CICS® Transaction Server for OS/390®

CICSPlex® SM Managing Workloads

Release 3

SC33-1807-31

CICS® Transaction Server for OS/390®

CICSPlex® SM Managing Workloads

Release 3

SC33-1807-31

Note!
Before using this information and the product it supports, be sure to read the general information under "Notices" on page v.

Second Edition, March 1999

This edition applies to Release 3 of CICS Transaction Server for OS/390, program number 5655-147, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Information in this edition was previously contained in SC-1807-00, which is now obsolete. Make sure you are using the correct edition for the level of product. The technical changes for this edition are summarized under "Summary of changes," and are indicated by a vertical bar to the left of the changes.

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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.

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C/370	NetView	
DB2	OS/2	

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Preface

This book provides administration information for the CICSPlex® SM component of CICS® Transaction Server for OS/390®. 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 OS/390 Release 3. The term **CICSplex** (spelled with a lowercase letter 'p') means the largest set of CICS systems to be managed by CICSPlex SM as a single entity.

Other terms used in this book are:

CICS TS for OS/390
The CICS element of CICS TS for OS/390

CICSPlex SM
The CICSPlex SM element of CICS TS for OS/390

MVS MVS/Enterprise Systems Architecture SP™ (MVS/ESA™)

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

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

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

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

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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.

For an explanation of other CICSPlex SM terms used in this book, please refer to the Glossary on page 163.

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

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

- CICS Transaction Server for OS/390 1.3
- CICS Transaction Server for OS/390 1.2
- CICS Transaction Server for OS/390 1.1
- CICS for MVS/ESA 4.1
- CICS Transaction Server for VSE/ESA Release 1
- CICS Transaction Server for OS/2 Warp 4.1
- Transaction Server for OS/2 Warp 4.0

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

• CICS for MVS/ESA 3.3
• CICS for MVS 2.1.2
• CICS for VSE/ESA 2.3
• CICS for VSE/ESA 2.2
• CICS for OS/2 2.0.1

Note: IBM Service no longer supports these CICS release levels.

You can use this release of CICSPlex SM to control CICS systems that are connected to, and managed by, your previous release of CICSPlex SM. However, if you have any directly-connectable release levels of CICS, as listed above, that are connected to a previous release of CICSPlex SM, you are strongly recommended to migrate them to the current release of CICSPlex SM, to take full advantage of the enhanced management services. See the *CICS Transaction Server for OS/390 Migration Guide* for information on how to do this.

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

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

CICS system	**CICSPlex SM component of CICS TS 1.3**	**CICSPlex SM 1.3**	**CICSPlex SM 1.2**
CICS TS 1.3	Yes	No	No
CICS TS 1.2	Yes	Yes	No
CICS TS 1.1	Yes	Yes	Yes
CICS for MVS/ESA 4.1	Yes	Yes	Yes
CICS for MVS/ESA 3.3	No	Yes	Yes
CICS for MVS 2.1.2	No	Yes	Yes
CICS TS for VSE/ESA Rel 1	Yes	No	No
CICS for VSE/ESA 2.3	No	Yes	Yes
CICS for VSE/ESA 2.2	No	Yes	Yes
CICS TS for OS/2 4.1	Yes	No	No
TS for OS/2 4.0	Yes	Yes	Yes
CICS for OS/2 2.0.1	No	Yes	Yes

Bibliography

CICS Transaction Server for OS/390

CICS Transaction Server for OS/390: Planning for Installation	GC33-1789
CICS Transaction Server for OS/390 Release Guide	GC34-5352
CICS Transaction Server for OS/390 Migration Guide	GC34-5353
CICS Transaction Server for OS/390 Installation Guide	GC33-1681
CICS Transaction Server for OS/390 Program Directory	GI10-2506
CICS Transaction Server for OS/390 Licensed Program Specification	GC33-1707

CICS books for CICS Transaction Server for OS/390

General	
CICS Master Index	SC33-1704
CICS User's Handbook	SX33-6104
CICS Transaction Server for OS/390 Glossary (softcopy only)	GC33-1705
Administration	
CICS System Definition Guide	SC33-1682
CICS Customization Guide	SC33-1683
CICS Resource Definition Guide	SC33-1684
CICS Operations and Utilities Guide	SC33-1685
CICS Supplied Transactions	SC33-1686
Programming	
CICS Application Programming Guide	SC33-1687
CICS Application Programming Reference	SC33-1688
CICS System Programming Reference	SC33-1689
CICS Front End Programming Interface User's Guide	SC33-1692
CICS C++ OO Class Libraries	SC34-5455
CICS Distributed Transaction Programming Guide	SC33-1691
CICS Business Transaction Services	SC34-5268
Diagnosis	
CICS Problem Determination Guide	GC33-1693
CICS Messages and Codes	GC33-1694
CICS Diagnosis Reference	LY33-6088
CICS Data Areas	LY33-6089
CICS Trace Entries	SC34-5446
CICS Supplementary Data Areas	LY33-6090
Communication	
CICS Intercommunication Guide	SC33-1695
CICS Family: Interproduct Communication	SC33-0824
CICS Family: Communicating from CICS on System/390	SC33-1697
CICS External Interfaces Guide	SC33-1944
CICS Internet Guide	SC34-5445
Special topics	
CICS Recovery and Restart Guide	SC33-1698
CICS Performance Guide	SC33-1699
CICS IMS Database Control Guide	SC33-1700
CICS RACF Security Guide	SC33-1701
CICS Shared Data Tables Guide	SC33-1702
CICS Transaction Affinities Utility Guide	SC33-1777

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CICS DB2 Guide	SC33-1939

CICSPlex SM books for CICS Transaction Server for OS/390

General	
CICSPlex SM Master Index	SC33-1812
CICSPlex SM Concepts and Planning	GC33-0786
CICSPlex SM User Interface Guide	SC33-0788
CICSPlex SM Web User Interface Guide	SC34-5403
CICSPlex SM View Commands Reference Summary	SX33-6099
Administration and Management	
CICSPlex SM Administration	SC34-5401
CICSPlex SM Operations Views Reference	SC33-0789
CICSPlex SM Monitor Views Reference	SC34-5402
CICSPlex SM Managing Workloads	SC33-1807
CICSPlex SM Managing Resource Usage	SC33-1808
CICSPlex SM Managing Business Applications	SC33-1809
Programming	
CICSPlex SM Application Programming Guide	SC34-5457
CICSPlex SM Application Programming Reference	SC34-5458
Diagnosis	
CICSPlex SM Resource Tables Reference	SC33-1220
CICSPlex SM Messages and Codes	GC33-0790
CICSPlex SM Problem Determination	GC33-0791

Other CICS books

CICS Application Programming Primer (VS COBOL II)	SC33-0674
CICS Application Migration Aid Guide	SC33-0768
CICS Family: API Structure	SC33-1007
CICS Family: Client/Server Programming	SC33-1435
CICS Family: General Information	GC33-0155
CICS 4.1 Sample Applications Guide	SC33-1173
CICS/ESA 3.3 XRF Guide	SC33-0661

If you have any questions about the CICS Transaction Server for OS/390 library, see *CICS Transaction Server for OS/390: Planning for Installation* which discusses both hardcopy and softcopy books and the ways that the books can be ordered.

Summary of Changes

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

The information in this book has been updated to incorporate changes made to the CICSPlex SM element of CICS Transaction Server for OS/390 Release 3. Changes made since the last edition are indicated by vertical bars to the left of the change.

New and changed function in CICS Transaction Server for OS/390 Release 3

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

Dynamic routing

CICS Transaction Server for OS/390 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.

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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*.

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 dynamic DPL requests, the new Dynam Status field in the PROGRAMD view indicates whether or not the current program may be dynamically routed. The TASKD, TASK2, and TASK3 views have been amended to include dynamic routing information. New views TASK4, TASK5, TASK6, TASK7, TASK8, and TASK9 have been introduced to show detailed monitoring information. For details, see *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*.

Changes made to this book for CICS Transaction Server for OS/390 Release 3

In addition to the changes required by new and changed product function, the following changes have been made to this book:

- The book has been restructured to accommodate the introduction of new CICSPlex SM function for CICS Transaction Server for OS/390 Release 3:
  - Appendix A has been split: the body of the text has been moved to form "Chapter 4. Customizing the dynamic routing program" on page 23, but the copy book structures remain in "Appendix A. Copy books" on page 143.
  - Appendix B has been split: the body of the text has been moved to form "Chapter 5. Requesting additional dynamic routing support" on page 35, and the copy book structure is now in "Appendix A. Copy books" on page 143.
  - Chapter 1 has been split to form "Chapter 1. Introduction to workload management" on page 3, "Chapter 2. Preparing to manage workloads" on page 7, and "Chapter 3. Activating workload management" on page 19.
- The workload management operations views have been moved from *CICSPlex SM Operations Views Reference* to this book as a new chapter, "Chapter 8. Managing workloads" on page 89.
- The workload management example tasks have been moved from *CICSPlex SM Operations Views Reference* to this book and incorporated in "Chapter 9. Example tasks" on page 111.
- The sections in "Chapter 6. Summary of workload management views" on page 43 on using the end-user interface (EUI) have been removed. See *CICSPlex SM User Interface Guide* for all information on how to use the EUI.

Part 1. Implementing workload management

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Chapter 1. Introduction to workload management

This chapter introduces the concepts involved with workload management and the dynamic routing of transactions and programs. The topics covered are:

- "Workload management and dynamic routing"
- "Workload requirements" on page 4

Workload management and dynamic routing

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

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

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, and for CICS BTS activities, the requesting region is typically an application-owning region (AOR).

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

Target region
: The CICS system in which the transaction or program will run. For all dynamically-routed transactions, programs, and BTS activities, the target region is typically an AOR.

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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 is associated with a transaction or program occurrence.
  - The process type associated with the CICS BTS activity.

  See "Separating the work in a workload" on page 9 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 13.

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 127 for details.
2. For additional information about how CICSPlex SM handles dynamic routing and how you can customize this facility, see "Chapter 4. Customizing the dynamic routing program" on page 23.

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/ESA image.
- For dynamic routing of both terminal-related and non-terminal-related EXEC CICS START commands, requesting, routing, and target regions must be CICS Transaction Server for OS/390 Release 3 or above.

- For dynamic routing of DPLs, routing regions must be CICS Transaction Server for OS/390 Release 3 or above; target regions may be any level of CICS.
- 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, or CICS Transaction Server for VSE/ESA Release 1 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®, CICS for OS/2®, or CICS/VSE®).
- The routing region must be defined as local to a CMAS involved in managing the CICSplex, that is, it cannot be a remote MAS. It must use CICSPlex SM facilities to communicate with that CMAS. For additional information, see *CICS Transaction Server for OS/390 Installation Guide*.

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

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

Before you can implement dynamic and distributed routing, you need to specify Yes in the Routing support active field of the CICS system definition. See *CICSPlex SM Administration*.

Chapter 2. Preparing to manage workloads

This chapter introduces the concepts involved with workload management and the dynamic routing of transactions and programs. The topics covered are:

- "Establishing a workload"
- "Balancing the work in a workload"
- "Separating the work in a workload" on page 9
- "Taking affinity relations into consideration" on page 13
- "Taking abend probabilities into consideration" on page 16

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.

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balancing the work in a workload

The dynamic routing processes are explained using Figure 1, 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.

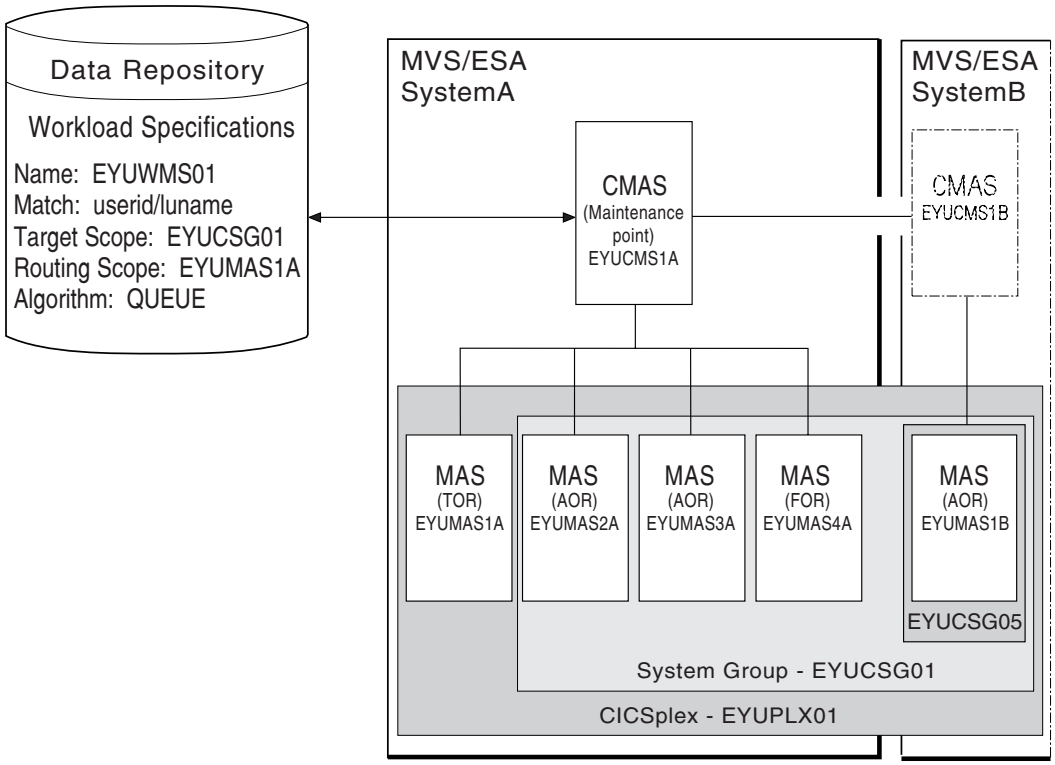

Figure 1. Sample workload balancing definition for dynamic routing

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.

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.

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

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

It is important for the Service Level Administrator to define goals that are realistic for the underlying capacity of the target systems. Transactions of like attributes (for example, transactions that have similar resource consumption, or pseudoconversational transactions) should be assigned to distinct service classes. (The response-time goals can be the same for several service classes.) CICS statistics should be used to help you define these transaction sets. (See the *Performance Guide* for your release of CICS for information about CICS statistics.)

In order for the goal algorithm to be used, all requesting regions, routing regions, and target regions must be on MVS/ESA 5.1 or later images running in goal mode. The requesting regions, routing regions, and target regions themselves must be CICS/ESA 4.1 or later regions, and CICS Transaction Server for VSE/ESA Release 1 and later regions. Switching any of the images back into System Resource Manager (SRM) mode causes CICSPlex SM to revert to the queue algorithm.

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

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

Separating the work in a workload

You can separate the work in a workload based on:

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

Note: You can separate a workload using either luname and userid, or process type. You cannot separate a workload using, for example, a generic process type and a user id.

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 2 on page 10 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.

