CICS Transaction Server for z/OS
Version 5 Release 2

Installation Guide

GC34-7279-00

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Note

Before using this information and the product it supports, read the information in "Notices" on page 445.

This edition applies to the IBM CICS Transaction Server for z/OS Version 5 Release 2 (product number 5655-Y04) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Preface

What this book is about

This book describes CICS® Transaction Server for z/OS®, Version 5 Release 2 (CICS TS). It takes you through the necessary planning and helps you install CICS Transaction Server for z/OS, Version 5 Release 2.

It contains guidance about tailoring CICS for use in your systems environment:

- Describing the content of CICS TS and the two delivery methods—ServerPac and CBPDO
- Explaining the method of installing CICS TS (with either ServerPac or CBPDO), and provides references to the required sources of information. In this book, "installing" means loading the code into the libraries in preparation for the migration and customizing tasks.
- Listing the hardware and software you must have to run the CICS TS product elements and exploit the function provided by CICS TS.
- Covering installation, and verification of that installation, for both CICS and CICSPlex® SM.
- Telling you about installing the workstation-based components of CICS TS.

The book assumes that you are upgrading to CICS TS levels of all the product elements in the Server.

Planning the migration to CICS TS requires that you understand the function provided by the CICS TS product set. You can learn about the function in the various product libraries of the individual elements that comprise the product set.

Always check the product libraries, for example, Upgrading, for changes that might affect CICS TS elements.

Who is this book for?

This book is intended for experienced CICS system programmers who are planning to migrate to CICS TS.

This book is also for system programmers who are responsible for installing and tailoring CICS and CICSPlex SM.

By "experienced", we mean that a system programmer's experience includes installing and managing CICS and some or all of the other elements in the CICS TS product set.

What you need to know to understand this book

To fully understand the installation information in this book, you should have experience of the IBM® MVS™ operating system, and the System Modification Program/Extended (SMP/E) licensed program needed to maintain CICS and CICSPlex SM.

To use the installation verification procedures, you should be familiar with the JCL and cataloged procedures for MVS. It also helps if you are familiar with CICS and CICSPlex SM concepts.

Location of topics in the information center

The topics in this publication can also be found in the CICS information center. The information center uses content types to structure how the information is displayed.

The information center content types are generally task-oriented, for example; upgrading, configuring, and installing. Other content types include reference, overview and scenario or tutorial-based information. The following mapping shows the relationship between topics in this publication and the information center content types, with links to the external information center:

Table 1. Mapping of PDF topics to information center content types. This table lists the relationship between topics in the PDF and topics in the content types in the information center

Set of topics in this publication	Location in the information center
Installing	• Installing • Getting started • Configuring

How to use this book

For planning

Read through the sections of this book that tell you about the products and hardware you need to support the function that comes with CICS TS and the pointers to migration and installation information that is in the product libraries that you receive with CICS TS.

Once you have identified the actions you need to take to complete your migration, write a plan describing the steps your installation will take. Include your estimate of how much time each step requires and who will do it.

Methods of delivery for installation

CICS and CICSPlex SM are available only as elements of the CICS Transaction Server, through either the ServerPac or CBPDO method of delivery.

For information about these two methods of delivery of the CICS Transaction Server, see Part 2, “Installing CICS TS,” on page 21.

To install the CICS Transaction Server using the CBPDO method, use the , together with the instructions contained in the Memo to Users Extension, to load the software from the tape DASD. For the ServerPac method, follow the supplied set of ISPF dialogs and the accompanying documentation.

After you have loaded the CICS Transaction Server elements to DASD, you should then use this information to tailor CICS to your environment; that is to:

- Integrate CICS with MVS and ACF/VTAM
- Apply service to CICS (if required)

- Create the CICS data sets
- Install DB2® support (if required)
- Install MRO and ISC support (if required)
- Run the installation verification procedures (if required).

Note:

1. "LPA-required and LPA-eligible modules" on page 159 gives details of the CICS modules that are needed in, and eligible for, the MVS link pack area.
2. If you installed CICS from CBPDO, you do not need to run the DFHISTAR job again to specify the post-installation parameters. However, if you want to create several copies of the post-installation jobs (for example to create several copies of the DFHDEFDS job to define CICS data sets unique to several CICS regions), you can edit and run the DFHISTAR job as many times as required.

Some of the information in this book is also of interest if you have installed CICS Transaction Server using the ServerPac method of delivery.

In particular, you should edit and run the DFHISTAR job, specifying the keyword POST, to define parameters needed to tailor your CICS environment.

Notes on terminology

CICS is used throughout this book to mean the CICS element of the IBM CICS Transaction Server for z/OS, Version 5 Release 2.

CICSPlex SM refers to CICSPlex System Manager, an element of CICS Transaction Server.

CICS TS Version 2 region is used to refer to a CICS region running under CICS TS Version 2.

MVS is used throughout this book to mean the operating system MVS, or the Base Control Program (BCP) element of z/OS.

RACF® is used throughout this book to mean the MVS Resource Access Control Facility (RACF) or any other external security manager that provides equivalent function.

The term **CICS TS 3.2 region** is used to refer to a CICS region running under CICS Transaction Server for z/OS, Version 3 Release 2.

**$** In the programming examples in this book, the dollar symbol ($,) is used as a national currency symbol and is assumed to be assigned the EBCDIC code point X'5B'. In some countries a different currency symbol, for example the pound symbol (£), or the yen symbol (¥), is assigned the same EBCDIC code point. In these countries, the appropriate currency symbol should be used instead of the dollar symbol.

hlq Throughout this book, the term *hlq* is used to denote the high-level qualifier of the CICS TS data sets; for example, CICSTS52.CICS for CICS data sets and CICSTS52.CPSM for CICSPlex SM data sets. The CICSTS52 part of the high-level qualifier is defined by the LINDEX parameter in the DFHISTAR installation job.

IMS™ library names

The IMS libraries referred to in this section are identified by IMS.libnam (for example, IMS.SDFSRESL). If you are using your own naming conventions, change the IMS prefix to match those naming conventions.

CICS system connectivity

This release of CICSPlex SM can be used to control CICS systems that are directly connected to it.

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

- CICS Transaction Server for z/OS, Version 3 Release 2
- CICS Transaction Server for z/OS, Version 3 Release 1
- CICS Transaction Server for z/OS, Version 2 Release 3
- CICS Transaction Server for z/OS, Version 2 Release 2

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

Table 2 shows which supported CICS systems can be directly connected to which releases of CICSPlex SM.

Table 2. Directly-connectable CICS systems by CICSPlex SM release

CICS system	CICSPlex SM component of CICS TS 5.2	CICSPlex SM component of CICS TS 3.1	CICSPlex SM component of CICS TS 2.3	CICSPlex SM component of CICS TS 2.2
CICS TS 3.2	Yes	No	No	No
CICS TS 3.1	Yes	Yes	No	No
CICS TS 2.3	Yes	Yes	Yes	No
CICS TS 2.2	Yes	Yes	Yes	Yes
TXSeries™ 4.3.0.4	No	No	Yes	Yes
TXSeries 5.0	No	No	Yes	Yes

Changes in CICS Transaction Server for z/OS, Version 5 Release 2

For information about changes that have been made in this release, please refer to *What's New* in the information center, or the following publications:

- *CICS Transaction Server for z/OS What's New*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 5.1*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.2*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 3.2*
- *CICS Transaction Server for z/OS Upgrading from CICS TS Version 3.1*

Any technical changes that are made to the text after release are indicated by a vertical bar (|) to the left of each new or changed line of information.

Part 1. Planning for installation

This section discusses the steps required to plan your CICS TS installation.

Chapter 1. Introduction to CICS TS installation

This section outlines the way that CICS TS is packaged for installation, the methods that you can use to install, and the documentation that you will need.

You can obtain CICS Transaction Server for z/OS in three editions:
- CICS Transaction Server for z/OS, Version 5 Release 2
- CICS Transaction Server for z/OS Developer Trial, Version 5 Release 2
- CICS Transaction Server for z/OS Value Unit Edition, Version 5 Release 2

Each of these offerings comprises of two components:
- CICS TS for z/OS V5.2 - base component
- An activation module specific to the offering

You must install both of these components. Each component is installed separately and has its own Program Directory. Having one CICS TS for z/OS V5.2 - base component for all three editions of CICS TS for z/OS makes it possible to upgrade from CICS Transaction Server for z/OS Developer Trial, Version 5 Release 2 to either CICS Transaction Server for z/OS, Version 5 Release 2 or CICS Transaction Server for z/OS Value Unit Edition, Version 5 Release 2, without the need to reinstall the base component.

Installation methods for CICS TS

You can install CICS TS using a system replace method called ServerPac or using the Custom-Built Product Delivery Option (CBPDO).

CICS TS does not have a stand-alone product tape or Custom Built Installation Process Offering (CBIPO).

Because of the overall ease of installing, choose ServerPac, if possible.
- If you order ServerPac, you receive the following items:
  - A series of tapes, each in IEBCOPY dump-by-data set format (not a physical volume dump) containing a complete generated CICS TS system. This system consists of distribution and target libraries, consolidated software inventory (CSI), and other SMP/E libraries already generated. CICS TS elements and their service are integrated into distribution and target libraries.

    IBM has performed an IPL of the system and run all installation verification programs (IVPs) before shipment.
  - A CustomPac dialog, accessed through ISPF, that produces jobs that unload the tape to DASD. Through the dialog, you can name the data sets and place them in the catalogs you specify. The following documentation is included and tells you how to use the dialog:
    - *ServerPac: Installing Your Order* (customized for each customer order)
    - *ServerPac: Using the Installation Dialog*, SA22-7815
  - All unintegrated service, available on a service tape.
  - Sample jobs to assist with the installation of CICS TS product and service.

  Through the dialog, you can do the following tasks:

- Name the data sets and place them on the volumes and in the catalogs you choose.
  - Save configuration data for the next install, easing your move to the next release of CICS TS.
  - Run tailored postinstallation verification jobs.
- If you order CBPDO, you receive one logically stacked SMP/E RELFILE tape that contains all the base elements. Depending on your customer profile, you receive uninstalled service. You also receive the following items:
  - Sample jobs to help you install CICS TS and service.
  - *Custom-Built Offerings Plan/Install*, SC23-0352; the CBPDO Memo to Users Extension;*Program Directory for CICS Transaction Server for z/OS*, GC33-1200, and program materials that describe your CBPDO order.

Figure 1 illustrates the content differences between the ServerPac method and the CBPDO method of installing CICS TS.

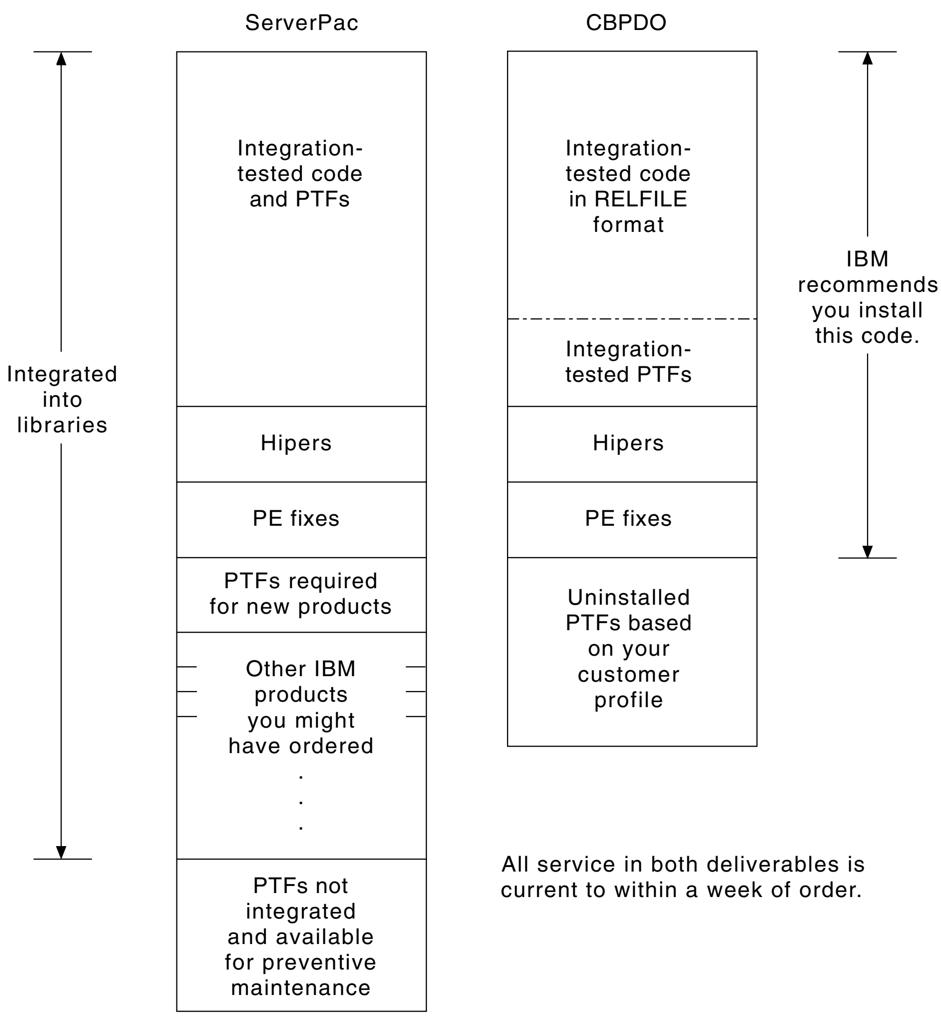


Figure 1. Contents of the ServerPac and the CBPDO Delivery

Program Directories

The Program Directory is a document provided with CICS Transaction Server. It contains information about the materials and procedures for installing each component of CICS TS.

To install any of the editions of CICS Transaction Server for z/OS, you need the Program Directory for both components.

Table 3. Program Directories required for installation. Program Directories required for installation

Edition	Program Directories required
CICS Transaction Server for z/OS, Version 5 Release 2	• Program Directory: CICS TS for z/OS V5.2 base component • Program Directory: activation module for CICS TS for z/OS V5.2
CICS Transaction Server for z/OS Developer Trial, Version 5 Release 2	• Program Directory: CICS TS for z/OS V5.2 base component • Program Directory: activation module for CICS TS for z/OS V5.2 Developer Trial
CICS Transaction Server for z/OS Value Unit Edition, Version 5 Release 2	• Program Directory: CICS TS for z/OS V5.2 base component • Program Directory: activation module for CICS TS for z/OS V5.2 Value Unit Edition

Chapter 2. Requirements for CICS TS

Before installing, you need to check that you have the requirements for CICS in place.

Hardware and storage requirements for installing CICS TS

Whether you choose the CBPDO method or the ServerPac method, the hardware requirement is the same. The amount of storage required for all the target and distribution data sets is detailed in the space table in the Program Directory.

You require a hardware configuration that runs the required levels of MVS, provided that the configuration has a terminal and a tape device capable of reading one of the following types of tape on which CICS TS is supplied:

- 6250 bpi 9-track reels
- 3480 cartridges
- 4MM DAT cartridges

Do not place any CICS DFHRPL libraries, such as SDFHLOAD, in the extended addressing space (EAS) of an extended address volume (EAV) DASD volume. If DFHLDSVC attempts to access any DFHRPL data sets from the EAS, an IEC142I 113-44 message is issued and the request fails.

Software requirements for installing CICS TS

The system software requirements for installing CICS TS using the ServerPac method or the CBPDO method are the same except for the addition of SMP/E for CBPDO.

You must install z/OS, Version 1 Release 13 or a later release on the system that you use to install both the ServerPac and the CBPDO.

z/OS includes the following elements that are required for installing CICS TS:

- Interactive System Productivity Facility (ISPF)
- Time Sharing Option/Extended (TSO/E)
- DFSMS/MVS
- Language Environment®
- Two components of z/OS Communications Server: SNA and IP (previously VTAM® and TCP/IP)
- z/OS UNIX System Services

If you are installing CICS TS using the CBPDO method, you also require:

- System Modification Program/Extended (SMP/E)
- High Level Assembler/MVS & VM & VSE.

For information about optional supported software and the service that you must apply to ensure that CICS TS installs correctly, see CICS Transaction Server for z/OS V5.2 detailed system requirements.

z/OS UNIX file system and PDSE requirements

Some components are installed in PDSE data sets and z/OS UNIX files, which affects the installation process.

CICS TS for z/OS, Version 5.2 requires PDSE data set support for installation to complete successfully. DFSMS/MVS, which is supplied as an element of z/OS, provides this support for PDSE data sets. For FMID JCI690D, which contains the z/OS UNIX-dependent code, the OMVS address space must be active in full-function mode, otherwise the installation of this function fails.

In the set of installation jobs, some initial jobs create the z/OS UNIX files and the directories shown in Figure 2. Run these jobs before any of the normal DFHINST*n* jobs. The user ID running these jobs requires superuser authority.

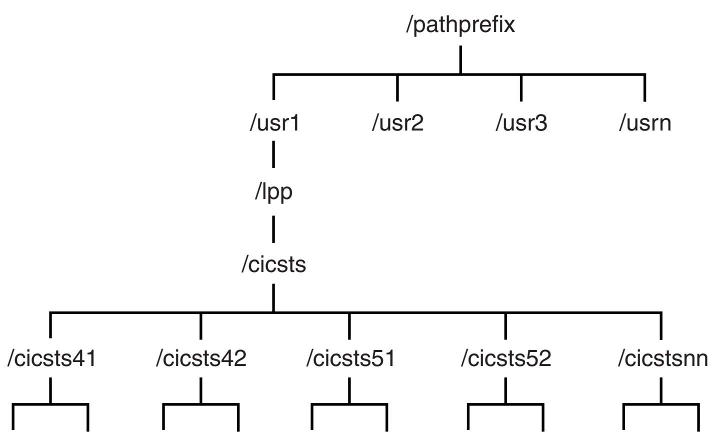


Figure 2. The z/OS UNIX directory structure for CICS

1. If you normally maintain additional SMP/E target zone libraries to apply service, you can also create additional directories at the /cicsts52 level to create the z/OS UNIX equivalent. See the DFHIHFSA job for more information.
2. The `/pathprefix` in Figure 2 is optional.

Chapter 3. CICS Explorer planning

The CICS Explorer® is a system management tool that is delivered as part of CICS Transaction Server. It is designed to provide an easy-to-use way of managing one or more CICS systems. Based on an Eclipse platform, it provides a view of some of the CICSPlex SM functions in a CICS Transaction Server and a platform for the integration of future CICS tools. You must decide how you will run the CICS Explorer in your organization before installing it.

To use the CICS Explorer with CICS TS for z/OS, Version 5.2, you must download and install CICS Explorer Version 5.2 or later.

CICS Explorer prerequisites

To install and use the CICS Explorer, you must have the correct operating system on your workstation, the correct service applied to your CICS systems, and CICS or CICSPlex SM configured to use the CICS management client interface.

The CICS Explorer prerequisites are listed on the CICS Explorer system requirements web page.

For a successful system connection, CICS Explorer must determine the CICSPlex SM topology. To determine the topology, CICS Explorer requires at least READ access to the following CICSPlex SM resource tables:

- CMAS resource table
- CICSplex configuration definition resource table
- CICS region data operations resource table

You must ensure that your security manager configuration provides this minimum level of access to the function and type combinations CONFIG.DEF, TOPOLOGY.DEF, and OPERATE.REGION for each user ID that uses the CICS Explorer.

CICS Explorer also requires that a default CMAS context is set for the WUI. This context is set in the WUI parameter **DEFAULTCMASCTXT**. Failure to set the context results in the error `IZE0106E error with INVALIDPARM CONTEXT while connecting CICS Explorer`.

Configuring CICS or CICSPlex SM

You must configure CICSPlex SM or your CICS regions before you can connect to them with the CICS Explorer. You can connect the CICS Explorer to the following systems:

- To a CICS TS for z/OS, Version 3 system through a CICSPlex SM WUI server. This option provides the ability only to view CICS resources in the CICSplex.
- To a CICS TS for z/OS, Version 4 or later system through a CICSPlex SM WUI server or a CICSPlex SM MAS. This option provides the ability to view, change, and perform actions against CICS resources in the CICSplex.
- To a single CICS TS for z/OS, Version 4 or later CICS region. This option provides the ability to view, change, and perform actions against CICS resources in that region.

To connect to a CICS TS for z/OS, Version 3 system through a CICSPlex SM WUI server, no setup is needed in CICSPlex SM. Follow the connection instruction in the CICS Explorer Help information.

To connect to a CICS TS for z/OS, Version 4 or later system you can configure CICSPlex SM or your CICS region to use the CICS management client interface.

CICS Explorer installation options

You have several options for installing the CICS Explorer, depending on how you decide to use it in your organization. Understanding how the CICS Explorer runs, and how it stores its configuration information, will help you to decide which installation option to choose.

The CICS Explorer workspace

When the CICS Explorer is started for the first time, it creates a workspace folder. The folder contains the following configuration information:

- Connection details for connecting to CICS systems or CICSPlex SM WUI servers
- User IDs and passwords (encrypted) for accessing CICS systems or CICSPlex SM
- User-customized view and perspective information

By default, the workspace is stored in a directory on the local workstation. You can provide an option when starting the CICS Explorer so that it uses a different workspace location, but, because the workspace contains user IDs and passwords, you must ensure that the workspace can be accessed only by the owning user. Three main options satisfy this criterion:

A local workstation
If the user has sole use of a workstation, the CICS Explorer can be saved on the local workstation in the default location.

A private USB flash drive
If the user is using a shared workstation, you can provide an option when starting CICS Explorer to save the workspace on a USB flash drive which can be removed when the user logs off.

A secure remote network drive
If a remote network drive with adequate security is available, you can provide an option when starting CICS Explorer to save the workspace in the user's area on the drive.

The CICS Explorer help system

Like all applications run on the Eclipse platform, the online documentation for CICS Explorer uses the Eclipse help system. This help system runs on a web server which listens only on localhost and does not run as a privileged user, so the content is not accessible externally.

For more information on using Eclipse, see the Eclipse Workbench User Guide, or you can visit the Eclipse website eclipse.org.

CICS Explorer installation options

When deciding where to install the CICS Explorer code you have three main choices. The table in this section identifies the three choices and the advantages and disadvantages of each:

Table 4. Options and implications of Explorer code installation

Explorer code location	Workspace location	Update method	Advantages/ Disadvantages
Local on user's workstation.	• Local • USB flash drive • Remote network drive	Users must update their own copies of the software.	Advantages: • Starts quickly. • Runs quickly. • No remote network drive required. Disadvantages: • Users might not get updates regularly and have problems with earlier levels of software.
Remote on a network drive.	• Local • USB flash drive • Remote network drive	Software is updated centrally.	Advantages: • CICS Explorer can be run from any workstation with network access. • Centrally managed software; every user at the same level. • Runs quickly. Disadvantages: • Slower to start; code is downloaded to user workstation before running. • A network failure prevents the users from saving their CICS Explorer configurations. • A network drive failure puts all users out of action.

Table 4. Options and implications of Explorer code installation (continued)

Explorer code location	Workspace location	Update method	Advantages/ Disadvantages
Remote on a server using X-windowing	Remote on shared server	Software is updated centrally	Advantages: • Runs quickly; software runs remotely, GUI is downloaded to user's workstation. • Centrally managed software; every user at the same level. • CICS Explorer can be run from any workstation with X-window capability. Disadvantages: • Slower to start; code is downloaded to user workstation before running. • A server failure puts all users out of action.

When you have decided where to install CICS Explorer and how to manage the users's workspace, you can begin the installation.

Chapter 4. CICSPlex SM planning

CICSPlex SM requires some additional planning for installation.

CICSPlex System Manager Concepts and Planning provides an introduction to CICSPlex SM. If you are not already familiar with CICSPlex SM, read that introduction before you read these topics.

Related tasks:

Implementing CICSPlex SM security in Securing

CICSPlex SM setup checklist and worksheets

Use the aids provided to help you install and setup CICSPlex SM.

Checklist

Use the checklist as a guide to your progress as you set up or revise the configuration of your CICSPlex SM components. The checklist is for use with a CICS Transaction Server for z/OS system and all of the components you can install on it.

You perform some of the tasks on the MVS checklist only once for your CICSPlex SM environment, and for other tasks perform them once for each component. See the 'Where to obtain information' column for a reference to information about how to perform each task.

The order of items in the checklist is a suggested order for performing the installation and setup steps. However, you might find that, particularly if you are modifying your CICSPlex SM environment, a different order is more practical.

Worksheets

Use the worksheets as a record of the names and locations of components and data sets. Copy the worksheets as required.

The worksheets contain, in some cases, more than one line for a type of CICSPlex SM component. You might have fewer or more than shown of that type of component.

MVS installation and setup checklist

A checklist is provided to help you to install and setup MVS.

Component			What you must do	Values to note	Where to obtain information
Components are indicated: **CM**=CMAS, **M**=MAS, **W**=WUI server					
CM	M	W	Make note of SYS1.PARMLIB(IEASYSxx) values for this MVS system	APF= CMD= LNK= LNKAUTH= LPA= MAXUSER= NSYSLX= PROG= RSVNONR= RSVSTRT= SMF= SYSNAME=	“Noting IEASYSxx values for CICSPlex SM” on page 125
CM			Update number of linkage indexes in IEASYSxx	NSYSLX value	“Specifying each CMAS correctly in IEASYSxx” on page 126

Component			What you must do	Values to note	Where to obtain information
CM	M	W	Update IEAAPFxx or PROGxx to authorize SEYUAUTH	IEAAPFxx or PROGxx member Library name	Chapter 14, “Authorizing the CICS and CICSPlex SM libraries,” on page 105
	M	W	Update IEAAPFxx or PROGxx to authorize SEYULPA Optional library. Can be populated below.	IEAAPFxx or PROGxx member Library name	Chapter 14, “Authorizing the CICS and CICSPlex SM libraries,” on page 105
CM			Verify SEYULINK is authorized	LNKAUTH= value Library name	Chapter 14, “Authorizing the CICS and CICSPlex SM libraries,” on page 105
CM			Update linklist with SEYULINK	LNKLSTxx member Library name	“CICS- and CICSPlex SM-supplied modules required in the MVS linklist” on page 119
	M	W	Update LPA list with lindex.SEYULPA Optional library. Can be populated below.	LPALSTxx member Library name	“Installing CICSPlex SM modules into the LPA” on page 177
CM	M	W	Use your ESM to protect CICSPlex SM libraries	As required by your ESM	See the *CICS RACF Security Guide*
CM			Define security for the CMAS startup procedures	Procedure names	*CICS RACF Security Guide*
CM			Create z/OS Communications Server application definition for each CMAS	SYS1.VTAMLST major node member Application name(s)	“Step 1: Creating a z/OS Communications Server application definition for a CMAS” on page 151
CM			Define cross-domain resources for each CMAS	SYS1.VTAMLST members	“Step 2: Defining cross-domain resources for a CMAS” on page 151
CM	M	W	Edit DFHISTAR for postinstallation members	Edited member	“CICSPlex SM postinstallation members” on page 250
CM	M	W	Run edited DFHISTAR member to generate POST installation members.	sysproc.XEYUINST output library name	“CICSPlex SM postinstallation members” on page 250
	M	W	(Optional) Install LPA modules	Installed usermod name	“Installing CICSPlex SM modules into the LPA” on page 177
CM			Create CICSPlex SM data repository	dsindex.EYUDREP. cmasname	“Creating the CICSPlex SM data repository” on page 303
CM			Create CICSPlex SM system parameter member for each CMAS	Modified EYUCMS0P parameter member(s)	“Preparing to start a CMAS” on page 301
	M		Edit CICSPlex SM system parameter member for each MAS	Modified EYULMS0P parameter member(s)	“Preparing to start a z/OS MAS” on page 346
		W	Edit CICSPlex SM system parameter member for each WUI	Modified EYUWUI0P parameter member(s)	“Web User Interface server initialization parameters” on page 330
CM			Edit CICS SIT parameters for each CMAS	Modified parameter member(s)	“CMAS-related CICS system initialization parameters” on page 311

Component			What you must do	Values to note	Where to obtain information
	M		Edit CICS SIT parameters for each MAS	Modified parameter member(s)	"z/OS MAS-related CICS system initialization parameters" on page 350
		W	Edit CICS SIT parameters for each WUI	Modified parameter member(s)	"Reviewing CICS system initialization parameters for the WUI" on page 324
CM			Create the CICS data sets and the data repository for each CMAS	Modified EYUCMSDS member	"Preparing to start a CMAS" on page 301
CM			Install CMAS startup procedure (EYUCMASP sample procedure)	Installed procedure member	"Preparing to start a CMAS" on page 301
	CM		Create CMAS-to-CMAS links using the WUI or the EYU9XDBT utility	CMAS names Target APPLID Target CICS SYSID	*CICSPlex System Manager Administration*
CM			Create CICSplex definition using the WUI or the EYU9XDBT utility	CICSplex name	*CICSPlex System Manager Administration*
	M		Create all MAS definitions using the WUI or the EYU9XDBT utility	MAS name(s)	*CICSPlex System Manager Administration*
	M		Start the MAS	Message EYUXL0007I LMAS Phase II initialization complete	"Preparing to start a z/OS MAS" on page 346
	M		Shut down the MASs using the WUI CICS regions view - stops CICS	Message EYUXL0016I MAS shutdown complete	"Stopping and restarting management of a CICS system" on page 354

System worksheet

A worksheet is provided to help you to setup your CICSPlex SM system.

System: _______

Subsystem ID: _______

SNA applid: _______

	Name:	SNA applid:	CICS-SYSID:
CMAS:	______________	______________	______________
WUI server:	______________	______________	______________
MAS:	______________	______________	______________
MAS:	______________	______________	______________
MAS:	______________	______________	______________
CMAS:	______________	______________	______________
WUI server:	______________	______________	______________
MAS:	______________	______________	______________

MAS:	______________	______________	______________
MAS:	______________	______________	______________
CMAS:	______________	______________	______________
WUI server:	______________	______________	______________
MAS:	______________	______________	______________
MAS:	______________	______________	______________
MAS:	______________	______________	______________

CMAS worksheet

A worksheet is provided to help you to setup your CMAS.

System: _______ CMAS name: _______
CICS sysid: _______ SNA applid: _______

SYS1.PARMLIB(IEASYSxx) values:

APF= ___________ LNK= ___________ LNKAUTH= ___________
NSYLSX= ___________ PROG= ___________

DSN added to member IEAAPFxx or PROGxx: when LNKAUTH=APFTAB: (when LNKAUTH=LNKLST, no DSNhere)	____________________________.SEYUAUTH ____________________________.SEYULINK
DSN added to member LNKLSTxx:	____________________________.SEYULINK
SNA mode table node name:	______________
SYS1.VTAMLST start list (ATCSTRxx):	______________
SYS1.VTAMLST configuration list (ATCCONxx):	______________
SYS1.VTAMLST applications member:	______________
SYS1.VTAMLST cross-domain member:	______________
SNA definitions; node names:	

	Name	SNA applid	CICS sysid
MAS:	______________	______________	______________
MAS:	______________	______________	______________
MAS:	______________	______________	______________

Installation materials library:	____________________________.SDFHINST
Modified DFHISTAR (postinstallation) member:	______________
DFHINST exec output library:	____________________________.XDFHINST
CICSPlex SM data repository DSN:	____
CICS resource definition tables output DSN:	____
CICS CSD DSN:	____
Modified EYUCMS0P member:	______________
CICS SIT parameters member:	______________
Modified EYUCMSDS member:	______________
CMAS startup procedure member:	______________
Links to other CMASs:	

CMAS name:	SNA applid:	CICS sysid:	Protocol:
______________	______________	______________	______________
______________	______________	______________	______________
______________	______________	______________	______________
______________	______________	______________	______________

Links to MASs:

MAS name:	SNA applid:	CICS sysid:	Protocol:
______________	______________	______________	______________
______________	______________	______________	______________
______________	______________	______________	______________
______________	______________	______________	______________

MAS worksheet

A worksheet is provided to help you to setup your MAS.

MVS system:	______________	
CICSplex name:	______________	
CPSM name:	______________	MAS CPSM name: ______________
CICS sysid:	______________	MAS CICS sysid: ______________
SNA applid:	______________	MAS SNA applid: ______________
MAS type:	______________	AOR, TOR

DSN added to member IEAAPFxx or PROGxx: when LNKAUTH=APFTAB: (when LNKAUTH=LNKLST, no DSN here)	____________________________.SEYUAUTH
DSN added to member LPALSTxx:	____________________________.SEYULPA
SYS1.VTAMLST start list (ATCSTRxx):	______________
SYS1.VTAMLST configuration list (ATCCONxx):	______________
SYS1.VTAMLST applications member:	______________
Installation materials library:	____________________________.SDFHINST
Modified DFHISTAR (postinstallation) member:	______________
DFHINST exec output library:	____________________________.XDFHINST
LPA module (usermod) name:	______________
CICS resource definition tables output DSN:	____
CICS CSD DSN:	____
Modified EYULMS0P DSN (member):	____
CICS SIT parameters DSN (member):	____
Link from CMAS:	

CMAS name:	SNA applid:	CICS sysid:	Protocol:
______________	______________	______________	______________

WUI server worksheet

A worksheet is provided to help you to setup your WUI server.

MVS system:	______________
CICSplex name:	______________

CPSM name: ______________ MAS CPSM name: ______________
CICS sysid: ______________ MAS CICS sysid: ______________
SNA applid: ______________ MAS SNA applid: ______________

DSN added to member IEAAPFxx or PROGxx: when LNKAUTH=APFTAB: (when LNKAUTH=LNKLST, no dsn here) ____________________________.SEYUAUTH
DSN added to member LPALSTxx: ____________________________.SEYULPA
SYS1.VTAMLST start list (ATCSTRxx): ______________
SYS1.VTAMLST configuration list (ATCCONxx): ______________
SYS1.VTAMLST applications member: ______________
Installation materials library: ____________________________.SDFHINST
Modified DFHISTAR (postinstallation) member: ______________
DFHINST exec output library: ____________________________.XDFHINST
LPA module (usermod) name: ______________
CICS resource definition tables output dsn: ____

CICS CSD DSN: ____
Modified EYUWUI0P DSN (member): ____
CICS SIT parameters DSN (member): ____
Link from CMAS:

CMAS name:	SNA applid:	CICS sysid:	Protocol:
______________	______________	______________	______________

IVP planning worksheet

A worksheet is provided to help you to define your IVP.

Table 5. IVP planning worksheet

Component	DFHISTAR parameters	Your value	DFHISTAR defaults
Load library high-level qualifier for CICS	TINDEX.CICS. XTRAQUAL		CICSTS52.CICS
Load library high-level qualifier for CICSPlex SM	TINDEX.CPSM. XTRAQUAL		CICSTS52.CPSM
Attributes of the CICS TS system data sets	DSINFO		CICSTS52 CICS41 3390
Data set name of the SCEECICS library	SCEECICS		SYS1.SCEECICS
Data set name of the SCEERUN library	SCEERUN		SYS1.SCEERUN
Data set name of the SCEERUN2 library	SCEERUN2		SYS1.SCEERUN2
Data set name of the SCEESAMP library	SCEESAMP		SYS1.SCEESAMP
CMAS name	CMASNAME		CMAS01
CMAS sysid	CMSSYSID		CM01
CMAS applid	CMASNAME		CMAS01

Table 5. IVP planning worksheet (continued)

Component	DFHISTAR parameters	Your value	DFHISTAR defaults
CICSplex name	CSYSPLEX		CSYPLX01
MAS name	CSYSNAME		CSYS01
MAS sysid	CSYSYSID		CS01
Web User Interface CICSplex name	WUIPLEX		WUIPCM01
Web User Interface applid	WUINAME		WUINCM01
Web User Interface sysid	WUISYSID		WU01
TCP/IP host name	TCPIPHST		xxxxxxxx. xxxxxxxx. xxxxxxxx. xxxxxxxx
TCP/IP port for Web User Interface	TCPIPPRT		12345
Timezone	TIMEZONE		B

Part 2. Installing CICS TS

You must install two components for any of the three editions of CICS Transaction Server for z/OS: the base component and the activation module that is specific to each edition.

CICS TS comprises of two components:

- CICS TS for z/OS V5.2 - base component
- An activation module specific to the offering

These components can be installed in any order but they must both be installed before you can run the installation verification procedures, described in Verifying the CICS installation.

Chapter 5. Installing the CICS TS activation module

You install an activation module for the CICS offering that you require. You do not have to install the activation module before the base component.

Before you begin

Create a new SMP/E environment for the components in your CICS TS for z/OS, Version 5.2 offering. This environment can be shared between the CICS TS for z/OS V5.2 - base component and the activation module.

If you are using more than one offering, the activation modules for all the offerings can share the SMP/E environment with the base.

Make sure that you have access to the Program Directory for the activation module for the edition that you are installing. See "Program Directories" on page 5 for details.

About this task

This task describes the steps that are required to install the activation module.

Procedure

1. Install the activation module by using the instructions in the program directory for the activation module component that you require
2. Authorize the data set.

Results

You installed data sets containing the activation module called `CICSTS52.`*`HLQ.suffix`*. Where *suffix* is the activate module suffix, which is one of the following:

- SDFHLIC for CICS TS for z/OS V5.2 - activation module
- SDFHDEV for CICS TS for z/OS Developer Trial V5.2 - activation module
- SDFHVUE for CICS TS for z/OS Value Unit Edition V5.2 - activation module

What to do next

If you previously installed CICS TS for z/OS Developer Trial Version 5.2 and want to upgrade to another edition of the product, follow the instructions in Upgrading from Developer Trial to a full version of CICS TS for z/OS, Version 5.2 or CICS TS VUE 5.2.

If this is the first version of CICS TS for z/OS, Version 5.2 that you installed, you must install the base component, as described in Part 2, "Installing CICS TS," on page 21.

Chapter 6. Installing the CICS TS base component from CBPDO

You install all the elements from the CICS TS CBPDO using a single installation process.

The CBPDO *Memo to Users Extension* contains information about the CBPDO you ordered and the features and service it includes. It also contains CBPDO installation information.

Read the *Memo to Users Extension* thoroughly before starting any of the installation tasks. If you are a new user of CBPDO, you must also read the IBM publication, *MVS Custom-Built Offerings Planning and Installation*, SC23-0352.

The *Program Directory for CICS Transaction Server for z/OS* gives a sample IEBCOPY job that you can customize to copy RELFILE(2) from the CICS TS CBPDO tape.

1. Modify the **LABEL=3** parameter to reference the file number of RELFILE(2) as supplied on the CBPDO tape.
2. When you have copied RELFILE(2) to DASD, you generate a single set of installation jobs using the CICS TS job generator, DFHISTAR.
3. This generates the following set of customized installation jobs, based on the parameters you specify to DFHISTAR:

- DFHIHFS0, DFHIHFS1, DFHIHFSA, and DFHISMKD, the z/OS UNIX-related jobs
- DFHINST1 through DFHINST6

Using the SMP/E RECEIVE, APPLY, and ACCEPT commands

The process for using the SMP/E RECEIVE, APPLY, and ACCEPT commands is explained in the Program Directory for CICS Transaction Server.

Using DFHISTAR process

DFHISTAR provides default qualifiers for the data sets into which you install CICS TS. The DFHISTAR job provides several parameters to enable you customize your settings.

CICS TS comprises a number of elements that are installed in a single process by the DFHINST*n* jobs. To ensure the element libraries are easily identified, DFHISTAR adds an element qualifier to the data set names. Using the default high-level qualifier CICSTS52, the names generated by DFHISTAR take the following form:

CICS
CICSTS52.CICS.*ddname*

CICSPlex SM
CICSTS52.CPSM.*ddname*

REXX for CICS
CICSTS52.REXX.*ddname*

To enable you to customize the z/OS UNIX-related jobs, the DFHISTAR job provides the following parameters:

HFS0DSN

The data set name of the file system to be mounted at directory `/pathprefix/usr/lpp/cicsts`. Pathprefix is variable, and optional, The other parts of this directory name structure are fixed. The default data set name is OMVS.USR.LPP.CICSTS.

The DFHIHFS0 job uses this parameter.

HFS1DSN

The data set name of the file system to be mounted at directory `/pathprefix/usr/lpp/cicsts/ussdir`, where ussdir is a variable you specify in the ussdir parameter in DFHISTAR. If you omit the **ussdir** parameter it defaults to the value of the **TINDEX** parameter in lowercase, which in turn defaults to CICSTS52, so if both defaults are taken, the full directory path resolves to `/pathprefix/usr/lpp/cicsts/`cicsts52.

The default data set name is OMVS.USR.LPP.CICSTS.CICSTS52.

The DFHIHFS1 job uses this parameter.

HFSADSN

The data set name of the file system to be mounted at directory `/pathprefix/usr/lpp/cicsts/ussdira`, where *ussdira* is a variable you also specify in DFHISTAR. If you omit the **ussdira** parameter, it defaults to the value (in lowercase) of *aindex*, which, in turn, defaults to CICSTS52.A. The default data set name is OMVS.USR.LPP.CICSTS.CICSTS52.A.

The DFHIHFSA job uses this parameter.

"Editing the DFHISTAR job" on page 29 describes all the parameters that you can specify to customize the installation jobs, and explains the jobs that are generated.

Chapter 7. Installing the CICS TS base component from ServerPac

A CICS TS ServerPac consists of a number of tapes, the exact number depending on whether other products are included with the CICS TS ServerPac and also on the type of tape requested.

For example, a ServerPac order can consist of the following tapes:
- A tape that contains related-installation material (RIM) files
- Three tapes that contain the CICS TS product, consisting of all the SMP/E CSI data sets and the target and distribution libraries
- A service tape

If you already have printed copies of the ServerPac manuals, use these to guide you through the installation process. If you do not have copies, download and print the manuals from the first ServerPac tape. A sample job in member PRTDOC on the RIM tape enables you to print the manuals.

Resources to install the ServerPac

You require several resources to install the CICS TS ServerPac.
- A tape drive for reading the tapes
- A TSO session for running the CustomPac dialog
- A copy of the *ServerPac: Using the Installation Dialog* manual, SA22-7815
- The *ServerPac: Installing Your Order*, customized for each customer order
- The CustomPac dialog supplied with ServerPac

First-time user of the CustomPac dialog for ServerPac

If you are installing a ServerPac for the first time, start by installing the CustomPac dialog, then invoke it.

The *ServerPac: Using the Installation Dialog* manual in “Chapter 2. Installing and Starting the Dialogs” describes how to install the CustomPac dialog.

The INVOCATION topic in the *ServerPac: Using the Installation Dialog* manual explains how to invoke the dialog.

Existing user of the CustomPac dialog for ServerPac

If you have installed a ServerPac version of CICS TS for a previous order, use the dialog already installed. Invoke the CustomPac dialog, either from the ISPF primary options menu or by invoking the ServerPac CLIST.

As an existing user of the CustomPac dialog, you can begin at the step described in the *ServerPac: Using the Installation Dialog* manual, in Chapter 2. Receive a New Order.

Summary of the ServerPac installation steps

When you invoke the CustomPac dialog, you are presented with the primary option menu, which allows you to receive, install and display an order.

You can do the following tasks from the primary option menu:

- Receive the order (option **R**)
- Install the order (option **I**)

The primary menu also enables you to display information about orders.

The following tasks are described, with illustrations of the various panels, in the *ServerPac: Using the Installation Dialog* manual:

Receive the order

This step is described in section "6.0 Receive an Order".

The "Order Receive" panels enable you enter your CICS TS order information and to complete the job card information required to generate the order-receive job. The final phase of this step presents you with the generated JCL in an edit session, from which you can submit the job to receive the installation material (RIM) files to your DASD.

Install orders

This step is described in section "7.0 Installation Menu".

The "Installation Menu" panels enable you to perform the following tasks:

- Configure the order control information tables
- Define values for the installation variables used in skeleton batch jobs
- Define the names of the SMP/E zones into which you want to install CICS TS
- Modify data set profiles and DASD allocation for the order
- Define catalog data set names and the aliases associated with them
- Define system-specific aliases (where applicable)
- Select and submit the installation jobs
- Save the installation work configuration for use with future CICS TS orders
- Update the order inventory status

Chapter 8. Installing CICS TS using DFHISTAR

Use the DFHISTAR job for installing CICS TS.

This topic covers the following subjects:

Editing the DFHISTAR job

You can edit the DFHISTAR job to assign values to installation parameters for your environment.

The DFHISTAR job is in the TDFHINST library when you copy RELFILE(2) from the distribution tape. You can either edit the DFHISTAR job directly or copy the DFHISTAR job to preserve the IBM supplied values and edit your copy.

Remember that the product is installed using cataloged data sets.

To help you look up details about a particular parameter, Table 6 lists the DFHISTAR parameters, in alphabetical order, with their predefined values. The parameters in the DFHISTAR job itself are listed in associated groups. The table also indicates whether a parameter is relevant to CICS, or CICSPlex SM, or both.

The default values of the parameters are the same as the IBM supplied values. You can use the IBM supplied values, define your own values, or let the CICS Transaction Server installation process determine default values for you.

Enter your values for parameters of the DFHISTAR job in lowercase. Except for the z/OS UNIX parameters **USSDIR**, **USSDIRA**, and **JAVADIR**, the values are translated into uppercase when you run the DFHISTAR job.

Table 6. Alphabetical list of parameters for the DFHISTAR job

Parameter	CICS	CICSPlex SM	Supplied value	Refer to
ACTIVATE	X	X	SDFHLIC	"Specifying the data set name of the activation module" on page 37
ADDTVOL	X		CICS52 SYSALLDA	"Specifying attributes of any additional target libraries" on page 48
AINDEX	X		CICSTS52.A	"Specifying attributes of any additional target libraries" on page 48
ALINDEX	X		SYS1.CICSTS52.A	"Specifying attributes of any additional target libraries" on page 48

Table 6. Alphabetical list of parameters for the DFHISTAR job (continued)

Parameter	CICS	CICSPlex SM	Supplied value	Refer to
ASMPLTS	X		CICSTS52.A.SMPLTS	"Specifying attributes of any additional target libraries" on page 48
ASMPMTS	X		CICSTS52.A.SMPMTS	"Specifying attributes of any additional target libraries" on page 48
ASMPSCDS	X		CICSTS52.A.SMPSCDS	"Specifying attributes of any additional target libraries" on page 48
ASMPSTS	X		CICSTS52.A.SMPSTS	"Specifying attributes of any additional target libraries" on page 48
AZONE	X		AZONE	"Specifying attributes of any additional target libraries" on page 48
AZONECSI	X		CICSTS52.A.AZONE	"Specifying attributes of any additional target libraries" on page 48
AZONELOG	X		CICSTS52.A.AZONE.SMPLOG	"Specifying attributes of any additional target libraries" on page 48
BLKFB80	X		0	"Specifying block sizes" on page 38
BLKISPF			3200	This parameter is now obsolete.
BLKU	X	X	32760	"Specifying block sizes" on page 38
CMACVOL	X		CICS52	"Specifying disk volumes" on page 39
CMASNAME		X	CMAS01	"Specifying attributes specific to CICSPlex SM" on page 54
CMCIPORT		X	12346	"Specifying attributes specific to CICSPlex SM" on page 54
CMSSYSID		X	CM01	"Specifying attributes specific to CICSPlex SM" on page 54
CSSLIB	X		SYS1.CSSLIB	"Specifying the data set name of the CSSLIB library" on page 50
CSYSYSID		X	CS01	"Specifying attributes specific to CICSPlex SM" on page 54
CSYSNAME		X	CSYS01	"Specifying attributes specific to CICSPlex SM" on page 54
CSYSPLEX		X	CSYPLX01	"Specifying attributes specific to CICSPlex SM" on page 54
DEFVOL	X	X	CICS52 SYSALLDA	"Specifying disk volumes" on page 39
DINDEX	X	X	CICSTS52	"Specifying the indexes of CICS Transaction Server data sets" on page 36
DISTVOL	X	X	CICS52 SYSALLDA	"Specifying disk volumes" on page 39
DOWNLOAD			CICSTS52.DOWNLOAD	This parameter is not used.
DSINFO	X	X	CICSTS52 SYSALLDA	"Specifying attributes of the CICS Transaction Server system data sets" on page 48
DZONE	X		DZONE	"Specifying SMP/E zone attributes" on page 44

Table 6. Alphabetical list of parameters for the DFHISTAR job (continued)

Parameter	CICS	CICSPlex SM	Supplied value	Refer to
DZONECSI	X		CICSTS52.DZONE NEW CICSTS52 SYSALLDA	"Specifying SMP/E zone attributes" on page 44
DZONELOG	X		CICSTS52.DZONE.SMPLOG NEW	"Specifying SMP/E zone attributes" on page 44
GINDEX	X	X	CICSTS52	"Specifying the indexes of CICS Transaction Server data sets" on page 36
GZONE	X		NEW CICSOPT	"Specifying SMP/E zone attributes" on page 44
GZONECSI	X	X	CICSTS52.GZONE NEW CICSTS52 SYSALLDA	"Specifying SMP/E zone attributes" on page 44
GZONELOG	X		CICSTS52.GZONE.SMPLOG NEW	"Specifying SMP/E zone attributes" on page 44
HFS0DSN	X		OMVS.USR.LPP.CICSTS	"Specifying the CICS TS z/OS UNIX directories and data sets" on page 37
HFS1DSN	X		OMVS.USR.LPP.CICSTS.CICSTS52	"Specifying the CICS TS z/OS UNIX directories and data sets" on page 37
HFSADSN	X		OMVS.USR.LPP.CICSTS.CICSTS52..A	"Specifying the CICS TS z/OS UNIX directories and data sets" on page 37
JAVADIR	X		java/J7.0_64	"Specifying the installation directory for Java support" on page 38
JES	X		JES2	"Specifying the type of JES to be used" on page 35
JOB	X	X	(No valid value)	"Specifying the JOB parameters for installation jobs" on page 34
LIB	X	X	CICSTS52.XDFHINST	"Specifying the CICS Transaction Server temporary installation libraries" on page 34
LINDEX	X	X	SYS1.CICSTS52	"Specifying the indexes of CICS Transaction Server data sets" on page 36
LOGGER-INFO	X		001 500 4096 64000 2048 MVSX XXXXXXXX XXXXXXXX	"Specifying log stream and log stream structure attributes" on page 53
MODNAME	X		DFHCSVC	Chapter 19, "Installing the CICS SVCs," on page 137
NEWDREP		X	.	"Specifying block sizes" on page 38
OLDDREP		X	.	"Specifying attributes specific to CICSPlex SM" on page 54
OPTVOL	X		CICS52 SYSALLDA	"Specifying disk volumes" on page 39
PATHPREFIX	X		Null string	"Specifying the CICS TS z/OS UNIX directories and data sets" on page 37
PREFIX	X		DFH	"Specifying the prefix of CICS Transaction Server jobs" on page 36
SCEECICS	X	X	SYS1.SCEECICS	"Specifying the data set names of the SCEECICS and SCEERUN libraries" on page 52

Table 6. Alphabetical list of parameters for the DFHISTAR job (continued)

Parameter	CICS	CICSPlex SM	Supplied value	Refer to
SCEECPP	X		SYS1.SCEECPP	"Specifying the data set name of the SCEECPP library" on page 51
SCEELIB	X		SYS1.SCEELIB	"Specifying the data set names of the SCEERUN2 library" on page 52
SCEEBND2	X		SYS1.SCEEBND2	"Specifying the data set name of the SCEEBND2 library" on page 50
SCEERUN	X	X	SYS1.SCEERUN	"Specifying the data set names of the SCEECICS and SCEERUN libraries" on page 52
SCEERUN2	X	X	SYS1.SCEERUN2	"Specifying the data set names of the SCEERUN2 library" on page 52
SCEELKED	X		SYS1.SCEELKED	"Specifying the data set name of the SCEELKED library" on page 50
SCEELKEX	X		SYS1.SCEELKEX	"Specifying the data set name of the SCEELKEX library" on page 51
SCEEOBJ	X		SYS1.SCEEOBJ	"Specifying the data set name of the SCEEOBJ library" on page 51
SCEESAMP	X	X	SYS1.SCEESAMP	" Specifying the data set name of the SCEESAMP library" on page 52
SCSFMOD0	X		SYS1.SCSFMOD0	"Specifying the data set names of the SCSFMOD0 and SIXMEXP libraries" on page 53
SCLBSID	X		SYS1.SCLBSID	"Specifying the data set name of the SCLBSID library" on page 51
SCOPE	X	X	ALL	"Specifying the scope of the installation" on page 35
SCSQLOAD	X		SYS1.SCSQLOAD	"Specifying the data set name of the SCSQLOAD library" on page 52
SCSQANLE	X		SYS1.SCSQANLE	"Specifying the data set name of the SCSQANLE library" on page 53
SCSQCICS	X		SYS1.SCSQCICS	"Specifying the data set name of the SCSQCICS library" on page 53
SCSQAUTH	X		SYS1.SCSQAUTH	"Specifying the data set name of the SCSQAUTH library" on page 53
SDSNLOAD	X		SYS1.SDSNLOAD	"Specifying the data set name of the SDSNLOAD library" on page 52
SEZACMTX	X		SYS1.SEZACMTX	"Specifying the data set names of the SEZARPCL and SEZACMTX libraries" on page 51
SEZARPCL	X		SYS1.SEZARPCL	"Specifying the data set names of the SEZARPCL and SEZACMTX libraries" on page 51
SISPLOAD	X		SYS1.SISPLOAD	"Specifying the library data set names" on page 49
SIXMEXP	X		SYS1.SIXMEXP	"Specifying the data set names of the SCSFMOD0 and SIXMEXP libraries" on page 53

Table 6. Alphabetical list of parameters for the DFHISTAR job (continued)

Parameter	CICS	CICSPlex SM	Supplied value	Refer to
SMPLTS	X		CICSTS52.SMPLTS	"Specifying attributes of the permanent SMP/E data sets" on page 44
SMPMTS	X		CICSTS52.SMPMTS	"Specifying attributes of the permanent SMP/E data sets" on page 44
SMPPTS	X		CICSTS52.SMPPTS	"Specifying attributes of the permanent SMP/E data sets" on page 44
SMPSCDS	X		CICSTS52.SMPSCDS	"Specifying attributes of the permanent SMP/E data sets" on page 44
SMPSTS	X		CICSTS52.SMPSTS	"Specifying attributes of the permanent SMP/E data sets" on page 44
SMPVOL	X	X	CICS52 SYSALLDA	"Specifying disk volumes" on page 39
SMPWORK	X	X	SYSALLDA	"Specifying attributes of the temporary SMP/E work data sets" on page 43
SMS	X		NO	"Specifying the SMS option for DASD allocations" on page 39
SVCNUMB	X		216	Chapter 19, "Installing the CICS SVCs," on page 137
TAPEUNIT	X		3480	"Specifying the distribution tape device type" on page 47
TARGVOL	X	X	CICS52 SYSALLDA	"Specifying disk volumes" on page 39
TCPIPHST		X	XXXXXXXX.XXXXXXXX.XXXXXX XX.XXXXXXXX	"Specifying attributes specific to CICSPlex SM" on page 54
TCPIPPRT		X	12345	"Specifying attributes specific to CICSPlex SM" on page 54
TEMPLIB	X	X	CICSTS52.TDFHINST	"Specifying the CICS Transaction Server temporary installation libraries" on page 34
TIMEZONE		X	B	"Specifying attributes specific to CICSPlex SM" on page 54
TINDEX	X	X	CICSTS52	"Specifying the indexes of CICS Transaction Server data sets" on page 36
TZONE	X	X	TZONE	"Specifying SMP/E zone attributes" on page 44
TZONECSI	X		CICSTS52.TZONE NEW CICSTS52 SYSALLDA	"Specifying SMP/E zone attributes" on page 44
TZONELOG	X		CICSTS52.TZONE.SMPLOG NEW	"Specifying SMP/E zone attributes" on page 44
USSDIR	X		.	"Specifying the CICS TS z/OS UNIX directories and data sets" on page 37
USSDIRA	X		.	"Specifying attributes of any additional target libraries" on page 48
UTILITIES	X	X	ASMA90 IEWL GIMSMP IEBCOPY	"Specifying the utilities" on page 35
WORKUNIT	X	X	SYSALLDA	"Specifying the disk unit for work data sets" on page 39

Table 6. Alphabetical list of parameters for the DFHISTAR job (continued)

Parameter	CICS	CICSPlex SM	Supplied value	Refer to
WUI		X	YES	"Specifying attributes specific to CICSPlex SM" on page 54
WUINAME		X	WUINCM01	"Specifying attributes specific to CICSPlex SM" on page 54
WUIPLEX		X	WUIPCM01	"Specifying attributes specific to CICSPlex SM" on page 54
WUISYSID		X	WU01	"Specifying attributes specific to CICSPlex SM" on page 54
XTRAQUAL	X		. . .	"Specifying extra qualifiers" on page 37

Specifying the CICS Transaction Server temporary installation libraries

Specify your data set names for the two temporary libraries that are used to install CICS Transaction Server. If you do not want to use the default names, record your values for the TEMPLIB and LIB parameters.

`TEMPLIB library_name`

Specifies the name of the temporary installation library that contains the skeleton installation jobs. Specify the name of the data set into which you copied RELFILE(2) from the distribution tape, described in *Copy RELFILE(2) from the Distribution Tape* in the *Program Directory for CICS Transaction Server for z/OS*.

Also specify this name on the SYSPROC DD statement of the DFHISTAR job.

`LIB library_name`

Specifies the name of the installation output library to which the jobs generated by the DFHISTAR job are added.

Specifying the JOB parameters for installation jobs

Decide which parameters you want to use on the JOB statements of the CICS Transaction Server installation jobs and specify them on the JOB parameter.

`JOB accounting_information`

Specifies the JOB statement and accounting information that you want substituted into the jobs generated by the DFHISTAR job. Here is an example:

```
JOB //XXXXXXXX JOB 1,userid,MSGCLASS=A,MSGLEVEL=(1,1),
JOB //         CLASS=A,NOTIFY=userid
JOB /*JOBPARM SYSAFF=node1
JOB /*ROUTE PRINT node2.userid
```

1. Do not change `XXXXXXXX` given in the sample JOB statement in the DFHISTAR job because it is the 8-character job name that is substituted by the DFHISTAR job. For example, for the installation job DFHIVPBT, the DFHISTAR job changes `XXXXXXXX` to DFHIVPBT.
2. Normal JCL rules for coding JOB statements apply to the JOB parameter.
3. To add a TIME parameter to the CICS Transaction Server installation jobs, sample run times are given in "Run times of the installation jobs" on page 59.
4. Delete or comment out extra lines of the JOB statement that you do not require.

5. Normal JCL rules apply when coding the JOB statement; for example, all lines except the last line must end in a comma.

Specifying the scope of the installation

Specify the scope of the CICS Transaction Server installation on the **SCOPE** parameter.

SCOPE ALL|BASE|POST
Specifies whether you want to generate all the CICS Transaction Server installation and postinstallation jobs, or only the postinstallation jobs. When you install CICS Transaction Server from the distribution tape, specify the default, `SCOPE ALL`. Code the other options, if necessary, during postinstallation tasks.

ALL
Specifies that you want to generate all the CICS Transaction Server installation jobs and all the postinstallation jobs.

BASE
Specifies that you want to generate only the installation jobs (DFHINST1 through DFHINST6, DFHIHFS0, DFHIHFS1, and DFHISMKD) that you use to install CICS Transaction Server from the distribution tape.

POST
Specifies that you want to generate only the postinstallation jobs that you can use to create the CICS Transaction Server data sets, and run the IVPs.

Specifying the type of JES to be used

Specify the type of job entry subsystem (JES) that you use to install CICS Transaction Server on the JES parameter. The DFHISTAR job generates jobs with statements suitable for JES2 or JES3.

