CICSpex PLXPROD1, which comprises AORs CICSPA01, CICSPA02, and CICSPA03 in CICS system group CSGTGTS1. These three systems may act as routing and target regions. In addition, it is assumed that the RLS file for the BTS process type is accessible to all CICS system in CICS system group CSGTGTS1, and that all the systems in CICS system group CSGTGTS1 are interconnected.

Note: You should check the system requirements before trying to dynamically route CICS BTS activities. See "Chapter 27. Separating CICS BTS activities" on page 153 and "CICS release requirements for dynamic routing" on page 26.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.

2. Activate workload balancing for the systems in CSGTGTS1.
   In the CICSSYS view, tab to the line for the CICSPA01 entry and issue the UPD command. Page forward until you see the Update System - Workload Attributes panel. In the Target routing at startup field, enter YES. In the Routing support active field, enter YES. These changes takes effect when the target region CICSPA01 is next started.
   Repeat this step for target regions CICSPA02 and CICSPA03.

3. Create a workload specification.
   Issue the command WLMSPEC from the current view. From the WLMSPEC view, issue the command CRE. Complete the Create WLM Specification panel as shown here, and press Enter.
balancing BTS activities

You must supply:

- A name for the specification (WLSCBTS in this example).
- A Match Key value. USERID is shown in this example, though in fact it doesn’t matter whether you specify USERID or LUNAME, because the Match Key value has no effect on simple workload balancing. It’s used only for some kinds of workload separation, but you have to supply a value because CICSPlex SM doesn’t know, at this stage, that you aren’t going to use this workload specification for workload separation.
- A Target Scope value, which is the name of the single target region, or group of target regions, to which transactions can be routed. In this example, use CSGTGT1.
- An Algorithm Type value. For this example, use QUEUE.

4. Associate the workload specification with routing region scope CSGTGT1.
5. Specify DSRTPGM=EYU9XLOP.
   You can do this either in the SIT of each region in the CICS system group, or using the CICSRGN view.
6. Activate workload management.
   a. From the MAS view, type the UPDate command by CICSPA01.
   b. On the general MAS attributes view, type YES in the WLM active field to start managing workloads for this CICS system.
   c. Press Enter.

Repeat for CICSPA02 and CICSPA03.
7. Program your BTS activities to run asynchronously.

When the routing and target regions in CSGTGT1 are next started, BTS activities are balanced among the target regions.
Chapter 27. Separating CICS BTS activities

All the workload management examples are based on the same configuration. The CICSplex, PLXPROD1 consists of one TOR, CICSPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. You will see how the roles played by these CICS regions varies, depending on the nature of the individual task.

For any task, you must be aware of the scope—that is, of the CICS systems—with which you are working: if the scope is a single CICS system, any data you retrieve from CICSpelix SM relates to that single system; if the scope is a group of CICS systems, the data relates to all of the systems in the group; if the scope is a CICSpelix, the data relates to every system in that CICSpelix. For all of the examples in this chapter, the initial scope is CICSpelix PLXPROD1.

This example shows you how to separate a CICS BTS-related workload. In this example, BTS activity BTSACT1 has an affinity of LIFETIME and runs under transaction id BTS1 and process type SALES. This example uses the configuration that has been used for the example in Chapter 26, Balancing CICS BTS activities on page 151. Similarly, the SIT parameter DSRTPGM must be set to EYU9XLOP.

Note: You should check the system requirements before trying to dynamically route CICS BTS activities. See CICS system connectivity on page x and CICS release requirements for dynamic routing on page 26.

1. If the current context isn’t PLXPROD1, issue the command CON PLXPROD1 from the current view.

2. Create a transaction group.
   a. From the current view, issue the command TRANGRP. The TRANGRP view is displayed, listing any transaction groups already defined in PLXPROD1.
   b. From the TRANGRP view, issue the command CRE. The Create Trangroup panel is displayed. Complete the panel as shown here:

   ------------------------ Create Trangroup for PLXPROD1 ------------------------
   COMMAND =>>
   Trangroup name ===> TRCGBTS1
   Description ===> CICS BTS transaction group
   Status ===> ACTIVE Transaction Group Status
   (ACTIVE, DORMANT)
   Match Key ===> USERID Primary WLMDEF search criterion
   (USERID, LUNAME)
   Affinity Relation ===> BAPPL Optional affinity relation may be:
   (USERID, LUNAME, GLOBAL, BAPPL)
   Affinity Lifetime ===> ACTIVITY Optional affinity lifetime may be:
   (SIGNON, LOGON, PCONV, DELIMIT, SYSTEM, PERMANENT ACTIVITY, PROCESS)
   Create Affinity ===> Create Auto Affinity (YES, NO, N/A)
   Event Name ===> RTADEF/STATDEF, or generic
   Abend Health ===> 0 Target ABEND Health Factor (0 - 99)
   Abend Load ===> 0 Target ABEND Load Factor (0 - 99)

   Press Enter to create Trangroup.
   Type END or CANCEL to cancel without creating.

Notice that the Affinity Relation and Affinity Lifetime fields must be completed. These values tell CICSpelix SM that the transactions in this group constitute a BTS affinity, and that this affinity lasts while those transactions are coming from
the same BTS application. If one of them is initiated from a different BTS application, CICSPlex SM can select a different target region. Of course, the same type of affinity will then come into play in that second target region. You can ignore any fields that have been left blank. Press Enter. The TRANGRP view is redisplayed, now showing the name of the transaction group TRGCBTS1.

Note: For a complete description of the TRANGRP view, see "TRANGRP (Transaction groups)" on page 52.

3. Identify the transactions in group TRGCBTS1.

From the TRANGRP view, move the cursor to the entry for TRGCBTS1, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Complete the panel as shown here:

```
------------------- Add Transaction to Trangroup for PLXPROD1 -------------------
COMMAND ==> TRGPAY03

Transaction ACTIVITY Mode Error
BTS1 ====> ====> ====> ====> ====> ====> ====> ====> ====> ====> ====> ====>
```

Press Enter to add Transaction to Trangroup. Type END or CANCEL to cancel without adding.

Press Enter. The TRANGRP view is redisplayed.

4. Create a workload definition.

a. From the command line of the current view, issue the command WLMDEF. The WLMDEF view is displayed.

b. From the WLMDEF view, issue the command CRE. The Create Workload Definition panel is displayed. Complete the panel as shown here:

```
----------------------- Create Workload Definition for PLXPROD1 -----------------------
COMMAND ==> WLDCBTS3
Definition Name ===> Separate CICS BTS activities
Description ===> Specific Trangroup, Generic, or Blank
Trangroup Name ===> TRGCBTS1
Terminal Luname ===> Specific or pattern Luname
User Id ===> Specific or pattern Userid
Process Type ===> SALES Specific or pattern Process Type
Target Scope ===> CSGTGTS1 CICS System, Group, or Generic
```

Press Enter to create definition. Type END or CANCEL to cancel without creating.

These values tell CICSPlex SM that transactions in group TRGCBTS1, and of process type SALES, must go to a target region in group CSGTGTS1. CICSPlex SM can select the most appropriate target region at the time the transaction is initiated.
Press Enter. The WLMDEF view is redisplayed.

**Note:** For a complete description of the WLMDEF view, see "WLMDEF (Workload definitions)" on page 60.

5. Add the workload definition to the workload group.
   In the WLMDEF view, move the cursor to the entry for WLDCBTS1, and issue ADD from the line-command field. The Add WLM Definition to Workload Group panel is displayed. In the Workload Group Name field, type WLGCBTS1 and press Enter. The WLMDEF view is redisplayed.

6. Add the workload group to the a workload specification.
   In the WLMGROUP view, tab to the entry for WLDCBTS1, and issue ADD from the line-command field. In the Specification Name field, type WLGCBTS1 and press Enter.
separating BTS activities
Chapter 28. Managing enterprise beans with workload management

This section differs from the task descriptions given earlier in this book in that its aim is to give a step-by-step description of all the tasks required to define enterprise beans and their execution environment to CICS using CICSPlex SM and to establish and execute the workload management of enterprise beans. The first half of the chapter deals with a sample CICSPlex SM environment which uses CICSPlex SM facilities to define required Enterprise JavaBean components and which implements the basic workload balancing of enterprise bean transactions. The second half describes the balancing environment in more detail and shows how to implement a more complex configuration for workload separation.

Balancing an enterprise bean workload

This task is designed to establish some of the principles of workload balancing with enterprise beans. It illustrates the use of CICSPlex SM facilities to define the configuration described for all the sample tasks: the CICSpex, PLXPROC1 consists of one TOR, CICSPPT01, and three AORs, CICSPA01, CICSPA02, and CICSPA03. In an EJB environment, the TOR CICSPPT01 is the listener, and the enterprise bean may run in any of the AORs, CICSPA01, CICSPA02, and CICSPA03 in response to a client request.

The task then illustrates the optional use of CICSPlex SM Business Application Services (BAS) to define the required Enterprise JavaBean components to CICS. Finally, it implements workload balancing of enterprise beans within the sample environment that has been built.

The task is divided into a number of subtasks:

1. "Defining the CICS region environment"
2. "Creating BAS definitions" on page 160
3. "Creating topology definitions" on page 164
4. "Creating workload definitions" on page 165
5. "Running the enterprise bean workload balancing task" on page 167

Defining the CICS region environment

To define the workload management environment for this task:

- Set the DSRTPGM system initialization parameter in all regions to EYU9XLOP in one of the following ways:
  - In the system initialization table (see CICS System Definition Guide).
  - On the PARM parameter in the startup job (see CICS System Definition Guide).
  - In the Dst Route Pgm attribute of the CICSRGN view (see CICSPlex System Manager Operations Views Reference).
- Set the IRCSTRT system initialization parameter in all regions to YES, so that IRC is started at system initialization. See CICS System Definition Guide.
- Create a CICSSYS definition for the listener region CICSPPT01. For this example, the Routing support active attribute should be set to YES and the Target routing attribute should be set to NO.
Note: If your listener region is also an AOR, the Target routing at startup attribute should be set to YES.

To ensure that local CICSPlex SM environment is properly established at MAS initialisation time, you should include the statement

MASPLTWAIT(YES)

in the EYUPARM file for all listener regions. If you do not, and there are enterprise beans queued for execution when the MAS initializes, it is possible that the routing requests for the first few enterprise beans will be rejected. By including this EYUPARM statement, the CICS PLTPI processing will suspend until the critical components of the local CICSPlex SM environment complete their initialization.