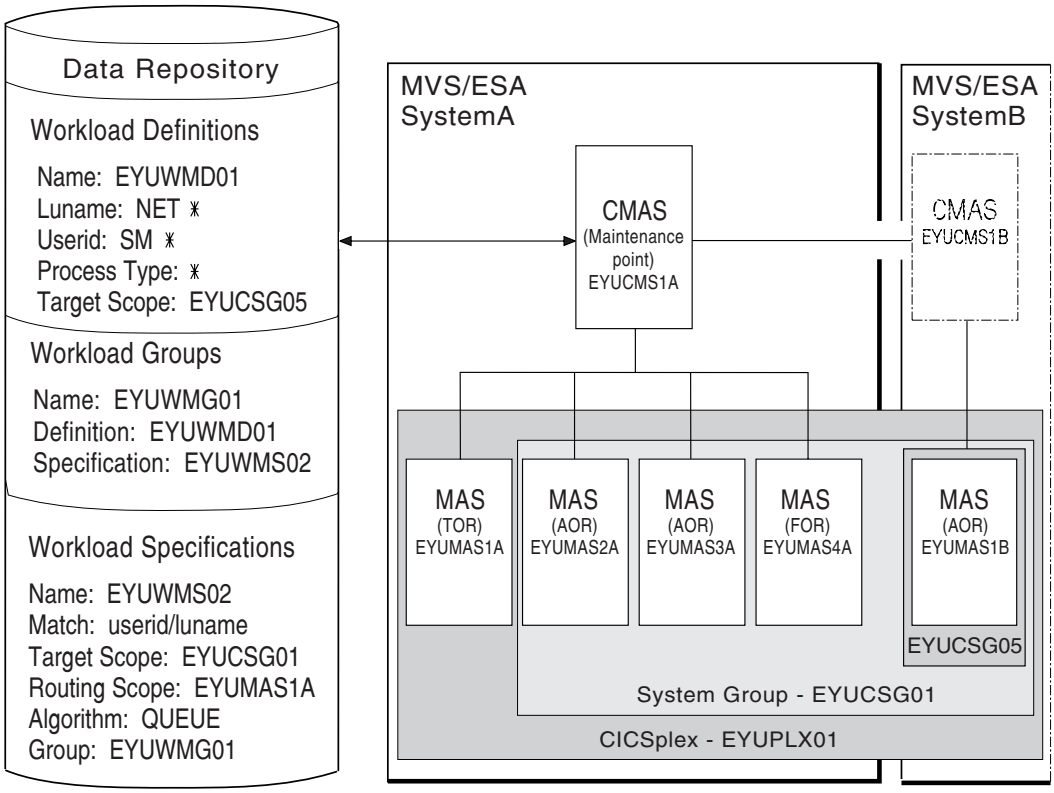

Figure 2. Sample definition separating a workload by terminal and user name

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 3 on page 11 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.

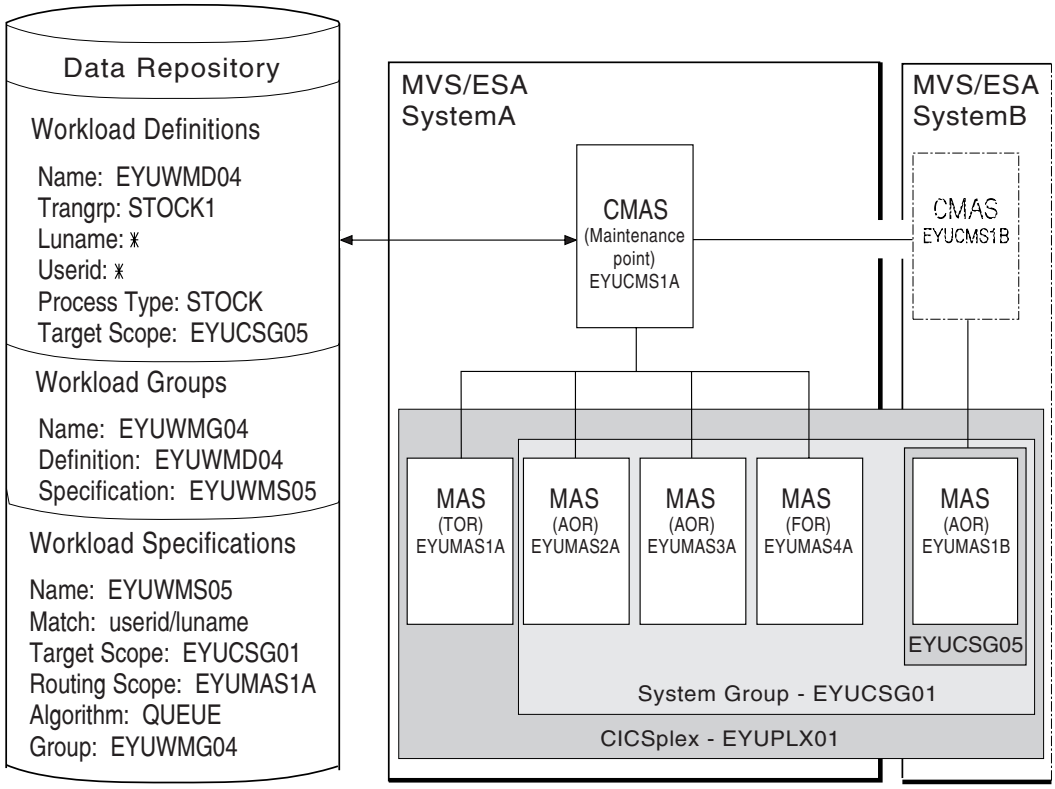

Figure 3. Sample definition separating a workload by process type

If you choose to separate a workload by process type, you must set the Luname and Userid to *. If you separate a workload by Luname and userid, you must set the Process Type field to *. You can separate a workload only either by process type or by luname and userid.

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

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

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

Separating by transaction

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

Figure 4 on page 13 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 page 51.)

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.

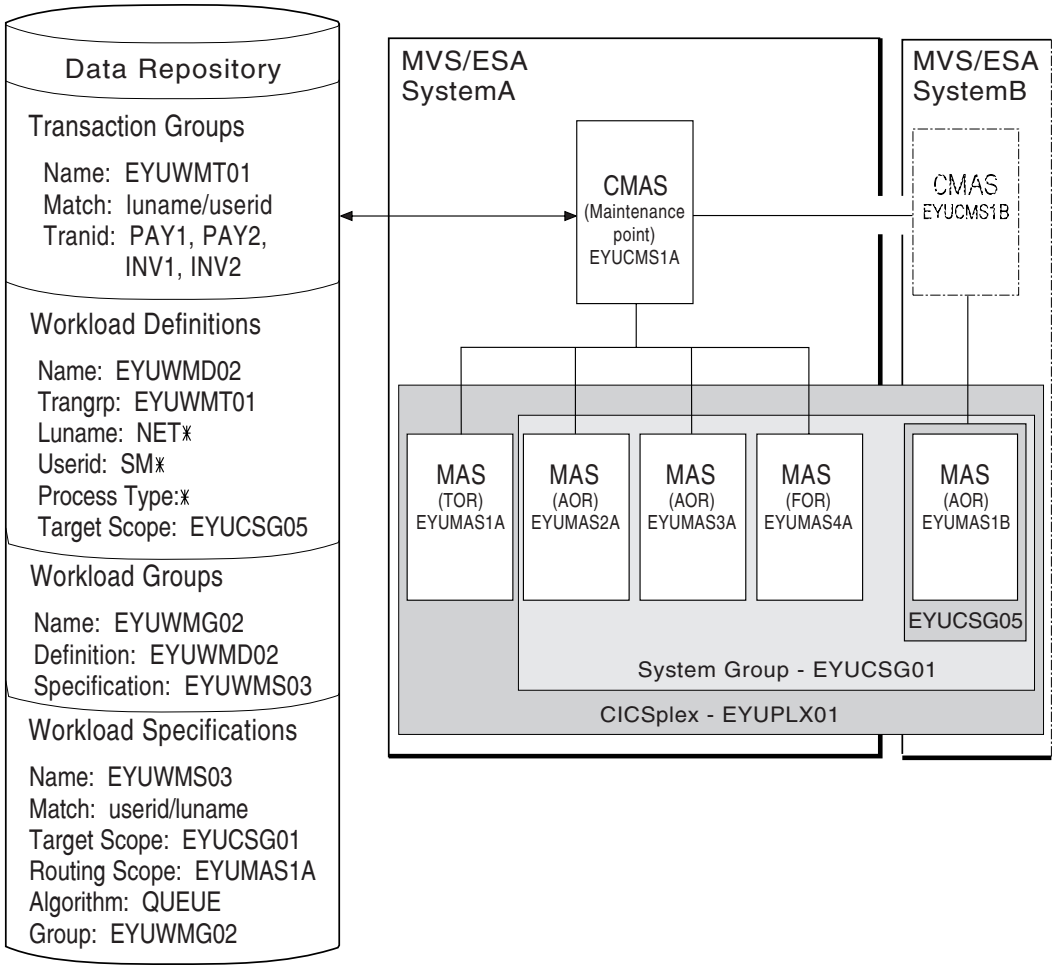

Figure 4. Sample definition separating a workload by transaction

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 Table 8 on page 56.

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

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

CICS BTS considerations

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

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

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

Adding affinities into a workload

Figure 5 on page 15 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.

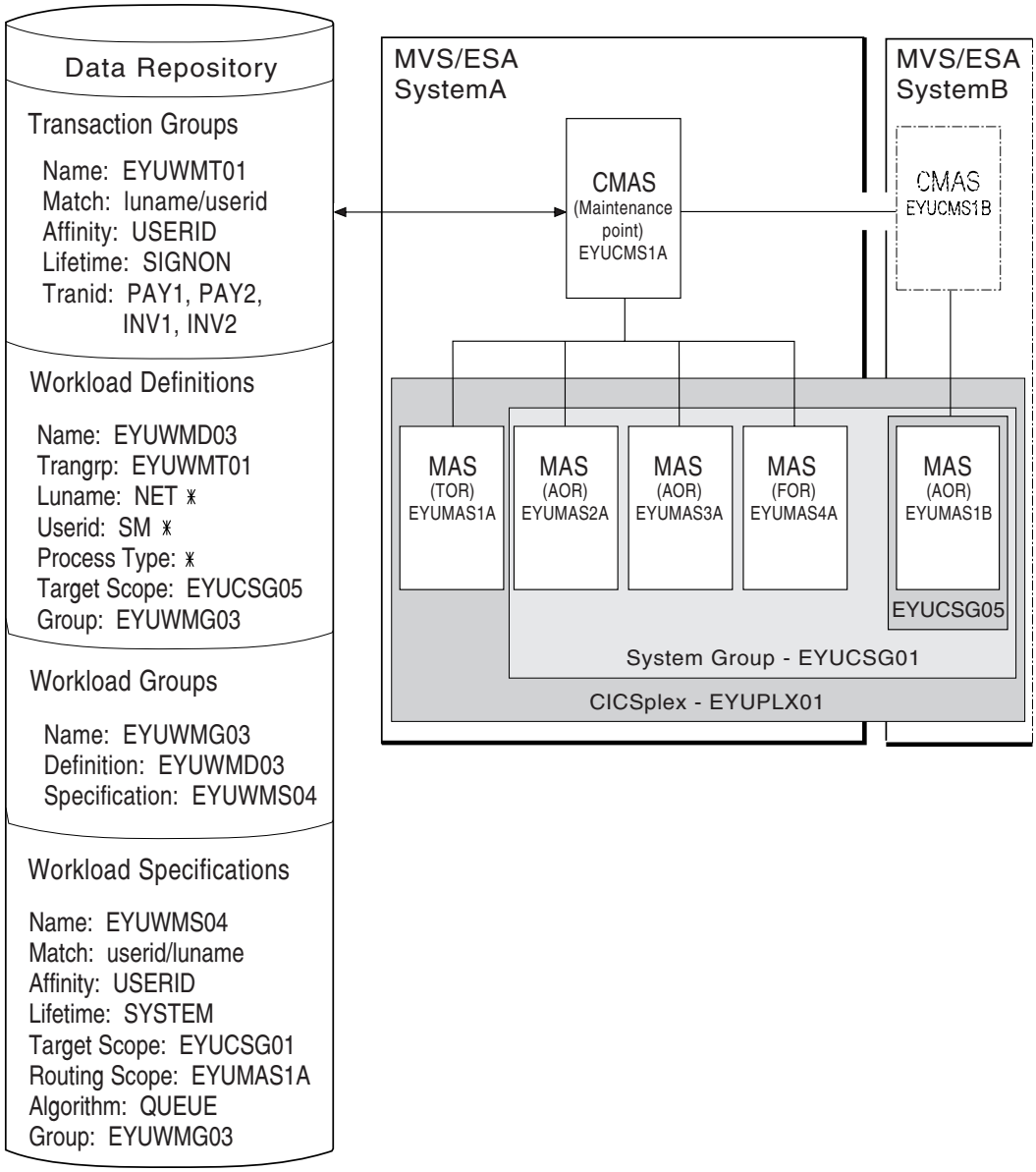

Figure 5. Sample definition adding transaction affinity to a workload

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, and CICS Transaction Server for VSE/ESA Release 1 and later, CICSPlex SM can evaluate both the health and activity (or load) of each target region identified by the Target Scope. This information, along with the abend probability values you provide when defining transaction groups to CICSPlex SM, is then used in determining to which target region a particular transaction should be routed. That is, it is used as a guide to avoiding target regions where the abend probability is greater than is acceptable for a given transaction or set of transactions within the transaction group.

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

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

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

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

- If the probability that a given transaction within the set will abend in a specific target region is equal to or greater than the abend health value you specified with the transaction, then that target region is considered unhealthy.

CICSPlex SM attempts to avoid routing the transaction to that target region. However, if there is no healthier target region, then the transaction may be routed to that target region.

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

Note: Once an affinity is active, all subsequent transactions are routed to the same target region for as long as the affinity remains active, regardless of its abend probability.

taking abend probabilities into consideration

Chapter 3. Activating workload management

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

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

1. Associate a workload specification with the CICS system, using the WLMSPEC view, as described on page 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 modifying the CICS system initialization table (SIT) parameters to include:

   ```
   DTRPGM=EYU9XLOP
   ```

   and, for non-terminal-related EXEC CICS START commands and BTS activities:

   ```
   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. Customizing the dynamic routing program" on page 23.
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.

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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 4 on page 46.)

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 126.

Part 2. Implementing dynamic routing

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Chapter 4. Customizing the dynamic routing program

This chapter contains Product-sensitive Programming Interface Information.

CICSPlex SM uses the CICS dynamic routing facilities to direct requests from a CICS system acting as a requesting region to a CICS system acting as a target region. This chapter describes how CICSPlex SM handles dynamic routing. The topics covered are:

- "Overview of CICSPlex SM workload management processing" on page 24
- "Sample source programs and copy books" on page 25
- "Modifying dynamic routing" on page 25
- "CICSPlex SM data areas" on page 33
- "Creating a user-replacement module for EYU9WRAM" on page 33

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, and CICS Transaction Server for VSE/ESA Release 1 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 Release 3

  Routing regions
  CICS Transaction Server for OS/390 Release 3

  Target regions
  CICS Transaction Server for OS/390 Release 3

- For CICS BTS:

  Requesting regions
  CICS Transaction Server for OS/390 Release 3

  Routing regions
  CICS Transaction Server for OS/390 Release 3

  Target regions
  CICS Transaction Server for OS/390 Release 3

- For DPL:

  Routing regions
  CICS Transaction Server for OS/390 Release 3

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

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Overview of CICSPlex SM workload management processing

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 DTRPGM system initialization table (SIT) parameter associated with the requesting region initiating the transaction, and all potential target regions.