JES JES2|2|JES3|3
Specifies the release of JES that you are using. If you are using JES2, specify *JES2* or *2*. If you are using JES3, specify *JES3* or *3*.

Specifying the utilities

Specify the utilities to install CICS Transaction Server on the UTILITIES parameter.

UTILITIES *asmprog binder smpeprog copyutil*
Specifies the names of utility programs to be used when installing CICS Transaction Server elements and programs that it uses.

asmprog
The program name of the assembler. Specify *ASMA90* for High Level Assembler/MVS and VM and VSE, which is required.

binder
The program name of the z/OS binder. Ensure that program IEWL references the z/OS program management binder.

smpeprog
The program name of the SMP/E program. The IBM-supplied name is GIMSMP.

copyutil
The program name of the data set copy utility program. The IBM-supplied name is IEBCOPY.

The High Level Assembler either must be in the LINKLST concatenation or you must add a STEPLIB DD statement that points to the library containing the High Level Assembler in any jobs that invoke SMP/E.

Specifying the prefix of CICS Transaction Server jobs

Specify the 1- to 6-character prefix to be added to the jobs generated by the DFHISTAR job. This prefix overwrites the first characters of the job name.

For example, `PREFIX USERID` changes the job name DFHINST1 to USERIDT1.

`PREFIX prefix`
The 1- to 6-character prefix to be added to the CICS jobs generated by the DFHISTAR job.

Specifying the indexes of CICS Transaction Server data sets

Specify the high-level indexes for the CICS Transaction Server distribution, target, and SMP/E libraries allocated by the installation process.

`GINDEX library_prefix`
Assigns a high-level index to the CICS Transaction Server SMP/E global libraries allocated by the installation process.

The *library_prefix* value must not be longer than 26 characters and the leading character must be alphabetic. If you specify more than one level of index, the names must be separated by a period; for example, `GINDEX CICSTS52.TEST`.

`TINDEX library_prefix`
Assigns a high-level index to the CICS Transaction Server SMP/E target libraries (except for the SDFHLINK, SDFHLPA, SEYULINK, and SEYULPA target libraries) allocated by the installation process.

1. The LINDEX parameter defines the high-level index for the SDFHLINK and SDFHLPA libraries.
2. The *dsindex* operand of the DSINFO parameter defines the high-level index for the data sets created by the DFHCOMDS and DFHDEFDS jobs.

The *library_prefix* value must not be longer than 26 characters and the leading character must be alphabetic. If you specify more than one level of index, the names must be separated by a period; for example, `TINDEX CICSTS52.TEST`.

`DINDEX library_prefix`
Assigns a high-level index to the CICS Transaction Server SMP/E distribution libraries allocated by the installation process.

The *library_prefix* value must not be longer than 26 characters and the leading character must be alphabetic. If you specify more than one level of index, the names must be separated by a period; for example, `DINDEX CICSTS52.TEST`.

`LINDEX library_prefix`
Assigns a high-level index to the SDFHLPA, SDFHLINK, SEYULINK, and SEYULPA libraries allocated by the installation process. Define the *library_prefix* value in the MVS Master Catalog.

The *library_prefix* value must not be longer than 26 characters and the leading character must be alphabetic. If you specify more than one level of index, the names must be separated by a period; for example, `LINDEX SYS1. CICSTS41. CICS.TEST`.

Specifying the data set name of the activation module

Specify the data set name of the activation module that is used during the installation process.

ACTIVATE *dsname*
Specifies the data set qualifier for the activation module that is required to run your version of CICS.

DFHSTART is updated with the activation module data set.

The value that you specify must correspond with the version of CICS that you are installing.

SDFHLIC
Specifies the licensed edition (the default value).

SDFHDEV
Specifies the Developer Trial. For more information, see CICS Transaction Server for z/OS Developer Trial, Version 5.2.

SDFHVUE
Specifies the Value Unit Edition. For more information, see CICS Transaction Server for z/OS Value Unit Edition, Version 5.2.

Specifying extra qualifiers

Specify extra qualifiers that can optionally be inserted into the data set name of the 'target', 'distribution', and 'additional' zone data sets respectively, and inserted before the last data set qualifier. For example, XTRAQUAL JDOE . . changes the name of the target zone libraries to the values set by TINDEX.CICSTS52.CICS.JDOE.SDFHLOAD.

XTRAQUAL . . .
Three qualifiers to be used by 'target', 'distribution', and 'additional' zone data sets. If a qualifier is not required, specify a period (.).

Specifying the CICS TS z/OS UNIX directories and data sets

The DFHISTAR job has parameters that enable you to customize the UNIX system services z/OS UNIX directories.

HFS0DSN
The data set name of the file system to be mounted at directory /*pathprefix*/usr/lpp/cicsts/cicsts52.

These directory names are fixed. The default is data set name OMVS.USR.LPP.CICSTS .

See "Running the DFHIHFS0 job" on page 59 for details of the job that uses this parameter.

HFS1DSN
The data set name of the file system to be mounted at directory /*pathprefix*/usr/lpp/cicsts/*ussdir*, where *ussdir* is the name of the directory specified on the ussdir parameter in the DFHISTAR job. The default is data set name OMVS.USR.LPP.CICSTS.CICSTS52.

See "Running the DFHIHFS1 job" on page 60 for details of the job that uses this parameter.

HFSADSN
The data set name of the z/OS UNIX equivalent of the SMP/E "additional target zone", to be mounted at directory /*pathprefix*/usr/lpp/cicsts/*ussdira*,

where *ussdira* is the name of the directory specified on the ussdira parameter in the DFHISTAR job. The default data set name is OMVS.USR.LPP.CICSTS.CICSTS52.A.

See "Creating extra sets of CICS Transaction Server target libraries (optional)" on page 68 for details of the job that uses this parameter.

PATHPREFIX
The name of an optional prefix to the CICS TS directory `/usr/lpp/cicsts`. For example:

`/example/usr/lpp/cicsts`

USSDIR
The name of the CICS TS directory under `/pathprefix/usr/lpp/cicsts`.

The full name is therefore `/pathprefix/usr/lpp/cicsts/ussdir`. Ussdir is a name that you can choose. The default for *ussdir* is the value of the TINDEX parameter in lowercase.

The default path is:

`/pathprefix/usr/lpp/cicsts/cicsts52`

The name of the UNIX System Services directory after the root directory (`/usr/lpp`) is always /cicsts.

USSDIRA dsname
Specifies the name of the UNIX System Services directory for the Additional Target zone. See job DFHINSTA.

The default is the value of the AINDEX parameter in lowercase.

The UNIX System Services directory path starts `/ussindex/cicsts/ussdira` where *ussindex* is the translated value of the USSINDEX parameter, and *ussdira* is the value of the USSDIRA parameter.

The default path is: `/pathprefix/usr/lpp/cicsts/`cicsts52.a The name of the UNIX System Services directory after the root directory (/usr/lpp/) is always cicsts.

Specifying the installation directory for Java support

Specify the directory where the IBM 64-bit SDK for z/OS, Java™ Technology Edition is installed on z/OS UNIX. Support for the 31-bit version of the SDK is withdrawn, so you must upgrade to use the 64-bit version.

The **JAVADIR** parameter specifies the location of the SDK on z/OS UNIX. The supplied value `java/J7.0_64` points to the default installation directory for Version 7 of the IBM 64-bit SDK for z/OS, Java Technology Edition. This value of this parameter is appended to `/pathprefix/usr/lpp/`, giving a full path name of `/pathprefix/usr/lpp/javadir`.

The installation directory is used in the CICS-supplied sample JVM profiles.

Specifying block sizes

Specify the block sizes to be used when allocating data sets during installation on the BLKFB80 and BLKU parameters.

BLKFB80 {0|*blocksize*}
The block size to be used when allocating data sets that have a fixed block record format and record length of 80 bytes.

The IBM-supplied value in DFHISTAR is 0. Leave this value specified as 0 to allow z/OS to determine the optimum block size for you.

BLKU {32760|*blocksize*}
The block size to be used when allocating data sets that have an undefined record length.

Specifying the disk unit for work data sets

Specify the UNIT parameter for the disk or disks on which work data sets are stored on the WORKUNIT parameter.

WORKUNIT disktype
A unit identifier.

Specifying the SMS option for DASD allocations

Specify the extent to which you want to leave the allocation of CICS TS installation data sets to SMS. You can either let SMS handle all DASD allocation, or you can use volume parameters to control the allocations that do not have to be managed by SMS.

Some CICS TS data sets are installed in PDSE data sets. These are the following data sets:

- The SMP/E SMPLTS data set.
- The distribution library, ADFJMOD.
- The target library, SDFJAUTH.

See *Program Directory for CICS Transaction Server for z/OS* for information about these data sets.

SMS YES | NO
If you specify SMS YES, the VOLUME parameter is omitted from the generated installation jobs and all data set allocations are handled by SMS.

If you specify SMS NO, the VOLUME parameter is included on the generated installation jobs, and is recognized according to your SMS configuration. The VOLUME parameters used are those specified on the ADDTVOL, DEFVOL, DISTVOL, CMACVOL, OPTVOL, SMPVOL, and TARGVOL parameters.

Specifying disk volumes

To make the best use of your disk space, you can specify your own disk volumes and device types to be used to install CICS Transaction Server.

If you intend to install CICS Transaction Server into disk space managed by the storage management subsystem (SMS) component of MVS/DFP, you do not have to specify your own disk volumes; SMS can determine device assignment. In this case, proceed to “Specifying SMP/E zone attributes” on page 44. For further information about installing system-managed storage and about planning for and migrating storage to an SMS-managed environment, see the *MVS Storage Management Library: Storage Management Subsystem Migration Planning Guide*, SC26-4406.

You can specify your own disk details using the following parameters:

DEFVOL volume disktype
Defines the default disk on which the contents of the disk volumes CMACVOL, DISTVOL, OPTVOL, SMPVOL, and TARGVOL resides if the

appropriate parameter is not coded in the DFHISTAR job. For example, if you do not code the DISTVOL parameter, the CICS Transaction Server distribution libraries resides on the disk defined by DEFVOL.

volume
Is one of the following entries:
- The volume serial identifier, in the range 1 through 6 characters, of the default volume.
- A period (.) if all volumes other than CMACVOL and SMPVOL that are not specifically defined by the appropriate parameter of the DFHISTAR job are put onto any available volume. The CMACVOL and SMPVOL volumes are put onto the same volume as the library specified by the TEMPLIB parameter.

disktype
Is the UNIT parameter of the volume.

If you omit the DEFVOL parameter, all volumes that are not specifically defined by the appropriate parameter of the DFHISTAR job are put onto the same volume as the library specified by the TEMPLIB parameter.

DISTVOL volume disktype
Defines the disk on which the CICS Transaction Server distribution libraries resides.

volume
Is one of the following entries:
- The volume serial identifier, in the range 1 through 6 characters, of the volume on which the distribution libraries resides.
- A period (.) if the CICS Transaction Server libraries are to be put onto any available volume.

disktype
Is the UNIT parameter of the volume.

If you omit the DISTVOL parameter, the distribution libraries are put on the volume specified by the DEFVOL parameter. If the DEFVOL parameter is omitted, or if a period (.) is specified for its *volume* operand, the distribution libraries are put onto any available volume.

TARGVOL volume disktype
Specifies details of the disk containing the CICS Transaction Server target libraries.

volume
Is one of the following entries:
- The volume serial identifier, in the range 1 through 6 characters, of the volume on which the CICS Transaction Server target libraries are to reside.
- A period (.) if the CICS Transaction Server target libraries are to be put onto any available volume.

disktype
Is the UNIT parameter for the volume.

If you omit the TARGVOL parameter, the CICS Transaction Server target libraries are put onto the volume specified by the DEFVOL parameter. If the

DEFVOL parameter is omitted, or if a period (.) is specified for its *volume* operand, the CICS Transaction Server target libraries are put onto any available volume.

SMPVOL volume disktype
Specifies the disk that contains the permanent, non-VSAM SMP/E data sets for CICS Transaction Server that are associated with global or distribution zones and are therefore unique.

volume
Is one of the following entries:
- The volume serial identifier, in the range 1 through 6 characters, of the volume on which the permanent non-VSAM SMP/E data sets are to reside.
- A period (.) if the permanent non-VSAM SMP/E data sets are to be put onto the same volume as the library specified by the TEMPLIB parameter.

disktype
Is the UNIT parameter for the volume.

If you omit the SMPVOL parameter, the permanent non-VSAM SMP/E data sets for CICS Transaction Server are put on the volume specified by the DEFVOL parameter. If the DEFVOL parameter is omitted, or if a period (.) is specified for its *volume* operand, the data sets are put onto the same volume as the library specified by the TEMPLIB parameter.

OPTVOL volume disktype
Specifies details of the disk onto which the optional source material is copied.

volume
Is one of the following entries:
- The volume serial identifier, in the range 1 through 6 characters, of the volume on which the optional source material is to reside.
- A period (.) if the optional source material is to be put on any available volume.

disktype
Is the UNIT parameter of the volume. This is required only if *volume* is specified.

If you omit the OPTVOL parameter, the optional source material is put on the volume specified by the DEFVOL parameter. If the DEFVOL parameter is omitted, or if a period (.) is specified for its *volume* operand, the optional source material is put onto any available volume.

CMACVOL volume
Defines the disk on which the VSAM KSDS, DFHCMACD, resides. This data set is used for the CICS Transaction Server messages facility (CICS-supplied transaction CMAC).

volume
Is one of the following entries:
- The volume serial identifier, in the range 1 through 6 characters, of the volume on which the VSAM KSDS, DFHCMACD, is to reside.
- A period (.) if the DFHCMACD data set is to be put onto the same volume as the library specified by the TEMPLIB parameter.

If you omit the CMACVOL parameter, the DFHCMACD data set is put onto the volume specified by the DEFVOL parameter. If the DEFVOL parameter is omitted, or if a period (.) is specified for its *volume* operand, the DFHCMACD data set is put onto the same volume as the library specified by the TEMPLIB parameter.

When are these volumes used?

The reference table lists the DFHISTAR volume parameters and details of their use.

DFHISTAR volume parameter	Installing	Applying service	Customizing	Assembling resource tables	Running CICS Transaction Server
SMPVOL	Yes	Yes	Yes	Yes	
DISTVOL	Yes	Yes	Yes		
TARGVOL	Yes	Yes	Yes	Yes	Yes
DZONECSI[1]	Yes	Yes	Yes		
TZONECSI[1]	Yes	Yes	Yes	Yes	
GZONECSI[1]	Yes	Yes	Yes	Yes	

[1] The entries for xZONECSI parameters are also for the associated xZONE parameters.

You require the RELFILE data sets on SMPVOL during installation only.

You require SMPVOL, DISTVOL, TARGVOL, DZONE, TZONE, and GZONE when you apply service or customize your CICS Transaction Server programs. You require SMPVOL and GZONE when you apply service or customize your alternative libraries for use with the extended recovery facility.

You require SMPVOL, TARGVOL, TZONE, and GZONE when you assemble your CICS Transaction Server tables. You require SMPVOL and GZONE when you assemble CICS Transaction Server tables for the second (alternate) CICS Transaction Server region.

You require only TARGVOL to run CICS Transaction Server.

Allocating space for CICS Transaction Server disk volumes

Whether or not you use SMS-managed data sets, you still require enough disk space in which to create the CICS Transaction Server disk volumes.

The space required by the installation jobs on these volumes depends on the type of disk you intend to use. The number of tracks required on the different types of DASD are given in Table 7. The *Program Directory for CICS Transaction Server for z/OS* describes the size of the CICS Transaction Server distribution and target libraries.

Table 7. Number of tracks required for CICS Transaction Server

Identification	3380	3390
CICSTS52.TDFHINST	15	15
CICSTS52.XDFHINST	15	15
Relfile data sets on SMPVOL	4875	4500

Table 7. Number of tracks required for CICS Transaction Server (continued)

Identification	3380	3390
SMP/E non-VSAM data sets on SMPVOL	390	375
DISTVOL	4680	4320
TARGVOL	11235	10848
DZONE	165	165
TZONE	165	165
GZONE	165	165
Total during installation	21705	19905
Total after installation	16830	15405

Allow up to 15% on the values in Table 7 on page 42 for servicing requirements. Secondary allocations are 10% of the primary allocations.

If you intend to store other IBM software or your own application programs in these libraries, you must modify the generated jobs accordingly.

Specifying attributes of the temporary SMP/E work data sets

You must define the attributes of the temporary SMP/E work data sets, SMPWRK1, SMPWRK2, SMPWRK3, SMPWRK4, and SMPWRK6, for the following CICS Transaction Server jobs: DFHINSTJ, DFHINST6, DFHLPUMD, DFHSMPE, and EYULPMOD.

Define the attributes of those SMP/E data sets on the SMPWORK parameter:

The CICS Transaction Server jobs used to install CICS Transaction Server for z/OS have DD statements for the SMP/E data sets that they must know about.

SMPWORK disktype

The UNIT parameter for the disk that is to contain the temporary SMP/E work data sets, SMPWRK1, SMPWRK2, SMPWRK3, SMPWRK4, and SMPWRK6, required to install CICS Transaction Server.

Do not allocate the SMPWRK6 data set to Virtual I/O (VIO). If you specify a value for *disktype*, ensure that SMPWRK6 cannot be allocated to VIO.

If you specify a value for *disktype*, or omit the SMPWORK parameter altogether, `//SMPWRKn` DD statements are added to the following jobs generated by the DFHISTAR job:

- DFHINSTJ
- DFHLPUMD
- DFHSMPE

If you specify NO, a period (.), or a null string, CICS Transaction Server assumes that SMP/E knows about the temporary SMP/E work data sets. To define the attributes of the SMP/E work data sets, you must do one of the following tasks:

- Provide appropriate DDDEFS for the temporary SMP/E work data sets.
- Apply the SMP/E sample usermod (SMP0001) that contains superzap statements for updating the default attributes of the SMP/E data sets in the GIMMPDFT module.

The GIMMPDFT module, which is part of SMP/E, defines the default attributes of SMP/E data sets, and can be used to dynamically allocate data sets to be used by all zones. For more information about the entries in the GIMMPDFT module and the sample entry values in the usermod SMP0001, see *System Modification Program Extended: Reference*l, SA22–7772.

Specifying attributes of the permanent SMP/E data sets

You can specify the attributes of the permanent SMP/E data sets using the SMPPTS, SMPMTS, SMPSTS, SMPSCDS and SMPLTS parameters.

Specify the attributes of the permanent SMP/E data sets on the following parameters:

SMPPTS dsname
: Specifies the name of the SMP/E primary data set used to store temporarily PTF function SYSMODs or other fixes that are in RECEIVE or APPLY status; that is, PTF fixes that have not been rejected or accepted.

SMPMTS dsname
: Specifies the name of the SMP/E macro temporary store (MTS) data set used to store updated versions of macros. Although required by SMP/E, CICS does not use the MTS data set.

SMPSTS dsname
: Specifies the name of the SMP/E source temporary store (STS) data set used to store updated versions of source elements. Although required by SMP/E, CICS does not use the STS data set.

SMPSCDS dsname
: Specifies the name of the SMP/E saved control data set (SCDS) used to store old target zone entries that have been modified by inline JCLIN processing in a SYSMOD.

SMPLTS dsname
: Specifies the name of the link-edit temporary (LTS) data set used with the CALLLIBS function. This data set must always be an SMS-managed PDSE, whether or not Java is installed, unless you have installed the PTFs for z/OS UNIX and PDSE support on non-managed SMS volumes listed in Flash10007, which can be found by links from http://www.ibm.com/support/techdocs.

The CICS Transaction Server jobs that must know the attributes of the SMP/E data sets have DD statements for them.

Specifying SMP/E zone attributes

Specify the attributes of the SMP/E distribution zone, global zone, target zone, and any additional target zones.

The CICS DB2 attachment facility contains modules named with the DSN prefix. Therefore, to prevent existing DB2 modules with the same DSNxxxxx names from being overwritten, do not install CICS Transaction Server into the same target and distribution zones as DB2.

To specify SMP/E zone attributes, use the following parameters:

GZONELOG dsname NEW|OLD
: Specifies details of the SMP/E log for the global zone CSI.

dsname
The name of the global zone log.

NEW|OLD
Specifies whether an existing global zone log is to be used. If you specify NEW, any existing global zone log with the specified *dsname* is deleted, and a new global zone log is allocated. If you specify OLD, an existing global zone log is used.

TZONELOG dsname NEW|OLD
Specifies details of the SMP/E log for the target zone CSI.

dsname
The name of the target zone log.

NEW|OLD
Specifies whether an existing target zone log is to be used. If you specify NEW, any existing target zone log with the specified *dsname* is deleted, and a new target zone log is allocated. If you specify OLD, an existing target zone log is used.

DZONELOG dsname NEW|OLD
Specifies details of the SMP/E log for the distribution zone CSI.

dsname
The name of the distribution zone log.

NEW|OLD
Specifies whether an existing distribution zone log is to be used. If you specify NEW, any existing distribution zone log with the specified *dsname* is deleted, and a new distribution zone log is allocated. If you specify OLD, an existing distribution zone log is used.

GZONECSI cluster NEW|OLD volume disktype
Specifies details of the global zone CSI.

cluster
The VSAM cluster name, without the qualifier '.CSI'.

NEW|OLD
Specifies whether an existing global zone CSI is to be used. If you specify NEW, any existing global zone CSI with the specified *cluster* name is deleted, and a new global zone CSI is allocated. If you specify OLD, an existing global zone CSI is used.

volume
Either the volume serial (volser) identifier for the volume on which the global zone CSI is to be allocated or a period (.) if the CSI is to be put on a volume determined by the CICS Transaction Server installation process.

disktype
The UNIT parameter for the volume.

TZONECSI cluster NEW|OLD volume disktype
Specifies details of the target zone CSI.

cluster
The VSAM cluster name, without the qualifier '.CSI'.

NEW|OLD
Specifies whether an existing target zone CSI is to be used. If you specify

NEW, any existing target zone CSI with the specified *cluster* name is deleted, and a new target zone CSI is allocated. If you specify OLD, an existing target zone CSI is used.

volume
Either the volume serial (volser) identifier for the volume on which the target zone CSI is to be allocated or a period (.) if the CSI is to be put on a volume determined by the CICS Transaction Server installation process.

disktype
The UNIT parameter for the volume.

DZONECSI cluster NEW|OLD volume disktype
Specifies details of the distribution zone CSI.

cluster
The VSAM cluster name, without the qualifier '.CSI'.

NEW|OLD
Specifies whether an existing distribution zone CSI is to be used. If you specify NEW, any existing distribution zone CSI with the specified *cluster* name is deleted, and a new distribution zone CSI is allocated. If you specify OLD, an existing distribution zone CSI is used.

volume
Either the volume serial (volser) identifier for the volume on which the distribution zone CSI is to be allocated or a period (.) if the CSI is to be put on a volume determined by the CICS Transaction Server installation process.

disktype
The UNIT parameter for the volume.

GZONE NEW|OLD options
Specifies whether the global zone to be used already exists.

NEW|OLD
Specifies whether an existing global zone is to be used. The DFHISTAR job as supplied specifies NEW. Optionally, change this to OLD to use an existing global zone. If you specify OLD, CICS Transaction Server is installed into an existing SMP/E global zone.

Specify NEW if you want to preserve your existing releases of CICS Transaction Server in their current SMP/E zones and install the new release in its own zones.

If you specify OLD, the existing SMP/E zones are used and any existing release of the product is deleted.

If you specify OLD, but specify NEW for the GZONECSI parameter, both parameters are assigned the NEW disposition.

options
Specifies the name of the SMP/E options to be used on the SET BOUNDARY command.

TZONE zonename
Specifies the name of the target zone.

zonename
The name of the target zone to be used by SMP/E. This name must be unique to the target zone. It must not be longer than seven characters, and the leading character must be alphabetic.

DZONE zonename
Specifies the name of the distribution zone.

zonename
The name of the distribution zone to be used by SMP/E. This name must be unique in the global zone. It must not be longer than seven characters, and the leading character must be alphabetic.

Specifying SMP/E zone and zone log dispositions

As supplied, the DFHISTAR job assumes that you are going to install CICS Transaction Server into new target and distribution zones. However you can specify a new or old global zone, and new or old zone logs by the disposition option NEW|OLD on the associated parameters of the DFHISTAR job.

The disposition option NEW means that the DFHINST3 job deletes any existing zone or zone log with its name specified before redefining it. For example, if you specify the following parameter:

```
GZONELOG CICSTS52.GZONE.SMPLOG NEW
```

the DFHINST3 job deletes any existing SMP/E global zone log with the name CICSTS52.GZONE.SMPLOG before defining a new SMP/E global zone log with that name.

Further, if you specify different dispositions for a zone parameter and its associated zone log parameter, they are both given the default disposition NEW, to ensure that both a zone and its zone log have the same disposition.

If you intend to install CICS Transaction Server using one new CSI for all zones, you must specify the disposition NEW on all three CSI parameters of the DFHISTAR job. For example:

```
DZONE           DZONE
DZONECSI        CICSTS52.SMPZONE NEW CICSTS52 SYSALLDA
DZONELOG        CICSTS52.DZONE.SMPLOG NEW
GZONE           NEW CICSOPT
GZONECSI        CICSTS52.SMPZONE NEW CICSTS52 SYSALLDA
GZONELOG        CICSTS52.GZONE.SMPLOG NEW
TZONE           TZONE
TZONECSI        CICSTS52.SMPZONE NEW CICSTS52 SYSALLDA
TZONELOG        CICSTS52.TZONE.SMPLOG NEW
```

Specifying the high-level qualifiers for SMP/E data sets

For each different high-level qualifier that you have specified for SMP/E zone CSIs, logs, and other SMP/E data sets, you must create an ALIAS definition in the master catalog before the data sets can be used.

Specifying the distribution tape device type

Specify the type of device that will load the CICS Transaction Server distribution tape on the TAPEUNIT parameter.

TAPEUNIT devicetype
Specifies the device type to be used to read the distribution tape. Use 3480 for the 3480 tape cartridge, 3400-6 for the 6250 tape, or the unit names in use in your installation.

Specifying attributes of the CICS Transaction Server system data sets

Use the DSINFO parameter to specify the attributes of the CICS Transaction Server system data sets, which are created when you run the postinstallation jobs, DFHCOMDS, DFHDEFDS, EYUCMSDS, EYUWUIDS, and EYUCSYDS

For more information about the postinstallation jobs DFHCOMDS and DFHDEFDS, see "DFHCOMDS job for common data sets" on page 254.

DSINFO dsindex volume disktype qualifier
Defines the following attributes of CICS TS system data sets:

dsindex
Assigns a high-level index to all the data sets defined by the jobs, DFHCOMDS, DFHDEFDS, EYUCMSDS, EYUWUIDS, and EYUCSYDS.

The leading character of *dsindex* must be alphabetic. *dsindex* can have one or two levels of index, but each level must be no longer than eight characters. If you specify more than one level of index, the names must be separated by a period, for example, CICSTS52.CICSHTC1.

volume
The volume identifier of the volume.

disktype
The UNIT parameter for the volume.

qualifier
A partial qualifier added to the index for the data sets created by the jobs DFHCOMDS, DFHDEFDS, EYUCMSDS, EYUWUIDS, and EYUCSYDS. You can specify a partial qualifier of up to four alphanumeric characters; these characters are appended to the characters CICS to make the qualifier. If you specify a period (.), no qualifier is used.

Specifying attributes of any additional target libraries

If you want to create extra copies of the CICS Transaction Server target libraries, specify the attributes of those libraries on the listed parameters.

AINDEX library_prefix
Assigns a high-level index to the additional set of CICS target libraries copied by a version of the DFHINSTA job.

Note:

1. The high-level index for the additional SDFHLINK and SDFHLPA libraries is defined by the ALINDEX parameter.
2. The high-level index for the data sets created by the jobs DFHCOMDS and DFHDEFDS is defined by the *dsindex* operand of the DSINFO parameter.

The AINDEX value must be unique; for example, it must be different from the INDEX value. It must not be longer than 26 characters, and the leading character must be alphabetic. If you specify more than one level of index, the names must be separated by a period; for example, `AINDEX CICSTS52.A.TEST`.

ALINDEX library_prefix
Assigns a high-level index to the additional SDFHLPA and SDFHLINK libraries allocated by running a version of the DFHINSTA job.

The *library_prefix* value must not be longer than 26 characters and the leading character must be alphabetic. If you specify more than one level of index, the names must be separated by a period; for example, `ALINDEX SYS1.CICSTS52.A.TEST`.

AZONELOG dsname
Specifies details of the SMP/E log for the additional target zone CSI.

dsname
The name of the additional target zone log to be used by SMP/E.

AZONECSI cluster
Specifies details of the additional target zone CSI. The CSI data set is created on the volume and unit specified by the ADDTVOL parameter.

cluster
The VSAM cluster name, without the qualifier **.CSI**.

AZONE zonename
Specifies the name of the additional target zone, to be used for the set of CICS Transaction Server target libraries copied by a version of the DFHINSTA job.

zonename
The name of the additional target zone to be used by SMP/E. This name must be unique to the target zone. It must not be longer than seven characters and the leading character must be alphabetic.

ASMPSCDS dsname
Specifies the name of the additional zone SMP/E SCDS data set.

dsname
The name of the additional zone SMP/E SCDS data set.

ASMPMTS dsname
Specifies the name of the additional zone SMP/E MTS data set.

dsname
The name of the additional zone SMP/E MTS data set.

ASMPSTS dsname
Specifies the name of the additional zone SMP/E STS data set.

dsname
The name of the additional zone SMP/E STS data set.

ASMPLTS dsname
Specifies the name of the additional zone SMP/E LTS data set.

dsname
The name of the additional zone SMP/E LTS data set.

ADDTVOL volume disktype
Specifies the volume and unit type to contain all the additional zone data sets.

volume
The volume serial identifier of the volume.

disktype
The UNIT parameter for the volume.

Specifying the library data set names

Specify the data set names for the SISPLOAD, CSSLIB, SCEELKED, SCEELIB, SCEEBND2, SCEELKEX, SCEEOBJ, SCEECPP, SCLBSID, SEZARPCL, SEZACMTX,

SCEECICS, SCEERUN, SCEERUN2, SCEESAMP, SDSNLOAD, SCSQLOAD, SCSQANLE, SCSQCICS, SCSQAUTH, and SCSFMOD0 libraries.

Specifying the data set names of the SISPLOAD library

Specify the full data set name, up to 44 characters, of the library that contains ISPLINK; SISPLOAD for ISPF Version 4 and above, or ISPLOAD for ISPF version 3 and below. For example, `SISPLOAD SYS1.USERID.SISPLOAD` changes the SISPLOAD library name to SYS1.USERID.SISPLOAD. This library is accessed, as read-only, during the installation of CICS Transaction Server.

`SISPLOAD dsname`
Up to 44 characters.

Specifying the data set name of the CSSLIB library

Specify the full data set name, up to 44 characters, of the CSSLIB library. For example, `CSSLIB SYS1.USERID.CSSLIB` changes the CSSLIB library name to SYS1.USERID.CSSLIB. This library is accessed, as read-only, during the installation of CICS Transaction Server.

`CSSLIB dsname`
Up to 44 characters.

Specifying the data set name of the SCEELKED library

Specify the full data set name, up to 44 characters, of the SCEELKED library. For example, `SCEELKED SYS1.USERID.SCEELKED` changes the SCEELKED library name to SYS1.USERID.SCEELKED. This library is accessed, as read-only, during the installation of CICS Transaction Server.

`SCEELKED dsname`
Up to 44 characters.

Specifying the data set names of the SCEELIB library

Specify the full data set names, up to 44 characters, of the SCEELIB library. For example, `SCEELIB SYS1.USERID.SCEELIB` changes the SCEELIB library name to SYS1.USERID.SCEELIB. The library is accessed, as read-only, during the installation of CICS Transaction Server.

`SCEELIB dsname`
Up to 44 characters.

Specifying the data set name of the SCEEBND2 library

Specify the full data set name, up to 44 characters, of the SCEEBND2 library. For example, `SCEEBND2 SYS1.USERID.SCEEBND2` changes the SCEEBND2 library to SYS1.USERID.SCEEBND2. This library is accessed, as read-only, during the installation of CICS Transaction Server.

`SCEEBND2 dsname`
Up to 44 characters.

Specifying the data set name of the SCEELKEX library

Specify the full data set name, up to 44 characters, of the SCEELKEX library. For example, `SCEELKEX SYS1.USERID.SCEELKEX` changes the SCEELKEX library name to SYS1.USERID.SCEELKEX. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCEELKEX dsname
Up to 44 characters.

Specifying the data set name of the SCEEOBJ library

Specify the full data set name, up to 44 characters, of the SCEEOBJ library. For example, `SCEEOBJ SYS1.USERID.SCEEOBJ` changes the SCEEOBJ library name to SYS1.USERID.SCEEOBJ. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCEEOBJ dsname
Up to 44 characters.

Specifying the data set name of the SCEECPP library

Specify the full data set name, up to 44 characters, of the SCEECPP library. For example, `SCEECPP SYS1.USERID.SCEECPP` changes the SCEECPP library name to SYS1.USERID.SCEECPP. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCEECPP dsname
Up to 44 characters.

Specifying the data set name of the SCLBSID library

Specify the full data set name, up to 44 characters, of the SCLBSID library. For example, `SCLBSID SYS1.USERID.SCLBSID` changes the SCLBSID library name to SYS1.USERID.SCLBSID. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCLBSID dsname
Up to 44 characters.

Specifying the data set names of the SEZARPCL and SEZACMTX libraries

Specify the full data set names, up to 44 characters, of the SEZARPCL and SEZACMTX libraries. For example, `SEZARPCL SYS1.USERID.SEZARPCL` changes the SEZARPCL library to SYS1.USERID.SEZARPCL and `SEZACMTX SYS1.USERID.SEZACMTX` changes the SEZACMTX library name to SYS1.USERID.SEZACMTX. These libraries are accessed, as read-only, during the installation of CICS Transaction Server.

SEZARPCL dsname
Up to 44 characters.

SEZACMTX dsname
Up to 44 characters.

Specifying the data set names of the SCEECICS and SCEERUN libraries

Specify the full data set names, up to 44 characters, of the SCEECICS & SCEERUN libraries. For example, `SCEECICS SYS1.USERID.SCEECICS` changes the SCEECICS library to SYS1.USERID.SCEECICS and `SCEERUN SYS1.USERID.SCEERUN` changes the SCEERUN library name to SYS1.USERID.SCEERUN. These libraries are accessed, as read-only, during the installation of CICS Transaction Server.

SCEECICS dsname
Up to 44 characters.

SCEERUN dsname
Up to 44 characters.

Specifying the data set names of the SCEERUN2 library

Specify the full data set names, up to 44 characters, of the SCEERUN2 library. For example, `SCEERUN2 SYS1.USERID.SCEERUN2` changes the SCEERUN2 library to SYS1.USERID.SCEERUN2. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCEERUN2 dsname
Up to 44 characters.

Specifying the data set name of the SCEESAMP library

Specify the full data set name, up to 44 characters, of the SCEESAMP library. For example, `SCEESAMP SYS1.USERID.SCEESAMP` changes the SCEESAMP library name to SYS1.USERID.SCEESAMP. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCEESAMP dsname
Up to 44 characters.

Specifying the data set name of the SDSNLOAD library

Specify the full data set name, up to 44 characters, of the DB2 SDSNLOAD library. For example, `SDSNLOAD SYS1.USERID.SDSNLOAD` changes the SDSNLOAD library name to SYS1.USERID.SDSNLOAD. This library is accessed, as read-only, during the installation of CICS Transaction Server.

The REXX for CICS element contains some modules that are link-edited against the DB2 load library, SDSNLOAD. If you do not have DB2 installed, the DFHINST6 job fails because SDSNLOAD cannot be allocated to the job. To avoid this problem, define a dummy SDSNLOAD data set, with LRECL=0 and RECFM=U, and specify the name of this empty data set on the SDSNLOAD parameter.

SDSNLOAD dsname
Up to 44 characters.

Specifying the data set name of the SCSQLOAD library

Specify the full data set name, up to 44 characters, of the SCSQLOAD library. For example, `SCSQLOAD SYS1.USERID.SCSQLOAD` changes the SCSQLOAD library name to SYS1.USERID.SCSQLOAD. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCSQLOAD dsname
Up to 44 characters.

Specifying the data set name of the SCSQANLE library

Specify the full data set name, up to 44 characters, of the SCSQANLE library. For example, `SCSQANLE SYS1.USERID.SCSQANLE` changes the SCSQANLE library name to SYS1.USERID.SCSQANLE. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCSQANLE dsname
Up to 44 characters.

Specifying the data set name of the SCSQCICS library

If you want to run the WebSphere® MQ for z/OS sample programs, specify the full data set name, up to 44 characters, of the SCSQCICS library. For example, `SCSQCICS SYS1.USERID.SCSQCICS` changes the SCSQCICS library name to SYS1.USERID.SCSQCICS. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCSQCICS dsname
Up to 44 characters.

Specifying the data set name of the SCSQAUTH library

Specify the full data set name, up to 44 characters, of the SCSQAUTH library. For example, `SCSQAUTH SYS1.USERID.SCSQAUTH` changes the SCSQAUTH library name to SYS1.USERID.SCSQAUTH. This library is accessed, as read-only, during the installation of CICS Transaction Server.

SCSQAUTH dsname
Up to 44 characters.

Specifying the data set names of the SCSFMOD0 and SIXMEXP libraries

Specify the full data set names, up to 44 characters, of the SCSFMOD0 and SIXMEXP libraries. For example, `SCSFMOD0 SYS1.SCSFMOD0` changes the SCSFMOD0 library to SYS1.SCSFMOD0. These libraries are accessed, as read-only, during the installation of CICS Transaction Server.

SCSFMOD0 dsname
Up to 44 characters.

SIXMEXP dsname
Up to 44 characters.

Specifying log stream and log stream structure attributes

Specify attributes of the CICS Transaction Server log streams and the coupling facility structures that you use when you run the postinstallation jobs DFHILG1, DFHILG2, DFHILG3 and DFHILG4, on the LOGGER-INFO parameter.

For more information about these postinstallation jobs, see Chapter 34, "Defining the logger environment for CICS," on page 205.

LOGGER-INFO strsfx logsz shuntsz jnlsz gensz sysname loghlq logmodel
Defines the following attributes of CICS Transaction Server system data sets:

strsfx
The last part of the coupling facility structure names, can be any three characters allowed in a structure name. The default is 001. It is used in DFHILG1, DFHILG2, DFHILG3, and DFHILG4.

logsz
The average buffer size for system log streams in the LOG_DFHLOG_strsfx structure. The default is 500. It is used in DFHILG1.

shuntsz
The average buffer size for shunted system log streams in the LOG_DFHSHUNT_strsfx structure. The default is 4096. It is used in DFHILG1.

jnlsz
The average buffer size for unforced user journal log streams in the LOG_USERJRNL_strsfx structure. The default is 64000. It is used in DFHILG1.

gensz
The average buffer size for forced user journal log streams and forward recovery log streams in the LOG_GENERAL_strsfx structure. The default is 2048. It is used in DFHILG1.

sysname
The MVS system name used to create model log streams for DFHLOG and DFHSHUNT. The default is MVSX. It is used in DFHILG2 and DFHILG5.

loghlq
The first qualifier of the model name for general logs and DFHLGLOG. It is used in DFHILG3, DFHILG4, DFHILG6, and DFHILG7.

logmodel
The second qualifier of the model name for general logs. It is used in DFHILG3 and DFHILG6.

Specifying attributes specific to CICSPlex SM

Use these DFHISTAR attributes to customize the postinstallation JCL for CICSPlex SM.

This JCL is used in the installation verification procedure for CICSPlex SM, as described in Part 7, “Getting started with CICSPlex SM,” on page 409.

All attributes specific to CICSPlex SM have defaults. If you do not want to use CICSPlex SM, you can run DFHISTAR without providing overrides for any of the following CICSPlex SM specific parameters:

CMASNAME value
Specifies the 1- to 8-character name to be allocated to a CMAS. The name can contain alphabetic, national, and numeric characters. However, the first character must be alphabetic or national. The default is CMAS01.

The name of a CMAS must be unique in the CICSPlex SM environment. It must not be the same as the name of another CMAS, a CICSplex, a CICS system, or a CICS system group.

CMCIPORT value
Specifies the numeric identifier allocated to the TCP/IP port number for the

CICS management client interface (CMCI) on the WUI server. The identifier can contain numeric characters only, in the range 1 to 65535. The default is 12346.

CMSSYSID value
Specifies the 4-character system identifier of the CMAS. This identifier can contain alphabetic, national, and numeric characters. It must match the SYSIDNT system initialization parameter for the CMAS. The default is CM01.

WUISYSID name
Specifies the 1- to 4-character name allocated to a WUI system identifier. The name can contain alphabetic, national, and numeric characters. However, the first character must be alphabetic or national. The default value is WU01.

CSYSYSID value
Specifies the 1- to 4-character system identifier for the managed CICS system. This identifier can contain alphabetic, national, and numeric characters. The default is CS01.

CSYSPLEX value
Specifies the 1- to 8-character name to be allocated to a CICSplex of managed systems. This identifier can contain alphabetic, national, and numeric characters. The default is CSYPLX01.

The name of a CICSplex must be unique in the CICSPlex SM environment. It must not be the same as the name of another CICSplex, a CICS system, or a CICS system group.

TCPIPHST
Specifies the TCP/IP host name for the WUI server. The default is XXXXXXXX.XXXXXXXX.XXXXXXXX.XXXXXXXX.

TCPIPPRT
Specifies the numeric identifier allocated to the TCP/IP port number for the WUI server. The identifier can contain numeric characters only, in the range 1 to 65535. The default is 12345.

TIMEZONE code
Specifies the time zone assigned to the data repository. This code must be a single alphabetic character in the range B through Z. See *CICSPlex System Manager Administration* for more information about setting the time zone. The default is B.

WUI value
Specifies whether to create a WUI CICSplex. This parameter is ignored if the OLDDREP parameter is specified. The default is YES if OLDDREP is not specified.

YES
Create a WUI CICSplex.

NO Do not create a WUI CICSplex.

WUIPLEX name
Specifies the 1- to 8-character name allocated to a WUI CICSplex. The name can contain alphabetic, national, and numeric characters. However, the first character must be alphabetic or national. This parameter is ignored if the OLDDREP parameter is specified. The default is created from the characters WUIP, followed by the CMSSYSID. For example, using the default CMSSYSID, CM01, the default WUIPLEX name is WUIPCM01.

WUINAME name
Specifies the 1- to 8-character name allocated to a WUI. The name can contain alphabetic, national, and numeric characters. However, the first character must be alphabetic or national. The default is WUINCM01.

CSYSNAME name
Specifies the 1- to 8-character name to be allocated to a MAS. The name can contain alphabetic, national, and numeric characters. However, the first character must be alphabetic or national. The default is CSYS01.

The name of a MAS must be unique in the CICSPlex SM environment. It must not be the same as the name of another MAS, a CICSplex, a CICS system, or a CICS system group.

OLDDREP dsname
Specifies an existing data repository that is being used by a previous release of CICSPlex SM. The records in the existing data repository are migrated to a new data repository for CICS TS for z/OS, Version 5.2. The existing data repository is not modified. If you do not specify this parameter, a new data repository is created.

dsname
The VSAM cluster name of the existing data repository.

The new CICS TS for z/OS, Version 5.2 data repository has the name

dsinfo.EYUDREP.cmasname

Where:

dsinfo
Is the index specified with the DSINFO parameter.

cmasname
Is the name specified with the CMASNAME parameter.

Use a period (the default value) to have an empty data repository created for CICS TS for z/OS, Version 5.2.

NEWDREP dsname
Specifies a new data repository that is being used by CICSPlex SM.

dsname
The VSAM cluster name of the existing data repository.

The new CICS TS for z/OS, Version 4.1 data repository has the name:

dsinfo.EYUDREP.cmasname

Where:

dsinfo
Is the index specified with the DSINFO parameter.

cmasname
Is the name specified with the CMASNAME parameter.

Use a period (the default value) to have an empty data repository created for CICS TS for z/OS, Version 5.2.

Creating RACF profiles for the CICS Transaction Server data sets

Your Security Administrator creates appropriate RACF profiles for the CICS Transaction Server data sets.

At this stage, you require authority to access only the data set qualifiers specified on the TEMPLIB and LIB parameters of the DFHISTAR job. DFHISTAR uses a temporary sequential data set, with the high-level qualifier specified on the INDEX parameter, to resolve the parameters to be substituted into the jobs being tailored. However, consider coordinating the access authority for all the CICS Transaction Server data sets at the same time.

RACF profiles are discussed in detail in the RACF profiles in Securing.

Running the DFHISTAR job

Edit and save the DFHISTAR job with the values of installation parameters for your CICS Transaction Server environment. When you are ready to tailor the skeleton jobs, submit the DFHISTAR job.

The highest expected return code is 0.

When the DFHISTAR job has run, the *Program Directory for CICS Transaction Server for z/OS* shows, in tabular form, the non-DFHISTAR jobs that have been copied and are tailored to your CICS Transaction Server environment, and are added to the library that you specified on the LIB parameter of the DFHISTAR job. By default, this library is the CICSTS52.XDFHINST library. If necessary, the DFHISTAR job creates the library specified on the LIB parameter.

Checking the output from the DFHISTAR job

Check the output from the DFHISTAR job and, if required, edit and submit the DFHISTAR job again.

The DFHISTAR job produces a job log and, if necessary, an error code:

- The output job log lists the values that were used for the parameters of the DFHISTAR job.
- If any error occurs when running the DFHISTAR job, a warning code of 4 or an error code of 12 is returned. For error code 4, the skeleton jobs are tailored and added to the CICSTS52.XDFHINST library. For error code 12, the skeleton jobs are not tailored or copied. To resolve the cause of either error code, examine the output job log and, if necessary, edit and submit the DFHISTAR job again.

You can run the DFHISTAR job any number of times to alter the attributes of the jobs that it creates.

When running the DFHISTAR job after the first time, you can select specific jobs to be created by using the SCOPE or SELECT parameter:

SCOPE ALL|BASE|POST
: Specifies whether you want to generate all the CICS Transaction Server installation and postinstallation jobs, or only the postinstallation jobs. When you install CICS Transaction Server from the distribution tape, specify the default, `SCOPE ALL`. Code the other options, if necessary, during postinstallation tasks.

  ALL
  : Specifies that you want to generate all the CICS Transaction Server installation jobs and all the postinstallation jobs.

  BASE
  : Specifies that you want to generate only the installation jobs (DFHINST1

through DFHINST6, DFHIHFS0, DFHIHFS1, and DFHISMKD) that you use to install CICS Transaction Server from the distribution tape.

POST
: Specifies that you want to generate only the postinstallation jobs that you can use to create the CICS Transaction Server data sets, and run the IVPs.

Checking that you are ready to run the installation jobs

Check data set names, installation JCL, CSIs, and RACF authority, to make sure that you are now ready to run the installation jobs: DFHIHFS0, DFHIHFS1, DFHISMKD, DFHINST1, DFHINST2, DFHINST3, DFHINST4, DFHINST5, DFHINST6, and DFHIJVMJ.

1. Check the names of the data sets that the installation jobs create, because the jobs will delete any existing data sets with those names. If you want to keep an existing data set with a name specified in one of the installation jobs, you must change the name to be used for the new data set. For example, for the installation parameter DZONECSI *dsname* NEW, the data set *dsname* is deleted and a new distribution zone CSI called *dsname* is allocated.
2. The supplied CICS Transaction Server installation JCL installs CICS-supplied Transaction Server for z/OS into new target and distribution zones. If you want to install CICS Transaction Server into existing target and distribution zones, you must modify the DFHINST3 job.

   Caution: If you intend to use an existing target or distribution zone that contains an earlier release of CICS Transaction Server, be aware that any earlier release of CICS Transaction Server is cleared before being replaced by CICS Transaction Server.
3. If you intend to install CICS Transaction Server using both existing and new CSIs, any new CSIs must have the same control interval size as the existing CSIs.

   If your existing CSIs do not have a control interval size of 4096 bytes, you must edit the DFHINST3 job, before running it, to change the CONTROLINTERVALSIZE(4096) parameter on the commands used to create the VSAM data sets for the new CSIs, to specify the same control interval size as the existing CSIs.

   For further information about allocating CSI data sets, see the *System Modification Program Extended: Reference* manual, SA22–7772.
4. Ensure that you have appropriate RACF authority for the CICS Transaction Server data sets.

Running the installation jobs

Check that you are ready to run the installation jobs and then submit the jobs in sequence.

Before you run the installation jobs, ensure the following settings are in place:

- The MVS image was IPLed with OMVS in full-function mode.
- The user ID under which you are running the jobs has superuser authority.

After you have run the DFHISTAR job to create the installation jobs, submit those jobs in sequence to install CICS Transaction Server. The following topics describe the CICS Transaction Server installation jobs, and give guidance on how to use them.

The CICS Transaction Server jobs are in the CICSTS52.XDFHINST library as a result of running the DFHISTAR job, which you copied from the distribution tape, as described in *Copy RELFILE(2) from the Distribution Tape* in the *Program Directory for CICS Transaction Server for z/OS*.

Run these jobs one at a time. Before you run a job, read the information about it, starting with "Running the DFHIHFS0 job."

After you have run a job, check its output before proceeding to the next job. If a job ends abnormally, find out why it failed by looking at the job log, which lists the error messages produced on each run. Correct the error and then proceed as advised in the job description. Do not attempt to run the next job until the previous job has run successfully.

Run times of the installation jobs

Here are the run times for the installation jobs on an IBM 2084 D32. These figures give you an idea of expected run times.

Job	Processor Time	CPU Time
DFHIHFS0	8 seconds	less than 1 second
DFHIHFS1	12 seconds	less than 1 second
DFHISMKD	1 second	less than 1 second
DFHINST1	7 seconds	less than 1 second
DFHINST2	6 seconds	less than 1 second
DFHINST3	2 seconds	less than 1 second
DFHINST4	5 seconds	less than 1 second
DFHINST5	3 minutes	15 seconds
DFHINST6	8 minutes	2 minutes
DFHIJVMJ	2 seconds	less than 1 second

These time values are suitable to run the installation jobs on an IBM 2084 D32 or bigger system. If you have a system smaller than an IBM 2084 D32, review these values.

Running the DFHIHFS0 job

This job create a file system and cicsts directory.

- Creates the *cicsts* directory at `/`*`pathprefix`*`/usr/lpp/`.
- Mounts the file system at directory `/`*`pathprefix`*`/usr/lpp/cicsts`.
-
  - Owner=RWX
  - Group=RWX
  - Other=R-X

  (In octal form: 775)

  Where:

- R equates to Read
- W equates to Write
- X equates to Execute
- \- equates to no permission

1. You might not need to run DFHIHFS0 if you have installed an earlier release of CICS TS or if you are re-installing CICS TS 4.1, because CICS creates the /cicsts directory that is common to all releases of CICS since CICS TS for OS/390®, Version 1.3. If you do need to run DFHIHFS0, run this job once only.
2. You must grant RACF ALTER ACCESS to the OMVS data sets before running DFHIHFS0.
3. The /cicsts directory contains only directories, each being a mount point.
4. CICS requires the MOUNT issued by DFHIHFS0 to access files stored in the file system, but the MOUNT command is lost when you re-IPL MVS. SDFHINST member DFHBPXP0 contains a MOUNT command for inclusion in a BPXPRMxx member of the SYS1.PARMLIB data set. The MOUNT command applies to the data set specified in the HFS0DSN parameter of the DFHISTAR job to be mounted at directory `/`*`pathprefix`*`/usr/lpp/cicsts`. Copy this command into a BPXPRM*xx* member of the SYS1.PARMLIB data set to ensure the mount is restored when MVS is IPLed.
5. All steps of DFHIHFS0 must end with return code zero for the job to be successful.

Running the DFHIHFS1 job

This job unmounts and deletes the file system, before creating and mounting a new file system as specified in DFHISTAR.

1. Unmounts the file system at directory `/`*`pathprefix`*`/usr/lpp/cicsts/`*ussdir* to allow the job to be rerun, and if necessary forces return code zero.
2. Deletes from `/`*`pathprefix`*`/usr/lpp/cicsts` the directory defined by the /*ussdir* parameter of the DFHISTAR job. This allows the job to rerun and, if necessary, forces return code zero.
3. Deletes the file system specified in the HFS1DSN parameter of the DFHISTAR job to allow the job to rerun and, if necessary, forces return code zero.
4. Creates the file system specified in the HFS1DSN parameter of the DFHISTAR job.
5. Creates the /*ussdir* directory at `/`*`pathprefix`*`/usr/lpp/cicsts`, where /*ussdir* is the name of the directory specified on the ussdir parameter.
6. Mounts the file system at directory `/`*`pathprefix`*`/usr/lpp/cicsts/`*ussdir*.
7. Changes the permission settings for the /*ussdir* directory to 775.

All steps of DFHIHFS1 must end with return code zero for the job to be successful.

CICS requires the MOUNT issued by DFHIHFS1 to access files stored in the z/OS UNIX file system, but the MOUNT command is lost when you re-IPL MVS. SDFHINST member DFHBPXP1 contains a MOUNT command for `/`*`pathprefix`*`/usr/lpp/cicsts/`*ussdir*, where *ussdir* is the name of the directory specified in the *ussdir* parameter in the DFHISTAR job. Copy this command into a BPXPRM*xx* member of the SYS1.PARMLIB data set to ensure the mount is restored when MVS is IPLed.

Running the DFHISMKD job

This job creates the UNIX System Services directories.

You must run this job before any of the other installation jobs.

The highest expected return code is 0.

Running the DFHINST1 job

This job allocates and catalogs CICS Transaction Server distribution and target libraries.

To ensure that you can rerun this job, it deletes and uncatalogs the data sets that are allocated in the second step of the job.

If the DFHINST1 job ends abnormally, examine the job log to determine the cause, correct the problem, and then rerun the job.

The highest expected return code is 0.

Running the DFHINST2 job

This job allocates the CICS Transaction Server RELFILE data sets. If you run the DFHINST2 job now, you ensure that enough space has been allocated to the RELFILE data sets to allow the DFHINST5 job to complete.

To ensure that you can rerun this job, it deletes and uncatalogs the data sets, if they exist, that it allocates later.

If the DFHINST2 job ends abnormally, examine the job log to determine the cause, correct the problem, and then rerun the job.

The highest expected return code is 0.

Running the DFHINST3 job

This job allocates the CICS Transaction Server SMP/E data sets.

Caution: If you intend to use an existing target or distribution zone that contains an earlier release of CICS Transaction Server elements, be aware that any earlier release of CICS is cleared before being replaced by CICS Transaction Server.

Before you run the DFHINST3 job, if you intend to install CICS Transaction Server using both existing and new CSIs, make sure any new CSIs have the same control interval size as the existing CSIs.

If your existing CSIs do not have a control interval size of 4096 bytes, edit the DFHINST3 job before running it to change the CONTROLINTERVALSIZE(4096) parameter on the commands used to create the VSAM data sets for the new CSIs, to specify the same control interval size as the existing CSIs.

For further information about allocating CSI data sets, see the *System Modification Program Extended: Reference* manual, SA22–7772.

To ensure that you can rerun this job, it deletes and uncatalogs the data sets, if they exist, that it allocates later.

This job also sets up the global, target, and distribution zones, depending on the parameters that you specified to the DFHISTAR job:

1. If you specified NEW for GZONE, the global zone is deleted and redefined.
2. The distribution zone is deleted and redefined.
3. The target zone is deleted and redefined.
4. Member GIMZPOOL from SYS1.MACLIB is copied using the REPRO command into the zones redefined in the previous steps.
5. If you specified OLD for GZONE, the entries for the DZONE and TZONE names are removed from the global zone.

If the DFHINST3 job ends abnormally, examine the job log to find the cause, correct the problem, and then rerun the job.

The highest expected return code is 0.

Running the DFHINST4 job

This job primes the global zone, target zone, and distribution zone, which are the new SMP/E zones created in DFHINST3..

If you did not run the DFHINST2 job, increase the DSSPACE values in the DFHINST4 job before submitting it.

If the DFHINST4 job ends abnormally, examine the job log to determine the cause, correct the problem, and then repeat all jobs, beginning with DFHINST1. This correction avoids SMP/E space problems, and consequent X37 stops with an abend message, during reruns of these SMP/E jobs.

The highest expected return code is 0, if you install into new zones, and 8, if you are installing into existing zones.

Running the DFHINST5 job

This job uses the RECEIVE command to receive the CICS Transaction Server software from the distribution tape into the RELFILE data sets created by the DFHINST2 job. This installation job, apart from the initial IEBCOPY job, is the only job that requires the distribution tape to be mounted.

If the DFHINST5 job ends abnormally, examine the job log to determine the cause, correct the problem, and then repeat all jobs, beginning with DFHINST1. This correction avoids SMP/E space problems, and consequent X37 stops with an abend message, during reruns of these SMP/E jobs.

The highest expected return code is 0.

Running the DFHINST6 job

This job performs the SMP/E APPLY and ACCEPT functions that install CICS Transaction Server into the target and distribution libraries respectively.

To ensure that DFHINST6 runs successfully, perform the following steps:

- Ensure that the DB2 SDSNLOAD library is available for this job. Without SDSNLOAD, DFHINST6 fails; see “Specifying the data set name of the SDSNLOAD library” on page 52.

  If you run DFHINST6 with an empty SDSNLOAD library, the APPLY step completes with return code 4, and the return code from the binder is 8. The

REXX for CICS modules, CICSQL and CICDB2, which interface with DB2, are stored in SCICLOAD without the required DB2 routines and are not usable.

- Run DFHINST6 on the same MVS image on which the z/OS UNIX file system is installed, unless you are set up for MVS sharing.

  If you have modified the other installation jobs (for example, to use existing libraries and therefore existing target and distribution zones), consider splitting the DFHINST6 job to do APPLY CHECK, APPLY, ACCEPT CHECK, and ACCEPT functions as four separate jobs.

The DFHINST6 job is the longest running of all the installation jobs; see "Run times of the installation jobs" on page 59. It produces a large amount of printed output. The region size for the DFHINST6 job is currently set to 'REGION=0M', because this job requires more memory than the other installation jobs. Adjust your JES parameters (for example, with a JES2 /*JOBPARM LINES=99 statement) to avoid a system abend 722.

If successful, this job gives a return code of 4. See the "GIM23903W - LINK SUCCESSFUL . . " message, listed in the report that is output by the apply job. DFHINST6 job issues messages GIM23903W and GIM23913W depending on the execution environment of the installer. Both messages are acceptable.

The binder produces IEW2454W messages during the APPLY stage for unresolved external references while some CICS Transaction Server load modules are being link-edited during installation, giving return code 4. You might also receive numerous IEW2646W and IEW2651W messages, which indicate conflicts with user-specified RMODE and AMODE modes respectively. You can ignore these IEWxxxx messages, which are produced for component object modules of executable CICS Transaction Server load modules.

Messages IEW2689W, IEW2470E, IEW2648E, and IEW2303E might be displayed. You can ignore them.

When you have run the DFHINST6 job, the following SMP/E message is produced from the job:

```
GIM20502I  GIMSMP PROCESSING IS COMPLETE - THE HIGHEST RETURN CODE WAS 04 -
```

You can ignore this SMP/E message.

If any other SMP/E messages appear, see the *SMP/E: Messages & Codes* manual for guidance information about their meaning and take the appropriate action.

If the DFHINST6 job finishes abnormally, examine the job log to determine the cause, correct the problem, and then repeat all the jobs, beginning with DFHINST1. This correction avoids SMP/E space problems, and consequent X37 abends, during reruns of these SMP/E jobs.

