CICS Transaction Server for z/OS

IBM

CICSPlex SM Managing Workloads

Version 3 Release 1

CICS Transaction Server for z/OS

IBM

CICSPlex SM Managing Workloads

Version 3 Release 1

This edition applies to Version 3 Release 1 of CICS Transaction Server for z/OS, program number 5655-M15, 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 the product.

Contents

Preface

This book provides administration information forCICSPlex® System Manager for 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 SM User Interface Guide
> For information about using the ISPF user interface to CICSPlex SM.

CICSPlex SM 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 SM 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 3 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:

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

CICS   The CICS element of CICS TS for z/OS

EUI   The MVS/TSO ISPF end user interface component of CICSPlex SM.

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.

WUI   The Web User Interface component of CICSPlex SM.

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 SM 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 can be used to control CICS systems that are directly connected to it.

For this release of CICSPlex SM, the connectable CICS systems are:
- CICS Transaction Server for z/OS 3.1
- CICS Transaction Server for z/OS 2.3
- CICS Transaction Server for z/OS 2.2
- CICS Transaction Server for OS/390® 1.3

You can use this release of CICSPlex SM to control systems running supported releases of CICS 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 from CICS TS Version 2.3* for information on how to do this.

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

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

CICS system	CICSPlex SM component of CICS TS 3.1	CICSPlex SM component of CICS TS 2.3	CICSPlex SM component of CICS TS 2.2	CICSPlex SM component of CICS TS 1.3
CICS TS 3.1	Yes	No	No	No
CICS TS 2.3	Yes	Yes	No	No
CICS TS 2.2	Yes	Yes	Yes	No
CICS TS 1.3	Yes	Yes	Yes	Yes
TXSeries 4.3.0.4	No	Yes	Yes	No
TXSeries 5.0	No	Yes	Yes	No

Summary of changes

This book is based on the CICSPlex SM for CICS Transaction Server for z/OS, Version 2 Release 3 edition. It has been updated to incorporate changes made for CICS Transaction Server for z/OS, Version 3 Release 1.

Changes made since the last edition are indicated by vertical bars to the left of the change.

Changes made to this book for CICS Transaction Server for z/OS, Version 3 Release 1

CICSPlex SM support for the CICS for Windows component of IBM TXSeries (also known as Windows NT 4.3 and Windows NT 5.0) is no longer provided in CICS Transaction Server for z/OS, Version 3 Release 1. Therefore, it is not now possible to set up a CICSPlex SM remote MAS agent for Windows.

However, you can continue to use the CICS Transaction Server Version 2.3 or Version 2.2 for CICSPlex SM support of TXSeries.

Changes for CICS Transaction Server for z/OS, Version 2 Release 3

CICS Transaction Server for z/OS, Version 2 Release 3 introduces CICSPlex SM support for the Link3270 bridge. This support is covered in the following topics:

- Figure 10 on page 53 describes the management of Link3270 bridge workloads.
- "Separating Link3270 bridge workloads" on page 15 covers separation of Link3270 bridge workloads by luname.

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

There has been a change in CICSPlex SM field naming conventions in this release. Data set name fields such as DSNAME, file name fields such as LOCFILE and REMFILE, and transient data queue name fields such as EXTRATDQ and INTRATDQ are now case-sensitive. When entering data set and file names into the CICSPlex SM interfaces (EUI, API and WUI), ensure that you enter the data in the correct case. In previous releases of CICSPlex SM, the data set names and file names are automatically converted to upper case.

There are no other significant changes to this book for CICS Transaction Server for z/OS, Version 2 Release 2.

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

The support for the workload mangement 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 enterprise beans by transaction" on page 14 covers workload separation of enterprise beans.
- "Enterprise bean considerations" on page 17 for transaction affinities.

- "Enterprise bean considerations" on page 32 when customizing the dynamic routing program.
- "Balancing an enterprise bean workload" on page 144 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 CICSplex 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, CICSPlex 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 *CICSPlex SM Managing Business Applications* and *CICSPlex SM Managing Business Applications*.

Operations implications
For routable START requests, the new Routing Status field in the LOCTRAND view indicates whether or not the current transaction may be dynamically routed. For details see *CICSPlex SM Operations Views Reference*. For dynamic DPL requests, the new Dynam Status field in the PROGRAMD view indicates whether or not the current program may be dynamically routed. For details see *CICSPlex SM Operations Views Reference* 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 *CICSPlex SM 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 CICSplex 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 CICSplex 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 CICSplex-enabled, and take full advantage of CICSPlex SM's workload separation and workload balancing functions. The CICS system group within a CICSplex, 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 CICSPlex 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
    - Link3270 requests
- 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 specifed 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, for CICS BTS activities, and for Link3270 bridge requests, 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 CICS BTS activities, and for Link3270 bridge requests, 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, processtype, 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.

  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 16.

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 "Using real-time analysis to select a target region for workload balancing" on page 131 for details.

2. For additional information about how CICSPlex SM handles dynamic routing and how you can customize this facility, see Chapter 4, "Dynamic routing with CICSPlex SM," on page 27.

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 CICSplex, or, for BTS processes and activities, part of the same BTS-set. They do not need to reside in the same MVS 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 CICSPlex 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 CICSplex.. It must use CICSPlex SM facilities to communicate with that CMAS. For additional information, see *CICS Transaction Server for z/OS Installation Guide*.
- For Link3270 bridge requests the target regions must be at CICS Transaction Server for z/OS, Version 2 Release 2 or later.

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.

workload requirements

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 *CICSPlex 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 CICSplex 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 CICSplex. 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 80.

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.

balancing the work in a workload
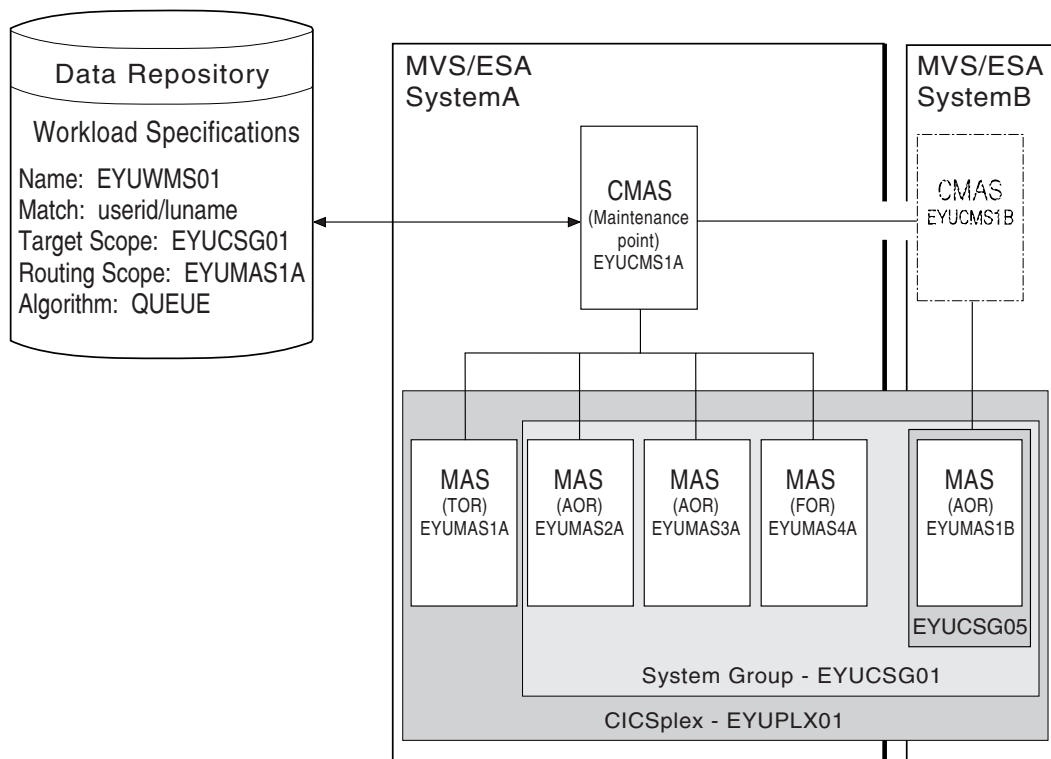
Figure 1. Sample workload balancing definition for dynamic routing

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.
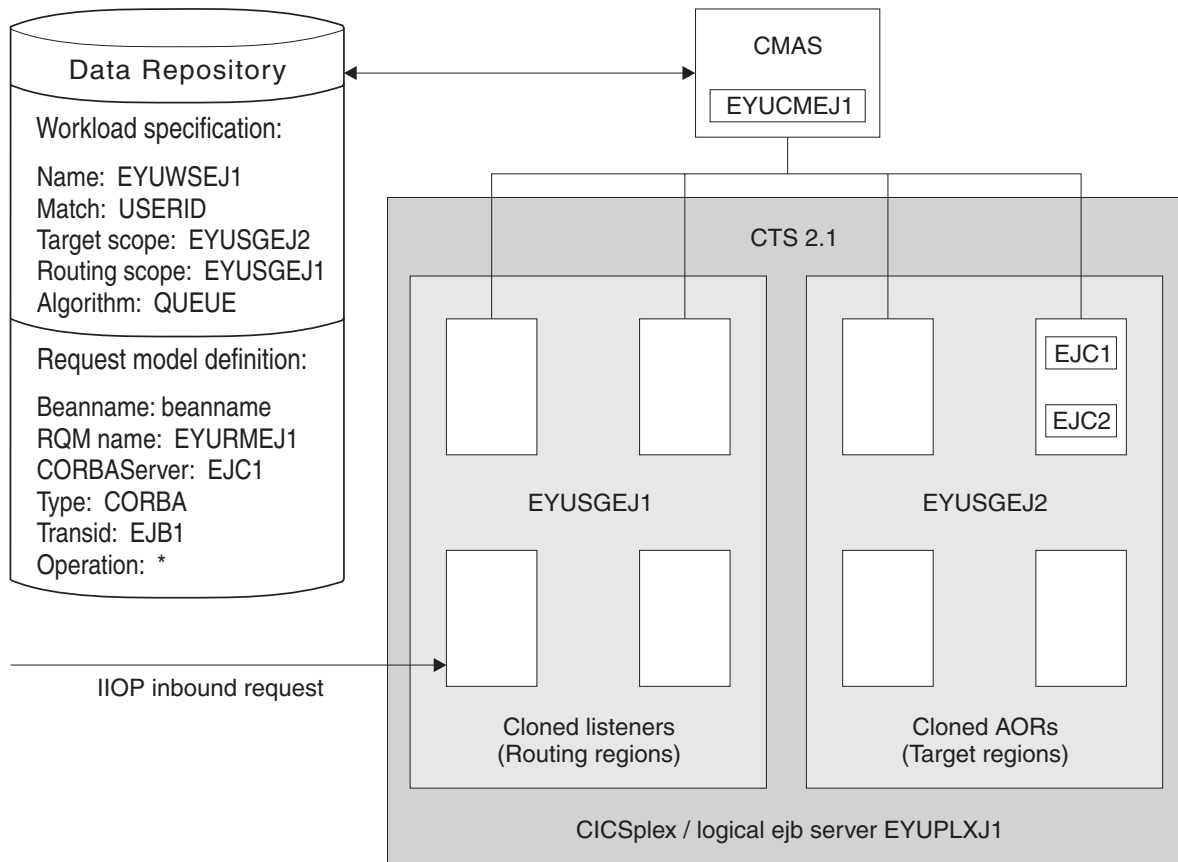
Figure 2. Sample workload balancing definition for dynamic routing of enterprise beans

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 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, LU name, 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 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 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 itself.
- 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 LU name 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.
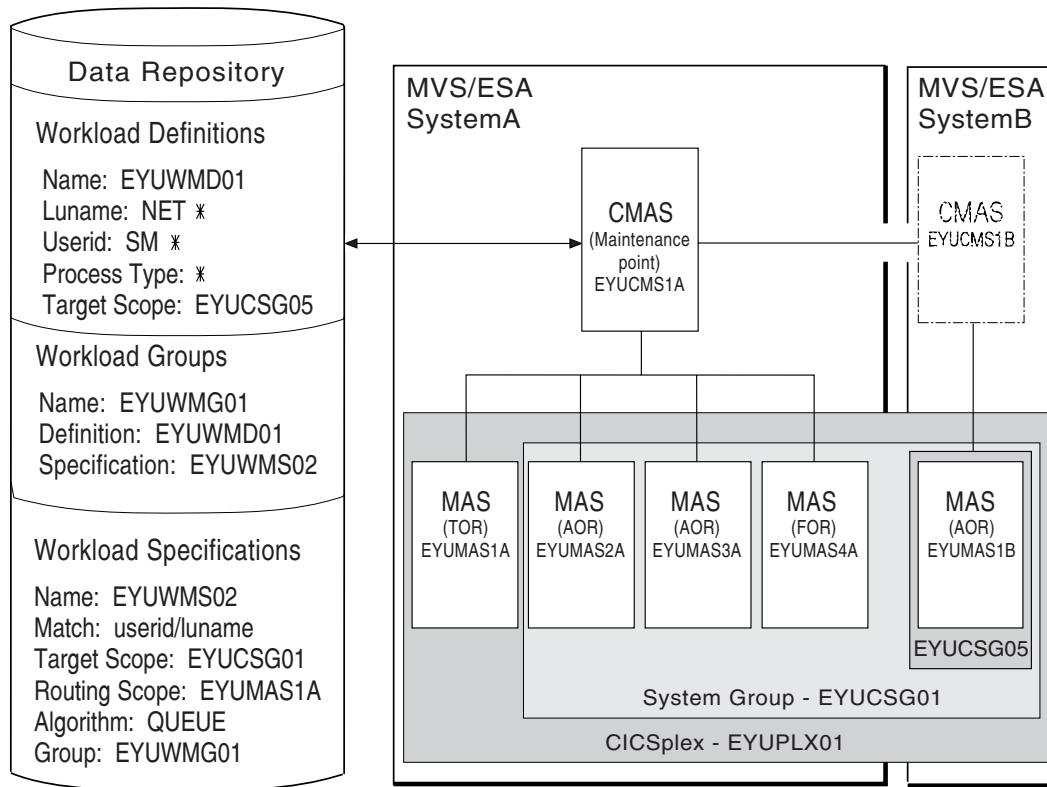
Figure 3. Sample definition separating a workload by terminal and user name

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.

separating the work in a workload
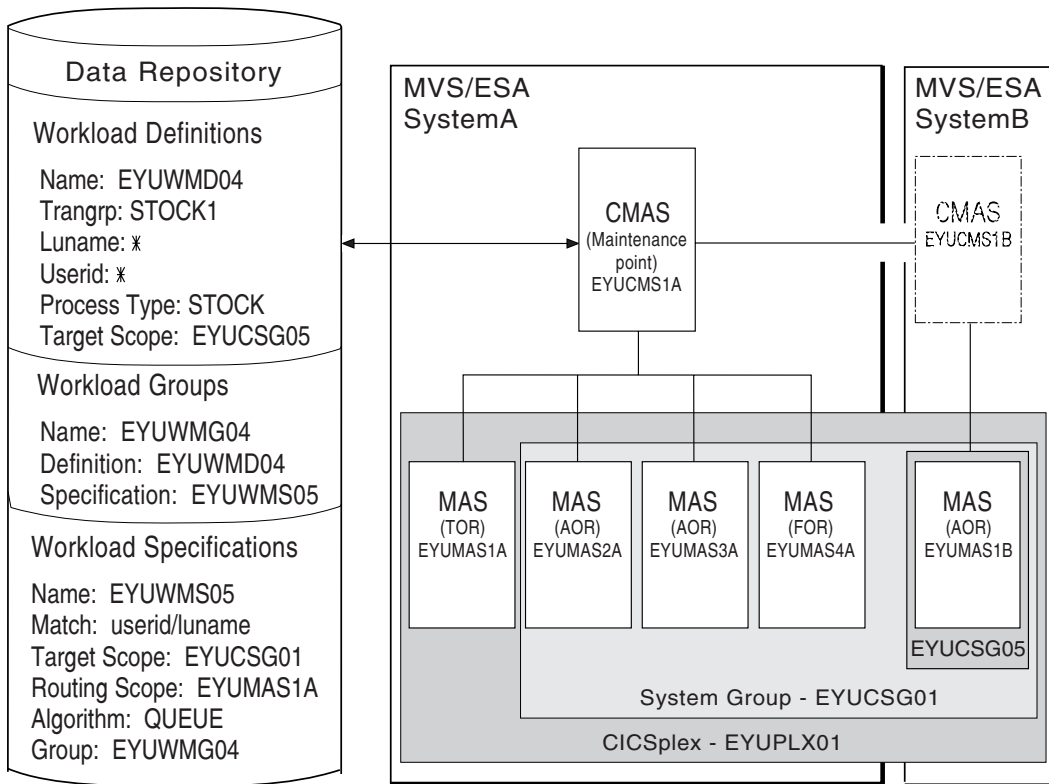
Figure 4. Sample definition separating a workload by process type

workload group

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 LU name and user ID, 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 LU name and user ID.

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 LU name and user ID. 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, LU name and user ID, 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 LU name and user ID. Thus, if a transaction's associated process type, LU name and user ID mean that it satisfies the selection criteria specified in two workload definitions, one specifying separation by process type and the other separation by LU name and user ID, 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 54.)