Note: You may still see the "Waiting for workload" message in the MAS message log. Assuming that your WLM definitions relating to the MAS are correct, this is not an error condition. It is reporting that execution of any queued enterprise beans is temporarily suspended until the local workload is established. When workload integration completes, the queued beans will continue to be processed automatically.

The Install Resources attribute should be set to ALWAYS, to ensure that the resources are installed automatically when the CICS region is started. Set the Recovery Action attribute to CONTINUE so that if an installation fails, those resources which have not failed can still be installed.

--- Create System - Workload Attributes - for PLXPROD1 ---

COMMAND ===>

System Name  CICSPT01
Description   Enterprise beans listener region
Routing Support active  ====> YES  Routing support to be activated
Target routing at startup  ====> NO

Enter DOWN or UP to view other System screens.
Press Enter to create the System.
Type END or CANCEL to cancel without creating.

Figure 44. Creating a CICS listener system definition — workload attributes

resources are installed automatically when the CICS region is started. Set the Recovery Action attribute to CONTINUE so that if an installation fails, those resources which have not failed can still be installed.

COMMAND ===>

System Name  CICSPT01
Description   Enterprise beans listener region
Install Resources  ====> ALWAYS  (NEVER, ALWAYS, COLDONLY, WARMONLY)
Recovery Action  ====> CONTINUE  (CONTINUE,PROMPT,TERMINATE,IMMEDIATE,NORMAL)

Enter DOWN or UP to view other System screens.
Press Enter to create the System.
Type END or CANCEL to cancel without creating.

Figure 45. Creating a CICS system definition - business application services attributes
Create a CICSSYS definition for each of the AORs. The Routing Support active and the Target routing at startup attributes should be set to YES. For CICSPA01:

```
--------------- Create System - Workload Attributes - for PLXPROD1 ---------------
COMMAND ===>
System Name   CICSPA01
Description    Enterprise beans AOR1
Routing Support active ===> YES Routing support to be activated
Target routing at startup ===> YES

Enter DOWN or UP to view other System screens.
Press Enter to create the System.
Type END or CANCEL to cancel without creating.
```

**Figure 46. Creating a CICS AOR system definition - workload attributes**

Repeat for the AORs. See [CICSPlex System Manager Administration](#).

Create a CICS system group (CICSGRP) for the listener and all the AORs:

```
----------------------- Create System Group for PLXPROD1 ----------------------
COMMAND ===>
System Group name ===> EJBCSG01
Description          ===> Enterprise beans listener and AORS

Press Enter to Create the System Group.
Type END or CANCEL to cancel without creating.
```

**Figure 47. Creating a CICS system group definition.**

Create a CICS system group (CICSGRP) for just the AORs. See [CICSPlex System Manager Administration](#).

```
----------------------- Create System Group for PLXPROD1 ----------------------
COMMAND ===>
System Group name ===> EJBCSG02
Description          ===> Enterprise beans AORS

Press Enter to Create the System Group.
Type END or CANCEL to cancel without creating.
```

**Figure 48. Creating a CICS system group definition.**

Add the listener region and the AORS to CICS system group EJBCSG01 by issuing the GRP line action command from the CICSSYS view.
Press Enter. Repeat for each AOR. See CICSPlex System Manager Administration.

- Add the AORs to CICS system group EJBCSG02 by issuing the GRP line action command from the CICSSYS view. To add the first AOR, type the system name into the Scope field, as shown:

Figure 49. Adding a member to a CICS system group

Press Enter. Repeat for the other two AORs. See CICSPlex System Manager Administration.

Figure 50. Adding a member to a CICS system group

Press Enter. Repeat for the other two AORs. See CICSPlex System Manager Administration.

Creating BAS definitions

- Create a CorbaServer definition (EJCODEF) for a logical server comprising the three AORs. The value of the Port attribute must match that of the TCPDEF Portnumber attribute. The Shelf attributes should refer to valid MVS Open Edition (MVSOE) file specifications that exist on the MVS image in which the CICS region is running. The Host parameter should be either a valid host name or the dotted decimal address of the MVS image on which the CICS region is running. Beans installed in the CorbaServer will be published to the namespace under the JNDI prefix.
Note: In order to keep this example as simple as possible, SSL has been set to NO, but any enterprise should, of course, have a fully-implemented security system.

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>Name</th>
<th>Version</th>
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<tbody>
<tr>
<td></td>
<td>EJC1</td>
<td>0</td>
</tr>
<tr>
<td>Description</td>
<td>CorbaServer 1</td>
<td></td>
</tr>
<tr>
<td>RESGROUP</td>
<td>EJBGRP01</td>
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</tr>
<tr>
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<td>ejbuser1</td>
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</tr>
<tr>
<td>Sessbeantime</td>
<td>000200 000000-992359 (DDHMM)</td>
<td></td>
</tr>
<tr>
<td>Shelf</td>
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<table>
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<td>SSLPort</td>
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<table>
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<tr>
<th>CLIENT ORB CERTIFICATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
</tr>
</tbody>
</table>

Press ENTER to create EJCODEF.  
Type END or CANCEL to cancel without creating.

**Figure 51. Creating a CorbaServer definition**

See [CICSPlex System Manager Managing Business Applications](#) for details of EJCODEF.

- Create a TCP/IP service definition (TCPDEF) for the IP port number, which will be supplied by your system administrator. The value of the Portnumber attribute must match the value of the EJCODEF Port attribute. The transaction must be the CICS enterprise bean request receiver CIRR.

Note: In order to keep this example as simple as possible, AUTHENTICATE has been set to NO, but any enterprise should, of course, have a fully-implemented security system.
See CICSplex System Manager Managing Business Applications for details of TCPDEF.

- Create a resource assignment (RASGNDEF) to install the TCPDEF in the listener region CICSPT01:

```
COMMAND ===>
Name ===> EJBTCPS1 Version ===> 1 Entry version Number
Description ===> Enterprise bean TCPIP service 1
REGROUP ===> EJBGRP1
User Data ===>

Urm ===> Name of user replaceable module
Portnumber ===> 27301 Port number for this service (1 - 32767)
Certificate ===> HFS pathname of certificate
Status ===> OPEN Initial status of service (OPEN, CLOSED)
SSL ===> NO Use of SSL (NO, YES, CLIENTAUTH)
Transaction ===> CIRR Transaction Id to process this service
Backlog ===> 00000 Requests queued before rejection (0 - 32767)
TSQprefix ===> Prefix for temporary storage queue
IPaddress ===> INADDR_ANY IP address
SocketClose ===> 002000 Socket close (NO, 0-240000)
Authenticate ===> AUTO No | Basic | Certificate | Autoregister
| AUTOMATIC
Protocol ===> IIOP HTTP | IIOP

Press ENTER to create TCPDEF.
Enter END or CANCEL to cancel without creating.
F1=HELP F2=hsplit F3=END F4=RETURN F5=RFIND F6=RCHANGE
F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT F12=RETRIEVE
```

Figure 52. Creating a TCP/IP service definition

See CICSplex System Manager Managing Business Applications for details of TCPDEF.

- Create a resource assignment (RASGNDEF) to install the TCPDEF in the listener region CICSPT01:

```
COMMAND ===>
Name ===> EJBRAS01 Description ===> Assignment for listener region
Target Scope ===> CICSPT01 CICS System or System Group
Related Scope ===> CICS System or System Group
Resource Group ===> EJBGRP1 REGROUP Containing definitions
Resource Type ===> TCPDEF Resource Definition Type
Usage ===> LOCAL Assignment type (LOCAL,REMOTE,LINK)
Mode ===> N/A UsageQualifier by Resource Type
Referenced Assign ===> N/A Resource Assignment Definition name
Override ===> NONE Scope of override (TARGET,RELATED,Both, NONE)

Press ENTER to create Resource Assignment.
Type UP or DOWN to view other screens.
Enter END or CANCEL to cancel without creating.
```

Figure 53. Creating a resource assignment - Page 1

- Create a transaction definition for CIRP, the default request processor transaction, based on the CEDA-supplied definition and linking to supplied program DFJIIARP:
Create a resource assignment (RASGNDEF) to install the supplied transaction CIRP as a target in the listener region CICSPT01. The AOR CICS system group should be specified as the related scope. This ensures that the request processor transaction CIRP is routed from the listener region to an AOR.

COMMAND ===> CIRP
Name ===> Default request processor transaction
Version ===> 1
RESGROUP ===> EJBGRP01
User Data ===> DFJIIRP
Program ===> Name program to process transaction
Twsize ===> Transaction work area size (0–32767, blank)
Profile ===> Profile definition name
Partitionset ===> Application partition set (name, KEEP, OWN)
Status ===> Transaction status (ENABLED, DISABLED)
Taskdatablock ===> Task storage location (BELOW, ANY)
Taskdatakey ===> Task storage key (USER, CICS)
Storageclear ===> Clear task life-time storage (YES, NO)
Runaway ===> Max tasktime (SYSTEM, 0–2700000, blank)
Shutdown ===> Status during shutdown (DISABLED, ENABLED)
Isolate ===> Isolate user storage (YES, NO)

Press ENTER to create TRANDEF.
Enter UP or DOWN to view other screens.
Type END or CANCEL to cancel without creating.

Figure 54. Creating a transaction definition - Page 1

- Create a resource assignment (RASGNDEF) to install the supplied transaction CIRP as a target in the listener region CICSPT01. The AOR CICS system group should be specified as the related scope. This ensures that the request processor transaction CIRP is routed from the listener region to an AOR.

COMMAND ===> EJBRAS02
Name ===> Resource assignment for CIRR
Description ===> Resource assignment for CIRR
Target Scope ===> CICSPT01 CICS System or System Group
Related Scope ===> EJBCSG02 CICS System or System Group
Resource Group ===> EJBGRP01 RESGROUP Containing definitions
Resource Type ===> TRANDEF Resource Definition Type
Usage ===> REMOTE Assignment type (LOCAL,REMOTE,LINK)
Mode ===> DYNAM Usage Qualifier by Resource Type
Referenced Assign ===> Resource Assignment Definition name
Override ===> NONE Scope of override (TARGET,RELATED,BOTH, NONE)

Press ENTER to create Resource Assignment.
Type UP or DOWN to view other screens.
Enter END or CANCEL to cancel without creating.