```
DTRPGM=EYU9XLOP
```

If you are using CICSPlex SM to manage non-terminal-related EXEC CICS START commands or BTS activities, you have to set the DSRTPGM SIT parameter:

```
DSRTPGM=EYU9XLOP
```

CICS notifies EYU9XLOP of all routing requests. These are:

- Route selection, route selection error, and transaction termination.
- For CICS/ESA 4.1 and later, and CICS Transaction Server for VSE/ESA Release 1 and later, routed transaction abend and notification.
- For BTS (CICS Transaction Server for OS/390 Release 3 and later), transaction initiation 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 the terminal id, luname, user id, or process type. Then EYU9WRAM selects a target region from the list of candidates.

If you are using CICSPlex SM to manage non-terminal-related EXEC CICS START commands or BTS activities, that is, EYU9XLOP is specified for the DSRTPGM SIT parameter, EYU9WRAM will be invoked for route selection, route selection error,

routing attempt complete, and notification on the routing regions. EYU9WRAM is invoked for transaction initiation, transaction abend, and transaction termination on the target region.

Sample source programs and copy books

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

EYURWCOM
: Defines the communication area

EYURWCOD
: Defines literals for EYURWCOM

EYURWSVE
: Defines each element of a target region scope list

EYURWSVD
: Defines literals for EYURWSVE

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

Table 2. Sample programs and copy books

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	SEYUCOB
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	SEYUPL1
Copybook 1	EYUPWCOM	EYURWCOM	SEYUPL1
Copybook 2	EYUPWCOD	EYURWCOD	SEYUPL1
Copybook 3	EYUPWSVE	EYURWSVE	SEYUPL1
Copybook 4	EYUPWSVD	EYURWSVD	SEYUPL1
C:			
Program	EYUCWRAM	EYU9WRAM	SEYUC370
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/370, COBOL 2, and PL/I. Sample programs distributed with CICSPlex SM contain examples of the CALL statements for each of these languages.

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

Nondynamic transaction considerations

For CICS/ESA 4.1 and later, and CICS Transaction Server for VSE/ESA Release 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 28. 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
  - Route 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 150, 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, and CICS Transaction Server for VSE/ESA Release 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, and CICS Transaction Server for VSE/ESA Release 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 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, and CICS Transaction Server for VSE/ESA Release 1 and later, issuing SM_ROUTE during Route Notify processing causes an exception response to be returned.

Actions during routing attempt complete

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

Actions during route selection error

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

Actions during transaction termination

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

Actions during transaction abend

- Calling any API function causes an exception response to be returned.

Actions during transaction initiation

At transaction initiation:

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

Creating an affinity

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

You should review "Affinity considerations" before using SM_CREAFF.

Prior to calling SM_CREAFF, you must first call SM_SCOPE to obtain a scope list. SM_CREAFF will not create an affinity to 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" 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.

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 143.

CICSPlex SM data areas

The EYU9WRAM program uses the following data areas:

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

The names of the copy books that you can use to map these data areas are identified in Table 2 on page 25.

The format of EYURWCOM is shown in Figure 42 on page 144.

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 43 on page 151.

Creating a user-replacement module for EYU9WRAM

You can use the sample procedures provided in CICSTS13.CPSM.SEYUPROC to create replacement modules for EYU9WRAM. The procedure members are:

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

creating a user-replacement for EYU9WRAM

Samples may be found in "Sample user-replacement modules" on page 161. 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 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 Release 3.

If your routing regions are CICS Transaction Server for OS/390 Release 3, or if you are using CICS BTS, you should use the dynamic routing facilities described in "Chapter 4. Customizing the dynamic routing program" on page 23, in order for CICSPlex SM to manage more effectively your work requests.

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

- The interface between the CICS relay program and the defined dynamic routing program.
- CICSPlex SM workload management processing, as described in "Chapter 1. Introduction to workload management" on page 3.
- The CICSPlex SM workload management routing action module (EYU9WRAM), as described in "Chapter 4. Customizing the dynamic routing program" on page 23.

The topics covered are:

- "How to invoke CICSPlex SM workload management" on page 36
- "Processing considerations" on page 37
- "Sample calling sequence" on page 39

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 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.

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- 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 44 on page 153.

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 13. For details on specifying affinity relation and lifetime values, see “Creating a transaction group” on page 53.

Abend compensation considerations

If the target region is running CICS/ESA 4.1 and later, or CICS Transaction Server for VSE/ESA Release 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 16. For details on requesting abend compensation, see "Creating a workload specification" on page 81.

MVS/ESA workload management considerations

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

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

CMAS availability considerations

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

Sample calling sequence

Figure 45 on page 159 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

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Chapter 6. Summary of workload management views

This chapter identifies the views that you use to establish and maintain the workload management activity at your enterprise.

This chapter describes:

- "Workload management definitions and their related views"
- "Views for managing definitions" on page 46

Workload management definitions and their related views

You can use the workload management administration views to define a variety of workload management attributes. Figure 6 on page 44 provides an overview of the workload management views from the perspective of the CICSPlex SM object model. In addition to these views, you can use the views described in Table 4 on page 46 to display information about and manage active workloads. You can also display a visual map of your workload management definitions by using the MAP action command, as described in *CICSPlex SM User Interface Guide*.

Figure 7 on page 45 illustrates the relationship between the components of a workload in a CICSplex and the views used to establish the workload.

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workload management definitions and their views

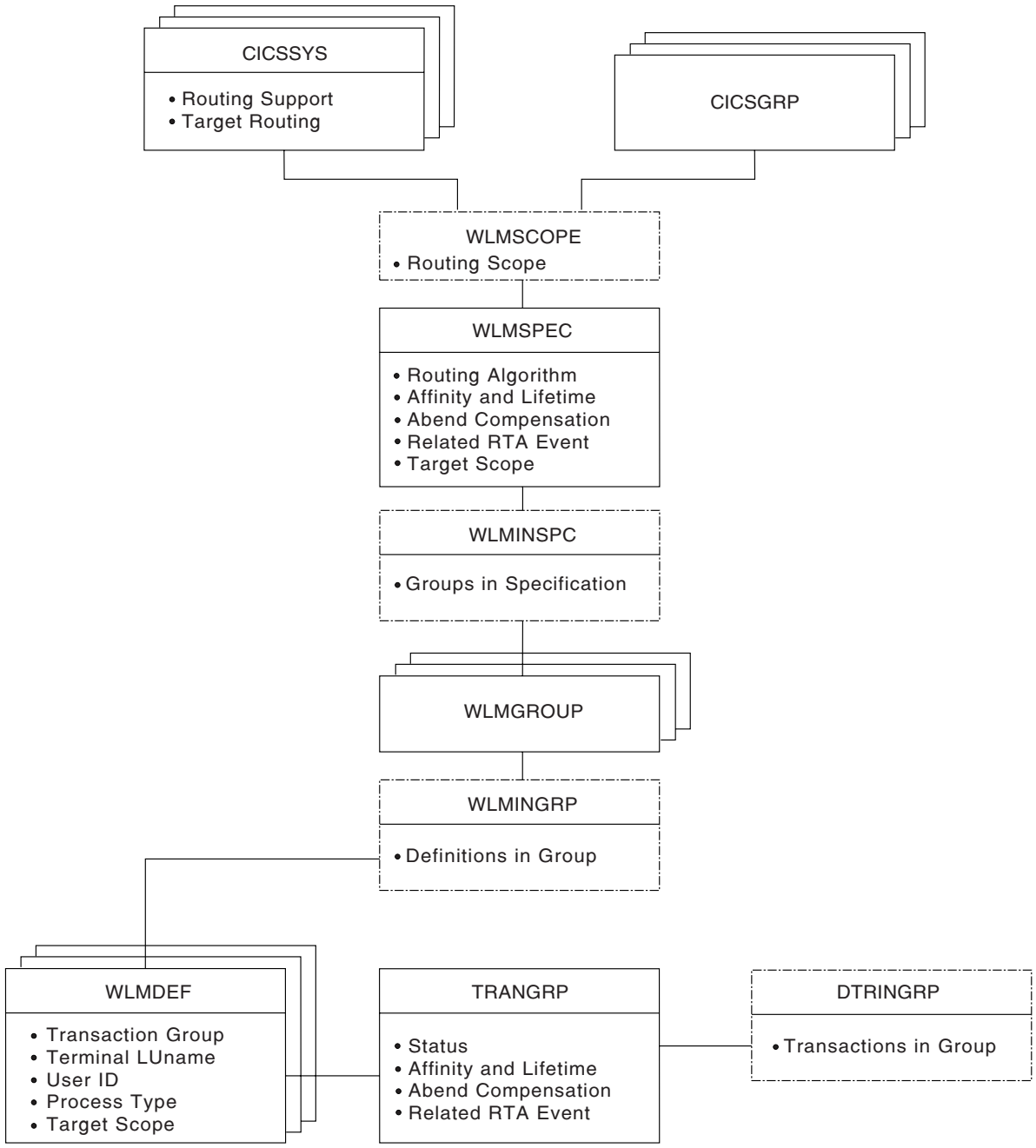

Figure 6. Views for creating workload management objects and associations

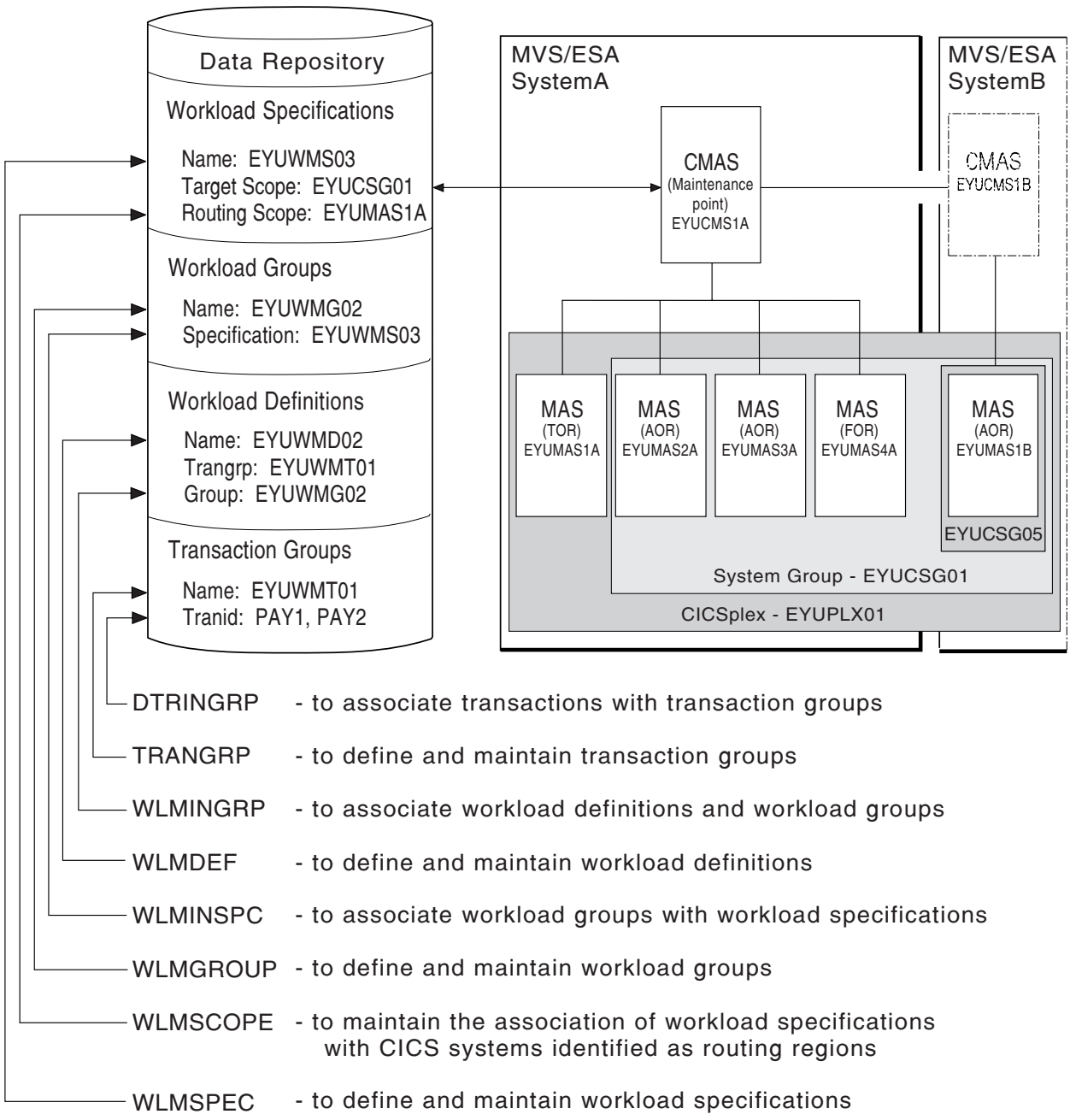

Figure 7. The relationship between a workload and the workload management views

Table 3 shows the views you can use to create workload management definitions. It also indicates the information you can display and the actions you can perform using these views.

Table 3. Views to create and maintain workload management definitions

Display	Actions Supported	View	Page
CICS systems and CICS system groups associated with workload specification	• Change or remove the association between a routing scope and a workload specification.	WLMSCOPE	76

Table 3. Views to create and maintain workload management definitions (continued)

Display	Actions Supported	View	Page
Transaction groups	• Create, browse, change, remove, or update a transaction group. • Add a transaction to a transaction group.	TRANGRP	51
Transactions in transaction groups	• Remove a transaction from a transaction group.	DTRINGRP	50
Workload definitions	• 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.	WLMDEF	60
Workload groups	• 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.	WLMGROUP	67
Workload groups with their workload definitions	• Add or remove the association between a workload definition and a workload group.	WLMINGRP	72
Workload specifications	• 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.	WLMSPEC	80
Workload specifications with their workload groups	• Add or remove the association between a workload group and a workload specification.	WLMINSPC	74

Views for managing definitions

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

Table 4. Views to manage active workload management definitions

Display	Actions Supported	View	Page
Transaction affinities	• 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.	WLMATAFD	99
Target regions	• Display information about all target regions associated with a specific workload. • Change the status of a target region to active or quiesced.	WLMAWAOR	99
Summary of target regions	• Display summary information about all target regions associated with a specific workload.	WLMAWAOS	101

Table 4. Views to manage active workload management definitions (continued)

Display	Actions Supported	View	Page
Routing regions	• Display information about active routing regions associated with a specific workload.	WLMAWTOR	108
Summary of routing regions	• Display summary information about active routing regions associated with a specific workload.	WLMAWTOS	109
Transactions	• Display information about all active transactions associated with a specific workload. • Discard a transaction from a transaction group.	WLMATRAN	97
Transaction affinities	• Display information about the active transaction affinities for a transaction group associated with a specific workload. • Discard an affinity entry.	WLMATAFF	92
Summary of transaction affinities	• Display summary information about the active transaction affinities for a transaction group associated with a specific workload. • Discard an affinity entry.	WLMATAFS	94
Transaction groups	• Display information about transaction groups associated with a specific workload. • Change the status of a transaction group to active or dormant.	WLMATGRP	95
Workloads	• Display information about active workloads.	WLMAWORK	106
Workload definitions	• Display information about active workload definitions associated with a specific workload. • Discard an active workload definition.	WLMAWDEF	102

Chapter 7. Creating workload management definitions

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

- Issuing the appropriate workload management view command.
- Issuing the MENU ADMWLM command and selecting a view from the menu. (An example of this menu is shown in Figure 8.)
- Initiating a hyperlink from one view to another by placing the cursor on a hyperlink field and pressing Enter.

```
26MAR1999  22:02:28 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =MENU==============EYUPLX01=EYUPLX01=26MAR1999==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 8. The ADMWLM menu

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

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

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

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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 9, includes information about all existing transaction groups within the current context.

```
26MAR1999  18:29:11 ------------ INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =DTRINGRP==========EYUPLX01=EYUPLX01=26MAR1999==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 9. The DTRINGRP view

Action commands

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

Table 5. 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 116
- "Routing particular transactions from a given user to a specific target region" on page 119
- "Honoring a pseudoconversational transaction" on page 121

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 10 on page 52, includes information about all existing transaction groups within the current context.

```
26MAR1999  21:41:53 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =TRANGRP==========EYUPLX01=EYUPLX01=26MAR1999==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 10. The TRANGRP view

Action commands

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

Table 6. TRANGRP view action commands

Primary command	Line command	Description
n/a	ADD	Add a transaction to a transaction group, as described on page 58.
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 11 on page 53. The panel fields are not modifiable.
CREate	CRE	Create a transaction group definition and add it to the data repository, as described in "Creating a transaction group" on page 53. 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 11. You can change the contents of any field in the panel except Trangroup Name.