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.
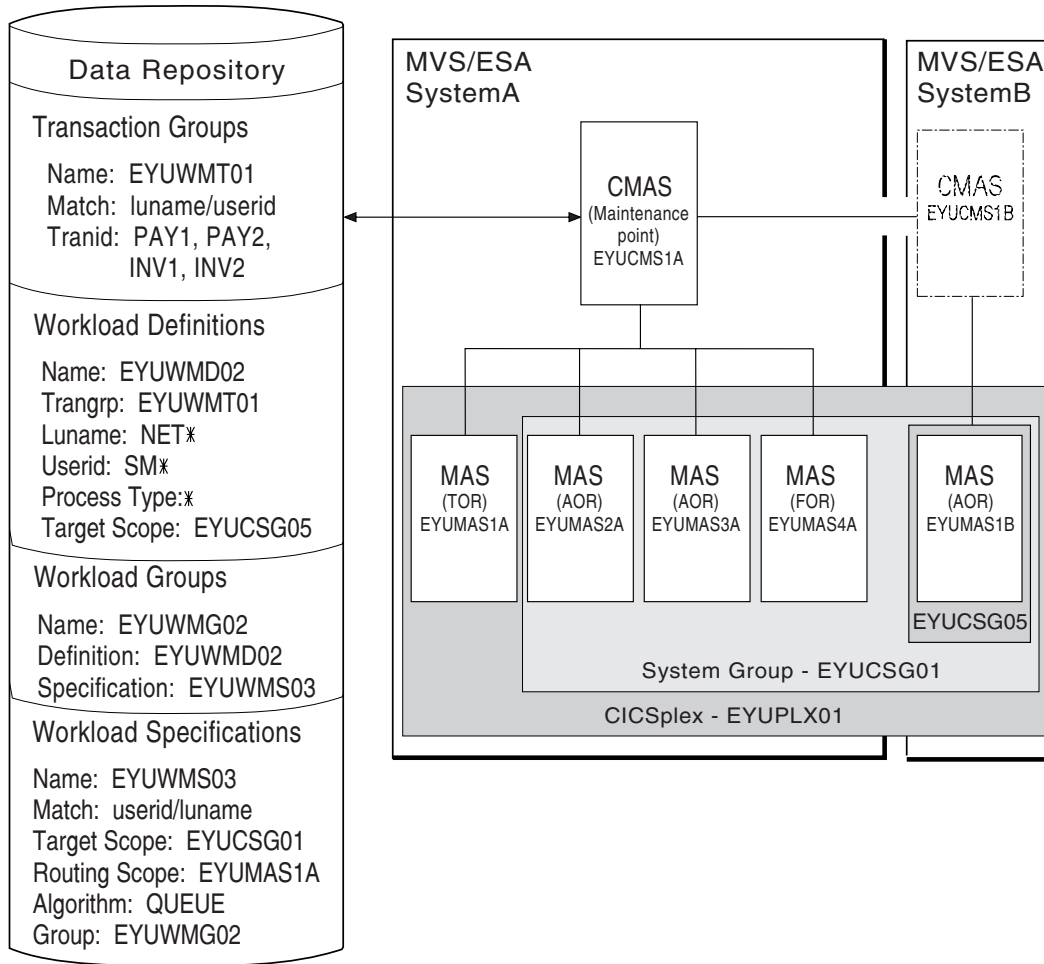
Figure 5. Sample definition separating a workload by transaction

Separating enterprise beans by transaction

The method for workload separation of enterprise beans is the same as that described in "Separating by transaction" on page 13. 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 EYUTGEJ1. 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.
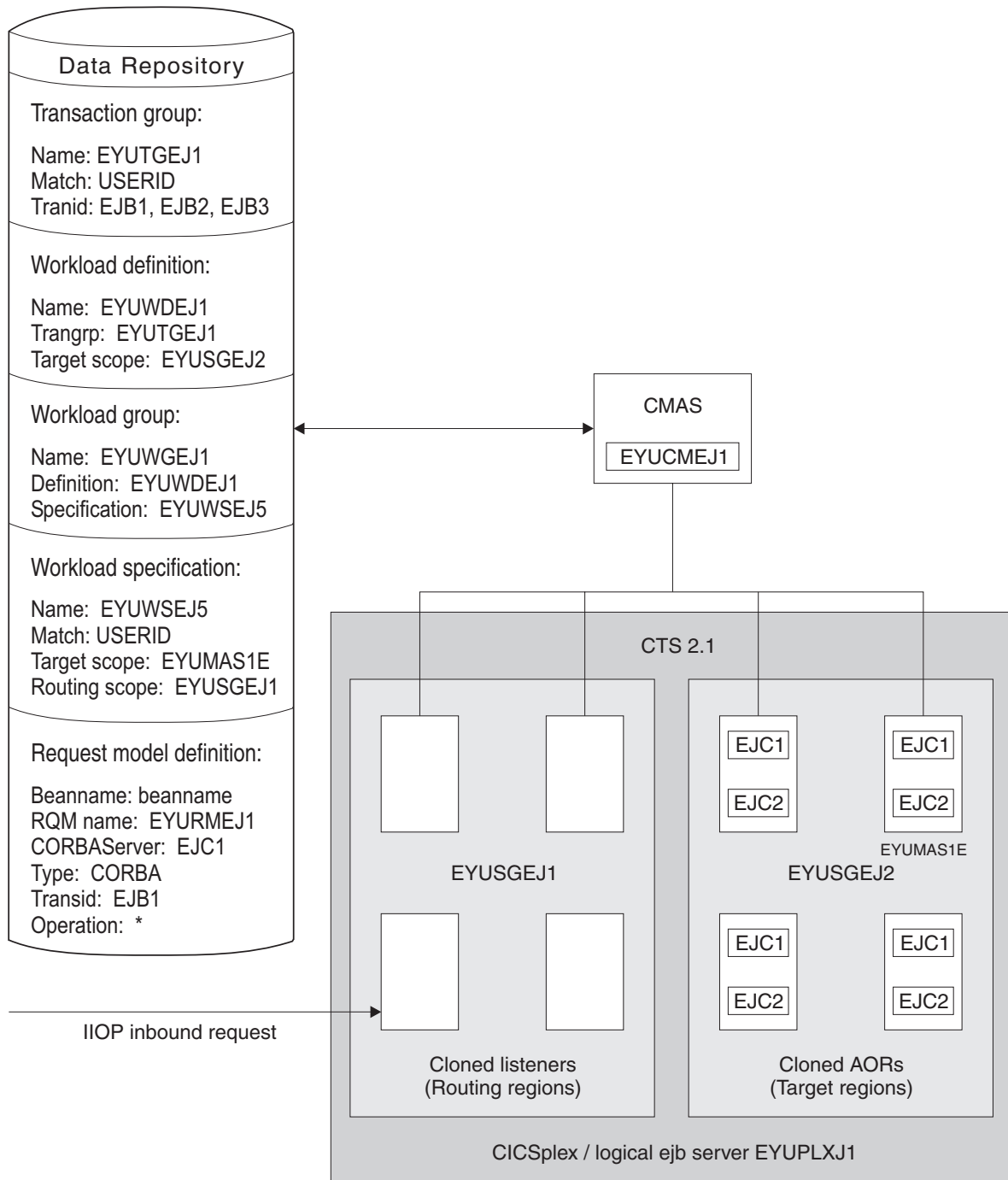
Figure 6. Sample workload separation definition for dynamic routing of enterprise beans

Separating Link3270 bridge workloads

Link3270 bridge workloads can be separated by user ID, LU name, and transaction group. For Link3270 bridge workloads theLU name can be produced in three different ways:

separating the work in a workload

1. It can be supplied by the user in the BRIH-NETNAME parameter on the Link3270 call.
2. It can be generated randomly by the Link3270 bridge facility.
3. The CICS autoinstall user replaceable program can be used in conjunction with either of the other two methods to accept, reject or modify the supplied or generated NETNAME.

You can separate Link3270 bridge workloads by LU name only if you are using methods 1 or 3 of those listed, so that the LU name is known in advance. If you are using the method 2, the LU name is not known in advance and cannot be used for workload separation.

To separate by the bridge facility NETNAME and not the name associated with the client program that started the Link3270 bridge you must modify the EYU9WRAM module. You can use the CICS API commands:

- EXEC CICS ASSIGN USERID()
- EXEC CICS ASSIGN BRFACILITY NETNAME()

to assign the user ID and LU name. You can use the NETNAME returned from the INQUIRE BRFACILITY() command rather than the NETNAME passed via the DFHDYPDS commarea parameter DYRNETNM to separate the workload.

For more information about Link3270 bridge facility definitions see the *CICS External Interfaces Guide*.

Taking affinity relations into consideration

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 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 "Valid affinity relation and lifetime combinations and their meanings" on page 60.

When multiple CMASs in the CICSplex manage affinities for the workload, and one
of these CMASs is brought down and the local MASs stay up, the workload
becomes frozen. When the workload is frozen, it cannot be changed, however the
current workload remains active.

When a CMAS is down, and you have any of the following affinity life times and
affinity relationships, a new affinity instance cannot be created, and the transaction
cannot be routed to the target MAS associated to the to the affinity, because the
local TORs cannot be informed of the workload changes while the workload is
frozen.

Table 2.

Affinity relation	Affinity Lifetime
USERID	• SYSTEM • PERMANENT
LUNAME	• SYSTEM • PERMANENT

Table 2. (continued)

Affinity relation	Affinity Lifetime
GLOBAL	• SYSTEM • PERMANENT
BAPPL	• SYSTEM • PERMANENT • ACTIVITY • PROCESS

\#   When the CMAS is brought back up and reconnects to the MASs, the workload is
\#   un-frozen and is able to be changed.

| You can use the IBM CICS Interdependency Analyzer for z/OS 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 Interdependency Analyzer for z/OS User's Guide and Reference*.

> **Note:** You cannot use the IBM CICS Interdependency Analyzer for z/OS 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.

Link3270 bridge considerations

For Link3270 bridge transactions, affinities are managed by CICS and not by CICSPlex SM. Transaction affinity relation and lifetime fields in the workload management views should be left blank.

Adding affinities into a workload

Figure 7 on page 19 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.

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.

Data Repository

Transaction Groups

   Name: EYUWMT01
   Match: luname/userid
   Affinity: USERID
   Lifetime: SIGNON
   Tranid: PAY1, PAY2,
            INV1, INV2

Workload Definitions

   Name: EYUWMD03
   Trangrp: EYUWMT01
   Luname: NET ✳
   Userid: SM ✳
   Process Type: ✳
   Target Scope: EYUCSG05
   Group: EYUWMG03

Workload Groups

   Name: EYUWMG03
   Definition: EYUWMD03
   Specification: EYUWMS04

Workload Specifications

   Name: EYUWMS04
   Match: userid/luname
   Affinity: USERID
   Lifetime: SYSTEM
   Target Scope: EYUCSG01
   Routing Scope: EYUMAS1A
   Algorithm: QUEUE
   Group: EYUWMG03

MVS/ESA SystemA — CMAS (Maintenance point) EYUCMS1A

MVS/ESA SystemB — CMAS EYUCMS1B

MAS (TOR) EYUMAS1A
MAS (AOR) EYUMAS2A
MAS (AOR) EYUMAS3A
MAS (FOR) EYUMAS4A
MAS (AOR) EYUMAS1B — EYUCSG05

System Group - EYUCSG01

CICSplex - EYUPLX01

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:

- 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.

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. If a transaction abends in a target region with EXEC CICS HANDLE ABEND in force, CICSPlex SM does not receive the information that the abend has occurred. Therefore, CICSPlex SM cannot take such abends into account when calculating the probability that a transaction will abend in that target region. In other words, the abend probability might stay low in this situation, even though abends had occurred.

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 85.
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 setting the CICS system initialization table DTRPGM (SIT) parameter in the requesting region which initiates the request and in any target region which is also to act as a routing region:

   ```
   DTRPGM=EYU9XLOP
   ```

   For non-terminal-related EXEC CICS START commands and BTS activities and also for all regions within a logical server, set the DSRTPGM SIT parameter in the region which initiates the request and in all potential target regions:

   ```
   DSRTPGM=EYU9XLOP
   ```

   If the CICS system is active, you can use the CICSRGND view, described in *CICSPlex SM 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, "Dynamic routing with CICSPlex SM," on page 27.

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.

activating workload management

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 CICSplex using that workload know about the definition, you can use the WLMAWDEF view, as described in Table 5 on page 51.)

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 CICSplex 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 CICSPlex 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 "Discarding an active transaction from a workload" on page 130.

Part 2. Implementing dynamic routing

Chapter 4. Dynamic routing with CICSPlex SM

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, set the DTRPGM SIT parameter associated with the requesting region initiating the transaction:

      DTRPGM=EYU9XLOP

  Any target region which is also to act as a routing region must also specify DTRPGM in the SIT and must be set up as a routing region as described in "Adding a scope to a workload specification" on page 85.

- For non-terminal-related EXEC CICS START commands, BTS activities, or enterprise beans, set the DSRTPGM SIT parameter in the requesting region that initiates the request, and in all potential target regions that are also set up as a routing region:

      DSRTPGM=EYU9XLOP

Note: If the target region is not going to be set up as a routing region, then EYU9XLOP should not be specified in the DTRPGM and DSTRPGM SIT parameters, because this will cause routed transactions to hang in EYU9XLOP waiting for the workload which will never come.

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 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 viii)

    Target regions
    Any release of CICS (but see "CICS system connectivity" on page viii)
- 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 viii)
- For enterprise beans:

    Routing regions
    CICS Transaction Server for z/OS, Version 2 Release 1 or later

    Target regions
    CICS Transaction Server for z/OS, Version 2 Release 1 or later
- For Link3270 bridge:

Routing regions
CICS Transaction Server for z/OS, Version 2 Release 3 or later

Target regions
CICS Transaction Server for z/OS, Version 2 Release 2 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, COBOL 2, and PL/I are distributed with CICSPlex SM. Copy books are located in language-specific libraries. All samples programs are located in the SEYUSAMP library. The names of the sample programs and copy books, and the CICSPlex SM libraries in which they can be found are listed in Table 3.

Table 3. Sample programs and copy books

Language	Member name	Alias	Library
Assembler:			
Program	EYUAWRAM	EYU9WRAM	SEYUSAMP
Copybook 1	EYUAWCOM	EYURWCOM	SEYUMAC
Copybook 2	EYUAWCOD	EYURWCOD	SEYUMAC
Copybook 3	EYUAWSVE	EYURWSVE	SEYUMAC
Copybook 4	EYUAWSVD	EYURWSVD	SEYUMAC
COBOL:			
Program	EYULWRAM	EYU9WRAM	SEYUSAMP
Copybook 1	EYULWCOM	EYURWCOM	SEYUCOB
Copybook 2	EYULWCOD	EYURWCOD	SEYUCOB
Copybook 3	EYULWSVE	EYURWSVE	SEYUCOB
Copybook 4	EYULWSVD	EYURWSVD	SEYUCOB
PL/I:			
Program	EYUPWRAM	EYU9WRAM	SEYUSAMP
Copybook 1	EYUPWCOM	EYURWCOM	SEYUPL1
Copybook 2	EYUPWCOD	EYURWCOD	SEYUPL1
Copybook 3	EYUPWSVE	EYURWSVE	SEYUPL1
Copybook 4	EYUPWSVD	EYURWSVD	SEYUPL1
C:			
Program	EYUCWRAM	EYU9WRAM	SEYUSAMP
Copybook 1	EYUCWCOM	EYURWCOM	SEYUC370
Copybook 2	EYUCWCOD	EYURWCOD	SEYUC370
Copybook 3	EYUCWSVE	EYURWSVE	SEYUC370
Copybook 4	EYUCWSVD	EYURWSVD	SEYUC370

Modifying dynamic routing

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

modifying dynamic routing

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.

> **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, 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:

- 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 comand, 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." 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 32. 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 31. 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." 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
  - Transaction termination
  - Transaction abend

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

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 167, 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.
- Issuing SM_SCOPE or SM_BALANCE or SM_ROUTE 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" on page 36 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 an 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" on page 36 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 EYURWCOM 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.

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 an 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 159.

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 3 on page 29.

The format of EYURWCOM is shown in Figure 53 on page 160.

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 54 on page 168.

Creating a user-replacement module for EYU9WRAM

You can use the sample procedures provided in CICSTS31.CPSM.SEYUPROC to create replacement modules for EYU9WRAM. The procedure members are:

Assembler	EYUEITAL
C/370™	EYUEITDL
PL/I	EYUEITPL
COBOL II	EYUEITVL

Samples may be found in "Sample user-replacement modules" on page 177. 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 do not need the information in this chapter. You should use the distributed routing facilities described inChapter 4, "Dynamic routing with CICSPlex SM," on page 27.

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, "Dynamic routing with CICSPlex SM," on page 27.

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:

Language	Member name	Library
Assembler	EYUAWTRA	SEYUMAC
COBOL	EYULWTRA	SEYUCOB
PL/1	EYUPWTRA	SEYUPL1
C	EYUCWTRA	SEYUC370

Prior to invoking CICSPlex SM workload management, you must initialize the EYURWTRA communication area. The format of EYURWTRA is shown in Figure 55 on page 170.

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.

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 16. For details on specifying affinity relation and lifetime values, see "Creating a transaction group" on page 56.

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 comands, 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 20. For details on requesting abend compensation, see "Creating a WLMSPEC specification" on page 81.

MVS workload management considerations

If the MVS 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 WLMSPEC 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 56 on page 175 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 using the Web User Interface (WUI) or end user interface (EUI) to define a variety of workload management attributes. Figure 8 on page 48 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 5 on page 51 to display information about and manage active workloads. In the EUI you can also display a visual map of your workload management definitions by using the MAP action command, as described in *CICSPlex SM Administration*.

Figure 9 on page 49 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
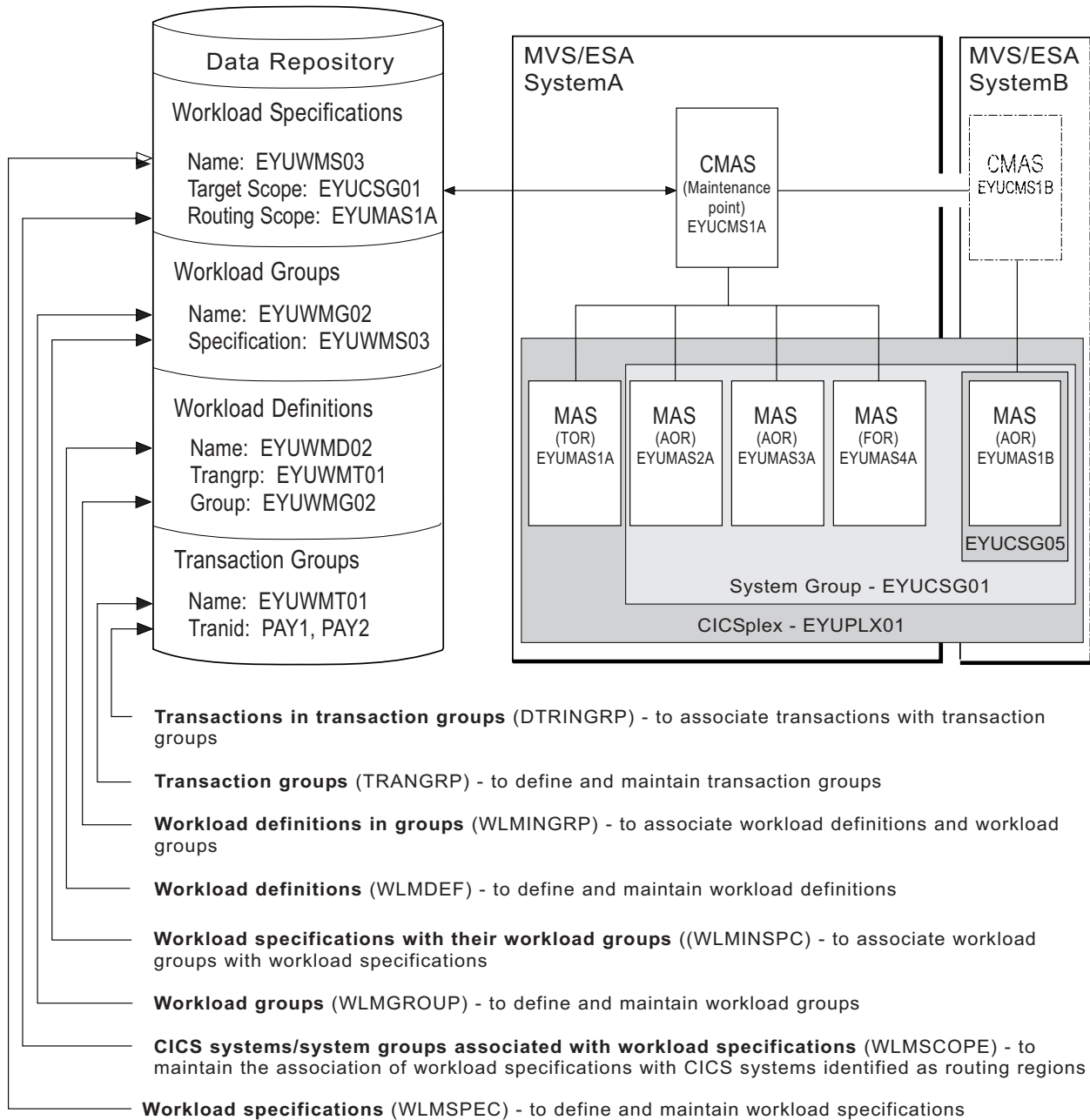
Figure 9. The relationship between a workload and the workload management views

Table 4 on page 50 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. To access these views in the Web User Interface these views click **Administration views —>Workload manager administration views**.

workload management definitions and their views

Table 4. Views to create and maintain workload management definitions

WUI view	EUI View	Tasks Supported	Page
CICS systems associated with workload specifications CICS system groups associated with workload specifications	WLMSCOPE	• Change or remove the association between a routing scope (CICS system or system group) and a workload specification.	76
Transaction groups	TRANGRP	• Create, browse, change, remove, or update a transaction group. • Add a transaction to a transaction group.	54
Transactions in transaction groups	DTRINGRP	• Remove a transaction from a transaction group.	53
Workload definitions	WLMDEF	• Create, change, or remove a workload definition. • Add an association between a workload definition and a workload group. • Install a workload definition into a workload.	63
Workload groups	WLMGROUP	• Create, change, or remove a workload group. • Add an association between a workload group and a workload specification. • Install workload definitions associated with a workload group into a CICS system or CICS system group.	69
Workload definitions in groups	WLMINGRP	• Add or remove the association between a workload definition and a workload group.	73
Workload specifications	WLMSPEC	• Create, browse, change, or remove a workload specification. • Add an association between a workload specification and a scope identified as one or more routing regions.	80
Workload specifications with their workload groups	WLMINSPC	• Add or remove the association between a workload group and a workload specification.	75

Chapter 7. Views for managing definitions

When a CICS system is active, you can use the views identified in Table 5 to display information about and control its use of workload management. To access these views in the Web User Interface, click **Active workload views**.