Figure 55. Creating a resource assignment - Page 1

- Create a resource assignment (RASGNDEF) for the CorbaServer to install in all the AORs.

Chapter 28. Managing enterprise beans with workload management 163
See CICSPlex System Manager Managing Business Applications for details of RASGNDEF.

• Create a resource description (RESDESC) for all the resource assignments:

<table>
<thead>
<tr>
<th>COMMAND ====&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name          ===&gt; EJBRESD1</td>
</tr>
<tr>
<td>Description   ===&gt; Enterprise beans</td>
</tr>
<tr>
<td>Valid Scope   ===&gt; YES Add to Topology Scope Set (YES,NO)</td>
</tr>
<tr>
<td>Scope Name    ===&gt; EJB Name to be used as Scope</td>
</tr>
<tr>
<td>Model         ===&gt; Resource Description copy model</td>
</tr>
<tr>
<td>ResGroup Scope ===&gt; EJBGRP01 Scope applied to associated ResGroups</td>
</tr>
<tr>
<td>Auto Install  ===&gt; YES Add Description Resources to Scope</td>
</tr>
</tbody>
</table>

Press ENTER to create Resource Description.
Enter UP or DOWN to view other screens.
Type END or CANCEL to cancel without creating.

Figure 57. Creating a resource description - Page 1

A scope name of EJB has been specified to allow users to exploit CICSPlex SM logical scoping when reviewing the objects installed through this RESDESC. Auto Install(YES) has been specified to ensure that all objects in this RESDESC (that are appropriate to a MAS) are automatically installed at MAS initialization.

See CICSPlex System Manager Managing Business Applications for details of RESDESC.

Creating topology definitions

• An MRO link must be established between the listener CICSPT01 and each AOR to allow the exploitation of dynamically routed EJBs. To create these links:
Create connection definitions (CONNDEF). As MRO must be the connection method, the Access method attribute should be either XM (for MVS cross memory services) or IRC (for the interregion communication program DFHIRP). The AutoConnect attribute should be YES.

Create session definitions (SESSDEF). The Protocol attribute should be LU61. The Recv/Send prfx attribute should be <, >; this enables CICS to create the session names dynamically, thus avoiding duplicated session names.

- Create the link between the listener region and the first AOR. From the SYSLINK view, issue the CRE command. Complete the panel as shown:

```
COMMAND ===>
Primary System ==> CICSPT01
Secondary System ==> CICSPA01
ConnDef Name ==> EJBCON01 Version ==> 1
SessDef Name ==> EJBSES01 Version ==> 1
```

Press ENTER to create SYSLINK.
Type END or CANCEL to cancel without creating.

Figure 58. Creating a CICS system link

Establish links from the listener to the remaining AORs in a similar manner. This will create three bi-directional pairs of links which will appear on the screen as six physical links.

- Verify the connections by issuing the CONNECT line action command. You should see a pair of connections for each pair of systems. The connection type should be MRO. The connections should be ACQUIRED and INSERVICE for any routing to occur successfully.

Note: Occasionally, newly-defined connections fail to acquire successfully until the CICS system partners are restarted.

Creating workload definitions

Establishing the workload management definitions for generic enterprise beans workload balancing is simple. Assuming that all enterprise beans need to be balanced across all available AORs, the only definition required is a workload specification (WLMSPEC):
The resultant specification must be added to the system group encompassing all MASes. In our example CICSpilex, that is the listener region and the three AORs. Note that the Target Scope is the AOR group only. This is because we want to route all dynamic transactions to the AORs through this WLMSPEC. The WLMSPEC is added to the group of all MASes, rather than just the listener, because the scope of the WLM balancing processing itself must cover all of the EJB regions, whereas the target scope of the transactions directed by the WLMSPEC covers just the regions that the routed transactions may be executed in. In other words, all regions must be aware of this WLMSPEC, but only the group which consists of AOR MASes only may execute the dynamic transactions routed through it.

The result of ADDing the WLMSPEC to the EJBCSG01 group may be confirmed with the WLMSCOPE command, which should show:

```
W1 =WLMSCOPE==========DWPLEXC7=ALLMAS===02/02/2001=11:06:24====CPSM==========5====
CMD WLM Scope Scope Scope Scope Update
--- Spec---- Name---- Type---- Mode---- Link---- Option--
EJBSPEC1 EJBCSG01 SYSGROUP
EJBSPEC1 EJBAOR1 CICSSYS INHERIT EJBCSG01
EJBSPEC1 EJBAOR2 CICSSYS INHERIT EJBCSG01
EJBSPEC1 EJBAOR3 CICSSYS INHERIT EJBCSG01
EJBSPEC1 EJBTOR1 CICSSYS INHERIT EJBCSG01
```

Figure 60. WLMSCOPE command output

When all of the MASes are restarted, ensure that each MAS confirms

```
EYUNL0160I xxxxxxxx Workload registration complete
```

where xxxxxxxx is the corresponding MAS name. At that point, the workload management environment should be ready to balance the execution of enterprise beans.
Running the enterprise bean workload balancing task

- When the CICS regions are restarted, the resource description EJBRESD1 will cause all the resources needed by each MAS to be installed automatically in the AORs. From the EJCOSE view, monitor the CorbaServer status by refreshing the view occasionally until the status is INSERVICE for all regions listed.

- When all the CorbaServers are INSERVICE, issue the PUBLISH command against the CorbaServer in one of the AORs. This command causes the attributes of the CorbaServer, its associated DJARs and the beans contained in them to be identified to the Java Naming and Directory Interface (JNDI). When the command completes, the CICS routing and execution environment should be ready to run the enterprise beans.

When the initial process is run on the client, it uses the services of JNDI to identify a TCP/IP port. This port is used to pass a bean execution request to the configured listener region. The request receiver transaction CIRR is invoked within that region and issues a START request to the request processor transaction CIRP. This transaction has been redefined as dynamic and so the listener calls the DSRTPGM routing exit program to select a target region. In this case that program is EYU9XLOP, which will drive the workload balancing services of CICSPlex SM to select a suitable AOR. This AOR name is returned to the routing exit in the listener, which will route the execution of CIRP to the selected AOR. Finally the CorbaServer in the target AOR receives the request and executes the enterprise bean on behalf of the original client. The usage count value of the CIRP transaction across each of the AORs should increase with each execution of the client program. This can be verified using the CICSPlex SM command LOCTRAN CIRP.

Separating enterprise beans in a workload

Isolating the execution of certain enterprise beans to specific CorbaServers in specific regions, may be done with the normal workload management workload definition command suite. To do this, we need to associate a bean name to a CICS transaction code, so that workload management can route that transaction to a predetermined CICS region. We may use the previous workload balancing definition set as a starting point, and add the following definitions to it. As we did in the workload balancing example, we will choose to use CICSPlex SM Business Application Services (BAS) to define the extra Enterprise JavaBean components to CICS.

Creating BAS definitions for enterprise bean separation

As we now want to separate the execution of our enterprise beans, we must define the DJAR that they are deployed into. This is done with an EJCODEF.
The DJAR file must be deployed to the location specified by the HFSFile parameter, and the CorbaServer must also be installed at a target system, before the beans within "MyGreekBeans.jar" will be available for execution. You do not have to define the bean names themselves to CICS. That information can be retrieved from the DJAR after it has been installed at an AOR and is in an INSERVICE state.

Installation of this DJAR will be controlled by the following RASGNDEF.

Figure 61. Creating a Java archive definition

The DJAR file must be deployed to the location specified by the HFSFile parameter, and the CorbaServer must also be installed at a target system, before the beans within "MyGreekBeans.jar" will be available for execution. You do not have to define the bean names themselves to CICS. That information can be retrieved from the DJAR after it has been installed at an AOR and is in an INSERVICE state.

Installation of this DJAR will be controlled by the following RASGNDEF.

Figure 62. Creating a resource assignment

When this definition is complete, it should be ADDed to the RESDESC EJBRESD1, to cause automatic DJAR installation when the EJBAOR MASes initialize.

A clone of the CICS CIRP transaction is required for each bean identifier (specific or generic) that needs to be separated through workload management. A dynamic definition of CIRP was already established for the workload balancing, and this may
be copied under different transaction ids. Assuming that you wish to separate three explicit beans (Alpha, Beta and Gamma), copy the current CIRP definition three times to transaction codes EJB1, EJB2 and EJB3. When creating each of these definitions, you may save time by adding them to the same RESGROUP as the one that CIRP is already associated with, through the RESGROUP parameter on the CREATE TRANDEF panel. In that way, these new TRANDEFs will be automatically associated with the RASGNDEF that will install them dynamically to the listener, and statically to each of the AORs.

Once the TRANDEFs (to handle the specific bean execution requests) are in place, we need an object to associate the bean name with a transaction code — a request model. Request models are defined using the RQMDEF panel.
This definition associates transaction code EJB1 with *Alpha* bean. The critical parameters here are: Transid, CorbaServer, Type and Beanname. Transid must identify the same id as that which we defined as "dynamic" earlier. Type specifies that the IIOP request type is for Enterprise JavaBeans. Beanname is the case-sensitive id of the enterprise bean that we wish to isolate. CorbaServer is the id of the CorbaServer which will host the bean. The definition should be repeated to associate transaction code EJB2 with *Beta* bean and transaction code EJB3 with *Gamma* bean. All three request models should be associated with the EJBGRP01 RESGROUP.

---

### Create Request Model Definition for DWPŁEXC7

**COMMAND ===>

**Name** EJBRQM1 **Version** 1

**Description** ==> RQModel for Baby Bean

**RESGROUP** ==> EJBGRP01

**User Data** ==> EJB1

**Transid** ==> EJB1

**CorbaServer** ==> EJC1

**Type** ==> EJB CORBA | EJB | GENERIC

**Corba Parameters**

- **Module**
- **Interface**

**EJB Parameters**

- **Beanname** ==> Alpha
- **Intfacetype** ==> BOTH

**Common Parameters**

- **Operation** ==> *
- **Intfacetype** ==> BOTH

**OMGModule**

- **IIOP Module Name**

**OMGInterface**

- **IIOP Interface Name**

**OMGOperation**

- **IIOP Operation Name**

Press ENTER to create RMQDEF.  
Type END or CANCEL to cancel without creating.  
Enter UP or DOWN to view other screens.