If the DFHINST6 job fails and you are using an existing global zone (that is, you specified the GZONE parameter of the DFHISTAR job with the disposition parameter OLD), perform the following steps:

1. REJECT the CICS Transaction Server base-level function SYSMOD.
2. Rerun the DFHINST1 job. When you rerun the installation jobs, some steps that were successfully completed in the previous run produce return codes with a value of 8.

Running the DFHIJVMJ job

The DFHIJVMJ job creates the customized sample JVM profiles that you require if you want to run a JVM program in CICS.

DFHIJVMJ reads the supplied JVM profiles in the partitioned data set SDFHENV. It replaces the symbol *&JAVA_HOME* in the files with the value you specify on the **JAVADIR** parameter in the DFHISTAR installation job. The extra // characters on each side of the symbol in the supplied files are removed during symbol substitution.

The customized JVM profiles are then written as z/OS UNIX files in the directories listed in "Verifying Java components checklist" on page 283.

Running the DFHCSVCJ job

The DFHCSVCU utility program dynamically updates the MVS SVC number specified in the PARM statement to invoke the required module, and so removes the need to restart the z/OS LPAR in order to use a new or updated SVC.

Note: You can use the DFHCSVCU utility program only if you have been provided with the required authorization.

Before the DFHCSVCU utility program is run, the target program must be loaded into the MVS link pack area (LPA) using the following MVS console command:

`SETPROG LPA,ADD,MODNAME=`*module*,DSNAME=*dataset*

Where:

- *module* is the module to be invoked by the SVC and
- *dataset* is the load library where the module resides.

Because this utility issues SVCs (supervisor calls) it must be invoked from an authorized library by an operator who has sufficient authority to run the program.

The **SVCnnn=module** parameter identifies the number of the SVC to be modified and the program to be invoked by the SVC. The following checks are made by the utility program before any update is attempted:

1. A PARM statement is specified on the EXEC JCL card.
2. The PARM statement contains an SVCnnn= keyword statement.
3. The number specified is greater than 199 and less than 256.
4. The SVC type for the specified SVC number is 3 or 4.
5. The module name is less than or equal to 8 characters in length.

If any of these checks fail, the utility ends with the return code set to 12.

When an existing SVC is to be updated the utility asks the operator to confirm that the SVC update is to proceed. Any response other than `Yes` results in the utility ending with the return code set to 12.

Note: Updates made by the DFHCSVCU utility are temporary, and are only valid until the system is restarted or another instance of the utility program is executed. For the updates to be permanent, member IEASVCxx in SYS1.PARMLIB must be updated with the changes.

Checking the output from the installation jobs

When you have successfully run all of the installation jobs, CICS Transaction Server is loaded.

You now have CICS Transaction Server installed on your DASD. Back up the volume on which CICS Transaction Server resides. If any errors occur during customization later, you do not have to re-run the installation jobs.

Postinstallation activities

Copy the CICS Transaction Server procedures into a cataloged procedure library, load any CICS features that you have, and tailor the CICS Transaction Server.

For information about tailoring CICS Transaction Server, see Chapter 38, "Tailoring the CICS-supplied skeleton jobs," on page 249.

Copying the CICS Transaction Server procedures into a procedure library

CICS Transaction Server supplies procedures that can be tailored or are copied directly to your procedure library when you run the installation jobs. All procedures are described in the table.

The procedures DFHAUPLE, DFHSMPE, DFHSTART, EYUCMASP, EYUCSYSP, and EYUWUIP are tailored to your CICS Transaction Server environment and stored in the CICSTS52.XDFHINST library when you run the DFHISTAR job. The other procedures are not modified by the DFHISTAR job and are copied into the CICSTS52.SDFHPROC library when you run the CICS Transaction Server installation jobs.

Copy all these procedures into a cataloged procedure library; for example, SYS1.PROCLIB. Before you copy the procedures, read the following instructions:

1. Your procedure library might already contain procedures, supplied with an earlier release of CICS, that have the same names as the new procedures but are, in fact, different. If so, you must find some way of selecting the right release. Here are some ways of using the new versions:
   a. For the time being, rename either set of procedures and modify the appropriate jobs to use the new names.
   b. Insert the new procedures into the job streams that use them and use the procedures as in-stream procedures. Place the inserted procedures between the JOB statement and the first EXEC statement. You must insert a `// PEND` statement after the inserted procedures. When the new release becomes the production system, you can copy the new procedures into your procedure library.
   c. Indicate the DDNAME of the cataloged procedure library that is to be used to convert the JCL for the job. For example, you could use the JES2 `/*JOBPARM PROCLIB=xxxxxxxx`. For more information about specifying DDNAMEs in JCL, see the *z/OS MVS JCL Reference*.
   d. Specify, in the JCLLIB statement, the name of the procedure libraries that you want to search for the named procedure or procedures. For more information about JCLLIB, see the *z/OS MVS JCL Reference*.

2. If service is applied to the CICS Transaction Server procedures, the versions in the libraries CICSTS52.CICS.SDFHINST and CICSTS52.CICS.SDFHPROC are updated by SMP/E. You must then copy the updated procedures into your procedure library.
3. The default for the symbolic parameter GZONE in the procedures DFHSMPE and DFHAUPLE is taken from the value that you specified by the GZONE parameter of the DFHISTAR job.
4. The default for the ZNAME symbolic parameter in the procedures DFHSMPE and DFHAUPLE is taken from the value that you specified by the TZONE parameter of the DFHISTAR job. For a description of how the ZNAME parameter is used, see the SMPCNTL DD statement in The CICS TS-supplied SMP/E procedure.
5. Change the OUTC parameter as required.

When you have read these instructions, and acted on them as necessary, copy the procedures into a cataloged procedure library. The CICS Transaction Server-supplied procedures are listed in Table 8.

CICS-supplied procedures

The CICS-supplied procedures and their descriptions are listed in an alphabetical table. Copy the procedures from the SDFHPROC library, unless the procedure specifies a different library.

Table 8. CICS-supplied procedures

Procedure	Description
DFHASMVS	Assembles some CICS Transaction Server programs and user-written assembler language programs.
DFHAUPLE	Assembles and link-edits CICS Transaction Server control tables and makes the assembly and link-edit information available to SMP/E. DFHAUPLE is installed in SDFHINST.
DFHBMSU	Runs the BMS load module disassemble utility program, DFHBMSUP.
DFHEBTAL	Translates, assembles, and link-edits assembler application programs using EXEC DLI commands in a batch environment under Language Environment.
DFHEGTAL	Translates, assembles, and link-edits AMODE(64) assembler application programs using the command-level interface.
DFHEITAL	Translates, assembles, and link-edits AMODE(24) and AMODE(31) assembler application programs using the command-level interface.
DFHEXTAL	Translates, assembles, and link-edits assembler application programs using the external CICS Transaction Server interface.
DFHLNKVS	Link-edits CICS Transaction Server programs and application programs.
DFHMAPS	Prepares physical and symbolic maps.
DFHMAPT	Prepares physical and symbolic maps for C++.
DFHSMPE	Runs SMP/E. DFHSMPE is installed in SDFHINST.
DFHSTART	Starts CICS. DFHSTART is installed in SDFHINST.
DFHYBTPL	Translates, compiles, and link-edits PL/I application programs using EXEC DLI commands in a batch environment under Language Environment.
DFHYBTVL	Translates, compiles, and link-edits COBOL application programs using EXEC DLI commands in a batch environment under Language Environment.
DFHYITDL	Translates, compiles, and link-edits C/370™ application programs using the command-level interface under Language Environment.

Table 8. CICS-supplied procedures (continued)

Procedure	Description
DFHYITEL	Translates, compiles, and link-edits C++ application programs using the command-level interface under Language Environment.
DFHYITFL	Translates, compiles, and link-edits C application programs using the XPLINK compiler option under Language Environment.
DFHYITGL	Translates, compiles, and link-edits C++ application programs using the XPLINK compiler option under Language Environment.
DFHYITPL	Translates, compiles, and link-edits PL/I application programs using the command-level interface under Language Environment.
DFHYITVL	Translates, compiles, and link-edits COBOL application programs using the command-level interface under Language Environment.
DFHYXTDL	Translates, compiles, and link-edits C/370 application programs using the external CICS Transaction Server interface under Language Environment.
DFHYXTEL	Translates, compiles, and link-edits C++ application programs using the external CICS Transaction Server interface under Language Environment.
DFHYXTPL	Translates, compiles, and link-edits PL/I application programs using the external CICS Transaction Server interface under Language Environment.
DFHYXTVL	Translates, compiles, and link-edits COBOL application programs using the external CICS Transaction Server interface under Language Environment.
DFHZITCL	Translates, compiles, and link-edits COBOL application programs using the integrated CICS translator.
DFHZITDL	Translates, compiles, and link-edits XL C application programs using the integrated CICS translator.
DFHZITEL	Translates, compiles, and link-edits XL C++ application programs using the integrated CICS translator.
DFHZITFL	Translates, compiles, and link-edits XL C XPLINK application programs using the integrated CICS translator.
DFHZITGL	Translates, compiles, and link-edits XL C++ XPLINK application programs using the integrated CICS translator.
DFHZITPL	Translates, compiles, and link-edits PL/I application programs using the integrated CICS translator.
EYUCMASP	Starts a CMAS.
EYUCSYSP	Starts a MAS.
EYUEITAL	Assembler sample procedure provided in the SEYUPROC library to create replacement modules for EYU9WRAM
EYUEITDL	C sample procedure provided in the SEYUPROC library to create replacement modules for EYU9WRAM
EYUEITPL	PL/I sample procedure provided in the SEYUPROC library to create replacement modules for EYU9WRAM
EYUEITVL	COBOL sample procedure provided in the SEYUPROC library to create replacement modules for EYU9WRAM
EYUJXBTP	JCL procedure used by the samples, EYUJXBT1, EYUJXBT2, EYUJXBT3, and EYUJXBT4, to invoke the EYU9XDBT program
EYUJXDDP	Contains procedural JCL for running the DLA.
EYUWUIP	Starts a WUI.
ICCFCC	CICS foundation classes.
ICCFCCL	CICS foundation classes.

Table 8. CICS-supplied procedures (continued)

Procedure	Description
ICCFCGL	CICS foundation classes.
ICCFCL	CICS foundation classes.

For further information about using the DFHSMPE and DFHSTART procedures, see "The CICS TS-supplied SMP/E procedure" on page 242.

Creating extra sets of CICS Transaction Server target libraries (optional)

You can use the CICS Transaction Server installation job, DFHISTAR, to generate an optional installation job, DFHINSTA, which you can use to create extra copies of the CICS Transaction Server target libraries and UNIX System Services directories.

Here are some of the benefits of using multiple libraries:

- Backing out PTFs and APARs. If you apply PTFs or APARs to CICS Transaction Server and if they fail a fix-test, you can back out the changes with minimum disruption.
- DASD failure. Multiple libraries protect you against failure of the DASD on which the CICS Transaction Server load libraries reside.

Base the decision to use multiple libraries for CICS Transaction Server on the following factors:

- Your requirement for high availability. As already stated, the use of multiple libraries can protect you against CICS Transaction Server downtime caused by DASD failure or incorrect service, either from IBM-supplied PTFs or your own modifications to your CICS Transaction Server region.
- The extra DASD required. Multiple libraries require more disk space.
- Other ways of providing high availability. For example, use a CICSPlex, z/OS Communications Server persistent sessions, and MVS functions to provide restart of CICS Transaction Server regions.
- The added complexity of maintaining multiple sets of CICS Transaction Server libraries. Two or more sets of CICS Transaction Server target libraries, together with the SMP/E procedures that are required to support them, increase the complexity of maintenance. Define procedures to ensure that upgrades to the CICS Transaction Server libraries are kept under control.
- Alternative solutions. If you have already established a proven process for fix verification and for testing applications developed for your production CICS Transaction Server region, you might decide that you do not require multiple CICS Transaction Server libraries.

You can use the DFHINSTA job, generated by the DFHISTAR job, to create extra sets of CICS Transaction Server target libraries fully under the control of SMP/E. Each time you run the DFHINSTA job, you can generate only one extra set of target libraries.

To create an extra sets of target libraries, complete the following steps. You can repeat the steps to create more sets of target libraries.

1. Edit the DFHISTAR job to specify values:

- The ADDTVOL, AINDEX, ASMPSCDS, AZONE, AZONECSI, AZONELOG, and USSDIRA parameters, for the new set of target libraries.
- The INDEX, TZONE, TZONECSI, and TZONELOG parameters, for the primary target libraries you want to copy from. The TZONE, TZONECSI, and TZONELOG parameters must specify the target zone that contains the CICS Transaction Server target libraries defined with the high-level qualifier provided by the INDEX parameter.
- The DZONE, DZONECSI, and DZONELOG parameters, for the distribution libraries to be associated with the new set of target libraries.
- The SELECT parameter, to specify DFHINSTA, which you want to copy, and the member name you want the generated version of DFHINSTA to be stored as in the CICSTS52.XDFHINST library. For example,

  ```
  SELECT DFHINSTA INSTA111
  ```

  stores the generated version of DFHINSTA into member INSTA111 of the CICSTS52.XDFHINST library when you submit the DFHISTAR job.

  Each time you copy DFHINSTA to create a new set of target libraries, specify a new name on the SELECT parameter to save each copy with a different name in case you require it again.

For further information about editing the DFHISTAR job and about the parameters of the DFHISTAR job, see "Editing the DFHISTAR job" on page 29. Do not change the other parameters in the DFHISTAR job.

2. Submit the DFHISTAR job.

   When you run the DFHISTAR job, it saves the generated version of the DFHINSTA job in the CICSTS52.XDFHINST library with the member name specified on the SELECT parameter in the DFHISTAR job. The LIB parameter of the DFHISTAR job specifies the data set name of the CICSTS52.XDFHINST library.

3. Consider running the DFHIHFSA job.

   If you decide to create an additional SMP/E target zone using job DFHINSTA, run the DFHIHFSA job before running the DFHINSTA job. DFHIHFSA creates an additional SMP/E target zone for z/OS UNIX. This job performs the following steps:

   - Unmounts the z/OS UNIX file system at directory `/`*`pathprefix`*`/usr/lpp/cicsts/`*`ussdir`* to allow the job to rerun and, if necessary, forces return code 0.
   - Deletes the /*ussdira* directory at `/`*`pathprefix`*`/usr/lpp/cicsts`, where *ussdira* is the name of the directory specified on the ussdira parameter in the DFHISTAR job. This allows the job to rerun and, if necessary, forces return code 0.
   - Deletes the file system specified in the HFSADSN parameter of the DFHISTAR job to allow the job to rerun and, if necessary, forces return code 0.
   - Creates the file system specified in the HFSADSN parameter of the DFHISTAR job.
   - Creates the /*ussdira* directory at `/`*`pathprefix`*`/usr/lpp/cicsts`, where *ussdira* is the name of the directory specified in the ussdira parameter in the DFHISTAR job.
   - Mounts the file system at directory `/`*`pathprefix`*`/usr/lpp/cicsts/`*`ussdira`*
   - Changes the permission settings for the *ussdira* directory to 775.

   All steps of this job must end with return code zero for the job to be successful.

CICS requires the MOUNT issued by DFHIHFSA to access files stored in the z/OS UNIX, but the MOUNT command is lost when you re-IPL MVS. SDFHINST member DFHBPXPA contains a MOUNT command for `@pathprefix@/uss_path_a@` where where *uss_path_a* is the name of the directory specified in the *uss_path* parameter in the DFHISTAR job. Copy this command into a BPXPRM*xx* member of the SYS1.PARMLIB data set to ensure that the mount is restored when MVS is IPLed.

4. Submit DFHINSTA.

   The DFHINSTA job, or a copy of it, copies the CICS Transaction Server target libraries specified by the INDEX parameter, and creates corresponding CICS Transaction Server SMP/E data sets for them. In particular, it allocates a new SMP/E CSI data set for the extra target zone.

   So that you can run the DFHINSTA job more than once, step 1 deletes previous copies of the data sets to be created. Step 3 deletes the SMP/E CSI data set. Step 6 removes the ZONEINDEX entry for the extra target zone.

   The first time the DFHINSTA job is run, Step 6 gives the following messages:

   ```
   GIM35701E ** ZINDEX SUBENTRY azone WAS NOT DELETED BECAUSE
                     IT DOES NOT EXIST.
   GIM25601I    THE SPECIFIED ENTRY WAS NOT UPDATED BECAUSE OF
                     AN ERROR DURING UCLIN PROCESSING.
   ```

   You can ignore these messages the first time the job is run.

Loading other optional features

The sample job, DFHINSTJ, is supplied for loading other optional features.

CICS Transaction Server contains no optional features at General Availability time, but you can use the sample job if any optional features are shipped at a later date. The DFHINSTJ job is generated in the CICSTS52.XDFHINST library when you run the DFHISTAR job.

Note: optional source material is not supplied with CICS Transaction Server V4.2

In previous releases, the sample job DFH0PSRC was used to load optional source material from the distribution tapes. DFH0PSRC was generated when the DFHISTAR job was run. This is no longer available, as optional source material is not supplied.

Activating CICS Transaction Server

Perform the following steps after you have loaded CICS Transaction Server to disk.

1. Apply service; see Chapter 36, "Applying service to CICS Transaction Server for z/OS," on page 241.
2. Integrate CICS Transaction Server with MVS; see Part 4, "Setting up the MVS environment for CICS," on page 103.
3. Create CICS Transaction Server system data sets; see Chapter 39, "Jobs for creating the CICS data sets," on page 253.
4. (Optional) Install CICS IMS DBCTL support; see Chapter 44, "Defining DL/I support," on page 287.
5. (Optional) Install MRO and ISC support, see Chapter 42, "Installing MRO, IPIC, and ISC support," on page 271.
6. (Optional) Run the installation verification procedures (IVPs); see Part 6, "Verifying the CICS installation," on page 373.

Information about putting CICS Transaction Server into operational status is included as part of the process of verifying the installation; see Part 6, “Verifying the CICS installation,” on page 373.

Checklist for the CICS Transaction Server for z/OS installation

Use the checklist to assist with your installation.

Table 9. CICS Transaction Server installation checklist

Step	Done?	Description	See page
1		Check that you have received the material that you ordered.	N/A
2		Check that you have all the installation prerequisites.	See the *Program Directory for CICS Transaction Server for z/OS*
3		Copy RELFILE(2) from the distribution tape. Record your name for the TDFHINST library: ______________________	See the *Program Directory for CICS Transaction Server for z/OS*
4		Edit the DFHISTAR job in the TDFHINST library.	“Editing the DFHISTAR job” on page 29
4.1		Specify the CICS Transaction Server temporary installation libraries.	“Specifying the CICS Transaction Server temporary installation libraries” on page 34
4.2		Specify the JOB parameters for installation jobs.	“Specifying the JOB parameters for installation jobs” on page 34
4.3		Specify the scope of the installation.	“Specifying the scope of the installation” on page 35
4.4		Specify the type of JES to be used.	“Specifying the type of JES to be used” on page 35

Table 9. CICS Transaction Server installation checklist (continued)

Step	Done?	Description	See page
4.5		Specify the utilities to be used.	“Specifying the utilities” on page 35
4.6		Specify the prefix of CICS Transaction Server jobs.	“Specifying the prefix of CICS Transaction Server jobs” on page 36
4.8		Specify the prefix of the CSSLIB library.	“Specifying the data set name of the CSSLIB library” on page 50
4.9		Specify the prefix of the SISPLOAD library.	“Specifying the library data set names” on page 49
4.10		Specify the indexes of CICS Transaction Server data sets.	“Specifying the indexes of CICS Transaction Server data sets” on page 36
4.11		Specify block sizes.	“Specifying block sizes” on page 38
4.13		Specify the disk unit for work data sets.	“Specifying the disk unit for work data sets” on page 39
4.14		Specify disk volumes.	“Specifying disk volumes” on page 39
4.15		Allocate the space for CICS Transaction Server disk volumes.	“Allocating space for CICS Transaction Server disk volumes” on page 42
4.16		Specify SMP/E zone attributes.	“Specifying SMP/E zone attributes” on page 44

Table 9. CICS Transaction Server installation checklist (continued)

Step	Done?	Description	See page
4.17		Specify attributes of the temporary SMP/E work data sets.	"Specifying attributes of the temporary SMP/E work data sets" on page 43
4.18		Specify attributes of the permanent SMP/E data sets.	"Specifying attributes of the permanent SMP/E data sets" on page 44
4.19		Specify the high-level qualifiers for SMP/E data sets.	"Specifying the high-level qualifiers for SMP/E data sets" on page 47
4.20		Specify the z/OS UNIX directories and data sets.	"Specifying the CICS TS z/OS UNIX directories and data sets" on page 37
4.21		Specify the distribution tape device type.	"Specifying the distribution tape device type" on page 47
4.22		Specify attributes of the CICS Transaction Server system data sets.	"Specifying attributes of the CICS Transaction Server system data sets" on page 48
4.23		Specify attributes specific to CICSPlex SM (optional).	"Specifying attributes specific to CICSPlex SM" on page 54

Table 9. CICS Transaction Server installation checklist (continued)

Step	Done?	Description	See page
4.24		Specify attributes of any additional target libraries.	"Specifying attributes of any additional target libraries" on page 48
5		Create RACF profiles for the CICS Transaction Server data sets.	"Creating RACF profiles for the CICS Transaction Server data sets" on page 56
6		Run the DFHISTAR job.	"Running the DFHISTAR job" on page 57
6.1		Check the output from the DFHISTAR job.	"Checking the output from the DFHISTAR job" on page 57
7		Check that you are ready to run the installation jobs.	"Checking that you are ready to run the installation jobs" on page 58
8		Run the installation jobs.	"Running the installation jobs" on page 58
8.1		Check the output from the installation jobs.	"Checking the output from the installation jobs" on page 65
9		Copy the CICS Transaction Server procedures into a procedure library.	"Copying the CICS Transaction Server procedures into a procedure library" on page 65

Table 9. CICS Transaction Server installation checklist (continued)

Step	Done?	Description	See page
10		Create any extra sets of CICS Transaction Server target libraries (optional).	"Creating extra sets of CICS Transaction Server target libraries (optional)" on page 68
11		Load the Japanese national language feature (optional).	"Loading other optional features" on page 70

Chapter 9. Installing the CICS Information Center

The CICS Information Center runs in an Eclipse framework, commonly known as a help system, and consists of a number of documentation plug-ins, including various tools and connectors. The information center is supplied on CD-ROM with a readme file.

The readme file contains a complete list of all the plug-ins that are provided, and you can select which plug-ins to install based on your CICS environment. If you already have an Eclipse help system, or an Eclipse-based IDE such as WebSphere Studio Enterprise Developer, you can opt to install only the CICS documentation plug-ins. You can run the information center locally on a workstation, or as a server with remote access. Before you begin to install the information center, read the following topics:

- "Requirements"
- "Installing the information center on a workstation"
- "Installing the information center on a server" on page 78
- "Installing the CICS plug-in in an Eclipse IDE or help system" on page 79

Requirements

The information center is supported on a range of platforms.

- Windows 2000
- Windows XP
- AIX® 5.2 and 5.3
- Linux RedHat Enterprise 3.0
- Linux SuSE Enterprise 3.0
- Linux RedHat Enterprise 8 and 9 for System z
- Linux SuSE Enterprise 8 and 9 for System z
- z/OS 1.13 or later

Please note that support for the information center on Linux for System z and z/OS is only offered in server mode for remote access using a Web browser.

The information center uses a JRE. A JRE for each platform is provided with the information center, except for z/OS. If you want to run an information center on z/OS, you need to use the JRE provided with the operating system.

To get the best results when viewing the information center, it is recommended that you use one of the following Web browsers:

- Microsoft Internet Explorer 6.0
- Mozilla 1.7

To view PDF documents within the information center, you require Adobe Acrobat Reader 4.05 or higher installed, and the Acrobat Web plug-in installed in your Web browser.

Installing the information center on a workstation

The information center can run locally from any directory on your workstation.

If you do not have an Eclipse help system, you will need to install this first as it is required to run the information center. If you do have an Eclipse help system, see "Installing the CICS plug-in in an Eclipse IDE or help system" on page 79.

1. Select the appropriate folder for your operating system on the CD-ROM. This folder contains a zip file of the Eclipse help system.
2. Unzip the zip file to a new directory on your workstation. This creates an eclipse help system on your workstation.
3. Select the plug-ins folder on the CD-ROM. This folder contains all of the documentation plug-ins.
4. Copy the documentation plug-ins you require to the eclipse\plugins directory of the help system that you have just unzipped. The readme file contains a complete list of the plug-in names and the products they refer to. It is recommended that you copy the CICS TS plug-in `com.ibm.cics.ts.doc`, the CICS support plug-in `com.ibm.cicsts.doc`, and associated support plug-ins `com.ibm.support.core.doc` and `com.ibm.support.core.doc.nl`.
5. At the highest directory level in your Eclipse help system, execute the file IC_local_Start to start the information center on your workstation. This should automatically launch a Web browser and display the information center.

Please note that you cannot run the information center locally on z/OS 1.13 or the Linux for z/OS platforms.

Installing the information center on a server

Running the information center on a server requires you to allocate a specific port number, to allow remote access using a Web browser.

You can run the information center in server mode on any of the supported platforms listed in "Requirements" on page 77. If you already have a help system installed, see "Installing the CICS plug-in in an Eclipse IDE or help system" on page 79 for information on how to install just the CICS documentation plug-ins. To install the information center on UNIX, Linux and Windows servers, follow these steps:

1. Select the appropriate folder for your operating system on the CD-ROM. This folder contains a zip file of the Eclipse help system.
2. FTP the zip file to an appropriate directory on your server and then unzip it. This creates a help system on your server.
3. Select the plug-ins folder on the CD-ROM. This folder contains all of the documentation plug-ins.
4. Use the readme file on the CD-ROM to select which documentation plug-ins you want to install. Copy the required plug-ins to the eclipse\plugins directory of the help system that you unzipped. It is recommended that you copy the CICS TS plug-in `com.ibm.cics.ts.doc`, the CICS support plug-in `com.ibm.cicsts.doc`, and associated support plug-ins `com.ibm.support.core.doc` and `com.ibm.support.core.doc.nl`.
5. At the highest directory level in your Eclipse help system, edit the file IC_server_start to specify the port number that you want the information center to use. The default is 29127. If your company allows you to reserve ports, you can ask your TCP/IP system programmer to reserve this port or the port number of your choice
6. Execute the file IC_server_start to start the information center in server mode.
7. To verify that you can access the information center, start up a Web browser and type the web address http:\\servername:port , where *servername* is the

name of the server where you installed the information center and *port* is the port number that you specified in the start up file.

The information center runs in the UNIX System Services (USS) component of z/OS. To install the information center on z/OS, follow these steps:

1. Select the z/OS folder on the CD-ROM, which contains a tar file of the Eclipse help system.
2. FTP the tar file to a suitable z/OS UNIX directory in USS. Ensure you mount the z/OS UNIX file containing this directory through the BPXPRMxx member of SYS1.PARMLIB.
3. Un-tar the file using the command `tar -xvf filename`. This creates a help system on your server.
4. Select the plugins folder on the CD-ROM. This folder contains all of the documentation plug-ins.
5. Use the readme file on the CD-ROM to select which documentation plug-ins you want to install. FTP the required plug-ins to the eclipse\plugins directory of the help system that you unzipped. It is recommended that you copy the CICS TS plug-in `com.ibm.cics.ts.doc`, the CICS support plug-in `com.ibm.cicsts.doc`, and associated support plug-ins `com.ibm.support.core.doc` and `com.ibm.support.core.doc.nl`.
6. At the highest directory level in your Eclipse help system, edit the file IC_server_start to specify the directory path of a Java Runtime Environment (JRE) at 1.4.2 that you want the information center to use. You can also change the port number from the default of 29127. Use the command `vi IC_server_start.sh` to open the file to edit it, or if connected through TSO you can use the command `oedit IC_server_start.sh`. Add the following command to the beginning of the file, using the appropriate path to the JRE. For example, you could specify:
   ```
   export PATH=/u/lpp/java142/J1.4/bin:$PATH
   ```
7. Execute the start file using the command `./IC_server_start.sh &`. The & indicates that the information center should run as a background task. This means that if you log off, the information center will continue to run on the server.
8. To verify that you can access the information center, start a Web browser and type the Web address `http:\\servername:port` , where *servername* is the name of the server where you installed the information center and *port* is the port number that you specified in the start file.

Installing the CICS plug-in in an Eclipse IDE or help system

If you already have an Eclipse help system installed on your workstation or server, or if you are using any Eclipse-based product (for example, all versions of WebSphere Studio Enterprise Developer or WebSphere Developer for System z), you can install the CICS documentation and run it within your existing software.

Ensure that you shut down your help system or product before adding the CICS documentation plug-ins, otherwise Eclipse will not recognize the newly added plug-ins. Follow these steps:

1. Select the plugins folder on the CD-ROM. This folder contains all of the documentation plug-ins.
2. Use the readme file on the CD-ROM to select which documentation plug-ins you want to install. It is recommended that you copy the CICS TS plug-in

`com.ibm.cics.ts.doc`, the CICS support plug-in `com.ibm.cicsts.doc`, and associated support plug-ins `com.ibm.support.core.doc` and `com.ibm.support.core.doc.nl`.

3. Copy the required documentation plug-ins to the eclipse\plugins directory of the help system or Eclipse Integrated Development Environment (IDE) that you already have installed. For example, for a default installation of WebSphere Studio Enterprise Developer, you would copy the plug-ins to the directory C:\Program Files\IBM\WebSphere Studio\eclipse\plugins.
4. Start up the help system or Eclipse IDE to ensure that the CICS documentation is present.

Part 3. CICS Explorer installation

You can install the CICS Explorer in a number of places depending on the requirements of your organization. After installation, you must configure the CICS Explorer connections to your CICS or CICSPlex SM systems and you can also define where the CICS Explorer saves its workspace,

CICS also provides a CICS Explorer SDK that application developers can install into an existing Eclipse IDE. The SDK provides support for developing and deploying Java applications in CICS.

Chapter 10. Installing the CICS Explorer

You can install the CICS Explorer in a number of locations. Three locations are most suitable for the installation. Always read the CICS Explorer Release Notes before installing CICS Explorer. The Release Notes are included on the product download site, and contain the latest information, including limitations and restrictions, about the CICS Explorer.

The CICS Explorer product is a combination of two Explorer products: The z/OS Explorer, which provides the host connection and z/OS functions, and the CICS Explorer SDK, which provides the CICS functions. The CICS Explorer SDK consists of three features: CICS Explorer, CICS SDK for Java support, and CICS SDK for web and JSP support. The CICS Explorer SDK also contains a copy of z/OS Explorer, although this copy is ignored in certain installation scenarios

Installing CICS Explorer with IBM Installation Manager

CICS Explorer can be installed by using IBM Installation Manager (IM). When you use Installation manager to install CICS Explorer, you must also use Installation Manager to install updates or extra plug-ins.

The CICS Explorer product is a combination of two Explorer products: The z/OS Explorer, which provides the host connection and z/OS functions, and the CICS Explorer SDK, which provides the CICS functions. The CICS Explorer SDK consists of three features: CICS Explorer, CICS SDK for Java support, and CICS SDK for web and JSP support. The CICS Explorer SDK also contains a copy of z/OS Explorer, although this copy is ignored in certain installation scenarios. Both the z/OS Explorer and CICS Explorer SDK are available as Installation manager packages.

There are two ways you can install CICS Explorer by using the Installation Manager:

Install a stand-alone version of CICS Explorer (Version 5.1.1 and later)
: You can install a stand-alone version of CICS Explorer by using the Installation Manager. You must install z/OS Explorer first, and then install the CICS Explorer SDK on top of z/OS Explorer. The z/OS Explorer is installed either by using an existing copy of Installation Manager to point to the z/OS Explorer download site, or by downloading and by using the z/OS Explorer Installation Manager *launchpad* file. The launchpad installs the Installation Manager product, if it is not already installed, and then installs the z/OS Explorer product. Using Installation Manager, you can then install the CICS Explorer SDK.

Install the CICS Explorer SDK into an existing supported Eclipse instance
: If you have an existing supported Eclipse IDE instance, you can install the CICS Explorer SDK. The CICS Explorer SDK contains the z/OS Explorer and the CICS Explorer products. If your Eclipse was installed by using Installation Manager, you must install the CICS Explorer SDK Installation Manager package.

  Note: If your Eclipse was not installed by using Installation Manager, you must install the CICS Explorer SDK p2 package. For more information about installing the CICS Explorer SDK by using the P2 package, see Chapter 13, “Installing the CICS Explorer SDK,” on page 101.

For more information about using Installation Manager, see the related links later in the topic.

Installing by using an existing copy of Installation Manager

The CICS Explorer download page contains the URL for the composite update site. You must add the URL to the Installation Manager Preferences - Repositories page. Click the **Install** option in the Installation Manager wizard, and follow the prompts to install z/OS Explorer, and the CICS Explorer SDK. When you are installing with the Installation Manager, you must install z/OS Explorer before you can install the CICS Explorer SDK

Installing by using the Installation Manager launchpad

Download the z/OS Explorer Installation Manager compressed file from the download page. Unpack the file into an empty folder, then open the `disk1` folder. Double-click the launchpad executable file that is applicable to your operating system. Follow the prompts to install Installation Manager and z/OS Explorer.

Installing into an existing Eclipse

If you already have a supported Eclipse IDE environment, you do not need to install the z/OS Explorer separately. The CICS Explorer SDK package contains the z/OS Explorer code, and this code is installed automatically. The CICS Explorer download page contains the URL for the composite update site. You must add the URL to the Installation Manager Preferences - Repositories page. Click the **Install** option in the Installation Manager wizard, and follow the prompts to install the CICS Explorer SDK.

Related information:

Managing installations with Installation Manager

Installing on a local workstation

You can install the CICS Explorer on a local workstation that is used by only one person.

About this task

This task describes how to install the CICS Explorer on a user's local workstation. If you want to install CICS Explorer by using the Installation Manager, see “Installing CICS Explorer with IBM Installation Manager” on page 83.

Procedure

1. On the CICS Explorer download site, navigate to the **Direct Download** section and click the download you require. If you are installing into an existing Eclipse product, you must download and install the CICS Explorer SDK. If you are installing the stand-alone product, you must install CICS Explorer only.
2. Select one of the following choices to complete the product installation.
   - If you are installing the CICS Explorer SDK into an existing Eclipse, do not unpack the downloaded file. Start Eclipse and click **Help > Install new software** from the main menu. Click **Add > Archive**. Navigate to the folder

where you saved the downloaded file, select the file and click **Open**. Select the CICS Explorer product in the Install window, and follow the prompts to complete the installation.

- Extract the contents to a new directory on your local workstation. For example, `C:\Program Files\Explorer\` on a Windows operating system, or `~/Explorer/` on a Linux operating system. When the extract has completed, open the `CICS_Explorer` directory in your new `Explorer` directory. Locate the `cicsexplorer.exe` file (`cicsexplorer` on Linux) and create a shortcut on the desktop.

Results

The CICS Explorer is now installed on the workstation and is started by double-clicking the shortcut icon, or started from Eclipse. To change the location of the CICS Explorer user workspace, see the relevant related link.

Related tasks:

"Changing the CICS Explorer workspace location" on page 91
The CICS Explorer workspace contains connection and configuration information. Because the workspace contains user IDs and passwords, you must ensure that the workspace can be accessed only by the owning user. You can change the location where the CICS Explorer saves the user's workspace.

Related reference:

"CICS Explorer installation options" on page 10
You have several options for installing the CICS Explorer, depending on how you decide to use it in your organization. Understanding how the CICS Explorer runs, and how it stores its configuration information, will help you to decide which installation option to choose.

Installing on a remote network drive

You can install the CICS Explorer on a remote network drive. The software can be shared by multiple users and can be centrally managed.

About this task

This task describes how to install the CICS Explorer on a remote network drive. The person doing the installation must have write access to the network drive. If you want to install CICS Explorer by using the Installation Manager, see "Installing CICS Explorer with IBM Installation Manager" on page 83. When Installation Manager prompts for the location to install CICS Explorer, you can use the **Browse** button to find the remote network drive location.

Procedure

1. Download the CICS Explorer `.zip` file from the download site to your local workstation.
2. Extract the contents to a new directory on the remote network drive.
3. When the extract is complete, open the `CICS_Explorer` directory in the new directory on the remote network drive. Locate the `cicsexplorer.exe` file and create a shortcut on your local workstation.
4. Right-click the shortcut and click **Properties**. The **Target** field displays the path to the CICS Explorer executable file on the remote network drive. You must distribute the shortcut to all users who will run CICS Explorer. If the path from their workstations to the remote server is different from the one already there, you must change the path in the shortcut.

Results

The CICS Explorer is now installed on the remote network drive. The users start the CICS Explorer by double-clicking the shortcut icon that you distributed. To change the location of the CICS Explorer user workspace, see “Changing the CICS Explorer workspace location” using the related link at the bottom of this topic.

Related reference:

“CICS Explorer installation options” on page 10
You have several options for installing the CICS Explorer, depending on how you decide to use it in your organization. Understanding how the CICS Explorer runs, and how it stores its configuration information, will help you to decide which installation option to choose.

Installing on a shared Linux server

You can install CICS Explorer on a shared Linux server and access it using the X Window System.

About this task

This task describes how to install CICS Explorer on a shared Linux server. The person doing the installation must have write access to the server. If you want to install CICS Explorer by using the Installation Manager, see “Installing CICS Explorer with IBM Installation Manager” on page 83. When Installation Manager prompts for the location to install CICS Explorer, you can use the **Browse** button to find the remote network drive location.

Procedure

1. Download the CICS Explorer `.tar.gz` file from the download site to your local workstation.
2. Log in to the Linux server and create a new directory for the CICS Explorer, for example; `/opt/Explorer`
3. Extract the contents of the `.tar.gz` file to the new directory.

Results

CICS Explorer is now installed on the shared server. Users can use SSH tunnelling to access the CICS Explorer client, and display the output on the local terminal. The CICS Explorer executable file is `cicsexplorer` located in the CICS_Explorer directory. Using the previous example, the file path is `/opt/Explorer/CICS_Explorer/cicsexplorer`.

When a user starts CICS Explorer for the first time, a workspace is created on the local file system, for example; `/home/`*username*`/.cicsexplorer`. To change the location of the CICS Explorer user workspace, see “Changing the CICS Explorer workspace location” using the related link at the bottom of this topic.

Related tasks:

“Changing the CICS Explorer workspace location” on page 91
The CICS Explorer workspace contains connection and configuration information. Because the workspace contains user IDs and passwords, you must ensure that the workspace can be accessed only by the owning user. You can change the location where the CICS Explorer saves the user's workspace.

Related reference:

"CICS Explorer installation options" on page 10
You have several options for installing the CICS Explorer, depending on how you decide to use it in your organization. Understanding how the CICS Explorer runs, and how it stores its configuration information, will help you to decide which installation option to choose.

Taking a backup of the CICS Explorer workspace

Before you upgrade to a new release of CICS Explorer, it is advisable to back up your CICS Explorer workspace so that you can restore the workspace to a previous version, if required.

About this task

For some releases, when you upgrade to a new release of CICS Explorer, data stored in your existing workspaces is automatically migrated to the new data format when you use those workspaces with the new release. The workspaces will no longer work with previous releases of CICS Explorer.

In this situation, if you need to work with a previous release of CICS Explorer, you must back up your existing workspace before you upgrade.

An example of this requirement is when you want to test a new release, but continue to work with the previous release.

To back up your CICS Explorer workspace, including the connection definitions, use the following procedure.

Procedure

Copy the `.cicsexplorer` folder in your CICS Explorer workspace location to another folder, or compress it into an archive folder. The location of the `.cicsexplorer` folder depends on your operating system and whether you have set your own CICS Explorer workspace location. Typical locations are as follows:

Windows XP:
`Documents and Settings\$USER\`

Windows 7:
`\Users\$USER\`

Linux: `/home/$username/`

What to do next

To revert to the previous workspace with the previous release of CICS Explorer, replace the `.cicsexplorer` folder with the backup copy that you made.

Chapter 11. Configuring the FTP server for CICS Explorer

CICS Explorer uses the z/OS Communications Server FTP server to gain access to data sets, z/OS hierarchical file systems such as zFS, and the JES spool. For CICS Explorer to successfully obtain the required spool files, the FTP.DATA configuration file for the Server must specify JESINTERFACELEVEL 2.

About this task

This task describes how to check the JESINTERFACELEVEL in the FTP server.

Procedure

1. Start an FTP client and run a **`quote stat`** command.
2. Check the output to determine the JESINTERFACELEVEL. For example:

```
230 userid is logged on.  Working directory is "/u/<userid>".
ftp> quote stat
211-Server FTP talking to host 10.10.10.10, port 1087
211-User: USERID  Working directory: /u/<userid>
211-The control connection has transferred 1360 bytes
....
211-Truncated records will not be treated as an error
211-JESLRECL is 80
211-JESRECFM is Fixed
211-JESINTERFACELEVEL is 2
211-Server site variable JESTRAILINGBLANKS is set to TRUE
....
211 *** end of status ***
ftp> quit
221 Quit command received. Goodbye.
```

3. Optional: (Optional) Change the FTP.DATA configuration file for the Server to specify JESINTERFACELEVEL 2.

What to do next

When you have configured the FTP server you can configure the CICS Explorer.

Chapter 12. Configuring the CICS Explorer

When you have installed the CICS Explorer, you must configure the way that it connects to your CICS or CICSPlex SM systems. You can also change the default location for the CICS Explorer workspace when CICS Explorer starts.

Changing the CICS Explorer workspace location

The CICS Explorer workspace contains connection and configuration information. Because the workspace contains user IDs and passwords, you must ensure that the workspace can be accessed only by the owning user. You can change the location where the CICS Explorer saves the user's workspace.

Before you begin

You must first create a shortcut to the CICS Explorer executable file that you are using.

About this task

This task describes how to modify the target path in a shortcut to save the CICS Explorer workspace at a different location from the default.

Procedure

1. Right-click the shortcut and click **Properties**. The **Target** field in the Properties dialog displays the path to the CICS Explorer executable file.
2. Append the text below to the Target path, ensuring that you leave a space between the existing path and the new text, and retain the quotes:
   - On a Windows operating system, append: -data "*newdirectorypath*\ *workspacename*", including the quotation marks, where

     newdirectorypath
     : Is the directory path to the location of the new workspace

     workspacename
     : Is the name for the new workspace file.
   - On a Linux operating system append: -data ~/*workspacename*, where

     workspacename
     : Is the name for the new workspace file.

   For example: `C:\Explorer\CICS_Explorer\cicsexplorer.exe -data "C:\Documents and Settings\Administrator\Desktop\new_workspace"`
3. Save and close the shortcut.

Results

When you next start the CICS Explorer using the shortcut created above, the CICS Explorer workspace is created in the new location. You must always start the CICS Explorer from the new shortcut to use the new workspace.

Related reference:

“CICS Explorer installation options” on page 10
You have several options for installing the CICS Explorer, depending on how you decide to use it in your organization. Understanding how the CICS Explorer runs, and how it stores its configuration information, will help you to decide which installation option to choose.

Defining connection credentials

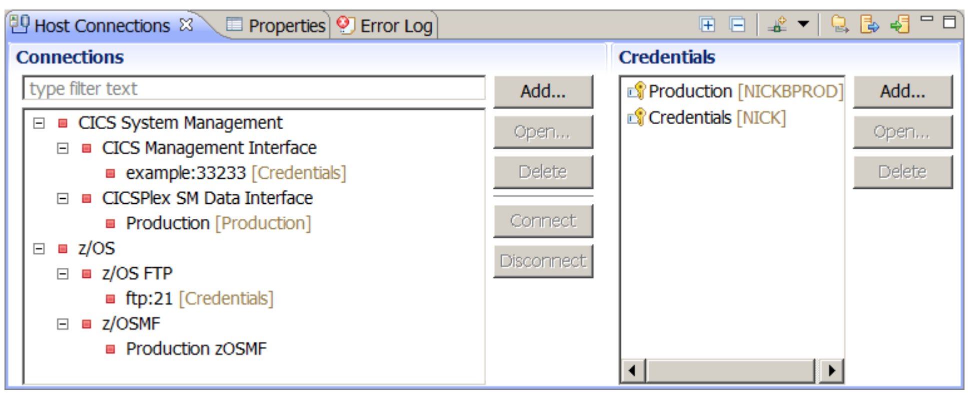
When CICS Explorer attempts to establish a system connection it must send your credential details, that is your user ID and password or password phrase, to the system for authentication. When you have defined a credential you can use it on systems that share the credential without re-entering the details every time. You must have at least one credential before you can connect to a system.

Before you begin

Before proceeding, ensure that you have all your system connection details and that you have the correct level of authorization to connect to your system

Procedure

1. On the workbench menu bar click **Window > Manage Connections**. The Host Connections view opens. The following example shows the Host Connections view from the CICS Explorer, showing the CICS System Management and z/OS connection categories. The categories available depends on the Explorer being used.



2. Click **Add** on the Credentials section to add a new credential. The New Credentials window opens.
3. Enter your credential details and provide a credentials name. The name can be anything you like and is used only to help you distinguish between different credentials. Select the **Save Password** checkbox to save the password.

   Note: You might have a single user ID but use different passwords for different systems. If you have, you can define multiple credentials, each one having the same user ID but with different credential name and password or pass phrase. Alternatively you can choose to define one credential, but not to save the password or pass phrase, in which case you are required to enter them when you connect to a system.
4. Click **OK** to save the credential or **Cancel** to cancel the process and close the window without saving the new credential.

What to do next

You can now click **Add** in the Connections section of the Host Connections view to configure a system connection. For more information about configuring system connections see the related links, or specific Help topics in your Explorer user guide.

Related tasks:

"Configuring a CICS system connection"
Before you can view any information, you must establish a connection between CICS Explorer and your CICS systems by providing details about the system connection, its location, and authentication requirements. By default, CICS Explorer attempts to connect using the SSL protocol. If the SSL connection is not successful, the connection will be retried without SSL.

Configuring a CICS system connection

Before you can view any information, you must establish a connection between CICS Explorer and your CICS systems by providing details about the system connection, its location, and authentication requirements. By default, CICS Explorer attempts to connect using the SSL protocol. If the SSL connection is not successful, the connection will be retried without SSL.

Before you begin

If you are connecting to a CICS TS version 3 system, you must connect to a CICSPlex SM WUI server using the "CICSPlex SM Data Interface" read-only connection.

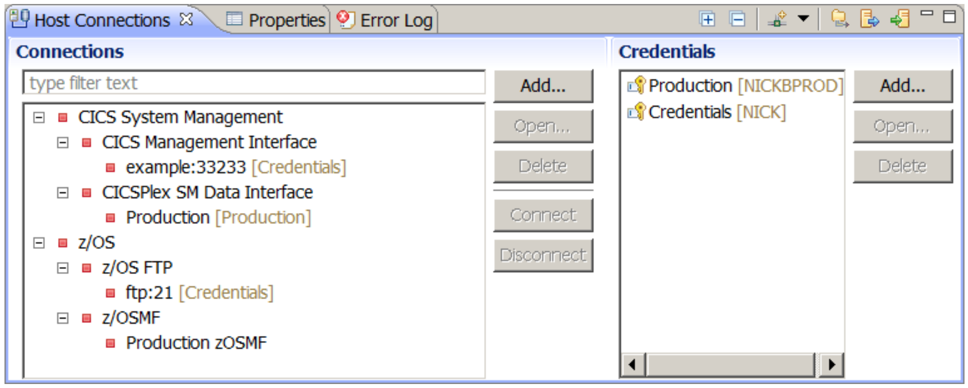
If you are connecting to a CICS version 4 or later system you can connect either to a CICSPlex SM WUI server using the "CICSPlex SM Data Interface" read-only connection, or, if you want update capability, you can use the CICS management client interface (CMCI) connection. If you are using the CMCI connection, the CICS system must be set up to use CMCI. See the topic Setting up the CICS management client interface in the CICS Transaction Server for z/OS version 4 information center for instructions on how to do this.

If you are connecting to a CICS TS for VSE/ESA 1.1.1 system, you can use the CICS management client interface (CMCI) read-only connection.

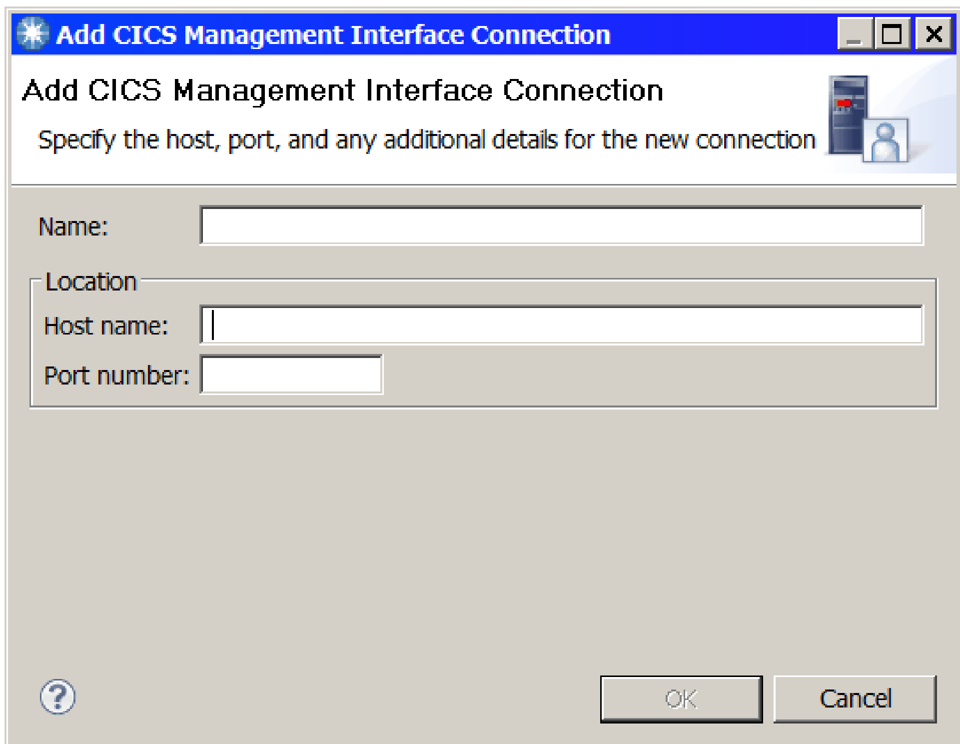
If CICS Explorer is not configured, or you want to add a connection, perform these steps:

Procedure

1. On the workbench menu bar click **Window > Manage Connections**. The Host Connections view is displayed. If your connections are pre-configured, you see the connections listed under the categories in the view. If not, the categories are empty. The following example screen capture shows the Host Connections view with one connection defined in each category type. Each connection is associated with a credential, with the exception of the z/OS FTP connection. The credential is shown in parenthesis after the connection name.



2. In the Connections section select the category for the connection you want to add and click **Add**. The Add Connection window opens. The following example shows the Add CICS Management interface Connection window.



3. Enter the TCP/IP host name of your server in the **Host Name** field. As you type, the characters up to the end of the first qualifier are inserted in the Name field. So if your host name is `myserver.example.ibm.com` then the name would display as `myserver`. You can type over the name to be anything you want.
4. Enter the port number. As you type, the port number is also appended to the name field, so the name is displayed something like `myserver:20332`. You can type over the name to change it to anything you want.
5. Click **OK** to save the connection. The connection is saved and is shown in the Connections section.
6. Optional: You can choose to associate a credential with the connection at this time. Right-click the connection name and hover over **Set Credentials** to show the credentials available. Click the credential you want to use for the connection.

What to do next

The connection and associated credential are shown in the Host Connections view. You can now connect to the system by right-clicking the connection name and clicking **Connect**. Alternatively select the connection name and click the **Connect** button. If the connection is not already associated with a credential, you can choose an existing credential or create one at this time.

Configuring an FTP system connection

You must have an FTP or z/OSMF connection to use the views in the z/OS perspective. By default, the FTP connection uses the secure forms of the protocols, FTP over TLS. If the secure connection is not successful, the connection is reattempted without security.

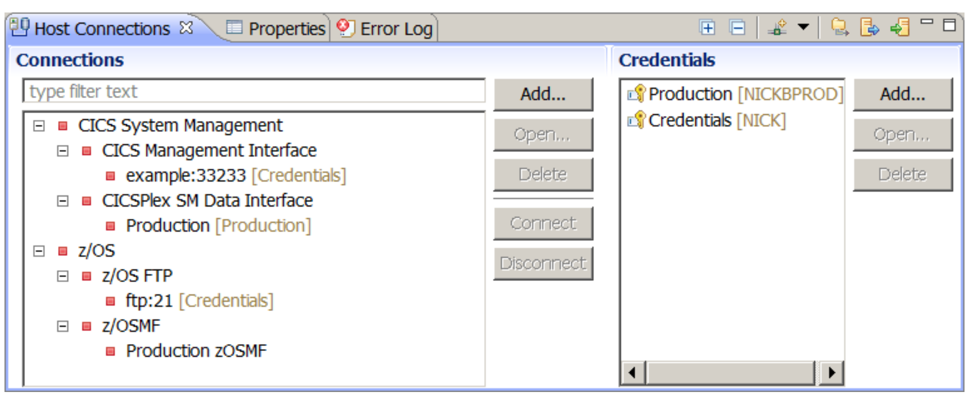
Before you begin

You must have at least one connection "credential" before you can configure a system connection. A credential is a repository for a user ID and password combination. See the topic "Defining connection credentials" on page 92 for further information.

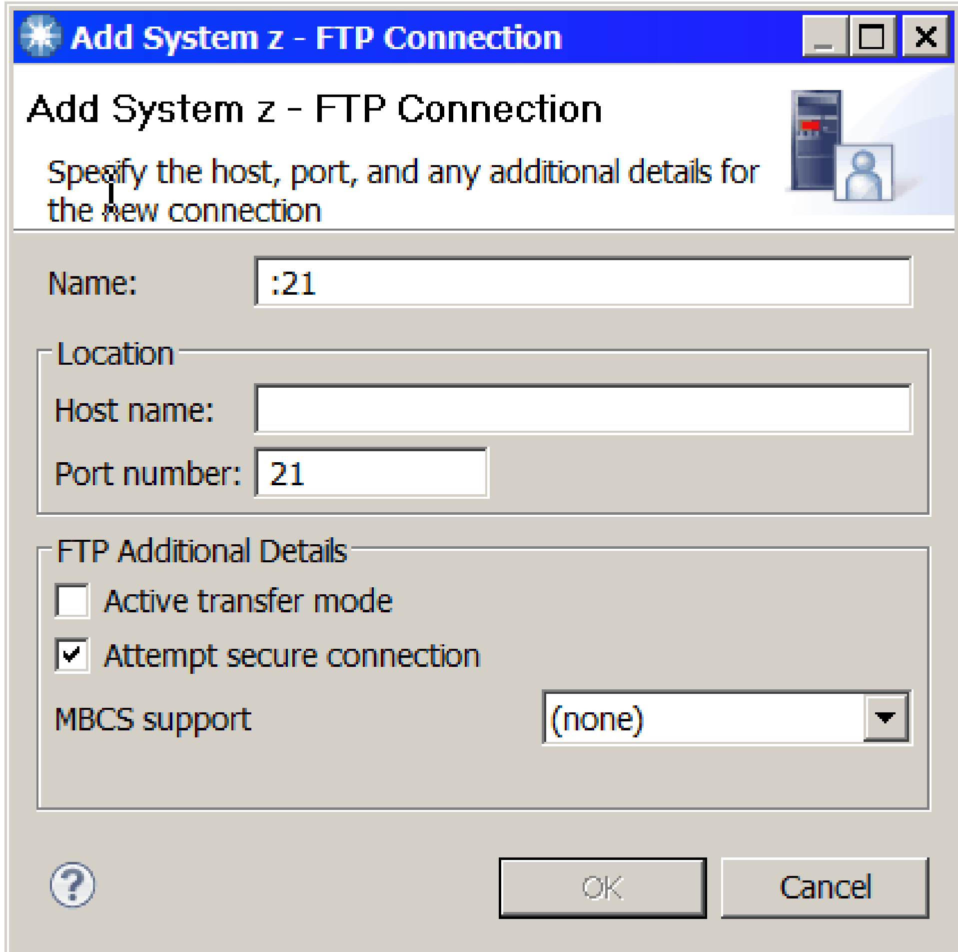
Note: For z/OS Explorer to successfully obtain the required spool files, the FTP.DATA configuration file for the Server must specify JESINTERFACELEVEL 2. For more information about the JESINTERFACELEVEL parameter, see your System z/OS documentation.

Procedure

1. Click **Window > Manage Connections** from the workbench menu bar. The Host Connections view is displayed. If your connections are pre-configured, you see the connections listed under the categories in the view. If not, the categories are empty. The following example screen capture shows the Host Connections view in the CICS Explorer. One connection is defined in each category type. Each connection is associated with a credential, with the exception of the z/OS FTP connection. The credential is shown in parenthesis after the connection name.



2. In the Connections section select the System z FTP category and click **Add**. The Add System z - FTP Connection dialog opens.



3. Enter the TCP/IP host name of your FTP server in the **Host Name** field. As you type, the characters up to the end of the first qualifier are inserted in the Name field. So if your host name is `myserver.example.ibm.com` then the name would appear as `myserver:21`. You can type over the name to be anything you want.
4. Complete the other fields as appropriate for your organization, and click **OK** The connection is saved and shown in the Host Connections view.
5. Optional: You can choose to associate a credential with the connection at this time. Right-click the connection name and hover over **Set Credentials** to show the credentials available. Click the credential you want to use for the connection.

Results

The connection and associated credential are shown in the Host Connections view. You can now connect to the system by right-clicking the connection name and clicking **Connect**. Alternatively select the connection name and click **Connect**. If the connection is not already associated with a credential, you can choose an existing credential or create one at this time.

Configuring a z/OSMF system connection

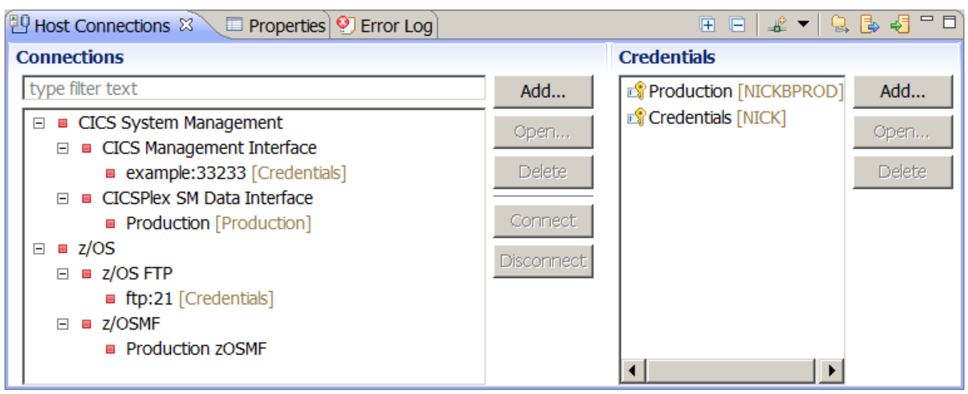
The z/OS Management Facility (z/OSMF) is a product for z/OS that provides support for a modern, Web-browser-based management console for z/OS, and extends the functionality of the z/OS Explorer. You must have a z/OSMF connection to use the features of z/OSMF. When you define a z/OSMF system, the z/OS Explorer attempts to create an FTP connection at the same time. The z/OS Explorer then chooses the connection that is most suitable for the task you are performing.