Table 5. Views to manage active workload management definitions

WUI view	EUI View	Actions Supported	Page
Affinities for transaction group	WLMATAFD	• 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.	106
Target region in active workload	WLMAWAOR	• Display information about all target regions associated with a specific workload. • Change the status of a target region to active or quiesced.	106
Target regions	WLMAWAOS	• Display summary information about all target regions associated with a specific workload.	108
Routing regions	WLMAWTOR	• Display information about active routing regions associated with a specific workload.	113
Routing regions	WLMAWTOS	• Display summary information about active routing regions associated with a specific workload.	114
Transaction groups	WLMATRAN	• Display information about all active transactions associated with a specific workload. • Discard a transaction from a transaction group.	105
Affinities for transaction groups	WLMATAFF	• Display information about the active transaction affinities for a transaction group associated with a specific workload. • Discard an affinity entry.	101

WUI view	EUI View	Actions Supported	Page
Affinities for transaction groups	WLMATAFS	• Display summary information about the active transaction affinities for a transaction group associated with a specific workload. • Discard an affinity entry.	102
Transaction groups	WLMATGRP	• Display information about transaction groups associated with a specific workload. • Change the status of a transaction group to active or dormant.	103
Active workloads	WLMAWORK	• Display information about active workloads.	112
Workload definitions	WLMAWDEF	• Display information about active workload definitions associated with a specific workload. • Discard an active workload definition.	109

Chapter 8. Creating workload management definitions

This chapter contains a description of tasks involved in creating and maintaining workload management definitions. To carry out these tasks you can:

- Using the web User Interface (WUI) click **Administration views—>Workload manager administration views**. This opens the menu shown in Figure 10.

Figure 10. Workload manager administration views menu

- Using the end user interface (EUI):
  - Issue the appropriate workload management view command.
  - Issue the MENU ADMWLM command and selecting a view from the menu. (An example of this menu is shown in Figure 11.)
  - Initiate a hyperlink from one view to another by placing the cursor on a hyperlink field and pressing Enter.

```
 27FEB2005  22:02:28 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                                 SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =MENU==============EYUPLX01=EYUPLX01=27FEB2005==22:02:28=CPSM=========10===
 CMD Name               Description
 --- ------------------------------
     ADMWLM     Workload Manager Administration Views
       WLMSPEC    Workload Specifications
       WLMGROUP   Workload Groups
       WLMDEF     Workload Definitions
       TRANGRP    Transaction Groups
       ========   ================================================================
       WLMSCOPE   Members Associated with Workload Specifications
       WLMINSPC   Workload Groups in Specifications
       WLMINGRP   Workload Definitions in Groups
       DTRINGRP   Transactions in Transaction Groups
```

Figure 11. The ADMWLM menu

Unless noted otherwise, only the context is recognized when you are creating and maintaining workload management definitions.

Creating workload management definitions using the end user interface

This section contains descriptions of the EUI workload management views and their associated tasks.

DTRINGRP (Transactions in transaction groups)

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

```
DTRINGRP [trangroup]
```

where `trangroup` is a specific or generic transaction group name. If you omit this parameter, the view, illustrated in Figure 12 on page 54, includes information about

53

all existing transaction groups within the current context.

```
 27FEB2005  18:29:11 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                             SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =DTRINGRP=========EYUPLX01=EYUPLX01=27FEB2005==18:29:11=CPSM=========6===
 CMD Trangrp  Trans    PCONV
 --- Name---- Name---- Mode----
     EYUTRG01 ETVP
     EYUTRG05 ETD1
     EYUTRG05 ETD2
     EYUTRG05 ETD3
     EYUTRG06 ETL1     START
     EYUTRG06 ETL2     END
```

Figure 12. The DTRINGRP view

Action commands

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

Table 6. DTRINGRP view action commands

Primary command	Line command	Description
n/a	MAP	Display a visual map of workload management definitions using the specified transaction group as a starting point.
n/a	REM	Remove a transaction from a transaction group.
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.

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:
- "Routing a specific transaction to a specific target region" on page 122
- "Routing particular transactions from a given user to a specific target region" on page 124
- "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 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 13, includes information about all existing transaction groups within the current context.

```
 27FEB2005  21:41:53 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                                 SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
 >W1 =TRANGRP===========EYUPLX01=EYUPLX01=27FEB2005==21:41:53=CPSM==========3===
 CMD Trangrp  Affinity Affinity Cre Match    State    Event    Description
 --- Name---- Relation Lifetime- Aff Key---- -------- Name---- ---------------
     EYUTRG01                    NO  USERID   ACTIVE            SSet - Related to
     EYUTRG05                    NO  USERID   ACTIVE   EYURTD20 SSet - Applicatio
     EYUTRG06 USERID   PCONV     NO  USERID   ACTIVE            SSet - Existing a
```

Figure 13. The TRANGRP view

Action commands

Table 7 summarizes the action commands you can use with the TRANGRP view.

Table 7. TRANGRP view action commands

Primary command	Line command	Description
n/a	ADD	Add a transaction to a transaction group, as described on page 61.
n/a	BRO	Browse a transaction group definition in the data repository.
		The format of the resulting panel is similar to that shown in Figure 14 on page 57. The panel fields are not modifiable.

Table 7. TRANGRP view action commands (continued)

Primary command	Line command	Description
CREate	CRE	Create a transaction group definition and add it to the data repository, as described in "Creating a transaction group."
		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).
n/a	MAP	Display a visual map of workload management definitions using the specified transaction group as a starting point.
n/a	REM	Remove a transaction group definition from the data repository. **Note:** Removing a transaction group causes all transactions associated with it to be removed also.
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 transaction group definition in the data repository.
		The format of the resulting input panel is similar to that shown in Figure 14. You can change the contents of any field in the panel except Trangroup Name.

Hyperlink fields

Table 8 shows the hyperlink field on the TRANGRP view.

Table 8. TRANGRP view hyperlink fields

Hyperlink field	View displayed	Description
Trangrp Name	DTRINGRP	Detailed information about the transactions comprising the designated transaction group.

Creating a transaction group

Figure 14 on page 57 shows the format of the panel produced when you use the create primary (CREate) or line (CRE) action command from the TRANGRP view.

```
--------------------- Create Trangroup for EYUPLX01 -------------------------
COMMAND  ===>

 Trangroup name     ===>
 Description        ===> SSet - Related transactions

 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    ===>               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.
```

Figure 14. 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**
>>Select a target region from the target region scope identified with the associated workload definition.

>>If the AORSCOPE specified in a WLMDEF is to be used for route selection, the TRANGRP status must be ACTIVE.

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

>>If a TRANGRP with no affinity defined was defined as DORMANT instead of ACTIVE, the AORSCOPE defined to the WLMDEF will not be used for routing selecion. The transasction will be routed to the SYSID defined in the REMOTESYSTEM of CICS TRANSACTION definition

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.

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 (LUTYPE 6.2) 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 "Valid affinity relation and lifetime combinations and their meanings" on page 60 for valid affinity and lifetime combinations.

Create Affinity

(Required when you specify a value in the Affinity Relation and Affinity
Lifetime fields.) 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, "Dynamic routing with CICSPlex SM," on page 27 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 2 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 0 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 1 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.

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 20.

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

Valid affinity relation and lifetime combinations and their meanings:

USERID

All dynamic requests identified in the transaction group that are both:

- Initiated from a terminal by an EXEC CICS START command associated with a terminal, or by a BTS activity,
- Associated with the same *user*

are to be directed to the same target region.

The following affinity lifetime values are valid for the USERID affinity relation:

SIGNON

The affinity continues as long as the user's terminal session is active.

DELIMIT

The affinity continues until a transaction with a pseudoconversation mode of END is encountered.

PCONV

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.

SYSTEM

The affinity continues as long as that target region is active.

PERMANENT

The affinity continues as long as any CMAS involved in managing the CICSplex using the workload is active.

LUNAME

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.

The following affinity lifetime values are valid for the LUNAME affinity relation:

LOGON
> The affinity continues as long as the terminal session is active.

DELIMIT
> The affinity continues until a transaction with a pseudoconversation mode of END is encountered.

PCONV
> 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.

SYSTEM
> The affinity continues as long as that target region is active.

PERMANENT
> The affinity continues as long as any CMAS involved in managing the CICSplex using the workload is active.

GLOBAL
All dynamic requests identified in the transaction group that are either initiated from, or associated with (using the EXEC CICS START command), any terminal by any user, or by any BTS process, are to be directed to the same target region.

The following affinity lifetime values are valid for the GLOBAL affinity relation:

SYSTEM
> The affinity continues as long as that target region is active.

PERMANENT
> The affinity continues as long as any CMAS involved in managing the CICSplex using the workload is active.

BAPPL
All dynamic requests identified in the transaction group that are associated with the same BTS process are to be directed to the same target region.

The following affinity lifetime values are valid for the BAPPL affinity relation:

ACTIVITY
> The affinity continues as long as the associated activity exists.

PROCESS
> The affinity continues as long as the associated process exists.

SYSTEM
> The affinity continues as long as that target region is active.

PERMANENT
> The affinity continues as long as any CMAS involved in managing the CICSplex using the workload is active.

Adding a transaction to a transaction group
Figure 15 on page 62 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                 EYUWMT03

      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 15. Adding a transaction to a transaction group

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 SM 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:
- "Routing a specific transaction to a specific target region" on page 122
- "Routing particular transactions from a given user to a specific target region" on page 124
- "Honoring a pseudoconversational transaction" on page 125
- "Updating an active workload definition" on page 129

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

```
WLMDEF [wlmdef]
```

where `wlmdef` is a specific or generic workload definition name. If you omit this parameter, the view, illustrated in Figure 16, includes information about all existing workload definitions within the current context.

```
 27FEB2005  22:02:37 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                               SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
 >W1 =WLMDEF============EYUPLX01=EYUPLX01=27FEB2005==22:02:37=CPSM==========3===
 CMD Def       Trangrp  Luname           Userid  Process  Target   Description
 --- Name---- Name---- ---------------- -------- Type---- Scope--- ------------
     EYUWLD01 EYUTRG01 *                *        *        EYUCSG04 SSet - Separa
     EYUWLD05 EYUTRG05 *                *        *        EYUCSG03 SSet - Applic
     EYUWLD06 EYUTRG06 *                *        *        EYUMAS1B SSet - Existn
```

Figure 16. 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 64 identifies the overtype fields you can modify when you use the SET action command.

Table 9. WLMDEF view action commands

Primary command	Line command	Description
n/a	ADD	Add an association between a workload definition and a workload group, as described on page 67.

creating workload management definitions

Table 9. WLMDEF view action commands (continued)

Primary command	Line command	Description
n/a	BRO	Browse a workload definition in the data repository. The format of the resulting panel is similar to that shown in Figure 17 on page 65. The panel fields are not modifiable.
CREate	CRE	Create a workload definition and add it to the data repository, as described on page 64. 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 definition, fields in the new view contain values to be modelled (from the existing workload definition).
n/a	INS	Install a workload definition into a workload, as described on page 68.
n/a	MAP	Display a visual map of workload management definitions using the specified definition as a starting point.
n/a	REM	Remove a workload definition from the data repository.
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 17 on page 65. You can change the contents of any field in the panel except Entry Name.

Table 10. WLMDEF view overtype fields

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

Hyperlink fields

Table 11 shows the hyperlink field on the WLMDEF view.

Table 11. WLMDEF view hyperlink fields

Hyperlink field	View displayed	Description
Trangrp Name	DTRINGRP	Detailed information about the transactions in the specified transaction group.

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

Creating a workload definition

Figure 17 on page 65 shows the format of the panel produced when you use the create primary (CREate) or line (CRE) action command from the WLMDEF view.

```
---------------------- Create Workload Definition for EYUPLX01 ---------------
COMMAND  ===>

 Definition Name  ===>
 Description      ===> SSet Separate ETUP


 Trangroup Name   ===> EYUTRG01        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     ===> EYUCSG04        CICS System, Group, or Generic


Press Enter to create definition.
Type END or CANCEL to cancel without creating.
```

Figure 17. 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 54.)

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 18 on page 68 illustrates the panel produced when you use the add (ADD) line action command from the WLMDEF view.

```
/‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾\
  ------------------ Add WLM Definition to Workload Group for EYUPLX01 --------
  COMMAND  ===>

   Workload Definition        EYUWMD05
   Description                Test workload definition

   Workload Group      ===>                   Group Name or Generic

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

Figure 18. Adding an association between a workload definition and 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.

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 73.

Note: If an appropriate workload group does not currently exist, you must first create the group, as described on page 70. Then add the workload definition to the workload group using either this action command or the one described on page 74.

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 19 illustrates the panel produced when you use the install (INS) line action command from the WLMDEF view.

```
/‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾\
  ---------------------------- Install WLMDEF for EYUPLX01 -----------------------
  COMMAND  ===>

   Name           EYUWMD01
   Description    Test workload definition

   Type           WLMDEF

   Workload ===>          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.
_____/
```

Figure 19. 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 23.

To deactivate an installed workload definition, use the WLMAWDEF view, as described in Table 5 on page 51.

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 "Routing a specific transaction to a specific target region" on page 122

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 20, includes information about all workload groups within the current context.

```
 27FEB2005  22:02:49 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                               SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =WLMGROUP==========EYUPLX01=EYUPLX01=27FEB2005==22:02:49=CPSM==========3===
 CMD Workload Description
 --- Group--- -----------------------------
     EYUWLG01 SSet - EYUA AOR groupings
     EYUWLG04 SSet - All AOR groupings
     EYUWLG05 SSet - EYUB AOR grouping
```

Figure 20. The WLMGROUP view

Action commands

Table 12 summarizes the action commands you can use with the WLMGROUP view. Table 13 on page 70 identifies the overtype field you can modify when you use the SET action command.

Table 12. WLMGROUP view action commands

Primary command	Line command	Description
n/a	ADD	Add an association between a workload group and a workload specification, as described on page 71.
n/a	ASC	Add an association between a workload definition and a workload group, as described on page 72.

creating workload management definitions

Table 12. WLMGROUP view action commands (continued)

Primary command	Line command	Description
n/a	BRO	Browse a workload group in the data repository.
		The format of the resulting panel is similar to that shown in Figure 21 on page 71. The panel fields are not modifiable.
CREate	CRE	Create a workload group and add it to the data repository, as described on page 70.
n/a	INS	Install the workload definitions associated with a workload group into a workload, as described on page 72.
n/a	MAP	Display a visual map of workload management definitions using the specified group as a starting point.
n/a	REM	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.
n/a	SET	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.
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 group in the data repository. The format of the resulting input panel is similar to that shown in Figure 21. You can change the Description field.

Table 13. WLMGROUP view overtype field

Field name	Value
Description	1- to 30-character description of the workload group.

Hyperlink fields

Table 14 shows the hyperlink field on the WLMGROUP view.

Table 14. WLMGROUP view hyperlink field

Hyperlink field	View displayed	Description
Workload Group	WLMINGRP	Detailed information about the associations that exist between the designated workload group and workload definitions.

Creating a workload group

Figure 21 on page 71 shows the format of the panel produced when you issue the create primary (CREate) or line (CRE) actions command from the WLMGROUP view.

```
-------------------- Create WLM Group for EYUPLX01 -------------------
 COMMAND  ===>


 Group Name           ===>
 Description          ===>  Test Workload Group




Press Enter to create Workload Group.
Type END or CANCEL to cancel without creating.
```

Figure 21. 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 22 illustrates the panel produced when you use the add (ADD) line action
command from the WLMGROUP view.

```
-------------- Add WLM Group to Workload Specification for EYUPLX01 -----------
 COMMAND  ===>

 Workload Group              EYUWMG01
 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.
```

Figure 22. 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 76 to
associate the workload group with a workload specification.

Associating a workload definition with a workload group

Figure 23 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  ===>

Workload Group Name            EYUWOG01
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 23. 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 24 illustrates the panel produced when you use the install (INS) line action command from the WLMGROUP view.

```
---------------------- Install WLMGROUP for EUPLX01 --------------------------
COMMAND  ===>

Name            EYUWMG01
Description     Test workload group

Type            WLMGROUP

Workload    ===>        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.
```

Figure 24. Installing a workload group

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 the workload definitions, within the workload group, into the CICS system or CICS system group associated with the designated workload.

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 23.

To deactivate an installed workload definition, use the WLMAWDEF view, as described in Table 5 on page 51.

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 25, includes information about all workload groups and their associated workload definitions within the current context.

```
 27FEB2005  22:03:07 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                                SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =WLMINGRP==========EYUPLX01=EYUPLX01=27FEB2005==22:03:07=CPSM==========3===
 CMD Group    Def
 --- Name---- Name----
     EYUWLG01 EYUWLD01
     EYUWLG04 EYUWLD05
     EYUWLG05 EYUWLD06
```

Figure 25. The WLMINGRP view

Action commands
Table 15 on page 74 summarizes the action commands you can use with the WLMINGRP view.

creating workload management definitions

Table 15. WLMINGRP view action commands

Primary command	Line command	Description
n/a	ADD	Add an association between a workload definition and a workload group, as described on page 74.
n/a	BRO	Browse the association between a workload definition and a workload group.
		The format of the resulting panel is similar to that shown in Figure 26. The panel fields are not modifiable.
n/a	MAP	Display a visual map of workload management definitions using the specified group as a starting point.
n/a	REM	Remove the association between a workload definition and a workload group.
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.

Hyperlink fields

Table 16 shows the hyperlink fields on the WLMINGRP view.

Table 16. WLMINGRP view hyperlink fields

Hyperlink field	View displayed	Description
Group Name	WLMGROUP	Detailed information about the designated workload group.
Def Name	WLMDEF	Detailed information about the designated workload definition.

Adding a workload definition to a workload group

Figure 26 illustrates the panel produced when you use the add (ADD) line action command from the WLMINGRP view.