---

*Figure 63. Creating a request model definition*

This definition associates transaction code EJB1 with *Alpha* bean. The critical parameters here are: Transid, CorbaServer, Type and Beanname. Transid must identify the same id as that which we defined as "dynamic" earlier. Type specifies that the IIOP request type is for Enterprise JavaBeans. Beanname is the case-sensitive id of the enterprise bean that we wish to isolate. CorbaServer is the id of the CorbaServer which will host the bean. The definition should be repeated to associate transaction code EJB2 with *Beta* bean and transaction code EJB3 with *Gamma* bean. All three request models should be associated with the EJBGRP01 RESGROUP.
To control the installation of these request models, use the following RASGNDEF.

--- Create Resource Assignment for DWPLEXC7 Page 1 ---

**COMMAND ====>**

<table>
<thead>
<tr>
<th>Name</th>
<th>EJBRAS5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Assign RQModels to Listener</td>
</tr>
<tr>
<td>Target Scope</td>
<td>EJBTOR1  CICS System or System Group</td>
</tr>
<tr>
<td>Related Scope</td>
<td>CICS System or System Group</td>
</tr>
<tr>
<td>Resource Group</td>
<td>EJBGRP01 RESGROUP Containing Definitions</td>
</tr>
<tr>
<td>Resource Type</td>
<td>RQMQDEF Resource Definition Type</td>
</tr>
<tr>
<td>Usage</td>
<td>LOCAL Assignment Type (LOCAL, REMOTE)</td>
</tr>
<tr>
<td>Mode</td>
<td>N/A Usage Qualifier by Resource Type</td>
</tr>
<tr>
<td>Referenced Assign</td>
<td>Resource Assignment Definition name</td>
</tr>
<tr>
<td>Override</td>
<td>NONE Scope of Override (TARGET, RELATED, BOTH, NONE)</td>
</tr>
</tbody>
</table>

Press ENTER to create Resource Assignment.
Enter UP or DOWN to view other screens.
Enter END or CANCEL to cancel without creating.

*Figure 64. Creating a resource assignment*

When this definition is complete, it should be ADDED to the same RESDESC EJBRESD1 as the other EJ resource assignments. Note that the installation scope for these request models, like that of the TCP/IP service definition, applies to the listener region only.

That completes the BAS definition set for enterprise bean workload separation. It comprises a single overall RESDESC, defined with Auto Install(YES) to force resource installation at MAS initialization. Associated with that RESDESC are RASGNDEFS which specify that:

- the CorbaServer and DJAR are locally installed to the AORs,
- the TCP/IP service and request models are locally installed to the listener region,
- the request processor transactions CIRP and EJB1-EJB3 are installed dynamically in the listener region, and locally in each of the AORs.

**Creating workload definitions for enterprise bean separation**

Establishing the workload management definitions necessary for the separation of specific enterprise beans requires a larger definition set than for simple enterprise bean workload balancing. In addition to a workload specification to control the workload operation, sets of workload management definitions and transaction group definitions are required beneath it to implement the required bean separation. We will start our definition set at the bottom of the hierarchy and work upwards. At the lowest level, CICS transactions need to be isolated. That is achieved through a TRANGRP definition.
Note that CICSPlex SM cannot manage any logical affinities that may exist between enterprise beans, so ensure that Affinity Relation and Affinity Lifetime are left blank and Create Affinity is N/A. (Any values specified here will be ignored by CICSPlex SM affinity processing). Repeat this definition twice for TRANGRPs EJB2 and EJB3. From the resultant TRANGRP list, issue the ADD prefix command against each of the EJB* items. This will add transaction EJB1 to TRANGRP EJB1, transaction EJB2 to TRANGRP EJB2 and transaction EJB3 to TRANGRP EJB3.

The next step is to create workload definitions for each of the transactions that we wish to separate, which is achieved by using the WLMDEF command.

--- Create Trangroup for DWPLEXC7 ---

COMMAND ===>

Trangroup name  EJB1
Description  ==> Group for Alpha Bean transid
Status  ==> ACTIVE  Transaction Group Status
          (ACTIVE, DORMANT)
Match Key  ==> USERID  Primary WLMDEF search criterion
            (USERID, LUNAME)
Affinity Relation  ==> Optional affinity relation may be:
                         (USERID, LUNAME, GLOBAL, BAPPL)
Affinity Lifetime  ==> Optional affinity lifetime may be:
                      (SIGNON, LOGON, PCONV, DELIMIT, SYSTEM, PERMANENT,
                       ACTIVITY, PROCESS)
Create Affinity  ==> N/A  Create Auto Affinity (YES, NO, N/A)
Event Name  ==> RTADEF/STATDEF or generic
Abend Health  ==> 0  Target ABEND Health Factor (0 - 99)
Abend Load  ==> 0  Target ABEND Load Factor (0 - 99)

Press ENTER to create Trangroup.
Type END or CANCEL to cancel without creating.

--- Create Workload Definition for DWPLEXC7 ---

COMMAND ===>

Definition Name  EJB1
Description  ==> Alpha Bean
Trangroup Name  ==> EJB1  Specific Trangroup, Generic, or Blank
Terminal Luname  ==> *  Specific or pattern Luname
User ID  ==> *  Specific or generic Userid
Process Type  ==> *  Specific or generic Process Type
Target Scope  ==> EJBBAOR1  CICS System, Group, or Generic

Press ENTER to create definition.
Type END or CANCEL to cancel without creating.

--- Figure 65. Creating a TRANGRP definition ---

--- Figure 66. Creating a workload definition for enterprise bean separation ---

This is the point in the definition set where we associate the transactions to be isolated against a specific scope. In this case we want to separate all transactions in TRANGRP EJB1 (in this case just the EJB1 transaction) to MAS EJBBAOR1. Repeat this definition twice to separate TRANGRP EJB2 to MAS EJBBAOR2 and TRANGRP EJB3 to EJBAOR3. A WLMGROUP will be needed to allow the
association of the WLMDEFs to the WLMSPEC, so CREate one named EJBGRP1 and ADD WLMDEFs EJB1, EJB2 and EJB3 to it.

The final workload management object required for this scenario is the workload management specification. In this case it will be named EJBSPEC2.

--- Update WLM Specification for DWPLEXC7 ---

**COMMAND ===>

<table>
<thead>
<tr>
<th>WLM Spec Name</th>
<th>EJBSPEC2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Separated EJB Workload</td>
</tr>
<tr>
<td>Affinity Relation</td>
<td>Default Affinity Relation</td>
</tr>
<tr>
<td>Affinity Lifetime</td>
<td>Default Affinity Lifetime</td>
</tr>
<tr>
<td>Match Key</td>
<td>USERID Default Primary search criteria</td>
</tr>
<tr>
<td>Create Affinity</td>
<td>N/A Create auto affinity (YES, NO, N/A)</td>
</tr>
<tr>
<td>Target Scope</td>
<td>EJBCSG02 Default CICS System, Group or Generic</td>
</tr>
<tr>
<td>Event Name</td>
<td>RTADEF, STATDEF or Generic</td>
</tr>
<tr>
<td>Abend Health</td>
<td>0 Target ABEND Health Factor (0 - 99)</td>
</tr>
<tr>
<td>Abend Load</td>
<td>0 Target ABEND Load Factor (0 - 99)</td>
</tr>
<tr>
<td>Algorithm Type</td>
<td>QUEUE Algorithm Type (GOAL, QUEUE)</td>
</tr>
</tbody>
</table>

Press ENTER to update the WLM Specification.
Type END or CANCEL to cancel without updating.

--- MAP of WLMSPEC EJBSPEC2 ---

**COMMAND ===>

<table>
<thead>
<tr>
<th>WLMSPEC</th>
<th>WLMGROUP</th>
<th>WLMDDEF</th>
<th>TRANGRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>EJBSPEC2</td>
<td>EJBGRP1</td>
<td>EJB1</td>
<td>EJB1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EJB2</td>
<td>EJB2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EJB3</td>
<td>EJB3</td>
</tr>
</tbody>
</table>

--- End Of Map ---

Figure 67. Updating a workload specification for enterprise bean separation

The content of this object is logically the same as that of our balancing WLMSPEC defined previously. However to allow for easier manipulation of the workload management balancing/separation process we recommend that a new WLMSPEC is defined. Return to the WLMGROUP view and ADD EJBGRP1 to this new WLMSPEC, and then issue a MAP command against WLMSPEC EJBSPEC2 to confirm the workload management definition hierarchy.

--- MAP of WLMSPEC EJBSPEC2 ---

**COMMAND ===>

<table>
<thead>
<tr>
<th>WLMSPEC</th>
<th>WLMGROUP</th>
<th>WLMDDEF</th>
<th>TRANGRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>EJBSPEC2</td>
<td>EJBGRP1</td>
<td>EJB1</td>
<td>EJB1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EJB2</td>
<td>EJB2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EJB3</td>
<td>EJB3</td>
</tr>
</tbody>
</table>

--- End Of Map ---

Figure 68. Map of WLMSPEC showing workload management definition hierarchy

As with the balancing specification, the WLMSPEC must be added to the system group comprising all MASes, that is the listener and the AORs. The target scope is still the group which consists of the AOR MASes only.