Hyperlink fields

Table 7 shows the hyperlink field on the TRANGRP view.

Table 7. TRANGRP view hyperlink fields

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

Usage

Creating a transaction group

Figure 11 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 11. Creating a transaction group

Provide the following information, as appropriate:

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

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

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

ACTIVE
Recognize the affinity relation and lifetime settings.

DORMANT
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.

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.

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

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

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

ACTIVITY
Maintain transaction affinity until the associated BTS activity ends.

PROCESS
Maintain transaction affinity until the associated BTS process ends.

Note: The Affinity Relation and Affinity Lifetime fields are related. If you specify a value in the Affinity Relation field, you must specify a value in the Affinity Lifetime field. See Table 8 on page 56 for valid affinity and lifetime combinations.

Create Affinity
(Optional.) Indicate whether CICSPlex SM should automatically create an affinity relationship for transactions associated with this transaction group.

YES (or blank)
CICSPlex SM creates an affinity using the values specified in the Affinity Relation and Affinity Lifetime fields.

NO CICSPlex SM does not automatically create an affinity. However, you can create one by using the SM_CREAFF function in the dynamic routing program (EYU9WRAM). The SM_CREAFF function provides greater control over the creation of affinities. For example, you can create an affinity to a target region that CICSPlex SM might not ordinarily select for dynamic routing. Refer to "Chapter 4. Customizing the dynamic routing program" on page 23 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, and CICS Transaction Server for VSE/ESA Release 1 and later.) Specify the abend probability for a transaction associated with this group that should cause a target region to be considered unhealthy:

0 Ignore target region abend probability calculations.

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

Abend Load
(For CICS/ESA 4.1 or later, and CICS Transaction Server for VSE/ESA

Release 1 and later.) Specify the abend probability for a transaction associated with this group that should cause a target region's load level to be doubled:

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

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

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

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 16.

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

Table 8. Valid relation and lifetime combinations and their meanings

Affinity Relation and Meaning	Lifetime and Meaning
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.	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.

Table 8. Valid relation and lifetime combinations and their meanings (continued)

Affinity Relation and Meaning	Lifetime and Meaning
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.	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.	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.	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 12 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 12. 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 116
- "Routing particular transactions from a given user to a specific target region" on page 119
- "Honoring a pseudoconversational transaction" on page 121
- "Updating an active workload definition" on page 125

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 13, includes information about all existing workload definitions within the current context.

```
26MAR1999  22:02:37 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMDEF============EYUPLX01=EYUPLX01=26MAR1999==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 13. 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 61 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 64.
n/a	BRO	Browse a workload definition in the data repository. The format of the resulting panel is similar to that shown in Figure 14 on page 62. The panel fields are not modifiable.

Table 9. WLMDEF view action commands (continued)

Primary command	Line command	Description
CREate	CRE	Create a workload definition and add it to the data repository, as described on page 62. 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 65.
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 14 on page 62. 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.

Table 11. WLMDEF view hyperlink fields (continued)

Hyperlink field	View displayed	Description

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

Usage

Creating a workload definition

Figure 14 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 14. 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 page 51.)

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 15 on page 65 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 15. 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 72.

Note: If an appropriate workload group does not currently exist, you must first create the group, as described on page 68. Then add the workload definition to the workload group using either this action command or the one described on page 73.

Installing a workload definition in a workload

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

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

Figure 16 on page 66 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 16. 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 19.

To deactivate an installed workload definition, use the WLMAWDEF view, as described in Table 4 on page 46.

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 116

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

```
26MAR1999  22:02:49 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMGROUP==========EYUPLX01=EYUPLX01=26MAR1999==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 17. The WLMGROUP view

Action commands

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

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 69.
n/a	ASC	Add an association between a workload definition and a workload group, as described on page 69.
n/a	BRO	Browse a workload group in the data repository. The format of the resulting panel is similar to that shown in Figure 18 on page 68. The panel fields are not modifiable.
CREate	CRE	Create a workload group and add it to the data repository, as described on page 68.
n/a	INS	Install the workload definitions associated with a workload group into a workload, as described on page 70.
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.

Table 12. WLMGROUP view action commands (continued)

Primary command	Line command	Description
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 18. 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.

Usage

Creating a workload group

Figure 18 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 18. 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 19 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 19. 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 75 to associate the workload group with a workload specification.

Associating a workload definition with a workload group

Figure 20 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 20. 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 21 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 21. 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 19.

To deactivate an installed workload definition, use the WLMAWDEF view, as described in Table 4 on page 46.

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

```
26MAR1999  22:03:07 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMINGRP==========EYUPLX01=EYUPLX01=26MAR1999==22:03:07=CPSM==========3===
CMD Group    Def
--- Name---- Name----
    EYUWLG01 EYUWLD01
    EYUWLG04 EYUWLD05
    EYUWLG05 EYUWLD06
```

Figure 22. The WLMINGRP view

Action commands

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

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 73.
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 23 on page 73. 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.

Usage

Adding a workload definition to a workload group

Figure 23 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 23. 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 24, includes information about all workload specifications and their associated workload groups within the current context.

```
26MAR1999  22:03:22 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMINSPC==========EYUPLX01=EYUPLX01=26MAR1999==22:03:22=CPSM==========3===
CMD Spec     Group
--- Name---- Name----
    EYUWLS01 EYUWLG01
    EYUWLS01 EYUWLG04
    EYUWLS01 EYUWLG05
```

Figure 24. 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 75.
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 25 on page 75. 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.

Table 17. WLMINSPC view action commands (continued)

Primary command	Line command	Description
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.

Usage

Adding a workload group to a workload specification

Figure 25 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 25. 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 26, includes information about all workload specifications, and the associated routing scope information, within the current context.

```
26MAR1999  22:03:43 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMSCOPE==========EYUPLX01=EYUPLX01=26MAR1999==22:03:43=CPSM==========1===
CMD WLM      Scope    Scope    Scope    Scope    Update
--- Spec---- Name---- Type---- Mode---- Link---- Option--
    EYUWLS01 EYUMAS1A CICSSYS  EXPLICIT
```

Figure 26. The WLMSCOPE view

Action commands

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

Table 19. WLMSCOPE view action commands

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 27 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 78.
n/a	SET	Change the association between a routing scope and a workload specification using overtype fields (see Table 13 on page 68). **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.

Table 19. WLMSCOPE view action commands (continued)

Primary command	Line command	Description
n/a	UPD	Update the association between a routing scope and a workload specification, as described in "Updating a scope-to-workload specification association".

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).

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.

Usage

Updating a scope-to-workload specification association

Figure 27 on page 78 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 27. 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 28 on page 79 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 28. 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 111
- "Adding a routing region to an active workload" on page 115
- "Updating a workload specification" on page 126
- "Using real-time analysis to select a target region for workload balancing" on page 127

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

```
26MAR1999  22:03:16 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMSPEC==========EYUPLX01=EYUPLX01=26MAR1999==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 29. 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 30 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 workload specification. When you use the primary command CREate, some fields in the new view may contain values supplied by CICSPlex SM; you may change these values. When you enter the line command CRE next to the name of a workload specification, fields in the new view contain values to be modelled (from the existing workload specification).
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 30 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.

Usage

Creating a workload specification

Figure 30 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 30. 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.

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.

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.

Note: The Affinity Relation and Affinity Lifetime fields are related. If you specify a value in the Affinity Relation field, you must specify a value in the Affinity Lifetime field. See Table 8 on page 56 for valid affinity and lifetime combinations.

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

Create Affinity
(Optional.) Indicate whether CICSPlex SM should automatically create an affinity relationship for transactions that cannot be matched to a transaction group.

YES (or blank)
CICSPlex SM creates an affinity using the values specified in the Affinity Relation and Affinity Lifetime fields.

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

Refer to "Chapter 4. Customizing the dynamic routing program" on page 23 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, and CICS Transaction Server for VSE/ESA Release 1 and later.) Specify the abend probability for a transaction associated with the default transaction group that should cause a target region to be considered unhealthy:

0 Ignore target region abend health calculations.

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

Abend Load
(For CICS/ESA 4.1 and later, and CICS Transaction Server for VSE/ESA Release 1 and later.) Specify the abend probability for a transaction associated with the default transaction group that should cause a target region's load level to be doubled:

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

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

For example, if you specified 25 as the Abend Health value, you must specify a value, x, between 2 and 24 (inclusive) as the Abend Load value. Then, if the probability of abend for a transaction being routed to a given target region is between 0% and x%, the perceived load on that target region is adjusted upward. Once the abend probability reaches x%, the perceived load is doubled, which 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 16.

2. Once an affinity is active, all subsequent transactions are routed to the same target region for as long as the affinity remains active, regardless of its abend probability.

Algorithm Type

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

QUEUE

Route the transaction to the target region that:

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

GOAL

Supported in MVS/ESA 5.1 and higher where the MVS Workload Manager (MVS/WLM) is also supported. Additionally, the CICS system(s) specified in the target region Scope field must be CICS/ESA 4.1 and later, or CICS Transaction Server for VSE/ESA Release 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 31 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 31. 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.

Chapter 8. Managing workloads

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

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

- Active workloads

  WLMAWORK
  Displays information about active workloads.

  WLMAWORD
  Displays detailed information about an active workload.

  WLMAWTOR
  Displays information about active routing regions within a workload.

  WLMAWTOS
  Displays summary information about active routing regions within a workload.

  WLMAWAOR
  Displays information about active target regions within a workload.

  WLMAWAOS
  Displays summary information about active target regions within a workload.

  WLMAWDEF
  Displays information about active workload definitions.

- Transactions and transaction groups comprising an active workload

  WLMATGRP
  Displays information about transaction groups associated with a workload.

  WLMATAFD
  Displays a detailed view of the properties of a single active CICS BTS affinity.

  WLMATAFF
  Displays information about transaction affinities for a transaction group or the affinities created using the default workload affinity.

  WLMATAFS
  Displays a summary view of transaction affinities for a transaction group or the affinities created using the default workload affinity.

  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.

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- Issuing the MENU WORKLOAD command and selecting a view from the menu. (An example of this menu is shown in Figure 32.)
- Initiating a hyperlink from one view to another by placing the cursor in the hyperlink field and pressing Enter.

```
26MAR1999  18:02:59 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =MENU==============EYUPLX01=EYUPLX01=26MAR1999==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 32. 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 33 is an example of the WLMATAFD view.

```
26MAR1999 11:30:30 ---------- INFORMATION DISPLAY -----------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1         ALT WIN ===>
 W1 =WLMATAFF=WLMATAFD=EYUPLX01=EYUPLX01=26MAR1999==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 33. 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 34 is an example of the WLMATAFF view.

```
26MAR1999 11:30:30 ---------- INFORMATION DISPLAY -----------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1         ALT WIN ===>
 W1 =WLMATAFF==========EYUPLX01=EYUPLX01=26MAR1999==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 34. 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.

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

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	Detailed information about the specified transaction group.
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 92.

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 34 on page 92 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 35 is an example of the WLMATGRP view.

```
26MAR1999  22:11:06 ----------- INFORMATION DISPLAY --------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMATGRP==========EYUPLX02=EYUPLX02=26MAR1999==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 35. The WLMATGRP view

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

Action commands

Table 27 on page 96 shows the action command you can issue from the WLMATGRP view. The overtype field is shown in Table 28 on page 96.

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.

Figure 36 is an example of the WLMATRAN view.

```
26MAR1999  22:11:42 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMATRAN==========EYUPLX02=EYUPLX02=26MAR1999==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 36. The WLMATRAN view

Action commands

Table 30 on page 98 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	Detailed information about the specified transaction group.

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 37 is an example of the WLMAWAOR view.

```
26MAR1999  22:04:37 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMAWAOR==========EYUPLX01=EYUPLX01=26MAR1999==22:04:37=CPSM==========2===
CMD Workload Ownr Target   Status    Connection
--- -------- ---- -------- --------- Lost------
    EYUWLS01 CM1A EYUMAS2A ACTIVE
    EYUWLS01 CM1A EYUMAS3A ACTIVE
```

Figure 37. 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 Operations Views Reference*.

Action commands

Table 32 on page 100 shows the action command you can issue from the WLMAWAOR view. The overtype field is shown in Table 33 on page 100.

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). **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 99.

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 37 on page 99 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 100). **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 38 is an example of the WLMAWDEF view.

```
26MAR1999  22:10:58 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWDEF==========EYUPLX02=EYUPLX02=26MAR1999==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 38. The WLMAWDEF view

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

Action commands

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

Table 36. WLMAWDEF view action commands

Primary command	Line command	Description
DiSCard `defname workload owner`	DSC	Discard an active definition.

Table 36. WLMAWDEF view action commands (continued)

Primary command	Line command	Description

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 95, 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	Detailed information about the specified transaction group.

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

WLMAWORD (Details of an active workload)

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.

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 39 is an example of the WLMAWORD view.

```
26MAR1999  22:04:19 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMAWORK=WLMAWORD=EYUPLX01=EYUPLX01=26MAR1999==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 39. 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 WLMAWORK view shows information about active workloads 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.

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 40 is an example of the WLMAWORK view.

```
26MAR1999  22:09:30 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWORK==========EYUPLX02=EYUPLX02=26MAR1999==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 40. 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.

Table 39. WLMAWORK view hyperlink fields (continued)

Hyperlink field	View displayed	Description
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 41 is an example of the WLMAWTOR view.