```
 ------------- Add WLM Definition to Workload Group for EYUPLX01 -------
 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 26. 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 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 27, includes information about all workload specifications and their associated workload groups within the current context.

```
27FEB2005  22:03:22 ----------- INFORMATION DISPLAY --------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMINSPC=========EYUPLX01=EYUPLX01=27FEB2005==22:03:22=CPSM==========3===
CMD Spec     Group
--- Name---- Name----
    EYUWLS01 EYUWLG01
    EYUWLS01 EYUWLG04
    EYUWLS01 EYUWLG05
```

Figure 27. The WLMINSPC view

Action commands

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

Table 17. WLMINSPC view action commands

Primary command	Line command	Description
n/a	ADD	Add an association between a workload group and a workload specification, as described on page 76.
n/a	BRO	Browse the association between a workload group and a workload specification.
		The format of the resulting panel is similar to that shown in Figure 28 on page 76. 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 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.
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.

Hyperlink fields

Table 18 shows the hyperlink fields on the WLMINSPC view.

Table 18. WLMINSPC view hyperlink fields

Hyperlink field	View displayed	Description
Spec Name	WLMSPEC	Detailed information about the designated workload specification.
Group Name	WLMGROUP	Detailed information about the designated workload group.

Adding a workload group to a workload specification

Figure 28 illustrates the panel produced when you use the add (ADD) line action command from the WLMINSPC view.

```
------------------ Add WLM Group to Specification for EUPLX01 ----------------
 COMMAND  ===>

  Specification Name   ===> EYUWMS01   Spec Name or Generic

  WLM Group Name       ===> EYUWMG01   Group Name or Generic

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

Figure 28. Adding a workload group to 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.

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 29 on page 77, includes information about all workload specifications, and the associated routing scope information, within the current context.

```
 27FEB2005  22:03:43 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                                SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =WLMSCOPE=========EYUPLX01=EYUPLX01=27FEB2005==22:03:43=CPSM==========1===
 CMD WLM       Scope     Scope     Scope     Scope     Update
 --- Spec---- Name---- Type---- Mode---- Link---- Option--
     EYUWLS01 EYUMAS1A CICSSYS  EXPLICIT
```

Figure 29. The WLMSCOPE view

Action commands

Table 19 summarizes the action commands you can use with the WLMSCOPE view. Table 20 on page 78 identifies the overtype fields you can modify when you use the SET action command.

Table 19. WLMSCOPE view action commands

Primary command	Line command	Description
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 30 on page 78. 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 79.
n/a	SET	Change the association between a routing scope and a workload specification using overtype fields (see Table 13 on page 70). **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 the association between a routing scope and a workload specification, as described in "Updating a scope-to-workload specification association" on page 78.

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 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).

creating workload management definitions

Table 20. WLMSCOPE view overtype fields

Field name	Value
WLM Spec	1- to 8-character name of an existing workload specification that is to be associated with the CICS system or CICS system group.
Update Option	FORCE	KEEP	NAME	NULL

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

Hyperlink field	View displayed	Description
WLM Spec	WLMSPEC	Detailed information about the designated workload specification.

Updating a scope-to-workload specification association

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

```
 ----------- Update WLM Specification to Scope for EYUPLX01 -------------------
COMMAND  ===>

  Specification Name    ===> EYUWMS01    Specification name or Generic
  Scope                      EYUCSG01
  Scope Type                 SYSGROUP

  Option                ===>              FORCE, KEEP, NAME, or NULL


  Press ENTER to update.
  Type END or CANCEL to cancel without updating.
```

Figure 30. 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:

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 31 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 31. 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:
- "Balancing a workload" on page 117
- "Adding a routing region to an active workload" on page 120
- "Updating a workload specification" on page 131
- "Using real-time analysis to select a target region for workload balancing" on page 131

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 32, includes information about all existing workload specifications within the current context.

```
 27FEB2005  22:03:16 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                             SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
 >W1 =WLMSPEC==========EYUPLX01=EYUPLX01=27FEB2005==22:03:16=CPSM=========1===
 CMD Name      Affinity Affinity Target   Cre Match  Event     Description
 --- -------- Relation Lifetime Scope--- Aff Key--- Name---- ------------------
     EYUWLS01                    EYUCSG03     USERID            SSet - Basic worklo
```

Figure 32. The WLMSPEC view

Action commands

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

Table 22. WLMSPEC view action commands

Primary command	Line command	Description
n/a	ADD	Add an association between a workload specification and a scope identified as one or more routing regions, as described on page 85.
n/a	BRO	Browse a workload specification in the data repository. The format of the resulting panel is similar to that shown in Figure 33 on page 82. The panel fields are not modifiable.

Table 22. WLMSPEC view action commands (continued)

Primary command	Line command	Description
CREate	CRE	Create a workload specification and add it to the data repository, as described in Creating a WLMSPEC 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).
n/a	MAP	Display a visual map of workload management definitions using the designated specification as a starting point.
n/a	REM	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.
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 specification in the data repository. The format of the resulting panel is similar to the panel shown in Figure 33 on page 82. You can change the contents of any field in the panel except WLM Spec Name.

Hyperlink fields

Table 23 shows the hyperlink field on the WLMSPEC view.

Table 23. WLMSPEC view hyperlink field

Hyperlink field	View displayed	Description
Name	WLMINSPC	Detailed information about the associations that exist between the designated workload specification and its workload groups.

Creating a WLMSPEC specification

Figure 33 on page 82 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 EYUPLX01 ----------------------
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 33. 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.

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 "Valid affinity relation and lifetime combinations and their meanings" on page 60 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
(Required when you specify a value in the Affinity Relation and Affinity
Lifetime fields.) Indicate whether CICSPlex SM should automatically create
an affinity relationship for transactions that cannot be matched to a
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 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, "Dynamic routing with CICSPlex SM," on page 27 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 2 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 0 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 1 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.

Notes:

1. For additional information about specifying abend health and abend load values, see "Taking abend probabilities into consideration" on page 20.

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 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.

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

```
------------------ Add Scope for Specification for EYUPLX01 ------------------
COMMAND  ===>

 WLM Spec Name           EYUWMS04
 Description             Test workload specification


 Scope           ===>               CICS System, Group or Generic
 Option          ===>               FORCE, NULL, or NONE for System Group

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

Figure 34. 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 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.

Creating workload management definitions using the WUI

This section contains examples of the tasks involved in creating and managing workload management definitions using the WUI.

Creating a workload specification

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 "Routing a specific transaction to a specific target region" on page 122. This section describes how to create a workload group definition and add it to the data repository.

- Click **Administration views—>Workload manager administration views—>Workload specifications**to open the **Workload specifications** view.

  This view displays a list of existing workload specifications. It has action buttons that allow you to create, update, and remove workload specifications, and to associate CICS systems and CICS system groups with a workload specification.

- If you want to use some of the information from an existing definition in the creation of your new definition, select an existing definition by selecting an adjacent check box in the **Record** column.

- Click the **Create** action button.

- Provide the following information, as appropriate:

  WLM specification 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.

  Default affinity
  (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.

Default affinity lifetime
(Required when you specify a value in the **Default affinity** 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 **Default affinity** and **Default affinity lifetime** fields are related. If you specify a value in the **Default affinity** field, you must specify a value in the **Default affinity lifetime**. See "Valid affinity relation and lifetime combinations and their meanings" on page 60 for valid affinity and lifetime combinations.

Primary search criterion
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.

Automatic affinity creation option
(Required when you specify a value in the Default affinity and Default

affinity lifetime fields.) Indicate whether CICSPlex SM should automatically create an affinity relationship for transactions that cannot be matched to a 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 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, "Dynamic routing with CICSPlex SM," on page 27 for details on EYU9WRAM and SM_CREAFF.

N/A Affinity not defined (**Default affinity** and **Default affinity lifetime** fields are blank).

Default 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.

RTA 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.

Acceptable level of abend probability
> 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 threshold
> 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 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 20.

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 5.1 and higher where the MVS Workload Manager (MVS/WLM) is also supported. 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.

• Click **Yes** to create the new definition.

The **Workload management specification** view is redisplayed and includes an entry for the new definition.

Associating a CICS system or system group with a workload specification

Each workload specification has a default target scope and one or more CICS systems or CICS system groups associated with it. These associated CICS systems or groups are known as the routing scope in EUI views. The default target scope is identified when you create the specification. Associated CICS systems and system groups are identified when you add the routing region to the specification.

Follow this procedure to associate a CICS system group to an existing workload specification:

1. Click **Administration views—>Workload manager administration views—>Workload specifications**to open the **Workload specifications** view.

   This view displays a list of existing workload specifications.

2. Select a workload specification and click the **Associate CICS group** action button.

   This opens the **Associate CICS group** view.

3. In the **CICS system group field** enter the specific or generic name of an existing CICS system group that represents one or more routing regions.

> **Note:** 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.

4. Select one of the following options to indicate how the CICS systems that make up the CICS system group are to use the workload specification associated with the CICS system group:

FORCE
> All CICS systems currently associated with 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). If you add a new CICS system to the CICS system group, it does not automatically inherit the FORCE option. You must specify NULL or FORCE when adding a CICS system to a 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 association, either explicitly established or inherited from another CICS system group, it is unchanged.

Notes:

a. If the CICS system group 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.

b. The CICS systems designated as the default 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.

5. Click **Yes** to update the workload specification in the data repository.

Once you associate a CICS system or system group to a workload specification, the specification is automatically installed whenever an associated CICS system is started. Any workload definitions associated with the specification through workload groups are also automatically installed.

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:

1. Click **Administration views—>Topology administration views—>CICS System definitions** to display a list of active CICS systems.

2. Select the CICS system and click the **Update** action button

3. In the **Workload manager status** field, specify **YES**, and click the **Yes** button at the bottom of the screen.

Creating a transaction group

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. This section describes how to create a transaction group definition and add it to the data repository.

1. Click **Administration views—>Workload manager administration views—>Transaction groups** to open the **Transaction group definition view**.

   This view displays a list of existing transaction group definitions. It has action buttons that allow you to create, update, and remove transaction group definitions, and to add a transaction to a transaction group.

2. If you want to use some of the information from an existing definition in the creation of your new definition, select an existing definition by selection by selecting an adjacent check box in the **Record** column.

3. Click the **Create** action button.

4. Provide the following information, as appropriate:

   Transaction group 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.

   Affinity relation and lifetime checking 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.

   Primary search criterion
   > 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 relationship
   > (Optional.) Indicate the affinity relation that is to be used when processing the transactions associated with this transaction group. Specify:
   > **N_a**   Not defined.
   > **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 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 relationship** field.) Indicate the affinity lifetime to be used when processing transactions associated with this transaction group. Specify:

N_a Not defined.

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 (LUTYPE 6.2) 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 relationship** and **Affinity lifetime** fields are related. If you specify a value in the **Affinity relationship** field, you must specify a value in the **Affinity lifetime** field. See "Valid affinity relation and lifetime combinations and their meanings" on page 60 for valid affinity and lifetime combinations.

Automatic affinity creation option

(Required when you specify a value in the Affinity relationship and Affinity lifetime fields.) 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 relationship** 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, "Dynamic routing with CICSPlex SM," on page 27 for details on EYU9WRAM and SM_CREAFF.

N/A Affinity not defined (**Affinity relationship** and **Affinity lifetime** fields are blank).

RTA 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.

Acceptable level of abend probability
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.

Acceptable target region load level
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.

Notes:

a. 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.

  b. For additional information about specifying abend health and abend load values, see "Taking abend probabilities into consideration" on page 20.

5. Click **Yes** to create the new definition.

   The Transaction group definition view is redisplayed with an entry for the new definition.

Creating a workload definition

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. This section describes how to create a workload definition and add it to the data repository.

1. Click **Administration views—>Workload manager administration views—>Workload definitions** to open the **Workload management definition** view.

   This view displays a list of existing workload management definitions. It has action buttons that allow you to create, update, remove and install workload definitions, and to add a workload definition to a workload group.

2. If you want to use some of the information from an existing definition in the creation of your new definition, select an existing definition by selection by selecting an adjacent check box in the **Record** column.

3. Click the **Create** action button.

4. Provide the following information, as appropriate:

   Workload management 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 group 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 54.)

   Terminal LU name
   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.)

BTS 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.

Scope name of set of target systems

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.

5. Click **Yes** to create the new definition.

The **Workload management definition** view is redisplayed and includes an entry for the new definition.

Creating a workload group

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 "Routing a specific transaction to a specific target region" on page 122. This section describes how to create a workload group definition and add it to the data repository.

- Click **Administration views—>Workload manager administration views—>Workload groups** to open the **Workload management group** view.

  This view displays a list of existing workload management group definitions. It has action buttons that allow you to create, update, remove and install workload groups, and to add a group to a workload specification.

- If you want to use some of the information from an existing definition in the creation of your new definition, select an existing definition by selecting an adjacent check box in the **Record** column.

- Click the **Create** action button.

- Provide the following information, as appropriate:

Workload management 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.

- Click **Yes** to create the new definition.

  The **Workload management group** view is redisplayed and includes an entry for the new definition.

creating workload management definitions

Chapter 9. Managing workloads

This chapter describes how you can use the end user interface to obtain information about active workloads and the transactions and transaction groups comprising those workloads. See Chapter 7, "Views for managing definitions," on page 51 for a summary of equivalent Web User Interface views.

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.

  WLMATRAN
  > 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 35.)
- Initiating a hyperlink from one view to another by placing the cursor in the hyperlink field and pressing Enter.

```
 27FEB2005  18:02:59 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                             SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =MENU=============EYUPLX01=EYUPLX01=27FEB2005==18:02:59=CPSM=========8===
 CMD Name              Description
 --- ------------------------------
     WORKLOAD    Workload Operations Views
       WLMAWORK   Active Workloads
       WLMAWTOR   Routing regions in an Active Workload
       WLMAWTOS   Routing regions in an Active Workload Summary
       WLMAWAOR   Target regions in an Active Workload
       WLMAWAOS   Target regions in an Active Workload Summary
       WLMAWDEF   Active Workload Definitions
       WLMATGRP   Transaction Groups Associated with an Active Workload
       WLMATAFF   Transaction Affinities for an Active Workload
       WLMATRAN   Transactions Associated with an Active Workload
```

Figure 35. The WORKLOAD menu

For additional information about accessing views, see *CICSPlex SM User Interface Guide*.

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 $$DTGA$$. $$DTGA$$ 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.

key

Is the affinity key of the item to be detailed.

Hyperlink from:
The Key field of the WLMATAFF view.

Figure 36 is an example of the WLMATAFD view.

```
27FEB2005 11:30:30 ---------- INFORMATION DISPLAY ----------------------------
COMMAND ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1         ALT WIN ===>
 W1 =WLMATAFF=WLMATAFD=EYUPLX01=EYUPLX01=27FEB2005==11:30:30=CPSM=============
    Trangrp.......                                              WL01
    Workload......                                              WLMSPEC1
    Workload Owner                                              C6C1
    Affinity......                                              BAPPL
    Lifetime......                                              ACTIVITY
    Target system.                                             EYUMAS2A
    Key..........  BTSFILE1..GBIBMIYA.IGCS232..KRc... WLMTEST-COMPLETE
    Key (Hex 1-26) C2C1D4C6C9D3C5F11910C7C2C9C2D4C9E8C14BC9C7C3E2F2F3F2
       (Hex 27-52) 1925D2D98335000130E6D3D4E3C5E2E360C3D6D4D7D3C5E3C540
```

Figure 36. 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

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.

Figure 37 is an example of the WLMATAFF view.

```
27FEB2005 11:30:30 ---------- INFORMATION DISPLAY ----------------------------
COMMAND  ===>                                               SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
 W1 =WLMATAFF=========EYUPLX01=EYUPLX01=27FEB2005==11:30:30=CPSM=============
CMD Trangrp   Workload Ownr Affinity  Lifetime  Target    Key

--- --------  -------- ---- --------  --------  --------  --------------------
    EYUWMT01  EYUWMS01 AOR1 USERID    PCONV     EYUMAS2A  BTSFILE1..GBIBMIYA.IG
    EYUWMT02  EYUWMS02                          EYUMAS3B  *
```

Figure 37. 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 24. WLMATAFF view action commands

Primary command	Line command	Description
n/a	FOR	Discard an affinity entry.
		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 25. WLMATAFF view hyperlink fields

Hyperlink field	View displayed	Description
Workload	WLMAWORK	Detailed information about the specified workload.
Trangrp	WLMATGRP	Tabular information about all active transaction groups.
Key (valid for CICS BTS affinities only)	WLMATAFD	Detailed information about the properties of a single active CICS BTS affinity.

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 101.

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 37 on page 102 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 26. WLMATAFS view action commands

Primary command	Line command	Description
n/a	FOR	Discard an affinity entry.
		The affinity is reestablished when the next transaction within the affected transaction group is encountered.
	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.

Access

Issue command:
> `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 38 is an example of the WLMATGRP view.

```
 27FEB2005  22:11:06 ----------- INFORMATION DISPLAY -------------------------
 COMMAND  ===>                                               SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
 >W1 =WLMATGRP==========EYUPLX02=EYUPLX02=27FEB2005==22:11:06=CPSM==========3==
 CMD Trangrp  Workload Ownr Status  Cre Match  Affinity Lifetime  Event--- -Abe
 --- -------- -------- ---- ------- Aff Key--- -------- --------- Name---- Crit
     EYUTRG02 EYUWLS02 CM1B ACTIVE  NO  LUNAME LUNAME   LOGON            0    0
     EYUTRG03 EYUWLS02 CM1B ACTIVE  NO  USERID NONE     NONE             0    0
     EYUTRG04 EYUWLS02 CM1B ACTIVE  NO  USERID NONE     NONE             0    0
     EYUTRGTS EYUCBTS1 CM1B ACTIVE  YES USERID BAPPL    ACTIVITY         0    0
```

Figure 38. 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 shows the action command you can issue from the WLMATGRP view. The overtype field is shown in Table 28 on page 105.

Table 27. WLMATGRP view action commands

Primary command	Line command	Description
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

Field name	Values
Status	ACTIVE|DORMANT

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

Hyperlink field	View displayed	Description
Workload	WLMAWORK	Detailed information about the specified workload.
Affinity	WLMATAFF	Detailed information about the specified affinity.
Event Name	EVENT	Detailed information about a real-time analysis event that may affect the routing of transactions in the workload.

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:

BBMXBD15I
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 CICSplex identified as the context.

Access

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

managing workloads

Figure 39 is an example of the WLMATRAN view.

```
 27FEB2005  22:11:42 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                                SCROLL ===> PAGE
 CURR WIN ===> 1      ALT WIN ===>
  W1 =WLMATRAN=========EYUPLX02=EYUPLX02=27FEB2005==22:11:42=CPSM=========9===
 CMD Transid  PCONV Trangrp  Workload Ownr
 --- -------- Mode- -------- -------- ----
     ETA1           EYUTRG04 EYUWLS02 CM1B
     ETA2           EYUTRG04 EYUWLS02 CM1B
     ETA3           EYUTRG04 EYUWLS02 CM1B
     ETA4           EYUTRG04 EYUWLS02 CM1B
     ETL1           EYUTRG03 EYUWLS02 CM1B
     ETL2           EYUTRG03 EYUWLS02 CM1B
     ETL3           EYUTRG03 EYUWLS02 CM1B
     ETL4           EYUTRG03 EYUWLS02 CM1B
     ETVP           EYUTRG02 EYUWLS02 CM1B
```

Figure 39. The WLMATRAN view

Action commands

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

Table 30. WLMATRAN view action commands

Primary command	Line command	Description
DiSCard	DSC	Discard a transaction from a transaction group.