If the WLMSCOPE command shows that the balancing specification EJBSPEC1 is still defined, issue the REM command against the item applied to the SYSGROUP entry that covers all the MASes. Removing that item will cause automatic deletion of inherited entries logically beneath it. Then return to the WLMSPEC display to
ADD EJBSPEC2 to the EJBCSG01 CICS group. This should be confirmed with the WLMSCOPE command, which should show:

```
W1 =WLMSCOPE=========DwPLEXC7=ALLMAS===02/02/2001=11:06:24====CPSM=========5====
CMD  WLM  Scope  Scope  Scope  Scope  Update
--- Spec---- Name---- Type---- Mode---- Link---- Option--
EJBSPEC2  EJBCSG01  SYSGROUP
EJBSPEC2  EJBAOR1  CICSSYS  INHERIT  EJBCSG01
EJBSPEC2  EJBAOR2  CICSSYS  INHERIT  EJBCSG01
EJBSPEC2  EJBAOR3  CICSSYS  INHERIT  EJBCSG01
EJBSPEC2  EJBTO1  CICSSYS  INHERIT  EJBCSG01
```

Figure 69. WLMSCOPE command output

When all of the MASes are restarted, ensure that each MAS confirms
EYUNL0160I xxxxxxxx Workload registration complete

where xxxxxxxx is the corresponding MAS name. At that point the workload management environment should be ready to separate execution of enterprise bean Alpha to MAS EJBAOR1, Beta bean to MAS EJBAOR2 and Gamma bean to MAS EJBAOR3. Use the command LOCTRAN EJB* to inspect the use counts for each transaction and expect to see them incremented each time any of these beans are driven from your client.
Part 4. Appendixes
Appendix A. Copy books

This chapter contains:

- "EYURWCOM"
- "EYURWSVE" on page 185
- "EYURWTRA" on page 187

Note: Unless otherwise indicated, the data fields described in this chapter are read-only. Fields that are not described here are reserved for CICSPlex SM; unpredictable results may occur if these fields are changed.

EYURWCOM

Note: Unless otherwise indicated, the data fields described in this chapter are read-only. Fields that are not described here are reserved for CICSPlex SM; unpredictable results may occur if these fields are changed. The format of EYURWCOM is shown in Figure 70 on page 178.
Figure 70. The EYURWCOM communication area (Part 1 of 2)

copy books

EYURWCOM DSECT , EYU9WRAM communication area
WCOM_PREFIX DS OCL20 EYU9WCOM prefix
WCOM_SLENGTH DS AL2 Structure Length
WCOM_ARROW DS C > delimiter
WCOM_NAME DS CL8 EYURWCOM
WCOM_BLANK DS C Blank
WCOM_PGMNAME DS CL8 EYU9WRAM
WCOM_PFX_LEN EQU *-WCOM_PREFIX Length of prefix
WCOM_CTYPE DS C Call Type
WCOM_ERR_ROUTE DS C Route Selection Error Code
WCOM_INIT_CTYPE DS C Initial Call Type. This field
has meaning if the WCOM_CTYPE value is WCOM_CTYPE_ERR. Its
value will be the initial CTYPE value for the Transaction and
will be either WCOM_CTYPE_SEL or WCOM_CTYPE_NOT
WCOM_CALLER DS CL1 WorkLoad Manager Caller
WCOM_REM_SYSID DS CL4 Default Remote SYSID
WCOM_REM_TRANID DS CL8 Default Remote TRANSID
WCOM_REM_APPLID DS CL8 Default Remote APPLID
WCOM_CALL_COUNT DS F Invocation Count
WCOM_INS_BUFF DS A Address of Input Buffer
WCOM_INS_BUFFL DS F Length of Input Buffer
WCOM_TASK_PRIO DS H Task Priority
WCOM_CLASS DS XL4 Task Service Class
WCOM_DYRTPYE DS CL1 Request type
WCOM_DYRPLPROG DS CL8 DPL Program name
WCOM_WORK_AREA DS A Address of WRAM program workarea
WCOM_WORK_LNTH DS F Length of Task Work Area
WCOM_STATUS DS C CPSM Status
WCOM_TERM_TYPE DS C Terminal Type flag
WCOM_DA_TOKEN DS XL4 API Token Value
WCOM_RET_RESP DS F EYU9WRAM result indicator
WCOM_ERR_APPID DS CL8 APPLID of the last selected
AOR if the WCOM_CTYPE indicator
is set to WCOM_CTYPE_ERR
WCOM_ERR_SYSID DS CL4 SYSID of the last selected
AOR if the WCOM_CTYPE indicator
is set to WCOM_CTYPE_ERR
WCOM_TRANSID DS CL8 Transaction Identifier
WCOM_USERID DS CL8 USERID
WCOM_LUNAME DS CL17 LUNAME (NETID.NETNAME) blank pad
WCOM_FILL4 DS CL3 Reserved
WCOM_API_RESP DS F API RESPONSE Code
WCOM_API_REASON DS F API REASON Code
WCOM_SCOP_CNT DS A Address of SCOP_VECTOR
WCOM_SCOP_CNT DS F Count of elements in SCOP_VECTOR
WCOM_SEL_AOR DS CL8 APPLID of SM_BALANCE AOR
WCOM_SEL_SYSID DS CL4 SYSID of SM_BALANCE AOR and the
SM_ROUTE selected target region
WCOM_AFF_STAT DS C Affinity Status
WCOM_DTRTRAN_IND DS CL1 DTRTRAN indicator
WCOM_DTRREJ_IND DS CL1 DTRTRAN Reject Indicator
WCOM_AFFAOR_STAT DS CL1 Affinity AOR status. Defined if
Affinity is active
WCOM_AFF_TYPE DS CL1 Transaction Group affinity type
WCOM_AFF_LIFE DS CL1 Transaction Group affinity life

CICS TS for OS/390: CICSPlex SM Managing Workloads
The EYURWCOM communication area fields are:

**WCOM_ACTIVITY_COMP**
- Specifies whether or not the CICS BTS activity is completing.
  - 0: The activity is not completing.
  - 1: The activity is completing.

**WCOM_ACTIVITY_ID**
- Specifies the CICS BTS activity id.

**WCOM_ACTIVITY_NAME**
- Specifies the CICS BTS activity name.

**WCOM_AFFAOR_STAT**
- Specifies the status of the affinity target region. This field contains a value only if WCOM_AFF_STAT is set to C (committed) or A (active).
  - 0: The target region is active.
  - 1: The target region is not active.
  - 2: The target region is active, but was shutdown and restarted since the affinity was created.
  - 3: The target region is active, but the link between the TOR and target region is not available.

**WCOM_AFF_AUTO**
- Specifies, as a 1-byte data-value, whether CICSPlex SM creates an affinity during SM_BALANCE.
  - 0: CICSPlex SM does not automatically create an affinity during SM_BALANCE.
  - 1: CICSPlex SM automatically creates an affinity during SM_BALANCE.
  - 2: No affinity is defined for the transaction group.

**WCOM_AFF_LIFE**
- Specifies, as a 1-byte data-value, the affinity lifetime.
  - 0: No affinity is defined.
  - 1: PCONV (pseudoconversational).
  - 2: SIGNON.
  - 3: LOGON.
  - 4: SYSTEM.

Figure 70. The EYURWCOM communication area (Part 2 of 2)
WCOM_AFF_STAT
Specifies, as a 1-byte data-value, whether an affinity relationship exists.

- **blank** (Unknown) The affinity cannot be determined at this time.
- **U** (Undefined) No affinity is defined.
- **C** (Committed) An affinity is active and will be selected by SM_BALANCE. The affinity cannot be deleted using SM_DELAFF (it has a lifetime of SYSTEM or PERMANENT).
- **D** (Defined) An affinity is defined and will become active on the next SM_BALANCE call, provided that the workload specification is defined with Create Affinity YES for the transaction group. Alternatively, you can use the SM_CREAFF function to create the affinity.
- **A** (Active) An affinity is active and can be deleted using SM_DELAFF.

WCOM_AFF_TYPE
Specifies the type of affinity. This field corresponds to the Affinity Relation field on the Create WLM Specification panel. Refer to page 81 for a detailed description of each value.

- **0** No affinity is defined for this transaction group.
- **1** GLOBAL.
- **2** USERID.
- **3** LUNAME.
- **4** BAPPL.

WCOM_API_REASON
Specifies the dynamic routing API reason code. The copybook EYURWCOD contains a list of all available reason codes.

WCOM_API_RESP
Specifies the dynamic routing API response code.

- **0** Normal response.
- **1** Invalid request. Check the reason.
- **2** Parameter error. Check the reason.
- **3** SM_ROUTE warning. Check the reason.
- **4** Reserved for SM_ROUTE error.
- **5** SM_SCOPE warning. Check the reason.
- **6** Reserved for SM_SCOPE error.
- **7** SM_BALANCE warning. Check the reason.
- **8** Reserved for SM_BALANCE error.
- **9** Disaster.
- **10** SM_CREAFF warning. Check the reason.
- **11** Reserved for SM_CREAFF error.
- **12** Reserved for SM_DELAFF warning.
- **13** Reserved for SM_DELAFF error.

WCOM_ARROW
Specifies, as a 1-byte data-value, a constant of >.

WCOM_BLANK
Specifies, as a 1-byte data-value, a blank.
WCOM BUFFL
Specifies the length of the input buffer.

WCOM CALL COUNT
Specifies the number of times EYU0WDTR has been invoked for a single transaction. This value is useful in determining when to stop trying to route a transaction or program to a specific target region.

WCOM CALLER
Specifies the Workload Manager Caller identifier, which may be one of the following:
0 CICS/ESA Relay Program
1 External Service Program
2 Scheduler Services

WCOM COMMAREA
For CICS/ESA 4.1 and later, provides the address of the transaction communication area. This field is zero for transactions routed by Scheduler Services.

WCOM COMMAREAL
For CICS/ESA 4.1 and later, provides the length of the transaction communication area. This field is zero for transactions routed by Scheduler Services.

WCOM CTYPE
Specifies, as a 1-byte data-value, the type of call, which can be:
0 Route selection.
1 Route error.
2 Route termination.
3 Route abend.
4 (Available with CICS/ESA 4.1 and later.) Route notification. Occurs when a transaction is either ATI or is defined as static.
5 Route initiate (occurs only when the caller is Scheduler Services).
6 Route complete (occurs only when the caller is Scheduler Services).

WCOM DA_TOKEN
Identifies the dynamic routing API token value.

WCOM DTRREJ IND
Specifies, for a dynamically routed transaction, whether or not the transaction should be rejected. This indicator may be set by the EYU9WRAM module.
0 The transaction should not be rejected (the default).
1 The transaction should be rejected.

WCOM DTRTRAN IND
Specifies whether or not the transaction can be dynamically routed:
0 The transaction cannot be dynamically routed.
1 The transaction can be dynamically routed.

WCOM DYRLPROG
Specifies, as an 8-byte data-value, the program name for DPL.

WCOM DYRTYPE
Specifies the type of routing request:
0 For routing a transaction from a terminal.
1 For notification that an ATI request is to be statically routed.
2 For routing a transaction initiated by an EXEC CICS START command, where there is no data associated with the START.
For routing a transaction initiated by an EXEC CICS START command, where there is data associated with the START.