```
26MAR1999  22:04:27 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMAWTOR==========EYUPLX01=EYUPLX01=26MAR1999==22:04:27=CPSM==========1===
CMD Workload Ownr Router   Connection
--- -------- ---- -------- Lost------
    EYUWLS01 CM1A EYUMAS1A
```

Figure 41. 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 108.

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 41 on page 108 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 cusor 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 100). **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.

WLMAWTOS

Chapter 9. Example tasks

This chapter provides examples of some typical workload management tasks:

- "Balancing a workload"
- "Adding a region to an existing target region scope" on page 114
- "Removing a region from a target region scope" on page 115
- "Adding a routing region to an active workload" on page 115
- "Quiescing a target region in an active workload" on page 116
- "Routing a specific transaction to a specific target region" on page 116
- "Routing particular transactions from a given user to a specific target region" on page 119
- "Honoring a pseudoconversational transaction" on page 121
- "Deactivating a workload definition" on page 124
- "Updating an active workload definition" on page 125
- "Discarding an active transaction from a workload" on page 126
- "Updating a workload specification" on page 126
- "Using real-time analysis to select a target region for workload balancing" on page 127
- "Dynamic routing an EXEC CICS START TERMID command" on page 132
- "Dynamic routing of an inbound client DPL request" on page 135
- "Dynamic routing of a peer-to-peer DPL request" on page 135
- "Balancing CICS BTS activities" on page 136
- "Separating CICS BTS activities" on page 138

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

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

Balancing a workload

This example shows what you have to do 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 going to be the one with the shortest queue of work requests. The TOR (CICSPT01) is the requesting region and the routing region, and the three AORs (CICSPA01, CICSPA02, and CICSPA03) are all target regions. None of the CICS regions are currently running.

If some of your work requests can't be routed freely (perhaps you want work requests from a particular user always to go to the same target region, for example), don't worry. You'll see how to add that requirement in a later example task ("Routing a specific transaction to a specific target region" on page 116).

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Create a CICS system group.

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The group will include all of the target regions among which the work requests ("the workload") can be routed dynamically.

From the current view, issue the command CICSGRP. From the CICSGRP view, issue the command CRE. Complete the Create System Group panel as shown here, and press Enter:

```
 ---------------------- Create System Group for PLXPROD1 ----------------------
 COMMAND  ===>

  System Group name  ===> CSGTGTS1
  Description        ===> All target regions in CICSplex PLXPROD1

Press Enter to Create System Group.
Type END or CANCEL to cancel without creating.
```

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

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

3. Add target regions to CICS system group CSGTGTS1.

   Tab to the CSGTGTS1 entry in the CICSGRP view, and issue ADD from the line-command field. Complete the Add Member to System Group panel as shown here, and press Enter:

```
 --------------------- Add Member to System Group for PLXPROD1 -----------------
 COMMAND  ===>

 System Group Name  CSGTGTS1
 Description        All target regions in CICSplex PLXPROD1
 Member       ===>  CICSPA01           CICS System, Group or Generic

  Component Spec     Inherit




 Press Enter to add Member to System Group.
 Type END or CANCEL to cancel without adding.
```

   (You'll find that the System Group Name and Description fields are filled in already. The Member name field is the only one you need to complete. You can ignore the rest of the panel.)

   Repeat this step for target regions CICSPA02 and CICSPA03.

4. Create a workload specification.

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

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

 WLM Spec Name       ===> WLSPAY01
 Description         ===> Balance payroll workload in PLXPROD1

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

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

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

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

5. Associate the workload specification with a routing region.

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

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

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

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

6. Activate workload balancing in the routing region.

   Issue the command CICSSYS from the current view. In the CICSSYS view, tab to the line-command field for the CICSPT01 entry and issue the UPD command. Page forward until you see the Update System - Workload Attributes panel. In the Routing support active field, enter YES. This change takes effect when CICSPT01, and the target regions in CICS system group CSGTGTS1, are next started..

7. Activate workload balancing in the target regions.

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

   Repeat this step for target regions CICSPA02 and CICSPA03.

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

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

Adding a region to an existing target region scope

This example task shows how you can increase the number of regions in an existing target scope without disrupting an existing workload. Assume that you have implemented workload balancing in 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 (via the CICSSYS panels) and is running.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Add target region CICSPA04 to CICS system group CSGTGTS1.

   From the current view, issue the command CICSGRP. The CICSGRP view is displayed. Move the cursor to the entry for CSGTGTS1, and issue ADD from the line-command field. The Add Member to System Group panel is displayed. In the Member field, enter the name CICSPA04.

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

   From the current view, issue the command CICSSYS. In the CICSSYS view, type UPD in the line-command field against the entry for CICSPA04. Then, page forward (using PF8) until you see the Update System - Workload Attributes panel. In the Target routing at startup field, enter YES. The CICSSYS view is redisplayed. This change takes effect when the target region CICSPA04 is next started.

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

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. Now you want to remove region CICSPA04 from the group CSGTGTS1, without disrupting the active workload.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Remove target region CICSPA04 from CICS system group CSGTGTS1.

   From the current view, issue the command SYSGRPC CSGTGTS1. The SYSGRPC view is displayed, showing all target regions in the group. Tab to the entry for CICSPA04, and issue REM from the line-command field. The Remove System from System Group panel is displayed. To confirm that CICSPA04 should be removed from the group, simply press Enter.
3. To check that CICSPA04 has indeed been removed, issue the command WLMAWAOR WLSPAY01 from the current view. The WLMAWAOR view is displayed, showing target regions to which the workload can be routed. CICSPA04 does not appear in the list.

Adding a routing region to an active workload

This example task shows how to add a routing region to an active workload, without disrupting that workload. Assume that you are still balancing the workload in 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. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Update the CICSPlex SM definition for CICS system CICSPT02.

   From the current view, issue the command CICSSYS. In the CICSSYS view, type UPD in the line-command field against the entry for CICSPT02. Then, page forward (using PF8) until you see the Update System - Workload Attributes panel. In the field Routing support active, type YES and press Enter. The CICSSYS view is redisplayed. This change takes effect when routing region CICSPT02 is next started.
3. Associate CICSPT02 with workload specification WLSPAY01.

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

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

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

To check that CICSPT02 is part of the active workload, issue the command WLMAWTOR WLSPAY01 from the current view. The WLMAWTOR view, showing entries for both CICSPT01 and CICSPT02, is displayed.

Quiescing a target region in an active workload

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

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. List the target regions associated with workload WLSPAY01.

   From the current view, issue the command WLMAWAOR WLSPAY01. The WLMAWAOR view for workload specification WLSPAY01 is displayed:

```
26MAR1999  22:04:37 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMAWAOR==========PLXPROD1=PLXPROD1=26MAR1999==22:04:37=CPSM==========3===
CMD Workload Ownr Target   Status    Connection
--- -------- ---- -------- --------- Lost------
    WLSPAY01 CM1A CICSPA01 ACTIVE
    WLSPAY01 CM1A CICSPA02 ACTIVE
    WLSPAY01 CM1A CICSPA03 ACTIVE
```

3. Quiesce target region CICSPA03.

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

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 shows how to define some workload separation requirements to CICSPlex SM. Specifically, you want CICSPlex SM always to route the transaction PAY1 to the target region CICSPA02, which belongs to CICS system group CSGTGTS1. Note that you are still working in CICSplex PLXPROD1, and that workload balancing, from a single CICSPT01 among target regions in the group CSGTGTS1, is in effect.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1 from the current view.
2. Create a transaction group.
   a. From the current view, issue the command TRANGRP. The TRANGRP view is displayed, listing any transaction groups already created in PLXPROD1.

b. From the TRANGRP view, issue the command CRE. The Create Trangroup panel is displayed. Complete the panel as shown here:

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

 Trangroup name    ===> TRGPAY01
 Description       ===> Send PAY1 to CICSPA02

 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.
```

Press Enter. The TRANGRP view is redisplayed, now showing the name of the transaction group TRGPAY01.

Note: For a complete description of the TRANGRP view, see "TRANGRP (Transaction groups)" on page 51.

3. Add transaction PAY1 to transaction group TRGPAY01.

   In the TRANGRP view, tab to the entry for TRGPAY01, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Type the name PAY1 in the Transaction Name field, and press ENTER. The TRANGRP view is redisplayed.

4. Create a workload definition.

   a. From the command line of the current view, issue the command WLMDEF. The WLMDEF view is displayed, listing any workload definitions already created in PLXPROD1.

   b. From the WLMDEF view, issue the command CRE. The Create Workload Definition panel is displayed. Complete the panel as shown here:

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

 Definition Name      ===> WLDPAY01
 Description          ===> Separate TRGPAY01 to CICSPA02

 Trangroup Name       ===> TRGPAY01       Specific Trangroup, Generic, or Blank
 Terminal Luname      ===> *              Specific or pattern Luname
 User Id              ===> *              Specific or pattern Userid
 Process Type         ===> *              Specific or pattern Process Type
 Target Scope         ===> CICSPA02       CICS System, Group, or Generic

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

The Target Scope value is the name of the target region to which you want transactions in group TRGPAY01 to be routed.

Press Enter. The WLMDEF view is redisplayed.

Note: For a complete description of the WLMDEF view, see "WLMDEF (Workload definitions)" on page 60.

5. Create a workload group.

   (A workload group is essential if you want a workload definition to be installed automatically when the routing region that's routing the transactions is started.)

   a. Issue the command WLMGROUP from the current view. The WLMGROUP view is displayed, listing any workload groups already created in PLXPROD1.

   b. From the WLMGROUP view, issue the command CRE. The Create WLM Group panel is displayed. Complete the panel as shown here:

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

 Group Name          ===>  WLGPAY01
 Description         ===>  Workload Group for WLDPAY01




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

   Press Enter. The WLMGROUP view is redisplayed.

   Note: For a complete description of the WLMGROUP view, see "WLMGROUP (Workload groups)" on page 67.

6. Add the workload group WLGPAY01 to the existing workload specification WLSPAY01.

   a. In the WLMGROUP view, move the cursor to the entry for WLGPAY01, and issue ADD from the line-command field. The Add WLM Group to Workload Specification panel is displayed.

   b. In the Specification Name field, enter the name of the existing workload specification, WLSPAY01. The WLMGROUP view is redisplayed.

7. Add the workload definition to the workload group.

   a. From the current view, issue the command WLMDEF WLDPAY01. The WLMDEF view is displayed.

   b. Move the cursor to the entry for WLDPAY01, and issue ADD from the line-command field. The Add WLM Definition to Workload Group panel is displayed. In the Workload Group Name field, type WLGPAY01 and press Enter. The WLMDEF view is redisplayed.

8. Install the workload group into the active workload.

   Because the workload WLSPAY01 is already active, you have to install the new workload group WLGPAY01 explicitly. If you did not install WLGPAY01, it wouldn't take effect until the routing region CICSPT01,and the target regions in CICS system group CSGTGTS1, were next started.

   From the current view, issue the command WLMGROUP. In the WLMGROUP view, tab to the entry for WLGPAY01 and issue INS from the line-command field. Complete the Install WLMGROUP panel as shown here, and press Enter.

```
----------------------- Install WLMGROUP for PLXPROD1-------------------------
COMMAND  ===>

Name             WLGPAY01
Description      Workload Group for WLDPAY01

Type             WLMGROUP

Workload    ===> WLSPAY01 Active Workload in which to install the WLMGROUP
                          Or Generic
Owner       ===> *        Owner of the Workload in which to install the WLMGROU
                          Or Generic

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

The Owner value is the SYSID of the system on which the workload specification WLSPAY01 was created. If you enter a generic value in this field, CICSPlex SM presents a list from which you can select the correct value.

Because you are reusing a workload specification that is already active in CICSplex PLXPROD1, and have installed the workload group the workload separation you have defined in this example takes immediate effect.

You can check that the new workload definition WLDPAY01 is active by issuing the command WLMAWDEF WLSPAY01 from the current view. The WLMAWDEF view, showing an entry for WLDPAY01 in workload WLSPAY01 with a Target Scope field value of CICSPA02, is displayed. When transaction PAY1 is next started, by any user and from any terminal, CICSPlex SM will route it to target region CICSPA02.

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

This example task is a refinement of the previous example ("Routing a specific transaction to a specific target region" on page 116). 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. If the current context isn't PLXPROD1, issue the command CON PLXPROD1 from the current view.
2. Create a transaction group.
   a. From the current view, enter TRANGRP. The TRANGRP view is displayed, listing any transaction groups already defined in PLXPROD1.
   b. From the TRANGRP view, enter CRE. The Create Trangroup panel is displayed. Complete the panel as shown here:

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

 Trangroup name    ===> TRGPAY02
 Description       ===> Send USRPAY03's transactions to CICSPA03

 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.
```

You can ignore any fields that have been left blank. Press Enter. The TRANGRP view is redisplayed, now showing the name of the transaction group TRGPAY02.

Note: For a complete description of the TRANGRP view, see "TRANGRP (Transaction groups)" on page 51.

3. Identify the transactions that belong to group TRGPAY02.

   In the TRANGRP view, tab to the entry for TRGPAY02, and issue ADD from the line-command field. The Add Transaction to Trangroup panel is displayed. Complete four of the Transaction fields with the values PAY6, PAY7, PAY8, and PAY9 respectively, and press Enter. The TRANGRP view is redisplayed.

4. Create a workload definition.

   a. From the command line of the current view, issue the command WLMDEF. The WLMDEF view is displayed.

   b. From the WLMDEF view, issue the command CRE. The Create Workload Definition panel is displayed. Complete the panel as shown here:

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

 Definition Name      ===> WLDPAY02
 Description          ===> Separate TRGPAY02 to CICSPA03

 Trangroup Name       ===> TRGPAY02       Specific Trangroup, Generic, or Blank
 Terminal Luname      ===> *              Specific or pattern Luname
 User Id              ===> USRPAY03       Specific or pattern Userid
 Process Type         ===> *              Specific or pattern Process Type
 Target Scope         ===> CICSPA03       CICS System, Group, or Generic

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

These values tell CICSPlex SM that transactions in group TRGPAY02 and initiated by user USRPAY03 must be routed to target region CICSPA03.

Press Enter. The WLMDEF view is redisplayed.

Note: For a complete description of the WLMDEF view, see "WLMDEF (Workload definitions)" on page 60.

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

   In the WLMDEF view, move the cursor to the entry for WLDPAY02, and issue ADD from the line-command field. The Add WLM Definition to Workload Group panel is displayed. In the Workload Group Name field, type WLGPAY01 (the name of the workload group you created in the previous example). Workload group WLGPAY01 is already associated with the active workload specification WLSPAY01. When you press Enter, the WLMDEF view is redisplayed.

6. Install the new workload definition into the active workload.

   Because group WLGPAY01 is already associated with the active workload WLSPAY01, changes you make to that group will not take effect until the routing region 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 WLDPAY02 again and issue INS from the line-command field. The Install WLMDEF panel is displayed. Complete the panel as shown here, and press Enter.

```
---------------------------- Install WLMDEF for PLXPROD1 ----------------------
COMMAND  ===>

 Name            WLDPAY02
 Description     Separate TRGPAY02 to CICSPA03

 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 WLDPAY02 in the active workload WLSPAY01, the workload separation requirements you have defined in this example take immediate effect. You can check that the new workload definition WLDPAY02 is active by issuing the command WLMAWDEF WLSPAY01 from the current view. The WLMAWDEF view, showing an entry for WLDPAY02 in workload WLSPAY01 with a Target Scope field value of CICSPA03, is displayed.

Honoring a pseudoconversational transaction

In this example, you'll learn how to ensure that multiple transactions, among which there is an affinity, are routed to the same target region. As before, you are working in 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 51.

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 60.

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 task shows you how to deactivate the workload definition WLDPAY02, which you created in the example "Routing particular transactions from a given user to a specific target region" on page 119.

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.

```
26MAR1999  22:10:58 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                              SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=26MAR1999==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

In this example, you'll see how 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 119, 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:

```
26MAR1999  22:10:58 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=26MAR1999==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:

```
26MAR1999  22:02:37 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMDEF============PLXPROD1=PLXPROD1=26MAR1999==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 60.
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.

```
26MAR1999  22:10:58 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
>W1 =WLMAWDEF==========PLXPROD1=PLXPROD1=26MAR1999==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.

Discarding an active transaction from a workload

This example shows you how to discard an active transaction from a workload.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Display active transactions.

   From the current view, issue the command WLMATRAN EYUWLS02. The WLMATRAN view, showing active transactions associated with workload specification EYUWLS02, is displayed:

```
26MAR1999  22:11:42 ----------- INFORMATION DISPLAY ---------------------------
COMMAND  ===>                                                SCROLL ===> PAGE
CURR WIN ===> 1        ALT WIN ===>
 W1 =WLMATRAN==========PLXPROD1=PLXPROD1=26MAR1999==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

In this example, you'll see how to update the workload specification WLSPAY01, which you created in the example "Balancing a workload" on page 111. Be aware that, although this task is a very simple one, its effects need to be considered carefully. In particular, the updated workload specification cannot take effect immediately unless you also stop and then restart both the routing region with which the workload specification is associated and the target regions to which the routing region routes transactions.

1. If the current context isn't PLXPROD1, issue the command CON PLXPROD1.
2. Update workload specification WLSPAY01.

a. Issue the command WLMSPEC from the current view. The WLMSPEC view, showing all workload specifications in the CICSplex PLXPROD1, is displayed.

b. Tab to the entry for WLSPAY01, and issue UPD from the line-command field. The Update WLM Specification panel is displayed. Change the Algorithm Type to GOAL.