`tran workload owner`

Where:

tran   Is the specific or generic name of a transaction.

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.

> **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 31. WLMATRAN view hyperlink fields

Hyperlink field	View displayed	Description
Workload	WLMAWORK	Detailed information about the specified workload.
Trangrp	WLMATGRP	Tabular information about all active transaction groups.

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 40 is an example of the WLMAWAOR view.

```
 27FEB2005  22:04:37 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                              SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =WLMAWAOR=========EYUPLX01=EYUPLX01=27FEB2005==22:04:37=CPSM==========2===
 CMD Workload Ownr Target   Status    Connection
 --- -------- ---- -------- --------- Lost------
     EYUWLS01 CM1A EYUMAS2A ACTIVE
     EYUWLS01 CM1A EYUMAS3A ACTIVE
```

Figure 40. 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 SM Administration*.

Action commands

Table 32 shows the action command you can issue from the WLMAWAOR view. The overtype field is shown in Table 33 on page 108.

Table 32. WLMAWAOR view action commands

Primary command	Line command	Description
n/a	SET	Change target region routing activity according to the value you specify in the overtype field (see Table 33 on page 108). **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

Field name	Values
Status	ACTIVE|QUIESCED

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

Hyperlink field	View displayed	Description
Target	CICSRGND	Detailed information about the specified target region.

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 106.

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 40 on page 107 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 aummarized by the data in that field.

Action commands

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

Table 35. WLMAWAOS view action commands

Primary command	Line command	Description
n/a	SET	Change target region routing activity according to the value you specify in the overtype field (see Table 33 on page 108). **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.

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 41 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.

```
27FEB2005  22:10:58 ----------- INFORMATION DISPLAY --------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWDEF==========EYUPLX02=EYUPLX02=27FEB2005==22:10:58=CPSM==========3===
CMD Name     Workload Ownr Trangrp Luname            Userid   Process Target
--- -------- -------- ---- -------- ---------------- -------- Type--- Scope---
    EYUWLD02 EYUWLS02 CM1B EYUTRG02 *                *        *       EYUMAS3B
    EYUWLD03 EYUWLS02 CM1B EYUTRG03 *                *        *       EYUMAS1C
    EYUWLD04 EYUWLS02 CM1B EYUTRG04 *                *        *       EYUCSG07
```

Figure 41. The WLMAWDEF view

Table 36. WLMAWDEF view action commands

Primary command	Line command	Description
DiSCard	DSC	Discard an active definition.

`defname workload owner`
Where:
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.

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 103, 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 $$DTGA$$.

Hyperlink fields

Table 37 shows the hyperlink fields on the WLMAWDEF view.

Table 37. WLMAWDEF view hyperlink fields

Hyperlink field	View displayed	Description
Workload	WLMAWORK	Detailed information about the specified workload.
Trangrp	WLMATGRP	Tabular information about all active transaction groups.

Table 37. WLMAWDEF view hyperlink fields (continued)
Hyperlink field   **View displayed   Description**

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 42 is an example of the WLMAWORD view.

```
 27FEB2005  22:04:19 ----------- INFORMATION DISPLAY -------------------------
 COMMAND  ===>                                                 SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =WLMAWORK=WLMAWORD=EYUPLX01=EYUPLX01=27FEB2005==22:04:09=CPSM==========1===
     Workload Name.... EYUWLS01 Description  SSet - Basic workload balance
     Owner Name.......     CM1A
     Router Count.....        1
     Target Count.....        2
     Affinity.........     NONE
     Affinity Lifetime    NONE
     Target Scope..... EYUCSG03
     Event Name.......
     Status..........   ACTIVE
     Create Affinity..       NO
     Algorithm Type...    QUEUE
     Abend Health.....        0
     Abend Load.......        0
```

Figure 42. 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

Hyperlink field	View displayed	Description
Affinity	WLMATAFF	Detailed information about the specified affinity.
Router Count	WLMAWTOR	The number of active CICS systems, identified as routing regions, associated with the workload.
Target Count	WLMAWAOR	The number of active CICS systems, identified as target regions, associated with the workload.

WLMAWORK (Active workloads)

The WLMAWORD view shows information about an active workload within the CICSplex identified as the context. A workload is active within a CICSplex 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 CICSplex.
* Any transaction causes an affinity lifetime of PERMANENT to be established.

Note: The WLMAWORK will not exist until the first CICS defined as a router has initialized and created the workload. The creation of the workload is indicated in the CMAS EYULOG by message EYUWM0400I.

Access

Issue command:

```
WLMAWORK [workload]
```

workload

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 43 is an example of the WLMAWORK view.

```
 27FEB2005  22:09:30 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                              SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
 >W1 =WLMAWORK=========EYUPLX02=EYUPLX02=27FEB2005==22:09:30=CPSM=========1===
 CMD Name     Ownr Rout Targ Affinity Lifetime  Scope    Event    Status Cre Alg
 --- -------- ---- Cnt- Cnt- -------- --------- -------- Name---- ------ Aff --
     EYUWLS02 CM1B   1    1 NONE      NONE      EYUCSG06          ACTIVE NO  QUE
```

Figure 43. 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 39. WLMAWORK view hyperlink fields

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

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 CICSplex 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 44 on page 114 is an example of the WLMAWTOR view.

```
27FEB2005  22:04:27 ----------- INFORMATION DISPLAY --------------------------
 COMMAND  ===>                                               SCROLL ===> PAGE
 CURR WIN ===> 1        ALT WIN ===>
  W1 =WLMAWTOR=========EYUPLX01=EYUPLX01=27FEB2005==22:04:27=CPSM=========1===
 CMD Workload Ownr Router   Connection
 --- -------- ---- -------- Lost------
     EYUWLS01 CM1A EYUMAS1A
```

Figure 44. The WLMAWTOR view

Action commands

None.

Hyperlink fields

Table 40 shows the hyperlink field on the WLMAWTOR view.

Table 40. WLMAWTOR view hyperlink field

Hyperlink field	View displayed	Description
Router	CICSRGND	Detailed information about the specified routing region.

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.

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 113.

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 44 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 41. WLMAWTOS view action commands

Primary command	Line command	Description
n/a	SET	Change target region routing activity according to the value you specify in the overtype field (see Table 33 on page 108). **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. Example tasks

This chapter includes a number of typical workload management example tasks; some illustrate how these tasks can be carried out using the Web User Interface (WUI), the remainder illustrate the use of the ISPF end user interface (EUI).

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 vary, 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.

Balancing a workload

This example describes how to use the Web User Interface (WUI) to get CICSPlex 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 the one with the shortest queue of work requests, relative to the maximum number of tasks permitted in the target region. This queue of work, also called the load count, is the queue of all active and queued user tasks. By default, tasks queued for both MAXTASKS and TRANCLASS are included in the load count. Use of the WLMLOADCOUNT EYUPARM allows sites to exclude tasks queued for TRANCLASS from the load count. Please refer to the *CICS Transaction Server for z/OS Installation Guide* (GC34-6426) for more information about the WLMLOADCOUNT EYUPARM.

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 ("Routing a specific transaction to a specific target region" on page 122).

1. 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.
   a. Click **Administration views—>Topology administration views—>CICS system group definitions** to open the **System group definition** tabular view
   b. If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click **Refresh**.
   c. Click the **Create** button to open the **System group definition** create screen.
   d. Type in the following:
      System group name
         CSGTGTS1
      Description
         All target regions in CICSplex PLXPROD1

e. Click **Yes** to create the system group

   The **System group definition** tabular 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 CICSPlex SM which target regions belong to the group.

2. Add target regions to CICS system group CSGTGTS1.
   a. Click **Administration views—>Topology administration views—>CICS system definitions** to open the **CICS system definition** tabular view
   b. Select the entries for the CICS systems CICSPA01, CICSPA02 and CICSPA03 and click the **Add to CICS system group** button.
   c. In the **Group which member will join** field type in CSGTGTS1 and click the button labelled **Yes to 3 remaining**. This adds the three selected systems to your new group.

3. Create a workload specification.
   a. From the main menu click **Administration views—>Workload manager administration views—>Workload specifications** to open the **Workload management specification** tabular view.
   b. Click the **Create** button and provide the following information:
      WLM specification name
         WLSPAY01
      Description
         Balance payroll workload in PLXPROD1
      Primary search criterion
         USERID
      Default target scope
         CSGTGTS1
      Algorithm type
         QUEUE

   Leave the remaining fields empty or accept the defaults.

   Notes:
   1) A **Primary search criterion** value of USERID is shown in this example, though in fact it does not matter whether you specify USERID or LUNAME, because the **Primary search criterion** value has no effect on simple workload balancing. It is used only for some kinds of workload separation, which is the subject of a later example. 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.
   2) The **Default target scope** value is the name of the single target region, or group of target regions, to which work requests can be routed.
   3) The **Algorithm type** value, QUEUE, tells CICSPlex SM to select the target region that has the shortest queue of work requests.
   4) The **Description** is optional, but is worth providing. (When you are confronted with a list of specification names, and have no way of telling one from another, you will appreciate its value.)

   Click **Yes**. The **Workload management specification** tabular view is redisplayed, this time showing an entry for the new WLM Specification, WLSPAY01.

4. Associate the workload specification with a routing region.

   The next step is to tell CICSPlex SM about the region that is going to be routing the work requests to the target regions in group CSGTGTS1.
   a. In the **Workload management specification** view, select the entry for the WLSPAY01 specification, and click **Associate CICS system**.

b. In the **CICS system** field, enter the name of the routing region (CICSPT01, in this example) and click **Yes**.

   You can check that the association between the routing region and the workload specification has worked by selecting the entry for WLSPAY01 in the **Workload management specification** tabular view to open a detail view of WLSPAY01, then clicking **CICS systems associated with this workload specification**.

5. Activate workload balancing in the routing region.
   a. From the main menu click **Administration views—>Topology administration views—>CICS system definitions** to open the **CICS system definition** tabular view.
   b. Select the entry for CICSPT01 and click the **Update** action button to open a detail view of CICSPT01.
   c. Scroll down to the **Workload manager status** field and select **YES** from the drop-down menu. Click the **Yes** button at the bottom of the screen to return to the **CICS system definition** tabular view.

      This change takes effect when the routing target region CICSPT01 is next started.

6. Activate workload balancing in the target regions.
   a. From the **CICS system definitition** tabular view, select the entry for CICSPA01 and click the **Update** action button to open a detail view of CICSPA01.
   b. Scroll down to the **AOR dynamic routing mode** field and select **YES** from the drop-down menu. Click the Yes button at the bottom of the screen to return to the **CICS system definition** tabular view.

      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 clicking **Active workload views—>Active workloads**. This opens the **Active workload** view, showing the workload specification WLSPAY01 as active.

To see which target regions are being routed to, click **Active workload views—>Target regions in an active workload**. The displayed view is shows all active target regions being routed to within workload WLSPAY01. All of the target regions listed belong to the CICS system group CSGTGTS1.

Adding a region to an existing target region scope

This example describes how to use the Web User Interface (WUI) to increase the number of regions in an existing target scope without disrupting an existing workload. Assume that you have implemented workload balancing in CICSplex 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 CICSplex PLXPROD1 and is running.

1. Add target region CICSPA04 to CICS system group CSGTGTS1.
   a. From the Web User Interface main menu click **Administration views—>Topology administration views—>CICS system definitions** to open the **CICS system definition** tabular view.
   b. If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click **Refresh**.

c. Select the entry for CICSPA04, and click **Add to CICS system group**. The **Add toCICS system group** screen is displayed.

d. In the **Group which member will join** field, enter the name CSGTGTS1 and click **Yes**.

2. Update the CICSPlex SM definition of target region CICSPA04.

a. From the **CICS system definition** tabular view select the entry for CICSPA04 and click the **Update** button.

b. Scroll down to the **Workload manager status** field and select **YES**. Click **Yes** at the bottom of the screen to confirm the update.

This change takes effect when the target region CICSPA04 is next started.

When the target region CICSPA04 has been started, you can check that the workload is active by clicking **Active workload views—>Target regions in an active workload** This opens the **Target region in an active workload** view showing all target regions (including CICSPA04) to which work requests in this workload can be routed.

Removing a region from a target region scope

CICS system group CSGTGTS1 contains four target regions (CICSPA01, CICSPA02, CICSPA03, and CICSPA04) in CICSplex PLXPROD1. Work requests are balanced among these target regions, and the routing is controlled by workload specification WLSPAY01.

This example describes how to use the Web User Interface (WUI) to remove region CICSPA04 from the group CSGTGTS1, without disrupting the active workload.

1. Remove target region CICSPA04 from CICS system group CSGTGTS1.

a. From the Web User Interface main menu click **Administration views—>Topology administration views—>CICS system group definitions** to open the **CICS system group definition** tabular view.

b. If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click .

c. Click on the entry for CSGTGTS1, to open a detail view and click **CICS systems in this CICS system group**. This opens the **Link between CICS system and CICS system group** view.

d. Select the record for CICSPA04 and click **Remove**. This opens the **Remove** confirmation screen.

e. Click **Yes** to confirm the update.

2. To check that CICSPA04 has been removed, click **Active workload views—>Target regions in an active workload**. This opens the **Target region in an active workload** view showing all target regions to which the workload can be routed. CICSPA04 should not appear in the list.

Adding a routing region to an active workload

This example describes how to use the Web User Interface (WUI) to add a routing region to an active workload, without disrupting that workload. Assume that you are still balancing the workload in CICSplex 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 CICSplex PLXPROD1 (via the CICSSYS panels) and is running.

1. Update the CICSPlex SM definition for CICS system CICSPT02.

a. From the Web User Interface main menu click **Administration views—>Topology administration views—>CICS system definitions** to open the **CICS system definition** tabular view.

b. If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click .

c. Select the record for CICSPT02 and click **Update**. Click **Yes** on the confirmation panel to confirm the update.

d. Scroll down to the **Workload manager status** field and select **YES** from the drop-down menu.

e. Click **Yes** at the bottom of the screen to confirm the update. This change takes effect when routing region CICSPT02 is next started.

2. Associate CICSPT02 with workload specification WLSPAY01.

a. From the main menu click **Administration views—>Workload manager administration views—>Workload specifications** .

b. Select the entry for WLSPAY01 and click **Associate CICS system**.

c. In the **CICS system** field, type in CICSPT02 and click **Yes** to confirm the update.

When CICSPT02 has been restarted, you can verify that it has been added to WLSPAY01 as follows:

1. Open the **Workload management (WLM) specification** tabular view and click on the entry for WLSPAY01. This opens a detail view.

2. Click **CICS systems associated with this workload specification**. Both CICSPT01 and CICSPT02 should be listed.

To check that CICSPT02 is part of the active workload, from the main menu, click **Active workload views—>Routing regions in an active workload** This opens a tabular view showing entries for both CICSPT01 and CICSPT02.

Quiescing a target region in an active workload

This example describes how to use the Web User Interface (WUI) 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. List the target regions associated with workload WLSPAY01.

a. From the Web User Interface main menu click **Active workload views—>Target regions in an active workload**.

b. If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field.

c. In the Workload name field type WLSPAY01 and click **Refresh**. This redisplays the **Target region in active workload**. The three CICS regions CICSPA01, CICSPA02 and CICSPA03 are listed. Their status is active.

2. Quiesce target region CICSPA03.

a. Select the entry for target region CICSPA03, and click **Quiesce**. This opens the **Quiesce** confirmation screen.

b. Click **Yes** to confirm the action. The **Target region 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.

Routing a specific transaction to a specific target region

The example tasks described so far in this chapter have all been concerned with workload balancing. This example describes how to use the Web User Interface (WUI) 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 transaction to be routed is to be started with EXEC CICS START, it should be defined as ROUTABLE.

2. Create a transaction group.
   a. From the main menu, click **Administration views—>Workload manager administration views—>Transaction groups**. This opens the **Transaction group definition** view.

      If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click **Refresh**.

   b. Click the **Create** button and provide the following information:
      Transaction group name
      > TRGPAY01

      Description
      > Send PAY1 to CICSPA02

      Affinity relation and lifetime checking status
      > ACTIVE

      Primary search criterion
      > USERID

      You can leave the remaining fields or accept the defaults.

   Click **Yes**.Enter. The **Transaction group definition** view is redisplayed, now showing the name of the transaction group TRGPAY01.

3. Add transaction PAY1 to transaction group TRGPAY01.
   a. In the **Transaction group definition** view, select the entry for TRGPAY01, and click the **Add transaction** button.
   b. Type the name PAY1 in the **Transaction name** field, and click **Yes** to confirm. The **Transaction group definition** is redisplayed.

4. Create a workload definition.

   a. From the main menu, click , **Administration views—>Workload manager administration views—>Workload definitions**. This open the **Workload management definition** view, listing any workload definitions already created in PLXPROD1.

   b. Click the **Create** button and provide the following information:
      Workload management definition name
      > WLDPAY01

      Description
      > Separate TRGPAY01 to CICSPA02

      Transaction group name
      > TRGPAY01

      Scope name of set of target systems
      > CICSPA02

   c. Click **Yes** to confirm.

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. From the main menu, click , **Administration views—>Workload manager administration views—>Workload groups**. This open the **Workload management group** view, listing any workload groups already created in PLXPROD1.
   b. Click the **Create** action button and type in the following:
      Workload management group name
         WLGPAY01
      Description
         Workload group for WLDPAY01
   c. Click **Yes** to confirm. The **Workload management group** screen is redisplayed.
6. Add the workload group WLGPAY01 to the existing workload specification WLSPAY01.
   a. In the **Workload management group** screen, select the entry for WLGPAY01, and click **Add to WLM specification**
   b. In the **Specification name** field, enter the name of the existing workload specification, WLSPAY01 and click **Yes**. The **Workload management group** screen is redisplayed.
7. Add the workload definition to the workload group.
   a. From the main menu, click , **Administration views—>Workload manager administration views—>Workload definitions** to open the **Workload management definition** view.
   b. Select the entry for WLDPAY01, and click **Add to WLM group**
   c. In the **Resource group name** field, type WLGPAY01 and click **Yes**. The **Workload management definition** 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 would not take effect until the routing region CICSPT01 and the target regions in CICS system group CSGTGTS1, were next started.
   a. From the main menu, click , **Administration views—>Workload manager administration views—>Workload groups** to open the **Workload management group** view.
   b. Select the entry for WLGPAY01 and click the **Install** action button.
   c. In the **Workload name** field type WLSPAY01, and In the **Workload owner** field type in the SYSID of the system on which the workload specification WLSPAY01 was created.

      Click **Yes** to confirm

   The Owner value is the SYSID of the system on which the workload specification WLSPAY01 was created.

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 opening the **Workload management definition** view. This should include an entry for WLDPAY01 in workload WLSPAY01. When transaction PAY1 is next started, by any user and from any terminal, CICSPlex SM will route it to target region CICSPA02.

Routing particular transactions from a given user to a specific target region

This example task again describes how to use the Web User Interface in a refinement of the previous example ("Routing a specific transaction to a specific target region" on page 122). 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 CICSplex PLXPROD1.