For routing, notification, or termination of a program-link request. (Whenever the dynamic routing program is invoked for a program-link request, WCOM_DYRTYPE is set to ‘4’.)

For routing a CICS BTS request.

For routing a non-terminal START request.

For routing of an IIOP request.

WCOM_ERR_APPLID
Identifies the APPLID of the last selected target region when the WCOM_CTYPE indicator contains a 1 (for route error).

WCOM_ERR_ROUTE
Specifies, as a 1-byte data-value, the route selection error code.

0 The selected sysid is unknown.
1 The selected sysid is not in service.
2 The selected system is in service, but no sessions are available.
3 The allocate request has timed out.
4 A queue of allocate requests has been purged.
5 Dynamically routed START commands are not supported in the target region.
6 The EXEC CICS LINK command returned LENGERR.
7 The EXEC CICS LINK command returned PGMIDERR.
8 The EXEC CICS LINK command returned INVREQ.
9 The EXEC CICS LINK command returned NOTAUTH.
A The EXEC CICS LINK command returned TERMERR.
B The EXEC CICS LINK command returned ROLLBACK.

WCOM_ERR_SYSID
Identifies the SYSID of the last selected target region when the WCOM_CTYPE indicator contains a 1 (for route error).

WCOM_EVENT_NAME
Specifies, as an 8-byte data-value, the event name, if any, defined for the transaction group to which the transaction is associated.

WCOM_INIT_CTYPE
Specifies, as a 1-byte data-value, the initial route selection function if a route error occurs; that is, if the WCOM_CTYPE field value is 1. The value is one of the following:

0 Route selection.
4 Route notification.

WCOM_INP_BUFF
Specifies the address of the input buffer, which contains the data entered with the transaction. The data may be in lowercase or mixed case, unless UCTRAN(YES) is specified on the TYPETERM definition.

For APPC transaction routing, the first 4 bytes of the buffer contain a value that reflects the total length of all the data sent; followed by some or all of the data itself. Note that, depending on the size of the initial TIOA, the buffer may not be big enough to contain all the data.

For non-APPC transaction routing, the buffer contains TIOA terminal data.

WCOM_LUNAME
Identifies the 8-byte logical unit name, preceded by a period (.luname).

Depending on how EYU9XLOP is called, the LUname is set from:
EXEC CICS ASSIGN NETNAME, when called from the CICS relay program

WTRA_LUNAME, when called from a user-written dynamic routing program (as described in "Chapter 5. Requesting additional dynamic routing support" on page 37).

**WCOM_NAME**
Specifies, as an 8-byte data-value, a constant of EYURWCOM.

**WCOM_PFX_LEN**
Specifies the length of the prefix area.

**WCOM_PGMNAME**
Specifies, as an 8-byte data-value, the name of your program.

**WCOM_PREFIX**
Specifies the start of a 20-character prefix area.

**WCOM_PROCESS_COMP**
Specifies whether or not the CICS BTS process is completing.

0 The process is not completing.
1 The process is completing.

**WCOM_PROCESS_ID**
Specifies the BTS process id.

**WCOM_PROCESS_NAME**
Specifies the BTS process name.

**WCOM_PROCESS_TYPE**
Specifies the BTS process type.

**WCOM_REM_APPLID**
Specifies the remote application identifier.

**WCOM_REM_SYSID**
Specifies the name of the remote system to which the transaction is to be routed.

**WCOM_REM_TRANID**
Specifies the remote transaction identifier.
Depending on how EYU9XLOP is called, this transaction ID is set from:

- DYRTRAN in DFHDYPDS, when called from the CICS relay program
- WTRA_TRANID, when called from a user-written dynamic routing program (as described in "Chapter 5. Requesting additional dynamic routing support" on page 37).

For DPL, WCOM_REM_TRANID may be set by EYU9WRAM before the SM_SCOPE call. In this way, you can modify the transaction identifier under which the DPL runs in the target system.

**WCOM_RET_RESP**
Identifies the response. You can set the contents of this field to one of the following values:

0 Successful.
1 Message issued.
2 Abort.

**WCOM_SCLASS**
Specifies the task service class
WCOM_SCOP_CNT
  Specifies the number of elements in SCOP_VECT.

WCOM_SCOP_VECT
  Specifies the address of SCOP_VECT.

WCOM_SEL_AOR
  Specifies the APPLID of the target region that was returned by
  SM_BALANCE or that you set for SM_ROUTE.

WCOM_SEL_SYSID
  Specifies the SYSID of the target region that was returned by
  SM_BALANCE or that you set for SM_ROUTE.

WCOM_SLENGTH
  Specifies, as a halfword binary data-value, the length of the EYURWTRA
  communication area.

WCOM_STATUS
  Specifies, as a 1-byte data-value, the status of CICSPlex SM.
  0  CICSPlex SM services are available.
  1  CICSPlex SM services are not available.

WCOM_TASK_PRIO
  Specifies the task priority.

WCOM_TERM_TYPE
  Specifies, as a 1-byte data-value, the type of terminal that started the
  transaction occurrence.
  0  LU2.
  1  LU6.
  2  Logical unit type is unknown.
  3  Transaction has no terminal.

WCOM_TGRP_NAME
  Specifies, as an 8-byte data-value, the name of the transaction group for
  this transaction.

WCOM_TRANSID
  Specifies, as an 8-byte data-value, the local transaction identifier.
  Depending on how EYU9XLOP is called, this transaction ID is set from:
  • EIBTRNID in DFHDYPDS, when called from the CICS relay program
  • WTRA_TRANID, when called from a user-written dynamic routing
    program (as described in Chapter 5, Requesting additional dynamic
    routing support” on page 37).

WCOM_USERID
  Specifies, as an 8-byte data-value, the user identifier.

WCOM_WORK_AREA
  Specifies the address of the EYU9WRAM program work area.

WCOM_WORK_LNTH
  Specifies the length of the task work area.

WCOM_WORK_NAME
  Specifies, as an 8-byte data-value, the name of the workload specification
  for this transaction.
Note: Unless otherwise indicated, the data fields described in this chapter are read-only. Fields that are not described here are reserved for CICSPlex SM; unpredictable results may occur if these fields are changed.

The element description area, EYURWSVE, contains information about the individual target regions associated with the list of candidate target regions returned by SM_SCOPE.

The format of the SCOP_VECT element description area is shown in Figure 71.

```
EYURWSVE DSECT , Define a SCOP_VECT element
WSVE_TOKEN DS D Target region TOKEN
WSVE_APPLID DS CL8 Target region APPLID
WSVE_LOAD_CNT DS F Target region Load Count
WSVE_RTER_IND DS CL1 Route Error indicator
WSVE_FILL0 DS CL2 Reserved
WSVE_SEL_IND DS CL1 Target region Selectable Indicator
WSVE_WEIGHT DS D Target region Weight
WSVE_SYSID DS CL4 Target region SYSSID
WSVE_IGNORE DS C IGNORE Indicator
WSVE_STAT_WSVE DS C Scope Vector entry status
WSVE_AOR_STATE DS C AOR State
WSVE_FILL1 DS C Reserved
WSVE_HLTH_IND DS 0CL2 HEALTH indicators
WSVE_HLTH_SOS DS C Short on Storage indicator
WSVE_HLTH_MAXT DS C Maxtask Indicator
WSVE_HLTHSTALL DS C Stall Indicator
WSVE_HLTH_DUMP DS C DUMP Indicator
WSVE_LINK_STAT DS C Communications LINK indicator
WSVE_EVENT_SEV DS C Target region severity indicator for the event specified in the Transaction Group for which the Transaction is defined.
WSVE_RELID DS 0CL4 Target region release level
WSVE_RELID_TYPE DS CL1 Target region release type
WSVE_RELID_VERS DS CL3 Target region release version
WSVE_FILL2 DS CL2 Reserved
WSVE_FILL3 DS F Reserved
WSVE_LENGTH EQU *-EYURWSVE Length Of SCOP_VECT element
```

Figure 71. The SCOP_VECT element description area

The information provided for each target region is:

**WSVE_AOR_STATE**

Identifies the current condition of the target region.

0 The target region has been quiesced (as a result of a SET QUIESCE action on the WLMAWAOR view). The target region has no outstanding transaction affinity relationships and is not accepting any additional work.

1 The target region is active and accepting work.

2 The target region is not active.

3 The target region is quiescing (as a result of a SET QUIESCE action on the WLMAWAOR view). Only transactions that are bound by outstanding affinity relationships can be routed to this target.
region. Such transactions can be routed to the target region only until the end of the affinity lifetime.

4 The target region state is unknown.

WSVE_APLID
Specifies the APPLID of the target region. Unpredictable results may occur if you modify the contents of this field.

WSVE_EVENT_SEV
Specifies target region severity for the event specified for the transaction group to which the transaction is associated.
0 Very low severe.
1 Low severe.
2 Low warning.
3 Normal.
4 High warning.
5 High severe.
6 Very high severe.
N No event is defined for the transaction group.

WSVE_HLTH_SOS
Specifies whether the target region is short on storage.
0 The target region is not short on storage.
1 The target region is short on storage.
2 The target region state is unknown.

WSVE_HLTH_MAXT
Specifies whether the target region has reached the maximum number of tasks.
0 The target region has not reached its maxtask level.
1 The target region has reached its maxtask level.
2 The target region state is unknown.

WSVE_HLTHSTALL
Specifies whether the target region is active but not doing any application work.
0 The target region is active but not doing any application work.
1 The target region is active and is doing application work.
2 The target region state is unknown.

WSVE_HLTH_DUMP
Specifies whether the target region is currently processing a transaction or system dump.
0 The target region is processing a dump.
1 The target region is not processing a dump.
2 The target region state is unknown.

WSVE_IGNORE
Specifies whether this target region can be used by SM_BALANCE. You can set the contents of this field to one of the following values:
0 The entry is valid for SM_BALANCE.
1 The entry should be ignored for SM_BALANCE.

WSVE_LINK_STAT
Specifies the condition of the communications link between the requesting region and target region.
0 The link is active.
1 The link is not active.
2 The link is not defined.
**WSVE_STAT_WSVE**  
Identifies the scope vector entry status.  
0 The entry is valid for use.  
1 Only the APPLID field is valid.  
2 Only the SYSID field is valid.