Before you begin

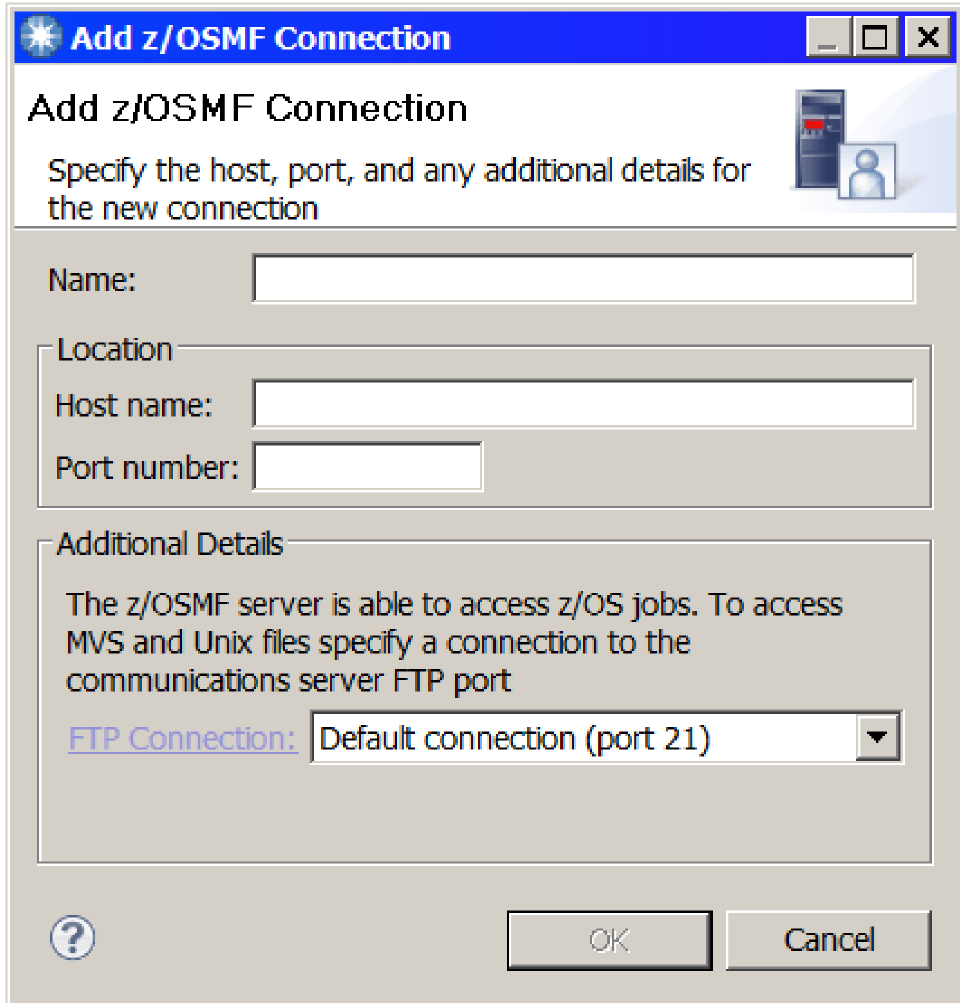
You should have at least one connection “credential” before you can configure a system connection. A credential is a repository for a user ID and password combination. For more information see Defining connection credentials .

Procedure

1. Click **Window > Manage Connections** from the workbench menu bar. The Host Connections view is displayed. If your connections are pre-configured, you see the connections listed under the categories in the view. If not, the categories are empty. The following example screen capture shows the Host Connections view in the CICS Explorer. One connection is defined in each category type. Each connection is associated with a credential, with the exception of the z/OS FTP connection. The credential is shown in parenthesis after the connection name.



2. In the Connections section select the z/OSMF category and click **Add**. The Add Connection window opens.



3. Enter the TCP/IP host name of your z/OSMF server in the **Host Name** field. As you type, the characters up to the end of the first qualifier are inserted in the Name field. So if your host name is `myserver.example.ibm.com` then the name would display as `myserver`. You can type over the name to be anything you want.
4. Enter the port number. As you type, the port number is also appended to the name field, so the name appears something like `myserver:20332`. You can type over the name to be anything you want.
5. By default the z/OSMF connection also sets up an FTP connection on port 21. If you previously defined a different FTP connection, you must select it from the FTP Connection list.
6. Click **OK** to save the connection. The connection is saved and shown in the Host Connections view.
7. Optional: You can choose to associate a credential with the connection at this time. Right-click the connection name and hover over **Set Credentials** to show the credentials available. Click the credential you want to use for the connection.

Results

The connection and associated credential are shown in the Host Connections view. You can now connect to the system by right-clicking the connection name and clicking **Connect**. Alternatively select the connection name and click **Connect**. If the connection is not already associated with a credential, you are able to chose an existing credential or create one at this time.

Related tasks:

"Configuring an FTP system connection" on page 95
You must have an FTP or z/OSMF connection to use the views in the z/OS perspective. By default, the FTP connection uses the secure forms of the protocols, FTP over TLS. If the secure connection is not successful, the connection is reattempted without security.

Chapter 13. Installing the CICS Explorer SDK

The CICS Explorer SDK is freely available to download from the IBM website to install in an Eclipse Integrated Development Environment (IDE).

Before you begin

Note: With CICS Explorer version 5.1.1 and later, the CICS Explorer SDK is integrated with the CICS Explorer product. However there is also a separate CICS Explorer SDK plug-in which can be installed in an existing Eclipse version 4.2 environment. Use the following procedure to install the CICS Explorer SDK, or to Install CICS Explorer, see Installing the CICS Explorer.

You must have the required software installed on your workstation, including an Eclipse IDE at the correct version. The list of supported operating systems and required software are described on the CICS Explorer website.

About this task

The CICS Explorer SDK is an Eclipse-based framework for developing extensions to the CICS Explorer. It also provides the following features:
- Support for developing Java applications with the JCICS API to run in any supported release of CICS
- Support for developing web applications that can run in a Liberty profile server in CICS TS for z/OS, Version 5.1
- Support for packaging applications to comply with the OSGi specification
- Support for deploying and installing applications in one or more CICS regions.

To install the SDK into an Eclipse IDE, follow this procedure.

Procedure

1. If you do not have an Eclipse IDE installed, go to the Eclipse website to download and install an IDE. You must install the Eclipse Classic IDE or Eclipse IDE for Java EE developers.
   - If you want to develop web applications in a Liberty profile and Java applications, download the Eclipse IDE for Java EE developers.
   - If you want to develop only Java applications, download the Eclipse Classic IDE.
2. To download the CICS Explorer SDK, go to the CICS Explorer website.
3. In the Scenario 6 section, select **Direct download CICS Explorer V5.1 SDK**.
4. Open the Eclipse IDE and click **Help** > **Install new software**.

   Note: Make sure that the option **Contact all update sites during install to find required software** is selected. The CICS Explorer SDK has dependencies on other Eclipse components, so you must ensure the update manager downloads and installs those dependencies.
5. Click **Add**. In the "Add site" dialog box, click **Archive**.
6. Browse to the downloaded file and click **Open**.

7. Select the check box next to **IBM CICS Explorer** and click **Next**. If you expand the list, you can deselect components. The SDK includes support for developing Java applications, and web applications that run in a Liberty profile.
8. Read and accept the license information, and click **Finish** to install the CICS Explorer SDK. Any dependencies that are not already installed in your Eclipse IDE are also installed.

Results

The CICS Explorer SDK is installed in your Eclipse IDE. You might need to accept a security warning and restart the IDE to pick up the new software.

What to do next

You can work with the CICS samples provided by the CICS Explorer SDK to become familiar with the Java and web application support.

Part 4. Setting up the MVS environment for CICS

You must perform a number of tasks after you have loaded the elements to DASD and before you run CICS.

The information about ACF/Communications Server, MVS, RACF, and other products given is for guidance only. Always consult the current publications of these products for the latest information.

The term “RACF” is used throughout this information to mean the MVS Resource Access Control Facility (RACF) or any other external security manager that provides equivalent function.

Chapter 14. Authorizing the CICS and CICSPlex SM libraries

The SDFHAUTH, SEYUAUTH, SDFHLINK, and SEYULINK libraries must be APF-authorized.

The SDFHLPA and SEYULPA libraries do not need to be APF-authorized, because they are in the LPALST. However, you must ensure that you properly protect any data set in the LPALST to avoid system security and integrity exposures, just as you would protect any APF-authorized library.

1. APF-authorize these libraries by adding them to the list of APF-authorized libraries in the appropriate PROGxx or IEAAPFxx member in SYS1.PARMLIB. These libraries must be APF-authorized to enable certain modules, such as DFHSIP, to run in supervisor state.
2. If your lists of APF-authorized libraries are specified in the dynamic format in a PROGxx member, refresh the APF list dynamically by using the SETPROG or SET PROG=xx command.
3. If your lists of APF-authorized libraries are specified in the static format in IEAAPFxx members, schedule an MVS IPL for the APF-authorization to take effect.
4. When you prepare your startup job stream, provide a STEPLIB DD statement for the SDFHAUTH and SEYUAUTH libraries. The SEYUAUTH library loads the message files, therefore it is required for both basic CICS functions and if you are using any CICSPlex SM or CICS Explorer functions. When you define your STEPLIB DD statement, remember that all other libraries concatenated with the SDFHAUTH and SEYUAUTH libraries must also be APF-authorized. If any of the libraries in a STEPLIB concatenation are not authorized, MVS regards all of them as unauthorized.
5. The SDFHLOAD and SEYULOAD libraries contain only programs that run in problem state, and must not be authorized. You must include the SDFHLOAD library in the CICS DFHRPL library concatenation. An example of this library DD statement is in the sample job stream in the *CICS System Definition Guide*.
6. If you require Java support, ensure that the SDFJAUTH library is APF-authorized. For more information about that library, see “Authorizing the hlq.SDFJAUTH library” on page 284.

Although, in general, CICS runs in problem state, the CICS initialization program, DFHSIP, must run in supervisor state for part of its execution. The CMAS startup program, EYU9XECS, also requires APF authorization.

For a module to run in supervisor state, it must be link-edited as an authorized module into a partitioned data set, which must also be defined to the operating system as APF-authorized. For CICS-supplied modules, the link-editing has been done for you. The CICS-supplied DFHSIP module is link-edited with the `authorized` attribute, using SETCODE AC(1), and is installed in the SDFHAUTH library.

For information about maintaining lists of APF-authorized libraries, see the *z/OS MVS Initialization and Tuning Guide*.

For information about authorizing access to CICS data sets, see the *CICS RACF Security Guide*.

Chapter 15. Authorizing CICS regions to access MVS resources

Protect your data sets, authorize your user IDs and regions and activate your RACF resource classes when you set up your security requirements to run CICS.

Grant access to the PDS libraries
Protect your data sets that use RACF. See "Protecting CICS load module data sets."

SNA ACB
Authorize each CICS region user ID to open the SNA ACB for the region applid.

CICS system transactions
Authorize each CICS region user ID to access the CICS category 1 system transactions.

SMSVSAM server
Authorize each CICS region to open the SMSVSAM control ACB if you plan to use CICS with VSAM record-level data sharing.

System logger log streams
Authorize each CICS region user ID to access the MVS system logger log streams that are used by CICS.

z/OS UNIX
Include an OMVS segment in the CICS region user profile, specifying the UID parameter, to ensure that your CICS regions have the required access to z/OS UNIX. Failure to do so results in CICS failing to start under that region user ID with RACF message ICH408I and CICS message DFHKE002. Other messages such as DFHKE0501 and DFHDM0105 might also occur if different CICS domains fail to initialize.

RACF resource classes
Activate the appropriate RACF resource classes to enable terminal users to access CICS resources and user-defined resources.

VSAM catalogs
Give the CICS region user ID read access to each VSAM catalog that contains files, where CICS has the file definitions installed, and where these files are opened during or after CICS startup. Include the VSAM catalog for the DFHCSD file for the CICS system definition data set (CSD).

Protecting CICS load module data sets

To prevent unauthorized or accidental modification of *hlq*.SDFHAUTH or *hlq*.SDFJAUTH, you must RACF-protect these libraries.

Without protection, the integrity and security of your MVS system are at risk. Additionally, if you require protection against the unauthorized use of DFHSIP, do not place this module in the LPA and do not include *hlq*.SDFHAUTH in the MVS LNKLST unless DFHSIP is RACF-protected as a controlled program with a profile in the RACF PROGRAM resource class.

You must also RACF-protect the other libraries, including *hlq*.SDFHLOAD, that make up the STEPLIB and DFHRPL library concatenations.

For information about authorizing access to CICS data sets, see Implementing RACF protection in a single CICS region in Securing.

Authorizing access to data set services modules

During initialization, CICS determines the availability of backup-while-open (BWO) support by linking to the callable services modules IGWAMCS2 and IGWABWO.

CICS also checks the DFSMSdss or DFDSS release level by linking to the module ADRRELVL. If access to this data set services module is controlled by means of RACF PROGRAM general resource profiles, security violation messages are issued against the CICS region user ID, unless the user ID is authorized to access ADR-prefixed module names.

You can avoid security violation messages against the CICS region user IDs, and still control access to data set services:

- If you have generic PROGRAM profiles protecting access to ADR modules, create specific PROGRAM profiles for the ADDRELVL module and ensure that your CICS region user IDs have READ access to these specific profiles.
- Instead of using PROGRAM profiles to protect access to data set services, use one of the following methods:
  - Define suitable profiles in the DASDVOL general resource class.
  - Define profiles in the FACILITY general resource class that are supported by DFSMS to control access to data set services.

  For information about using DASDVOL and FACILITY class profiles to control the uses of data set services, see the *DFSMS/MVS DFSMSdss Storage Administration Reference*, SC26-4929, and the *DFSMS/MVS DFSMSdss Storage Administration Guide*, SC26-4930.

Authorizing access to a CICS region z/OS Communications Server ACB

You can control which users, among those who are running non-APF-authorized programs, can open the SNA ACB associated with a CICS address space (CICS region).

Control ensures that only authorized CICS regions can present themselves as z/OS Communications Server applications that provide services with this applid, thus preventing unauthorized users from impersonating real CICS regions. The CICS region user ID requires the OPEN access, not the issuer of the z/OS Communications Server SET VTAM OPEN command.

1. To enable CICS to start with external security, authorize the CICS region user ID to open the CICS region's z/OS Communications Server ACB with the applid specified on the APPLID system initialization parameter.
2. For each applid, create an z/OS Communications Server APPL profile, and give the CICS region user ID READ access. For example:

```
RDEFINE VTAMAPPL applid UACC(NONE)  NOTIFY(userid)
PERMIT applid CLASS(VTAMAPPL) ID(cics_region_userid) ACCESS(READ)
```

The correct CICS applid to specify in the VTAMAPPL class is the specific applid, as specified in the CICS system initialization parameters. If you are using XRF (that is, if CICS is started with XRF=YES), you must define two VTAMAPPL profiles — one each for both the active and alternate CICS region's specific applid (the second operand on the CICS APPLID startup option).

3. Ensure that the VTAMAPPL class is active and RACLISTed for this protection to be in effect; for example:

```
SETROPTS CLASSACT(VTAMAPPL) RACLIST(VTAMAPPL)
```

4. If a CICS region will not use z/OS Communications Server, do not reauthorize the CICS region user ID for the CICS applid.
5. If you do not control the opening of a CICS region's z/OS Communications Server ACB, a new z/OS Communications Server application started with the same applid as that of a running CICS region has the following effect:
   - The running CICS region performs a FORCECLOSE of its SNA ACB and issues message DFHZC0101.
   - The running CICS region either ends or continues, depending on your use of the XXRSTAT exit. The default is to end. If the CICS region continues, it no longer uses z/OS Communications Server.
   - The new application opens the z/OS Communications Server ACB with the specified applid.
   - If the first running CICS region used z/OS Communications Server persistent sessions, the new application recovers any z/OS Communications Server sessions that persist from that CICS region.

For information about creating z/OS Communications Server APPL profiles for CICS region applids, see the CICS system resource security in Securing. For information about the XXRSTAT exit, see the .

Authorizing the region user ID to access category 1 transactions

To enable CICS to start using external security, you must first have authorized the CICS region user ID to access the category 1 system transactions. If the region user ID does not have this authority at CICS startup, CICS issues message DFHXS1113 and ends.

To give the region user ID the authority to access the category 1 system transactions, edit and submit the sample job stream in Figure 3 to run the CICS-supplied sample CLIST, DFH$CAT1. This job uses the RACF commands in the CLIST to update the RACF database.

Only a user with the RACF authority SPECIAL can run the CLIST to update the RACF database.

```
//RACFMIG  JOB 'accounting information',
//             CLASS=A,USER=userid,PASSWORD=password
//DEFINE   EXEC PGM=IKJEFT01
//SYSPRINT DD SYSOUT=A
//SYSTSPRT DD SYSOUT=A
//SYSUDUMP DD SYSOUT=A
//SYSTSIN  DD *
 EXEC 'CICSTS52.CICS.SDFHSAMP(DFH$CAT1)' LIST
/*
//
```

Figure 3. Batch job to run the sample CLIST, DFH$CAT1

Authorizing access to an SMSVSAM server

If you plan to run CICS with VSAM record-level sharing (RLS), you must authorize each region that connects to an SMSVSAM server to have access to that server.

In a test environment you might wish to use the default action and allow any CICS region using VSAM RLS to connect to an SMSVSAM server. If you wish to protect this access, the RACF SUBSYSNM general resource class must be active and you must authorize each CICS region that connects to an SMSVSAM server to have access to that server. This means granting access to the appropriate profile in the RACF SUBSYSNM general resource class. You define profiles in the SUBSYSNM resource class to control access by subsystems like CICS that want to connect to SMSVSAM.

A SUBSYSNM profile name is the name by which a given subsystem, such as CICS, is known to VSAM. For CICS regions, you must use the CICS applid as the profile name in the SUBSYSNM general resource class.

When CICS attempts to register the control ACB during CICS initialization, SMSVSAM calls RACF to check that the CICS region user ID is authorized to a profile name in the SUBSYSNM class that matches the CICS applid. If the CICS region user ID does not have READ authority, the register fails.

For example, if the applid of a CICS AOR is *CICSDAA1*, and the CICS region user ID (shared by a number of AORs) is *CICSDA##*, define and authorize the profile:

```
RDEFINE SUBSYSNM  CICSDAA1  UACC(NONE) NOTIFY(userid)

PERMIT  CICSDAA1  CLASS(SUBSYSNM)  ID(CICSDA##)  ACCESS(READ)
```

You can use wildcard characters on the applid to specify more than one CICS region, for example:

```
PERMIT  CICSD%%%  CLASS(SUBSYSNM)  ID(CICSDGRP) ACCESS(READ)
```

Authorizing access to MVS log streams

CICS does not control LOGSTRM security checks. To control them, the MVS security administrator activates the LOGSTRM and FACILITY general resource classes with the SETROPTS command.

Users of the IXCMIAPU administrative data utility and CICS regions both require appropriate authorizations to log streams and IXLSTR coupling facility structures.

Authorizing users of IXCMIAPU

You can create log structures and define log streams using the IXCMIAPU administrative data utility to update the LOGR data set. Your user ID must have the appropriate level of authorization.

Here are examples of levels of user ID authorization:

Coupling facility structures

To define and delete log structures using IXCMIAPU, you must have ALTER access to the LOGR resource profile named MVSADMIN.LOGR in the FACILITY general resource class. For example, use the following RACF command:

```
PERMIT MVSADMIN.LOGR CLASS(FACILITY) ACCESS(ALTER) ID(your_userid)
```

Coupling facility log streams

To define, delete, and update log streams, including log stream models, that are defined in coupling facility structures, you require these accesses:

- ALTER access to the appropriate log stream profile defined in the LOGSTRM general resource class
- UPDATE access to the coupling facility structure (IXLSTR) profile defined in the FACILITY general resource class; in this case, profile names are prefixed with IXLSTR.

For example, if the log stream and structure resource profiles are defined to RACF with the following commands:

```
RDEFINE LOGSTRM log_stream_profile  UACC(NONE)  [NOTIFY]
RDEFINE FACILITY IXLSTR.structure_name_a  UACC(NONE)  [NOTIFY]
```

Use the following RACF commands to give your user ID the required authorizations to these two profiles:

```
PERMIT log_stream_profile  CLASS(LOGSTRM) ACCESS(ALTER) ID(your_userid)
PERMIT IXLSTR.structure_name_a CLASS(FACILITY) ACCESS(UPDATE) ID(your_userid)
```

Authorizations for CICS regions

If the LOGSTRM resource class is active, the level of authorization required depends on whether log streams are always explicitly defined to the MVS system logger.

Ensure that the CICS region user ID is authorized to write to, and create if necessary, the log streams and log stream data sets that are used for its system log and general logs. See Chapter 34, “Defining the logger environment for CICS,” on page 205. You do this by granting the appropriate access authorization to log stream profiles in the RACF LOGSTRM general resource class:

- If CICS is expected to create log streams dynamically, CICS must have **ALTER** authority to the relevant log stream (LOGSTRM) profiles, and **UPDATE** authority to the relevant coupling facility structure (IXLSTR and IXGLOGR) profiles. Here is an example:

```
PERMIT region_userid.applid.* CLASS(LOGSTRM) ACCESS(ALTER)
       ID(region_userid)
PERMIT IXLSTR.structurename CLASS(FACILITY) ACCESS(UPDATE)
       ID(region_userid)

PERMIT IXGLOGR.region_userid.* CLASS(DATASET) ACCESS(UPDATE)
ID(region_userid)
```

- If all the log streams to which CICS writes are already defined to MVS, CICS requires only **UPDATE** authority to the log stream profiles:

```
PERMIT region_userid.applid* CLASS(LOGSTRM) ACCESS(UPDATE)
      ID(region_userid)

PERMIT IXGLOGR.region_userid.* CLASS(DATASET) ACCESS(UPDATE)
ID(region_userid)
```

In the above examples, *region_userid.applid*.* is the generic profile name of the log stream resource. These examples illustrate a resource name prefixed by the region user ID and applid. *region_userid* is the CICS region user ID under which CICS is running, either as a started task or batch job.

Permit READ access to those users who read the CICS log streams. You must permit UPDATE access to those users who update journals by granting the user the appropriate authority to the log stream, in the LOGSTRM resource class, and to the JOURNALNAME in the JCICSJCT class. You must also grant access to the data set profile protecting the data set that contains the log stream.

The user ID for the JCICSJCT is the logon user ID, not the CICS region user ID. The example shows how to define it:

```
PERMIT journal_name CLASS(JCICSJCT) ACCESS(UPDATE)ID(logon_userid)
```

You can define the generic profile in the following example to cover all the log streams referenced by the CICS region identified by its region user ID and applid:

```
RDEFINE LOGSTRM region_userid.** UACC(NONE)
```

If, however, you have multiple CICS systems sharing the same region user ID, but with differing security requirements, include the applid in the generic profile:

```
RDEFINE LOGSTRM region_userid.applid.* UACC(NONE)
```

The following example allows the CICS region user ID under which CICS is running to write journal and log records to log streams in the named coupling facility structure:

```
PERMIT IXLSTR.structurename CLASS(FACILITY) ACCESS(UPDATE)
       ID(region_userid)
```

The following examples give access to two categories of user:

```
PERMIT region_userid.applid.* CLASS(LOGSTRM) ACCESS(READ)
       ID(authorized_browsers)
PERMIT region_userid.applid* CLASS(LOGSTRM) ACCESS(UPDATE)
       ID(archive_userid)
```

In these examples, *archive_userid* is the user ID under which an application program runs to purge old data from CICS logs when the data is no longer required and *authorized_browsers* refers to the user IDs of users allowed to read log streams but not to purge data.

If several CICS regions share the same CICS region user ID, you can make profiles more generic by specifying * for the *applid* qualifier.

The number of profiles you define depends on the naming conventions of the logs and to what extent you can use generic profiling.

Authorizing access to z/OS UNIX System Services

CICS requires access to z/OS UNIX System Services and to directories and files in the file system. CICS facilities that require this access include TCP/IP support, Java support, CICS Web support, and task-related user exits that are enabled with the OPENAPI option, including the task-related user exit of the CICS DB2 attachment facility.

Before you begin

You must set up z/OS UNIX System Services, as described in z/OS UNIX System Services Planning.

About this task

To satisfy a CICS region request for a z/OS UNIX function for the first time, RACF does the following actions:

- Verifies that the user (the CICS region user ID) is defined as a z/OS UNIX user.
- Verifies that the user's current connect group is defined as a z/OS UNIX group.
- Initializes the control blocks required for subsequent security checks.

Follow the steps listed to ensure that each CICS region meets the security requirements:

1. Choose a RACF group that all your CICS regions can use to access z/OS UNIX and give a z/OS UNIX group identifier (GID) to this RACF group.
2. Give a z/OS UNIX user identifier (UID) to each CICS region user ID.
3. Make sure that each CICS region user ID connects to the RACF group that you chose.
4. Set up a home directory on z/OS UNIX for each of your CICS regions.

The UID and GID are numbers that can be in the range 0 to 16 777 216. 0 is a superuser ID. Give some thought to naming conventions and to any existing UIDs and GIDs in your z/OS UNIX system. For information on how to manage the UIDs and GIDs for your z/OS UNIX system, see z/OS UNIX System Services Planning.

To assign a z/OS UNIX UID and GID for your CICS regions and set up a home directory:

Procedure

1. Choose a RACF group that can be used by all your CICS regions. For example, you might use a RACF group that is defined as the default group of your CICS region user IDs, or you could set up a RACF group to be used only for access to z/OS UNIX System Services. When you are setting up facilities such as Java support or CICS Web support, you might want to use this RACF group for giving file access permissions on z/OS UNIX, in which case the RACF group's z/OS UNIX group identifier (GID) is associated with these directories and files. This association means that the owner of these directories and files, and anyone who is not the owner but has to carry out operations with these files, must have this group as their group or one of their supplementary groups. The RACF profiles in Securing explains how RACF groups work.
2. Choose a suitable z/OS UNIX group identifier (GID) for the RACF group, and assign the GID to the RACF group. To assign a GID, specify the GID value in the OMVS segment of the RACF group profile. For example, if the RACF group is CICSTSAB, and the GID you want to assign is 9, use the command:
   ```
   ALTGROUP CICSTSAB OMVS(GID(9))
   ```
3. Choose a suitable z/OS UNIX user identifier (UID) for each CICS region. Implementing security for z/OS UNIX files in Securing explains how the region user ID under which CICS runs is specified when CICS is run as a started task, as a started job, or as a job.
   a. Assign your chosen UIDs to each of your CICS region user IDs. To assign UIDs, specify the UID value in the OMVS segment of the RACF user profile for each CICS region user ID.
   b. Also specify the name of a home directory for each CICS region using the HOME option. The directory name format is `/u/`*`CICS region user ID`*.

   RACF security overview in Securing tells you how to update a RACF user profile using the **`ALTUSER`** command. For example, if the CICS region user ID is CICSHAA1, and the UID you want to assign is 2001, use the command:
   ```
   ALTUSER CICSHAA1 OMVS(UID(2001) HOME('/u/cicshaa1'))
   ```

If you want to know about the other information that can be specified in an OMVS segment parameter in a user profile besides the UID and home directory, see z/OS Security Server RACF Command Language Reference. You can assign the same UID to more than one CICS region user ID. If all your CICS regions must use the same z/OS UNIX files (for example, the files required for Java support), you can give all the CICS regions the same UID, and then you can use that UID for giving file access permissions on z/OS UNIX. However, bear in mind these points:

   a. The sharing of UIDs allows each CICS region to access all of the z/OS UNIX resources that the other CICS regions with that shared UID can access, and this level of access might not be appropriate in your system.
   b. The sharing of UIDs is not normally suitable in a z/OS UNIX system.
   c. If you do choose to share UIDs, the z/OS UNIX System Services parameter **MAXPROCUSER** limits the maximum number of processes that a single user (that is, with the same UID) can have concurrently active.

4. Set up each of the z/OS UNIX directories that you have specified as a home directory for one of your CICS regions. Further information on each of these steps is provided in z/OS UNIX System Services Planning.
   a. If you are not using an automount facility, use the **mkdir** command to create the z/OS UNIX directories. For example, issuing the UNIX command

      ```
      mkdir /u/cicshaa1
      ```

      Creates the z/OS UNIX directory `/u/cicshaa1`. If you are using the TSO command, enclose the directory name in single quotation marks.
   b. Whether or not you are using an automount facility, allocate a z/OS UNIX data set for each directory.
   c. If you are not using an automount facility, mount the data set that you have allocated.

   The z/OS UNIX data set that you allocate for a CICS region's home directory has a finite size. If a particular CICS region is using the home directory extensively, you might have to increase the amount of space that the region has available.

5. Verify that the permission defined for the `/etc` directory is set to 755, so that CICS can access the files. The `/etc` directory provides a symbolic link to the `/SYSTEM/etc` directory. The `/SYSTEM/etc` directory is created with a permission of 700, so you need to check that the `/SYSTEM/etc` directory permission is set to 755.
   a. Check the permission set in the `/SYSTEM/etc` directory, from the Unix shell:

      ```
      ls -ld /SYSTEM/etc
      ```

   b. If the permission is not `drwxr-xr-x`, issue the following Unix shell command to set permission to 755:

      ```
      chmod 755 /SYSTEM/etc
      ```

      If permission is not set to 755, you might receive a RACF error indicating that you have insufficient authority for CICS to access the files.

6. Make sure that each of your CICS region user IDs connects to the RACF group to which you assigned a z/OS UNIX group identifier (GID). If your CICS region user IDs connect to more than one RACF group, a RACF list of groups must be active in your system.

What to do next

Your CICS regions now have access to z/OS UNIX System Services. When you set up facilities such as Java support or CICS Web support, use the UIDs or GIDs to give the CICS regions permission to access directories and files on z/OS UNIX.

To check the UID and GID details for a user, use the **id** command in the UNIX environment. For example, issuing the **id** command for our example CICS region user ID CICSHAA1 gives the following result:

```
uid=2001(CICSHAA1) gid=9(CICSTSAB)
```

For more general information about RACF facilities for controlling access to z/OS UNIX System Services, see z/OS Security Server RACF Security Administrator's Guide.

Activating RACF resource classes

Before you can use RACF for CICS resources and for user-defined resources, you must activate the associated RACF resource classes by using the RACF SETROPTS command.

To run the CICS-supplied IVPs with external security, you must activate the resource classes for CICS resources.

To use your own user-defined resources with external security in your CICS environment:

- Define resource classes for your resources.
- Activate the resource classes.
- Optionally apply the RACLIST option to the resource classes to be used for QUERY SECURITY commands, to build in storage profiles for those resource classes.

For information about RACF resource classes, see the RACF classes for CICS resources in Securing.

Chapter 16. Defining the default CICS user ID to RACF

If you intend to use RACF to authorize terminal users to access CICS resources, define a default CICS user ID to RACF and specify it on the CICS system initialization parameter, DFLTUSER.

This default user ID assigns the security attributes to be used for all CICS terminal users who do not sign on with the CESN transaction or a user-written equivalent.

During startup, CICS tries to sign on the default user ID. If it is not signed on, perhaps because it is not defined, CICS issues message DFHSN0701 and stops CICS initialization. After the valid default CICS user ID is signed on, its security attributes are used for all CICS terminal users who do not sign on with the CESN transaction. If the default user ID is defined to RACF with a CICS segment, the operator attributes in that segment are also used for users who do not sign on.

For information about defining the user ID to RACF, see the CICS installation requirements for RACF in Securing.

Chapter 17. Installing CICS-required modules in the MVS linklist

There are two categories of modules that are loaded from the MVS linklist. These are CICS- and CICSPlex SM-supplied modules, and modules of other MVS products, for example, DFSMS.

Look through the subtopics in this section and select the ones that are relevant to your installation. Work through these topics to create your customized MVS linklist.

CICS- and CICSPlex SM-supplied modules required in the MVS linklist

CICS TS supplies the modules listed in the SDFHLINK and SEYULINK libraries when you install CICS TS.

The following CICS modules are in SDFHLINK:

AMDUSREF
: Alias of DFHTG690.

AXMSC
: AXM server connection routines for CICS data-sharing servers.

AXMSI
: AXM subsystem initialization routine for CICS data-sharing servers.

DFHDTCV
: Connection validation subroutine for shared data tables.

DFHDTSVC
: Shared data tables SVC services.

DFHGTCNV
: Subroutine used by LOGR subsystem interface.

DFHLGCNV
: Exit routine for LOGR subsystem interface.

DFHMVRMS
: General MVS RESMGR exit stub.

DFHNCIF
: Named counter server interface.

DFHNCOPT
: Named counter server options.

DFHPD690
: Dump formatting routine for use with IPCS.

DFHRPDUF
: System dump formatting routine for ONC RPC.

DFHRPTRI
: Trace interpretation routine for ONC RPC.

DFHRXSVC
: RRS domain authorized services.

DFHSNNFY
RACF CICS segment changes notification routine.

DFHSNPTO
CICS RACF dynamic parse TIMEOUT keyword print routine.

DFHSNVCL
CICS RACF dynamic parse OPCLASS validation routine.

DFHSNVID
CICS RACF dynamic parse OPIDENT validation routine.

DFHSNVPR
CICS RACF dynamic parse OPPTRY validation routine.

DFHSNVTO
CICS RACF dynamic parse TIMEOUT validation routine.

DFHSSIN
CICS subsystem that initializes the console message handling facilities.

DFHSSMGT
CICS subsystem message table that contains the text of messages for the subsystem interface modules.

DFHTG690
Link module for the CICS GTF trace printing load module DFHTRGTF.

DFHTR690
Link module for the CICS GTF trace printing load module DFHTR690.

DFHTT690
Link module used for trace interpretation. You do not have to include DFHTT690 in the MVS linklist. If it is not in the linklist, an APF authorized library in the STEPLIB concatenation of the batch job is required for every job that uses the module.

DFHXCSVC
External CICS interface (EXCI) SVC services routine.

The following CICSPlex SM modules are in SEYULINK:

EYU9D520
Dump formatting routine for use with IPCS.

EYU9X520
In each MVS image that contains a CMAS. EYU9X520 is the initialization module for the ESSS.

EYU9A520
In each MVS image that contains a CMAS where you want to run the CICSPlex SM API. EYU9A520 is the CICSPlex SM API subtask module.

EYU9T520
CICSPlex SM to Tivoli NetView Communications module.

These modules are supplied in an APF-authorized library in the MVS linklist because of the following reasons:

1. Non-CICS regions such as batch jobs or a CICS data sharing server can require them.
2. They must be consistent across several CICS regions.
3. Both CICS and non-CICS regions can require them.

4. The Security Administrator who runs the ADDUSER or ALTUSER commands under TSO requires the RACF dynamic parse routines. For information about the RACF interface routines, see the An overview of the CICSPlex SM ESM interface in Securing.

Ensure the modules supplied in SDFHLINK and SEYULINK are available from an APF-authorized library in the MVS linklist:

- Add these modules, as required, to an existing APF-authorized library defined in the MVS linklist

  or
- Define SDFHLINK and SEYULINK as APF-authorized libraries and include them in the MVS linklist

Compatibility with earlier CICS releases

Unless otherwise stated, the CICS Transaction Server for z/OS, Version 5 Release 2 levels of the modules in SDFHLINK are compatible with earlier releases of CICS. The CICSPlex SM modules in SEYULINK are not compatible with earlier releases. CICSPlex SM modules in SEYULINK are release specific. If you plan to run multiple releases of CICSPlex SM on the same MVS image, you must have the equivalent modules specific to the releases you are running.

DFHPD690, DFHTG690, DFHTR690, and DFHTT690 are release-dependent. If you run more than one release of CICS, ensure that the correct versions are available; for example, DFHPD630 for CICS TS for z/OS, Version 2.3.

CICS shared data tables modules for the MVS linklist

CICS supplies the following modules, for shared data tables, in *hlq*.SDFHLINK.

If you intend using shared data tables, ensure that these modules are available in the MVS linklist or the MVS link pack area:

- DFHDTSVC and DFHDTCV, because all regions using shared data tables must use the same level of SVC code.
- DFHMVRMS, the RESMGR exit stub, because JOBLIB and STEPLIB data sets are unavailable at end-of-memory.

CICSPlex SM API linklist modules

In each MVS image that contains a CMAS in which you plan to run the CICSPlex SM API, ensure that these required modules are in the correct location.

These modules are supplied in the SYS1.CICSTS52.CPSM.SEYUAUTH library.

EYU9AB00
: In either the MVS linklist or the STEPLIB concatenation of the application that calls the API. EYU9AB00 is the API batch interface module.

EYU9XESV
: In an authorized library in either the MVS linklist or the CMAS STEPLIB concatenation. EYU9XESV is the API security exit module.

In addition, any application that calls the API must be link-edited with one of the following stub routine modules, regardless of what programming language is used:

EYU9ABSI
For batch, TSO, or NetView® programs. EYU9ABSI is supplied in the SYS1.CICSTS52.CPSM.SEYUAUTH library.

EYU9AMSI
For application programs running in CICS. EYU9AMSI is supplied in the SYS1.CICSTS52.CPSM.SEYULOAD library.

Installing the REXX function package

The REXX runtime interface to the API consists of a function package and host command environment.

The interface consists of a single load module that contains two entry points:

EYU9AR00
The function package

EYU9AR01
The host command

EYU9AR00 is supplied in the SYS1.CICSTS52.CPSM.SEYUAUTH library with an alias of IRXFLOC.

For a REXX program to access the function package, the module EYU9AR00, with its alternate entry point EYU9AR01, and its alias IRXFLOC, must be in an authorized library in one of these places:

- The MVS linklist
- The STEPLIB concatenation of the application that calls the API

For a REXX program to access the function package from NetView, the EYU9AR00 module must also be aliased to DSIRXLFP and placed in an authorized library in either the MVS linklist or the STEPLIB concatenation for the NetView system.

Users of the CICSPlex SM runtime interface are subject to the normal CICSPlex SM API security checks. See the information in the CICSPlex SM security in Securing.

The following members contain SMP/E user modification control statements that you can use to move the necessary API load modules to the SYS1.CICSTS52.CPSM.SEYULINK library. These members are supplied in CICSTS52.CPSM.SEYUSAMP.

Member	Load module
EYU$UM11	EYU9AR00
EYU$UM12	EYU9AB00
EYU$UM13	EYU9XESV

If you use the IRXFLOC or DSIRXLFP aliases to provide access to the REXX function package, you must place them ahead of any other IRXFLOC or DSIRXLFP modules in the STEPLIB or MVS linklist concatenation.

If you do not want to use the aliases for the REXX function package, you must modify your REXX parameter modules IRXPARMS, IRXTSPRM, and IRXISPRM. If you do this, do the following actions:

- Add the function package supplied by CICSPlex SM as a System function package, rather than a Local or User function package.
- Add a new host command entry. Here are some examples:
  - An 8-byte Command Environment name of 'CPSM   '
  - An 8-byte Command Routine name of 'EYU9AR01'
  - A 16-byte Command Token of blanks

To complete installing the REXX function package:

- Increase the number of entries in the appropriate function package table.
- Add an entry to that table for EYU9AR00.

For more information about REXX function packages and host commands, see the *TSO/E Version 2 REXX/MVS Reference*.

Modules of other MVS products in the MVS linklist

CICS loads some DFSMS modules from the MVS linklist. This requirement either depends on the function you are using, such as backup-while-open (BWO) support, or on the release of DFSMS.

The following modules are loaded:

IGWABWO
: CICS loads this module, supplied in the MVS callable services library SYS1.CSSLIB, from the MVS linklist if you are using BWO for files accessed in non-RLS mode. In addition to IGWABWO in the linklist, IGWAMCS2 must be installed in the LPA. CICS tests for the presence of this module in the LPA to determine that BWO support is present in the MVS image before attempting to load IGWABWO.

  For files that are accessed in RLS mode, CICS does not require IGWABWO or IGWAMCS2.

IGWARLS
: CICS loads this module, supplied in the MVS callable services library SYS1.CSSLIB, from the MVS linklist. CICS issues the following message if it cannot load IGWARLS:

```
DFHFC0116 APPLID THE LOAD OF CALLABLE
          SERVICE IGWARLS HAS FAILED WITH RETURN CODE
          X'EEEE'.
```

  CICS initialization fails if CICS cannot load this callable services module.

Chapter 18. Defining CICS as an MVS subsystem

You define CICS as an MVS subsystem before you can use any of facilities listed.

- The console message-handling facility
- Multiregion operation (MRO)
- CICS shared data tables
- External CICS interface (EXCI).

For information about the console message-handling facility, see Administering CICS operations in Administering.

For information about MRO, see Multiregion operation in Getting started.

The definition of CICS as an MVS subsystem involves three members of the SYS1.PARMLIB partitioned data set: IEASYSxx, IEFSSNaa , and DFHSSIyy. You require only member DFHSSIyy if you want the console message-handling facility.

In an IEASYSxx member of the SYS1.PARMLIB library used for MVS initialization, include the parameter SSN=aa, where aa refers to the SYS1.PARMLIB member IEFSSNaa that contains the definitions for all subsystems required for this IPL of MVS, including the definition of CICS as an MVS subsystem.

aa,xx,yy represent suffixes that are used to distinguish different versions of members of the SYS1.PARMLIB library.

To start CICS with the START command:

- Give the MVS started task procedure a name different from the subsystem name in IEFSSNaa (default 'CICS'),

  or
- Issue the start command with the parameter SUB=JES2 or SUB=JES3 as appropriate.

For more information about the subsystem interface, see the *z/OS MVS Using the Subsystem Interface* manual.

The following topics cover:

Noting IEASYSxx values for CICSPlex SM

Some of the MVS initialization values located in an IEASYSxx member of the SYS1.PARMLIB library are referenced during installation of CICSPlex SM address spaces.

Access the IEASYSxx member of the SYS1.PARMLIB library that is used to initialize your MVS system and make note of the values assigned to the following parameters:

APF=
Completes the name of the parmlib member (IEAAPFxx) that contains authorized library names.

CMD=
Completes the name of the parmlib member (COMMNDxx) that contains commands to be issued internally during master scheduler initialization.

LNK=
Completes the name of one or more parmlib members (LNKLSTxx) that contain names of data sets that are to be concatenated to SYS1.LINKLIB.

LNKAUTH=
Specifies that all data sets in the LNKLST concatenation will be treated as APF-authorized or that only those that are named in the APF table will be treated as APF-authorized.

LPA=
Completes the name of one or more parmlib members (LPALSTxx) that are concatenated to SYS1.LPALIB for the purpose of building the pageable LPA (PLPA and extended PLPA).

MAXUSER=
Specifies a value that the system uses, along with the RSVSTRT and RSVNONR parameter values, to limit the number of jobs and started tasks that the system can run concurrently during a given IPL.

NSYSLX=
Specifies the number of linkage indexes (LXs), in addition to those in the system function table, that will be reserved for system linkage indexes (LXs).

PROG=
Completes the name of the parmlib member (PROGxx) that contains authorized library names when a dynamic APF list is being used.

RSVNONR=
Specifies the number of address space vector table (ASVT) entries that will be reserved for replacing those entries marked nonreusable for the duration of an IPL.

RSVSTRT=
Specifies the number of ASVT entries that will be reserved for address spaces created in response to a START command.

SYSNAME=
Specifies the name of the system being initialized.

For more information about these parameters, see the *z/OS Initialization and Tuning Reference* manual.

Specifying each CMAS correctly in IEASYSxx

In every z/OS image that contains a CMAS, verify that the IEASYSxx member of the SYS1.PARMLIB library that you use for z/OS initialization includes the parameter.

`NSYSLX=nnn`
Set or increase the value to include the minimum number of linkage indexes (LXs) that are required by CICSPlex SM. One LX is required for

the Environment Services System Services (ESSS), so the minimum number of LXs required for use by CICSPlex SM is one.

For more information about this parameter, see the *z/OS Initialization and Tuning Reference* manual.

Coding the IEFSSNaa MVS subsystem initialization member

To define CICS as an MVS subsystem, code an entry in the IEFSSNaa member in the SYS1.PARMLIB library.

If you want to use the console message handling facility or to change the number of pipes that can be allocated in an EXCI address space, code the entry by using one of the following methods:

```
CICS,DFHSSIN,DFHSSIyy
```

or

```
SUBSYS SUBNAME(CICS)
  INITRTN(DFHSSIN)
  INITPARM(DFHSSIyy)
```

This entry is used for every CICS region that runs under MVS that you have IPLed with this version of the IEFSSN member. You do not have to specify both DFHSSIN and DFHSSIyy, however apart from the suffix yy, you must code the entry for each parameter using the exact format given in the example. The terms have the following meanings:

CICS The name of the CICS subsystem.

DFHSSIN
The name of the CICS subsystem routine that initializes the console message-handling facilities and the number of pipes that can be allocated in an EXCI address space. If you omit this name, CICS is defined as an MVS subsystem, but none of the console message-handling facilities are enabled, and the default number of pipes that can be allocated in an EXCI address space is used. That default is 100.

DFHSSIyy
The name of a SYS1.PARMLIB member in which you have defined initialization parameters for message formatting and EXCI pipe allocation for the CICS subsystem. If you specify DFHSSIN but omit DFHSSIyy, the DFHSSIN routine tries to use the parameters that are defined in member DFHSSI00.

If the DFHSSI00 member does not exist, the routine uses the default values:
- For message formatting the default values are defined in the DFHSSIN member. They are described in "Default message-formatting initialization parameters" on page 131.
- For EXCI pipe allocation, the fixed value is 100.

The IEFSSNaa member in the SYS1.PARMLIB library also contains the definitions for all the other subsystems required for this IPL of MVS; for example, JES2, IRLM and DB2.

The SYS1.PARMLIB(BPXPRMxx) parameters

If you use certain CICS functions and run many CICS systems in an LPAR, the default options, shipped in the BPXPRMxx members of SYS1.PARMLIB, might not be sufficient.

You must review the default options for the following functions:

- C and C++ programs compiled using the XPLINK compiler option
- Programs that run on open TCBs and use APIs other than the CICS API
- SSL TCBs specified by the MAXSSLTCBS system initialization parameters
- Java programs running in JVM servers

If you use XPLINK or non-CICS APIs, you must increase the MAXPROCUSER and MAXPROCSYS values. See "Sizing MAXPROCSYS" for guidance.

If CICS is configured to use SSL, you might have to increase the MAXTHREADS and MAXTHREADTASKS values.

If CICS is configured to use JVM servers, you might have to increase the total THREADLIMIT value in each JVMSERVER.

If your system uses two or more of these facilities, corresponding further increases in the values for these parameters is appropriate.

Sizing MAXPROCSYS

The z/OS MAXPROCSYS parameter specifies the maximum number of processes that can be active at the same time in the LPAR. MAXPROCSYS allows you to manage system resources by limiting the number of processes that the system is to support. If you set the MAXPROCSYS value too low, regions might abend because CICS cannot create a process when attempting to attach a TCB. However, avoid setting the MAXPROCSYS value too high because this value is shared between all the address spaces in a z/OS system.

CICS uses at least two processes for each CICS region. If you have many CICS regions, you must set your system limit to handle these processes. The following table explains which TCBs become processes, depending on the CICS system:

Table 10. TCBs that become processes

TCB	Is the TCB always a process?	Description
Jobstep	Yes	The jobstep TCB is always created.
SO	Yes	The SO TCB is always created.
SL	No	The SL TCB is created unless the system initialization parameter, TCPIP=NO, is specified.
QR	No	The QR TCB becomes a process when an open TCB is attached (that is, L8, L9, X8, or X9).
SP	No	The SP TCB becomes a process, and the associated S8 TCBs are created and become threads only when SSL is used.
JVMSERVER (TP and T8)	No	Each enabled JVM server requires a single process regardless of how many threads it supports.

In summary, there is always a minimum of two processes for each CICS region, up to a maximum of six processes for each region, depending on which additional TCBs you are running.

You can issue the following command to give you a list of the processes that are running on your system:

```
D OMVS, A=addressspaceid
```

addresspaceid is the address space that you want to query.

If you run this command at system startup, and again when your system is stable, you can calculate the most appropriate number for MAXPROCSYS.

For more information about changing BPXPRMxx parameters, monitoring system limits, and calculating values for system resources, see *z/OS UNIX System Services Planning*.

The console message-handling facility

The console message-handling facility is an optional feature of the CICS subsystem that can affect the appearance of CICS messages displayed on an MVS console. It is effective when you specify FORMATMSG=YES as a parameter in the message-formatting initialization member for the CICS subsystem.

The subsystem reformatting is enabled when at least one of the following applications is executing in the MVS image where the subsystem is defined:

- Any version of CICS Transaction Server
- A message automation subsystem, such as NetView, which enables the MVS subsystem console message broadcasting service

The console message-handling facility affects the messages that are displayed on MVS system consoles in the following ways:

- The subsystem tries to ensure that all console messages issued by all CICS regions have a standard format. The format is:

  ```
  +DFHnnnn    APPLID   MESSAGE-TEXT
  ```

  In this message:

  +DFHnnnn
  - Begins in column 1
  - The "plus" sign (+) that precedes **DFHnnnn**, is added by MVS to indicate that a problem-state program issued the message. It is not present when CICS issues the message while it is in supervisor state.

  APPLID
  - Begins in column 13
  - The applid inserted into the message is the specific application identifier. This identifier is specified in the **APPLID** system initialization parameter.

  MESSAGE-TEXT
  - Begins in column 22.
- The subsystem adds route codes specified in the **ROUTECODE** subsystem initialization parameter, so the messages might be sent to more destinations.
- The subsystem reformats messages for all CICS releases.

- The subsystem does not reformat messages that are issued by a CICS region that has not yet determined its applid. These messages include those that are issued while processing the system initialization table and its overrides.
- The subsystem routine that reformats the messages does not receive control until after the message has been recorded in the CICS job log. Therefore, the reformatting is not usually apparent in the job log.
- Messages issued by the message domain already contain the applid. The subsystem does not insert the applid into such messages, but it might insert blank characters to cause alignment into standard locations.
- If the original CICS message is a long one, the addition of the applid might cause the message to exceed the maximum length for an MVS console message. In this case, the original message is suppressed and does not appear on the console, and the reformatted message is issued using the MVS multiple-line console message service to split the message over several lines. Both the original message and perhaps several instances of the reformatted multiple-line message appear in the job log, but only one copy of the reformatted message is displayed on the console.
- For some messages in which the applid normally follows a time and date stamp, the insertion of the applid in the standard position results in the applid being duplicated in the message. For these messages, the subsystem eliminates the time and date stamp, because these are available from other sources, and only one occurrence of the applid is shown.

Specifying the DFHSSIyy message-formatting initialization member

You can specify message-formatting initialization parameters for the CICS subsystem in a member DFHSSI*yy* of the SYS1.PARMLIB library, where *yy* is the suffix that identifies the SYS1.PARMLIB member used to define the CICS subsystem.

These parameters are FORMATMSG, HIDEPASSWORD, and ROUTECODES. Code the parameters in columns 1 through 71 of the DFHSSI*yy* member, like this:

```
FORMATMSG=YES,HIDEPASSWORD=YES,ROUTECODES=(1,2)
```

or with additional routecodes:

```
FORMATMSG=YES
HIDEPASSWORD=YES
ROUTECODES=(1,2,
3,4,
5,6)
```

FORMATMSG={YES|NO}
Specifies whether the CICS applid is to be inserted into all DFH console messages that do not use the CICS message domain.

YES
Insert CICS applid into messages.

NO Do not insert CICS applid into messages.

HIDEPASSWORD={YES|NO}
Specifies whether to mask the password or password phrase from MODIFY commands used to enter the CICS sign-on transactions at an MVS console.

YES
Mask the password or password phrase.

NO Do not mask the password or password phrase.

ROUTECODES=(n1[,n2] ....)
n1, n2... are numbers representing generic routecodes that are added to *all* DFH console messages issued by CICS. The routecodes 1-12 have special meanings:

1 Master console action

2 Master console information

3 Tape pool

4 Direct access pool

5 Tape library

6 Disk library

7 Unit record pool

8 Teleprocessing control

9 System security

10 System error/maintenance

11 Programmer information

12 Emulators

The status of other routecodes are listed:

13-20 Available for customer use

29-40 Reserved

41-128 Available to authorized programs only

For more information about these routing codes, see the *z/OS MVS Initialization and Tuning Reference* manual for your version of MVS.

Default message-formatting initialization parameters

You can define message-formatting initialization parameters for the CICS subsystem in a member DFHSSIyy of the SYS1.PARMLIB library.

To use parameters defined in a DFHSSIyy member other than the DFHSSI00 member, you must specify DFHSSIyy on the IEFSSNaa member in the SYS1.PARMLIB library used to define CICS as an MVS subsystem. If you do not specify DFHSSIyy, the DFHSSIN routine tries to use the parameters that are defined in the DFHSSI00 member. If the DFHSSI00 member does not exist, it uses the default parameters that are defined in the DFHSSIN routine.

If you specify DFHSSIyy but it does not exist, the DFHSSIN routine uses the default message-formatting initialization parameters that are defined in the DFHSSIN routine.

The default message-formatting initialization parameters defined in the DFHSSIN routine are as follows:

```
FORMATMSG=YES,HIDEPASSWORD=YES
(generic routecodes are not added to messages)
```

The default facilities:

- Insert the CICS applid into the CICS console message between the message identifier and the message text. The applid is inserted into only those console messages (starting with DFH) that do not use the CICS message domain. The CICS message domain inserts the CICS applid into all messages that it handles.

  If the original message is a long one, insertion of the CICS applid might cause the message to exceed the maximum length for an MVS console message. In this case, the original message is suppressed and does not appear on the console, and the reformatted message is issued using the MVS multiple-line console message service to split the message text over several lines. Both the original message and perhaps several instances of the reformatted multiple-line message appear in the job log, but only one copy of the reformatted message is displayed on the console.
- Examine each MODIFY command to see if it resembles a MODIFY CICS,CESN ... command. If the MODIFY command contains an old or new password (PS=xxxx,NEWPS=xxxx), the default facilities obliterate the password with asterisks. If the MODIFY command does not contain a password, the password you enter at the MVS console is masked.
- If your primary subsystem is JES3, the old and new passwords still appear in the JES3 hardcopy log. JES3 records the MODIFY command before the CICS message formatting subsystem can obliterate the password. (This processing does not happen when the primary subsystem is JES2.) The passwords are suppressed from the console for both JES2 and JES3. For information about the CESN transaction, and about how to prevent passwords from appearing in the hardcopy log, see the*CICS Supplied Transactions* manual.

If you do not specify DFHSSIN in the IEFSSNaa entry that defines CICS, the message handling facilities are not enabled. Also, if you run CICS as a started task, you cannot use the name “CICS” for the procedure name.

Activating message formatting

The next MVS subsystem to invoke the subsystem console message broadcasting service of MVS console support activates message-handling. Before activating message-handling, you must define CICS as an MVS subsystem with support for console message-handling, and also specify the message-formatting parameters in the DFHSSIyy member of the SYS1.PARMLIB library.

Message-handling is activated when you start a supported CICS region or if an automated-operation program, such as NetView, is active in the MVS image. See “The console message-handling facility” on page 129 for more information on console message-handling.

A newly started CICS region determines its own applid during initialization. Until the applid is known, message-formatting cannot operate. Therefore, messages issued very early in CICS initialization are not formatted.

Modules required to use the console message-handling facilities

To use the console message-handling facilities that are provided by the MVS subsystem functions of CICS, the CICS modules, DFHSSEN, DFHSSGC, DFHSSMGT, and DFHSSWT must be available at MVS IPL time.

DFHSSEN
: The module that cleans up CICS resources at end-of-memory and at end-of-task.

DFHSSGC
The subsystem generic connect module that connects an active CICS region to the CICS subsystem.

DFHSSIN
The CICS subsystem initialization module.

DFHSSMGT
The subsystem message table that contains the text of messages for the subsystem interface modules.

DFHSSWT
The subsystem interface write-to-operator (WTO) router that determines whether to route WTO calls to the appropriate CICS-dependent modules.

These modules must reside in the LPA or in an APF-authorized library in the MVS linklist:

- The modules DFHSSIN and DFHSSMGT, installed in the *hlq*.SDFHLINK library, must reside in an APF-authorized library in the MVS linklist.
- The DFHSSEN module, installed in the *hlq*.SDFHLPA library, must reside in the LPA.
- The modules DFHSSGC and DFHSSWT, installed in the *hlq*.SDFHLPA library, must reside either in the LPA or in an APF-authorized library in the MVS linklist.

The LINDEX parameter in the DFHISTAR installation job defines *hlq*.

The current versions of these modules are compatible with earlier CICS releases that support console message handling.

For information about adding modules that are installed in the *hlq*.SDFHLINK library to the MVS linklist, see Chapter 17, "Installing CICS-required modules in the MVS linklist," on page 119.

For information about adding modules installed in the *hlq*.SDFHLPA library to the LPA, see Chapter 22, "Installing CICS modules in the MVS link pack area," on page 155.

Coexistence with automation programs and other CICS releases

If you are using automated-operation programs or multiple CICS releases, then you must plan for them to coexist with the CICS message-handling facilities.

If your automation system must see the console messages before they are reformatted by CICS, place its subsystem definition in IEFSSNXX before the definition for CICS. But, if your automation system must see the reformatted messages, its definition must come after that of CICS. Consult the documentation of your automation package to determine which applies to you.

If you have defined the message-handling facility has been defined to MVS (by the CICS entry in the IEFSSNaa member of the SYS1.PARMLIB library), CICS regions running earlier releases of CICS in the same MVS image have the full benefit of the message handling that has been defined if either of the following cases is true:

- An automated-operation program, such as NetView, is active in the MVS image.

- A CICS region that supports message handling (see “The console message-handling facility” on page 129 for a list) is running in the same MVS image.

A consequence of the standard format console messages is that they no longer include date, time, and informational messages or information. If you use this kind of information as a token, you must make a change to the code so that it looks for a different token.

EXCI pipe allocation

The external CICS interface is an application programming interface that enables a non-CICS program (a client program) running in MVS to call a program (a server program) running in a CICS region and to pass and receive data by means of a communications area.

The CICS application is invoked as though it is linked to by another CICS application program.

This programming interface allows a user to allocate and open sessions or pipes which operate in "half-duplex", flip-flop" mode, to a CICS region and to pass distributed program link requests over them. The multiregion operation facility of CICS interregion communication supports these requests, and each pipe maps onto one MRO session, in which the client program represents the sending process and the CICS server region represents the receiving process. A default limit of 100 pipes for each EXCI address space applies.

Specifying the EXCI pipe allocation limit

Specify the EXCI pipe allocation limit for the CICS subsystem in a member DFHSSIyy of the SYS1.PARMLIB library, where yy is the suffix that identifies the SYS1.PARMLIB member used to define the CICS subsystem. The parameter is LOGONLIM.

Code the parameter in columns 1 through 71 of the DFHSSIyy member, like this:

```
LOGONLIM=200
```

LOGONLIM=nn
: The minimum and maximum values that can be specified for nn are 100 and 250.

  If you omit the parameter or the value specified lies outside the allowed range, CICS assumes a limit of 100.

The EXCI pipe allocation limit

CICS publishes the limit if it is determined during subsystem initialization, by creating a system-level name token pair formatted like this:

```
Name: input, fixed length 16 byte type
  Bytes 0-7 : The character string 'DFHIRP '
  Bytes 8-15: The character string 'LOGONLIM'
Token: output, fixed length 16 byte type
  Bytes 0-3 : The logon limit, held as fullword binary file
  Bytes 4-15: Reserved, set to nulls
```

You can use the callable service, IEANTRT, to retrieve the token. Invoke IEANTRT with level IEANT_SYSTEM_LEVEL (EQU 4). The return code is interpreted in the following way:

0 The name and token pair exists and the token has been retrieved. The logon limit can be extracted from the token.

4 The name and token pair does not exist. The logon limit is assumed to be 100.

Any other value indicates that the callable service has detected an error.