1. Create a transaction group.
   a. From the main menu, click **Administration views—>Workload manager administration views—>Transaction groups**. This opens the **Transaction group definition** view.

      If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click **Refresh**.
   b. Click the **Create** button and provide the following information:

      Transaction group name
      > TRGPAY02

      Description
      > Send USRPAY03's transactions to CICSPA03

      Affinity relation and lifetime checking status
      > ACTIVE

      Primary search criterion
      > USERID

      You can leave the remaining fields or accept the defaults.
   c. Click **Yes** to confirm. The **Transaction group definition** tabular view is redisplayed.

2. Identify the transactions that belong to group TRGPAY02.
   a. In the **Transaction group definition** view select the entry for TRGPAY02, and click **Add transaction**.
   b. In the **Transaction name** field, type in the name of the first transaction PAY6, and click **Yes** to confirm.

      Repeat this step for three more transactions: PAY7, PAY8, and PAY9.

3. Create a workload definition.
   a. From the main menu, click , **Administration views—>Workload manager administration views—>Workload definitions**. This opens the **Workload management definition** view, listing any workload definitions already created in PLXPROD1.
   b. Click the **Create** button and provide the following information:

      Workload management definition name
      > WLDPAY02

      Description
      > Separate TRGPAY02 to CICSPA03

      Transaction group name
      > TRGPAY02

      User ID
      > USRPAY03

      Scope name of set of target systems
      > CICSPA03
   c. Click **Yes** to confirm.

4. Add the workload definition to the existing workload group.

a. From the main menu, click , **Administration views—>Workload manager administration views—>Workload definitions** to open the **Workload management definition** view.

b. Select the entry for WLDPAY0 and click **Add to WLM group**

c. In the **Resource 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.

d. Click **Yes** to confirm.

5. 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:

a. Open the **Workload management definition** view again, select the entry for WLDPAY02, and click **Install**.

b. In the **Workload name** field, type in WLSPAY01 and in the **Workload owner** field, type in the SYSID of the system on which the workload specification WLSPAY01 was created.

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.

Honoring a pseudoconversational transaction

This example describes how to use the end user interface (EUI) to ensure that multiple transactions, among which there is an affinity, are routed to the same target region. As before, you are working in CICSplex 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        Transaction Group Status
                                                   (ACTIVE,DORMANT)
            Match Key           ===> USERID          Primary WLMDEF search criterion
                                                   (USERID,LUNAME)
            Affinity Relation   ===> USERID          Optional affinity relation may be:
                                                   (USERID,LUNAME,GLOBAL, BAPPL)
            Affinity Lifetime   ===> PCONV           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 CICSPlex 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, 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 TRGPAY03.

Note: For a complete description of the TRANGRP view, see "TRANGRP
(Transaction groups)" on page 54.

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  ===>

            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  ===>

 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         ===> 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 TRGPAY03, initiated by any user and from any terminal, 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 63.

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  ===>

 Name            WLDPAY03
 Description     TRGPAY03 to the same target region
 Type            WLMDEF

 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.

Deactivating a workload definition

This example describes how to use the end user interface (EUI) to deactivate the
workload definition WLDPAY02 created in the example "Routing particular
transactions from a given user to a specific target region" on page 124.

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.

```
27FEB2005  22:10:58 ----------- INFORMATION DISPLAY --------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=27FEB2005==22:10:58=CPSM==========3===
CMD Name     Workload Ownr Trangrp  Luname           Userid   Process Target
--- -------- -------- ---- -------- ---------------- -------- Type--- Scope---
    WLDPAY01 WLSPAY01 CM1B TRGPAY01 *                *        *       CICSPA02
    WLDPAY02 WLSPAY01 CM1B TRGPAY02 *                USRPAY03 *       CICSPA03
    WLDPAY03 WLSPAY01 CM1B TRGPAY03 *                *        *       CSGTGTS1
```

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.

Updating an active workload definition

This example describes how to use the end user interface (EUI) to update an active workload definition and then reinstall it in the active workload. In the example "Routing particular transactions from a given user to a specific target region" on page 124, 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:

   ```
   27FEB2005  22:10:58 ----------- INFORMATION DISPLAY --------------------------
   COMMAND  ===>                                              SCROLL ===> PAGE
   CURR WIN ===> 1        ALT WIN ===>
   >W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=27FEB2005==22:10:58=CPSM=========3===
   CMD Name     Workload Ownr Trangrp Luname            Userid   Process Target
   --- -------- -------- ---- ------- ---------------- -------- Type--- Scope---
       WLDPAY01 WLSPAY01 CM1B TRGPAY01 *                *        *       CICSPA02
       WLDPAY02 WLSPAY01 CM1B TRGPAY02 *                USRPAY03 *       CICSPA03
       WLDPAY03 WLSPAY01 CM1B TRGPAY03 *                *        *       CSGTGTS1
   ```

   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:

   ```
   27FEB2005  22:02:37 ----------- INFORMATION DISPLAY --------------------------
   COMMAND  ===>                                              SCROLL ===> PAGE
   CURR WIN ===> 1        ALT WIN ===>
   >W1 =WLMDEF============PLXPROD1=PLXPROD1=27FEB2005==22:02:37=CPSM=========1===
   CMD Def      Trangrp  Luname            Userid   Process Target   Description
   --- Name---- Name---- ---------------- -------- Type--- Scope--- --------------
       WLDPAY02 TRGPAY02 *                USRPAY03 *       CICSPA03 Separate TRGPA
   ```

   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 your CICSPlex SM configuration, you might also have to type SET in the line-command field before pressing Enter.)

   Note: For a complete description of the WLMDEF view, see "WLMDEF (Workload definitions)" on page 63.

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. 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.

```
27FEB2005  22:10:58 ----------- INFORMATION DISPLAY -------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
>W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=27FEB2005==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.

Note:

Updating the User ID, Terminal Luname, Process Type, or Target Scope attributes in a workload definition prevents the workload definition from being reinstalled dynamically. To reinstall the workload definition into an active workload, you must:

1. Use WLMAWDEF DSC line command to discard the active workload definition
2. Use WLMDEF INS line command to install the workload definition into the workload

Alternatively, to reinstall workload definitions with changed attributes use a batch API program to disable access to the affected application, discard the WLMAWDEF, install the WLMDEF view, and re-enable the affected application.

Discarding an active transaction from a workload

This example describes how to use the end user interface (EUI) 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:

```
27FEB2005  22:11:42 ----------- INFORMATION DISPLAY -------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
 W1 =WLMATRAN==========PLXPROD1=PLXPROD1=27FEB2005==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.

Updating a workload specification

This example describes how to use the Web User Interface to update the workload specification WLSPAY01, which you created in the example "Balancing a workload" on page 117. 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. Update workload specification WLSPAY01.
   a. From the main menu click **Administration views—>Workload manager administration views—>Workload specifications** to open the **Workload management specification** tabular view.
   b. If the current context is not PLXPROD1, specify PLXPROD1 in the **Context** field and click .
   c. Select the entry for WLSPAY01 and click the **Update** button.
   d. Change the **Algorithm type** from QUEUE to GOAL
   e. Click **Yes**. The view is redisplayed showing the updated entry for WLSPAY01.

2. Display the **Active workload** view.

   From the main menu, click **Active workload views—>Active workloads** and type in the workload name WLSPAY01.

   You will 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. When you have restarted the routing regions and target regions (using the **CICS regions** view, you will see that the algorithm type value has been updated.

Using real-time analysis to select a target region for workload balancing

This end user interface (EUI) example describes how to use CICSPlex 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, CICSPlex 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 *CICSPlex SM 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------------------
 COMMAND  ===>

 Name                  ===> RTEPAY15
 Description           ===> TSQ NUMITEMS > 50

 Sample Interval       ===> 300          Interval between samples in seconds
 TableName             ===> MTSQGBL      Resource Table Name or *
 Instance Pattern      ===> *            Specific or generic pattern
 Result Set Action     ===> ANY          Operation(ALL,ANY,SUM,MIN,MAX,AVG,CNT)
 Separate Task         ===> NO           Run as a separate task (YES, NO)

 Evaluation Column     ===> PUTQAUX      Column name to evaluate or *
     either Operator   ===> GT           (EQ,NE,LT,GT,LE,GE)
            Value      ===> 50
            Severity   ===> HS           (VLS,LS,LW,HW,HS,VHS)
     or set Thresholds:    Provide 3 low and/or 3 high values, N=Normal

VLS         LS          LW   (N)   HW          HS          VHS


 View                  ===> MTSQGBL      View invoked for this Evaluation

 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:

```
-------------------- Create Action Definition for PLXPROD1 --------------------
COMMAND  ===>

Action Name   ===> RTAPAY15
 Description  ===> NUMITEMS IN TSQ > 50

 Event         ===> YES          Generate Event (Yes/No)
  Event View   ===> TSQ          View for Event
  Priority     ===> 255          Event Priority (1 to 255)
  Event Text   ===> AUX TSQUEUE PUTQ ITEMS > 50

 External Msg ===> YES          Generate External Message (Yes/No)
  Enter Msg    ===> AUX TSQUEUE PUTQ ITEMS > 50
  Exit Msg     ===> AUX TSQUEUE PUTQ ITEMS < 50

 Alert         ===> NO           Generate Alert (Yes/No)
  CMAS Name    ===>              CMAS to Issue Alert
  Enter Text   ===>
  Exit Text    ===>

  Restart      ===> NO           Cancel for ARM Restart (Yes/No)

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:

```
----------------------- Create Analysis Definition for PLXPROD1 --------------
COMMAND ==>

 Name             ===> RTDPAY15
 Description      ===> TSQ NUMITEMS FOR WLM / RTA
 Perform Ops      ===> NO        Perform EVALDEF operations changes (YES, NO)
 Sample Interval  ===> 300       Interval between samples in seconds (1-86400)
 Action Name      ===> RTAPAY15  Action definition name or generic

                      VLS    LS    LW    HW    HS    VHS
Entry Intervals  ===> 0001  0001  0001  0001  0001  0001
Exit  Intervals  ===> 0001  0001  0001  0001  0001  0001

Evaluation expression:
===> RTEPAY15
===>
===>
===>
===>
===>
===>

Press Enter to create the Analysis Definition.
Type END or CANCEL to cancel without creating.
```

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:

                    Action or Generic    Severity
  SAM                    =>              =>
  SOS                    =>              =>
  SYSDUMP                =>              =>
  TRANDUMP               =>              =>
  MAXTASK                =>              =>
  STALL                  =>              =>

 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:

```
--------------- Update System - Analysis Attributes - for PLXPROD1-------------
COMMAND ===>

 System Name        CICSPA01
 Description        Target region 1 on System A

 Analysis active          ===> YES      Activate at RTA startup
 Analysis specification                 Current RTASPEC
 Specification source                   Type of link to RTASPEC
 System group name                      System group if implicit source


 System availability management:
                    Action or    Action        Severity        Severity
                    Generic      Inherit                        Inherit
  SAM        ===>                ===> NO   ===>          ===> NO
  SOS        ===>                ===> NO   ===>          ===> NO
  SYSDUMP    ===>                ===> NO   ===>          ===> NO
  TRANDUMP   ===>                ===> NO   ===>          ===> NO
  MAXTASK    ===>                ===> NO   ===>          ===> NO
  STALL      ===>                ===> NO   ===>          ===> NO


 Type DOWN or UP to view other System Screens.
 Press ENTER to Update the System.
 Type END or CANCEL to cancel without updating.
```

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:

```
-------------------- Update WLM Specification for PLXPROD1 --------------------
COMMAND  ===>

 WLM Spec Name        ===> WLSPAY02
 Description          ===> Workload using RTA for target region selection
 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         ===> CSGTGTS3      Default CICS System,Group or Generic

 Event Name           ===> RTDPAY15      RTADEF, STATDEF, or Generic

 Abend Health         ===> 0             Target ABEND Health Factor (0 - 99)
 Abend Load           ===> 0             Target ABEND Load Factor (0 - 99)
 Algorithm Type       ===> QUEUE         Algorithm Type (GOAL, QUEUE)


Press Enter to update WLM Specification.
Type END or CANCEL to cancel without updating.
```

Notice that the Event Name value is the name of the analysis definition you created in step 4 on page 133.

Note: For a complete description of the WLMSPEC view, see "WLMSPEC (Workload specifications)" on page 80.

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.

Dynamic routing an EXEC CICS START TERMID command

This example describes how to use the end user interface (EUI) 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 end user interface (EUI) 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 CSGTGTS1. Transaction group TRGPAY03 has transactions PAY1, PAY2, PAY3, and PAY4 associated with it. Workload definition WLDPAY03 was defined to tell CICSPlex 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:

```
 ------------------- Create WLM Specification for PLXPROD1 -------------------
 COMMAND  ===>

 WLM Spec Name       ===> WLSDYN01
 Description         ===> Dynamic routing START

 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        ===> CSGTGTS1     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)

 Algorithm Type      ===> GOAL         Algorithm Type (GOAL, QUEUE)


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

   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 (Workload specifications)" on page 80.

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 SM 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.

Dynamic routing of an inbound client DPL request

This example describes how to use the end user interface (EUI) 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 "Dynamic routing an EXEC CICS START TERMID command" on page 136.

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 a 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 attibute 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 SM Managing Business Applications*.

Dynamic routing of a peer-to-peer DPL request

This example describes how to use the end user interface (EUI) 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.

dynamically route peer-to-peer DPL

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 "Dynamic routing an EXEC CICS START TERMID command" on page 136. 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.

Balancing CICS BTS activities

This example describes how to use the end user interface (EUI) to balance a CICS BTS-related workload.

This example uses the configuration that has been used for earlier examples. You are working in CICSplex 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 "Separating CICS BTS activities" on page 142 and "CICS release requirements for dynamic routing" on page 28.

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.

```
 -------------------- Create WLM Specification for PLXPROD1 --------------------
  COMMAND  ===>

  WLM Spec Name        ===> WLSCBTS
  Description          ===> Routing CICS BTS activity

  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         ===> CSGTGTS1    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)

  Algorithm Type       ===> QUEUE       Algorithm Type (GOAL, QUEUE)


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

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 CSGTGTS1.
- An Algorithm Type value. For this example, use QUEUE.

4. Associate the workload specification with routing region scope CSGTGTS1.

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 CSGTGS1 are next started, BTS activities are balanced among the target regions.

Separating CICS BTS activities

This example describes how to use the end user interface (EUI) 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 "Balancing CICS BTS activities" on page 140. 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 viii and "CICS release requirements for dynamic routing" on page 28.

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     ===> TRGCBTS1
 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 CICSPlex 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 54.

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  ===>

  Trangroup               TRGPAY03

       Transaction       ACTIVTY 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  ===>

  Definition Name      ===> WLDCBTS3
  Description          ===> Separate CICS BTS activities

  Trangroup Name       ===> TRGCBTS1       Specific Trangroup, Generic, or Blank
  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 63.

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.

Balancing an enterprise bean workload

This example describes how to use the end user interface (EUI) to balance an enterprise bean workload.

In an enterprise bean environment, the TOR CICSPT01 is the listener, and the enterprise bean may run in any of the AORs, CICSPA01, CICSPA02, and CICSPA03 in response to a client request. There are MRO links between the regions.

Defining the workload management environment

- Define the CICS region environment:

  1. Set the DSRTPGM system initialization parameter in all regions to EYU9XLOP in one of the following ways:
     - In the system initialization table (see the *CICS System Definition Guide*).
     - On the PARM parameter in the startup job (see the *CICS System Definition Guide*).
     - In the Dst Route Pgm attribute of the CICSRGND view (see the *CICSPlex System Manager Operations Views Reference*).

  2. Set the IIOPLISTENER system initialization parameter to NO in the AORs. (The default value is YES which is correct for the listener region.)

  3. Use CICSSYS to define the listener region (CICSPT01) and the AORs. Set the Routing Support Active attribute to YES in all regions. Set Target Routing at Startup to YES in the AORs. If the listener region is not an AOR set Target Routing at Startup to NO. See *CICSPlex System Manager Administration*.

     If you are using BAS you should include the statement:

     ```
     MASPLTWAIT(YES)
     ```

     in the EYUPARM file for all listener regions, to ensure that the local CICSPlex SM environment is properly established at MAS initialization time. 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.

4. Create two CICS system groups using CICSGRP. The first group (EJBCSG01 in this example) contains the listener region and the AORs. The second group (EJBCSG02) should contain only the AORs. See *CICSPlex System Manager Administration*

- Create the enterprise bean environment. See *Java Applications in CICS* for a detailed discussion of the environment needed for running enterprise beans under CICS.

  Use CEDA or BAS to define and install the following:

  1. A TCP/IP Service definition for the IP portnumber, which specifies the enterprise bean request receiver CIRR as the Transaction attribute. See the *CICS Resource Definition Guide* for details of the CEDA definition or *CICSPlex System Manager Managing Business Applications* for details of the BAS definition.

  2. A CorbaServer definition for a logical server comprising the three AORs. The TCP/IP Service name must be specified in the CorbaServer UNAUTH attribute. See the *CICS Resource Definition Guide* for details of the CEDA definition or *CICSPlex System Manager Managing Business Applications* for details of the BAS definition.

  3. A transaction definition for the default request processor transaction CIRP (program DFHJIIRP).See the *CICS Resource Definition Guide* for details of the CEDA definition or *CICSPlex System Manager Managing Business Applications* for details of the BAS definition.

  4.   A definition for the DJAR that your beans are to be deployed into. See the *CICS Resource Definition Guide* for details of the CEDA definition or *CICSPlex System Manager Managing Business Applications* for details of the BAS definition.

  5. Install the TCP/IP definition in the listener region and the AORs.

  6. Install transaction CIRP as dynamic in the listener region.

  7. Install the CorbaServer and DJAR definitions in the AORs.

- Create the workload management definitions:

  If all enterprise beans are to be balanced across all available AORs, the only definition you need is a workload specification (WLMSPEC):

  1.   Create the workload specification:

```
------------------ Create WLM Specification for EYUPLX01 --------------------
COMMAND ===>

 WLM Spec Name             EJBSPEC1
 Description          ===> Balanced EJB 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 criteria
                           (USERID, LUNAME)
 Create Affinity     ===> N/A       Create auto affinity (YES, NO, N/A)
 Target Scope        ===> EJBCSG02  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)
 Algorithm Type      ===> QUEUE     Algorithm Type (GOAL, QUEUE)

Press ENTER to create the WLM Specification.
Type END or CANCEL to cancel without creating.
```

Figure 45. Creating a workload specification

> In this definition theTarget Scope is the group which contains AORs only (EJBCSG02). This is because all dynamic transactions are to be routed to the AORs through this WLMSPEC.

2. Add the WLMSPEC to the group of all MASs (EJBCSG01).

> This is because the scope of the WLM balancing processing must cover all of the regions, the listener region for routing decisions and the AORs so that their workloads are made visible to CICSPlex SM. On the other hand, 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 of AORs may execute the dynamic transactions routed through it.

3. You can use the WLMSCOPE command to view the groups associated with specification EJBSPEC1.