**WSVE_SYSID**  
Specifies the SYSID of the target region. Unpredictable results may occur if you modify the contents of this field.

---

**EYURWTRA**

**Note:** Unless otherwise indicated, the data fields described in this chapter are read-only. Fields that are not described here are reserved for CICSplex SM; unpredictable results may occur if these fields are changed.

The format of EYURWTRA is shown in Figure 72 on page 188.
1. The WTRA_TRANID, WTRA_USERID, and WTRA_LUNAME fields are used by CICSPlex SM workload management to identify an appropriate transaction group and target scope list for the unit of work. The scope list identifies the set of target regions to which the unit of work can be routed. These fields (TRANID, USERID, and LUNAME) are passed to the CICSPlex SM workload management routing action module (EYU9WRAM) along with an indication that the caller is an external program. The default route action processing does not make use of the fields, but a customized version of EYU9WRAM may.

2. If the transaction group identified for the unit of work defines an affinity, the values in the WTRA_USERID, WTRA_TERMID, and WTRA_LUNAME fields are used. The WTRA_PREFIX, WTRA_TERMID, and WTRA_LUNAME fields are used by CICSPlex SM workload management to identify an appropriate transaction group and target scope list for the unit of work. The scope list identifies the set of target regions to which the unit of work can be routed. These fields (TRANID, USERID, and LUNAME) are passed to the CICSPlex SM workload management routing action module (EYU9WRAM) along with an indication that the caller is an external program. The default route action processing does not make use of the fields, but a customized version of EYU9WRAM may.

### Notes:

1. The WTRA.TRANID, WTRA.USERID, and WTRA.LUNAME fields are used by CICSPlex SM workload management to identify an appropriate transaction group and target scope list for the unit of work. The scope list identifies the set of target regions to which the unit of work can be routed. These fields (TRANID, USERID, and LUNAME) are passed to the CICSPlex SM workload management routing action module (EYU9WRAM) along with an indication that the caller is an external program. The default route action processing does not make use of the fields, but a customized version of EYU9WRAM may.

2. If the transaction group identified for the unit of work defines an affinity, the values in the WTRA_USERID, WTRA_TERMID, and WTRA_LUNAME fields are used. The WTRA_PREFIX, WTRA_TERMID, and WTRA_LUNAME fields are used by CICSPlex SM workload management to identify an appropriate transaction group and target scope list for the unit of work. The scope list identifies the set of target regions to which the unit of work can be routed. These fields (TRANID, USERID, and LUNAME) are passed to the CICSPlex SM workload management routing action module (EYU9WRAM) along with an indication that the caller is an external program. The default route action processing does not make use of the fields, but a customized version of EYU9WRAM may.

### EYURWTRA copybook

- **EYURWTRA** DSECT,   
  Workload MGR DR COMM area

- **WTRA_PREFIX** DS OCL20  WTRA prefix
- **WTRA_SLENGTH** DS AL2  Structure Length
- **WTRA_ARROW** DS C  > delimiter
- **WTRA_NAME** DS CL8  EYURWTRA
- **WTRA_BLANK** DS C  Blanks
- **WTRA_PGMNAME** DS CL8  name of calling service pgm.
- **WTRA_PFX_LEN** EQU **WTRA_PREFIX** Length of prefix
- **WTRA_FUNC** DS C  Function ID
- **WTRA_DYRTYPE** DS C  Request type
- **WTRA_DYRLPROG** DS CL8  DPL program name
- **WTRA_ERR** DS C  Error type if Route Error
- **WTRA_OPTER** DS C  Call Back Option.
- **WTRA_RESPONSE** DS F  Response
  
  * 0 = Normal
  * 8 = ABORT
- **WTRA_BUFFADDR** DS F  Address of input buffer
- **WTRA_BUFFLNTH** DS F  Length of input buffer
- **WTRA_TRANID** DS CL8  Transaction Identifier
- **WTRA_USERID** DS CL8  USERID
- **WTRA_TERMID** DS CL4  Principal Facility ID
- **WTRA_APPLID** DS CL8  APPLID of default/selected target region
- **WTRA_SYSID** DS CL4  SYSID of default/selected target region
- **WTRA_LUNAME** DS CL17  LUNAME to use
- **WTRA_NEXTTRAN** DS CL8  The Identifier of the Transaction which will be executed after the current one completes. This should be set prior to calling using the Route Termination Function.
- **WTRA_API_RESP** DS F  Last API RESPONSE to WRAM
- **WTRA_API_REAS** DS F  Last API REASON to WRAM
- **WTRA_COMMAREA** DS A  COMMAREA address (0 if none)
- **WTRA_COMMAREAL** DS F  COMMAREA length (0 if none)
- **WTRA_USERAREA** DS CL128  128 byte user area for use by routing exit.
- **WTRA_LENGTH** EQU **-EYURWTRA** Length of communication area

Figure 72. The EYURWTRA communication area

### WTRA_API_REAS

Specifies a value of zero (0).
WTRA_LUNAME fields may appear as part of an affinity key on the WLMATAFF view. For this reason, you may want to specify values that are readable on a display terminal.

OR

Specifies, as a fullword binary data-value, the last reason code returned to the EYU9WRAM routing action process. You should inspect this field when the WTRA_RESPONSE field does not contain a return code of zero (0). This field, in conjunction with the WTRA_API_RESP field, describes why the function failed.

**WTRA_API_RESP**

Specifies a value of zero (0).

OR

Specifies, as a fullword binary data-area, the last response code returned to the EYU9WRAM routing action process. You should inspect this field when the WTRA_RESPONSE field does not contain a return code of zero (0). This field, in conjunction with the WTRA_API_REAS field, describes why the function failed.

**WTRA_APPLID**

Specifies, as an 8-byte data-value, the application ID of the selected target region, provided that the WTRA_RESPONSE field contains a return code of zero (0).

**WTRA_ARROW**

Specifies, as a one-byte data-value, a constant of >. This field must be set before calling EYU9XLOP.

**WTRA_BLANK**

Specifies, as a one-byte data-value, a blank space. This field must be set before calling EYU9XLOP.

**WTRA_BUFFADDR**

Specifies, as a fullword binary data-value, the address of the buffer to be passed to the starting transaction.

**WTRA_BUFFLNTH**

Specifies, as a fullword binary data-value, the length of the buffer to be passed to the starting transaction.

**WTRA_DYRLPROG**

Specifies, as an 8-character data-value, the name of the DPL program.

**WTRA_DYRTYPE**

This field, which must be set before calling EYU9XLOP, specifies, as a 1-byte data-value, the request type:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The request type is dynamic routing.</td>
</tr>
<tr>
<td>1</td>
<td>The request type is Notify,</td>
</tr>
<tr>
<td>2</td>
<td>The request type is a dynamic START command.</td>
</tr>
<tr>
<td>3</td>
<td>The request type is a dynamic START command with data.</td>
</tr>
<tr>
<td>4</td>
<td>The request type is a dynamic program link.</td>
</tr>
<tr>
<td>5</td>
<td>The request type is CICS BTS request routing.</td>
</tr>
<tr>
<td>6</td>
<td>The request type is a non-terminal START command.</td>
</tr>
</tbody>
</table>
The request type is an IIOP request.

**WTRA_ERR**
Specifies, as a one-byte data-value, the reason for the error. This field is valid when the WTRA_FUNC field indicates a routing error (1). This field may be one of the following:

- **0**: The selected sysid is unknown.
- **1**: The selected sysid is not in service.
- **2**: The selected system is in service, but no sessions are available.
- **3**: The allocate sessions request was rejected.
- **4**: A queue of allocate requests has been purged.
- **5**: The selected system does not support this function.
- **6**: The EXEC CICS LINK command returned LENGERR.
- **7**: The EXEC CICS LINK command returned PGMIDERR.
- **8**: The EXEC CICS LINK command returned INVREQ.
- **9**: The EXEC CICS LINK command returned NOTAUTH.
- **A**: The EXEC CICS LINK command returned TERMERR.

**WTRA_FUNC**
Specifies, as a one-byte data-value, the routing function, which identifies the reason CICSPlex SM workload management is being invoked. This field may be one of the following:

- **0**: For route selection.
- **1**: When an error occurs in route selection or a previous route error.
- **2**: For route termination.
- **3**: To notify CICSPlex SM workload management that the transaction should be routed to the named APPLID.
- **4**: To notify CICSPlex SM workload management that the routed transaction abended.

**WTRA_LUNAME**
Specifies a logical unit name that CICSPlex SM workload management should use to classify the unit of work. This LUNAME might also be used to construct workload affinities.

An LUNAME usually consists of a period (.) followed by the netname of the terminal from which the transaction was initiated. Since there may be no terminal associated with the transaction that is invoking CICSPlex SM workload management (or if there is, it may not be one you want to use), you can initialize this field with any string of characters. Be careful, however, not to include a question mark (?), plus sign (+), or asterisk (*) in the string; these characters indicate a generic name, which is not supported.

**WTRA_NAME**
Specifies, as an 8-byte data-value, a constant of EYURWTRA.

**WTRA_NEXTTRAN**
Specifies, as an 8-byte data-value, the name of a transaction to be invoked after the current transaction is complete. If there is no next transaction, set the field to all blanks.

**WTRA_OPTER**
Specifies, as a one-byte data-value, the call back option, as one of the following:

- **0**: Call CICSPlex SM workload management back with a route termination function (WTRA_FUNCTRIM).
- **1**: Do not call CICSPlex SM workload management back with a route termination function.
**WTRA_PREFIX**
Specifies the start of a 20-character prefix area.

**WTRA_PFX_LEN**
Specifies the length of the prefix area.

**WTRA_PGMNAME**
Specifies, as an 8-byte data-value, the name of the program invoking EYU9XLOP.

**WTRA_RESPONSE**
Specifies, as a fullword binary data-value, the return code, as one of the following:

- **0**: Continue processing.
- **8**: Terminate processing.

**WTRA_SLENGTH**
Specifies, as a halfword binary data-value, the length of the EYURWTRA communication area. This field must be set before calling EYU9XLOP.

**WTRA_SYSID**
Specifies the system ID of the CICS system that will serve as the default target region.

OR

Specifies, as a 1-byte data-value, the system ID of the selected target region, provided that the WTRA_RESPONSE field contains a return code of zero (0).