Default EXCI pipe allocation limit initialization parameter

Define the EXCI pipe allocation limit parameter for the CICS subsystem in a member DFHSSIyy of the SYS1.PARMLIB library.

To use parameters defined in any DFHSSIyy member except the DFHSSI00 member, specify DFHSSIyy in the IEFSSNaa member in the SYS1.PARMLIB library used to define CICS as an MVS subsystem. For more information on IEFSSNaa, see "Coding the IEFSSNaa MVS subsystem initialization member" on page 127.

- If you do not specify DFHSSIyy, the DFHSSIN routine tries to use the parameters that are defined in the DFHSSI00 member.
- If the DFHSSI00 member does not exist, the DFHSSIN routine uses the default parameters that are defined in the DFHSSIN routine.
- If you specify DFHSSIyy but it does not exist, the DFHSSIN routine uses the default parameters that are defined in the DFHSSIN routine.

The default EXCI pipe allocation initialization parameter defined in the DFHSSIN routine is LOGONLIM=100.

Chapter 19. Installing the CICS SVCs

Install the current level of the CICS Type 3 SVC, DFHCSVC, and the high performance option (HPO) SVC before you attempt to start a region.

If IBM changes the Type 3 SVC, for example at a new release or because of a service update, you must reinstall the current level of the CICS Type 3 SVC into the link pack area (LPA) and perform an IPL with the CLPA option.

To install the CICS Type 3 SVC, define the CICS SVCs to z/OS, install the DFHCSVC module into the LPA, and specify the DFHCSVC number on the **CICSSVC** system initialization parameter.

Alternatively, if you have the required authorization, you can use the DFHCSVCU utility program to install the CICS Type 3 SVC dynamically, without the need to perform an IPL of the z/OS system. For further information about running programs that require APF authorization, see Managing system security. For further information about the DFHCSVCU utility program, see DFHCSVCU in Reference -> Diagnostics.

Defining the CICS SVCs to your z/OS system

1. Define both the CICS Type 3 SVC and the HPO SVC to your z/OS system by specifying SVCPARM statements. You define the CICS SVCs in an IEASVCxx member of the SYS1.PARMLIB library, using SVCPARM statements. See z/OS MVS Initialization and Tuning Guide and z/OS MVS Initialization and Tuning Reference for a description of the SVCPARM statements.
2. If you are using the default SVC numbers, the following CICS entries are shown:
   ```
   SVCPARM 216,REPLACE,TYPE(3),EPNAME(DFHCSVC)
   SVCPARM 215,REPLACE,TYPE(6),EPNAME(DFHHPSVC)  [Only required for HPO]
   ```
   For the current SVC modules, you specify the EPNAME parameters as in the sample CICS entries.
3. If you have a version of the DFHHPSVC module from an earlier release of CICS already link-edited into your z/OS nucleus, you do not have to replace it with the latest version. Versions of the DFHHPSVC module from earlier releases of CICS are compatible with the current release. The version of the DFHHPSVC module from the current release of CICS is compatible with earlier releases of CICS. The CSECT name (EPNAME) of the version of the DFHHPSVC module from earlier releases is IGC215 or IGCnnn, if SRBSVC=nnn was used as a CICS system generation parameter in the earlier release.
4. If you are not using the default SVC numbers, change the values 215 and 216 to the SVC numbers you have chosen.
5. Select the required IEASVCyy member by coding the SVC parameter (SVC=yy) in a SYS1.PARMLIB member (IEASYSxx), which you use to perform an IPL of your z/OS system. When you code new SVC numbers, they do not come into effect until you next perform an IPL of your z/OS system.

Installing the DFHCSVC module into the LPA

Use the following guidelines when you install the DFHCSVC module into the LPA:

- Do not change DFHCSVC attributes.
- Do not relink-edit the DFHCSVC module to install it into the LPA. The term *install* means move or copy a module into the LPA by using SMP/E, or a copying method that reblocks the copied modules when the target data set has a smaller block size than the data set you are copying from.
- The DFHCSVC module, as supplied, has the attributes AMODE(31) and RMODE(ANY); do not change these attributes.

For further information about installing the DFHCSVC module in the LPA, see Chapter 22, “Installing CICS modules in the MVS link pack area,” on page 155.

Specifying the DFHCSVC number on the CICSSVC system initialization parameter

The current version of the CICS SVC module is compatible with all earlier releases of CICS, which enables you to run your earlier CICS regions with current regions in the same MVS image.

CICS contains a test to verify that it is using the correct level of the CICS DFHCSVC module. If CICS calls an SVC module using the SVC number specified on the **CICSSVC** system initialization parameter and that module is not at the current level, CICS issues message DFHKE0104. As a result of this message, CICS either abends with a system dump or prompts the operator to enter an alternative SVC number, depending on the option specified on the **PARMERR** system initialization parameter.

Using more than one version of the CICS Type 3 SVC

You might have to use more than one version of the CICS Type 3 SVC; for example, to test service applied to the DFHCSVC module while using the current version in a production system.

You can run several CICS regions, at different release levels, in the same MVS image, with each region using its own version of the CICS SVC. However, if some of those regions use MRO, all regions that use MRO must use the latest CICS Type 3 SVC (DFHCSVC module) and the latest DFHIRP module. For information about using the latest SVC with earlier releases of CICS, see “MRO between different CICS releases with a changed SVC number” on page 139.

To use more than one version of the CICS SVC, either use the DFHCSVCU utility program, or rename the new SVC module in the LPA, and then respecify the SVC in the SVCPARM statements.

You must have authorization to use the DFHCSVCU utility program. For more information about this program, see Chapter 19, “Installing the CICS SVCs,” on page 137.

To rename the new CICS SVC module, use the renaming facility of ISPF or IEBCOPY, or the TSO command RENAME, renaming the module to a unique name of your choice. Use SMP/E to rename the CICS SVC module in the SDFHLPA library. Use the SMP/E RENAME command to inform SMP/E of the change to the name of the CICS SVC module. Therefore, if you later use SMP/E to apply service to that module, the service is applied to the renamed module in the LPA, and *not* the DFHCSVC module.

For example, you might want to use an SVC number 255 for a test CICS region, and the default CICS SVC number 216 for your production system:

1. Create and apply an SMP/E USERMOD to rename the new CICS SVC module:
   ```
   ++USERMOD (umod1).
   ++VER(C150) FMID(HCI6900).
   ++RENAME (DFHCSVC) TONAME(newname).
   ```
2. Specify the number 255 for the new CICS SVC version by adding an appropriate statement to the list of SVCPARM statements. That list then reads:
   ```
   SVCPARM 216,REPLACE,TYPE(3),EPNAME(DFHCSVC)
   SVCPARM 215,REPLACE,TYPE(6),EPNAME(DFHHPSVC)  [Only required for HPO]
   SVCPARM 255,REPLACE,TYPE(3),EPNAME(newname)   [New CICS SVC version]
   ```

   The **EPNAME** parameter for the new CICS SVC specifies the module name, not the CSECT name, for the new CICS SVC module.

   All the SVCPARM statements apply to the same IEASVCxx member of the SYS1.PARMLIB library.
3. Perform another IPL of MVS to enable all the SVC versions specified in the SVCPARM statements. After you perform another IPL of MVS, you can use both versions of the CICS SVC, provided that both regions do not use MRO concurrently. If both systems use MRO, only the new, latest version of the SVC and the latest DFHIRP module are used by both regions.
4. In your production system, specify the number of the current CICS SVC in the **CICSSVC** system initialization parameter. Similarly, in the test system, specify the number of the new CICS SVC version.

MRO between different CICS releases with a changed SVC number

If a CICS TS 5.2 region, and other CICS regions from earlier releases, in the same MVS image use MRO, all the regions must use the CICS TS 5.2 SVC module.

If, when you install the CICS TS 5.2 SVC in the LPA, you give the SVC a number different from the number defined to the earlier CICS regions, you must respecify the SVC number. On each CICS region from an earlier release that will use the CICS TS 5.2 SVC, specify the new SVC number on the CICSSVC system initialization parameter.

Chapter 20. Selecting the high-performance option

The high-performance option (HPO) is for users whose top priority is to optimize terminal response times and maximize transaction throughput. HPO improves performance by reducing the transaction path length; that is, the number of instructions required to service each request.

Use of HPO potentially allows CICS application programs to bypass all MVS integrity controls. If you decide to use HPO, ensure that the application programs used on your CICS system meet your own installation's integrity requirements.The code to support the SNA authorized path feature of HPO, which is the improved path through SNA, is in CICS.

Defining DFHHPSVC to MVS

Define the DFHHPSVC module to MVS as a Type 6 SVC; the default HPO SVC number defined in the DFHSIT module is 215.

To change the default Type 6 SVC number:

1. Define the new number to MVS. See Chapter 19, "Installing the CICS SVCs," on page 137.
2. Define the new number to CICS by using the SRBSVC system initialization parameter.

If you are not using HPO, do not load the DFHHPSVC module into the MVS nucleus. You choose to use HPO explicitly by coding HPO=YES in the system initialization table.

Loading module DFHHPSVC

Before you can use HPO, ensure that the HPO SVC module is included in the MVS nucleus.

Use one of the following methods:

- Copy the DFHHPSVC module into SYS1.NUCLEUS, renaming it to IGC215 or the appropriate name if you are not using the default, and specify it on an INCLUDE statement in the NUCLSTxx member of the SYS1.PARMLIB library. You must also specify the name of the NUCLSTxx member on the NUCLST statement of the LOADxx member of the SYS1.PARMLIB library. The NUCLSTxx method provides you with greater flexibility in customizing the MVS nucleus than the NMLDEF method described in the second method.

  For further information about coding a NUCLSTxx member and about a comparison with the NMLDEF macro, see the *z/OS MVS Initialization and Tuning Guide*.
- Copy the DFHHPSVC module into SYS1.NUCLEUS and specify it in a nucleus module list (NML) for CICS, created using the NMLDEF macro shown in the sample job. This NML selects the CICS members in SYS1.NUCLEUS that are to be loaded into the MVS nucleus, and eliminates the requirement for the MVS nucleus to be re-link-edited for the DFHHPSVC module or any other module in the MVS nucleus.

- For information about coding an NMLDEF macro, see *z/OS MVS Programming: Authorized Assembler Services Reference Vol 3*. The sample job stream loads the CICS Type 6 SVC into the MVS nucleus:

```
//LOADSVC   JOB 'accounting info',MSGCLASS=A,CLASS=A
//NMLDEF    EXEC ASMHCL
//C.SYSIN    DD *
IEANCnnn NMLDEF NUCL=DFHHPSVC
//L.SYSLMOD DD DSN=SYS1.NUCLEUS,UNIT=3380,DISP=OLD
//L.SYSIN DD *
  NAME IEANCnnn
/*
//
```

  nnn is the number of the CICS NML, in the range 001 through 256. Choose the value of *nnn* to be unique in your MVS nucleus.

Removing existing DFHHPSVC modules from the MVS nucleus

If you have a version of the DFHHPSVC module from an earlier release of CICS already installed in your MVS nucleus, you do not have to replace it with the latest version. Versions of the DFHHPSVC module from earlier releases of CICS are compatible with the current release. The version of the DFHHPSVC module from the current release of CICS is compatible with earlier releases of CICS.

However, you can remove a link-edited version of the DFHHPSVC module from the MVS nucleus by running a link-edit job to replace the existing version of the nucleus with one that does not contain the module to be removed, in one of the following ways:

- If the existing nucleus-resident DFHHPSVC module is known to SMP/E, use the SMP/E UCLIN statement to remove the module entry.
- You must link-edit the nucleus module, IEANUC0x, with the scatter (SCTR) attribute. If you do not do this, MVS enters a non-restartable wait state at system initialization.
-

Chapter 21. Defining CICS regions as applications to SNA

To use SNA LUs with CICS, ensure that your CICS regions are defined to SNA before you attempt to run them.

To define your CICS regions to SNA as SNA application programs:

1. Define SNA application program minor nodes for your CICS regions, by specifying APPL definition statements in a member of the SYS1.VTAMLST library or your own *user*.VTAMLST library.
2. Issue a VARY ACT command to activate the APPL definitions and enable the CICS regions to connect to SNA.
3. Ensure that you have properly defined your SNA LUs for connection to CICS. You must do so if you intend using CICS autoinstall. For those LUs for which you want to use autoinstall, code LOGON mode table entries that match the model TYPETERM and TERMINAL definitions that CICS uses. You can either code your own autoinstall models, or use the CICS-supplied model definitions that are generated for you when you initialize the CICS system definition data set.

For further information about defining SNA resources, see the *z/OS Communications Server: SNA Network Implementation Guide* and *z/OS Communications Server: SNA Resource Definition Reference* manuals.

The following topics provide more detailed information on defining your CICS regions to SNA.

Defining specific APPL definitions and APPL parameters to SNA

To define a CICS region to SNA, specify the minor node name to be used for the CICS region on the SNA APPL definition statement. Include specific parameters on the SNA APPL statement.

Defining specific CICS APPL statements to SNA

For example, you might use the following definition for the CICS region to be identified as CICSHTH1:

```
***********************************************************************
* Specific APPL definition for CICS region CICSHTH1
***********************************************************************
CICSHTH1 APPL  AUTH=(ACQ,VPACE,PASS),VPACING=0,EAS=5000,PARSESS=YES    X
               SONSCIP=YES,LUAPFX=XX
*********************************************************************
```

- Code `CICSHTH1` on the CICS system initialization parameter **`APPLID`** to define the SNA application identifier to CICS.
-
- See “Data set naming conventions” on page 253 for information about the naming convention that is used for the CICSHTH1 applid.

SNA APPL parameters for CICS regions

`ACBNAME=acbname`
Specifies the minor node name (*acbname*) that is assigned to this application.

This name must be unique in the domain. If you do not specify this parameter, the name of the SNA APPL statement is taken.

AUTH=(ACQ,VPACE[,PASS])
Allows CICS to acquire LUTYPE 6 sessions. VPACE allows pacing of the intersystem flows. Specify PASS if you intend to use the **EXEC CICS ISSUE PASS** command to pass existing terminal sessions to other SNA applications.

EAS=*number*
Specifies the number of network-addressable units. The number must include the total number of parallel sessions for this CICS system.

HAVAIL=YES
Indicates that the application supports XRF sessions and can initiate XRF sessions.

LOGMODE=*name*
(For CICS-to-CICS APPC systems.) Defines the name of the MODE table that contains the LU6.2 MODEENT for the secondary sessions.

LUAPFX=*string*
Specifies the prefix characters of the LU alias to be assigned when a dynamically generated cross-network CDRSC with NQNMODE=NQNAME is created for a session with CICS. SNA concatenates the characters specified with the next sequential number available to form an SNA-generated LUALIAS name for the cross-network dynamic CDRSC.

string
Indicates the two characters to be used as the prefix for all dynamically generated LUALIAS names for dynamic cross-network CDRSCs in session with the CICS region defined by the APPL statement. Take into account the SNA naming conventions when choosing this prefix. For CICS information about specifying the LU alias string, see “Choosing an LUAPFX value” on page 148.

SNA deletes a dynamically generated LU alias after a terminal session is closed, or the last session of an APPC parallel sessions connection is closed, and the CDRSCTI-specified timeout interval has expired. The permitted range of timeout values is 1 second to 7 days, but generally the default of 8 minutes is acceptable in most situations. The CDRSCTI timer does not start until no more sessions that involve the resource represented by a CDRSC remain.

For more information about CICS support for the SNA dynamic LU alias facility, see “SNA LU alias facility” on page 146.

PARSESS=YES
Specifies LUTYPE 6 parallel session support.

PERSIST=MULTI
Indicates that the application supports Multi Node Persistent Sessions. For further information, see the *z/OS Communications Server: SNA Network Implementation*.

SONSCIP=YES
Specifies session outage notification (SON) support. SON enables CICS, in certain cases, to recover a session after session failure without operator intervention.

VPACING=number
Specifies the maximum number of normal-flow requests that another logical unit can send on an intersystem session before waiting to receive a pacing response. Start with a value of 5.

SNA version and release level indicator

The terminal control modules in CICS are assembled against z/OS Communication Server.

You can use any release of z/OS Communication Server. For details of the minimum level of products that you can use with the current release, see http://www.ibm.com/software/htp/cics/tserver/sysreqs/.

CICS can communicate with different levels of z/OS Communication Server. It can find out which level you are using and the level of function that is available. So you can upgrade CICS and z/OS Communication Server at different times. CICS finds out whether extra function is available when a new version of z/OS Communication Server is installed, and produces a message if the function is not being exploited fully.

Message DFHZC3473 on opening the z/OS Communications Server ACB

If the master terminal operator opens the z/OS Communications Server ACB for the first time, using the z/OS Communications Server command CEMT SET VTAM OPEN, but CICS is not using all available z/OS Communications Server function, message DFHZC3473 is sent to the transient data destination called CSNE.

The same message is sent there if the ACB is opened automatically during initialization, rather than by CEMT.

Defining cross-domain services when using SNA

If you want to use SNA services to access a CICS region on another MVS image, you must ensure that the required cross-domain services are defined to the SNAs involved.

For example, to be able to use an SNA APPC connection between a CICS region (applid CICSHTH1) on MVS image MVSH and a CICS region (applid CICSHAJ1) on MVS image MVSJ:

1. Define the cross-domain services (CDRSC) for accessing CICSHAJ1 in a member of the SYS1.VTAMLST library, or your own user.VTAMLST library, for MVSH.
2. Issue a VARY ACT command on MVSH to activate the CDRSC definition for accessing CICSHAJ1.
3. Define the cross-domain services (CDRSC) for accessing CICSHTH1 in a member of the SYS1.VTAMLST library, or your own user.VTAMLST library, for MVSJ.
4. Issue a VARY ACT command on MVSJ to activate the CDRSC definition for accessing CICSHTH1.

Here is an example:

1. Create the following CDRSC definition in a member of the VTAMLST library on MVSH:

```
CDIDHAJ1 VBUILD TYPE=CDRSC
*********************************************
* CDRSC for access to applid CICSHAJ1 on MVSJ
*********************************************
CICSHAJ1 CDRSC CDRM=IYAMCDRM   MVSJ
```

2. Issue the following command on MVSH to activate the cross-domain services to CICSHAJ1 on MVSJ:

```
/V NET,ACT,ID=CDIDHAJ1
```

3. Create the following CDRSC definition in a member of the VTAMLST library on MVSJ:

```
CDIDHTH1 VBUILD TYPE=CDRSC
*********************************************
* CDRSC for access to applid CICSHTH1 on MVSH
*********************************************
CICSHTH1 CDRSC CDRM=IYALCDRM   MVSH
```

4. Issue the following command on MVSJ to activate the cross-domain services to CICSHTH1 on MVSH:

```
/V NET,ACT,ID=CDIDHTH1
```

SNA LU alias facility

Specifying a prefix string on the LUAPFX parameter of the CICS APPL statement indicates that SNA is to generate LUALIAS names for dynamic cross-network CDRSCs in session with the CICS region defined by the APPL statement.

In this way, CICS can use an LU alias for autoinstalled terminals and workstations and ensure unique names in a CICSplex comprising terminal-owning and application-owning regions. SNA generates the LUALIAS names dynamically.

CICS supports both the predefined and dynamic forms of the SNA alias function only where shown in the following table:

	CICS-to-CICS APPC connections (APPL definitions)		**APPC devices (LU definitions)**				**Terminals**	
	Synclevel 1	**Synclevel 2**	**Synclevel 1**		**Synclevel 2**			
	Predefined alias only		**Predefined alias**	**Dynamic alias**	**Predefined alias**	**Dynamic alias**	**Predefined alias**	**Dynamic alias**
SNA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CICS	Yes	No	Yes	Yes	No	No	Yes	Yes

- The LU alias is used as the NETNAME for terminals and workstations that log on to a CICS region.
- CICS does not support LU alias for synclevel 2 connections (LUTYPE 6.1 and 6.2), ignores any LU alias for these LU types, and continues to use the network name defined in the SNA APPL statement.

Dynamic LU alias support

CICS supports the use of a dynamic LU alias for CICS terminals and workstations that are autoinstalled only.

You enable dynamic LU alias support by specifying LUAPFX on the SNA APPL definition for any CICS terminal-owning region that can receive duplicate netnames. Also, when starting SNA, specify the following options on the SNA START command:

- NQNMODE=NQNAME.
- CDRSCTI=*n* to specify the length of time that the session name lasts after the last session has logged off.
  1. Make the time specified on CDRSCTI long enough to cover any time interval specified on CICS START commands that are issued against a terminal resource that uses a dynamic LU alias. This requirement applies to STARTS with a delay that run on both a TOR or AOR. If the CDRSCTI time is not long enough, a resource can log off and then log back on again with a different network name and thus a different TERMID.
  2. Also, the CDRSCTI time interval must be greater than that specified on the CICS AILDELAY system initialization parameter. However, if your applications have no dependency on the network name or TERMID, you can disregard CDRSCTI or set it to 1.

SNA generates a dynamic LU alias only if LUAPFX is specified on the CICS APPL statement and the resource comes from another network. That is, it has a different network name from the network to which the CICS region belongs.

When to use dynamic LU alias

Use dynamic LU alias when you are using autoinstalled cross-network terminals or duplicate network names. For example, in the following circumstances:

- Your cross-network terminals and workstations that log on to CICS are mainly autoinstalled.

  The CICS region receives logons from terminals and synclevel 1 connections (both parallel and single sessions) and those logons (or binds) are from cross-network resources that might have duplicate network names.

  However, be aware that synclevel 1 connections can become synclevel 2 in the future. For example, if you have a connection between a TXSeries and CICS TS, the connection is synclevel 1; but, if you change to using TXSeries with a PPC gateway, synclevel 2 is used. CICS does not support dynamic LU aliases for synclevel 2 APPC connections.
- An AOR receives shipped terminals or connections with duplicate network names from different TORs.

Predefined LU alias support

CICS supports the use of a predefined LU alias for CICS terminals and workstations that are explicitly defined and those that are autoinstalled.

You can also use a predefined LU alias for CICS regions that communicate using CICS intersystem communication. You enable predefined alias support by specifying LUALIAS=*alias* on any cross-domain resource (CDRSC) that requires a specific alias. A terminal or APPC synclevel 1 workstation that is defined to CICS on an explicit resource definition (that is, it is not autoinstalled) and is in a different network, requires a CDRSC definition with a specific alias on the LUALIAS parameter. This alias overrides the dynamic generation of an alias where LUAPFX is specified on the CICS region's APPL statement. To ensure that CICS can match the SNA LU alias with the installed terminal definition, the LUALIAS value must match the NETNAME specified on the CICS TERMINAL resource definition.

An LUALIAS option in the CDRSC is effective if the resource comes from another SNA domain. That is, it is not used if the resource comes from the same MVS image, but is used if the resource comes from another MVS image regardless of whether it is from the same sysplex, another sysplex in the same network, or from a different sysplex. If an LU alias is predefined, a dynamic LU alias is not generated.

When to use predefined LU alias

Use predefined LU alias where you do not have dynamic LU alias enabled or where you want to override dynamic LU aliases.

- Dynamic LU alias is in operation in a CICS region and your terminals or workstations are explicitly defined on CICS terminal resource definitions with explicit terminal identifiers. In this case, you use predefined LU aliases to override the generation of dynamic LU aliases, which CICS fails to match with any installed resource definition.
- Dynamic LU alias is not in operation in a CICS region, to avoid any conflict with duplicate network names.

Cross-network resources that require predefined LU alias

If the following SNA cross-network resources are to be connected to a CICS region that is defined to SNA, with LUAPFX specified on its APPL statement, they must each have a CDRSC LUALIAS=netname entry.

- CICS RDO-defined terminals connected from another network, including SNA LUs that cannot be autoinstalled:
  - Pipeline terminals
  - Automatic teller machines (3614 and 3624)
  - Devices for which CICS does not receive logons, such as printers.
- LUTYPE 6.2 synclevel 1 connections that might be bound using limited resources.

  Like other LUTYPE 6.2 connections, limited resource connections release their dynamic LU alias when CDRSCTI ends after the last session is unbound. However, these sessions are unbound whenever they are not in use, and, if they rebind after the dynamic LU alias is released, CICS installs another connection, potentially with a different LU alias.
- CICS RDO-defined work stations (LUTYPE 6.2 synclevel 1 connections) connected from another network.
- Resources that require an LU name in a RACF profile definition or resources for which prior knowledge of the LU name is required.

Choosing an LUAPFX value

When you choose an LUAPFX value, consider the scope of this parameter in the CICSplex, and also consider its scope in the sysplex in which your CICS regions operate.

A predefined LUALIAS name is supplied to CICS for cross-domain and cross-network resources. All the CICS regions in an MVS image share the same SNA and are in the same domain. A CICS region in a different MVS image uses a different SNA and is thus in a different domain. Resources coming from one SNA to another, but which share the name NETID, are cross-domain resources

A dynamic LUALIAS name is supplied to CICS only for cross-network resources. A resource is a cross-network resource if it has a different network id. SNA ensures that all the dynamic LUALIAS names assigned in one MVS image are unique. However, CICS requires network names to be unique across MVS images so that there are no network name clashes in AORs.

It is important that all CICS regions across all connected networks use unique APPLIDs. This requirement is true whether or not dynamic LUALIASs are used; it is more important with dynamic LUALIASs.

To ensure that all SNA resources in a CICSplex have unique network names, use the LUAPFX prefix:

- Specify LUAPFX on terminal-owning regions (TORs) only.
- Use the same LUAPFX value for all the CICS TORs in the same MVS image (that is, for all the TORs that are connected to the same SNA), but ensure the LUAPFX is different in each MVS image in the sysplex..

  If the LUAPFX values are not the same throughout an MVS image, you risk one resource having two different network names in the CICS regions in that image.

  If the LUAPFX values are not unique to each MVS image in the sysplex, you risk two resources attempting to install in a TOR with the same dynamic LUALIAS, or having two resources with the same network name in an AOR.

  To ensure the uniqueness of the LU prefix in each MVS, use model APPL definitions, and in these use an MVS system symbol (&SYSCLONE) as suggested in the *z/OS Communications Server: SNA Resource Definition Reference*. If you use SNA generic resources and your CICS TORs are spread across different MVS images, be aware that if a resource with a dynamically allocated LU alias logs off and then logs on again, and SNA switches the resource to an SNA in another MVS image, a different LUALIAS is assigned because of the different LUAPFX value.
- Avoid using an LUAPFX value that corresponds to the first two characters of CICS RDO-defined terminal names or connection names installed in the CICSplex.

Using LU aliases

Factors to consider when you are planning to use SNA LU aliases with CDRSC resources.

Predictable TERMIDs

If your autoinstalled terminal resources must have a predictable and reproducible TERMID for such things as temporary storage queue names and START requests, you can modify your autoinstall user-replaceable module (URM) to select a reproducible TERMID from the network qualified name, NQNAME, supplied in the CINIT or the BIND.

The sample autoinstall URM contains an example of such code (commented-out), which extracts the network qualified name from the CINIT and BIND. The example illustrates how to create a TERMID from the last nonblank character of the NETID and the last 3 nonblank characters of the *real* network name (NETNAME).

MVS workload management

If your MVS workload policies specify LU name classifications, remove the LU name for any cross-network resources that are autoinstalled by CICS.

Recovery and persistent sessions support

Resources for which CICS uses any SNA LU alias, predefined or dynamic, and which come from a different network are not cataloged by a CICS region that is not using a persistent session. Therefore, the terminal sessions for the resources cannot be recovered during an emergency restart.

Resources for which CICS uses any SNA LU alias, predefined or dynamic, and which come from a different network are catalogued if CICS is using persistent sessions, so CICS can restore resource terminal session information from the CICS catalog pending recovery of the session from SNA. However, if the resource does not persist, the resource is deleted during an emergency restart.

This action is necessary because SNA might have been restarted, causing dynamic LU aliases to be reissued to different sessions. CICS cannot recognize if SNA has been restarted and CICS cannot differentiate between a predefined and a dynamic LU alias.

CLSDST PASS
If you ISSUE PASS (CLSDST PASS) for a terminal that uses a dynamic LU alias to pass control to another CICS region in another MVS image, the resource is known by a different network name in the receiving CICS. This condition is true if the APPL statement of only one or both the CICS regions specify LUAPFX to activate dynamic LU alias.

Generic resources
If a number of generic resource TORs are in two different MVS images, a terminal or work station that logs on to one image is assigned a different network name if it logs off and logs on to a TOR in another image.

FEPI
FEPI front end systems are not supported by SNA LU alias.

Defining SNA requirements for CICSPlex SM

You require ACF/SNA definitions to identify each CMAS used by CICSPlex SM. You must create z/OS Communications Server application definitions and, optionally, cross-domain resource management definitions. There are a number of steps to perform to create z/OS Communications Server application definitions and cross-domain resource management definitions for a CMAS.

1. Before you perform these steps, specify the sizes of the SNA buffers.
   - For the SNA-to-NCP connection, specify:
     - MAXDATA ≥ 4096
   - For the NCP-to-SNA connection, specify:
     - MAXBFRU * IOBUF ≥ 4096
     - MAXBFRU * UNITSZ ≥ 4096
   - For the NCP-to-NCP connection, specify
     - TRANSFR * BFRS = RUSIZE ≥ 4096

   Specify the size as 36 bytes smaller than the smallest MAXDATA value in any NCP through which the link might pass. The 36 bytes allow for the headers that are required for SNA. For more information about the requirements for the SNA-to-NCP connection, refer to the *SNA Resource Definition Reference* manual for your level of SNA. For more information about the requirements for the NCP-to-SNA and the NCP-to-NCP connections, refer to the *NCP Resource Definition Reference* manual for your level of NCP.

   If you require help determining or modifying your z/OS Communications Server buffer specifications, discuss with the z/OS Communications Server system programmer at your enterprise.

2. Depending on your SNA conventions, you might have to modify the procedures that are described in this section:
   - Change references to the SYS1.VTAMLST library if you do not keep your definitions in the default z/OS Communications Server list.
   - Modify the APPL and CDRSC statements if you want to add these statements to existing members, rather than create new ones.
3. Use the sample SNA APPL statements in the SEYUDEF library members, EYUDVTIA and EYUDVTIB. You can modify these samples to fit your requirements.

Step 1: Creating a z/OS Communications Server application definition for a CMAS

To establish a z/OS Communications Server for SNA application definition for a CMAS, either create a new member (*major node*) or access an existing member in the SYS1.VTAMLST library.

Add the following APPL statement to the member:

```
         VBUILD TYPE=APPL
name     APPL ACBNAME=acbname,AUTH=(VPACE,ACQ,SPO,PASS),              x
              EAS=10,PARSESS=YES,SONSCIP=YES,APPC=NO,                 x
              VPACING=number
```

where:

name
A 1-character to 8-character unique name.

acbname
The node name of this CMAS. This name must be unique in the domain. If you omit this parameter, the name of the SNA APPL statement is used.

vpacing
The maximum number of normal-flow requests that another logical unit can send on an intersystem session before waiting to receive a pacing response. Start with a value of five.

For example, to create a z/OS Communications Server application definition for the CMAS on SYSA, you might create a member APCMAS1 in the SYS1.VTAMLST library that contains the APPL statement:

```
         VBUILD TYPE=APPL
CMS1     APPL ACBNAME=CMS1,AUTH=(VPACE,ACQ,SPO,PASS),                 x
              EAS=10,PARSESS=YES,SONSCIP=YES,APPC=NO,                 x
              VPACING=5
```

You require the same type of definition for each CMAS you use.

Step 2: Defining cross-domain resources for a CMAS

Define cross-domain resources (CDRSCs) when a CMAS that is to communicate with another CMAS cannot take advantage of adjacent CDRSCs or you want to minimize the effort involved in using adjacent CDRSCs.

To establish a CDRSC definition, you must either create a new member or access an existing member in the SYS1.VTAMLST library. In the new or existing member, specify the following CDRSC statement for each CMAS that you want to communicate with:

```
        VBUILD TYPE=CDRSC
name    CDRSC CDRM=cdrm
```

where:

name
The name you assigned to a CMAS in Step 1.

cdrm
The name of the MVS image previously identified as the cross-domain resource manager (CDRM).

For example, to allow the CMAS on SYSA to communicate with the CMASs on SYSB and SYSC, you might create the member CDRCMS1 in the SYS1.VTAMLST library, that contains the CDRSC statements:

```
        VBUILD TYPE=CDRSC
CMS2    CDRSC CDRM=VTAMB
CMS3    CDRSC CDRM=VTAMC
```

where VTAMB and VTAMC are the cross-domain resource manager names that are assigned to SYSB and SYSC respectively.

You also require the same types of definitions for the CMASs on SYSB and SYSC. That is, for the CMAS on SYSB, you might create a member CDRCMS2, that contains the CDRSC statements:

```
        VBUILD TYPE=CDRSC
CMS1    CDRSC CDRM=VTAMA
CMS3    CDRSC CDRM=VTAMC
```

Note: VTAM is now z/OS Communications Server.

Step 3: Updating the configuration list for a CMAS

If, in Step 1 or 2, you created new members in the SYS1.VTAMLST library, you must update the SNA configuration list for each MVS image. When SNA starts, it automatically activates the new members.

To make these updates, add the new member names to the end of the configuration list in the appropriate ATCCONxx member of the SYS1.VTAMLST library. To find the suffix of the ATCCONxx member:

- Get the suffix of the COMMNDxx member from the CMD= parameter in the IEASYSxx member in SYS1.PARMLIB.
- Get the suffix of the ATCSTRxx member from the LIST= parameter on the command that is used to start SNA in the COMMNDxx member in SYS1.PARMLIB. If you do not start SNA from the COMMNDxx member, get the suffix from the LIST= parameter of the command that you use to start SNA.
- Get the suffix of the ATCCONxx member from the CONFIG= parameter in the ATCSTRxx member in SYS1.VTAMLST.

As an illustration, the examples shown in Steps 1 and 2 assume that the members APCMAS1 and CDRCMS1 exist. To add these members to the end of the configuration list in ATCCONxx, specify:

```
APCMAS1,                                                            x
CDRCMS1
```

If you added the CMAS and cross-domain definitions to existing members, ATCCONxx already contains these member names.

Step 4: Activating the major nodes for a CMAS

You can activate the definitions that are created in Steps 1 and 2 either by restarting the z/OS Communications Server for each system or by manually activating the definitions.

To manually activate a major node, you can issue the following commands, where `name` identifies a major mode that was created or modified in Steps 1 and 2:

- Deactivate the major node if it is currently active by issuing this command:

  ```
  VARY NET,INACT,ID=name
  ```

- Activate or reactivate the major node by issuing this command:

  ```
  VARY NET,ACT,ID=name
  ```

To ensure that the major node has been activated, issue this command:

```
D NET,ID=name
```

For example, to activate the member APCMAS1 and then ensure that it has been activated, issue these commands:

```
VARY NET,INACT,ID=APCMAS1
VARY NET,ACT,ID=APCMAS1
D NET,ID=APCMAS1
```

Perform the preceding steps for each CMAS you are using.

Chapter 22. Installing CICS modules in the MVS link pack area

How to define the CICS LPA library to your MVS, and how to install and use the CICS modules.

Preparing to install CICS modules in the MVS link pack area

Before you install modules in the MVS link pack area, you need to understand the benefits, the scope, service level implications, and the modules required in the MVS link pack area.

- "Benefits of using the MVS link pack area"
- "What is meant by the MVS link pack area?"
- "Which modules must be installed in the MVS link pack area?" on page 157
- "Which modules can be in the MVS link pack area?" on page 158
- "Mismatch of service levels" on page 156

Benefits of using the MVS link pack area

There are several benefits of placing code in the MVS link pack area.

- You protect the code from possible corruption by user applications. Because the MVS link pack area is in protected storage, it is virtually impossible to modify the contents of these programs.
- You can improve the performance, and reduce the demand for real storage, if you use the MVS link pack area for program modules. If more than one copy of the same release of CICS is running in multiple address spaces of the same processor, each address space requires access to the CICS nucleus modules. These modules can either be loaded into each of the address spaces or shared in the MVS link pack area. If they are shared in the MVS link pack area, the working set and, therefore, the demand for real storage (paging) can be reduced.
- You can decrease the storage requirement in the private area by careful allocation of the unused storage in the MVS link pack area created by rounding to the next segment.

  If you know the amount of space that you require in the LPA, and from that the total size of the MVS common area above the CICS private storage, you can determine the 1 MB segment on which the boundary between the two areas lies. This calculation might indicate some space in the MVS common area is left unused, which you can use for CICS LPA-eligible modules. By moving more modules from CICS private storage to the LPA, you decrease the space that is required for modules in CICS private storage.

What is meant by the MVS link pack area?

The MVS link pack area comprises several areas, both above and below 16 MB. In these topics, the term MVS link pack area refers to the pageable link pack areas above and below 16 MB where modules that are used from the MVS link pack area are normally installed.

The MVS link pack area has both pageable and fixed parts. Although you can install CICS modules into the fixed parts, use the pageable areas for performance reasons.

The term *LPA* specifically refers to the MVS link pack area below 16 MB, and the term *ELPA* specifically refers to the area above 16 MB. A module that is link-edited with the RMODE(ANY) attribute is loaded into the ELPA.

If you install a module into the LPA or ELPA, that module cannot be retrieved from the MVS link pack area until you re-IPL your MVS with CLPA specified. To use the new module and avoid an IPL, you can use the MVS dynamic LPA in one of the following ways:

- With the SETPROG LPA command
- With an LPA statement in a PROGxx member of PARMLIB, which specifies the SET PROG=xx command

Note: You should not use dynamic LPA with the 8 CICS modules that must be installed in the MVS link pack area, except for DFH99SVC and except for when you use the DFHCSVCU utility program to dynamically update the CICS SVC. For details about the DFHCSVCU utility program, see "Running the DFHCSVCJ job" on page 64.

Mismatch of service levels

If you use modules with mismatching service levels, you can cause unpredictable results. To be safe, do not use the LPA version of a module if it differs from the version in the CICS libraries that you are using.

Load modules used from the LPA might be at a lower service level than the rest of your CICS region in any of the following circumstances:

- You are running CICS from libraries that belong to a target zone currently at a higher service level than the LPA zone.
- You have applied service to the LPA zone since the last IPL of MVS.
- You are not using the MLPA to replace service-updated load modules, but have applied service to the LPA zone since the last IPL of MVS for which CLPA (create link pack area) was specified.

Thus, if you have applied service to a load module in your CICS libraries, you must also apply the service to the LPA version of the module, if one exists, so that the MVS link pack area always contains tested load modules.

Use the SMP/E RESTORE function to remove the USERMOD before the LPA zone is updated or copied. Then apply the USERMOD again.

If you have used a copy of the CICS-supplied USERMODs to install modules into the MVS link pack area, and the original USERMOD is serviced, you can reflect the changes in your version of the USERMOD.

Although it is possible for CICS PTFs to make changes to the CICS modules which must reside in the MVS link pack area, in reality it is a fairly rare event. The modules have to be downwardly compatible with lower releases, and applies to any code changes made to them by PTFs, as well as to the code at base level.

Which modules must be installed in the MVS link pack area?

The CICS modules that must be in the MVS link pack area are listed.

Table 11. CICS modules required in the MVS link pack area

Module	Description	When required in LPA	See notes after this table
DFHCSVC	CICS Type 3 SVC	Always	1, 2, 3, 4, and 6
DFHDSPEX	CICS postexit stub	Always	1, 3, and 5
DFHDUMPX	SDUMPX IEASDUMP QUERY exit	Always	1, and 3
DFHIRP	Interregion communication program	To use MRO, CICS shared database, or the console message-handling facility	1, 2, 3, and 6
DFHSSEN	Subsystem interface end-of-memory and end-of-task cleanup routine	To use the console message-handling facility	1, 2, 3, and 6
DFHSSGC	Subsystem generic connect module	To use the console message-handling facility	3, and 7
DFHSSWT	Subsystem interface WTO router	To use the console message-handling facility	3, and 7
DFH99SVC	Dynamic allocation - SVC services	Always	1, and 3

1. The module can be used only from the MVS link pack area and you must install it there before CICS can be started.
2. You must always install the latest service level of the modules DFHCSVC, DFHIRP (if required), and DFHSSEN.
3. The version of this module that is supplied with the current release is downward-compatible with earlier releases of CICS. It works correctly with CICS regions running earlier releases. Therefore, if you are running different releases of CICS on the same MVS image, use the latest version of this module.
4. You must define the DFHCSVC module to MVS as a Type 3 SVC. The default SVC number is 216. If you use a nondefault SVC number, you must define it to CICS on the CICSSVC system initialization parameter.

   Moving DFHCSVC into the MVS link pack area:

   Do not use the link editor to install the CICS SVC module into a library in the MVS link pack area. To copy or move the module from the *hlq*.SDFHAUTH library to the nominated library in the MVS link pack area, use either a suitable copy utility program, such as IEBCOPY, or an SMP/E USERMOD with `++MOVE` statements.
5. If you are running earlier releases of CICS with the latest version, ensure that the latest version of the DFHDSPEX module is installed in the MVS link pack area. The DFHDSPEX module must be in the MVS link pack area for integrity reasons, but the postexit routine, DFHDSAUT, can be either in the MVS link pack area or in the CICS address space. This choice enables you to use different levels of the DFHDSAUT module in different CICS regions running in the same MVS image, because the DFHDSAUT module might not be compatible between CICS versions.

6. To communicate by MRO, all CICS regions in the same MVS image must use the latest level of the modules DFHCSVC, DFHIRP, and DFHSSEN in the MVS link pack area.

   If a region detects that DFHIRP is at a lower level when it attempts to open interregion communication, it issues message DFHIR3799 and interregion communication fails to open.
7. To use console message-handling, these modules must be either in the MVS link pack area or in an APF-authorized library in the MVS linklist.

If an LPA module is only ever referred to by name, then refreshing it in the LPA is valid. That is, if each time it is used, a new reference to it is obtained by using an MVS LOAD macro. However, most references to LPA modules do not work this way. The address of an LPA module could be saved into a control block after the initial LOAD of the module. The implication is that this address remains unchanged without a CLPA IPL. If dynamic LPA is used to pick up a change to an LPA module, then the address saved in the control block is no longer valid. Of the 8 CICS modules which must be installed in the LPA, only DFH99SVC is eligible to be refreshed in this way.

Which modules can be in the MVS link pack area?

A number of CICS modules and user application program modules are available from the MVS link pack area.

CICS modules

The following CICS modules can be installed in the MVS link pack area:
- Modules that can reside above 16 MB (for example, the CICS message table, DFHMGT). You can also install these modules in the extended link pack area (ELPA).
- Modules that are optionally installed in the MVS link pack area; that is, a module that is not required in the MVS link pack area can be used only by the release of CICS to which it relates.
- Modules that are eligible to be used from the MVS link pack area are listed in the CICS-supplied USERMODs. The USERMOD member for base CICS modules is DFH$UMOD, which is in the *hlq*.SDFHSAMP library. Refer to DFH$UMOD for a list of these modules, and to the details in "LPA-required and LPA-eligible modules" on page 159, to help you select the CICS modules that you want to install in the MVS link pack area.

User application programs

You can use user application programs from the MVS link pack area if they are read-only and meet one of the following criteria:
- They are written in COBOL, do not overwrite WORKING STORAGE, and are compiled using VS COBOL II, or a later version. The CICS translator generates a CBL statement with the required compiler options.
- They are written in PL/I (so they do not overwrite STATIC storage) and are compiled using one of the versions of PL/I for z/OS listed in High-level language support. The CICS translator inserts the required REENTRANT option into the PROCEDURE statement.
- They are written in C/370, compiled with the RENT option, and link-edited with the RENT option.

- They are written in assembler language, assembled with the RENT option, and link-edited with the RENT and REFR options.

Command-level user application programs compiled using a Language Environment-conforming compiler, or written in assembler language or C/370, can be loaded above 16 MB. For information about installing application programs, see the *CICS Application Programming Guide*.

A read-only module that can be above 16 MB is also eligible for the ELPA.

LPA-required and LPA-eligible modules

The LPA-required modules, that is, modules that must be installed in the MVS link pack area, as supplied in *hlq*.SDFHLPA, are listed. The LPA-eligible modules that require associated system initialization parameters, or that are installed in the LPA below 16 MB, are also listed.

For a complete list of LPA-eligible modules, see the CICS-supplied sample DFH$UMOD. For further information about this sample, see "Installing CICS modules in the LPA" on page 168.

To find the size of each module, check the load library directory information.

LPA-required modules

All LPA-required modules are loaded into the part of the MVS link pack area that is above 16 MB (ELPA).

Table 12. LPA-required modules, supplied in hlq.SDFHLPA

Name	Description	Notes
DFHCSVC	CICS SVC startup	CICSSVC 1 2 on page 160
DFHDSPEX	DS domain - MVS POST exit stub	2 on page 160
DFHDUMPX	SDUMPX IEASDUMP QUERY exit	2 on page 160
DFHIRP	Interregion communication program	1 2 on page 160 3 on page 160
DFHSSEN	Subsystem interface end-of-memory / end-of-task clean up routine	1 2 on page 160 3 on page 160
DFHSSGC	Subsystem interface generic connect	2 on page 160 4 on page 160
DFHSSWT	Subsystem interface WTO router	2 on page 160 4 on page 160
DFH99SVC	Dyn alloc - SVC services	1 2 on page 160

Notes:

1. You must always install the latest service level of the CICS SVC module, DFHCSVC. Install the DFHCSVC module into the MVS link pack area before you run the CICS installation verification procedures.

   You must define the DFHCSVC module in an IEASVCxx member of the `SYS1.PARMLIB` library with SVCPARM statements. You select the required

IEASVCxx member by coding the SVC parameter (SVC=xx) in a SYS1.PARMLIB member (IEASYSyy), which you use to IPL your MVS.

You can run several CICS regions, at different release levels, in the same MVS image. Each region uses its own version of the DFHCSVC module. If some regions use MRO, all regions that use MRO must use the latest DFHCSVC module and the latest DFHIRP module.

If some regions use the DFHCSVC module, and you allocate to the SVC a number different from the SVC number that is used by the regions, you must generate a new version of the DFHCRC program on the regions.

For more information about the DFHCSVC module, see “Program Directories” on page 5.

2. All LPA-required modules are compatible with earlier releases of CICS. If you are running earlier releases of CICS, you must ensure that the correct version is installed in the LPA. The module must be in the LPA for integrity reasons, but the post exit routine itself can stay in the LPA or in the CICS address space. You can then use different versions of the DFHDSAUT module in different CICS regions that run in the same MVS image, because the DFHDSAUT module might not be compatible with all releases.
3. The DFHIRP module must be in the MVS link pack area only if you are using MRO, CICS shared database, or the console message-handling facility. If you install the DFHIRP module in the MVS link pack area, you must also install DFHSSEN if you are using the console message-handling facility.

   You must always install the latest service level of the DFHIRP (if required) and DFHSSEN.

   If you are running CICS with MRO at different release levels, all regions in the same MVS image must use the latest DFHIRP module.
4. To use the console message formatting facility of the MVS subsystem interface, you must install the modules DFHSSGC and DFHSSWT either in the MVS link pack area or in an APF-authorized library in the MVS link list. These modules are used by the subsystem interface and not directly by CICS. Therefore, the use of these modules from the MVS link pack area is not controlled by CICS parameters or options.

   For information about enabling the console message-formatting facility, and about the other modules it requires, see “Modules required to use the console message-handling facilities” on page 132.

LPA-eligible modules

Table 13 on page 161 shows the LPA-eligible modules that require associated system initialization parameters, or that are affected by an option in the resource definition of the program.

- If an LPA-eligible module requires an associated system initialization parameter, you must specify this parameter to use the function that is associated with that module. For more information about the system initialization parameters, see System initialization parameter descriptions and summary in Reference -> System definition -> System definition.
- Some LPA-eligible modules are affected by the USELPACOPY option of the resource definition of the program. If USELPACOPY=NO, you do not need to include that module in the MVS link pack area. For more information about the USELPACOPY option, see PROGRAM attributes in Reference -> System definition.

Table 14 on page 167 shows the LPA-eligible modules that are loaded into the part of the MVS link pack area that is below 16 MB (LPA). All other LPA-eligible modules are loaded into the ELPA.

Table 13. LPA-eligible modules that require an associated parameter or option

Name	Description	System initialization parameter or note
DFHAIIN	AITM Manager initialization	AIEXIT
DFHAIIQ	AITMM - locate/unlock/inquire/browse	AIEXIT
DFHAITM	AITMM - add replace/delete	AIEXIT
DFHALP	Terminal allocation	AIEXIT
DFHAPCE	CRTE session handling	1 on page 166
DFHAPRP	Dynamic program routing gate	1 on page 166
DFHCCNV		1 on page 166
DFHCEGN	Goodnight transaction stub	1 on page 166
DFHCESD	Shutdown transaction	1 on page 166
DFHCHS		1 on page 166
DFHCMAC	ME domain - CICS messages and codes transaction (CMAC)	1 on page 166
DFHCRNP	Interregion connection manager	1 on page 166
DFHCRQ	ATI purge program	1 on page 166
DFHCRR	Interregion session recovery program	1 on page 166
DFHCRS	Remote scheduler program	1 on page 166
DFHCRSP	CICS IRC startup module	1 on page 166
DFHCRT	Transaction routing relay program for APPC devices	1 on page 166
DFHDBAT	CICS-DBCTL adapter/transformer	1 on page 166
DFHDBCT	CICS-DBCTL control program	1 on page 166
DFHDBTI	EXEC DLI LD table	1 on page 166
DFHDIP	Data interchange program	DIP=YES
DFHDIPDY	Data interchange program (dummy)	DIP=NO
DFHDSAUT	DS domain - authorized services	2 on page 166
DFHDSBA$	BMS data stream build (standard)	BMS=STANDARD
DFHDSB1$	BMS data stream build (full)	BMS=FULL
DFHDYP	Dynamic routing program	DTRPGM=DFHDYP 1 on page 166
DFHEBU	EXEC FMH construction	ISC=YES/xx
DFHECID	CECI service program	1 on page 166
DFHECIP	Command interpreter (CECI) program	1 on page 166
DFHECIS	Event capture component	1 on page 166
DFHECSC	EP system event calls	1 on page 166

Table 13. LPA-eligible modules that require an associated parameter or option (continued)

Name	Description	System initialization parameter or note
DFHECSP	Command syntax check (CECS) program	1 on page 166
DFHEDAD	RDO (CEDA) service program	1 on page 166
DFHEDAP	RDO (CEDA) program	1 on page 166
DFHEDFBR	Temporary-storage browse transaction, CEBR	1 on page 166
DFHEDFD	EDF display program	1 on page 166
DFHEDFE	EDF attach error handler	1 on page 166
DFHEDFP	EDF control program	1 on page 166
DFHEDFR	EDF response table	1 on page 166
DFHEDFX	EDF task switch program	1 on page 166
DFHEDI	EXEC interface for data interchange	DIP=YES
DFHEDP	EXEC DLI command stub	1 on page 166
DFHEGL	EXEC interface for unmapped LU6.2 commands	VTAM=YES
DFHEIGDS	Translator table (GDS commands)	1 on page 166
DFHEIPSE	EXEC interface for perform security	SEC=YES
DFHEITAB	Translator table (basic commands)	1 on page 166
DFHEITBS	Translator table (special commands)	1 on page 166
DFHEITMT	Command language table for CEMT	1 on page 166
DFHEITOT	Command language table for CEOT	1 on page 166
DFHEITST	CEST language definition table	1 on page 166
DFHEITSZ	EXEC CICS language definition table	1 on page 166
DFHEMS	EXEC interface for BMS	BMS=STANDARD or FULL
DFHEMTA	Programmable interface to Master terminal program	1 on page 166
DFHEMTD	Master terminal (CEMT) service program	1 on page 166
DFHEMTP	Master terminal (CEMT) program	1 on page 166
DFHEOTP	CEOT service program	1 on page 166
DFHEPS	System spooling interface stub	SPOOL=YES
DFHESTP	CEST service program	1 on page 166
DFHETR	EXEC interface for trace control	3 on page 166
DFHETRX	EXEC interface for enter tracenum, monitor	USERTR
DFHFCBD	File control BDAM request processor	FCT=YES/xx
DFHFCDN	File control DSN block manager	FCT=YES/xx
DFHFCD2	File control shared data tables record request handler	FCT=YES/xx
DFHFCFR	File Control request handler	FCT=YES/xx

Table 13. LPA-eligible modules that require an associated parameter or option (continued)

Name	Description	System initialization parameter or note
DFHFCFS	File Control state program	FCT=YES/xx
DFHFCIN	File control initialization program	FCT=YES/xx
DFHFCMT	File control table manager	FCT=YES/xx
DFHFCRL	File control VSAM SHRCTL block manager	FCT=YES/xx
DFHFCRP	File control restart program	FCT=YES/xx
DFHFCSD	File control shutdown program	FCT=YES/xx
DFHFCST	File control statistics program	FCT=YES/xx
DFHFCU	File open utility program	FCT=YES/xx 1 on page 166
DFHFCVS	File access VSAM request processor	FCT=YES/xx
DFHGMM	z/OS Communications Server LU startup message	1 on page 166
DFHICUS	Interval storage manager	1 on page 166
DFHIIPA$	BMS non-3270 input mapping (standard)	BMS=STANDARD
DFHIIP1$	BMS non-3270 input mapping (full)	BMS=FULL
DFHINDAP	Indoubt tool	1 on page 166
DFHINDT	Indoubt tool	1 on page 166
DFHINTRU	Indoubt tool task-related user exit	1 on page 166
DFHISP	Intersystem communication program	ISC=YES
DFHMCPA$	BMS mapping control program (standard)	BMS=STANDARD
DFHMCPE$	BMS mapping control program (minimum)	BMS=MINIMUM
DFHMCP1$	BMS mapping control program (full)	BMS=FULL
DFHMCX	BMS fast path module	BMS
DFHMCY	Process MAPPINGEV Requests	BMS
DFHMIRS	DFHMIRS	ISC=YES 1 on page 166
DFHML1	BMS LU1 printer mapping program	BMS
DFHMLDML	XML parsing domain	1 on page 166
DFHMQBAS	BMS program that handles the base panel	1 on page 166
DFHMQBP0	CICS bridge - request handler	1 on page 166
DFHMQBP1	CICS MQ bridge - DPL abend handler	1 on page 166
DFHMQBR0	CICS MQ bridge - monitor main program	1 on page 166
DFHMQCOD	PLT program to start connection by using INITPARM	1 on page 166
DFHMQCON	Back-end module that issues a connection request to the WebSphere MQ subsystem	1 on page 166

Table 13. LPA-eligible modules that require an associated parameter or option (continued)

Name	Description	System initialization parameter or note
DFHMQCTL	First level transaction for operations. This program handles text mode operation only	1 on page 166
DFHMQDCI	Data conversion exit for inbound data to the MQ-CICS bridge, for use in the CICS environment	1 on page 166
DFHMQDCO	Data conversion exit for outbound data from the MQ-CICS bridge	1 on page 166
DFHMQDIS	Back-end module that services display requests	1 on page 166
DFHMQDSC	Back-end module that issues a disconnect request to the WebSphere MQ subsystem	1 on page 166
DFHMQDSL	Second-level transaction for DISPLAY	1 on page 166
DFHMQIG	MQ inquire group	1 on page 166
DFHMQMON	Monitor program for pending events	1 on page 166
DFHMQPLT	Sample CONNECT program in phase 2 PLT execution	1 on page 166
DFHMQPOP	BMS program that handles all pull-down maps	1 on page 166
DFHMQPRM	Retrieves all default adapter parameters	1 on page 166
DFHMQPUL	BMS program that handles all pull-down maps	1 on page 166
DFHMQQCN	Second-level transaction for CONNECT	1 on page 166
DFHMQRET	BMS program that handles the final screen, including scrolling	1 on page 166
DFHMQRS	Back-end module to service reset (change) requests	1 on page 166
DFHMQSSQ	Back-end module to service start and stop CKTI requests	1 on page 166
DFHMQTRU	CICS task-related user exit program for WebSphere MQ	1 on page 166
DFHMQTSK	Task initiation support (CKTI transaction)	1 on page 166
DFHMSP	Message switching program	1 on page 166
DFHMXP	Local queuing shipper	1 on page 166
DFHM32A$	BMS 3270 mapping (standard)	BMS=STANDARD
DFHM321$	BMS 3270 mapping (full)	BMS=FULL
DFHPBPA$	BMS page and text build (standard)	BMS=STANDARD
DFHPBP1$	BMS page and text build (full)	BMS=FULL
DFHPGADX	Program autoinstall exit - Assembler	1 on page 166
DFHPHP	Partition handling program	BMS
DFHPSP	System spooling interface program	SPOOL=YES
DFHPSSVC	System spooling interface, retrieve a data set name	SPOOL=YES
DFHQRY	Query transaction	1 on page 166
DFHRLRA$	BMS route list resolution (standard)	BMS=STANDARD
DFHRLR1$	BMS route list resolution (full)	BMS=FULL
DFHRMSY	Resource manager resync program	1 on page 166

Table 13. LPA-eligible modules that require an associated parameter or option (continued)

Name	Description	System initialization parameter or note
DFHRPAL	ONC RPC feature alias list	1 on page 166
DFHRTC	CRTE cancel command processor	1 on page 166
DFHRTE	Transaction routing program	1 on page 166
DFHSFP	Signoff program	1 on page 166
DFHSNP	Signon program	1 on page 166
DFHSNXR	XRF signon state	1 on page 166
DFHSUSX	XRF signon	XRF=YES/xx
DFHTADML	TA Domain	1 on page 166
DFHTPPA$	BMS terminal page processor (standard)	BMS=STANDARD
DFHTPP1$	BMS terminal page processor (full)	BMS=FULL
DFHTPQ	BMS terminal page cleanup program	BMS 1 on page 166
DFHTPR	BMS terminal page retrieval program	BMS 1 on page 166
DFHTPS	BMS terminal page scheduling program	BMS 1 on page 166
DFHTRAO	TR domain - auxiliary trace output	AUXTR=ON
DFHTSP	Temporary-storage control program	TST=YES/xx
DFHWSMS	DFHWSMS	XRF=YES/xx
DFHWSSON	CAVM state management signon request handler	XRF=YES/xx
DFHWTI	XRF takeover initiation program	XRF=YES/xx
DFHXFP	Online data transformation program	ISC=YES
DFHXFX	Optimized data transformation program	ISC=YES
DFHXRP	XRF request program	XRF=YES/xx)
DFHXRSP	XRF surveillance program	XRF=YES/xx
DFHXSS	XS domain - supervisor request services	SEC¬=NO
DFHXSWM	XRF message manager for security manager	XRF=YES/xx
DFHXTP	Terminal sharing transformation program	ISC=YES
DFHZATA	Autoinstall program	1 on page 166
DFHZATD	Autoinstall delete program	1 on page 166
DFHZATDX	User-replaceable autoinstall exit	AIEXIT 1 on page 166
DFHZATDY	User-replaceable autoinstall exit with APPC	AIEXIT 1 on page 166
DFHZCA	z/OS Communications Server working set module	VTAM=YES
DFHZCB	z/OS Communications Server working set module	VTAM=YES
DFHZCC	z/OS Communications Server working set module	VTAM=YES
DFHZCN1	CICS Client CCIN transaction	1 on page 166

Table 13. LPA-eligible modules that require an associated parameter or option (continued)

Name	Description	System initialization parameter or note
DFHZCP	Terminal management program	VTAM=YES
DFHZCT1	CICS Client CTIN transaction	1
DFHZCUT	Persistent verification signed-on-from list management program	VTAM=YES
DFHZCW	z/OS Communications Server nonworking set module	VTAM=YES
DFHZCX	LOCATE, ISC/IRC request	ISC=YES
DFHZCXR	Transaction routing module address list	ISC=YES
DFHZCY	z/OS Communications Server nonworking set module	VTAM=YES
DFHZCZ	z/OS Communications Server nonworking set module	VTAM=YES
DFHZGAI	APPC autoinstall - create APPC clones	AIEXIT
DFHZGBM	APPC manipulate bitmap	VTAM=YES
DFHZGCA	LU6.2 CNOS actioning	VTAM=YES
DFHZGCC	Catalog CNOS services	VTAM=YES
DFHZGCN	LU6.2 CNOS negotiation	VTAM=YES
DFHZGPR	z/OS Communications Server persistent sessions resource handler	VTAM=YES
DFHZHPRX	Authorized path SRB mode z/OS Communications Server EXECRPL	HPO=YES
DFHZLS1	LU6.2 CNOS request transaction program	VTAM=YES 1
DFHZRSP	Resync send program	TCP=YES/xx 1

Notes:

1. The program is used from the MVS link pack area only if you set the USELPACOPY option of its program resource definition to YES.
2. All LPA-required modules are compatible with earlier releases of CICS. If you are running earlier releases of CICS, you must ensure that the correct version is installed in the LPA. The module must be in the LPA for integrity reasons, but the post exit routine itself can stay in the LPA or in the CICS address space. You can then use different versions of the DFHDSAUT module in different CICS regions that run in the same MVS image, because the DFHDSAUT module might not be compatible with all releases.
3. You can set the system tracing status by coding appropriate system initialization parameters, and you can also set it dynamically by using the CETR transaction.