```
 W1 =WLMSCOPE=========EYUPLX01=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 CICSPA01  CICSSYS   INHERIT  EJBCSG01
    EJBSPEC1 CICSPA02  CICSSYS   INHERIT  EJBCSG01
    EJBSPEC1 CICSPA03  CICSSYS   INHERIT  EJBCSG01
    EJBSPEC1 CICSPT01  CICSSYS   INHERIT  EJBCSG01
```

Figure 46. WLMSCOPE command output

> When all of the MASs are started, 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

Restart the MASs and ensure that all the resources needed by each region are installed. You can use the EJCOSE view to monitor the CorbaServer status and the EJDJAR view to monitor DJAR status.

When all the CorbaServers and their assiciated DJARs are INSERVICE, issue the PUBLISH command against each 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

You can use the normal workload management workload definition commands to isolate the execution of enterprise beans to specific CorbaServers in specific regions.

To do this, you must associate a bean name with a CICS transaction, so that workload management can route that transaction to a predetermined CICS region.

You also need a larger definition set than for simple enterprise bean workload balancing. As well as a workload specification to control the workload operation, you need sets of workload management definitions and transaction group definitions beneath it to implement the bean separation.

Using the workload balancing definition set described in "Balancing an enterprise bean workload" on page 144 as a starting point, add the following definitions to it:

1. Copy the definition of the CIRP transaction that you created for workload balancing under a different transaction name for each bean that you wish to be separated, in the listener and all the AORs.

   For example, if you wish to separate three beans (*Alpha, Beta and Gamma*), copy the current CIRP definition three times as transactions EJB1, EJB2 and EJB3.

2. When you have completed the transaction definitions, you must define request models for each of the beans to associate the bean name with a transaction. If you specify INTFacetype(BOTH) you need only define one request model for each bean. See the *CICS Resource Definition Guide* or *CICSPlex System Manager Managing Business Applications* for more details.

3. Install the TCP/IP sevice definition in the listener and the AORs and the request model definitions in the listener.
4. Install the request processor transaction CIRP as dynamic in the listener region and the CIRP clones (EJB1,EJB2 and EJB3) in the listener and the AORs.
5. Create TRANGRP definitions to isolate the CICS transactions:

```
----------------------- Create Trangroup for EYUPLX01 ------------------------
 COMMAND ===>

  Trangroup name           EJBTRGP1
  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.
```

Figure 47. Creating 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 EJBTRGP2 and EJBTRGP3. From the resultant TRANGRP list, issue the ADD prefix command against transaction group EJBTRGRP1 and add transaction EJB1 to it.

```
------------------ Add Transaction to Trangroup for EYUPLX01 ------------------
COMMAND  ===>

 Trangroup                EJBTRGP1

     Transaction       PCONV Mode       Error
===> EJB1              ===>
===>                  ===>
===>                  ===>
===>                  ===>
===>                  ===>
===>                  ===>
===>                  ===>
===>                  ===>
===>                  ===>
===>                  ===>



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

Figure 48. Adding transaction EJB1 to group EJBTRGRP1

> Repeat this to add transaction EJB2 to TRANGRP EJBTRGP2 and transaction EJB3 to TRANGRP EJBTRGP3.

6. Using the WLMDEF command, create a workload definition for each of the transactions that is to be separated.

```
---------------------- Create Workload Definition for EYUPLX01 ---------------
COMMAND  ===>

 Definition Name  ===>EJBWDEF1
 Description      ===> Alpha Bean

 Trangroup Name   ===> EJBTRGP1          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     ===> CICSPA01       CICS System, Group, or Generic

Press Enter to create definition.
Type END or CANCEL to cancel without creating.
```

Figure 49. Creating a workload definition

> This definition associates the transactions in group EJBTRGP1 (in this case just the EJB1 transaction) with a specific scope. Repeat this definition twice to separate TRANGRP EJBTRGP2 to MAS CICSPA02 and TRANGRP EJBTRGP3 to CICSPA03. You must now create a WLMGROUP to allow the association of the WLMDEFs to the WLMSPEC. CREate one named EJBGRP1 and ADD WLMDEFs EJBWDEF1, EJBWDEF2 and EJBWDEF3 to it.

7. Create the workload management specification (WLMSPEC).

```
--------------------- Update WLM Specification for EYUPLX01 -------------------
COMMAND ===>

 WLM Spec Name           EJBSPEC2
 Description        ===> Separated EJB 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 criteria
                            (USERID, LUNAME)
 Create Affinity    ===> N/A       Create auto affinity (YES, NO, N/A)
 Target Scope       ===> EJBCSG02  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)
 Algorithm Type     ===> QUEUE     Algorithm Type (GOAL, QUEUE)

Press ENTER to update the WLM Specification.
Type END or CANCEL to cancel without updating.
```

Figure 50. Updating a workload specification for enterprise bean separation

8. From the WLMGROUP view use the ADD command to add EJBGRP1 to the workload specification you have just defined. You can verify the management definition hierarchy by issuing a MAP command against this WLMSPEC.

```
-------------------- MAP of WLMSPEC EJBSPEC2 ----------------- Row 1 of 3
 COMMAND ===>
WLMSPEC      WLMGROUP    WLMDEF      TRANGRP
--------     --------    --------    --------
EJBSPEC2 --- EJBGRP1  -+- EJB1     --- EJB1
                      |- EJB2     --- EJB2
                      +- EJB3     --- EJB3
------------------------ End Of Map -----------------------------------
```

Figure 51. Map of WLMSPEC showing workload management definition hierarchy

9. Add the WLMSPEC to the system group comprising all MASs, that is the listener and the AORs. The target scope is still the group which consists of the AOR MASs only. You can use the WLMSCOPE comand to view the workload specification.

```
W1 =WLMSCOPE==========EYUPLX01=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 CICSPA01  CICSSYS  INHERIT  EJBCSG01
     EJBSPEC2 CICSPA02  CICSSYS  INHERIT  EJBCSG01
     EJBSPEC2 CICSPA03  CICSSYS  INHERIT  EJBCSG01
     EJBSPEC2 CICSPT01  CICSSYS  INHERIT  EJBCSG01
```

Figure 52. WLMSCOPE command output

10. When all of the MASs 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 CICSPA01, *Beta* bean to MAS CICSPA02 and *Gamma* bean to MAS CICSPA03. Use the command LOCTRAN EJB* to inspect the use counts for each transaction and expect to see them incremented each time one of these beans is driven from your client.

You may, if you wish, introduce more granularity into the separation of your enterprise beans by separating them by bean method calls. Thus for example you can send Bean1.method1() to CICS1 and Bean1.method2() to CICS2. To do this you must define your transactions, copying the CIRP transaction definition as described earlier. For each of the methods to be separated you need to define a request model with INTFacetype(REMOTE) and associate one of the transactions with it. You also need a request model with INTFacetype(HOME) or (BOTH) to handle calls to the local region and direct them to the appropriate AOR. Then continue with the instructions for separation of enterprise beans given earlier

Managing a Link3270 bridge workload

These examples describe how to use the end user interface (EUI) to manage a Link3270 bridge workload

In the case of Link3270 bridge requests, the client application in the requester region calls the Link3270 bridge using EXEC CICS LINK, EXCI or ECI, and passes a communication area to the bridge router program, DFHL3270, which runs in the router region. The transaction ID that is used for Link3270 bridge workload balancing is the name that is passed to DFHL3270 in the communication area and is not necessarily the same as the transaction name entered at the terminal or workstation. The target regions contain the bridge environment in which the target transaction runs. The target regions must be at CICS Transaction Server for z/OS, Version 2 Release 2 or later because earlier releases do not contain the correct Link3270 bridge environment.

When CICSPlex SM is in use and the CICSPlex SM routing exit, EYU9XLOP is specified as the SIT DTRPGM parameter, DFHL3270 uses CICS distributed program linking to pass control to EYU9XLOP. The mirror program, DFHMIRS, passes the following information to EYU9XLOP in the DFHDYPDS communication area:

- A DYRTYPE value of 8, which indicates a Link3270 bridge request type
- An eight-character bridge token in the DYRBRTK field
- The transaction id of the transaction that is to execute in the target region in the DYRTRAN field

For more information about the Link3270 bridge see the *CICS External Interfaces Guide*.

CICS distributed program linking is described in detail in the *CICS Intercommunication Guide*

Balancing a Link3270 bridge workload

In this example CICSPT01 is the router region and the target regions are CICSPA01, CICSPA02 and CICSPA03.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1 from the current view.

2. Set the DTRPGM system initialization parameter to EYU9XLOP in all regions. (See the *CICS System Definition Guide*.)

3. Use the CICSSYS view to update the definitions of the regions (CICSPT01, CICSPA01, CICSPA02 and CICSPA03). Set the Routing Support Active attribute to YES in all four regions. Set the Target Routing at Startup attribute to YES in the regions that are to act as target regions. (See *CICSPlex System Manager Administration* for a description of the CICSSYS view.)

4. Use the CICSGRP view to create a CICS system group (CSGTGTS1in this example) which is to contain the regions that are to act as targets. (See *CICSPlex System Manager Administration* for a description of the CICSGRP view.)

5. Add the target regions to CSGTGTS1.

6. Create a workload specification. Issue the CRE command from the WLMSPEC view and complete the Create WLM specification panel as shown:

```
------------------ Create WLM Specification for PLXPROD1 --------------------
COMMAND ===>

 WLM Spec Name           BRSPEC01
 Description         ===> Link3270 Bridge 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 criteria
                         (USERID, LUNAME)
 Create Affinity    ===> N/A       Create auto affinity (YES, NO, N/A)
 Target Scope       ===> BRITGTS1  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)
 Algorithm Type     ===> QUEUE     Algorithm Type (GOAL, QUEUE)

Press ENTER to create the WLM Specification.
Type END or CANCEL to cancel without creating.
```

You must supply:

- The name of the workload specification. In this example it is called BRSPEC01.
- 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 is 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, which is the name of the region or group of regions (BRITGTS1 in this example) to which work is to be routed.
- An Algorithm Type. This example uses QUEUE but you can specify either QUEUE or GOAL for Link3270 bridge requests.

A complete description of the WLMSPEC view is given in "WLMSPEC (Workload specifications)" on page 80.

7. Associate the workload specification with the routing region scope using the Add Scope for Specification panel of the specification that you have just created (BRSPEC01 in this example).

When the regions are next restarted the workload will be balanced across the target regions. You can use the command WLMAWORK BRSPEC01 to check that the workload specification is active. You can use the command WLMAWAOR BRSPEC01 to see which target regions are being routed to.

Separating a Link3270 bridge workload

This example uses the same configuration as that described in "Creating workload management definitions using the end user interface" on page 53.

You can separate Link3270 bridge workloads by user ID, or transaction group. You can also separate by LU name, but only if you are overriding the NETNAME which the bridge generates automatically. See "Separating Link3270 bridge workloads" on page 15 for details of how to do this. You should also know that in the case of Link3270 bridge workloads the LU name is the eight–character NETNAME of the terminal running the client transaction that started the Link3270 bridge, rather than the NETNAME of the bridge facility itself. To separate by bridge facility NETNAME you must modify the EYU9WRAM module. See "Separating Link3270 bridge workloads" on page 15 for more information. CICS will route all transactions running under the same bridge facility to the same target region. You cannot force them to go to different regions.

The following example describes how to separate a bridge workload by userid and transaction group. Add the following definitions to those that you created in "Creating workload management definitions using the end user interface" on page 53.

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:

separating BTS activities

```
--------------------- Create Trangroup for PLXPROD1 ------------------------
COMMAND  ===>

 Trangroup name    ===> TRGBRI01
 Description       ===> Link3270 bridge transaction group

 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.
```

The Affinity Relation and Affinity Lifetime fields must be left blank and the Create Affinity field set to N/A because CICSPlex SM does not handle affinities between Link3270 bridge transactions.

A complete description of the TRANGRP view is given in "TRANGRP (Transaction groups)" on page 54.

3. Identify the transactions in group TRGBRI01.

   From the TRANGRP view, move the cursor to the entry for TRGBRI01, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Add the names of transactions that you wish to include in TRGBRI01:

```
------------------- Add Transaction to Trangroup for PLXPROD1 ------------------
COMMAND  ===>

 Trangroup                TRGPAY03

     Transaction     ACTIVTY Mode       Error
===> BRI1            ===>
===>                 ===>
===>                 ===>
===>                 ===>
===>                 ===>
===>                 ===>
===>                 ===>
===>                 ===>
===>                 ===>
===>                 ===>


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

4. Repeat the previous two steps for any further transactions that you wish to be routed to different regions.

5. 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  ===>

   Definition Name       ===> WLDBRI01
   Description           ===> Separate Link3270 bridge activities

   Trangroup Name        ===> TRGBRI01      Specific Trangroup, Generic, or Blank
   Terminal Luname       ===> *             Specific or pattern Luname
   User Id               ===> BRIUSER1      Specific or pattern Userid
   Process Type          ===> *             Specific or pattern Process Type
   Target Scope          ===> CICSPA01      CICS System, Group, or Generic


  Press Enter to create definition.
  Type END or CANCEL to cancel without creating.
\
```

These values indicate that transactions in group TRGBRI01 entered by
BRIUSER1 are to be routed to CICSPA01.

A complete description of the WLMDEF view is given in "WLMDEF (Workload
definitions)" on page 63.

6. Repeat the previous step for any further transaction groups you have created
    for transactions that are to be routed to different regions.

7. 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          ===>  WLGBRI01
   Description          ===>  Workload Group for WLDBRI01




  Press Enter to create Workload Group.
  Type END or CANCEL to cancel without creating.
\
```

A complete description of the WLMGROUP view is given in "WLMGROUP
(Workload groups)" on page 69.

8. Add the workload definition WLDBRI01 and any other workload definitions you
    have created to WLGBRI01:

    a. From the WLMDEF view issue the ADD command against the entry for
        WLDBRI01.

    b. Complete the panel as shown:

```
                 ------------------ Add WLM Definition to Workload Group for PLXPROD1 --------
                 COMMAND  ===>

                  Workload Definition          WLDBRI01
                  Description                  Link3270 bridge workload definition

                  Workload Group       ===>  WLGBRI01            Group Name or Generic

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

c. Repeat for any additional workload definitions that you created in step 5.

9. Add workload group WLGBRI01 to workload specification BRSPEC01.

    a. From the WLMGROUP view issue the ADD command against WLGBRI01. This causes the Add WLM group to Workload Specification Panel to be displayed.

    b. Enter the name of the workload specification BRSPEC01 in the Specification Name field.

10. In the WLMDEF view issue INS against workload definition WLDBRI01 to install it into the active workload. This ensures that the workload separation definitions you have just created take effect immediately. You can issue the WLMWADEF command to check that the workload definition is active.

Note: If you wish to separate by luname you must enter LUNAME in the MATCHKEY field of the TRANGRP Create panel and the luname in the Terminal Luname field of the WLMDEF Create panel. Refer to "Separating Link3270 bridge workloads" on page 15 for a description of the restrictions on the use of luname when separating Link3270 bridge workloads.

Part 4. Appendixes

Appendix A. Copy books

Thischapter contains:
* "EYURWCOM"
* "EYURWSVE" on page 167
* "EYURWTRA" on page 169

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 53 on page 160.

copy books

```
EYURWCOM          DSECT ,               EYU9WRAM communication area
WCOM_PREFIX    DS    0CL20              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_INP_BUFF     DS    A               Address of Input Buffer
WCOM_INP_BUFFL    DS    F               Length of Input Buffer
WCOM_TASK_PRIO    DS    H               Task Priority
WCOM_SCLASS       DS    XL4             Task Service Class
WCOM_DYRTYPE      DS    CL1             Request type
WCOM_DYRLPROG     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_FILL3        DS    CL2             Reserved
WCOM_DA_TOKEN     DS    XL4             API Token Value
WCOM_RET_RESP     DS    F               EYU9WRAM result indicator
WCOM_ERR_APPLID   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_VECT    DS    A               Address of SCOP_VECT
WCOM_SCOP_CNT     DS    F               Count of elements in SCOP_VECT
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
```

Figure 53. The EYURWCOM communication area (Part 1 of 2)

```
WCOM_AFF_AUTO      DS   CL1              WLM Automatic affinity create
                                         status
WCOM_FILL5         DS   CL1              Reserved
WCOM_WORK_NAME     DS   CL8              WorkLoad Name
WCOM_TGRP_NAME     DS   CL8              Transaction Group name
WCOM_EVENT_NAME    DS   CL8              Event Name defined in the
                                         Trangroup for this transaction
                                         (Blanks if none)
WCOM_COMMAREA      DS   A                Address of Transaction Commarea
WCOM_COMMAREAL     DS   F                Length of Transaction Commarea
WCOM_PROCESS_NAME  DS   CL36             CICS BTS process name
WCOM_PROCESS_TYPE  DS   CL8              CICS BTS process type
WCOM_PROCESS_ID    DS   CL52             CICS BTS process id
WCOM_ACTIVITY_ID   DS   CL52             CICS BTS activity id
WCOM_ACTIVITY_NAME DS   CL16             CICS BTS activity name
WCOM_PROCESS_COMP  DS   CL1              CICS BTS process completing
WCOM_ACTIVITY_COMP DS   CL1          CICS BTS activity completing
WCOM_LENGTH        EQU  *-EYURWCOM       Length of structure
```

Figure 53. The EYURWCOM communication area (Part 2 of 2)

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.
> **5**   PERMANENT.
> **6**   DELIMIT.

7	ACTIVITY.
8	PROCESS.

This field corresponds to the Affinity Lifetime field on the Create WLM Specification panel. Refer to page 82 for a description of each value.

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 "Affinity Relation" on page 82 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_BRIDGE_TOKEN

Specifies, as an 8-character data-value, the bridge facility token.

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 an 8-byte data-value. For Dynamic Program Link, this field contains the name of the program to be executed. For Dynamic Transaction Routing, this field contains the name of an alternate program to be loaded if the transaction executes in the local region. For User Service Calls, the value will be returned in the User Service Program Commarea

(EYURWTRA) field WTRA_DYRLPROG. This field may be modified, but the
modified value will be ignored unless WCOM_CTYPE equals 0 (Route
Selection) or 1 (Route Error).

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.
3	For routing a transaction initiated by an EXEC CICS START command, where there is data associated with the START.
4	For routing, notification, or termination of a program-link request.
5	For routing a CICS BTS request.
6	For routing a non-terminal START request.
7	For routing of an IIOP request.
8	Link3270 bridge requests
9	For routing, notification, or termination of a program-link request, where there is a channel associated with the program-link.
A	For routing a transaction initiated by an EXEC CICS START command, where there is a channel associated with the START.
B	For routing a non-terminal START command, where there is a channel associated with the START.

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.
C	The non-terminal initiated START returned TRANSIDERR.
D	The non-terminal initiated START returned IOERR.
E	The non-terminal initiated START returned USERIDERR.
F	The non-terminal initiated START or EXEC CICS LINK command failed because the RESUNAVAIL (Resource Unavailable) condition was raised by the XICERES or XPCERES CICS Global User Exits.

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 39).

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 39).

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 that are available.

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 39).

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.