**WTRA_TERMID**
Specifies a terminal ID that can be used to construct workload affinities. This terminal ID need not be defined to CICS.

This field usually contains the CICS facility ID. Since this may not be appropriate for your use, you should initialize the field to your own value.

**WTRA_TRANID**
Specifies, as a 4-byte data-ref, a transaction ID that CICSPlex SM workload management should use to classify the unit of work. This transaction ID need not be defined to CICS.

**WTRA_USERID**
Specifies a user ID that CICSPlex SM workload management should use to classify the unit of work. This user ID might also be used to construct workload affinities. It need not be defined to CICS.

For a list of the possible response and reason code values that can be returned in WTRA_API_RESP and WTRA_API_REAS, refer to the assembler copy book member EYURWCOD.
Appendix B. Sample programs

This chapter contains sample programs.

Sample calling sequence

Figure 73 illustrates a sample calling sequence for a program that will access CICSPlex SM workload management facilities. It is not intended to be used as a sample program and is, therefore, not complete in every detail.

*---------------------------------------------------------------------*
DFHEISTG , Define Workarea
WRK_WTRA DS CL(WTRA_LENGTH)
WRK_UOWCOMM DS 0C
WRK_UOW_RESP DS F
WRK_UOWCOMM_L EQU *-WRK_UOWCOMM
COPY EYURWTRA Include DSECT to map WTRA
SRVPGM DFHEI EIBREG=R11,DATAREG=R13,CODERE G=R12

*---------------------------------------------------------------------*
* Initialize the WTRA COMMAREA. *
*---------------------------------------------------------------------*
LA R8,WRK_WTRA --> WTRA
USING EYURWTRA,R8 *** USING WTRA ***
MVC WTRA_LENGTH,=AL2(WTRA_LENGTH) Set length of block.
MVI WTRA_ARROW,C'>' Set arrow.
MVC WTRA_NAME,=C'EYURWTRA' Set the name.
MVI WTRA_BLANK,C' ' Set blank delimit.
MVC WTRA_PGMNAME,=CL8'SRVPGM' Set program name.
MVC WTRA_TERMID,=CL4'TRM1' Set TermID.
MVC WTRA_USERID,=CL8'USR1' Set USERID.
MVC WTRA_LUNAME(8),=CL8'.NET1' Set LUNAME.
MVC WTRA_TRANID,=CL8'TRN1' Set TRANID.
MVC WTRA_SYSID,=C'SYS1' Set SYSID.
MVC WTRA_APPLID,=C'APPLID1' Set Applid.
MVI WTRA_FUNC,WTRA_FU NCSEL Set the Route Select Function.
MVI WTRA_DYRTYPE,WTRA_DYRTYPE_DYN

*---------------------------------------------------------------------*
* Invoke the WLM MAS Agent for Route Select. *
*---------------------------------------------------------------------*
ROUTE_SELECT DS 0H
   BAS R5,LINK_WLM Go do it.
   CLC WTRA_RESPONSE,=F'0' Call go OK?
   BNE CHECK_OPTER ..no.
   BAS R5,START_UOW Go Start the UOW.
   LTR R15,R15 Work Completed?
   BZ ROUTE_TERM ..yes.
   BP ROUTE_ABND UOW gave non zero return code.
   C R15,=F'-4' SYSID error?
   BNE ROUTE_ABND ..no.

Figure 73. A sample calling sequence for CICSPlex SM workload management facilities (Part 1 of 3)
* Invoke the WLM MAS Agent for Route Error. *

ROUTE_ERROR DS 0H
MVI WTRA_FUNC,WTRA_FUNCERR Set the Termination Function.
MVI WTRA_ERR,WTRA_ERROUT Say out of service.
B ROUTE_SELECT Go Get another system.

* Invoke the WLM MAS Agent for Route Abend. *

ROUTE_ABND DS 0H
MVI WTRA_FUNC,WTRA_FUNCABD Set the Abend function.
BAS R5, LINK_WLM Go terminate.
CLC WTRA_RESPONSE,=F'0' OK?
BE EXIT_ABD ..yes.

CHECK_OPTER DS 0H
CLI WTRA_OPTER,WTRA_CALLYES Call WLM for Term?
BNE WLM_CALLERR ..no.

* Invoke the WLM MAS Agent for Route Termination *

ROUTE_TERM DS 0H
MVI WTRA_FUNC,WTRA_FUNCTRM Set the Termination Function.
MVC WTRA_NEXTTRAN,'CL8'TRN2' Set the next TRANID.
BAS R5, LINK_WLM Go terminate.
CLC WTRA_RESPONSE,=F'0' OK?
BE EXIT_TERMOK ..yes..

* The WLM MAS AGENT returned an 8 in WTRA_RESPONSE *

WLM_CALLERR DS 0H

* Process completed successfully *

EXIT_TERMOK DS 0H

* Route Abend Call returned a 0 *

EXIT_ABD DS 0H
EXIT DS 0H
EXEC CICS RETURN

* LINK_WLM : Link to the WLM MAS AGENT *

LINK_WLM DS 0H
EXEC CICS LINK PROGRAM(EYU9XLOP) X
COMAREA(EYURWTRA) LENGTH(=AL2(WTRA_LENGTH)) X
BR R5 Exit routine.

Figure 73. A sample calling sequence for CICSPlex SM workload management facilities (Part 2 of 3)
Sample user-replacement modules

The sample user-replacement module procedures are:

Assembler language

```assembly
*---------------------------------------------------------------------*
* START_UOW : Start the Unit Work.                                 *
*---------------------------------------------------------------------*
START_UOW DS OH
   EXEC CICS LINK PROGRAM(UOWPGM) X
   COMMAREA(WRK_UOWCOMM) LENGTH(AL2(WRK_UOWCOMM_L)) X
   SYSID(WTRA_SYSID) X
   RESP(WRK_EIBRESP) X
   CLC WRK_EIBRESP,DFHRESP(NORMAL) X
   BE START_UOWL ..yes.
   L R15,F'-4' Assume SYSIDERR
   CLC WRK_EIBRESP,DFHRESP(SYSIDERR) X
   Did call go ok?
   BE START_UOWX ..yes.
   L R15,F'-8' Load Failure code.
   B START_UOWX Go exit.
START_UOWL DS OH
   L R15,WORK_UOW_RESP Load Response Code.
START_UOWX DS OH
   BR R5 Exit routine.
```

Figure 73. A sample calling sequence for CICSPlex SM workload management facilities (Part 3 of 3)

Sample JCL for replacement module for Assembler language

```assembly
//APPLPROG EXEC EYUEITAL,
//     OUTC=*,
//     CPSMHLOQ='CPSM210',
//     CICSMLQ='CICS610',
//     LMODDSN='user.load.library',
//     TRNPARM=('NOPROLOG,NOEPILOG'),
//     LNKPARM=('RENT,REUS,AMODE=31,RMODE=ANY,XREF,MAP,LIST')
//TRN.SYSIN DD DISP=SHR,DSN=user.source.library(EYU9WRAM)
//LKED.SYSIN DD *
   INCLUDE SYSLIB(EYU9WAPI)
   NAME EYU9WRAM(R)
/*
```

Figure 74. Sample JCL for replacement module for Assembler language
**C/370 language**

```plaintext
//APPLPROG EXEC EYUEITDL,
// OUTC=*,
// CPSMLQ='CPDM210',
// CICSHLQ='CICS610',
// EDCHLQ='SYSI',
// COMHLQ='SYSI',
// LMODDSN='user.load.library',
// CPARM= ('RENT,REUS,AMODE=31,AMODE=ANY,XREF,MAP,LIST'),
// LNKPARM=('RENT,REUS,AMODE=31,AMODE=ANY,XREF,MAP,LIST'),
// TRN.SYSIN DD DISP=SHR,DSN=user.source.library(EYU9WRAM)
//LKED.SYSIN DD *
// INCLUDE SYSLIB(EYU9WAPI)
NAME EYU9WRAM(R)
/*
```

*Figure 75. Sample JCL for replacement module for C/370 language*

**Note:** When the C/370 EYU9WRAM sample is compiled using Version 1.0 of the IBM C/370 compiler, EDC044 warning message will occur because the compiler truncates some of the field names.

**PLI language**

```plaintext
//APPLPROG EXEC EYUEITPL,
// OUTC=*,
// CPSMLQ='CPDM210',
// CICSHLQ='CICS610',
// PLIHQLQ='SYSL.IBMSYS.SYS',
// LMODDSN='user.load.library',
// PLIPARM= ('OBJECT,NODECK,INCLUDE,SYNTAX,LIST,MAP',
// 'STORAGE,OFFSET,XREF',
// 'LANGLEVEL(OS,SPROG),SYSTEM(CICS)'),
// LNKPARM=('RENT,REUS,AMODE=31,AMODE=ANY,XREF,MAP,LIST'),
// TRN.SYSIN DD DISP=SHR,DSN=user.source.library(EYU9WRAM)
//LKED.SYSIN DD *
// INCLUDE SYSLIB(EYU9WAPI)
NAME EYU9WRAM(R)
/*
```

*Figure 76. Sample JCL for replacement module for PLI language*

**COBOL II language**

```plaintext
//APPLPROG EXEC EYUEITVL,
// OUTC=*,
// CPSMLQ='CPDM210',
// CICSHLQ='CICS610',
// LMODDSN='user.load.library',
// COBPARM= ('LIB,OBJECT,RENT,RES',
// 'APOST,MAP,XREF,TRUNC(BIN)'),
// LNKPARM=('RENT,REUS,AMODE=31,AMODE=ANY,XREF,MAP,LIST'),
// TRN.SYSIN DD DISP=SHR,DSN=user.SOURCE.library(EYU9WRAM)
//LKED.SYSIN DD *
// INCLUDE SYSLIB(EYU9WAPI)
NAME EYU9WRAM(R)
/*
```

*Figure 77. Sample JCL for replacement module for COBOL language*
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- CICSPlex SM Commands Reference Summar
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- CICSPlex SM Administration
- CICSPlex SM Operations Views Reference
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- CICSPlex SM Managing Workloads
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- CICSPlex SM Application Programming Guide
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- CICS 4.1 Sample Applications Guide
- CICS/ESA 3.3 XRF Guide

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