   You can use the following system initialization parameters:

   AUXTR
   Activate auxiliary trace.

   AUXTRSW
   Define the auxiliary switch status.

   GTFTR
   Enable CICS to use MVS GTF tracing.

INTTR
Activate CICS internal tracing.

TRTABSZ
Specify the size of the internal trace table.

USERTR
Set the master user trace flag on or off.

For information about using CICS trace and controlling the tracing status with the CETR transaction, see Setting trace destinations and tracing status in Troubleshooting.

Table 14. LPA-eligible modules that are loaded into the LPA

Name	Description	System initialization parameter or note
DFHAIP	Application interface program	
DFHAPRL	Validate and install resources	
DFHASV	Authorized services interface	
DFHCPSM	Translator for CICSPlex SM commands	
DFHDLI	DL/I call router	
DFHDUIO	DU domain - open/close/switch/write	
DFHEIAD	AP domain - audit command	
DFHEIDLI	DL/I load table	
DFHEIGDX	EXEC interface load table	
DFHEITL	AP domain - resolve SPI	
DFHERM	Resource manager interface (RMI) module	
DFHFCBD	File control BDAM request processor	FCT=YES/xx
DFHFCU	File open utility program	FCT=YES/xx 1 on page 166
DFHICUT	AP domain - delete ICEs	
DFHLDSVC	LD domain - authorized service routine	
DFHLIRET	Language interface return program	
DFHMPDML	MP domain	
DFHPSP	System spooling interface program	SPOOL=YES
DFHTDEXL	TD domain - DCB exit list	
DFHTORP	Terminal object recovery program	
DFHTRAO	TR domain - auxiliary trace output	AUXTR=ON
DFHXCI	External CICS interface (EXCI) program	

Space requirements for CICS modules in the MVS link pack area

Allow enough space in the MVS link pack area for you to install those CICS modules that you intend using from there.

To find out how much space you require:

- Review the sizes of the modules that you want to install in the MVS link pack area, as given in the load library directory information.
- Review the module index of a system dump for the CICS region started with the system initialization parameter LPA=NO.
- Calculate the module sizes that are given for each module in the listing of modules that is provided by the IEHLIST utility program.

Remember also to allow space for any of your user application programs that you intend using from the MVS link pack area. The total space required depends on how the operating system packages the modules into the MVS link pack area.

When you have determined the space you require in the MVS link pack area, create a library with enough space and define it to your MVS. See "Defining the CICS LPA library to your MVS" for more information.

Defining the CICS LPA library to your MVS

CICS supplies the library *hlq*.SDFHLPA. This library contains the modules that must be in the LPA. You can also use this library to install other CICS modules or application programs that you want to use from the LPA.

You can give the *hlq*.SDFHLPA library your own index, but, if you do, you must specify the new index on the LINDEX parameter of the DFHISTAR job.

Add the full name of the *hlq*.SDFHLPA library to an LPALSTxx member of SYS1.PARMLIB. You must then IPL the system with the CLPA option to ensure that the library contents are loaded into the PLPA. Set the CLPA option by specifying it as an IEASYSxx member of SYS1.PARMLIB or in response to message IEA101A. Include IEASYSxx as the SYSPARM value in the LOADxx member.

RACF-protect the *hlq*.SDFHLPA library, to prevent unauthorized or accidental modification of this library. For information about protecting the CICS libraries, see the CICS installation requirements for RACF in Securing.

You can install into the *hlq*.SDFHLPA library the CICS modules to be used from the MVS link pack area. See "Installing CICS modules in the LPA."

Installing CICS modules in the LPA

You can install modules into the MVS link pack area by using SMP/E.

In the context of the LPA, *install* means to move or copy a module into a suitable LPA library by using SMP/E, or by using a copying method that re-blocks the copied modules when the target data set has a smaller block size than the data set you copy from. For example, you can use the COPYMOD function of the IEBCOPY program.

Do not relink-edit the modules to put them into the LPA library. CICS modules are supplied with the necessary attributes such that MVS loads them automatically above the 16 MB line into the ELPA.

The following steps summarize the procedure to install modules in the CICS LPA library, and to ensure that SMP/E can continue to service them. Further information explains these steps in more detail.

1. Select those modules that you want to use from the MVS link pack area and specify them in the SMP/E USERMOD to be used to install the modules in the MVS link pack area.

   For a list of CICS-supplied modules eligible for the MVS link pack area, see the CICS-supplied sample DFH$UMOD.

   To install modules in the MVS link pack area, use one of the following methods:

   - Use an SMP/E USERMOD that contains `++MOVE` statements for only the modules to be installed in the MVS link pack area.

     CICS supplies an SMP/E USERMOD called DFHUMOD in member DFH$UMOD in the *hlq*.SDFHSAMP library. This USERMOD contains `++MOVE` statements for all CICS modules, in the *hlq*.SDFHAUTH and *hlq*.SDFHLOAD libraries, that are eligible for the MVS link pack area. The USERMOD also indicates whether each module is LPA- or ELPA-eligible. You can choose which of the modules to install in the MVS link pack area by creating your own version of the USERMOD. Include modules in the working set of the installation.
   - Use your own version of a USERMOD. Your version can include `++MOVE` statements from both CICS-supplied USERMODs.

     If you intend changing a CICS-supplied USERMOD, to choose modules to install in the MVS link pack area, take a copy of the USERMOD and update the copy only. If you have copied the *hlq*.SDFHSAMP library, for instance, when changing user-replaceable programs, you already have copies of the CICS-supplied USERMODs. If the original *hlq*.SDFHSAMP library is serviced, and the USERMOD is modified, you can reflect the changes in your version.
2. Choose which read-only modules to install in the MVS link pack area and edit your copy of the SMP/E USERMOD.
   a. Comment out the `++MOVE` statements for the modules that you do not want to install in the LPA.
   b. Move the remaining `++MOVE` statements for the modules that you do want to install in the LPA one column to the left, so that the `++MOVE` statements start in column one of the USERMOD module.
   c. Add `++MOVE` statements for your user application program modules that you want to install in the LPA, with the `++MOVE` statements starting in column one of the DFH$UMOD module.
3. Receive the USERMOD into the CICS global zone. SMP/E moves those load modules you have specified from the named CICS target library (*hlq*.SDFHLOAD or *hlq*.SDFHAUTH) into the CICS LPA library.

   To receive and apply the CICS-supplied sample USERMODs in DFH$UMOD, you can use the associated job DFHLPUMD, which is tailored to your CICS environment and stored in the *hlq*.XDFHINST library when you run the DFHISTAR job.
4. Apply the USERMOD to the LPA zone. When you apply the USERMOD, you also update the corresponding LMOD entries in the target zone SMPCSI.

5. To enable CICS to use the modules that you have installed in the MVS link pack area, re-IPL your MVS with CLPA specified.

   Also, specify that CICS uses modules from the MVS link pack area. You can also control which modules are used from the MVS link pack area in several ways. See "Controlling the use of modules from the MVS link pack area" for more information.

Controlling the use of modules from the MVS link pack area

Using customizable options, CICS allows you to control which of the eligible modules are executed from the MVS link pack area.

The methods for controlling the use of modules from the MVS link pack area do not apply to the modules DFHCSVC, DFHDSPEX, and DFHIRP. These modules are used only from the MVS link pack area.

Modules in the MVS link pack area from hlq.SDFHAUTH

CICS uses standard MVS load facilities for modules installed in the MVS link pack area from the CICS APF-authorized library, *hlq*.SDFHAUTH.

That is, such a module is used from the first of the following locations where it is found:

1. STEPLIB concatenation
2. MVS link pack area
3. MVS LNKLST

To use any of the CICS modules installed in the MVS link pack area from the *hlq*.SDFHAUTH library, you must remove any version of the module from the *hlq*.SDFHAUTH library or any other library in the STEPLIB concatenation.

You can prevent CICS using modules installed in the MVS link pack area from the *hlq*.SDFHAUTH library by installing versions of those modules in a library in the STEPLIB concatenation.

CICS then uses the versions of the modules from the STEPLIB concatenation into the CICS address space, rather than any versions that might be in the MVS link pack area.

Modules in the MVS link pack area from hlq.SDFHLOAD

CICS system initialization parameters and resource definitions control the use of CICS modules installed in the MVS link pack area from the *hlq*.SDFHLOAD library.

The *hlq*.SDFHLOAD library is used for non-nucleus CICS modules, and some CICS nucleus modules. You can also use the library for your own user application programs.

Using modules from the MVS link pack area

You must follow these steps to use the CICS modules installed in the MVS link pack area from the *hlq*.SDFHLOAD library.

- Copy the modules into a CICS LPA library. That is, you do not have to remove them from the *hlq*.SDFHLOAD library.

- Specify the system initialization parameter LPA=YES. CICS then uses the following search order:
  1. MVS link pack area
  2. DFHRPL DD concatenation
- For a non-nucleus CICS module or user application program, specify USELPACOPY(YES) on the associated PROGRAM resource definition. These modules are identified in the CICS-supplied USERMODs by this statement:

  ```
  /* Not loaded from LPA unless USELPACOPY is set to Y in the CSD  */
  ```

  For each CICS-supplied LPA-eligible module that requires USELPACOPY(YES) specified in its associated PROGRAM resource definition, you must create your own resource definition with USELPACOPY(YES) specified, and use it instead of the CICS-supplied resource definition, because you cannot modify the CICS-supplied resource definitions. For example, you can use the DFHCSDUP utility program for these purposes:
  1. Copy the CICS-supplied resource groups that contain the module definitions to new resource groups.
  2. For each module that requires USELPACOPY(YES), change the PROGRAM resource definition in the new resource groups to specify USELPACOPY(YES).
  3. Add your new resource groups to a new group list; that is, at the start of the list.
  4. Append the CICS-supplied group list DFHLIST, or your own equivalent of that group list, to your group list. Alternatively, include DFHLIST on the GRPLIST system initialization parameter as well as your group list.
  5. Remove the CICS-supplied groups that you have copied.

  When the program definitions have been changed on the CSD, perform the following steps:
  – Reinitialize the CICS catalogs if you have been using modules not in the MVS link pack area, and now want to use those modules from the MVS link pack area
  – Specify your new group list (and DFHLIST if your group list does not include the list of resource groups provided in DFHLIST) on the GRPLIST system initialization parameter.

  A sample DFHCSDUP job for all CICS LPA-eligible jobs is in "Sample DFHCSDUP job to specify USELPACOPY(YES)" on page 174. In the above example, instead of steps 3 and 4, you can use the CEDA transaction for these tasks:
  – Copy your group list to create a new group list.
  – Add the new (USELPACOPY(YES)) groups to the new group list *in the same place as* the original, CICS-supplied, groups.
- CICS uses eligible modules installed in the MVS link pack area, if the following criteria are met:
  – You have *not* specified the name of the module on the CICS system initialization parameter PRVMOD.
  – The module has not already been loaded from the DFHRPL concatenation.
- If CICS cannot find an eligible module in the MVS link pack area, it loads the private (non-shared) version into the CICS address space from the DFHRPL concatenation, after issuing the message DFHLD0109I to warn you that the module is not in the MVS link pack area. See page "Handling the module-not-found warning message, DFHLD0109I" on page 174 for more information about this message.

- CICS assumes that the PL/I modules, IBMBPSLA and IBMBPSMA, are installed in the MVS link pack area and issues message DFHLD0109I if it fails to find them there. If you want your PL/I application programs to run with the PL/I shared library, ensure that the modules IBMBPSLA and IBMBPSMA are installed in the MVS link pack area, in the *hlq*.SDFHLOAD library or in another library in the CICS DFHRPL library concatenation.
- You must place program list tables (PLTs) must be placed in the DFHRPL concatenation. However, before PROGRAM resource definitions for phase one PLTPI programs and PLTSD programs are installed (for example, early in CICS initialization) CICS scans the MVS link pack area for those programs and issues message DFHLD0109I if it cannot find such a program there.
- Similarly, before PROGRAM resource definitions for global and task-related user exit programs are installed (for example, early in CICS initialization) CICS scans the MVS link pack area for those programs, and issues message DFHLD0109I if it cannot find such a program there.

Specifying USELPACOPY(YES)

For every non-nucleus CICS module or user application program that you have moved to the MVS link pack area, that is, have removed from the DFHRPL concatenation, ensure that you have specified USELPACOPY(YES) on the associated PROGRAM resource definition. Otherwise, CICS cannot find the module and might fail to start successfully. See “Sample DFHCSDUP job to specify USELPACOPY(YES)” on page 174 for a sample job to specify USELPACOPY(YES).

Using modules from DFHRPL

You can prevent CICS from using modules installed in the MVS link pack area from the *hlq*.SDFHLOAD library by specifying the NO option on the **LPA** system initialization parameter or by specifying the name of the module on the **PRVMOD** system initialization parameter.

- Specify NO on the LPA system initialization parameter.

  The NO option prevents CICS from using any modules installed into the MVS link pack area from the *hlq*.SDFHLOAD library. CICS tries to load the modules from libraries in the DFHRPL concatenation.

  You might use this option when you want to run CICS to test a lot of LPA-eligible modules before installing them in the MVS link pack area. For example, you can add the *hlq*.SDFHLPA library to the DFHRPL concatenation while testing CICS modules for the MVS link pack area. When you have verified the use of those modules from the MVS link pack area, specify the LPA=YES system initialization parameter and remove the *hlq*.SDFHLPA library from the DFHRPL concatenation.
- Specify the name of the module on the PRVMOD system initialization parameter.

  ```
  PRVMOD={name|(name1,name2,...)}
  ```

  Specifying the module name prevents CICS from using the specified modules from the MVS link pack area for only the run of CICS on which the **PRVMOD** parameter is specified. You might use the **PRVMOD** parameter when you want to run CICS to test a new version of an LPA-eligible module before replacing the version already in the MVS link pack area.

  Specify the full module name on the **PRVMOD** parameter, including any suffix; for example, DFHMCP1$. If only one module is named, the parentheses are optional. The **PRVMOD** parameter can span input lines. However, do not split module names across lines, because CICS system initialization adds a comma at the end of every input line that does not already end with a comma. The only validity check performed on a module name is to ensure that it does not exceed eight characters.

You cannot code the **PRVMOD** parameter in the DFHSIT module; you specify it in the **PARM** parameter, in the SYSIN data set, or through the system console.

- For a non-nucleus CICS module or user application program, specify USELPACOPY(NO), the default, on the associated PROGRAM resource definition. These modules are identified in the CICS-supplied USERMODs by the statement:

```
/* Not loaded from LPA unless USELPACOPY is set to Y in the CSD  */
```

You might use the USELPACOPY(NO) option of the PROGRAM resource definition for a more permanent exclusion of an LPA-resident module than for the single run of CICS control provided by the **PRVMOD** system initialization parameter.

Verifying modules for the MVS link pack area

When verifying new versions of modules to be installed into the MVS link pack area, you can use any of the following options to instruct a CICS region to use the new versions from the DFHRPL concatenation.

- The LPA=NO system initialization parameter
- The PRVMOD system initialization parameter
- The USELPACOPY(NO) option of the associated PROGRAM resource definition (where applicable)

For further information about these options, see "Using modules from DFHRPL" on page 172

In all cases, you must install the new versions of the modules into the *hlq*.SDFHLOAD library or another library in the DFHRPL concatenation.

If you are verifying many CICS LPA-eligible modules, you might choose to add the *hlq*.SDFHLPA library to the DFHRPL concatenation, allowing you to check that the modules you have installed in the MVS link pack area are being loaded from there.

The CICS-supplied USERMODs use SMP/E to move CICS LPA-eligible modules into the *hlq*.SDFHLPA library. Similarly, if you use SMP/E to apply service to any of those modules, the versions in the *hlq*.SDFHLPA library are updated. The updated versions of the modules are used from the MVS link pack area after you next re-IPL your MVS with CLPA specified. Until then, if you add the *hlq*.SDFHLPA library to the DFHRPL concatenation of your CICS region, and specify that CICS is not to use the version of the modules in the MVS link pack area, the updated versions of the modules are used from the DFHRPL concatenation.

After you have installed and verified the use of modules from the MVS link pack area, remove the versions of the modules from the DFHRPL concatenation of your CICS startup job.

You can find out whether CICS is loading modules from the MVS link pack area or the DFHRPL concatenation by reviewing the index of a system dump for the CICS region started with the system initialization parameter LPA=YES. Modules loaded from the MVS link pack area have the dump option LD=3.

Handling the module-not-found warning message, DFHLD0109I

CICS issues message DFHLD0109I if it searches the MVS link pack area for a module installed there from *hlq*.SDFHLOAD and fails to find it.

If you see the module-not-found warning message, check that you have specified USELPACOPY(YES) on the associated PROGRAM resource definition, if applicable. For further information about using modules loaded in the MVS link pack area from the *hlq*.SDFHLOAD library, see "Modules in the MVS link pack area from hlq.SDFHLOAD" on page 170.

CICS uses console routing code 11 for this particular message, which allows you to control the output of this message. For example, you can perform these actions:

1. Exclude, as required, routing code 11 from specific MVS console definitions in the CONSOLxx member of SYS1.PARMLIB.
2. Use the MVS VARY command to prevent this message from appearing on specified consoles by omitting route code 11 from a VARY command that defines which routing codes go to specified devices:

   ```
   VARY devnum,CONSOLE,ROUT=(rtcode,rtcode,.,.,.)
   ```

   Alternatively, you can remove route code 11 from those already defined by using the following VARY command:

   ```
   VARY devnum,CONSOLE,DROUT=(11)
   ```

3. Use the MVS message processing facility (MPF) to inhibit the message. To use MPF, code an entry specifying the CICS message number in the MPFLSTxx member of SYS1.PARMLIB.

CICS assumes that the following PL/I modules are LPA eligible and issues message DFHLD0109I if it fails to find them there:

- IBMBPSLA
- IBMBPSMA

Sample DFHCSDUP job to specify USELPACOPY(YES)

The standard IBM-supplied program definitions in the CSD all specify USELPACOPY(NO). If you copy or move to the LPA the IBM programs defined by definitions in the CSD, the next step is to modify the USELPACOPY attribute to ensure that CICS uses the LPA copy.

To simplify this task:

- IBM supplies, in the DFH$ULPA member of the SDFHSAMP library, an alternate set of DEFINE statements for all the IBM-supplied programs. All the programs defined in DFH$ULPA specify USELPACOPY(YES).
- If you do not want all the programs to be defined for LPA use, edit the member to remove the programs that are to remain as USELPACOPY(NO).
- The USELPACOPY(YES) versions are all defined in one new group called DFH$ULPA. Change this group name if you want to use your own name.
- Run the sample DFHCSDUP job shown in Figure 4 on page 175 to add the DFH$ULPA versions of the definitions to your CSD.
- You do not have to remove the standard definitions from DFHLIST. If you specify your group list after DFHLIST on the GRPLIST system initialization parameter, you ensure that the modified definitions override the standard definitions.

```
//LPAMODS     JOB  (account_details),MSGCLASS=A,MSGLEVEL=(1,1),
//                 CLASS=A,NOTIFY=userid
//DEFULPA     EXEC PGM=DFHCSDUP
//STEPLIB     DD DSN=CICSTS52.CICS.SDFHLOAD,DISP=SHR
//SYSPRINT    DD SYSOUT=*
//DFHCSD      DD DSN=user.CICSTS52.CICS.DFHCSD,DISP=OLD
//SYSIN       DD DSN=CICSTS52.CICS.SDFHSAMP(DFH$ULPA),DISP=SHR
/*
//*
```

Figure 4. Sample DFHCSDUP job for all CICS LPA-eligible modules

Chapter 23. Installing CICSPlex SM modules in the MVS link pack area

There are benefits and points to consider if you use the MVS link pack area (LPA).

Benefits of using the LPA include:

- **Sharing** – Two or more CICS regions in the same MVS image can share modules in the LPA, giving an overall reduction in the total working set.
- **Integrity** – the LPA is page-protected, even against key 0 programs, so all modules placed there are automatically protected against overwriting by other programs such as CICS applications. This integrity feature applies equally to a single CICS system in the processor.

Every CICSPlex SM module installed in the LPA can be used only by the release of CICSPlex SM to which it relates.

CICSPlex SM supplies prebuilt SMP/E USERMODs as members in the CICSTS52.CPSM.SEYUSAMP library. The USERMOD is:

```
EYU$UM01 – Local MAS modules
```

These USERMODs contain `++MOVE` statements for each module that is eligible for the extended link pack area (ELPA). A read-only module that can reside above 16 MB is eligible for the ELPA.

CICSPlex SM allocates an empty library for your use, called SYS1.CICSTS52.CPSM.SEYULPA. You can use SYS1.CICSTS52.CPSM.SEYULPA as the LPA library or you can add the modules to another LPA library.

If you are going to use SYS1.CICSTS52.CPSM.SEYULPA, verify that you have already authorized this library, described in Chapter 14, “Authorizing the CICS and CICSPlex SM libraries,” on page 105, and that you have applied appropriate security. You can give the SYS1.CICSTS52.CPSM.SEYULPA library your own high-level index. If you do, you must specify the new index on the LINDEX parameter of the DFHISTAR job.

Space requirements

Allow enough space in the link pack area for the installation of the selected CICSPlex SM modules.

The total space depends on how the modules are packaged into the link pack area by the operating system.

Installing CICSPlex SM modules into the LPA

In this context, the term *install* means to move or copy a module to the SYS1.CICSTS52.CPSM.SEYULPA library by using SMP/E, or by using a copying method that reblocks the copied modules when the target data set has a smaller block size than the data set you are copying from; for example, by using the COPYMOD function of the IEBCOPY program.

CICSPlex SM modules that are eligible for inclusion in the link pack area are listed in "CICSPlex SM modules eligible for the MVS link pack area" on page 179.

CICSPlex SM creates default definitions for the LPA-eligible modules specifying USELPACOPY(YES). So you do not have to modify these definitions to be able to search the LPA. You can, however, specify that the LPA is searched by using the CICS system initialization parameters LPA and PRVMOD. Specify LPA=YES for CICS to search the LPA for these programs. If you specify LPA=NO, which is the default, the LPA is not searched for these programs.

If you specify LPA=YES but have not moved the modules to the LPA, message DFHLD0109I is issued for each module. If you specify LPA=YES and have moved these modules to the LPA, you can use the PRVMOD system initialization parameter to control which modules are to be used from the LPA. See "Using modules from DFHRPL" on page 172 for more information.

Do not relink-edit the modules to put them into the SYS1.CICSTS52.CPSM.SEYULPA library. CICSPlex SM modules, as supplied, have the necessary attributes that cause MVS to load them automatically above 16 MB (into the ELPA).

The MVS link pack area has both pageable and fixed areas. Although you can install CICSPlex SM modules into the fixed areas, for performance reasons, use the pageable areas.

Modules to be loaded into the MVS pageable link pack area (PLPA) must have been link-edited with the RENT attribute. The library that contains these modules must be named in an LPALSTxx member of the SYS1.PARMLIB library.

To install modules in the CICSPlex SM LPA library, and to ensure that SMP/E can continue to service them, complete the following steps for one or both of the CICSPlex SM-supplied USERMODs:

1. Receive the USERMOD into the CICSPlex SM global zone and apply it to the CICSPlex SM target zone.
2. Define the SYS1.CICSTS52.CPSM.SEYULPA library to your MVS.

Receiving and applying the USERMOD

To receive and apply the CICSPlex SM-supplied USERMOD, in EYU$UM01, you can use the sample job EYULPMOD, which is tailored by DFHISTAR and stored in theCICSTS52.XDFHINST library when you run the DFHISTAR job.

Receive the USERMOD into the CICSPlex SM global zone and apply it to the CICSPlex SM target zone. This causes SMP/E to move those load modules you have specified from the named CICSPlex SM target library (either CICSTS52.CPSM.SEYUAUTH or CICSTS52.CPSM.SEYULOAD) into the SYS1.CICSTS52.CPSM.SEYULPA library.

When the USERMOD is applied, the corresponding LMOD entries in the target zone SMP CSI are updated. Either or both USERMODs can be applied depending on your enterprise's requirements.

Do not accept the USERMOD into the distribution zone, and, for the time being, do not apply it to any other target zone.

Defining the SYS1.CICSTS52.CPSM.SEYULPA library to your MVS

Add the full name of the SYS1.CICSTS52.CPSM.SEYULPA library to an LPALSTxx member of SYS1.PARMLIB to ensure that the library contents are loaded into the PLPA at the next IPL of your system when CLPA is specified.

When you have defined the SYS1.CICSTS52.CPSM.SEYULPA library to MVS, re-IPL your MVS with CLPA specified so that the modules in the SYS1.CICSTS52.CPSM.SEYULPA library can be used from the LPA.

Use the USERMOD EYU$UM01, supplied in the SEYUSAMP library, to move the LPA-eligible modules into the SEYULPA library. These modules are listed in "CICSPlex SM modules eligible for the MVS link pack area."

Applying maintenance to LPA modules

Use the SMP/E RESTORE function to back off the USERMOD before modules in the LPA are updated or copied. Afterwards, you can reapply the USERMOD.

CICSPlex SM modules eligible for the MVS link pack area

CICSPlex SM modules that are eligible for installation in the MVS link pack area (LPA) are specified in the CICSPlex SM supplied USERMOD, EYU$UM01.

The following table lists the CICSPlex SM modules that are eligible for inclusion in the LPA. The versions of these modules with the prefixes CJA, CJB, CJC, and CJD, in place of the prefix EYU, are also eligible for inclusion in the LPA. For example, modules CJA9BA01, CJB9BA01, CJC9BA01, and CJD9BA01, as well as EYU9BA01, are eligible. The prefix relates to the CICS release specific agent code of the underlying module.

You must allow enough space in the link pack area for the installation of the selected CICSPlex SM modules. The total space you require depends on how the modules are packaged into the link pack area by the operating system and a local MAS requires approximately 2034KB.

All CICSPlex SM modules are installed in the LOAD library and loaded in the ELPA.

Table 15. CICSPlex SM modules eligible for the LPA

Module	Description
EYU9BA01	BAS MAS object
EYU9CM01	MAS communications
EYU9MN01	MAS monitor
EYU9NA01	MAS agents
EYU9PS01	MAS real-time analysis
EYU9TS01	MAS topology
EYU9WM01	MAS workload management
EYU9XC01	MAS cache
EYU9XD01	MAS data repository
EYU9XL01	MAS kernel linkage

Table 15. CICSPlex SM modules eligible for the LPA (continued)

Module	Description
EYU9XM01	MAS message format
EYU9XQ01	MAS queue manager
EYU9XS01	MAS common services
EYU9XZ01	MAS trace

Chapter 24. Defining CICS IPCS exit control data to MVS

If you use the MVS interactive problem control system (IPCS) to format and analyze CICS system dumps, ensure that the release-specific CICS formatting routines are defined and available to MVS.

The formatting routine for use under IPCS has the release identifier as part of its name; that is, DFHPD*690*. You define this formatting routine to IPCS when formatting system dumps. The CICS formatting routine is release-specific, so, if you run more than one release of CICS, ensure that you use the correct version for the system dump you are formatting.

The DFHIPCSP CICS exit control data

IPCS provides an exit control table with IMBED statements to enable other products to supply exit control information.

The IPCS default table, BLSCECT, normally in the SYS1.PARMLIB library, has the following entry for CICS:

```
IMBED MEMBER(DFHIPCSP)  ENVIRONMENT(ALL) /* CICS                 */
```

Ensure that your IPCS job can find the CICS-supplied DFHIPCSP member. The DFHIPCSP member is in the *hlq*.SDFHPARM library. You can either copy the DFHIPCSP member into SYS1.PARMLIB, so that it is in the same default library as BLSCECT, or provide an IPCSPARM DD statement to specify the library containing the IPCS control tables:

```
//IPCSPARM  DD  DSN=SYS1.PARMLIB,DISP=SHR         For BLSCECT
//          DD  DSN=CICSTS52.CICS.SDFHPARM,DISP=SHR     For DFHIPCSP
```

The following code example shows the release-specific entries that are specified in DFHIPCSP.

```
 /* ============================================================== */
   EXIT EP(DFHPD212) VERB(CICS212) ABSTRACT(+
     'CICS Version 2 Release 1.2 analysis')
   EXIT EP(DFHPD321) VERB(CICS321) ABSTRACT(+
     'CICS Version 3 Release 2.1 analysis')
   EXIT EP(DFHPD330) VERB(CICS330) ABSTRACT(+
     'CICS Version 3 Release 3 analysis')
   EXIT EP(DFHPD410) VERB(CICS410) ABSTRACT(+
     'CICS Version 4 Release 1 analysis')
   EXIT EP(DFHPD510) VERB(CICS510) ABSTRACT(+
     'CICS Transaction Server for OS/390 Release 1 analysis')
   EXIT EP(DFHPD520) VERB(CICS520) ABSTRACT(+
     'CICS Transaction Server for OS/390 Release 2 analysis')
   EXIT EP(DFHPD530) VERB(CICS530) ABSTRACT(+
     'CICS Transaction Server for OS/390 Release 3 analysis')
   EXIT EP(DFHPD610) VERB(CICS610) ABSTRACT(+
    'CICS Transaction Server for z/OS V2 R1 analysis')
   EXIT EP(DFHPD620) VERB(CICS620) ABSTRACT(+
    'CICS Transaction Server for z/OS V2 R2 analysis')
   EXIT EP(DFHPD630) VERB(CICS630) ABSTRACT(+
    'CICS Transaction Server for z/OS V2 R3 analysis')
   EXIT EP(DFHPD640) VERB(CICS640) ABSTRACT(+
    'CICS Transaction Server for z/OS V3 R1 analysis')
   EXIT EP(DFHPD650) VERB(CICS650) ABSTRACT(+
    'CICS Transaction Server for z/OS V3 R2 analysis')
   EXIT EP(DFHPD660) VERB(CICS660) ABSTRACT(+
    'CICS Transaction Server for z/OS V4 R1 analysis')
   EXIT EP(DFHPD670) VERB(CICS670) ABSTRACT(+
    'CICS Transaction Server for z/OS V4 R2 analysis')
   EXIT EP(DFHPD680) VERB(CICS680) ABSTRACT(+
    'CICS Transaction Server for z/OS V5 R1 analysis')
/* ============================================================== */
```

Figure 5. Release-specific entries in DFHIPCSP for DFHPDnnn routines

For information about using IPCS to format CICS system dumps, see the *CICS Operations and Utilities Guide*.

Chapter 25. Preparing to use the CICSPlex SM IPCS tools

The interactive problem control system (IPCS) provides MVS users with interactive diagnostics of software failures. Before using IPCS, you must update BLSCECT, update library allocations and set SDUMP options.

You can use IPCS to format and analyze SDUMPs produced by CICSPlex SM or stand-alone dumps obtained while CICSPlex SM was active in the system being dumped. You can either view the dumps at your terminal or print them.

CICSPlex SM provides a dump formatting routine that you can use with the VERBEXIT subcommand to format CMAS, MAS, WUI server, or SMSS dumps.

- For more information about IPCS, see the *z/OS MVS Interactive Problem Control System IPCS) User's Guide*.
- For information about using IPCS to format CICSPlex SM system dumps, sees the *CICS Operations and Utilities Guide*.
- For information about displaying and formatting dumps with IPCS, see the *CICSPlex System Manager Problem Determination* guide.

Updating BLSCECT

IPCS provides an exit control table, BLSCECT, which is normally in SYS1.PARMLIB. This table contains imbed statements that you can update to enable other products to supply exit control information.

Perform the following steps to update BLSCECT:

1. Update the BLSCECT table with the following IMBED statement:
   ```
   IMBED MEMBER(EYUIPCSP) ENVIRONMENT(ALL)
   ```
   EYUIPCSP identifies the CICSPlex SM formatting routine as EYU9D520 with a VERB name of CPSM520.
2. Make sure EYUIPCSP can be found by your IPCS job by doing one of the following steps:
   - Copy EYUIPCSP from the CICSTS52.CPSM.SEYUPARM library into the same library as BLSCECT, usually SYS1.PARMLIB.
   - Provide an IPCSPARM DD statement to specify the library that contains the IPCS control tables. For example, the DD statement for a batch TSO session might look like this:
     ```
     //IPCSPARM DD  DSN=SYS1.PARMLIB,DISP=SHR            for BLSCECT
     //         DD  DSN=CICSTS52.CPSM.SEYUPARM,DISP=SHR   for EYUIPCSP
     ```

For more information about SYS1.PARMLIB library members related to IPCS, see the *MVS Interactive Problem Control System (IPCS): Customization* manual.

Updating library allocations

If CICSTS52.CPSM.SEYULINK is not in the linklist, include the EYU9D520 IPCS user exit routine.

Make sure that the EYU9D520 IPCS user exit routine is in a library in the linklist or a library that is accessed by the JOBLIB, STEPLIB, or TASKLIB option of the IPCS command, during the IPCS session. To accomplish this, perform one of these actions:

- Allocate CICSTS52.CPSM.SEYULINK to the desired DD statement.
- Copy CICSTS52.CPSM.SEYULINK (EYU9D520) to an appropriate library.
- Invoke IPCS, using the TASKLIB keyword to allocate CICSTS52.CPSM.SEYULINK .

  For example, issue the TSO COMMAND:

  ```
  IPCS NOPARM TASKLIB('CICSTS52.CPSM.SEYULINK ')
  ```

Chapter 26. MVS Program properties table entries

You can optionally define some CICS properties to MVS in the MVS program properties table (PPT).

Figure 6 is an example of a CICS PPT entry in the SCHEDxx member of SYS1.PARMLIB.

```
/****************************************************************/
/*              Program Properties table addition               */
/*                for the CICS program, DFHSIP                  */
/*                                                              */
/* The following defaults apply to this CICS entry:             */
/*                                                              */
/*  No affinity to a particular processor     (AFF(NONE))       */
/*  Can be canceled                           (CANCEL)          */
/*  Requires data set integrity               (DSI)             */
/*  Not a privileged job                      (NOPRIV)          */
/*  Password protection is required           (PASS)            */
/*  Not a system task                         (NOSYST)          */
/*  Protection key 8                          (KEY(8))          */
PPT PGMNAME(DFHSIP)         /* Add program name DFHSIP to the PPT*/
    NOSWAP                  /* Non-swappable                    */
    NOPREF                  /* No preferred storage required    */
/*                                                              */
```

Figure 6. Sample CICS PPT entry

For information about defining options in the PPT, see the *z/OS MVS Initialization and Tuning Guide*.

RACF password checking

If your installation has an MVS program properties table (PPT) entry for the DFHSIP program, ensure that the NOPASS option is *not* set in the PPT because this option bypasses password and RACF authorization checking.

For information about defining PPT entries for CICS in the SCHED*xx* member of the SYS1.PARMLIB library, see the *z/OS MVS Initialization and Tuning Reference* manual.

Non-swappable CICS regions

For performance reasons, consider making your CICS regions nonswappable by specifying the NOSWAP option of the PPT entry in the SCHED*xx* member of SYS1.PARMLIB. If you specify NOSWAP on the PPT entry in the SCHED*xx* member of SYS1.PARMLIB, PPTNSWP is set to ON in the PPT internal control block.

If you specify NOPASS on the MVS PPT entry in the SCHED*xx* member of SYS1.PARMLIB, PTNPAS is set to ON in the PPT internal control block.

MVS protection key for CICS

To use the storage protection facility of CICS, you must specify the system initialization parameter STGPROT=YES and must have the required hardware and software. If you operate CICS with storage protection, CICS observes the storage keys and execution keys that you specify in various system and resource definitions. For information about hardware and software that is required by CICS storage protection, see the *Program Directory for CICS Transaction Server for z/OS*.

Chapter 27. MVS performance definitions

You can use z/OS workload management to manage sysplex resources across MVS subsystems, in parallel with the existing system resource management facilities.

For information about z/OS workload management, see z/OS MVS Planning Workload Management.

The following topics discuss how you can implement workload management on the z/OS images that the CICS workload is to run on, and how to ensure that CICS performance parameters correspond to the policies defined for z/OS workload management.

Implementing z/OS workload management

Implementing z/OS workload management is part of the overall task of planning and installing MVS.

Implementing z/OS workload management generally involves the following steps:

1. Establish your workloads.
2. Set your business priorities.
3. Understand your performance objectives.
4. Define critical work.
5. Define performance objectives based on current business requirements
6. Get agreement for your workload performance objectives.
7. Specify a service level agreement or performance objectives.
8. Specify a z/OS Workload Manager (WLM) service definition that uses the information from the previous step. Record your service definition in a form that helps you to enter it into the z/OS Workload Manager ISPF application. Use the worksheets provided in z/OS MVS Planning Workload Management.
9. Install MVS.
10. Set up a sysplex with a single z/OS image and run in workload manager compatibility mode.
11. Upgrade your existing XCF couple data set.
12. Start the z/OS Workload Manager ISPF application and use it in the following steps.
13. Allocate and format a new couple data set for workload management. Do this from the ISPF application.
14. Define your service definition.
15. Install your service definition on the couple data set for workload management.
16. Activate a service policy.
17. Switch the z/OS image into goal mode.
18. Start a new z/OS image in the sysplex; that is, attach the new z/OS image to the couple data set for workload management and link it to the service policy.
19. Switch the new z/OS image into goal mode.
20. Repeat the previous two steps for each new z/OS image in the sysplex.

Note:
- Support for z/OS Workload Manager is initialized automatically during CICS startup.
- All CICS regions and other MVS subsystems running on a z/OS image with z/OS workload management are subject to the effects of workload manager.

Matching CICS performance parameters to service policies

Ensure that the CICS performance parameters are compatible with the workload manager service policies used for the CICS workload.

In general, define CICS performance objectives to the MVS workload manager first and observe the effect on CICS performance. When the MVS workload manager definitions are working correctly, then consider tuning the CICS parameters to further enhance CICS performance. However, use CICS performance parameters as little as possible.

Consider using these performance attributes:
- Transaction priority, passed on dynamic transaction routing. The priority assigned by the CICS dispatcher must be compatible with the task priority that is defined to MVS workload manager.
- Maximum number of concurrent user tasks for the CICS region.
- Maximum number of concurrent tasks in each transaction class.

Chapter 28. Implementing MVS automatic restart management

You can exploit MVS automatic restart management to implement a sysplex-wide integrated automatic restart mechanism.

To use the MVS automatic restart manager facility, follow these steps:

1. Implement automatic restart management on the MVS images on which the CICS workload is to run.
2. Ensure that CICS startup JCL used to restart CICS regions is suitable for MVS automatic restart management.
3. Specify appropriate CICS START options.
4. Specify appropriate MVS workload policies.

Implementing MVS automatic restart management for CICS generally involves the following steps:

- Ensure that the MVS images available for automatic restarts have access to the databases, logs, and program libraries required for the workload.
- Identify those CICS regions for which you want to use automatic restart management.
- Define restart processes for the candidate CICS regions.
- Define ARM policies for the candidate CICS regions.

For information about MVS automatic restart management, see Automatic restart management in Administering and *z/OS MVS Setting Up a Sysplex*.

Chapter 29. MVS cross-system MRO definitions

You can use CICS interregion communication (IRC) for multiregion operation (MRO) between CICS regions across MVS images in a sysplex.

IRC exploits the cross-system coupling facility (XCF) of MVS and removes the need for z/OS Communications Server to communicate between MVS images in the same sysplex.

In a sysplex, you must install DFHIRP from the highest release of CICS running in that MVS image.

Sysplex overview

A sysplex consists of multiple MVS systems, coupled together by hardware elements and software services. In a sysplex, MVS provides a platform of basic multisystem services that multisystem applications like CICS can use. As the workload grows, you can add MVS systems to the sysplex to meet the requirements of the greater workload.

To use XCF to communicate in a sysplex, you specify the XCF group name to CICS using the SIT XCFGROUP parameter. The default name is DFHIR000. If you specify a different group name, only members that specify that same group name can communicate using XCF. For more information about XCFGROUP, see XCFGROUP system initialization parameter in Reference -> System definition.

MVS XCF for MRO

When you format the primary and alternate couple data sets used by the XCF component of MVS, make sure that the following conditions are met:

- The value specified for the MAXMEMBER parameter must be large enough to handle the number of CICS regions and users of the EXCI in the CICS XCF group.

  In a single sysplex, a theoretical maximum number of 1023 CICS regions can participate in XCF/MRO using the same XCF group. However, the maximum size of the XCF group is reduced if you set the MVS MAXMEMBER parameter, used to define XCF couple data sets, to a lower limit. When you calculate the maximum number of members in the CICS XCF group, allow one member for each of these items:

  – Each CICS region to run on an MVS image in the sysplex.

  – Each pipe that is allocated by a user of the external CICS interface (EXCI). For information about EXCI users and pipes, see The EXCI CALL interface in Developing applications.

  To list the members in the CICS XCF group, you can use the MVS DISPLAY command. The name of the CICS group is always DFHIR000, so you can use this MVS command:

  ```
  DISPLAY XCF,GROUP,DFHIR000,ALL
  ```

- The value specified for the MAXGROUP parameter must be large enough for the CICS XCF group to be established.

Chapter 30. PR/SM policy for handling MVS failures

If you are running CICS under MVS in a Processor Resource/Systems Manager™ (PR/SM™) environment, you must define to MVS the preferred XCF PR/SM policy for handling MVS failures in a PR/SM environment.

You must also define to PR/SM the authorization for each LPAR to cause reset or deactivation of another LPAR.

Chapter 31. MVS ASREXIT - SYMREC Authorization Exit

A CICS program might call the first failure symptoms component. The component uses the MVS SYMREC macro to write symptom records to the MVS SYS1.LOGREC data set, in addition to, or instead of, a job log.

The SYMREC authorization exit, ASREXIT, must be in effect to allow CICS to use the SYMREC macro call; otherwise, the call fails with return code 12, reason code 3868 (X'F1C').

When SYMREC is called by CICS, the ASREXIT routine issues a return code that permits the SYMREC to be successfully written.

The MVS sample exit programs ASREXT0 and ASREXT1, supplied in SYS1.SAMPLIB, are suitable for this purpose. For further information about these exits, see z/OS MVS Installation Exits. The ASREXIT routine can determine whether CICS is the caller by testing EPLPNAME for the value DFHSIP, except in the following circumstances:

- When DFHSIP is renamed, in which case EPLPNAME contains the new name.
- When DFHSIP is the subject of an MVS LINK, in which case EPLPNAME contains the name of the program issuing the MVS LINK, unless it too is the subject of an MVS LINK.

If you choose this method, code your ASREXIT routine to allow for these exceptions.

An alternative method of coding the ASREXIT routine is shown in Figure 7 on page 196. This method is not affected by the exceptions described earlier.

```
         TITLE 'SYMREC SAMPLE EXIT'
         ASREPL
         PRINT NOGEN
         IHAPSA
         IKJTCB
         PRINT GEN
         DFHAFCD
         EJECT
ASREXIT  CSECT
ASREXIT  AMODE 31
ASREXIT  RMODE ANY
         USING *,R15                Temporary addressability
         MODID BR=YES
         DROP  R15
         STM   R14,R12,12(R13)      Save the caller's registers
         LR    R12,R15
         USING ASREXIT,R12
         L     R3,0(,R1)            Load the address of the EPL
         USING EPL,R3               Get addressability
         LA    R15,RCREJECT         Preset "reject" return code
         USING PSA,0
         L     R1,PSATOLD           Point at current TCB
         USING TCB,R1
         L     R1,TCBEXT2           Point at TCB extension
         DROP  R1
         USING TCBXTNT2,R1
         ICM   R1,B'1111',TCBCAUF   Point at AFCB; is there one?
         BZ    SETRC                No, branch
         DROP  R1
         USING DFHAFCB,R1
         CLC   AFIDENT,=C'AFCX'     Is it a genuine CICS AFCB?
         BNE   SETRC                No, branch
         CLI   AFVER,AFVER1         Is it at least Version 1?
         BL    SETRC                No, branch
         AH    R1,AFLENG            Add length of AFCB's DW
         DROP  R1                   table.
         USING AFTSTART-AFPFXLEN,R1 Allow for AFCB prefix length
         ICM   R1,B'1111',AFTAFCS   Point at AFCS; is there one?
         BZ    SETRC                No, branch
         DROP  R1
         LA    R15,RCWRITE          Set "write" return code
SETRC    DS    0H
         ST    R15,EPLRETC          Store return code
         DROP  R0
         DROP  R3
         DROP  R12
EXIT     LM    R14,R12,12(R13)      Restore caller's registers
         BR    R14                  Return
         LTORG *
R1       EQU   1                    Register 1
R3       EQU   3                    Register 3
R12      EQU   12                   Register 12
R13      EQU   13                   Register 13
R14      EQU   14                   Register 14
R15      EQU   15                   Register 15
RCREJECT EQU  X'0C'                 Return code C
RCWRITE  EQU  X'00'                 Return code 0
         END*  CONSTANTS
```

Figure 7. An example of coding the ASREXIT routine.

Chapter 32. Setting up VSAM RLS support

These topics provide an overview of each task you need to perform if you want to use VSAM RLS to enable CICS regions to share VSAM data sets.

Defining the master coupling facility lock structure

VSAM RLS support requires the coupling facility to define a master lock structure, IGWLOCK00, for cross-system locking.

See the *z/OS DFSMSdfp Storage Administration Reference* manual for information about calculating the size you require for the lock structure.

The amount of coupling facility space required depends on several characteristics of your hardware configuration and the applications that you run:
- The number of processors you have
- The power of your processors
- Your ratio of nonupdate activity to update activity
- Your ratio of recoverable updates to nonrecoverable updates
- Your ratio of sequential requests to direct requests

You define the lock structure in the CFRM policy with the IXCMIAPU utility.

Defining coupling facility cache structures and cache sets

VSAM RLS support requires the coupling facility to define *cache structures* for cross-system buffer invalidation. You determine the number and size of cache structures you require.

The number you require depends on factors such as these:
- The number of coupling facilities you have
- The amount of space in each coupling facility
- The amount of data that is accessed through each coupling facility

See the *z/OS DFSMSdfp Storage Administration Reference* manual for information about calculating the amount of space you require for the cache structures. If you have previously used data sets in LSR mode, the total amount of coupling facility space allocated to cache structures will not be less than the amount of storage you were using for LSR pools, including any hiperspace buffers.

To achieve performance benefits:
- Make the size of the cache larger
- Divide cache structures appropriately across coupling facilities

You define cache structures in the CFRM policy with the IXCMIAPU utility.

Defining cache sets

You define cache sets with the ISMF control data set (CDS) application. A cache set maps onto one or more cache structures. If you specify more than one cache set, the data sets can be rebound to another cache structure in the set if a cache structure fails.

See the *z/OS DFSMSdfp Storage Administration Reference* manual for more information about cache sets.

Preparing for RLS access

You need to define SMS storage classes and alter data set attributes to prepare for VSAM RLS access.

Defining SMS storage classes for RLS access

Before you can use VSAM RLS, you require one or more storage classes that specify a non-blank cache set name. Use the ISMF storage class application to specify a cache set name when you define or alter a storage class, together with weighting parameters for tuning, such as CF DIRECT WEIGHT and CF SEQUENTIAL WEIGHT. See the *z/OS DFSMSdfp Storage Administration Reference* manual for more information about defining SMS storage classes.

Altering data set attributes for RLS access

Before you can use a data set in RLS access mode, you must ensure that it is eligible.

To be eligible for RLS:
- Data sets must reside in SMS managed storage.
- Data sets must specify a storage class that has a nonblank cache set name.
- Data set recoverability attributes must be defined in the ICF catalog and not in the CICS file control resource definition, where they are ignored for RLS.

  You can specify a data set's attributes using the Access Method Services (AMS) DEFINE CLUSTER or ALTER CLUSTER commands.

  Specifying a LOG parameter of NONE, UNDO, or ALL ensures that the recoverability of the data set is defined. You cannot open files in RLS mode if the LOG parameter of the associated data set is UNDEFINED. If you specify LOG(ALL), you must also specify a forward recovery log stream on the LOGSTREAMID parameter.

  To use backup while open (BWO) for an RLS-accessed sphere, specify the BWO parameter. Specifying BWO(TYPECICS) means that backup while open can be used. All other values for BWO, including undefined, mean that backup while open is not allowed. BWO(TYPECICS) is valid only if LOG(ALL) and LOGSTREAMID are also specified.
- Data sets must not specify the IMBED attribute.

  If you have some data sets that specify IMBED, you must remove the IMBED option before you can use the data sets in RLS mode. Redefine a new data set without IMBED and use the AMS REPRO function to copy the old data set to the new data set.

Note that RLS supports the REPLICATE cluster attribute. It does not provide any performance benefit. Removing RLS might save storage space.

Defining sharing control data sets

VSAM RLS requires sharing control data sets. These are used to maintain data integrity in the sharing environment. The sharing control data set is used sysplex-wide by all the SMSVSAM servers, and is always duplexed.

Two active, and at least one spare, sharing control data sets must be available at all times.

The size of these data sets depends on the number of MVS images in the sysplex and on the number of files that are expected to be open concurrently. The *z/OS DFSMSdfp Storage Administration Reference* manual gives information about calculating the amount of space that is required for the sharing control data sets.

Sharing control data sets are VSAM linear data sets that must be on volumes that have global connectivity. The data sets can have multiple extents, but only on the same volume. You define them using standard techniques for defining data sets. The names must have SYS1.DFPSHCDS as the first and second qualifiers. See the *z/OS DFSMSdfp Storage Administration Reference* manual for other rules relating to the definition of sharing control data sets.

You must not issue RESERVEs on any volumes that contain sharing control data sets. Convert any such RESERVEs to enqueues.

You can check that the data sets are available to the sysplex with the MVS DISPLAY SMS command, on any MVS image:

```
D SMS,SHCDS
```

This command shows the names of the two active data sets and the spare data set as shown in the following example:

Name	Size	%UTIL	Status	Type
ACTIVE1.VP2SS03 7920KB	7920KB	74%	Good	ACTIVE
ACTIVE2.VP2SS03 7920KB	7920KB	74%	Good	ACTIVE
SPARE.VP2SS03 7920KB	7920KB	74%	Good	SPARE

The DISPLAY command shows only the third and fourth qualifiers of the sharing control data set names; the first and second qualifiers are always SYS1.DFPSHCDS.

The first time an SMSVSAM server is started in the sysplex, you vary online the sharing control data sets with this command for the active data sets:

```
V SMS,SHCDS,NEW
```

Use this command for the spare data set or data sets.

```
V SMS,SHCDS,NEWSPARE
```

for the spare data set (or data sets). The server cannot start properly if you do not issue these commands.

Authorizing CICS user IDs for VSAM RLS support

Authorize each CICS user ID that is to use VSAM RLS support to have read access to a profile in the SUBSYSNM class that matches the APPLID.

See "Authorizing access to an SMSVSAM server" on page 110 for more information.

You can restrict user access to the access method services SHCDS subcommands, AMS SHCDS LIST and REMOVE. The *z/OS DFSMS: Access Method Services for ICF* manual gives information about using these commands.

Adding new parameters to SYS1.PARMLIB(IGDSMSxx)

To include RLS support in your system, specify the required parameters in the IGDSMS*xx* member of SYS1.PARMLIB.

- Specify RLSINIT(YES); otherwise, SMSVSAM does not initialize automatically when you IPL MVS. Alternatively, you can start SMSVSAM using the `VARY SMS,SMSVSAM,ACTIVE` command.
- Specify a value for the deadlock detection interval with the DEADLOCK_DETECTION parameter.
- Specify time intervals for the creation and synchronization of VSAM RLS SMF records with the CF_TIME and SMF_TIME parameters.
- Specify the maximum size of the SMSVSAM local buffer pool with the RLS_MAX_POOL_SIZE parameter.

See the *z/OS DFSMSdfp Storage Administration Reference* manual for information about these parameters.

Establishing new procedures for VSAM RLS support

You might require new operational procedures in a number of areas as a result of using VSAM RLS support, including integrity of data and management of coupling facilities and structures, use of RESERVEs, switching to non-RLS mode and forward recovery management.

- Integrity of data in coupling facility caches

  To make sure that non-IBM products or user programs do not compromise the integrity of data in coupling facility caches when they modify the data on a volume, either vary the volume offline to each system in the sysplex, or CF-quiesce the volume using the

  ```
  V SMS,CFVOL(volid),QUIESCE
  ```

  command before running such programs
- Management of the coupling facility and coupling facility structures
- Use of RESERVEs on volumes that contain sharing control data sets.

  Make sure that RESERVEs are not used. Convert RESERVEs on other volumes into enqueues.
- Switching to non-RLS mode to run batch update jobs against recoverable data sets.
- Management of forward recovery and your forward recovery logs.

  Forward recovery differs from forward recovery for non-RLS access:
  - The forward recovery log stream must be in the ICF catalog.
  - All forward recovery log records for a data set merge into the same log stream.
  - Your forward recovery procedure must use the SHCDS FRSETRR, FRUNBIND, FRBIND, and FRRESETRR commands. CICS VSAM Recovery for z/OS automatically issues these commands.

Refer to the DFSMS/MVS documentation for more details.

Activating the coupling facility structures

After you have defined the coupling facility structures in the CFRM policy, activate the structures using the SETXCF START POLICY command, specifying a TYPE of CFRM and the policy name.

Chapter 33. Console messages

The message domain supports the use of MVS message routing codes in the range 1 to 16 for those messages that are sent to the console.

By default, if the issuing module specifies only CONSOLE (without a qualifying number) as the destination, CICS routes the message with MVS route codes 2 and 11. This support is available for all domain-type messages of the form DFHxxnnnn, where xx is the domain code and nnnn is the message number.

CICS issues other messages (of the form DFHnnnn) with either no route code or route codes other than 2 and 11.

The physical destination of these messages is controlled by the ROUTECODE parameter on the MVS console entries in a SYS1.PARMLIB member, CONSOLEnn. For further information about MVS console definitions, see the *z/OS MVS Initialization and Tuning Guide* .

Chapter 34. Defining the logger environment for CICS

CICS uses the MVS system logger for all its logging and journaling requirements.

Using services provided by the MVS system logger, the CICS log manager supports these logs:

- The CICS system log, which is used for these purposes:
  - Dynamic transaction backout
  - Warm and emergency restarts
  - Cold starts, but only if the log contains information required for resynchronizing indoubt units of work
- Forward recovery logs, autojournals, and user journals.

The MVS system logger is a component of MVS. It provides a programming interface to access records on a log stream. For information about the MVS system logger, see the following MVS publications:

- *z/OS MVS Setting Up a Sysplex* for:
  - General information about the MVS system logger.
  - Information about defining and formatting the LOGR couple data set.
  - Information about how to plan the system logger configuration, plan and set up a system logger application, and plan for recovery for system logger applications.
- *z/OS MVS Programming: Assembler Services Reference, Volume 1* and *z/OS MVS Programming: Assembler Services Reference, Volume 2* for the syntax of system logger services.
- *z/OS MVS Initialization and Tuning Reference* for information about the COUPLExx PARMLIB member.

Requirements planning and checklist for the logger environment

The requirements and the procedure to set up the CICS logging environment are outlined.

The procedure includes tasks for MVS system programmers, CICS system programmers, and security administrators, and close cooperation between all groups is required.

- Plan the logger environment.

  Consider the possible storage options, and choose which of the three available hardware options to use:
  - Nonvolatile coupling facility, where log stream data is duplexed in the MVS logger data space. Nonvolatile storage involves the use of battery backup or an uninterruptible power supply (UPS):
    - When using a UPS, you use a hardware console command to update coupling facility status.
    - When using battery backup, batteries must be online and charged.
  - Volatile coupling facility, where log stream data is duplexed to a staging data set.
  - DASD-only, where log stream data is duplexed in the MVS logger data space.

See "Coupling facility or DASD-only?" on page 212, to help you decide on one of these or a combination of both.

Make the following planning decisions:

– Determine the number CICS regions that require logger support and hence system log streams.
– Determine the number of user journals and autojournals that your regions use.
– Determine the number of forward recovery logs required for VSAM data sets.
– Determine whether any user journal or forward recovery log streams are to be shared between regions (to create merged data automatically). The system log streams, DFHLOG and DFHSHUNT, cannot be shared.

  DASD-only log streams can be shared only in the same MVS image.
– Decide on the number and sizes of the coupling facilities to be used.

  For information about types of coupling facility, see z/OS MVS Setting Up a Sysplex. The minimum level of coupling facility supported by the MVS system logger is CFLEVEL=1, with the appropriate service level of the coupling facility control code that supports CFLEVEL=1.
– Determine the log stream sizes:
  - For coupling facility log streams, see "Coupling facility log streams" on page 213.
  - For DASD-only log streams, see "DASD-only log streams" on page 231.

- Apply any maintenance updates.

  Ensure that all maintenance affecting the MVS system logger, and the CICS log manager and its utilities, is applied.
  – Logger serviceability APARs that relate to the MVS system logger are identified with the LOGRSERVICE keyword.
  – APARs that relate to the CICS log manager are identified with the CICSLOGR keyword.
- Create and format the LOGR couple data sets.

  You need to know the number of log streams and, for coupling facility log streams, the number of structures. Each CICS region requires two system log streams and the following optional log streams:
  – A log stream for the log of logs.
  – One or more log streams for forward recovery logs.
  – One or more log streams for autojournals.
  – One or more log streams for user journals.

  In consultation with your MVS system programmer, complete the following steps:
  – Use MVS utility IXCL1DSU to create and format the primary and alternate LOGR couple data sets.
  – Identify the LOGR couple data sets to the sysplex in the COUPLE*xx* member in SYS1.PARMLIB.
  – Make the LOGR couple data set available to the sysplex.

  For more information, see "Format the LOGR Couple Data Set and Make it Available to the Sysplex" in z/OS MVS Setting Up a Sysplex.
- Define the coupling facility structures.

If you are using the coupling facility for some or all of your log streams, update your CFRM policy and your LOGR couple data set with the required structure definitions. See “Defining coupling facility structures” on page 213 for details, including a sample job.