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

 WLM Spec Name       ===> WLSPAY01
 Description         ===> Separate transactions for USRPAY03 to CICSPA03

 Affinity Relation   ===>              Default Affinity Relation
                                  (USERID, LUNAME, GLOBAL, BAPPL)
 Affinity Lifetime   ===>              Default Affinity Lifetime
                                  (SIGNON, LOGON, SYSTEM, PERMANENT, PCONV, DELIM
                                   ACTIVITY, PROCESS)
 Match Key           ===> USERID       Default Primary search criterion
                                  (USERID,LUNAME)
 Create Affinity     ===>              Create Auto Affinity (YES, NO, N/A)
 Target Scope        ===> 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 update WLM Specification.
Type END or CANCEL to cancel without updating.
```

Press Enter. The WLMSPEC view is redisplayed showing the updated entry for WLSPAY01.

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

3. Display the WLMAWORK view.

   Issue the command WLMAWORK WLSPAY01 from the current view. You'll see that the Algorithm Type is still QUEUE. This is because region CICSPT01 doesn't know about the changes you've made. If you want the updated workload specification to take effect immediately, you have to stop the routing regions and the target regions to which they route, and then restart them. (If you don't know which routing regions and target regions are involved, you can hyperlink to a list of names for either type of region from the WLMAWORK view.) When you've restarted the routing regions and target regions (using the CICSRGN command), issue the command WLMAWORK WLSPAY01 from the current view. This time, you'll see that the Algorithm Type value has been updated.

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

In this example, you'll see 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 129.

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 shows you how to set up dynamic routing capability for a transaction started by an EXEC CICS START command, that specifies a terminal id and a transaction id, and to use the goal algorithm to select the target region.

Note: You should check the system requirements before trying to dynamically route EXEC CICS START TERMID commands. See page 4.

In this example, a program running in CICSPA01 issues an EXEC CICS START command, which is associated with terminal TRM1, to run transaction PAY1, for which you require a 2-second response time. Terminal TRM1 is associated with region CICSPT01. Transaction PAY1 may execute in any region connected to CICSPT01, that is, in CICSPA01–CICSPA03.

This example uses the environment that has already been created as part of earlier examples. You are working in CICSplex PLXPROD1, which comprises TOR CICSPT01 and AORs CICSPA01, CICSPA02, and CICSPA03 in CICS system group 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 8.

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, and the target regions in CICS system group CSGTGTS1, are 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 shows you how to set up dynamic routing capability for a DPL request from a CICS client, and to use the goal algorithm to select the target region.

Note: You should check the system requirements before trying to dynamically route inbound client DPL requests. See page 4.

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 132.

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 8.

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 SM 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 shows you how to set up dynamic routing for a peer-to-peer DPL request, and to use the goal algorithm to select the target region.

Note: You should check the system requirements before trying to dynamically route peer-to-peer DPL requests. See page 4.

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.

dynamically route peer-to-peer DPL

This example uses the environment that was used for "Dynamic routing an EXEC CICS START TERMID command" on page 132. 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 8.

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 shows you how to balance a CICS BTS-related workload. This example uses the configuration that has been used for earlier examples. You are working in 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 138 and "CICS release requirements for dynamic routing" on page 23.

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 shows you how to separate a CICS BTS-related workload. In this example, BTS activity BTSACT1 has an affinity of LIFETIME and runs under transaction id BTS1 and process type SALES. This example uses the configuration that has been used for the example in "Balancing CICS BTS activities" on page 136. 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 23.

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 51.

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 60.

5. Add the workload definition to the workload group.

   In the WLMDEF view, move the cursor to the entry for WLDCBTS1, and issue ADD from the line-command field. The Add WLM Definition to Workload Group panel is displayed. In the Workload Group Name field, type WLGCBTS1 and press Enter. The WLMDEF view is redisplayed.
6. Add the workload group to the a workload specification.

separating BTS activities

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.

Part 4. Appendixes

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Appendix A. Copy books

This chapter contains:
- "EYURWCOM"
- "EYURWSVE" on page 150
- "EYURWTRA" on page 153

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

The format of EYURWCOM is shown in Figure 42 on page 144.

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```
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 42. 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 42. 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 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_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, and CICS Transaction Server for VSE/ESA Release 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, and CICS Transaction Server for VSE/ESA Release 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, and CICS Transaction Server for VSE/ESA Release 1 and later) Route notification. Occurs when a transaction is either ATI or is defined as static.
5 Route initiate (occurs only when the caller is Scheduler Services).
6 Route complete (occurs only when the caller is Scheduler Services).

WCOM_DA_TOKEN
Identifies the dynamic routing API token value.

WCOM_DTRREJ_IND
Specifies, for a dynamically routed transaction, whether or not the transaction should be rejected. This indicator may be set by the EYU9WRAM module.
0 The transaction should not be rejected (the default).
1 The transaction should be rejected.

WCOM_DTRTRAN_IND
Specifies whether or not the transaction can be dynamically routed:
0 The transaction cannot be dynamically routed.
1 The transaction can be dynamically routed.

WCOM_DYRLPROG
Specifies, as an 8-byte data-value, the program name for DPL.

WCOM_DYRTYPE
Specifies the type of routing request:
0 For routing a transaction from a terminal.
1 For notification that an ATI request is to be statically routed.
2 For routing a transaction initiated by an EXEC CICS START command, where there is no data associated with the START.

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. (Whenever the dynamic routing program is invoked for a program-link request, WCOM_DYRTYPE is set to '4'.)
5 For routing a CICS BTS request.

WCOM_ERR_APPLID
Identifies the APPLID of the last selected target region when the WCOM_CTYPE indicator contains a 1 (for route error).

WCOM_ERR_ROUTE
Specifies, as a 1-byte data-value, the route selection error code.
0 The selected sysid is unknown.
1 The selected sysid is not in service.
2 The selected system is in service, but no sessions are available.
3 The allocate request has timed out.
4 A queue of allocate requests has been purged.
5 Dynamically routed START commands are not supported in the target region
6 The EXEC CICS LINK command returned LENGERR.
7 The EXEC CICS LINK command returned PGMIDERR.
8 The EXEC CICS LINK command returned INVREQ.
9 The EXEC CICS LINK command returned NOTAUTH.
A The EXEC CICS LINK command returned TERMERR.
B The EXEC CICS LINK command returned ROLLBACK.

WCOM_ERR_SYSID
Identifies the SYSID of the last selected target region when the WCOM_CTYPE indicator contains a 1 (for route error).

WCOM_EVENT_NAME
Specifies, as an 8-byte data-value, the event name, if any, defined for the transaction group to which the transaction is associated.

WCOM_INIT_CTYPE
Specifies, as a 1-byte data-value, the initial route selection function if a route error occurs; that is, if the WCOM_CTYPE field value is 1. The value is one of the following:
0 Route selection.
4 Route notification.

WCOM_INP_BUFF
Specifies the address of the input buffer, which contains the data entered with the transaction. The data may be in lowercase or mixed case, unless UCTRAN(YES) is specified on the TYPETERM definition.

For APPC transaction routing, the first 4 bytes of the buffer contain a value that reflects the total length of all the data sent; followed by some or all of the data itself. Note that, depending on the size of the initial TIOA, the buffer may not be big enough to contain all the data.

For non-APPC transaction routing, the buffer contains TIOA terminal data.

WCOM_LUNAME
Identifies the 8-byte logical unit name, preceded by a period (.luname).

Depending on how EYU9XLOP is called, the LUname is set from:

- EXEC CICS ASSIGN NETNAME, when called from the CICS relay program

- WTRA_LUNAME, when called from a user-written dynamic routing program (as described in "Chapter 5. Requesting additional dynamic routing support" on page 35).

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 35).

For DPL, WCOM_REM_TRANID may be set by EYU9WRAM before the SM_SCOPE call. In this way, you can modify the transaction identifier under which the DPL runs in the target system.

WCOM_RET_RESP
Identifies the response. You can set the contents of this field to one of the following values:
0 Successful.
1 Message issued.
2 Abort.

WCOM_SCLASS
Specifies the task service class

WCOM_SCOP_CNT
Specifies the number of elements in SCOP_VECT.

WCOM_SCOP_VECT
Specifies the address of SCOP_VECT.

WCOM_SEL_AOR
Specifies the APPLID of the target region that was returned by SM_BALANCE or that you set for SM_ROUTE.

WCOM_SEL_SYSID
Specifies the SYSID of the target region that was returned by SM_BALANCE or that you set for SM_ROUTE.

WCOM_SLENGTH
Specifies, as a halfword binary data-value, the length of the EYURWTRA communication area.

WCOM_STATUS
Specifies, as a 1-byte data-value, the status of CICSPlex SM.
0 CICSPlex SM services are available.
1 CICSPlex SM services are not available.

WCOM_TASK_PRIO
Specifies the task priority.

WCOM_TERM_TYPE
Specifies, as a 1-byte data-value, the type of terminal that started the transaction occurrence.
0 LU2.
1 LU6.
2 Logical unit type is unknown.
3 Transaction has no terminal.

WCOM_TGRP_NAME
Specifies, as an 8-byte data-value, the name of the transaction group for this transaction.

WCOM_TRANSID
Specifies, as an 8-byte data-value, the local transaction identifier.

Depending on how EYU9XLOP is called, this transaction ID is set from:

- EIBTRNID in DFHDYPDS, when called from the CICS relay program
- WTRA_TRANID, when called from a user-written dynamic routing program (as described in "Chapter 5. Requesting additional dynamic routing support" on page 35).

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

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 43 .

```
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 43. 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 Figure 44.

```
EYURWTRA       DSECT ,                 Workload MGR DR COMM area
WTRA_PREFIX    DS   0CL20              WTRA  prefix
WTRA_SLENGTH   DS   AL2                Structure Length
WTRA_ARROW     DS   C                  > delimiter
WTRA_NAME      DS   CL8                EYURWTRA
WTRA_BLANK     DS   C                  Blanks
WTRA_PGMNAME   DS   CL8                name of calling service pgm.
WTRA_PFX_LEN   EQU  *-WTRA_PREFIX      Length of prefix
WTRA_FUNC      DS   C                  Function ID
WTRA_DYRTYPE   DS   C                  Request type
WTRA_DYRLPROG  DS   CL8                DPL program name
WTRA_ERR       DS   C                  Error type if Route Error
WTRA_OPTER     DS   C                  Call Back Option.
               DS   C                  Reserved.
WTRA_RESPONSE  DS   F                  Response
*                                      0 = Normal
*                                      8 = ABORT
WTRA_BUFFADDR  DS   F                  Address of input buffer
WTRA_BUFFLNTH  DS   F                  Length of input buffer
WTRA_TRANID    DS   CL8                Transaction Identifier
WTRA_USERID    DS   CL8                USERID
WTRA_TERMID    DS   CL4                Principal Facility ID
                                       - normally obtained from
                                         EIBTRMID
WTRA_APPLID    DS   CL8                APPLID of default/selected target region
WTRA_SYSID     DS   CL4                SYSID of default/selected target region
WTRA_LUNAME    DS   CL17               LUNAME to use
               DS   CL3                Reserved
WTRA_NEXTTRAN  DS   CL8                The Identifier of the
                                       Transaction which will be
                                       executed after the current one
                                       completes.  This should be set
                                       prior to calling using the
                                       Route Termination Function.
WTRA_API_RESP  DS   F                  Last API RESPONSE to WRAM
WTRA_API_REAS  DS   F                  Last API REASON to WRAM
WTRA_COMMAREA  DS   A                  COMMAREA address (0 if none)
WTRA_COMMAREAL DS   F                  COMMAREA length (0 if none)
               DS   XL16               Reserved.
WTRA_USERAREA  DS   CL128              128 byte user area for use by
                                       routing exit.
WTRA_LENGTH    EQU  *-EYURWTRA         Length of communication area
```

Figure 44. 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_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 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.

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.

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 45 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 45. A sample calling sequence for CICSPlex SM workload management facilities (Part 1 of 3)

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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 45. 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 45. 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='CPSM140',
//             CICSHLQ='CICS530',
//             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 46. Sample JCL for replacement module for Assembler language

C/370 language

```
//APPLPROG  EXEC EYUEITDL,
//             OUTC=*,
//             CPSMHLQ='CPSM140',
//             CICSHLQ='CICS530',
//             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 47. Sample JCL for replacement module for C/370 language

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

PLI language

```
//APPLPROG  EXEC EYUEITPL,
//             OUTC=*,
//             CPSMHLQ='CPSM140',
//             CICSHLQ='CICS530',
//             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 48. Sample JCL for replacement module for PLI language