EYURWSVE

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 in shown in Figure 54 on page 168.

```
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_RTERR_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 SYSID
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   0CL12         HEALTH indicators
WSVE_HLTH_SOS DS   C             Short on Storage indicator
WSVE_HLTH_MAXT DS  C             Maxtask Indicator
WSVE_HLTH_STALL 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 54. 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_APPLID
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_HLTH_STALL

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

The format of EYURWTRA is shown in

copy books

```
#                       EYURWTRA    DSECT ,              Workload MGR DR COMM area
#                       WTRA_PREFIX   DS  0CL20          WTRA  prefix        I
#                       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         I
#                       WTRA_DYRTYPE  DS  C              Request type        I
#                       WTRA_DYRLPROG DS  CL8            DPL program name      IO
#                       WTRA_ERR      DS  C              Error type if Route Error  I
#                       WTRA_OPTER    DS  C              Call Back Option.      O
#                                     DS  C              Reserved.
#                       WTRA_RESPONSE DS  F              Response             O
#                       *                                0 = Normal
#                       *                                8 = ABORT
#                       WTRA_BUFFADDR DS  F              Address of input buffer   I
#                       WTRA_BUFFLNTH DS  F              Length of input buffer    I
#                       WTRA_TRANID   DS  CL8            Transaction Identifier    IO
#                       WTRA_USERID   DS  CL8            USERID              I
#                       WTRA_TERMID   DS  CL4            Principal Facility ID   I
#                                                        - normally obtained from
#                                                          EIBTRMID
#                       WTRA_APPLID   DS  CL8            APPLID of default/
#                                     selected target region   IO
#                       WTRA_SYSID    DS  CL4            SYSID of default/
#                                     selected target region   IO
#                       WTRA_LUNAME   DS  CL17           LUNAME to use       I
#                                     DS  CL3            Reserved
#                       WTRA_NEXTTRAN DS  CL8            The Identifier of the    I
#                                                        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   O
#                       WTRA_API_REAS DS  F              Last API REASON to WRAM     O
#                       WTRA_COMMAREA DS  A              COMMAREA address (0 if none)  I
#                       WTRA_COMMAREAL DS F              COMMAREA length (0 if none)  I
#                                     DS  XL16           Reserved.
#                       WTRA_USERAREA DS  CL128          128 byte user area for use by  IO
#                                                        routing exit.
#                       WTRA_LENGTH   EQU *-EYURWTRA     Length of communication area
```

Note: I indicates that a field is used for input, **O** indicates that a field is used for
output, and **IO** indicates the field can be used for input and output. Fields
that are not described here are reserved for CICSPlex SM. Unpredictable
results may occur if these fields are changed.
#
Figure 55. The EYURWTRA communication area
#

WTRA_API_REAS
Specifies a value of zero (0).

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 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_BRIDGE_TOKEN
Specifies, as an 8-character data-value, the bridge facility token.

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:

0   The request type is dynamic transaction routing.

1   The request type is Notify,

2   The request type is a dynamic START command.

	3	The request type is a dynamic START command with data.
	4	The request type is a dynamic program link.
	5	The request type is CICS BTS request routing.
	6	The request type is a non-terminal START command.
	7	The request type is an IIOP request.
	8	Link3270 bridge requests
#	**9**	The request type is a dynamic program link with channel.
#	**A**	The request type is a dynamic START command with channel.
#	**B**	The request type is a non-terminal START command with channel.

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-btye 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_FUNCTRM).
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.

copy books

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 56 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)
                DS   0D
WRK_UOWCOMM     DS   0C
WRK_UOW_RESP    DS   F
WRK_UOWCOMM_L   EQU  *-WRK_UOWCOMM
        COPY  EYURWTRA                 Include DSECT to map WTRA
SRVPGM  DFHEIENT EIBREG=R11,DATAREG=R13,CODEREG=R12


*----------------------------------------------------------------------*
* Initialize the WTRA COMMAREA.                                        *
*----------------------------------------------------------------------*
        LA    R8,WRK_WTRA            --> WTRA
        USING EYURWTRA,R8            *** USING WTRA ***
        MVC   WTRA_SLENGTH,=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_FUNCSEL  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 56. A sample calling sequence for CICSPlex SM workload management facilities (Part 1 of 3)

sample calling sequence

```
        *------------------------------------------------------------------*
        * 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'                           X
                                             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
                     COMMAREA(EYURWTRA) LENGTH(=AL2(WTRA_LENGTH))       X
               BR    R5                      Exit routine.
```

Figure 56. A sample calling sequence for CICSPlex SM workload management facilities (Part 2 of 3)

```
       *-----------------------------------------------------------------*
       * START_UOW    : Start the Unit Work.                             *
       *-----------------------------------------------------------------*
       START_UOW    DS  0H
               EXEC  CICS LINK PROGRAM(UOWPGM)                          X
                     COMMAREA(WRK_UOWCOMM) LENGTH(=AL2(WRK_UOWCOMM_L))   X
                     SYSID(WTRA_SYSID)                                   X
                     RESP(WRK_EIBRESP)
               CLC   WRK_EIBRESP,DFHRESP(NORMAL)                         X
                                           Did call go ok?
               BE    START_UOWL            ..yes.
               L     R15,=F'-4'            Assume SYSIDERR
               CLC   WRK_EIBRESP,DFHRESP(SYSIDERR)                       X
                                           Is there one?
               BE    START_UOWX            ..yes.
               L     R15,=F'-8'            Load Failure code.
               B     START_UOWX           Go exit.
       START_UOWL   DS  0H
               L     R15,WORK_UOW_RESP     Load Response Code.
       START_UOWX   DS  0H
               BR    R5                    Exit routine.
```

Figure 56. A sample calling sequence for CICSPlex SM workload management facilities (Part 3 of 3)

Sample user-replacement modules

The sample user-replacement module procedures are:

Assembler language

```
//APPLPROG  EXEC EYUEITAL,
//            OUTC=*,
//            CPSMHLQ='CPSM230',
//            CICSHLQ='CICS630',
//            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 57. Sample JCL for replacement module for Assembler language

C/370 language

```
//APPLPROG  EXEC EYUEITDL,
//           OUTC=*,
//           CPSMHLQ='CPSM230',
//           CICSHLQ='CICS630',
//           EDCHLQ='SYS1',
//           COMHLQ='SYS1',
//           LMODDSN='user.load.library',
//           CPARM=('RENT,SOURCE,SHOWINC,TERM',
//            'AGGREGATE,LIST,OFFSET'),
//           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 58. Sample JCL for replacement module for C language

> **Note:** When the C/370 EYU9WRAM sample is compiled using Version 1.0 of the IBM C/370 compiler, EDC0244 warning message will occur because the compiler truncates some of the field names.

PLI language

```
//APPLPROG  EXEC EYUEITPL,
//           OUTC=*,
//           CPSMHLQ='CPSM230',
//           CICSHLQ='CICS630',
//           PLIHLQ='SYS1.IBMSYS.SYS',
//           LMODDSN='user.load.library',
//           PLIPARM=('OBJECT,NODECK,INCLUDE,SYNTAX,LIST,MAP',
//            'STORAGE,OFFSET,XREF',
//            'LANGLVL(OS,SPROG),SYSTEM(CICS)'),
//           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 59. Sample JCL for replacement module for PLI language

COBOL II language

```
//APPLPROG  EXEC EYUEITVL,
//           OUTC=*,
//           CPSMHLQ='CPSM230',
//           CICSHLQ='CICS630',
//           LMODDSN='user.load.library',
//           COBPARM=('LIB,OBJECT,RENT,RES',
//            'APOST,MAP,XREF,TRUNC(BIN)'),
//           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 60. Sample JCL for replacement module for COBOL language

Bibliography

The CICS Transaction Server for z/OS library

The published information for CICS Transaction Server for z/OS is delivered in the following forms:

The CICS Transaction Server for z/OS Information Center
The CICS Transaction Server for z/OS Information Center is the primary source of user information for CICS Transaction Server. The Information Center contains:

- Information for CICS Transaction Server in HTML format.
- Licensed and unlicensed CICS Transaction Server books provided as Adobe Portable Document Format (PDF) files. You can use these files to print hardcopy of the books. For more information, see "PDF-only books."
- Information for related products in HTML format and PDF files.

One copy of the CICS Information Center, on a CD-ROM, is provided automatically with the product. Further copies can be ordered, at no additional charge, by specifying the Information Center feature number, 7014.

Licensed documentation is available only to licensees of the product. A version of the Information Center that contains only unlicensed information is available through the publications ordering system, order number SK3T-6945.

Entitlement hardcopy books
The following essential publications, in hardcopy form, are provided automatically with the product. For more information, see "The entitlement set."

The entitlement set

The entitlement set comprises the following hardcopy books, which are provided automatically when you order CICS Transaction Server for z/OS, Version 3 Release 1:

Memo to Licensees, GI10-2559
CICS Transaction Server for z/OS Program Directory, GI10-2586
CICS Transaction Server for z/OS Release Guide, GC34-6421
CICS Transaction Server for z/OS Installation Guide, GC34-6426
CICS Transaction Server for z/OS Licensed Program Specification, GC34-6608

You can order further copies of the following books in the entitlement set, using the order number quoted above:

CICS Transaction Server for z/OS Release Guide
CICS Transaction Server for z/OS Installation Guide
CICS Transaction Server for z/OS Licensed Program Specification

PDF-only books

The following books are available in the CICS Information Center as Adobe Portable Document Format (PDF) files:

CICS books for CICS Transaction Server for z/OS
General

CICS Transaction Server for z/OS Program Directory, GI10-2586
CICS Transaction Server for z/OS Release Guide, GC34-6421
CICS Transaction Server for z/OS Migration from CICS TS Version 2.3, GC34-6425

CICS Transaction Server for z/OS Migration from CICS TS Version 1.3, GC34-6423

CICS Transaction Server for z/OS Migration from CICS TS Version 2.2, GC34-6424

CICS Transaction Server for z/OS Installation Guide, GC34-6426

Administration

CICS System Definition Guide, SC34-6428

CICS Customization Guide, SC34-6429

CICS Resource Definition Guide, SC34-6430

CICS Operations and Utilities Guide, SC34-6431

CICS Supplied Transactions, SC34-6432

Programming

CICS Application Programming Guide, SC34-6433

CICS Application Programming Reference, SC34-6434

CICS System Programming Reference, SC34-6435

CICS Front End Programming Interface User's Guide, SC34-6436

CICS C++ OO Class Libraries, SC34-6437

CICS Distributed Transaction Programming Guide, SC34-6438

CICS Business Transaction Services, SC34-6439

Java Applications in CICS, SC34-6440

JCICS Class Reference, SC34-6001

Diagnosis

CICS Problem Determination Guide, SC34-6441

CICS Messages and Codes, GC34-6442

CICS Diagnosis Reference, GC34-6899

CICS Data Areas, GC34-6902

CICS Trace Entries, SC34-6443

CICS Supplementary Data Areas, GC34-6905

Communication

CICS Intercommunication Guide, SC34-6448

CICS External Interfaces Guide, SC34-6449

CICS Internet Guide, SC34-6450

Special topics

CICS Recovery and Restart Guide, SC34-6451

CICS Performance Guide, SC34-6452

CICS IMS Database Control Guide, SC34-6453

CICS RACF Security Guide, SC34-6454

CICS Shared Data Tables Guide, SC34-6455

CICS DB2 Guide, SC34-6457

CICS Debugging Tools Interfaces Reference, GC34-6908

CICSPlex SM books for CICS Transaction Server for z/OS

General

CICSPlex SM Concepts and Planning, SC34-6459

CICSPlex SM User Interface Guide, SC34-6460

CICSPlex SM Web User Interface Guide, SC34-6461

Administration and Management

CICSPlex SM Administration, SC34-6462

CICSPlex SM Operations Views Reference, SC34-6463

CICSPlex SM Monitor Views Reference, SC34-6464

CICSPlex SM Managing Workloads, SC34-6465

CICSPlex SM Managing Resource Usage, SC34-6466

CICSPlex SM Managing Business Applications, SC34-6467

Programming

CICSPlex SM Application Programming Guide, SC34-6468

CICSPlex SM Application Programming Reference, SC34-6469

Diagnosis

> *CICSPlex SM Resource Tables Reference*, SC34-6470
> *CICSPlex SM Messages and Codes*, GC34-6471
> *CICSPlex SM Problem Determination*, GC34-6472

CICS family books
Communication

> *CICS Family: Interproduct Communication*, SC34-6473
> *CICS Family: Communicating from CICS on System/390*, SC34-6474

Licensed publications

The following licensed publications are not included in the unlicensed version of the Information Center:

> *CICS Diagnosis Reference*, GC34-6899
> *CICS Data Areas*, GC34-6902
> *CICS Supplementary Data Areas*, GC34-6905
> *CICS Debugging Tools Interfaces Reference*, GC34-6908

Other CICS books

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 3 Release 1.

Designing and Programming CICS Applications	SR23-9692
CICS Application Migration Aid Guide	SC33-0768
CICS Family: API Structure	SC33-1007
CICS Family: Client/Server Programming	SC33-1435
CICS Transaction Gateway for z/OS Administration	SC34-5528
CICS Family: General Information	GC33-0155
CICS 4.1 Sample Applications Guide	SC33-1173
CICS/ESA 3.3 XRF Guide	SC33-0661

Determining if a publication is current

IBM regularly updates its publications with new and changed information. When first published, both hardcopy and BookManager® softcopy versions of a publication are usually in step. However, due to the time required to print and distribute hardcopy books, the BookManager version is more likely to have had last-minute changes made to it before publication.

Subsequent updates will probably be available in softcopy before they are available in hardcopy. This means that at any time from the availability of a release, softcopy versions should be regarded as the most up-to-date.

For CICS Transaction Server books, these softcopy updates appear regularly on the *Transaction Processing and Data Collection Kit* CD-ROM, SK2T-0730-xx. Each reissue of the collection kit is indicated by an updated order number suffix (the -xx part). For example, collection kit SK2T-0730-06 is more up-to-date than SK2T-0730-05. The collection kit is also clearly dated on the cover.

Updates to the softcopy are clearly marked by revision codes (usually a # character) to the left of the changes.

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

You can perform most tasks required to set up, run, and maintain your CICSPlex SM system in one of these ways:
* using a 3270 emulator connected to CICSPlex SM
* using a 3270 emulator logged on to CICS
* using a 3270 emulator logged on to TSO
* using a 3270 emulator as an MVS system console
* using the CICSPlex SM web user interface.

IBM Personal Communications (Version 5.0.1 for Windows 95, Windows 98, Windows NT and Windows 2000; version 4.3 for OS/2) provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICSPlex SM system.

Index

A

abend compensation
  description   20
  requesting   59, 84, 89, 94
  when accessing workload management directly   42
action commands for
  DTRINGRP   54
  TRANGRP   55
  WLMATAFF   102
  WLMATAFS   103
  WLMATGRP   104
  WLMATRAN   106
  WLMAWAOR   107
  WLMAWAOS   109
  WLMAWDEF   110
  WLMAWORD   111
  WLMAWORK   113
  WLMAWTOR   114
  WLMAWTOS   115
  WLMDEF   64
  WLMGROUP   70
  WLMINGRP   73
  WLMINSPC   75
  WLMSCOPE   77
  WLMSPEC   80
activating target region for workload management   108
activating workload management   23
administration menu   53
administration views
  workload management   53
affinity relationship   92
affinity, workload
  activating for transaction group   57, 92
  changing
    for transaction group   58, 92
    for workload specification   81
  deactivating for transaction group   57, 92
  description of   16
  displaying
    for transaction group   54
    for workload specification   80
  establishing for
    transaction group   56
    workload specification   81
  valid relation and lifetime combinations   60, 95
APPC   36, 58, 83, 88, 93
associating scope
  as target region to transaction group   66, 96
  as target region to workload specification   84, 85, 89, 90
  transaction with transaction group   61
  workload definition with workload group   67, 74
  workload group with workload specification   71, 76
automatic transaction initiation (ATI)   54

B

browsing specification   80
browsing transaction group definition   55

C

CICS business transaction services (BTS)   7
  BTS-set   5
  CICSplex considerations   5
  dealing with affinities   5
  release requirements   17, 28
communication areas
  EYURWCOM   37, 159
  EYURWTRA   40, 169
copy books   29, 159
creating a transaction affinity   35
creating a transaction group   55, 56
creating a user-replacement for EYU9WRAM   38
creating a workload definition   64
creating a workload group   70
creating a workload specification   81

D

default transaction group   55, 80, 101, 104, 110
definition views
  WLMATAFD   100
  WLMATAFF   101
  WLMATAFS   102
  WLMATGRP   103
  WLMATRAN   105
  WLMAWAOR   106
  WLMAWAOS   108
  WLMAWDEF   109
  WLMAWORD   111
  WLMAWORK   112
  WLMAWTOR   113
  WLMAWTOS   114
discarding active transaction affinity   102
discarding transactions   106
discarding workload definitions   110
displaying routing regions associated with workload   76
displaying scope
  as routing region for workload specification   77
  as target region for transaction group   63
  as target region for workload specification   80
displaying target regions
  for transaction group   63
  for workloads   80
displaying transaction affinities for group   54
displaying transaction groups   54
displaying transactions in group   53
displaying workload
  active   112
  definitions used by   109
  detailed view of CICS BTS affinity   100
  routing regions assigned to   113

Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

IBM World Trade Asia Corporation
Licensing
2-31 Roppongi 3-chome, Minato-ku
Tokyo 106, Japan

The following paragraph does not apply in the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact IBM United Kingdom Laboratories, MP151, Hursley Park, Winchester, Hampshire, England, SO21 2JN. Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Programming License Agreement, or any equivalent agreement between us.

Programming interface information

This book is intended to help you administer your IBM CICSPlex System Manager (CICSPlex SM) system.

This book also documents Product-sensitive Programming Interface and Associated Guidance Information provided by CICSPlex SM and CICS/ESA.

Product-sensitive programming interfaces allow the customer installation to perform tasks such as diagnosing, modifying, monitoring, repairing, tailoring, or tuning of CICSPlex SM and CICS/ESA. Use of such interfaces creates dependencies on the detailed design or implementation of the IBM software product. Product-sensitive programming interfaces should be used only for these specialized purposes. Because of their dependencies on detailed design and implementation, it is to be expected that programs written to such interfaces may need to be changed in order to run with new product releases or versions, or as a result of service.

Product-sensitive Programming Interface and Associated Guidance Information is identified where it occurs, either by an introductory statement to a chapter or section or by the following marking:

Product-sensitive programming interface

Programming Interface and Associated Guidance Information...

End of Product-sensitive programming interface

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. A current list of IBM trademarks is available on the Web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Other product and service names might be trademarks of IBM or other companies.

Sending your comments to IBM

If you especially like or dislike anything about this book, please use one of the methods listed below to send your comments to IBM.

Feel free to comment on what you regard as specific errors or omissions, and on the accuracy, organization, subject matter, or completeness of this book.

Please limit your comments to the information in this book and the way in which the information is presented.

To ask questions, make comments about the functions of IBM products or systems, or to request additional publications, contact your IBM representative or your IBM authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate, without incurring any obligation to you.

You can send your comments to IBM in any of the following ways:
- By mail, to this address:

  IBM United Kingdom Limited
  User Technologies Department (MP095)
  Hursley Park
  Winchester
  Hampshire
  SO21 2JN
  United Kingdom
- By fax:
  - From outside the U.K., after your international access code use 44–1962–816151
  - From within the U.K., use 01962–816151
- Electronically, use the appropriate network ID:
  - IBMLink: HURSLEY(IDRCF)
  - Internet: idrcf@hursley.ibm.com

Whichever you use, ensure that you include:
- The publication title and order number
- The topic to which your comment applies
- Your name and address/telephone number/fax number/network ID.

193

IBM ®

Product Number: 5655-M15

Spine information:

IBM

CICS TS for z/OS

CICSPlex SM Managing Workloads

Version 3
Release 1