- Establish the required security authorizations

  Ensure that all the user IDs that are involved with running the system logger, or defining or accessing logger resources, are authorized, and that the required profiles are defined in the LOGSTRM general resource class.

  – If the MVS system logger address space (IXGLOGR) is not given SAF privileged or trusted status, ensure that you give the required authorization to the user ID that runs IXGLOGR. For example, if the user ID that runs IXGLOGR (defined in the RACF started procedures table (ICHRIN03), or defined in the RACF STARTED class profile) is SYSTASK:

    - SYSTASK requires ALTER access to IXLSTR structure profiles in the FACILITY general resource class for access to log stream coupling facility structures.

    - SYSTASK requires ALTER access to the data set profiles (*hlq.data_set_name*) in the DATASET general resource class, for each DASD log stream and staging data set.

  – To use the MVS system logger IXCMIAPU utility to define, update and delete entries in the LOGR couple data set, you must have appropriate authorizations to the relevant RACF profiles in the LOGSTRM and FACILITY general resource classes. See “Authorizing users of IXCMIAPU” on page 110 for information and examples of how to do this.

  – To enable CICS to create log streams dynamically, and to write to log streams, ensure that the CICS region user ID has the required authorizations. See “Authorizations for CICS regions” on page 111 for information and examples of how to do this.

  Ensure that all the user IDs that are involved with running the system logger, or defining or accessing logger resources, are authorized, and that the required profiles are defined in the LOGSTRM general resource class. For more information about authorizations for the system logger, see z/OS MVS Setting Up a Sysplex.

- Check the sysplex definition in PARMLIB.

  To use the MVS system logger, each MVS image must be a member of a sysplex. Ensure your sysplex definition, in PARMLIB member IEASYS*xx*, specifies either PLEXCFG(MONOPLEX), for a single-member sysplex, or PLEXCFG(MULTISYSTEM), for a multi-member sysplex. Also ensure that you define a COUPLE*xx*, member in PARMLIB. The value specified on the SYSPLEX parameter in COUPLE*xx*, forms part of DASD-only and staging data set names.

- Activate the LOGR subsystem.

  Ensure that the LOGR subsystem is active so that the CICS log manager batch utility, DFHJUP, can format and print log data. The LOGR susbsystem is defined by the following entry in IEFSSN*xx* PARMLIB member:

  ```
  SUBSYS SUBNAME(LOGR) INITRTN(IXGSSINT)
  ```

- Plan staging data set requirements.

  Staging data sets are used for both DASD-only and coupling facility log streams, and if specified are dynamically allocated by the MVS system logger:

  – For DASD-only log streams, staging data sets are the primary (interim) storage.

- For coupling facility log streams, staging data sets are allocated by the system logger to safeguard log data in the event of the log data being in a volatile configuration; that is:
  - There is a loss of the coupling facility battery backup
  - A structure failure that results in the only copy of log data being in MVS local storage buffers.

  Review the following parameters:
  - STG_DUPLEX(YES) and DUPLEXMODE(COND) to cause the system logger to use staging data sets if the coupling facility is not failure independent (see “Staging data sets for coupling facility logstreams” on page 230 for more information).
  - STG_MGMTCLAS to specify the System Managed Storage (SMS) management class to be used for staging data set allocation (valid only when STG_DUPLEX(YES) or DASDONLY(YES) is specified)
  - STG_STORCLAS to specify the SMS storage class to be used for staging data set allocation (valid only when STG_DUPLEX(YES) or DASDONLY(YES) is specified).
  - STG_SIZE to specify the size of staging data sets.
  - SHAREOPTIONS(3,3) for log stream data sets and staging data sets (see “VSAM Share Options for System Logger” in z/OS MVS Setting Up a Sysplex).
- Plan DASD space and SMS environment for logger secondary storage.

  System logger secondary storage comprises all log stream (offload) data sets. See “Managing secondary storage” on page 236 for information about size parameters and other attributes that relate to secondary storage.
- Define log streams and log stream models.

  Define the specific log streams, and log stream models for dynamic creation of log streams, in the LOGR policy. Ensure that you complete the following steps:
  - Set HIGHOFFLOAD no higher than 80% so that the offload function can be activated before structures reach the 90% level and to provide a buffer so that CICS can continue to write records without filling the logstream before offload completes.
  - Set LOWOFFLOAD for DFHLOG and DFHSHUNT in the range 40–60%. For user journals and the log of logs, specify LOWOFFLOAD as 0.
  - Specify HLQ for the high level qualifier for offload data sets. It is not part of the CICS log stream name. The default is IXGLOGR.
  - Specify STG_DUPLEX(YES) and DUPLEXMODE(COND) for log streams in the coupling facility to ensure that staging data sets are used automatically if the coupling facility is volatile or failure dependent.
  - Set STG_SIZE to control the size, in 4KB blocks, of staging data sets allocated by the system logger. For coupling facility log streams, the staging data set must hold at least as much data as the log stream in the structure, so that offloads are not triggered by the staging data sets. See “Sizing coupling facility log streams” on page 220 and “Sizing for DASD-only log streams” on page 232.
  - Specify LS_DATACLAS and LS_SIZE, for the SMS data class and the number of 4KB allocation blocks respectively for log stream off load data sets. See “Managing secondary storage” on page 236.
  - Specify MODEL(YES) to indicate that a log stream definition is a model only and not an actual log stream. See SDFHINST members DFHILG2 (coupling facility) and DFHILG5 (DASD-only) for samples of model log streams.

Use AUTODELETE(YES) with a suitable retention period (RETPD) for general logs but *not* for CICS system logs (DFHLOG and DFHSHUNT). See "Defining coupling facility log streams" on page 219 for some sample IXCMIAPU jobs, and z/OS MVS Setting Up a Sysplex for general information about updating LOGR policies.

- Define JOURNALMODEL resource definitions.

  Define JOURNALMODEL resource definitions in the CICS CSD to enable CICS to map CICS journal names to MVS system logger log stream names. See JOURNALMODEL resources in Reference -> System definition.

- Review the **AKPFREQ** system initialization parameter.

  This parameter represents the number of write operations (log records) by CICS log manager to the log stream buffer before an activity keypoint is taken, whereas under the old journal control program it specifies the number of consecutive blocks written to the system log data set.

  The parameter has a significant effect on the size of system logger primary (interim) storage, affecting the log tail management that takes place during activity keypoint (AKP) processing. The system logger acts as follows:

  – It deletes records that are no longer of interest to CICS

  – It moves records to DFHSHUNT for those tasks that wrote log records in the last ACP.

- Evaluate the results after implementation.

  After you implemented the procedure to use the MVS system logger for CICS log streams and journals, evaluate the results on a continual basis. You can use the following:

  – CICS interval statistics. You can collect these at specified intervals and end-of-day to obtain CICS log manager statistics. You can also collect statistics using the DFH0STAT sample program.

  – SMF Type 88 records. These are produced by the MVS system logger, and can be printed using IXGRPT1, which is supplied in SYS1.SAMPLIB. You can also print these records using IXGRPT1J and IXGRPT1L.

Related information:

"Coupling facility or DASD-only?" on page 212
The CICS log manager supports the DASD-only option of the MVS system logger. Individual CICS log streams can use either coupling facility log structures or DASD-only logging.

"Coupling facility log streams" on page 213
If you use a coupling facility, the most suitable environment is provided by two or more non-volatile coupling facilities that are failure-independent from any of the exploiting MVS images, using dedicated processor resources.

"DASD-only log streams" on page 231
The CICS log manager supports the DASD-only option of the MVS system logger.

"Managing secondary storage" on page 236
Use System Managed Storage (SMS) to manage log stream data sets.

Setting up the environment for CICS log manager

CICS system programmers must consult with their MVS system programmers to plan for the storage that is required by the log streams required by the many CICS log managers operating in the sysplex.

Each log stream is a sequence of blocks of data, which the MVS system logger internally partitions over three different types of storage:

1. Primary storage, which holds the most recent records that were written to the log stream. Primary storage can consist of either of these areas:
   a. A structure in a coupling facility. Log data written to the coupling facility is also copied to either a data space or a staging data set.
   b. A data space in the same MVS image as the system logger. Log data written to the data space is also copied to a staging data set.
2. Secondary storage. When the primary storage for a log stream becomes full, the older records automatically spill into secondary storage, which consists of data sets managed by the storage management subsystem (SMS). Each log stream, identified by its log stream name (LSN), is written to its own log data sets.
3. Tertiary storage. A form of archive storage that is used as specified in your hierarchical storage manager (HSM) policy. Optionally, older records can be migrated to tertiary storage, which can be either DASD data sets or tape volumes.

See the different levels of log stream storage in Figure 8 on page 211 and Figure 9 on page 212.

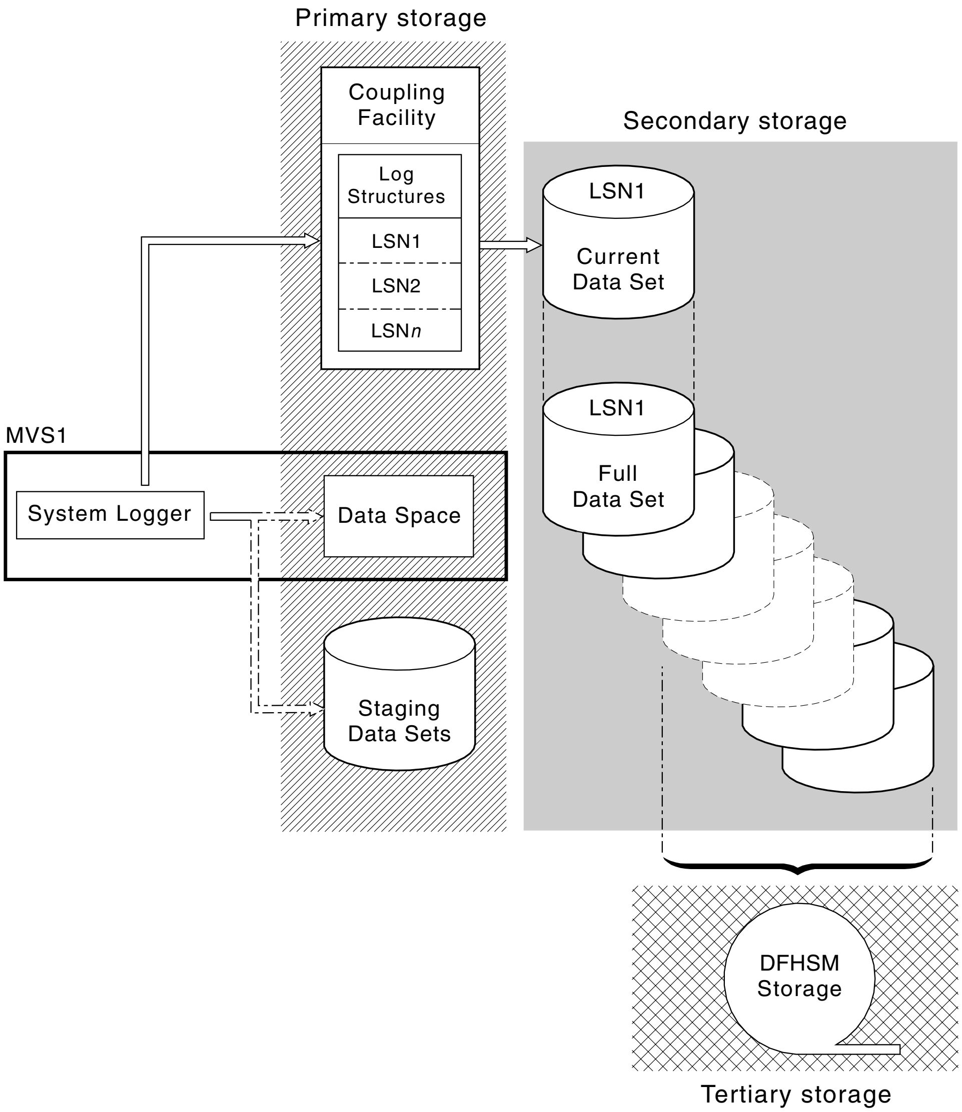


Figure 8. The types of storage used by the MVS system logger. This diagram shows a log stream that uses a coupling facility. Primary storage consists of space in a structure in the coupling facility and either space in a staging data set or a data space in the same MVS image as the system logger. Secondary storage consists of a series of data sets on disk storage to which the elements of the log structure in the coupling facility are mapped. Tertiary storage is the DFHSM storage, holding older levels of the secondary storage data sets.

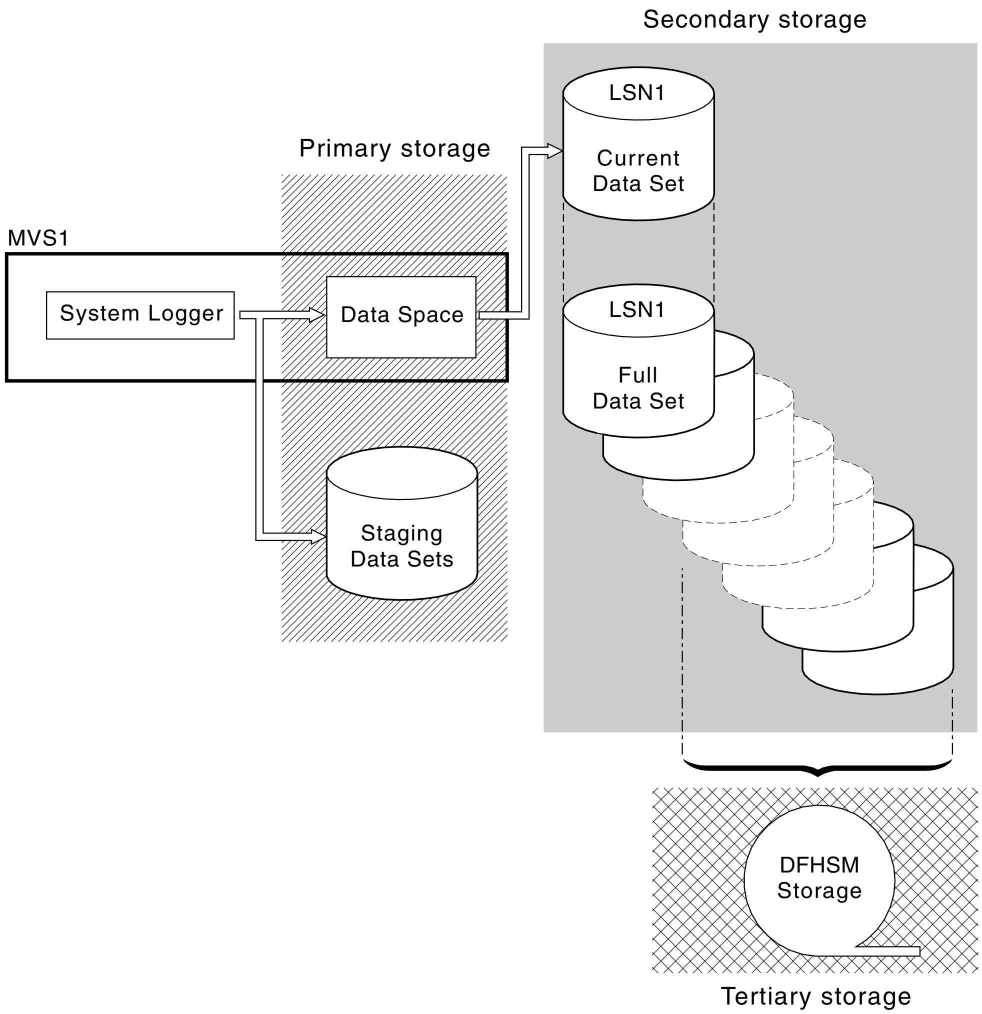


Figure 9. The types of storage used by the MVS system logger. This diagram shows a log stream that uses DASD-only logging. Primary storage consists of a data space in the same MVS image as the system logger and a single staging data set. Secondary storage consists of a series of data sets on disk storage, which hold successive copies of the single staging data set. Tertiary storage is the DFHSM storage holding older levels of the secondary storage data sets.

Coupling facility or DASD-only?

The CICS log manager supports the DASD-only option of the MVS system logger. Individual CICS log streams can use either coupling facility log structures or DASD-only logging.

Take the following points into account when deciding which log streams you define to use the coupling facility and which to use DASD-only:

- A coupling facility log stream must be used if you want to allow simultaneous access from CICS regions running in different MVS images. (Simultaneous access to a DASD-only log stream is limited to CICS regions in the same MVS image.)

  For example, assume that you are using RLS and have several CICS application-owning regions (AORs) running on different MVS images. Because the forward recovery log must be accessible from all the AORs, it must be defined as a coupling facility log stream. A CICS system log, on the other hand, is accessed only by a single CICS region, and can therefore always be defined as a DASD-only log stream.

Without a coupling facility, you cannot share general log streams across MVS images.

- Do not define all your CICS log streams to use structures in a single coupling facility. See "Coupling facility log streams" for more information.
- DASD-only log streams are easier to define and administer than coupling facility log streams.
- The CPU cost of a log write to a DASD-only log stream is greater than that of a write to a coupling facility log stream.
- If the amount of available coupling facility space is limited, you might want to define some DASD-only log streams to minimize the amount of space allocated to log structures.

Note that you can define a single-system sysplex, which must use a sysplex couple data set, with PLEXCFG=MONOPLEX. This definition is required for stand-alone MVS systems that use MVS system logger facilities. Also, define sysplexes that have two or more MVS images with PLEXCFG=MULTISYSTEM.

Coupling facility log streams

If you use a coupling facility, the most suitable environment is provided by two or more non-volatile coupling facilities that are failure-independent from any of the exploiting MVS images, using dedicated processor resources.

If one coupling facility fails, or requires maintenance, in such an environment, the system logger can rebuild its data in another coupling facility and continue. CICS systems that are running are minimally affected.

If you cannot devote two coupling facilities for the purposes of the MVS system logger, the next most robust environment is provided by one dedicated coupling facility for normal logger and lock structure use, with a coupling facility LPAR. This environment has the same advantages of rebuilding and affects running CICS systems only minimally. Furthermore, MVS detects that the LPAR coupling facility is not in a failure-independent domain, and causes the system logger to write log stream data to staging data sets for extra security.

Do not run with a single coupling facility because its failure can cause the MVS system logger, and any other users of the coupling facility, to suspend normal operation until access to the coupling facility is restored. CICS is effectively unusable in such a situation.

Unless you specify that the system logger is to use staging data sets, the recovery of log stream data depends on the MVS images remaining active so that the system loggers can use copies of log records held in storage to repopulate the coupling facility when it is again available. If you must run with a single coupling facility, specify DUPLEXMODE(UNCOND) to force the use of staging data sets.

Defining coupling facility structures

If you use a coupling facility for your CICS log streams, define the coupling facility structures you require for the log streams in your CFRM policy, in the CFRM data set, and in the LOGR policy, in the LOGR data set.

Updating the CFRM policy

Coupling facility space is divided into structures using the coupling facility resource management (CFRM) policy defined in the CFRM data set. The CFRM policy allows you to define how MVS is to manage coupling facility resources, and you update this policy using the IXCMIAPU utility. See Figure 10 on page 215 for a sample job to define coupling facility structures in the CFRM policy data set.

Updating the LOGR policy

You define structures in the MVS system logger LOGR policy in the system logger couple data sets using the DEFINE STRUCTURE specification of the ICXMIAPU utility. See Figure 11 on page 216 for a sample job to define coupling facility structures in the LOGR policy data set.

Before attempting to run any of the IXCMIAPU jobs, ensure that the MVS system logger, IXGLOGR, is running. If IXGLOGR is not running, for example, if MVS is running in LOCAL mode, logstream definition jobs fail with rc=0814.

```
//CFRM     JOB (accounting-information),CLASS=A,MSGCLASS=A
//POLICY   EXEC PGM=IXCMIAPU
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//*******************************************************************
//*                                                                 *
//*  System logger structure definitions should be merged with      *
//*  definitions for other structures required by the sysplex.      *
//*                                                                 *
//* Space values are for illustration only -- substitute values     *
//* appropriate to your number of logs and expected activity.       *
//*                                                                 *
//* NOTE:  The values in this job are not matched with the other    *
//         sample jobs.                                             *
//*******************************************************************
//SYSIN    DD *
   DATA TYPE(CFRM) REPORT(YES)
   DELETE POLICY NAME(POL1)
   DEFINE POLICY NAME(POL1)
       PREFLIST(cfname) REBUILDPERCENT(1)
   /* Define coupling facilities */
     CF NAME(cfname)
        TYPE(009674)
        MFG(IBM)
        PLANT(00)
        SEQUENCE(000000040032)
        PARTITION(3)
        CPCID(00)
        DUMPSPACE(8192)
   /* Define other structures required by sysplex here . . .      */
 ...
   /* Define logger structures for CICS log streams.              */
   /* - If a choice of facilities is available, use non-volatile  */
   /*     facilities if possible                                  */
   /* - Specify low REBUILDPERCENT so that structures are rebuilt */
   /*     in the event of connectivity failure                    */
   /* - INITSIZE gives initial coupling facility size (based on sizing calcs)    */
   /* - SIZE should be larger to allow for rebuild to a larger    */
   /*     size if INITSIZE proves to be too small                 */
   /*   SIZE and INITSIZE values are for illustration only -      */
   /*   substitute values appropriate for your intended usage.    */

     STRUCTURE NAME(LOG_DFHLOG_001)        /* CICS system logs    */
       INITSIZE(10000) SIZE(16000)
       PREFLIST(cfname) REBUILDPERCENT(1)

     STRUCTURE NAME(LOG_DFHSHUNT_001)      /* CICS secondary logs */
       INITSIZE(10000) SIZE(16000)
       PREFLIST(cfname) REBUILDPERCENT(1)

     STRUCTURE NAME(LOG_USERJNL_001)       /* CICS user journals  */
       INITSIZE(10000) SIZE(16000)
       PREFLIST(cfname) REBUILDPERCENT(1)

     STRUCTURE NAME(LOG_GENERAL_001)     /* Forward recovery logs */
       INITSIZE(10000) SIZE(16000)
       PREFLIST(cfname) REBUILDPERCENT(1)
/*
//
```

Figure 10. Sample policy job to define logger structures to CFRM 1/2

Multiple log streams can write data to a single coupling facility structure. The log data is not merged; the log data stays segregated according to log stream. You can specify the number of log streams that use the resources of a single coupling facility structure using the LOGSNUM parameter on the IXCMIAPU service to define a structure.

Each log stream is allocated a proportion of the structure space based on the number of currently connected log streams, up to the limit specified in LOGSNUM.

For example, you might define a structure to contain a maximum of, say, 30 log streams. If only 10 log streams are connected, each log stream can use one tenth of the space in the structure. As other log streams are connected and disconnected, the MVS system logger adjusts the proportion of space to be used by each log stream.

You must plan carefully before specifying a value for LOGSNUM, because this parameter determines how much storage space in the structure is available to each log stream. A number in the range 10 to 20 is optimum in many environments.

The JCL in Figure 11 defines log stream coupling facility structures to the MVS system logger. It is meant for guidance only and you must substitute values appropriate to your requirements.

```
//DEFSTRUC JOB ...
//POLICY   EXEC PGM=IXCMIAPU
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//*******************************************************************
//*                                                                 *
//* Define log stream coupling facility structures to the MVS logger  *
//*                                                                 *
//* AVGBUFSIZE and LOGSNUM values are just for illustration,        *
//* substitute values appropriate to your intended usage            *
//*                                                                 *
//*******************************************************************
//SYSIN    DD *
  DATA TYPE(LOGR) REPORT(YES)

  /* System logs           */
  DEFINE STRUCTURE NAME(LOG_DFHLOG_001) LOGSNUM(10)
            MAXBUFSIZE(64000) AVGBUFSIZE(500)

  /* Secondary system logs  */
  DEFINE STRUCTURE NAME(LOG_DFHSHUNT_001) LOGSNUM(10)
            MAXBUFSIZE(64000) AVGBUFSIZE(4096)

  /* User journals with unforced writes  */
  DEFINE STRUCTURE NAME(LOG_USERJRNL_001) LOGSNUM(10)
            MAXBUFSIZE(64000) AVGBUFSIZE(64000)

  /* Fwd recovery logs and user jnls that are forced */
  DEFINE STRUCTURE NAME(LOG_GENERAL_001) LOGSNUM(10)
            MAXBUFSIZE(64000) AVGBUFSIZE(2048)

/*
//
```

Figure 11. Sample JCL to define coupling facility structures to MVS system logger

See the *z/OS MVS Programming: Assembler Services Guide* for information on planning coupling facility configurations.

Planning for the number of log structures

There are a number of points to consider when planning the definition of your coupling facility structures.

- The CFRM policy allows a maximum of 255 structures for all purposes.
- Allow a maximum of 20 log streams per structure.
- Smaller structures are more quickly allocated, rebuilt, and recovered than larger ones.
- It is good practice to keep the log streams for test CICS systems and other systems not in regular use in structures separate from the structures holding the log streams of production CICS systems. This separation avoids the structure space available to production CICS systems being affected by structure usage of the test CICS systems.
- It is good practice to keep the log streams for terminal-owning regions (TORs) in structures separate from those accommodating log streams for application-owning regions (AORs). In addition, keep log streams for file-owning regions in structures separate from those accommodating log streams for TORs and AORs.
- Share structures between MVS images. If an MVS image or logger address space fails, and a surviving MVS image is using the same log stream structures, although not necessarily the same log streams, the surviving image is notified of the failure and can initiate immediate log stream recovery for the failing MVS.

  Recovery, otherwise, is delayed until the next time that a system attempts to connect to a log stream in the affected structures, or until the logger address space of the failing system is restarted.

  For example, in a 4-way sysplex comprising MVSA, MVSB, MVSC, and MVSD, you might have the CICS regions that normally run on MVSA and MVSB use structure LOG_DFHLOG_001, and the regions that run on MVSC and MVSD use structure LOG_DFHLOG_002. Thus, each MVS image has a partner to recover its log streams if MVS fails. If a structure fails, the two MVS images using the other structure can take over the workload. Also, if you have more than one coupling facility, allocate the system log structures to different coupling facilities. See Figure 12 for an illustration of this example.

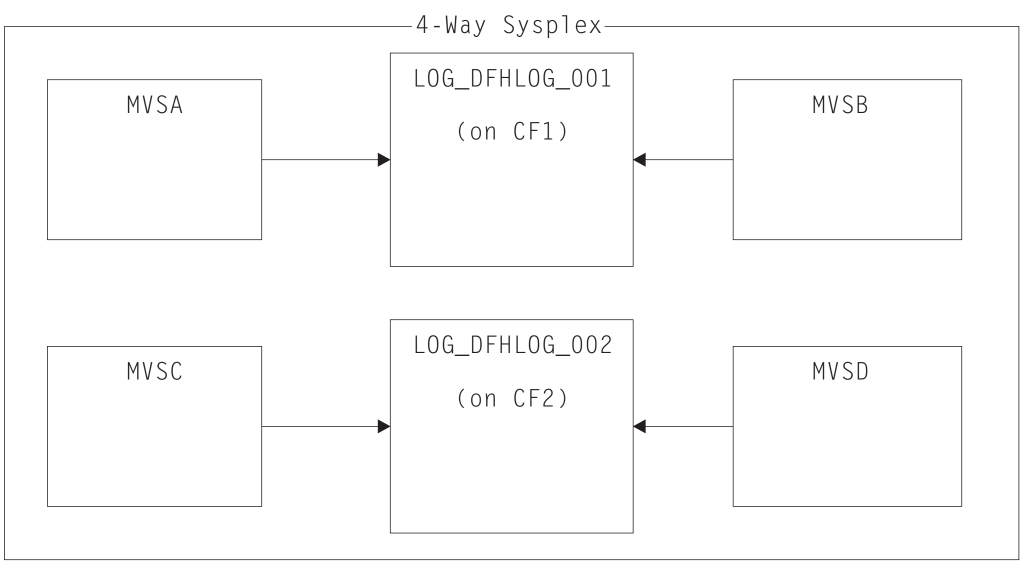


Figure 12. Sharing system logger structures between MVS images

- Use the appropriate buffer size. The average buffer size (AVGBUFSIZE) defined for a structure must be close to the actual buffer size of the log streams using the structure. If it is not,usable space might be exhausted long before the structure is full.

  Important:

  1. z/OS dynamically tunes the element and entry ratio, so the value you specify for AVGBUFSIZE is less important than it was on earlier releases of MVS.
  2. You cannot update AVGBUFSIZE, like other structure definition attributes such as MAXBUFSIZE and LOGSNUM, unless you first delete the log streams in the structure definition.
- Set MAXBUFSIZE to slightly less than 64 KB; for example, 64 000 is suitable. This number allows CICS to write the maximum size user record and allows coupling facility storage to be allocated in 256-byte units. If you allow MAXBUFSIZE to default, coupling facility storage is allocated in 512-byte units. This size can be wasteful of storage.

  If you set MAXBUFSIZE lower than 64 000 you gain no significant advantage as far as the use of storage is concerned.
- Set a low value for the REBUILDPERCENT parameter in the CFRM policy for log structures used for CICS system logs.

Log structure naming conventions

Adopt a naming convention for your coupling facility structures that helps to identify the purpose of the structure.

Use a format such as LOG_*purpose*_*nnn*:

- *purpose* identifies the type of use of the structure.
- *nnn* is a sequence number to allow for more than one structure for each purpose.

Here are some examples:

LOG_DFHLOG_001
: For the CICS primary system log. The structure must be large enough to avoid writing data to DASD. The average buffer size is small. See the sizing calculations in “Structure size for system log usage” on page 222.

LOG_DFHSHUNT_001
: For the CICS secondary system log. The structure must be small, but requires a large buffer size. A structure of 150 KB per log stream might be sufficient.

LOG_USERJRNL_001
: For user journals where block writes are not forced. The average and maximum buffer sizes of these structures must be the same.

LOG_GENERAL_001
: For forward recovery logs and user journals in which block writes are forced periodically.

See also “Develop a naming convention for system logger resources” in the *z/OS MVS Setting Up a Sysplex* manual.

Defining coupling facility log streams

Use the MVS IXCMIAPU utility to define coupling facility log streams to the LOGR couple data set.

The following code sample shows the basic syntax to define a coupling facility log stream:

```
DEFINE LOGSTREAM NAME(log_stream_name)
             STRUCTNAME(structure_name)
             LOWOFFLOAD(low_offload) HIGHOFFLOAD(high_offload)
             STG_DUPLEX(YES|NO) DUPLEXMODE(COND|UNCOND)
```

For detailed information about the full range of log stream attributes, see the *z/OS MVS Setting Up a Sysplex* manual.

Figure 13 shows example definitions for a pair of coupling facility log streams associated with a CICS system log. The definitions are for the CICS primary and secondary system log streams. The `region_userid` value is the RACF user ID under which the CICS address space is running. The `applid` value is the z/OS Communications Server APPL name of the CICS region (taken from the **APPLID** system initialization parameter).

The primary and secondary log streams are placed in different structures because of the large disparity in data volumes written to the primary and secondary system logs.

```
//DEFLOGS  JOB ...
//LOGDEFN  EXEC PGM=IXCMIAPU
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//*******************************************************************
//*                                                                 *
//* Define coupling facility log streams for CICS system log.      *
//*                                                                 *
//* The LOWOFFLOAD value is for illustration only --                *
//* substitute a value appropriate for your environment.           *
//*                                                                 *
//*******************************************************************
//SYSIN    DD *
  DATA TYPE(LOGR) REPORT(NO)
  DEFINE LOGSTREAM NAME(region_userid.applid.DFHLOG)
                  STRUCTNAME(LOG_DFHLOG_001)
                  LOWOFFLOAD(40) HIGHOFFLOAD(80)
                  STG_DUPLEX(YES) DUPLEXMODE(COND)
  DEFINE LOGSTREAM NAME(region_userid.applid.DFHSHUNT)
                  STRUCTNAME(LOG_DFHSHUNT_001)
                  LOWOFFLOAD(40) HIGHOFFLOAD(80)
                  STG_DUPLEX(YES) DUPLEXMODE(COND)
```

Figure 13. Example definitions of coupling facility log streams.

Using model log streams

To avoid defining explicitly each log stream used by each of your CICS regions, you can use model log stream definitions.

Using models, log streams are defined to MVS dynamically, on their first usage. Figure 14 on page 220 shows an example of coupling facility model definitions for CICS primary and secondary system log streams.

```
//DEFLOGS  JOB ...
//LOGDEFN  EXEC PGM=IXCMIAPU
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//****************************************************************
//*                                                              *
//* Define coupling facility model log streams for CICS system log.*
//*                                                              *
//* The LOWOFFLOAD value is for illustration only --             *
//* substitute a value appropriate for your environment.         *
//*                                                              *
//****************************************************************
//SYSIN    DD *
  DATA TYPE(LOGR) REPORT(NO)
  DEFINE LOGSTREAM NAME(sysname.DFHLOG.MODEL)
                   MODEL(YES)
                   STRUCTNAME(LOG_DFHLOG_001)
                   LOWOFFLOAD(40) HIGHOFFLOAD(80)
                   STG_DUPLEX(YES) DUPLEXMODE(COND)
  DEFINE LOGSTREAM NAME(sysname.DFHSHUNT.MODEL)
                   MODEL(YES)
                   STRUCTNAME(LOG_DFHSHUNT_001)
                   LOWOFFLOAD(40) HIGHOFFLOAD(80)
                   STG_DUPLEX(YES) DUPLEXMODE(COND)
```

Figure 14. Example model definitions for coupling facility system log streams. The value **sysname** is the sysid of the MVS image in which the CICS region or regions are running.

For detailed information about using model log streams, see Model log streams for CICS general logs. For information about the mapping of CICS journal definitions to log stream names, see Mapping of general log streams.

When using model log streams, note these points:

- For coupling facility log streams, a model log stream definition determines the coupling facility structure in which the new log streams are created. On an MVS image that runs both CICS production and CICS test regions, take care that the system logs for the production regions are kept separate from the system logs for the test regions.
- You must take into account recovery when using model log streams to define CICS system logs. See Recovery considerations for more information.

Sizing coupling facility log streams

You must work out the sizes of the CICS primary and secondary system log streams, forward recovery logs, and user journals and autojournals.

- Primary system log stream.

  Use the following guidelines when you size CICS primary system log stream, DFHLOG:

  – Minimize the amount of data that is offloaded to secondary storage.

    The MVS system logger begins the offload process when the high offload threshold (HIGHOFFLOAD) of the log stream is reached. The offload process has two steps:

    1. The MVS logger physically deletes the data in the log stream that the CICS log tail deletion process has marked for deletion.
    2. The MVS logger calculates how much data must be offloaded to secondary storage, based on the difference between HIGHOFFLOAD and LOWOFFLOAD, less the amount of data that was deleted since the last offload event.

    To minimize the amount of data offloaded from the CICS primary system log:

- Define a suitably sized coupling facility structure.
- Ensure that the log tail deletion process is working effectively. For detailed information about the log tail deletion process, see Log tail deletion in Administering.

– Avoid *structure full* events.

  A structure full event occurs when the structure space of a log stream becomes full before the offloading of data has completed. For information about monitoring and avoiding structure full events, see CICS logging and journaling in Improving performance.

- Secondary log stream.

  You must size the secondary system log stream, DFHSHUNT, to avoid structure full events. However, typically some data is offloaded from DFHSHUNT to secondary storage.

- General logs.

  You must size forward recovery logs, user journals, and autojournals to avoid structure full events. However, because CICS does not delete data from these log streams, data is typically offloaded to secondary storage.

Setting attribute values for structure, log stream and system definitions

You can use the System z Coupling Facility Structure Sizer tool (CFSizer) to calculate storage requirements for coupling facility log streams. CFSizer is a web-based application that communicates with a coupling facility at a current CFLEVEL to calculate storage requirements. See CFSizer.

You can use the CFSizer tool to calculate the following values:
- INITSIZE
- SIZE

For more information, see Structure size for system log usage.

For information about the CPC support for different CFLEVELs and the function in each CFLEVEL, see CF levels. For more information about the storage increments for different CFLEVELs, see the information about coupling facility control code support in *System z10® Processor Resource/Systems Manager Planning Guide*.

You can use the formulas provided in Structure size for system log usage to calculate the following values:
- INITSIZE
- AVGBUFSIZE
- SIZE
- LOWOFFLOAD

You can use the formula provided in Staging data set size calculation to calculate the following value:
- STG_SIZE

You must base your calculations on the journaling requirements of your applications.

Table 16 on page 222 summarizes how you decide on the values for various attributes on the structure definition, log stream definition, and system definition.

Table 16. How to decide on the values of attributes

Facility	Attribute	Method or Value
Structure	INITSIZE	Use CFSizer or the formula in INITSIZE calculation.
	SIZE	Use CFSizer or the formula in SIZE calculation.
	AVGBUFSIZE	Use the formula in AVGBUFSIZE calculation. Underestimate rather than overestimate.
	MAXBUFSIZE	64 000
Primary system log stream (DFHLOG)	HIGHOFFLOAD	80
	LOWOFFLOAD	Use the formula in LOWOFFLOAD calculation.
Secondary system log stream (DFHSHUNT)	HIGHOFFLOAD	80
	LOWOFFLOAD	0
General log stream	HIGHOFFLOAD	80
	LOWOFFLOAD	40 – 60
Log stream	STG_SIZE	Use the formula in Staging data set size calculation. Overestimate rather than underestimate.
CICS system	AKPFREQ	4 000

Startup might take longer than you experienced when using earlier releases. This is partly caused by the allocation and formatting of the staging data sets. Increased startup time depends on factors that include the following:

- Size of staging data set (STG_SIZE)
- DASD speed
- DASD contention

You can reduce startup time by avoiding large staging data sets.

Structure size for system log usage

You can use the System z® Coupling Facility Structure Sizer tool (CFSizer), or the formulas provided, to calculate storage requirements for the primary system log, DFHLOG, and the secondary system log, DFHSHUNT.

The CFSizer calculations assume that the coupling facility is at the current CFLEVEL. The formulas provided assume the coupling facility is at CFLEVEL 11.

You use the results of these calculations to set the coupling facility resource manager (CFRM) **INITSIZE** and **SIZE** parameters in the CRFM policy.

The primary and secondary log streams must be placed in different structures because of the large disparity in data volumes written to the primary and secondary system logs.

Generally, the volume of data that CICS keeps in the primary system log at any one time is slightly greater than the amount written during one activity keypoint interval. This volume is determined by the activity keypoint frequency, which is measured in the number of write requests to the CICS system logstream output buffer, and defined on the **AKPFREQ** system initialization parameter. When you plan coupling facility structure sizes, review the value specified for the **AKPFREQ** parameter.

Using CFSizer to determine structure size

CFSizer is a web-based application that communicates with a coupling facility at a current CFLEVEL to calculate storage requirements. For primary and secondary system logs, it calculates suitable values for the **INITSIZE** and **SIZE** parameters. See http://www.ibm.com/systems/support/z/cfsizer/.

To use CFSizer to calculate storage requirements for system logs, enter the following information:

Maximum buffer size
: The size, in bytes, of the largest log block that can be written to a logstream. The value must be between 1 and 65532. This value corresponds to the MAXBUFSIZE value in the definition of the logstream coupling facility structure. See “Defining coupling facility structures” on page 213.

Average buffer size
: The average size in bytes of log blocks written to all logstreams. This input is used to determine the initial entry to element ratio of the list structure. This value corresponds to the AVGBUFSIZE value in the definition of the logstream coupling facility structure. See “Defining coupling facility structures” on page 213.

  Also, this value is available in the system logger reports produced by IXGRPT1 and IXGRPT1J. See “Analyzing system logger data (SMF Type 88 records)” on page 235.

Highoffload
: The high offload threshold of the logstream. When this percentage of the coupling facility structure is full, the system logger begins to offload data from primary storage to offload data sets. For CICS logstreams, this value is usually between 80 and 85. See Checking logstream status and LOWOFFLOAD and HIGHOFFLOAD parameters on log stream definition in *CICS Performance Guide*.

  For more information about the offload threshold parameter, see *z/OS MVS Setting Up a Sysplex*.

Number of write requests per interval
: The number of log blocks written to the logstream (the total from all systems that use the logstream) during the data collection interval. This value is available in the CICS statistics reports. See Logstream statistics and Logstreams reports in *CICS Performance Guide*.

  Also, this value is available in the #WRITES INVOKED data in the system logger reports produced by IXGRPT1 and IXGRPT1J. See “Analyzing system logger data (SMF Type 88 records)” on page 235.

Length of interval in seconds
: The time interval in seconds over which the number of writes was collected. This value is available in the CICS statistics reports. See Statistics domain: Summary global statistics in *CICS Performance Guide*

Longest running task in seconds
: The duration in seconds of the longest running transaction during the data collection interval. This is not the average response time.

Log tail deletes
: The number of times CICS performed log tail deletion during the data collection interval. This value is available in the CICS statistics reports. See delete requests, stream deletes or logstream deletes in Logstream statistics

and Logstreams reports in *CICS Performance Guide*. You can also determine this value by using joblog of the region and counting the number of DFHLG0743 messages that were issued during the interval.

Calculation of INITSIZE for DFHLOG

To calculate the INITSIZE value to use in the CFRM policy for the primary system log, use the following formula:

```
INITSIZE = 310 + ( LOGSNUM * A * B / 1024)
```

where:

- `A = 2000 + (number_of_entries + 5)`
- `B = (AVGBUFSIZE * 1.1289) + 195`

To calculate a value for `number_of_entries`, use the following formula:

```
number_of_entries =  ((akpintvl + trandur) * writespersec) / 0.9
```

where:

- `akpintvl` is the interval between activity key points, which varies with workload. Calculate it as follows:

  ```
  akpintvl = AKPFREQ / ((N1 * R1) + (N2 * R2) + (Nn * Rn) )
  ```

  where:
  - `N1, N2 .... Nn` is the transaction rate for each transaction (transactions per second).
  - `R1, R2 .... Rn` is the number of log records written by each transaction.
- `trandur` is the execution time (between sync points) of the longest-running transaction that runs as part of the normal workload.

  If this duration is longer than the `akpintvl` value, you have the following choices:
  - Increase the value of the **AKPFREQ** parameter, thus increasing the value of `akpintvl`, provided that the value does not result in an unacceptably large coupling facility structure size.
  - Change the application logic to cause more frequent sync points.
  - Calculate a structure size based on a shorter transaction duration, and accept that DASD offloading occurs when the long-running transaction is used.
- `writespersec = lesser of 25 or ((N1 * R1) + ... (Nn * Rn))`, where:
  - `N1, N2 .... Nn` are the transaction frequencies (transactions per second) of the most frequently run transactions.
  - `R1, R2 .... Rn` is the number of log records written by each transaction.

To calculate the value of `AVGBUFSIZE` for the primary system log, DFHLOG, you can use the weighted average of the data logged by the most frequently run transactions in the system:

```
AVGBUFSIZE = (bytespersec / writespersec) + 48
```

where:

- `bytespersec = (N1 * D1) + (N2 * D2) + ... (Nn * Dn)`
  - `N1, N2 .... Nn` are the transaction frequencies (transactions per second) of the most frequently run transactions.
  - `D1, D2 .... Dn` are the bytes of data logged by each transaction.

You can calculate the amount of data (Dn) written to the system log for each transaction:

```
Dn = Ns * syncreclen +
     Nfc * (fcrechdr + fcreclen) +
     Nts * (tsrechdr + tsreclen) +
     Ntd * (tdrechdr + tdreclen) +
     Nur * (urrechdr + urreclen)
```

where:

- Ns is the number of sync points per transaction; usually 1.
- synreclen is the sync point record length.
- Nfc, fcrechdr, fcreclen are the number of recoverable updates made, the length of the record headers, and the length of the records for file control, respectively.

  Count only READ UPDATE and WRITE ADD records. fcrechdr is 144 (136 bytes of record header plus 8 bytes of file name).
- Nts, tsrechdr, tsreclen are for recoverable temporary storage updates.

  Count only TS PUT and TS UPDATE records. For TS PUT records, tsrechdr is 108, and tsreclen is 88. For TS UPDATE records, tsrechdr is 108, and tsreclen is 52.
- Ntd, tdtrechdr, tdreclen are for recoverable transient data updates.

  tdrechdr is 108, and tdreclen is 380.
- Nur, urrechdr, urreclen are for user records written to DFHLOG.

  urrechdr is 125.

• See Writes per second calculation for details of how to calculate writespersec.

If the result of the calculation shows a value for AVGBUFSIZE that is greater than the value defined for MAXBUFSIZE, the value defined for MAXBUFSIZE is taken as the value for AVGBUFSIZE, and writespersec is calculated as follows:

```
writespersec = bytespersec / (MAXBUFSIZE - 48)
```

Round the final result of the INITSIZE formula up to the next multiple of 256.

Calculation of SIZE for DFHLOG

To calculate the SIZE value to use in the CFRM policy for the primary system log, use the following formula:

```
SIZE = 480 + ( LOGSNUM * A * B / 1024)
```

where:

- A = 2500 + (number_of_entries + 5)
- B = (AVGBUFSIZE * 1.6821) + 289

To calculate a value for number_of_entries, see number of entries calculation.

Round the final result of the SIZE formula up to the next multiple of 256. The formula for SIZE gives a result that is approximately fifty percent greater that the INITSIZE value.

Calculation of LOWOFFLOAD for DFHLOG

You can calculate a suitable value for LOWOFFLOAD for DFHLOG using one of the following formulas:

- `LOWOFFLOAD = (trandur * 90) / (akpintvl + trandur) + 10 (where RETPD=0 specified)`
- `LOWOFFLOAD = (trandur * 90) / (akpintvl + trandur)(where RETPD=dddd specified)`

where:

- `akpintvl` is the interval between activity key points. See activity key point interval calculation.
- `trandur` is the execution time, between sync points, of the longest-running transaction that runs as part of the normal workload.

  If this duration is longer than `akpintvl` value, you have the following choices:
  - Increase the value of the **AKPFREQ** parameter, thus increasing the value of `akpintvl`, provided that this value does not result in an unacceptably large coupling facility structure size.
  - Change the application logic to cause more frequent sync points.
  - Calculate a structure size based on a shorter transaction duration, and accept that DASD offloading occurs when the long-running transaction is used.

For a description of the low offload threshold for a logstream, see LOWOFFLOAD and HIGHOFFLOAD parameters on log stream definition in *CICS Performance Guide*.

Calculation of INITSIZE and SIZE for DFHSHUNT

Generally, the secondary system logstream is only a fraction of the size of the primary logstream. To calculate coupling facility space for DFHSHUNT, use the following formulas:

- `INITSIZE = (150 * LOGSNUM) + 310`
- `SIZE = (230 * LOGSNUM) + 480`

where `LOGSNUM` is number of logstreams that can write data to the secondary logstream.

Structure size for forward recovery log usage

You can merge the forward recovery logs written by many CICS regions onto the same log stream. You can also use the same log stream for forward recovery data for multiple data sets.

You can calculate a value for number of entries for the INITSIZE and SIZE attributes in the following way:

```
no. entries = writespersec * 12.5
```

where:

```
writespersec = lesser of 25 or (N1 + ... + Nn)
```

where `N1 .... Nn` is the number of transactions per second writing to each data set.

You can calculate AVGBUFSIZE in the following way:

```
AVGBUFSIZE = (bytespersec / writespersec) + 36
```

where:

- `bytespersec = (N1 * Wr1 * (D1 + rechdr) +.. (Nn * Wrn * (Dn + rechdr)))`
- `writespersec = lesser of 25 or (N1 + ... + Nn)`, where:

– `N1 .... Nn` is the number of transactions per second writing to each data set.
– `Wr1 ... Wrn` is the number of write requests per transaction.
– `D1 .... Dn` is the average record length for each data set.

- `rechdr` is the record header length of each record.

If the records are WRITE ADD, WRITE ADD COMPLETE, or WRITE ADD DELETE records, `rechdr` is 84 and is followed by the record key and the record data (including its key).

If the result of the calculation shows a value for `AVGBUFSIZE` that is greater than the value defined for MAXBUFSIZE, the value defined for MAXBUFSIZE is taken as the value for `AVGBUFSIZE`, and `writespersec` is calculated:

```
writespersec = bytespersec / (MAXBUFSIZE - 36)
```

Structure size for user journal and autojournal usage

You can use the System z Coupling Facility Structure Sizer tool (CFSizer), or the formulas provided, to calculate storage requirements for the user journal and autojournal.

The CFSizer calculations assume that the coupling facility is at the current CFLEVEL. The formulas provided assume the coupling facility is at CFLEVEL 11.

Using CFSizer to determine structure size

CFSizer is a web-based application that communicates with a coupling facility at a current CFLEVEL to calculate storage requirements. For the user journal and autojournal, it calculates suitable values for the **INITSIZE** and **SIZE** parameters. See http://www.ibm.com/systems/support/z/cfsizer/.

To use CFSizer to calculate storage requirements for the user journal and autojournal, enter the following information:

Writes per second
: The number of log blocks written to the log stream per second from a single system. This value is available in the CICS statistics reports. See Logstreams reports in *CICS Performance Guide*.

Maximum buffer size
: The size, in bytes, of the largest log block that can be written to a logstream. The value must be between 1 and 65532. This value corresponds to the MAXBUFSIZE value in the definition of the logstream coupling facility structure. See “Defining coupling facility structures” on page 213.

Average buffer size
: The average size in bytes of log blocks written to all logstreams. This input is used to determine the initial entry to element ratio of the structure. This value corresponds to the AVGBUFSIZE value in the definition of the logstream coupling facility structure. See “Defining coupling facility structures” on page 213.

Number of logstreams
: The number of logstreams allocated to a structure. This must be a value from 0 to 512. In a CICS environment, the number of logstreams should be between 10 and 20.

For the user journal and autojournal, CFSizer uses the following default values:

Highoffload
80

Lowoffload
0

Calculation of structure size

Calculate values for the INITSIZE and SIZE attributes. See "Calculation of INITSIZE for DFHLOG" on page 224 and "Calculation of SIZE for DFHLOG" on page 225.

To calculate a value for `number_of_entries`, use the following formula:

```
number_of_entries = writespersec * 12.5
```

See the explanation of `writespersec` later in this topic.

For journals with log blocks that are not forced to the log stream, the average block size tends to be slightly less than the MAXBUFSIZE value defined for the coupling facility structure.

For journals with log blocks that are forced to the log, using the **EXEC CICS WAIT JOURNALNAME** or **EXEC CICS WAIT JOURNALNUM** commands, or using the WAIT option of the **EXEC CICS WRITE JOURNALNAME** or **EXEC CICS WRITE JOURNALNUM** commands, you can calculate AVGBUFSIZE from the weighted average of the data logged for each journal logging to the same log stream for a given CICS system.

```
AVGBUFSIZE = (bytespersec / (writespersec) + 36
```

where:

- `bytespersec = (N1 * Wr1 * (D1 + rechdr) + ... (Nn *Wrn * (Dn + rechdr)))`
- `writespersec = lesser of 25 or ((N1 * Wa1) + ... + (Nn * Wan))` where:
  - `N1, .... Nn` is the number of transactions per second writing to the journal.
  - `Wr1 .... Wrn` is the number of write requests per transaction.
  - `Wa1 .... Wan` is the number of wait requests per transaction.
  - `D1 .... Dn` is the average record length of each journal record.
  - `rechdr` is the record header length of each record.

Autojournal records are issued from file control. They might be DATA SET NAME records, which consist of a 204-byte record header, and no further data. Alternatively, they might be READ ONLY, READ UPDATE, WRITE UPDATE, WRITE ADD, or WRITE ADD COMPLETE records. In this case, `rechdr` is 84 bytes and is followed by the file control record itself.

User journal records consist of a 68-byte record header, followed by the user prefix and the user data.

If the result of the calculation shows a value for `AVGBUFSIZE` that is greater than the value defined for MAXBUFSIZE, the value defined for MAXBUFSIZE is taken as the value for `AVGBUFSIZE`, and `writespersec` is calculated as follows:

```
writespersec = bytespersec / (MAXBUFSIZE - 36)
```

Coupling facility requirements in an RLS environment

When you move to an RLS environment from an environment where multiple AORs accessed data sets in an FOR, the logging activity of the FOR is distributed across the AORs. Therefore, the coupling facility structure size required by each AOR increases.

Calculating increased AOR coupling facility storage requirements

Use the following formulae to calculate the `avgbufsize`, `number of entries` and `akpintvl` values for the AORs in the new RLS environment.

Calculate the AOR AVGBUFSIZE value required by the INITSIZE and SIZE formulae:

```
AOR AVGBUFSIZE = ( AOR_bytes + (FOR_bytes / no. of AORs) ) / (intvlen * 25)
```

where:

- `AOR_bytes` is the number of bytes written to the system log by an AOR in the sampling interval.
- `FOR_bytes` is the number of bytes written to the system log by an FOR in the sampling interval.
- `no of AORs` is the number of cloned AORs using the FOR.
- `intvlen` is the length in seconds of the sampling interval.

Calculate the `AOR no. entries` value required by the INITSIZE and SIZE formulae:

```
AOR no. entries = ((AOR_akpintvl + trandur) * 25) / 0.9
```

where:

- ```
  AOR_akpintvl = ( AKPFREQ * intvlen ) / ( AOR_recs + (FOR_recs / no. of AORs) )
  ```

  where:

  - `intvlen` is the length in seconds of the sampling interval.
  - `AOR_recs` is the number of records written to the system log by an AOR in the sampling interval.
  - `FOR_recs` is the number of records written to the system log by an FOR in the sampling interval.
  - `no of AORs` is the number of cloned AORs using the FOR.
- `trandur` is the execution time between sync points of the longest-running transaction that runs as part of the normal workload.

  If this value is greater than `AOR_akpintvl`, use `AOR_akpintvl` as the duration or consider increasing AKPFREQ.

After you calculate the values for `AOR AVGBUFSIZE` and `AOR no. entries`, determine the values of **`INITSIZE`** and **`SIZE`**, as described in “Structure size for system log usage” on page 222.

Use the reports produced from the log stream statistics from CICS Transaction Server for z/OS that occur in a reporting interval for the AORs and the FOR to calculate the values:

- The number of log write operations
- The amount of data written
  ```

Staging data sets for coupling facility logstreams

MVS usually keeps a second copy of the data written to the coupling facility in a data space, for use when rebuilding a coupling facility log if an error occurs.

This backup is satisfactory if the coupling facility is failure-independent from MVS; that is, in a separate CPC and non-volatile.

When the coupling facility is in the same CPC, or uses volatile storage, the MVS system logger supports staging data sets for copies of logstream data that might otherwise be vulnerable to failures that affect both the coupling facility and the MVS images.

When defining logstreams, consider the following tasks:

- Define STG_DUPLEX(YES) and DUPLEXMODE(COND) for those logstreams that are associated with the system log. These definitions ensure that the MVS system logger automatically copies to staging data sets if it detects that the coupling facility is not failure-independent and is a single point of failure, and is therefore vulnerable to permanent log data loss. `

  A connection to a logstream contains a single point of failure if the coupling facility is volatile or it resides on the same CPC as the MVS system connecting to it. For example, if there are two CPCs, CPC1 and CPC2, and CPC1 has an MVS LPAR and a coupling facility, but CPC2 has only MVS LPARs, the connections from the MVS LPAR in CPC1 to the coupling facility are failure-dependent. If you lose CPC1, you lose both MVS and its local buffers and the coupling facility. However, the connections from CPC2 are failure-independent, because the system logger local storage and buffers are in a physically separate CPC from the coupling facility, and the data is lost only if both fail. With DUPLEXMODE(COND), failure-dependent connections result in staging sets, but failure-independent connections are not allocated staging data sets.
- If you are operating with only a single coupling facility, define STG_DUPLEX(YES) and DUPLEXMODE(UNCOND) for those logstreams associated with the system log.
- Define STG_DUPLEX(YES) and DUPLEXMODE(COND) for those logstreams associated with forward recovery logs. If you do not, and a failure causes loss of data from the logstream, you need to take a new image copy of the associated VSAM data sets. For the consequent period of time until this operation is complete, the data sets are not fully protected.
- If you operate a nonvolatile, stand-alone coupling facility for normal logging, with a PR/SM LPAR configured as a coupling facility acting as backup, define all logstreams with STG_DUPLEX(YES) and DUPLEXMODE(COND).
- Define each staging data set to be at least the same size as the logstream share of the coupling facility, but round the average block size up to 4 KB.

  For example, you can calculate the staging data set size that corresponds to the basic coupling facility space requirement for each CICS system logstream (DFHLOG) by using the following formula:

  ```
  staging data set size = number_of_entries *  rnd-avg-buf /  4096
  ```

  where `rnd-avg-buf = avgbufsize (rounded up to 4K)`

  To calculate a value for `number_of_entries`, see number of entries calculation.

DASD-only log streams

The CICS log manager supports the DASD-only option of the MVS system logger.

Individual CICS log streams can use either coupling facility log structures or DASD-only logging. You might define a log stream to use DASD-only logging for these reasons:

- You do not have a coupling facility.
- You want to preserve coupling facility space for other uses.
- You do not require the log stream to be shared across MVS systems. (The CICS system log can never be shared.)

See Setting up the environment for CICS log manager for advice about defining individual log streams to use coupling facility or DASD-only logging, based on their usage.

Defining DASD-only log streams

Use the MVS IXCMIAPU utility to define DASD-only log streams to the LOGR couple data set.

The following code sample shows the basic syntax to define a DASD-only log stream:

```
DEFINE LOGSTREAM NAME(log_stream_name)
            DASDONLY(YES)
            MAXBUFSIZE(max_bufsize)
            STG_SIZE(stg_size)
            HIGHOFFLOAD(high_offload)
            LOWOFFLOAD(low_offload)
```

Figure 15 shows example definitions for a pair of log streams associated with a DASD-only system log.

```
//DEFLOGS  JOB ...
//LOGDEFN  EXEC PGM=IXCMIAPU
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//*****************************************************************
//*                                                               *
//* Define DASD-only log streams for CICS system log.             *
//*                                                               *
//* The LOWOFFLOAD and STG_SIZE values are for illustration       *
//* only -- substitute values appropriate for your environment.   *
//*                                                               *
//*****************************************************************
//SYSIN    DD *
  DATA TYPE(LOGR) REPORT(NO)
  DEFINE LOGSTREAM NAME(region_userid.applid.DFHLOG)
                   DASDONLY(YES)
                   MAXBUFSIZE(64000) STG_SIZE(3000)
                   LOWOFFLOAD(40) HIGHOFFLOAD(80)
  DEFINE LOGSTREAM NAME(region_userid.applid.DFHSHUNT)
                   DASDONLY(YES)
                   MAXBUFSIZE(64000) STG_SIZE(500)
                   LOWOFFLOAD(40) HIGHOFFLOAD(80)
```

Figure 15. Example definitions of DASD-only log streams. The definitions are for the CICS primary and secondary system log streams. The value **region_userid** is the RACF user ID under which the CICS address space is running; **applid** is the CICS region's SNA APPL name, taken from the APPLID system initialization parameter.

Using model log streams

To avoid defining explicitly each log stream used by each of your CICS regions, you can use model log stream definitions.

Using models, log streams are defined to MVS dynamically, on their first usage. Figure 16 shows example DASD-only model definitions for CICS primary and secondary system log streams.