COBOL II language

```
//APPLPROG  EXEC EYUEITVL,
//             OUTC=*,
//             CPSMHLQ='CPSM140',
//             CICSHLQ='CICS530',
//             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 49. Sample JCL for replacement module for COBOL language

Glossary

This glossary defines CICSPlex SM terms and abbreviations used in this book with other than their everyday meaning. Terms that are defined in the *IBM Dictionary of Computing*, New York: McGraw-Hill, 1994, are not defined here unless CICSPlex SM usage is different from the meaning given there.

If you cannot find the definition you need, refer to the *Dictionary of Computing* or the *CICSPlex SM Master Index*, SC33-1812.

A

action command. A CICSPlex SM command that affects one or more of the resources represented in a view. Action commands can be issued from either the COMMAND field in the control area of the information display panel or the line command field in a displayed view. Valid action commands are listed with the description of each view. See also *overtype field*.

action definition (ACTNDEF). In real-time analysis, a definition of the type of external notification that is to be issued when the conditions identified in an analysis definition are true.

activity. See *BTS activity*.

adjacent CMAS. A CICSPlex SM address space (CMAS) that is connected to the local CMAS via a direct CMAS-to-CMAS link. Contrast with *indirect CMAS*. See also *local CMAS*.

alter expression. A character string that defines the changes to be made to a resource attribute. An alter expression is made up of one or more attribute expressions.

alternate window. A window to which the results of a hyperlink can be directed. By default, the results of a hyperlink are displayed in the same window from which the hyperlink is initiated. Contrast with *current window*.

alternate window (ALT WIN) field. In the control area of an information display panel, the field in which you can specify an alternate window to receive the results of a hyperlink.

analysis definition. In real-time analysis, a definition of the evaluations to be performed on specified CICS resources, the intervals at which those evaluations are to be performed, and the actions to be taken when a notifiable condition occurs.

analysis group. In real-time analysis, a group of one or more analysis definitions, status definitions, or both. Analysis definitions and status definitions must belong to an analysis group if they are to be installed automatically in a CICS system when that system starts.

analysis point monitoring (APM). In real-time analysis, resource monitoring across multiple CICS systems within a CICSplex that results in a single notification of a condition, rather than one notification for each system. Contrast with *MAS resource monitoring*.

analysis point specification. In real-time analysis, a specification that identifies the CMASs that are to be responsible for analysis point monitoring.

analysis specification. In real-time analysis, a specification that establishes system availability monitoring or MAS resource monitoring within a group of CICS systems.

AOR. Application-owning region.

API. Application programming interface

APM. Analysis point monitoring.

application-owning region (AOR). In a CICSplex configuration, a CICS region devoted to running applications. For dynamic routing, the terms *requesting region*, *routing region*, and *target region* are used instead of AOR to signify the role of the region in the dynamic routing request.

ARM. Automatic restart manager.

ASU. Automatic screen update.

attribute. See *resource attribute, resource table attribute*.

attribute expression. A reference to a resource table attribute and, in some cases, its value. Attribute expressions are used to build filter expressions, modification expressions, and order expressions.

attribute value. The data currently associated with a resource table attribute. For example, the file attribute OPENSTATUS might have a value of CLOSED.

automatic restart manager (ARM). A recovery function of MVS/ESA 5.2 that provides improved availability for batch jobs and started tasks by restarting them automatically if they end unexpectedly. The affected batch job or started task can be restarted on the same system or on a different one, if the system itself has failed.

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automatic screen update (ASU). A CICSPlex SM facility that automatically updates the data in all unlocked windows at user-defined intervals. See also *automatic screen update interval*.

automatic screen update interval. The time interval between one automatic screen update and the next. This interval can be set in the CICSPlex SM user profile or when the ASU facility is turned on. See also *automatic screen update (ASU)*.

B

BAS. Business Application Services

batched repository-update facility. A CICSPlex SM facility, invoked from the CICSPlex SM end user interface, for the bulk application of CICSPlex SM definitions to a CMAS data repository.

BTS. CICS business transaction services

BTS activity. One part of a process managed by CICS BTS. Typically, an activity is part of a *business transaction*.

BTS process. A collection of more than one CICS BTS *activities*. Typically, a process is an instance of a *business transaction*.

BTS set. See CICS system group

business application. Any set of CICS resources that represent a meaningful entity to an enterprise or a user (such as, Payroll).

Business Application Services (BAS). The component of CICSPlex SM that provides the ability to define and manage business applications in terms of their CICS resources and associated CICS systems. BAS provides a central definition repository for CICS systems, complete with installation facilities and the ability to restrict a CICSPlex SM request to those resources defined as being part of the business application. See also *business application, scope*.

business transaction. A self-contained business function, for example, the booking of an airline ticket.

C

CAS. Coordinating address space.

CBIPO. Custom-built installation process offering.

CBPDO. Custom-built product delivery offering.

CEDA. A CICS transaction that defines resources online. Using CEDA, you can update both the CICS system definition data set (CSD) and the running CICS system.

CICS Business Transaction Services (BTS). A CICS domain that supports an application programming interface (API) and services that simplify the development of *business transactions*.

CICS system. The entire collection of hardware and software required by CICS. In CICSPlex SM topology, a definition referring to a CICS system that is to be managed by CICSPlex SM. See also *CICSplex, CICS system group*.

CICS system group. A set of CICS systems within a CICSplex that can be managed as a single entity. In CICSPlex SM topology, the user-defined name, description, and content information for a CICS system group. A CICS system group can be made up of CICS systems or other CICS system groups. In CICS business transaction services (BTS), a BTS set, that is the set of CICS regions across which BTS processes and activities may execute. See also *CICSplex, CICS system*.

CICSplex. A CICS complex. A CICSplex consists of two or more CICS regions that are linked using CICS intercommunication facilities. The links can be either intersystem communication (ISC) or interregion communication (IRC) links, but within a CICSplex are more commonly IRC. Typically, a CICSplex has at least one terminal-owning region (TOR), more than one application-owning region (AOR), and may have one or more regions that own the resources being accessed by the AORs. In CICSPlex SM, a management domain. The largest set of CICS regions, or CICS systems, to be manipulated by CICSPlex SM as a single entity. CICS systems in a CICSplex being managed by CICSPlex SM do not need to be connected to each other. See also *CICS system, CICS system group*.

CICSPlex SM. IBM CICSPlex System Manager.

CICSPlex SM address space (CMAS). A CICSPlex SM component that is responsible for managing CICSplexes. A CMAS provides the single-system image for a CICSplex by serving as the interface to other CICSplexes and external programs. There must be at least one CMAS in each MVS image on which you are running CICSPlex SM. A single CMAS can manage CICS systems within one or more CICSplexes. See also *coordinating address space (CAS), managed application system (MAS)*.

CICSPlex SM token. Unique, 4-byte values that CICSPlex SM assigns to various elements in the API environment. Token values are used by CICSPlex SM to correlate the results of certain API operations with subsequent requests.

client program. In dynamic routing, the application program, running in the *requesting region*, that issues a remote link request.

CMAS. CICSPlex SM address space.

CMAS link. A communications link between one CICSPlex SM address space (CMAS) and another CMAS or a remote managed application system (remote MAS). CMAS links are defined when CICSPlex SM is configured.

CODB. A CICSPlex SM transaction for interactive, system-level debugging of CMASs and of CICS/ESA, CICS/MVS, and CICS/VSE MASs. CODB must be used only at the request of customer support personnel.

COD0. A CICSPlex SM transaction for interactive, method-level debugging of CMASs and of CICS/ESA, CICS/MVS, CICS/VSE, and CICS for OS/2 MASs. COD0 must be used only at the request of customer support personnel.

COLU. A CICSPlex SM transaction for generating reports about CMAS and local MAS components. COLU must be used only at the request of customer support personnel.

COMMAND field. In the control area of an information display panel, the field that accepts CICSPlex SM, ISPF, and TSO commands. Contrast with *option field*.

command-level interface. A CICSPlex SM API interface that uses the CICS translator to translate EXEC CPSM statements into an appropriate sequence of instructions in the source language.

Common Services. A component of CICSPlex SM that provides commonly requested services (such as GETMAIN, FREEMAIN, POST, and WAIT processing) to other CICSPlex SM components.

communication area (COMMAREA). A CICS area that is used to pass data between tasks that communicate with a given terminal. The area can also be used to pass data between programs within a task.

Communications. A component of CICSPlex SM that provides all services for implementing CMAS-to-CMAS and CMAS-to-MAS communication.

context. A named part of the CICSPlex SM environment that is currently being acted upon by CICSPlex SM. For configuration tasks, the context is a CICSPlex SM address space (CMAS); for all other tasks, it is a CICSplex. See also *scope*.

control area. The top three lines of an information display panel, containing the panel title, the screen update time, the short message area, the COMMAND and SCROLL fields, and the current window (CUR WIN) and alternate window (ALT WIN) fields.

coordinating address space (CAS). An MVS subsystem that provides ISPF end-user access to the CICSplex to be accessed. See also *CICSPlex SM address space, managed application system (MAS)*.

coordinating address space subsystem ID. Identifies the coordinating address space (CAS) which can be up to 4 characters, to be connected to when issuing CICSPlex SM requests. The name of the CAS is installation-dependent, and is defined in the CICSPlex SM user profile.

cross-system coupling facility (XCF). XCF is a component of MVS that provides functions to support cooperation between authorized programs running within a sysplex.

current window. The window to which the results of all commands issued in the COMMAND field are directed, unless otherwise requested. Contrast with *alternate window*.

current window (CUR WIN) field. In the control area of an information display panel, the field that contains the window number of the current window. You can change the number in this field to establish a new current window.

custom-built installation process offering (CBIPO). A product that simplifies the ordering, installation, and service of MVS system control programs and licensed programs by providing them with current updates and corrections to the software that is already integrated.

custom-built product delivery offering (CBPDO). A customized package of both products and service, or of service only, for MVS system control programs and licensed programs.

D

Data Cache Manager. A component of CICSPlex SM that manages logical cache storage for use by other CICSPlex SM components.

data repository. In CICSPlex SM, the VSAM data set that stores administrative data, such as topology and monitor definitions, for a CICSPlex SM address space (CMAS).

Data Repository. A component of CICSPlex SM that provides methods for creating, accessing, updating, and deleting data in the CICSPlex SM data repository. See also *Managed Object Services*.

Database Control (DBCTL). An IMS/ESA facility providing an interface between CICS/ESA and IMS/ESA that allows access to IMS DL/I full-function databases and to data-entry databases (DEDBs) from one or more CICS/ESA systems.

Database 2 (DB2). An IBM licensed program. DB2 is a full-function relational database management system that presents a data structure as a table consisting of a number of rows (or records) and a number of columns.

DBCTL. Database Control.

DB2. Database 2.

derived field. On a monitor view, a field whose value does not come directly from CICS or CICSPlex SM data, but is calculated based on the values in other fields. See also *derived value*.

derived value. A rate, average, or percentage that results from CICSPlex SM processing of CICS statistics.

display area. On an information display panel, the area where windows can be opened to display data. The display area appears below the control area. The bottom two lines of the display area can be used to display the PF key assignments in effect for a CICSPlex SM session.

display attributes. A CICSPlex SM user profile option that controls the appearance of the window information line, field headings, and threshold values in a view.

display command. A CICSPlex SM command that extends the ISPF interface to create and control a multiwindow environment.

distributed program link (DPL). Function of CICS intersystem communication that enables CICS to ship LINK requests between CICS regions.

distributed routing program (DSRTPGM). A CICS-supplied user-replaceable program that can be used to dynamically route:

- CICS BTS processes and activities
- Transactions started by non-terminal related EXEC CICS START commands

DPL. Distributed program link.

DTR. Dynamic transaction routing.

dynamic routing. The automatic routing of a transaction or program, at the time it is initiated, from a requesting region to a suitable target region. Routing terminal data to an alternative transaction at the time the transaction is invoked. To do this, CICS allows the dynamic routing program to intercept the terminal data and redirect it to any system and transaction it chooses. See also dynamic routing program (EYU9XLOP)

dynamic routing program (EYU9XLOP). A user-replaceable CICS program that selects dynamically both the system to which a routing request is to be sent and the transaction's remote name. The alternative to using this program is to make these selections when a remote transaction is defined to CICS (static routing). See also *static routing*

dynamic transaction routing (DTR). The automatic routing of a transaction, at the time it is initiated, from a transaction-owning region (TOR) to a suitable application-owning region (AOR).

E

Environment Services System Services (ESSS). A component of CICSPlex SM that implements the formal MVS/ESA subsystem functions required by the product. ESSS provides cross-memory services, data space management, connection services, and lock management. An ESSS system address space is created at CICSPlex SM initialization and remains in the MVS image for the life of the IPL.

ESSS. Environment Services System Services.

evaluation definition. In real-time analysis, a definition of the resources that are to be sampled. When the result of an evaluation is true, an associated analysis definition is used to determine whether a notifiable condition has occurred.

event. A significant occurrence within the CICSplex or system for which the user has requested notification. For example, the end of processing, a subsystem failure, or any unusual condition in the system could be defined by a user as an event.

event notification. A CICSPlex SM notification of a significant occurrence within a CICSplex or CICS system.

extended diagnostic mode (XDM). A CICSPlex SM online internal diagnostic facility. XDM provides no information about resources managed by CICSPlex SM, and should be turned on only at the request of IBM customer support personnel. XDM can be turned on and off in the CICSPlex SM user profile.

external notification. In RTA, an event notification, generic alert, or operator message issued when a notifiable condition occurs.

F

file-owning region. In a CICSplex configuration, a CICS system devoted to managing CICS file access.

filter expression. A character string that consists of logical expressions to be used in filtering resource table records. A filter expression is made up of one or more attribute expressions.

FOR. File-owning region.

form. The way in which data obtained from a query is presented in a view. See also *query, view*.

G

generic alert. A Systems Network Architecture (SNA) Network Management Vector that enables a product to signal a problem to the network. CICSPlex SM uses generic alerts as part of its interface to NetView.

GMFHS. Graphic Monitor Facility host subsystem.

goal algorithm. In CICSPlex SM's workload balancing, an algorithm used to select an AOR to process a dynamic transaction. Using the goal algorithm, CICSPlex SM selects the AOR that is the least affected by conditions such as short-on-storage, SYSDUMP, and TRANDUMP; is the least likely to cause the transaction to abend; and is most likely to enable the transaction to meet response-time goals set for it using the Workload Manager component of MVS/ESA SP 5.1. Contrast with *queue algorithm*.

Graphic Monitor Facility host subsystem. A NetView feature that manages configuration and status updates for non-SNA resources.

H

hyperlink. A direct connection between the data in one CICSPlex SM view and a view containing related information. For example, from a view that lists multiple CICS resources, there may be a hyperlink to a detailed view for one of the resources. To use a hyperlink, place the cursor in the data portion of a hyperlink field and press Enter.

hyperlink field. On a CICSPlex SM view, a field for which a hyperlink is defined. The headings of hyperlink fields are shown in high intensity or color, depending on the terminal type.

I

IBM CICSPlex System Manager for MVS/ESA (CICSPlex SM). An IBM CICS system-management product that provides a single-system image and a single point of control for one or more CICSplexes that can be installed on heterogeneous operating systems.

indirect CMAS. A CICSPlex SM address space (CMAS) that the local CMAS can communicate with via an adjacent CMAS. There is no direct CMAS-to-CMAS link between the local CMAS and an indirect CMAS. Contrast with *adjacent CMAS*. See also *local CMAS*.

information display panel. The panel that supports the CICSPlex SM window environment. It consists of a control area and a display area. CICSPlex SM views are displayed in windows within the display area of this panel.

information display parameters. A CICSPlex SM user profile option that defines the initial screen configuration, how frequently the screen will be updated by ASU, and how long a window will wait for command processing to complete before timing out.

installation verification procedure (IVP). A procedure distributed with a system that tests the newly generated system to verify that the basic facilities of the system are functioning correctly.

interregion communication. Synonym for *multiregion operation*.

intersystem communication (ISC). Communication between separate systems by means of SNA networking facilities or by means of the application-to-application facilities of an SNA access method.

intertransaction affinity. A relationship between CICS transactions, usually the result of the ways in which information is passed between those transactions, that requires them to execute in the same CICS region. Intertransaction affinity imposes restrictions on the dynamic routing of transactions.

IRC. Interregion communication.

ISC. Intersystem communication.

IVP. Installation verification procedure.

K

Kernel Linkage. A component of CICSPlex SM that is responsible for building data structures and managing the interfaces between the other CICSPlex SM components. The environment built by Kernel Linkage is known as the method call environment.

L

line command field. In a CICSPlex SM view, the 3 character field, to the left of the data, that accepts action commands.

local CMAS. The CICSPlex SM address space (CMAS) that a user identifies as the current context when performing CMAS configuration tasks.

local MAS. A managed application system (MAS) that resides in the same MVS image as the CICSPlex SM address space (CMAS) that controls it and that uses the Environment Services System Services (ESSS) to communicate with the CMAS.

logical scope. A set of logically related CICS resources that are identified in a CICSPlex SM resource description. A logical scope can be used to qualify the context of a CICSPlex SM request.

M

maintenance point. A CICSPlex SM address space (CMAS) that is responsible for maintaining CICSPlex SM definitions in its data repository and distributing them to other CMASs involved in the management of a CICSplex. See also *data repository*.

Major object descriptor block (MODB). In CICSPlex SM, a control structure built by Kernel Linkage during initialization of a CICSPlex SM component that contains a directory of all methods that make up that component. The structure of the MODB is the same for all components.

Major object environment block (MOEB). In CICSPlex SM, a control structure built by Kernel Linkage during initialization of a CICSPlex SM component and pointed to by the MODB. The MOEB stores information critical to a CICSPlex SM component and anchors data used by the component. The structure of the MOEB is unique to the component it supports.

MAL. Message argument list.

managed application system (MAS). A CICS system that is being managed by CICSPlex SM. See *local MAS, remote MAS*.

managed object. A CICSPlex SM-managed CICS resource or a CICSPlex SM definition represented by a resource table. A view is based on a single managed object.

Managed Object Services. A subcomponent of the Data Repository component of CICSPlex SM that translates a request for data (from real-time analysis, for example) into the method calls required to obtain the data.

MAS. Managed application system.

MAS agent. A CICSPlex SM component that acts within a CICS system to provide monitoring and data collection for the CICSPlex SM address space (CMAS). The level of service provided by a MAS agent depends on the level of CICS the system is running under and whether it is a local or remote MAS. See also *CICSPlex SM address space (CMAS), local MAS, remote MAS*.

MAS resource monitoring (MRM). In real-time analysis, resource monitoring at the CICS system level; it results in one notification of a condition for each system in which it occurs. If the same condition occurs in three CICS systems where MAS resource monitoring is active, three notifications are issued. Contrast with *analysis point monitoring*.

Message argument list (MAL). In CICSPlex SM, a data structure passed between methods using Kernel Linkage method call services.

message line. On an information display panel, the line in the control area where a long message appears when the HELP command is issued in response to a short message. The message line temporarily overlays the CURR WIN and ALT WIN fields.

Message Services. A component of CICSPlex SM that provides services for building and issuing MVS/ESA console messages to other CICSPlex SM components.

meta-data. Internal data that describes the structure and characteristics of CICSPlex SM managed objects.

method. (Action.) An application programming interface (API) instruction that resolves into an EXEC CICS command, issued against one or more resources in one or more CICS systems, within the current context and scope.

method. In CICSPlex SM, one of the programs that make up a CICSPlex SM component. See also *message argument list (MAL)*.

mirror transaction. CICS transaction that recreates a request that is function shipped from one system to another, issues the request on the second system, and passes the acquired data back to the first system.

MODB. Major object descriptor block.

modification expression. A character string that defines the changes to be made to a resource attribute. A modification expression is made up of one or more attribute expressions.

MOEB. Major object environment block.

monitor definition. A user-defined statement of the specific resource occurrences (such as the program named PAYROLL) to be monitored by CICSPlex SM. A monitor definition can either be linked to a monitor specification as part of a monitor group or be installed directly into an active CICS system. See also *monitor group, monitor specification*.

monitor group. A user-defined set of CICSPlex SM monitor definitions that can either be linked to a monitor specification for automatic installation or be installed directly into an active CICS system. See also *monitor definition, monitor specification*.

monitor interval. The number of minutes that are to elapse before the statistics counters containing accumulated resource monitoring data are automatically reset. This value is part of a CICSplex definition and affects all of the CICS systems and CICS system groups associated with that CICSplex. See also *period definition, sample interval*.

monitor specification. A user-defined statement of the types of resources (such as programs) to be monitored by CICSPlex SM and how often data should be collected. A monitor specification is associated with a CICS system and is automatically installed each time the CICS system starts up. See also *monitor definition, monitor group*.

Monitoring Services. A component of CICSPlex SM that is responsible for monitoring resources within a

CICS system and making the collected data available to other CICSPlex SM components.

MRM. MAS resource monitoring.

MRO. Multiregion operation.

MSM. MultiSystem Manager.

multiregion operation (MRO). Communication between CICS systems without the use of SNA network facilities. Synonymous with *interregion communication*.

MultiSystem Manager. An object-oriented, graphical systems management application that runs under NetView for MVS.

MVS image. A single instance of the MVS operating system.

MVS system. An MVS image together with its associated hardware.

N

NetView. An IBM network management product that can provide rapid notification of events and automated operations. CICSPlex SM can be set up to send generic alerts to NetView as part of its event processing capabilities.

NetView Graphic Monitor Facility (NGMF). A function of the NetView program that provides the network operator with a graphic topological presentation of a network controlled by the NetView program and that allows the operator to manage the network interactively.

NetView program. An IBM licensed program used to monitor and manage a network and to diagnose network problems.

NGMF. NetView Graphic Monitor Facility.

notification. A message that is generated asynchronously by a CICSPlex SM managed object to describe an event related to the object.

O

option field. On a CICSPlex SM menu, the field in which you can specify an option number or letter. Contrast with *command field*.

order expression. A character string that defines either the attributes to be used in sorting resource table records, or the attributes to be included in a resource table view. An order expression is made up of one or more attribute expressions.

override expression. A character string that defines the changes to be made to a resource attribute. An override expression is made up of one or more attribute expressions.

overtype field. On a CICSPlex SM view, a field containing a value that can be changed by typing a new value directly into the field. Values that can be overtyped are shown in high intensity or color, depending on the terminal type. Acceptable values for overtype fields are listed with the description of each view. See also *action command*.

P

parameter expression. A character string that defines the parameters required for an action to complete or a definition to be processed.

parameter repository. In CICSPlex SM, a data set that stores cross-system communication definitions that allow one coordinating address space (CAS) to communicate with other CASs.

period definition. A user-defined range of hours and minutes and the time zone to which that range applies. A period definition is used to indicate when an action, such as resource monitoring, is to occur. See also *monitor interval, sample interval*.

PlexManager. A service utility that can be used to manage the communication connections between multiple coordinating address spaces (CASs) and between a CAS and its associated CICSPlex SM address spaces (CMASs) and CICSplexes.

process. See *BTS process*

processing thread. A connection between an application program and the CICSPlex SM API. A program can establish multiple processing threads, but each one is considered a unique API user; no resources can be shared across the boundary of a thread.

pseudoconversation. A CICS application designed to appear to the user as a continuous conversation, but that consists internally of multiple separate tasks.

Q

query. A request for specific data that is generated by a view command. See also *form, view*.

queue algorithm. In CICSPlex SM's workload balancing, an algorithm used to select an AOR to process a dynamic transaction. Using the queue algorithm, CICSPlex SM selects the AOR that has the shortest queue of transactions (normalized to MAXTASKs) waiting to be processed; is the least affected by conditions such as short-on-storage,

SYSDUMP, and TRANDUMP; and is the least likely to cause the transaction to abend. Contrast with *goal algorithm*.

Queue Manager. A component of CICSPlex SM that creates and manages queues of data in a cache that is shared by a CMAS and its local MASs.

R

RACF. Resource Access Control Facility.

real-time analysis (RTA). A component of CICSPlex SM that is responsible for monitoring the status of a CICS system or resource against its desired status, and issuing one or more external notifications when deviations occur.

record pointer. An internal indicator of the next resource table record to be processed in a result set.

related scope. A CICS system where resources defined to CICSPlex SM as remote should be assigned and, optionally, installed as local resources. See also *target scope*.

remote MAS. A managed application system (MAS) that uses MRO or LU 6.2 to communicate with the CICSPlex SM address space (CMAS) that controls it. A remote MAS may or may not reside in the same MVS image as the CMAS that controls it.

requesting region. The region in which a dynamic routing request originates. For dynamic transaction routing and inbound client dynamic program link requests, this is typically a TOR; for dynamic START requests and peer-to-peer dynamic program link requests, this is typically an AOR.

resource. Any physical or logical item in a CICS system, such as a transient data queue, a buffer pool, a file, a program, or a transaction.

Resource Access Control Facility (RACF). An IBM licensed program that provides for access control by identifying and verifying the users to the system, authorizing access to protected resources, logging any detected unauthorized attempts to enter the system, and logging the detected accesses to protected resources.

resource assignment. A user-defined statement that selects resource definitions to be assigned to CICS systems and, optionally, specifies resource attributes to override those definitions. A resource assignment applies to a single resource type and must be associated with a resource description. See also *resource definition, resource description*.

resource attribute. A characteristic of a CICS resource, such as the size of a buffer pool.

resource definition. In CICSPlex SM, a user-defined statement of the physical and operational characteristics of a CICS resource. Resource definitions can be associated with resource descriptions as part of a resource group. See also *resource description, resource group*.

resource description. A user-defined set of CICSPlex SM resource definitions that can be automatically installed in CICS systems and named as a logical scope for CICSPlex SM requests. Resource descriptions represent the largest set of CICS resources that can be managed by CICSPlex SM as a single entity. A resource description can be associated with one or more resource assignments. See also *logical scope, resource assignment, resource definition*.

resource group. A user-defined set of CICSPlex SM resource definitions. A resource group can be associated with resource descriptions either directly or by means of resource assignments. See also *resource assignment, resource definition, resource description*.

Resource Object Data Manager (RODM). A component of the NetView program that operates as a cache manager and that supports automation applications. RODM provides an in-memory cache for maintaining real-time data in an address space that is accessible by multiple applications.

resource table. The external representation of a CICSPlex SM managed object. A resource table defines all the attributes, or characteristics, of a managed object.

resource table attribute. A characteristic of a CICSPlex SM managed object, as represented by a field in a resource table.

resource type. A group of related resources, such as files.

result set. A logical group of resource table records that can be accessed, reviewed, and manipulated by an API program.

retention period. For a monitored CICS system, the period of time for which monitor data is retained after the system becomes inactive. If a system is being monitored, becomes inactive, and remains inactive beyond the specified retention period, the monitor data is discarded. If the system becomes active before the retention period expires, the monitor data gathered before the system became inactive is retained, and monitoring continues.

RODM. Resource Object Data Manager.

routing region. The region in which the decision is made as to which is the most suitable target region for a dynamic routing request. For dynamic transaction routing, dynamic terminal-related START requests, and inbound client dynamic program link requests, this is

typically a TOR; for non-terminal-related START requests, dynamic peer-to-peer program link requests, and CICS BTS activities, this is typically an AOR.

RTA. real-time analysis.

run-time Interface. A CICSPlex SM API interface that accepts commands in the form of text strings and generates the appropriate API calls. The run-time interface supports programs written as REXX EXECs.

S

SAM. System availability monitoring.

sample interval. The duration, in seconds, between occurrences of data collection for a specific resource type. See also *monitor interval, period definition, resource type*.

scope. A named part of the CICSPlex SM environment that qualifies the context of a CICSPlex SM request. The scope can be the CICSplex itself, a CICS system, a CICS system group, or any set of CICS resources that are defined as a logical scope in a CICSPlex SM resource description. For configuration tasks, where the context is a CICSPlex SM address space (CMAS), the scope is ignored. When you are applying security, scope must be a single CICS system or CICSplex. It cannot be a CICS system group or any combination of individual CICSplexes or CICS systems. See also *context, logical scope*.

screen configuration. A user-defined, named layout of windows and the context, scope, view, and sort order associated with each. The initial configuration to be displayed when CICSPlex SM is accessed can be identified on the user profile.

screen repository. In CICSPlex SM, a data set that stores screen configuration definitions created by the SAVESCR display command. See also *screen configuration*.

selection list. In CICSPlex SM, a data set that stores cross-system communication definitions that allow one coordinating address space (CAS) to communicate with other CASs.

selection list. A list of named items, such as views or screen configurations, from which one can be selected.

server program. In dynamic routing, the application program specified on the link request, and which is executed in the *target region*.

service point. One of the combinations of products and contexts that is known to the coordinating address space (CAS) to which you are connected. See also *context*.

session control parameters. A CICSPlex SM user profile option that sets the coordinating address space (CAS) subsystem ID used for accessing CICSPlex SM views and controls the extended diagnostic mode (XDM).

short message area. In the control area of an information display panel, that part of the title line that displays short messages.

single point of control. The ability to access and manage all CICS systems and their resources in a CICSplex from a single terminal or user session.

single system image. The collection and presentation of data about multiple CICS systems as though they were a single CICS system. In CICSPlex SM, the single-system image is provided by the CICSPlex SM address space (CMAS).

specification. See *analysis specification, monitor specification, workload specification*.

Starter Set. A part of CICSPlex SM comprising sample CICSPlex SM definitions and sample JCL. The Starter Set samples may be used as supplied for educational purposes. They may also be copied and adapted for the customer environment.

static routing. Non-dynamic routing. The routing request is routed to a predetermined system. Static transaction routing occurs when NO is specified is the Dynamic field in either the transaction definition or the progam definition. In both cases, the request is routed to the system named in the Remote Sysid field.

status definition. In real-time analysis, a definition of a user-written program to be invoked at specified intervals to evaluate the status of a non-CICS resource.

summarized result set. A special type of result set that is produced by grouping, or summarizing, the resource table records in a result set. See also *result set*.

summary expression. A character string that consists of one or more summary options and the resource table attributes to which they apply. See also *summary option*.

summary option. A value that indicates how the attribute values in a resource table are to be summarized.

sysplex. A set of MVS systems communicating and cooperating with each other through specific multisystem hardware components and software services to process customer workloads.

system availability monitoring (SAM). In real-time analysis, the monitoring of CICS systems to determine whether: they are active during their defined hours of operation; they are experiencing a short-on-storage, SYSDUMP, TRANDUMP, MAXTASK, or STALL condition. If a CICS system becomes inactive or one of the specified conditions occurs, an external notification is issued.

system image. The representation of a program and its related data as it exists in main storage.

T

target region. The region selected from a set of target regions as the most suitable region in which to execute the work request. For all dynamic routing requests, this is typically an AOR.

target scope. A CICS system or CICS system group where resources defined to CICSPlex SM should be assigned and, optionally, installed. See also *related scope*.

temporary maintenance point. A CICSPlex SM address space (CMAS) that serves as the maintenance point when the identified maintenance point is unavailable. See also *maintenance point*.

terminal-owning region. In a CICSplex configuration, a CICS region devoted to managing the terminal network. For dynamic routing, the terms *requesting region* and *routing region* are used instead of TOR to signify the role of the region in the dynamic routing request.

thread. See *processing thread*.

time-period definition. A user-defined range of hours and minutes, and the time zone to which that range applies. A time-period definition is used to indicate when an action, such as resource monitoring, is to occur.

token. See *CICSPlex SM token, user token*.

topology. An inventory of CICS and CICSPlex SM resources, and a map of their relationships. CICSPlex SM supports the definition of resource and system topology.

topology definition. A named subset of CICS and CICSPlex SM resources. Topology definitions are user-created and can include CICSplexes, CICS systems, and CICS system groups.

Topology Services. A component of CICSPlex SM that is responsible for maintaining topology information about CICSplexes and resources, and making it available to other CICSPlex SM components.

TOR. Terminal-owning region.

Trace Services. A component of CICSPlex SM that provides other CICSPlex SM components with the ability to write trace records to the CICS trace table and trace data sets. Trace Services also writes trace records created by a MAS to the trace table and data set of the managing CMAS.

transaction group. A user-defined, named set of transactions that determines the scope of workload balancing and the affinity relationships between transactions.

U

user token. Unique, 1- to 4-byte values that an API user can assign to asynchronous requests. User token values are not used by CICSPlex SM; they are simply held until the request is complete and then returned to the user.

V

view. In the CICSPlex SM API, a temporary, customized form of a resource table. A view can consist of some or all of the resource table attributes in any order. In the CICSPlex SM ISPF end-user interface, a formatted display of selected data about CICS resources or CICSPlex SM definitions. The data in a view is obtained from a query and can be presented in one or more forms. The data can be limited to a subset of CICSplex resources or definitions by establishing a context and scope.

view command. A CICSPlex SM command that displays a view in a window of the display area. The name of the view displayed matches the name of the view command. See also *view*.

W

window. In CICSPlex SM, a subdivision of the display area. The results of any CICSPlex SM view or display command are directed to a single window, which is the current window by default. Contrast with *view*. See also *current window*, *alternate window*.

window identifier. On a window information line, the field that identifies the window. A window identifier consists of a one-character status code and a number in the range 1 through 20.

window information line. The top line of each window in the display area. It includes the window identifier, the name of the view displayed in the window, the context and scope in effect, the date and time when the view was last refreshed, and the product name.

window number. A number assigned by CICSPlex SM to a window when it is opened. The window number is the second part of the window identifier on the window information line.

window status code. A one-character code that indicates whether a window is ready to receive commands, is busy processing commands, is not to be updated, or contains no data. It also indicates when an

error has occurred in a window. The window status code is the first character of the window identifier on the window information line.

WLM. Workload Manager.

workload. The total number of transactions that a given CICSplex is intended to process in a specific period. For example, a workload could be expressed as a number of transactions per hour, or per day. In CICSPlex SM, a named set of transactions and CICS systems, acting as requesting regions, routing regions, and target regions that form a single, dynamic entity.

workload balancing. The technique of balancing a workload across multiple target regions that are capable of processing the work.

workload definition. A user-defined statement of the transaction groups associated with a CICS system that is an AOR. A workload definition can either be linked to a workload specification as part of a workload group or be installed directly into an active workload. See also *workload group, workload specification*.

workload group. A user-defined set of CICSPlex SM workload definitions that can either be linked to a workload specification for automatic installation or be installed directly into an active workload. See also *workload definition, workload specification*.

Workload Manager (WLM). A component of CICSPlex SM that is responsible for managing the transaction workload in a CICSplex through the use of dynamic transaction routing.

workload separation. The technique of separating a workload into discrete parts, and allocating specific transactions to specific AORs.

workload specification. A user-defined statement that identifies a workload and a set of CICS systems acting as AORs. A workload specification also provides default management criteria for transactions that are not defined to CICSPlex SM. It is associated with a CICS system that is a TOR and is automatically installed each time the CICS system starts up. See also *workload definition, workload group*.

X

XCF. Cross-system coupling facility of MVS/ESA.

XDM. Extended diagnostic mode

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