```
//DEFLOGS  JOB ...
//LOGDEFN  EXEC PGM=IXCMIAPU
//STEPLIB  DD DSN=SYS1.MIGLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//*****************************************************************
//*                                                               *
//* Define DASD-only model log streams for CICS system log.       *
//*                                                               *
//* The LOWOFFLOAD and STG_SIZE values are for illustration       *
//* only -- substitute values appropriate for your environment.   *
//*                                                               *
//*****************************************************************
//SYSIN    DD *
  DATA TYPE(LOGR) REPORT(NO)
  DEFINE LOGSTREAM NAME(sysname.DFHLOG.MODEL)
                   MODEL(YES)
                   DASDONLY(YES)
                   MAXBUFSIZE(64000)
                   STG_SIZE(3000)
                   LOWOFFLOAD(40) HIGHOFFLOAD(80)
  DEFINE LOGSTREAM NAME(sysname.DFHSHUNT.MODEL)
                   MODEL(YES)
                   DASDONLY(YES)
                   MAXBUFSIZE(64000)
                   STG_SIZE(500)
                   LOWOFFLOAD(40) HIGHOFFLOAD(80)
```

Figure 16. Example model definitions for DASD-only system log streams. The value **sysname** is the sysid of the MVS image in which the CICS region or regions are running.

For information about the mapping of CICS journal definitions to log stream names, see Setting up CICS log streams in Configuring.

When using model log streams, note that, if you specify a STG_SIZE on the model definition, all new log streams created from the model have the same-sized staging data set.

Sizing for DASD-only log streams

You must work out the sizes of the CICS primary and secondary system log streams, forward recovery logs, and user journals and autojournals.

Sizing DFHLOG

To size the CICS primary system log stream, DFHLOG:

- **Minimize the amount of data that is offloaded to secondary storage**

  The MVS system logger begins the offload process when the high offload threshold (HIGHOFFLOAD) of the log stream is reached. The offload process consists of two steps:

  1. The MVS logger physically deletes the data in the log stream that has been marked for deletion by the CICS log-tail deletion process.

2. The MVS logger calculates how much data must be offloaded to secondary storage, based on the difference between HIGHOFFLOAD and LOWOFFLOAD, less the amount of data that has been deleted since the last offload event.

To minimize the amount of data offloaded from the CICS primary system log, you must:

– Define a suitably sized staging data set. You can alter the size of a staging data set without deleting the log stream. To do so, use the UPDATE LOGSTREAM request of the MVS IXCMIAPU utility to change the value of the STG_SIZE parameter.

– Ensure that the log-tail deletion process is working effectively. For detailed information about the log-tail deletion process, see Log-tail deletion.

- **Avoid “staging-data-set-full” events**

  A staging-data-set-full event occurs when a log stream's staging data set becomes full before the offloading of data has completed.

  For advice on monitoring and avoiding staging-data-set-full events, see Monitoring the logger environment.

Sizing DFHSHUNT

You must size the secondary system log stream, DFHSHUNT, to avoid staging-data-set-full events. However, typically some data is offloaded from DFHSHUNT to secondary storage.

Sizing general logs

You must size forward recovery logs, user journals, and autojournals to avoid staging-data-set-full events. However, because CICS does not delete data from these log streams, data is typically offloaded to secondary storage.

Setting attribute values for log stream and system definitions

Table 17 summarizes how you decide on the values for various attributes on the log stream definition, and system definition.

Table 17. How to decide on the values of attributes

Facility	Attribute	Method or Value
Primary system log stream (DFHLOG)	HIGHOFFLOAD	80
	LOWOFFLOAD	Use the formula in “Sizing your DASD log streams” on page 234 to calculate a suitable value.
	MAXBUFSIZE	64000
	STG_SIZE	Use the formula in “Sizing your DASD log streams” on page 234 to calculate a suitable value.
Secondary system log stream (DFHSHUNT)	HIGHOFFLOAD	80
	LOWOFFLOAD	40 – 60
	MAXBUFSIZE	64 000
	STG_SIZE	500 (4 KB blocks)

Table 17. How to decide on the values of attributes (continued)

Facility	Attribute	Method or Value
General log stream	HIGHOFFLOAD	80
	LOWOFFLOAD	0
	MAXBUFSIZE	64 000
	STG_SIZE	Use the formula in "Sizing your DASD log streams" to calculate a suitable value
CICS system	AKPFREQ	4 000

Startup might take longer than you experienced when using earlier releases. This is caused in part by the allocation and formatting of the staging data sets. Increased startup time depends on factors like these:

- Size of staging data set (STG_SIZE)
- DASD speed
- DASD contention

You can reduce startup time by avoiding large staging data sets.

Sizing your DASD log streams

If you are capacity planning for new applications, you must calculate your space requirements.

The formulae provided help you to calculate values for LOWOFFLOAD and STG_SIZE.

You must base your calculations on the journaling requirements of your applications. These requirements provide the starting point for the following formulae.

You can calculate LOWOFFLOAD for DFHLOG using the following formula:

```
LOWOFFLOAD = (trandur * 90) / (akpintvl + trandur) + 10  (where RETPD=0 specified)
```

or

```
LOWOFFLOAD = (trandur * 90) / (akpintvl + trandur)    (where RETPD=dddd specified)
```

where:

- `akpintvl` is the interval between activity key points. Calculate it using the following formula:

  ```
  akpintvl = AKPFREQ / ( (N1 * R1) + (N2 * R2) + (Nn * Rn) )
  ```

  where:
  - `N1, N2 .... Nn` is the transaction rate for each transaction (transactions per second).
  - `R1, R2 .... Rn` is the number of log records written by each transaction.
- `trandur` is the execution time (between sync points) of the longest-running transaction that runs as part of the normal workload.

  If this duration is longer than the `akpintvl` value, you have these choices:
  - Increase the value of AKPFREQ, thus increasing the value of `akpintvl`, provided that this value does not result in an unacceptably large staging data set size.

- Change the application logic to cause more frequent sync points.
- Calculate a staging data set size based on a shorter transaction duration, and accept that offloading to secondary storage occurs when the long-running transaction is used.

You can calculate STG_SIZE for DFHLOG using the following formula:

```
Staging DS size    =  (AKP duration)  *  No. of log writes per second
for system log (no. of 4k blocks)
where AKP duration = (CICS TS 390 AKPFREQ)/(No. buffers per second)
```

You can take the values for the number of log writes per second and buffer puts per second from your statistics. The value for log writes per second must not exceed 30.

Converting a DASD-only log stream to use a coupling facility

You can upgrade a DASD-only log stream to use a coupling facility structure, without having to delete and redefine the log stream.

1. Make sure that there are no connections, neither active nor failed, to the log stream.
2. Use the UPDATE LOGSTREAM request of the MVS IXCMIAPU utility. Specify the STRUCTNAME keyword, and let the DASDONLY keyword default to NO. For example:

```
//LOGUPDT  JOB ...
//LOGUPDT  EXEC PGM=IXCMIAPU
//SYSPRINT DD SYSOUT=A,DCB=RECFM=FBA
//****************************************************************
//*                                                              *
//* Convert DASD-only log stream to coupling facility log stream.*
//*                                                              *
//****************************************************************
//SYSIN    DD *
  DATA TYPE(LOGR) REPORT(NO)
  UPDATE LOGSTREAM NAME(region_userid.applid.DFHLOG)
                   STRUCTNAME(LOG_DFHLOG_001)
                   STG_DUPLEX(YES) DUPLEXMODE(COND)
```

Figure 17. Converting a DASD-only log stream to use a coupling facility structure. This example shows the CICS primary system log stream. The value **region_userid** is the RACF user ID under which the CICS address space is running; **applid** is the CICS region's SNA APPL name, taken from the APPLID system initialization parameter.

1. To upgrade a DASD-only log stream to a coupling facility log stream that does *not* use a staging data set, you must explicitly specify STG_DUPLEX(NO), because the DASD-only log stream by definition uses a staging data set; unless you specify STG_DUPLEX(NO), this storage data set is retained by the coupling facility log stream.
2. You cannot use UPDATE LOGSTREAM to convert a log stream that uses a coupling facility structure to one that uses DASD-only. To do that, you must delete and redefine the log stream.

Analyzing system logger data (SMF Type 88 records)

When you review the output from the system logger reports produced by IXGRPT1, IXGRPT1J, and IXGRPT1L, look at the following key fields for CICS system logs.

Check the following key fields:

- The number of bytes deleted from primary storage is close to the number of bytes written
- The number of bytes deleted from the system log after writing to offload data sets is usually very low:
  - If this number is high, resources are being used to move data to the offload data set only to be later deleted.
  - This number is a key indicator that log-tail deletion is not working effectively.
  - Check the MVS system log for any DFHRM0205 and DFHLG0743 messages from the affected CICS region.
  - Look for long-running tasks (using CICS monitoring data or a system monitoring package), or check if AKPFREQ is too high.
- In general offloads are acceptable, but offloads triggered by NTRY FULL indicators are not a good sign:
  - NTRY FULL indicates that the entry-to-element ratio is too high.
  - Such offloads are probably the result of unlike logstreams defined in the same structure.
  - The offloads are being triggered by all the entries being used rather than triggered by the HIGHOFFLOAD value.
- TYPE3 I/O counts must not appear in the statistics for coupling facility log streams, because they indicate that I/O is being initiated when over 90% of the elements for the log stream are in use.
- Average buffer size is important for these reasons:
  - If over 4 KB, the writes are asynchronous, rather than synchronous.
  - Buffer size is used to determine the entry to element ratio.
  - If MAXBUFSIZE specified on the log stream definition is *lower than* 65 532-bytes, the element size is 256-bytes.
  - If MAXBUFSIZE is 65 532-bytes, the element size is 512-bytes.
  - The entry-to-element ratio is calculated as (average-buffer-size plus 4 divided by 4).

Managing secondary storage

Use System Managed Storage (SMS) to manage log stream data sets.

Managing log data sets

You can specify the SMS characteristics of log data sets in a number of ways, depending on your installation.

Using automatic class selection (ACS) routines
You can use installation-written automatic class selection (ACS) routines to assign log data sets to SMS classes.

Using the LOGR policy
When you define or update a log stream definition in the LOGR policy, you can assign the SMS storage class, data class, and management class for both the DASD log data sets and staging data sets.

- Use LS_DATACLAS to specify the SMS data class to be used for log stream data set allocation.
- Use LS_STORCLAS to specify the SMS storage class to be used for log stream data set allocation.

- Use LS_SIZE to specify the size, in 4 KB blocks, of the log stream DASD data sets. Specify a size so that each data set can contain multiple offloads of the primary storage: this capability is particularly important if *all* the data is offloaded for a log stream, as in the case of user journals and forward recovery logs. The MVS system logger issues message IXG256I is you specify less than 64 KB.

  If you omit the size parameter, the size is taken from the ALLOC*xx* member of PARMLIB. The default is 2 tracks, which leads to a high number of new data set allocations. Specify a size that is large enough to avoid a high frequency of new data set allocations; aim for a new data set to be allocated less frequently than once an hour.

SHAREOPTIONS(3,3)
Always define logger data sets with SHAREOPTIONS(3,3), whether the system is a part of a multiple-member sysplex or a monoplex. The common symptom of not having SHAREOPTIONS(3,3) is return code 84A or 403 from the logger.

For more information about managing log data sets, see the *z/OS MVS Setting Up a Sysplex* manual.

Managing the system log

CICS manages the system log by deleting records, for completed units of work, during activity keypoint processing (log-tail deletion). With an appropriately sized log stream, the system log data remains in primary storage, thus avoiding data spilling to DASD.

Note that:
- The CICS system log must be used only for short-lived data required for recovery purposes. For example, do not write audit trail user records to the system log.
- Allow CICS to manage the size of the system log.

However, if historically you have used the system log for such things as audit trails, you might want to preserve system log data beyond the time it is typically deleted by CICS. You can use the RETPD MVS parameter to preserve system log data. Define DFHLOG and DFHSHUNT to MVS with AUTODELETE(NO) and RETPD(dddd). The default values are AUTODELETE(NO) and RETPD(0). By specifying AUTODELETE(NO), CICS, rather than MVS, retains control of the log-tail trimming process; `dddd` is the number of days for which data is to be retained. In this way, the MVS logger physically deletes an entire log data set when *all* of the data in the data set has been marked for deletion by the CICS log-tail trimming process and is older than the retention period specified for the log stream.

You can view log data that has been marked for deletion by CICS, but not yet physically deleted by MVS, with the DFHJUP utility program or the VIEW=ALL option of the MVS IXGBRWSE macro.

Managing general logs

The number of data sets per log stream recognized by the MVS logger is several million. Therefore, in general, do not be concerned about the limit being reached. You can cause redundant data to be deleted from log streams automatically, after a specified period. To arrange deletion for general log streams, define the logs to MVS with AUTODELETE(YES) and RETPD(dddd), where `dddd` is the number of days for which data is to be retained. This definition causes the MVS system logger to delete an entire log data set when all the data in it is older than the retention period (RETPD) specified for the log stream.

Chapter 35. Unicode data conversion by z/OS

z/OS Unicode services provides support for the conversion of Unicode data (either UTF-8 or UTF-16) to any of the EBCDIC CCSIDs currently supported by CICS.

For more information on Unicode services, see z/OS Unicode Services User's Guide and Reference.

The three CCSIDs for UTF data are as follows:

- CCSID 1202 indicates UTF-16LE.
- CCSID 1201 indicates UTF-16BE.
- CCSID 1200, which indicates that the data carries a byte order marker that must be examined to see whether the following form is big-endian or little-endian.

When handling CCSID 1200, CICS respects the byte order marker for inbound conversions, but cannot retain that information when handling a related outbound conversion. All outbound data for CCSID 1200 is UTF-16BE. Application programmers must know about this CCSID restriction, and perform their own BE to LE conversions if necessary.

Chapter 36. Applying service to CICS Transaction Server for z/OS

Service material for CICS Transaction Server for z/OS is distributed as APAR fixes and PTFs.

An APAR (Authorized Program Analysis Report) is raised when you and your IBM programming service representative agree that a CICS problem exists. You might be given an APAR fix. When the problem has been analyzed, all users are sent a PTF (Program Temporary Fix) to correct the problem permanently on the current release. PTFs are incorporated into any future CICS release.Both types of change are called SYSMODs (system modifications).

Using SMP/E control statements, you can process SYSMODs in three stages:
1. The **RECEIVE** control statement moves the SYSMOD into the PTF temporary store (PTS) data set. This operation is reversed by the **REJECT** control statement.
2. The **APPLY** control statement moves the SYSMOD into the target libraries. This operation is reversed by the **RESTORE** control statement.

   At this point you can test the modified system.
3. The **ACCEPT** control statement moves the SYSMOD into the distribution libraries. This operation is not easily reversed.

When you are dealing with APAR fixes, apply the SYSMOD, but do not accept it. If you later obtain a PTF that solves the problem in a different way, you might be asked to restore (that is, remove) the APAR fix and apply the PTF instead.

When you are dealing with PTFs, apply the SYSMOD and then test it. Afterward you can accept it.

For background information about SMP/E operations, see the *SMP/E User's Guide* manual. For more detailed information, see the *SMP/E Reference* manual.

Load library secondary extents

CICS supports load library secondary extents that are created while CICS is running.

If you define libraries in the DFHRPL or dynamic LIBRARY concatenation with primary and secondary extents, and secondary extents are added while CICS is running, as a result of link-editing into the load library, the CICS loader detects the occurrence and closes and then reopens the library. In this way, you can introduce new versions of programs by using the CEMT NEWCOPY command, even if the new copy of the program has caused a new library extent.

However, do not attempt to apply service to data sets that are used by CICS TS components that are running.

The CICS TS-supplied SMP/E procedure

DFHSMPE is a CICS TS-supplied procedure for applying service to the CICS and CICSPlex SM components of CICS TS.

This procedure is tailored to your environment and stored in the *hlq*.XDFHINST library when you run the DFHISTAR job.

For information about how to apply corrective service with SMP/E, see the *System Modification Program Extended: User's Guide*.

Whenever you do any SMP/E processing on CICS or CICSPlex SM software, and you use any of the examples quoted in the *System Modification Program Extended: User's Guide*, specify DFHSMPE as the name of the SMP/E procedure on the EXEC statement; that is, in place of SMPPROC, as used in the examples. The DFHSMPE procedure includes the following DD statement for supplying SMP/E control statements:

```
//SMPCNTL DD DSN=&&SETBDY,DISP=(OLD,DELETE)
//        DD DDNAME=DFHSMPIN
```

The ZNAME parameter of the DFHSMPE procedure generates a SET BDY command for the zone that is identified by the parameter. The command is stored in the temporary data set, SETBDY. The ZNAME parameter is set to the value of *zonename* that you specify for the TZONE parameter. If you do not specify any value for *zonename* for the TZONE parameter of the DFHISTAR job, *zonename* and the ZNAME value default to TZONE.

The ZNAME parameter also generates a SET BDY command in DFHAUPLE, the CICS TS procedure supplied for assembling and link-editing CICS control tables.

If you supply an *override* SMPCNTL DD statement in the job that runs DFHSMPE, it must come *before* any DD statements that are additional to the procedure. Furthermore, if you provide an override, you receive the following MVS system message:

```
IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
```

You receive this message because the DD statement for DFHSMPIN is missing because of the SMPCNTL DD override. However, the message is not a JCL error, and does not prevent the step from running successfully with a return code of 0.

If you supply any SMP/E control statements in your job using the DFHSMPIN ddname, they are prefixed by a SET BDY command for the zone that you specify on the ZNAME parameter. If you run SMP/E with a command that does not require this SET BDY statement, the way your job runs is not affected.

APARs and PTFs

An APAR is a temporary fix created for individual customers. PTFs are intended for all users to install to avoid possible problems.

APARs

Generally, do *not* ACCEPT APAR fixes into distribution libraries. Subsequent PTFs might not include the APAR fix, and you might be required to reapply the APAR fix.

If two APAR fixes depend on each another, and each is a prerequisite of the other, you must apply them both in the same SMP/E APPLY processing step.

PTFs

A PTF can contain fixes for several different problems, so several APAR fixes reported in RETAIN® might be superseded by the more permanent PTF:

- A PTF provides card-image changes that are functionally equivalent to those in the APAR fix.
- A PTF contains object-module replacements for preassembled CICS TS programs.

For further information about using SMP/E to apply service, see the *System Modification Program Extended: User's Guide*.

Applying service to CICS modules

If you use the CICS TS-supplied SMP/E usermod to install a module into the LPA (for example, into the *hlq*.SDFHLPA library), and later apply service to that module, the LPA-resident version of the module is serviced. If you have not used the SMP/E usermod to install the module into the LPA, the original version in the *hlq*.SDFHAUTH library or *hlq*.SDFHLOAD library is serviced.

After you have installed CICS, and before you start the postinstallation tasks, change the TEMPLIB parameter and the SYSPROC DD statement of the DFHISTAR job to refer to the *hlq*.SDFHINST library. This reference ensures that, if you apply service to any of the skeleton jobs, the changes applied to the *hlq*.SDFHINST library are used in subsequent runs of DFHISTAR. In any such subsequent runs of DFHISTAR, you can use the SELECT parameter to select any jobs that are affected by service.

1. If DFHISTAR is serviced, add the service changes to your DFHISTAR module in the *hlq*.TDFHINST library to preserve your current installation parameters, or respecify your current installation parameters in the serviced DFHISTAR module, which you can copy from the *hlq*.SDFHINST library to the *hlq*.TDFHINST library.
2. Linkage editor messages IEW0461, IEW2454, IEW2646, IEW2651, and IEW2689 are produced during the APPLY stage for unresolved external references. These messages are issued, giving a return code of 4, when some CICS load modules are link-edited during PTF installation. You can ignore these IEWxxxx messages because they are produced for component object modules of executable CICS load modules.
3. JCI690D and JCI690E PTFs to ship Java service are often significantly larger than those for the base CICS product and might require more system resources during APPLY processing. To avoid errors caused by insufficient storage, do not restrict the region size for the SMP/E APPLY step for such PTFs. If a region size limit is used and the APPLY fails with errors relating to insufficient storage, it might be necessary to increase or remove the limit for the SMP/E job. In some cases, you might require a region size of 500 MB or more.

Chapter 37. Applying service to CICSPlex SM

Service material for CICSPlex SM is distributed as corrective or preventive service.

Both types of changes are called system modifications (SYSMODs). SYSMODs are processed using SMP/E control statements.

For background information on SMP/E operations, see the *System Modification Program Extended: General Information*. For more detailed information, see the *System Modification Program Extended: Reference*. For information about how to apply corrective service using SMP/E, see the *System Modification Program Extended: User's Guide*.

CICS Transaction Server for z/OS-supplied SMP/E procedure

For all CICS Transaction Server regions, the procedure for applying service is DFHSMPE.

You can customize this procedure with the DFHISTAR job that is stored in the CICSTS52.CICS.XDFHINST library.

For full details about applying service to the CICSPlex SM component of CICS TS, see Chapter 36, "Applying service to CICS Transaction Server for z/OS," on page 241.

Applying PTFs to CICSplexes running CICS Transaction Server for z/OS, Version 3 Release 2 and later

Use this procedure if the PTF modifies a CICSPlex SM resource table. If any CMAS in your CICSplex is running CICS TS or an earlier release of CICSPlex SM, consult the documentation that comes with the PTF for advice on how to proceed.

Use this procedure if the PTF modifies a CICSPlex SM resource table:

- First apply the PTF to the maintenance point for the CICSplex.
- If the PTF modifies a repository record, upgrade the repository at the maintenance point before restarting the maintenance point CMAS.
- After the maintenance point CMAS is restarted, apply the PTF to any local MASs connected to the maintenance point CMAS. You can restart these local MASs one at a time. You do not have to restart them all together.
- After the maintenance point CMAS is restarted, apply the PTF to any other CMASs in the CICSplex. You can do this at the same time as the MASs connected to the maintenance point are being updated. You can update the non-maintenance point CMASs one at a time and you do not have to restart them all together.
- If the PTF modifies a repository record, upgrade the repository for the non-maintenance point CMAS before restarting it.
- After a non-maintenance point CMAS is restarted, you can apply the PTF to any local MASs connected to that CMAS and restart them. You can restart these local MASs one at a time. You do not have to restart them all together.

To summarize, update the maintenance point CMAS first, then the other CMASs, and update a MAS only after its owning CMAS has been updated.

A PTF might contain additional documentation, giving further instructions specific to that PTF.

If you have multiple CMASes connected together in a network with more than one CMAS being a Maintenance Point for different CICSplexes, you must apply PTFs to all CMASes simultaneously which function as a Maintenance Point.

For example, consider the following configuration:
- CMAS1 is an MP for PLEX1
- CMAS2 is an MP for PLEX2
- CMAS3 helps manage PLEX1 and PLEX2
- CMAS4 helps manage PLEX2

There are CMAS-to-CMAS connections between each of the above listed CMASes.

If you are applying PTF maintenance to CMAS1, you must also apply it to CMAS2 at the same time, because both CMASes function as MPs for various CICSplexes. Failure to do so results in CMAS isolation.

Applying service CICSPlex SM modules

If you use the CICS TS-supplied SMP/E USERMOD to install modules into the LPA (for example, into the CICSTS52.CPSM.SEYULPA library), and later apply service to that module, the LPA-resident version of the module is serviced. If you have not used the SMP/E USERMOD to install the module into the LPA, the original version in the CICSTS52.CPSM.SEYUAUTH library or CICSTS52.CPSM.SEYULOAD library is serviced.

After you have applied CICSPlex SM service, ensure that all CICSPlex SM regions are running with a consistent set of CICSPlex SM libraries. Failure to do so can cause unpredictable results.

For more information about applying service to CICSPlex SM, see "CICS Transaction Server for z/OS-supplied SMP/E procedure" on page 245.

Part 5. Getting ready to run CICS

Before you can run CICS, you must customize the CICS TS supplied skeleton jobs and enable services that are required by CICS.

For detailed information on configuring CICS, including setting up the data sets, connectivity, and configuring CICSPlex SM see Configuring .

Chapter 38. Tailoring the CICS-supplied skeleton jobs

You tailor the CICS-supplied skeleton jobs to your CICS TS environment.

If you used CBPDO or the ServerPac to install CICS TS, edit and run DFHISTAR to tailor the CICS-supplied skeleton jobs that create the CICS TS data sets and run the CICS TS IVPs.

If you used the distribution tape to install CICS TS, as described in the *Program Directory for CICS Transaction Server for z/OS*, you have typically tailored the skeleton jobs already, and you can now start Chapter 39, "Jobs for creating the CICS data sets," on page 253.

Whichever method you used to install CICS TS, you can edit and run DFHISTAR several times, to create different copies of the skeleton jobs or subsequently change them. For example, to create several copies of DFHDEFDS to define data sets unique to several CICS regions, or if you have to apply service to any of the installation-related jobs. In this way, you can tailor the jobs to your CICS environment after you have loaded the CICS software into the SMP/E-supported CICS libraries.

The CICS installation libraries

When you use CBPDO to install CICS TS, you use the TDFHINST, XDFHINST, ADFHINST, and SDFHINST installation libraries.

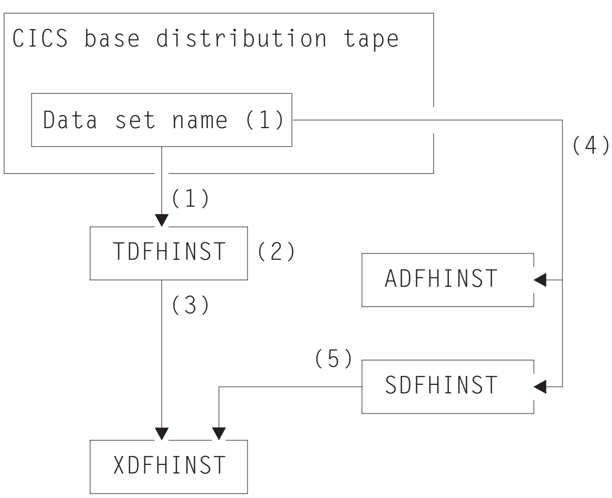


Figure 18. Installation libraries for this release

The names of the CICS installation libraries in Figure 18 and their use is explained in the following notes which refer to the numbers in the figure:

1. Skeleton installation-related jobs are copied from data set HCI 640.F2 on the distribution tape into *hlq*.TDFHINST. *hlq*.TDFHINST is used to store the DFHISTAR that you edit and run to tailor the skeleton installation-related jobs

to your CICS environment. Until you have installed the CICS software into the SMP/E-supported CICS libraries, this library also stores the skeleton jobs to be tailored.
2. You edit DFHISTAR in the *hlq*.TDFHINST library, to specify CICS installation parameters specific to your CICS environment.
3. When you run DFHISTAR, the tailored copies of the skeleton jobs are copied from the *hlq*.TDFHINST library to the *hlq*.XDFHINST library. *hlq*.XDFHINST is used to store the tailored, executable, copies of the skeleton jobs that are to be run.
4. To install CICS, you run the tailored copies of the CICS-supplied installation jobs to transfer the CICS software from the distribution tape to the *hlq*.ADFHINST and *hlq*.SDFHINST libraries. *hlq*.ADFHINST is the SMP/E-supported distribution installation library. *hlq*.SDFHINST is the SMP/E-supported target installation library. After you have installed the CICS software into this library and other SMP/E-supported libraries, named SDFHxxxx and ADFHxxxx, the skeleton jobs that you use on any later runs of DFHISTAR are stored in the SDFHINST library.

The names of the TDFHINST and XDFHINST libraries, and the prefix for those and other CICS libraries, are defined in DFHISTAR, which you edit as described in this topic.

Running DFHISTAR

When you have edited DFHISTAR with the values for installation parameters for your CICS environment, submit DFHISTAR.

When you run DFHISTAR, it tailors the skeleton jobs selected by the SCOPE or SELECT parameter in the DFHISTAR input to your environment and adds them to the library that you specified on the LIB parameter (by default, *hlq*.XDFHINST). If necessary, DFHISTAR creates the library that is specified on the LIB parameter.

A table in section 6.4 of *Program Directory for CICS Transaction Server for z/OS* lists those skeleton jobs installed in the *hlq*.SDFHINST library that you can tailor by running DFHISTAR.

You must specify the full name of the installation library from which the skeleton jobs are obtained, on the TEMPLIB parameter and SYSPROC DD statement of DFHISTAR (by default, *hlq*.TDFHINST). For the postinstallation tasks that are described, specify TEMPLIB SDFHINST.

DFHISTAR produces a job log and, if necessary, an error code:
- The output job log lists the values that were used for the parameters of DFHISTAR.
- If an error occurs when running DFHISTAR, an error code of 4 or 12 is returned. For error code 4, the skeleton jobs are tailored and added to the *hlq*.XDFHINST library. For error code 12, the skeleton jobs are not tailored or copied. To resolve the cause of the error, examine the output job log and, if necessary, edit and submit DFHISTAR again.

CICSPlex SM postinstallation members

A number of CICSPlex SM postinstallation members are delivered, as skeletons, in the TDFHINST library. When you run DFHISTAR, the postinstallation members are customized and saved in the XDFHINST library.

Use these members to create a basic CICSPlex SM configuration that consists of a CMAS, a WUI, and a managed CICS system (MAS).

Postinstallation members are split into three areas as shown in Table 18, Table 19, and Table 20.

Table 18. Postinstallation members for a CMAS

Member	Description
EYUCMASJ	JCL to start a CMAS. It runs EYUCMASP.
EYUCMASP	Starts a CMAS. This CMAS uses the CICS-supplied sample table, DFHSIT6$, but appropriate override values are supplied in the job.
EYUCMS0P	EYUPARM parameters for a CMAS.
EYUCMSDS	JCL to create and initialize the data sets for a CMAS.
EYUCMSSP	CICS SIT overrides for a CMAS.

For more information on CMAS data set customization, see "Creating and customizing CMAS data sets" on page 314.

Table 19. Postinstallation members for a WUI

Member	Description
EYUJWREP	JCL to delete and define a WUI data repository. This function is also included in EYUWUIDS.
EYUWUI0P	EYUPARM parameters for a WUI.
EYUWUIDS	JCL to create and initialize the data sets for a WUI.
EYUWUIIN	EYUWUI parameters for a WUI.
EYUWUIJ	JCL to start a WUI. It runs EYUWUIP.
EYUWUIP	Starts a WUI. This WUI uses the CICS-supplied sample system initialization table, DFHSIT6$, but appropriate override values are supplied in the job.
EYUWUISP	CICS SIT overrides for a WUI.

For more information on WUI customization, see "Creating and customizing the WUI data set" on page 328.

Table 20. Postinstallation members for a managed CICS system (MAS)

Member	Description
EYUCSYDS	JCL to create and initialize the data sets for a managed CICS system.
EYUCSYSJ	JCL to start a managed CICS system. It runs EYUCSYSP.
EYUCSYSP	Procedure to start a managed CICS system. The MAS uses the CICS-supplied sample system initialization table, DFHSIT6$, but appropriate override values are supplied in the job.
EYUJHIST	JCL to delete and define a pair of history data sets.
EYULMS0P	EYUPARM parameters for a managed CICS system.
EYULMSSP	CICS SIT overrides for a managed CICS system.
EYULPMOD	JCL to apply the USERMOD function, EYU$UM01, that moves some MAS load modules to a link pack area (LPA) library.

For more information on managed CICS system customization, see “Creating and customizing MAS data sets” on page 346.

Chapter 39. Jobs for creating the CICS data sets

After you have installed CICS, and applied any necessary service, you can run the DFHCOMDS, DFHDEFDS, DFHCMACI, DFH0JCUS, and DFH0JHLP jobs to create CICS data sets. These data sets are required if you want to run the IVP.

When you run DFHISTAR, these jobs are tailored to your environment and stored in the library that you specify on the **LIB** parameter of DFHISTAR (by default, *hlq*.XDFHINST). If you have not yet run DFHISTAR, do so before running any of the CICS postinstallation jobs.

You can generate several copies of these jobs by rerunning DFHISTAR, selecting the jobs that you want to copy. To generate new copies of these jobs, edit DFHISTAR to specify new values for the **DSINFO** and **SELECT** parameters. Only those jobs that you name in the **SELECT** parameter are regenerated.

The supplied level of DFSMS changes the way that the index control interval size (CISIZE) is calculated for the VSAM data sets that have index components. As a result, expect a large default CISIZE, which can cause open errors during CICS startup. The change in CISIZE applies to both CICS data sets and your own application data sets.

CICS supplies the following jobs to create the required data sets:

DFHCOMDS
: Deletes and re-creates data sets common to all CICS regions.

DFHDEFDS
: Deletes and re-creates copies of data sets that are used only by one CICS region. You can run a separate copy of this job to create the data sets for each CICS region.

DFHCMACI
: Deletes and re-creates the CICS messages data set, dsindex.DFHCMACD, and loads it with the data from the CICS-supplied file, DFHCMACD, in the *hlq*.SDFHMSGS target library.

DFH0JCUS
: Deletes and re-creates the sample applications details data set, dsindex.SAMPLE.DFHCTCUS and its associated alternate index and path, and loads it with the data from the CICS-supplied file, DFH0DCUS, in the *hlq*.ADFHAPD2 library.

DFH0JHLP
: Deletes and re-creates the sample applications help data set, dsindex.SAMPLE.DFHCTHLP, and loads it with the data from the CICS-supplied file, DFH0DHLP, in the *hlq*.ADFHAPD1 library.

Data set naming conventions

No restrictions apply to the data set names you choose for CICS data sets, other than MVS constraints.

In the examples in this information, *hlq* is the high-level qualifier, and the DD name is the lowest level. If you are running multiple CICS regions, you can use the CICS APPLID as a third-level qualifier.

The CTGI naming convention is an example of a naming convention that you can use for CICS 4-character names, and is based on the 4-character CTGI symbol:

- C identifies an entire CICSplex.
- T identifies the type of region.
- G identifies a group of regions.
- I identifies iterations of regions in a group.

Use the CTGI naming convention. For example, if CICSHTH1 is the APPLID, the following data set name for the CSD is correct:

```
DFHCSD   DD  DSN=CICSTS52.CICS.CICSHTH1.DFHCSD,DISP=SHR
```

Where names are allowed to be up to eight characters long, as for CICS APPLIDs, the letters CICS are used for the first four characters, particularly for production regions.

DFHCOMDS job for common data sets

The DFHCOMDS job deletes and re-creates the data sets that are common to CICS regions. The common data sets are DFHCSD and SYSIN.

For detailed information on creating these data sets for your CICS regions, see Setting up the CICS system definition data set in Configuring.

The DFHCOMDS job creates one of each of these data sets common to all CICS regions. If you use separate copies of any of these data sets for each CICS region, move and edit the appropriate statements into the DFHDEFDS job. For further information about creating multiple copies of these data sets, see “Creating several copies of the DFHCSD and SYSIN data sets” on page 255.

The DFHCOMDS job comprises five job steps:

1. DELETE deletes the data sets.
2. DEFCSD defines the VSAM cluster for the CICS system definition data set, dsindex.DFHCSD, where *dsindex* is defined by the **DSINFO** parameter of DFHISTAR.
3. INITCSD initializes the CICS system definition data set.
4. DEFRPIDC defines the VSAM cluster for ONC RPC.
5. DEFSYSIN creates the SYSIN PDS and copies the following modules from the *hlq*.SDFHSAMP library:
   - DFH$SIPA
   - DFH$SIPD
   - DFH$SIPT
   - DFH$SIP1
   - DFH$SIP2
   - DFH$SIP5
   - DFHRCNO
   - DFHRCYES

Creating several copies of the DFHCSD and SYSIN data sets

The CICS-supplied DFHCOMDS job creates one of each of the DFHCSD and SYSIN data sets common to all CICS regions.

To use separate copies of any of these data sets for each CICS region:

- Move the statements that define the data set from the DFHCOMDS job to the DFHDEFDS job.
- Edit the statements in the DFHDEFDS job to specify the symbol &REGNAME for the region qualifier in the name of the data set.

Move and edit the appropriate data set statements before you create copies of the DFHDEFDS job for each CICS region. When you run DFHISTAR to create the new copies of the DFHDEFDS job, it substitutes your values for the CICS region qualifier (&REGNAME) and index (&INDEX) into the data set names.

For example: If you intend using a copy of the DFHCSD data set for each CICS region, copy the job steps DELCSD, DEFCSD, and INITCSD from the DFHCOMDS job to the DFHDEFDS job. Also, add the symbol &REGNAME for the qualifier to the name of the DFHCSD data set to give `&DSINDEX.CICS&REGNAME.DFHCSD`. If you edit DFHISTAR to select the DFHDEFDS job to be copied, and specify the following DSINFO parameter:

```
DSINFO userid.CICSTS52.CICS H3P060 3390 IDA .
```

when you run the DFHDEFDS job, it creates the DFHCSD data set called `userid.CICSTS52.CICS.CICSIDA.DFHCSD` for the CICS region identified by the qualifier IDA. If you change the SELECT and DSINFO parameters of DFHISTAR, to specify an appropriate new job name and qualifier for another CICS region, you can create several copies of the DFHDEFDS job to create DFHCSD and SYSIN data sets for each CICS region.

DFHDEFDS job for CICS region data sets

The DFHDEFDS job deletes and re-creates copies of data sets that are required for each CICS region.

For details on creating these data sets, see Defining data sets in Configuring.

Data set	Description
DFHAUXT	Non-VSAM auxiliary trace (A) data set
DFHBRNSF	Bridge
DFHBUXT	Non-VSAM auxiliary trace (B) data set
DFHDMPA	Non-VSAM dump (A) data set
DFHDMPB	Non-VSAM dump (B) data set
DFHDPFMB	The debugging profiles base data set
DFHDPFMP	The debugging profiles path data set
DFHDPFMX	The debugging profiles path data set
DFHGCD	CICS global catalog
DFHHTML	HTML template data set
DFHINTRA	Intrapartition transient data set
DFHLCD	CICS local catalog

Data set	Description
DFHLRQ	BTS local request queue
DFHPIDIR	WS-AT directory data set
DFHTEMP	Temporary storage data set
FILEA	Sample program file

Use DFHISTAR to create a copy of the DFHDEFDS job for each CICS region. Edit DFHISTAR, specifying the parameters **DSINFO** and **SELECT**, and run it once for each region.

In DFHISTAR, specify the following parameters:

- **SELECT DFHDEFDS newname** to specify the new name by which the copy of the DFHDEFDS job is to be known.
- **DSINFO** to specify the following details of the data sets for each CICS region:
  - The high-level index (*dsindex*)
  - The serial number of the volume (*volume*)
  - The unit type of the volume (*disktype*)
  - The region qualifier (*qualifier*)

The format of the data set names is:

```
dsindex.CICSqualifier.dsname
```

dsindex
: Is the high-level index for the data sets, specified on the DSINFO parameter of DFHISTAR. The default is *hlq*.

qualifier
: Is the region qualifier for the data sets that are used by this CICS region, specified on the DSINFO parameter of DFHISTAR. The default is no qualifier.

dsname
: Is the name of the data set being defined.

For example, the default name for the CICS local catalog is *hlq*.CICS.DFHLCD.

The DFHDEFDS job comprises the following job steps:

1. **DELETE** deletes any existing copies of the data sets.
2. **DEFINE** defines the clusters for the data sets.
3. **INITDP** initializes the debugging profiles base data set.
4. **DEFALT** defines the alternate index for the debugging profiles data set.
5. **BLDDP** builds the alternate index for the debugging profiles data set.
6. **INITGCD** initializes the CICS global catalog.
7. **INITLCD** initializes the CICS local catalog.
8. **DEFTRACE** defines the trace data sets.
9. **DEFDUMP** defines the dump data sets.
10. **DEFHTML** defines the CICS default HTML data set.
11. **LOADFILE** loads the sample data into the FILEA data set.
12. **LOADHTML** loads HTML templates for supplied transactions.

DFHCMACI job for creating the messages data set

The DFHCMACI job deletes and re-creates the CICS messages data set DFHCMACD. This data set is used by the CMAC transaction.

The DFHCMACI job comprises the following job steps:

1. **CMACDEF** deletes any existing copies of the DFHCMACD data set and defines the VSAM cluster for the CICS message data set dsindex.DFHCMACD, where dsindex is defined by the DSINFO parameter of DFHISTAR.
2. **CMACLOAD** loads the CICS message data set with data from the CICS-supplied file, DFHCMACD, in the *hlq*.SDFHMSGS target library.

For detailed information about setting up this data set, see Defining data sets in Configuring.

Defining the sample applications data sets

CICS provides a range of samples that you can use to help develop your own applications and test various CICS functions; for example, as an aid to verifying that CICS has installed correctly.

These programs are in the *CICS 4.1 Sample Applications Guide* and the *Designing and Programming CICS Applications*.

Before you can use some of these samples, you must create the data sets that they use, and make them available to your CICS region, as described in these topics. Do not create these data sets, unless you intend using the associated sample applications.

The CUA text-level application

You can use this sample application to demonstrate BMS support for the Common User Access (CUA) interface. The application uses an action bar, with associated pull-downs, pop-ups, and help panels.

The application programs demonstrate how to code COBOL programs to display, overlay, and remove CUA style windows.

Creating the data sets for the CUA text-level application

To create the data sets that the CUA text-level application requires, submit the DFH0JCUS and DFH0JHLP jobs, which are installed in the *hlq*.XDFHINST library.

Making the data sets available to CICS

You can cause CICS to dynamically allocate the files for these data sets and open them after CICS initialization by installing the sample resource definitions in the group DFH$CTXT.

If no DD statement exists for these data sets in the CICS startup job stream, the files are allocated to the data sets with DSNAMEs that are specified in the resource definitions: *hlq*.SAMPLE.DFHCTCUS, *hlq*.SAMPLE.DFHCTHLP, and *hlq*.SAMPLE.DFHCTAIX, for the data sets and the alternate index. Alternatively, you can add DD statements for the data sets to your CICS startup job, which causes CICS to use the DSNAMEs specified on the DD statements instead of those in the resource definitions.

For information about this sample application, see the *CICS Sample Applications Guide*.

The FILEA sample application programs

The FILEA sample application programs comprise four sets of command-level application programs that operate on the sample VSAM file, FILEA.

Each of the four programming languages that are supported (Assembler, C, COBOL, and PL/I) has its own set. These programs show basic functions, such as inquire, browse, add, and update, that can serve as a framework for your own first programs. They were written before publication of the Common User Access guidelines.

Creating the data set for FILEA

When you submit the DFHDEFDS job, a copy of the data set that the FILEA application requires is created. This data set is installed in the *hlq*.XDFHINST library.

Making the data set available to CICS

When you tailor the CICS installation-related jobs, a DD statement for the FILEA data set is added to the CICS IVP jobs and the DFHSTART procedure. If you want CICS to dynamically allocate the data set and open the file, remove the DD statement and install a FILE resource definition with an appropriate DSNAME; for example, as supplied in the group DFH$FILA. For more information about CICS installation-related jobs, see Chapter 38, “Tailoring the CICS-supplied skeleton jobs,” on page 249.

The CICS Application Programming Primer sample application

You can use this sample application to demonstrate the design and programming of a standard CICS application.

It provides online inquiry and maintenance for a sample customer credit file in a department store. The application uses VSAM files and 3270 display and printer terminals. It was written before publication of the Common User Access guidelines, and provides similar function, without CUA support, as the CUA sample application.

Creating the data sets for the Primer application

To create the data sets that the Primer sample application requires, edit and submit the sample job.

```
//DEFACCTF JOB (accounting parameters),MSGCLASS=A,MSGLEVEL=(1,1),
//         CLASS=A,NOTIFY=userid
//*
//*********************************************************************
//*          CICS sample jobs to define ACCT files
//*
//* This job deletes and defines the following data sets for the
//* ACCT sample described in the CICS Application Programming Primer
//*
//*  STEPS:
//*  . DELETE AND DEFINE
//*      - DELETE/DEFINE THE CLUSTERS FOR:
//*          . CICSTS52.CICS.ACCTFILE
//*          . CICSTS52.CICS.ACIXFILE
//*
//*  THE HIGH-LEVEL-QUALIFIER(S) OF THE DATASETS: CICSTS52.CICS
//*  THE VOLUME SERIAL                            CICS41
//*  THE UNIT TYPE                                3390
//*
//*********************************************************************
//DELETE    EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DELETE CICSTS52.CICS.ACCTFILE
 DELETE CICSTS52.CICS.ACIXFILE
 SET MAXCC=0
/*
//DEFINE    EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 /*                              */
 DEFINE CLUSTER(NAME(CICSTS52.CICS.ACCTFILE)-
          KEYS(5 0)-
          INDEXED -
          RECORDSIZE(383 383)-
          REC(80)-
          SHR(2 3)-
          VOLUMES(CICS41)) -
        DATA(NAME(CICSTS52.CICS.ACCTFILE.DATA)-
          UNIQUE)-
       INDEX(NAME(CICSTS52.CICS.ACCTFILE.INDEX)-
          UNIQUE)
          /*                             */
 DEFINE CLUSTER(NAME(CICSTS52.CICS.ACIXFILE)-
          KEYS(17 0)-
          INDEXED -
          RECORDSIZE(63 63)-
          REC(80)-
          SHR(2 3)-
          VOLUMES(CICS41)) -
        DATA(NAME(CICSTS52.CICS.ACIXFILE.DATA)-
          UNIQUE)-
       INDEX(NAME(CICSTS52.CICS.ACIXFILE.INDEX)-
          UNIQUE)
/*
//*
```

Figure 19. Example JCL to create the Primer sample data sets

Making the data sets available to CICS

You can cause CICS to dynamically allocate the files for these data sets and open them on first reference by installing the sample resource definitions in the group DFH$ACCT.

If no DD statement exists for these data sets in the CICS startup job stream, the files are allocated to the data sets with DSNAMEs that are specified in the resource definitions: *hlq*.ACCTFILE and *hlq*.ACIXFILE. Alternatively, you can add DD statements for the data sets to your CICS startup job, which causes CICS to use the DSNAMEs specified on the DD statements instead of those in the resource definitions.

For information about this sample application, see the *CICS Application Programming Primer*.

CICS resource definitions for CICSPlex SM

You must review or change some definitions when you upgrade the CSD for CICSPlex SM.

Dynamic creation of CICS resource definitions

CICS can dynamically define the CICS resource definitions required to allow the CICSPlex SM CMAS, MAS agent, or WUI server to be started.

This includes the COLM and COVC transactions. If these transactions are invoked, or the equivalent **CPSMCONN** system initialization parameter is set, CICSPlex SM dynamically creates further definitions as required.

The dynamically created resource definitions and their attributes can be found in the following members of the SEYUSAMP sample library:

- EYU$CDEF contains the default resource definitions for a CMAS.
- EYU$MDEF contains the default resource definitions for a MAS.
- EYU$WDEF contains the default resource definitions for a WUI server.

If the dynamically created CICS resource definitions need to be changed, see “Overriding the dynamically created CICS resource definitions for CICSPlex SM.”

The CSD in use needs to be appropriate for the release of CICS in use. For example, upgrade the CSD to the latest release and depending on the CICS release of the region, add the CICS DFHCOMPx CSD compatibility groups to the CICS group list as necessary. See the appropriate CICS Upgrading documentation for details.

Overriding the dynamically created CICS resource definitions for CICSPlex SM

You do not have to update your CSD to obtain the default resource definitions supplied by CICSPlex SM.

You do not typically run user transactions in a CMAS. However, if you do choose to define your own transactions to the CMAS, be aware that transaction IDs used by CICSPlex SM in the CMAS have no specific format. To avoid conflict between your names and those that are used by CICSPlex SM, review the transactions that are defined in EYU$CDEF. For a list of these transactions, see “Default CICS resource definitions for CICSPlex SM,” on page 437.

If you do want to modify a definition, you can do so using the required definition from the EYU$CDEF (CMAS), or EYU$WDEF (WUI) samples.

For MAS definitions use the following:

- EYU$M640: This sample includes the default CICS resource definitions used for a MAS agent at the CICS TS 5.1 level and the CICS region at CICS R640.
- EYU$M650: This sample includes the default CICS resource definitions used for a MAS agent at the CICS TS 5.1 level and the CICS region at CICS R650.
- EYU$M660: This sample includes the default CICS resource definitions used for a MAS agent at the CICS TS 5.1 level and the CICS region at CICS R660.
- EYU$M670: This sample includes the default CICS resource definitions used for a MAS agent at the CICS TS 5.1 level and the CICS region at CICS R670.
- EYU$MDEF: This sample includes the default CICS resource definitions used for a MAS agent at the CICS TS 5.1 level and the CICS region at CICS R680.

Copy the required definitions from the appropriate sample into a DFHCSDUP job, and make the required changes, including specifying a CSD group. Specify this CSD group in an appropriate GRPLIST for the CMAS, MAS, or WUI server. The region is then COLD or INITIAL started, as required, to process the change.

Some CICS resource definitions are enforced. If an inappropriate definition is found, a message is produced during CICSPlex SM initialization. If CICSPlex SM cannot dynamically correct the error, CICSPlex SM initialization can fail.

You can update the CSD for CICSPlex SM if CMAS journaling is required; see "CMAS journaling" on page 317.

Another reason you might want to update the CSD for CICSPlex SM is if your WUI servers require additional import or export TDQs to make copying WUI view or menu definitions easier. You can use the COVI and COVE definitions from EYU$WDEF as a model. For example, if the WUI servers can access the same MVS data sets, make your updates in this way:

1. Copy the COVI and COVE definitions from EYU$WDEF into a DFHCSD job.
2. Rename the COVE TDQ; for example, to MYEX. This TDQ definition must have the data set name specified. Also, this data set must be preallocated using data set characteristics.
3. Include the MYEX definition in a group that is to be used by the exporting WUI.
4. Install the MYEX TDQ, after the definition has been made on the CSD in one of these ways:
   - A COLD start of the exporting WUI, if the group is in the exporting WUI's group list, or
   - CEDA INSTALL, if the WUI server is running.
5. Rename the COVI TDQ; for example, to MYIM. This TDQ definition must have the same data set name specified on the MYEX TDQ definition.
6. Include the MYIM definition in a group that is to be used by the importing WUI.
7. Install the MYIM TDQ, after the definition has been made on the CSD in one of these ways:
   - A COLD start of the importing WUI, if the group is in the importing WUI's group list, or
   - CEDA INSTALL, if the WUI server is running.
8. Use COVC, on the exporting WUI, to export the required definitions to the MYEX TDQ. Wait for the Export to complete.
9. Use COVC, on the importing WUI, to import the required definitions to the MYIM TDQ.

If the WUI servers cannot access the same data sets, the export data set must be copied from the exporting system (after the COVC Export is complete) to the importing system (before the COVC Import is run).

The following DFHCSDUP SYSIN control statements contain the default definitions, copied from EYU$WDEF, with the modification to the default definitions, to allow the same data set to be used to export to a copy of the COVE output TD queue and the COVI input TD queue to import into another WUI. The modification is in bold type.

```
//CSDUP   EXEC PGM=DFHCSDUP
//STEPLIB  DD  DSN=cics.index.SDFHLOAD,DISP=SHR
//DFHCSD   DD  DSN=cics.dfhcsd,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD   *
*-------------------------------------------------------------------*
* Create TDQUEUE definitions for import/export                      *
*-------------------------------------------------------------------*
DELETE  GROUP(group_name)
DEFINE TDQUEUE(MYIM) GROUP(group_name)
DESCRIPTION(CPSM WUI IMPORT DATASET)
     TYPE(EXTRA) DATABUFFERS(1) DDNAME(EYUCOVI) DSNAME(hlq.wui.screens)
     ERROROPTION(IGNORE) OPENTIME(DEFERRED) TYPEFILE(INPUT)
     RECORDSIZE(32000) BLOCKSIZE(0) RECORDFORMAT(VARIABLE)
     BLOCKFORMAT(BLOCKED) DISPOSITION(SHR)
*
DEFINE TDQUEUE(MYEX) GROUP(group_name)
DESCRIPTION(CPSM WUI EXPORT DATASET)
     TYPE(EXTRA) DATABUFFERS(1) DDNAME(EYUCOVE) DSNAME(hlq.wui.screens)
     ERROROPTION(IGNORE) OPENTIME(DEFERRED) TYPEFILE(OUTPUT)
     RECORDSIZE(32000) BLOCKSIZE(0) RECORDFORMAT(VARIABLE)
     BLOCKFORMAT(BLOCKED) DISPOSITION(SHR)
ADD GROUP(group_name) LIST(list_name)
```

where:

STEPLIB
: Identifies `cics.index.SDFHLOAD` as the CICS load library that contains the DFHCSDUP module.

DFHCSD Identifies `cics.dfhcsd` as the CICS CSD file to be updated.

SYSIN Shows the SYSIN input for import and export transient data queues.

group_name
: Identifies the name of your group.

list_name
: Identifies the name of a CSD list, which you include on the GRPLIST system initialization parameter for WUI server WUI A.

For information about TD queue definitions see "Transient data queue definitions for the WUI" on page 339.

A return code of 4 is expected from this run of DFHCSDUP because, before adding the designated group to the CSD, the job attempts to delete any group with the same name.

You can amend the supplied definitions for a CMAS and MAS in the same way. Run DFHCSDUP including the modified resource definition from the sample EYU$CDEF, for a CMAS, or EYU$MDEF, for a MAS, in a CSD list that you use when starting your system.

Amending log stream names in a CMAS

If the log stream names used by the CICS-supplied DFHLGMOD group are not appropriate for your environment, copy group DFHLGMOD to a new group, where you can make your amendments. Add the new group to a CSD list and ensure that the list is included for your CMAS, using the SIT GRPLIST system initialization parameter.

See Chapter 34, “Defining the logger environment for CICS,” on page 205 for details on how to define log streams.

Do not operate the CMAS with log streams that are defined as DUMMY. Dummy log streams can cause problems when recovering the CSD or CICSPlex SM data repository (EYUDREP). See “CMAS journaling” on page 317 for details about the various CMAS journaling options that you can activate.

Chapter 40. Adding CICS support for programming languages

You must add runtime support for the programming languages used with the CICS command level (EXEC) programming interface before you can install your application programs.

About this task

To write CICS application programs that request CICS services through the command-level application programming interface (API), you can use Assembler language, C and C++, COBOL, or PL/I.

CICS provides the support required to run application programs written in Assembler language, and Language Environment provides the required support for all the other languages.

The programming guidance documentation expects that your CICS system is using the services of Language Environment, which provides a common runtime environment for IBM implementations of Assembler and those high-level languages (HLLs) supported by CICS, namely COBOL, PL/I, C, and C++. Supported compilers are listed in High-level language support in What's new.

Installing Language Environment support

Language Environment support is provided by runtime libraries that establish a common runtime environment for application programs compiled by high-level languages. All programs compiled by a high-level language, whether by a Language Environment-conforming compiler or not, must be run under CICS-Language Environment support.

About this task

The CICS-Language Environment interface is initialized automatically when CICS performs the following tasks:

1. Loads the Language Environment interface modules, CEECCICS, CEEPIPI, and CEECTCB, from STEPLIB.
2. Successfully calls the CEECCICS module to initialize the interface.

Language Environment initialization takes place during CICS startup, when CICS issues the message `DFHAP1203I` *`applid`* `Language Environment is being initialized`. The CEECCICS module is loaded, followed by a partition initialization call, before the start of second phase PLT processing. If Language Environment cannot successfully complete the initialization of all languages supported by CICS, or can initialize only some of them, it issues messages to the MVS console. If Language Environment initialization fails completely, it might be because the CEECCICS module was not loaded, or something failed during the loading of a particular language routine.

Installing CICS support for Language Environment

To enable Language Environment support to be installed correctly by CICS, specify storage requirements and ensure that you have the required modules and resource definitions.

:

1. Specify enough storage for the extended read-only dynamic storage area (ERDSA) to run CICS and Language Environment together. They require a minimum of 3,500 KB. To this minimum, add an amount of storage sufficient for your own requirements.
2. Ensure the CICS-Language Environment interface module, CEECCICS, and the Language Environment modules CEEPIPI and CEECTCB are installed in an APF-authorized library defined in the STEPLIB concatenation in the CICS startup JCL. You can do this by including the Language Environment SCEERUN library in an APF-authorized library in the STEPLIB concatenation of your CICS startup job, for example, in the CICSTS52.CICS.SDFHAUTH librarmr , or in an APF-authorized library in the MVS LNKLSTnn concatenation.
3. Ensure that the program resource definitions for the Language Environment language interface modules have been added to the CICS CSD. These definitions are in the CEE group.

   The CEE group is added automatically to the CSD and to the grouplist DFHLIST during CICS installation, as part of the DFHCOMDS job.

   The definitions are also supplied as DEFINE statements in the CEECCSD and CEECCSDX members of the SCEESAMP library. You use CEECCSDX if you are using the XPLINK complier option for C/C++ modules.

   You can add the CEE group to any CICS startup group list named in the GRPLIST system initialization parameter.
4. Define the Language Environment transient data destinations, CESE and CESO (DD names CEEMSG and CEEOUT). The CICS-supplied resource definition group DFHDCTG, in the CSD, contains entries for CESE and CESO.

   For information about the attributes required for Language Environment transient data destinations, see the *IBM Language Environment for MVS & VM Programming Guide*, SC26-4818.
5. Define the Language Environment runtime libraries on the CICS STEPLIB and DFHRPL DD statements:
   - Add the SCEERUN library, which contains CEECCICS and CEECTCB, and the SCEERUN2 library, which contains support that is required for the IBM Java Virtual Machine (JVM) and also support for other programming languages, to STEPLIB or to a library in the MVS LNKLSTnn concatenation. Both the libraries, SCEERUN and SCEERUN2, must be APF-authorized.
   - Add the SCEECICS, SCEERUN2, and SCEERUN libraries to DFHRPL.

   For example:

```
//*              CICS APF-authorized libraries
//STEPLIB  DD DSN=hlq.CICS.SDFHAUTH,DISP=SHR
//         DD DSN=hlq.LE.SCEERUN2,DISP=SHR
//         DD DSN=hlq.LE.SCEERUN,DISP=SHR
//*              CICS load libraries
//DFHRPL   DD DSN=hlq.CICS.SDFHLOAD,DISP=SHR
//         DD DSN=hlq.LE.SCEECICS,DISP=SHR
//         DD DSN=hlq.LE.SCEERUN2,DISP=SHR
//         DD DSN=hlq.LE.SCEERUN,DISP=SHR
```

   Use only these Language Environment runtime libraries for *all* your high-level language application programs.

Language Environment support for COBOL

Language Environment is a prerequisite for application programs written in COBOL.

High-level language support in What's new lists the COBOL compilers that are supported by CICS Transaction Server for z/OS, Version 5 Release 2, and their service status on z/OS. For information about Language Environment, see z/OS Language Environment Customization.

To run COBOL application programs:

- Install support for Language Environment, ensuring that CICS can initialize Language Environment during startup.
- Install resource definitions for your programs with the LANGUAGE attribute specified as LANGUAGE(COBOL), or leave the language blank.

For your application programs, CICS can create and install program resource definitions automatically, or you can create them specifically in the CSD, and install them by using the **GRPLIST** system initialization parameter or **CEDA INSTALL** command. For more information about installing program resource definitions, see Resource management transaction CEDA commands in Reference -> System definition.

Language Environment support for C and C++

Language Environment is a prerequisite for application programs compiled using IBM C/C++ for MVS or SAA AD/Cycle C/370 compilers. Language Environment incorporates the runtime libraries required for both these C language compilers.

For information about Language Environment, see the *z/OS Language Environment Customization* manual.

To run C application programs in CICS:

- Install support for Language Environment, ensuring that CICS can initialize the Language Environment environment during startup.
- Install resource definitions for your programs with the LANGUAGE attribute specified as LANGUAGE(C) or leave the language blank.

For information about installing program resource definitions, see Resource definition installation in Configuring.

CICS supports application programs written in C++ that meet these requirements:

- Are compiled using the IBM C/C++ for MVS compiler (5655-121)
- Run with the Language Environment runtime libraries

If you use Version 3 Release 2, or later, of the C/C++ compiler to compile a C++ program, specify the CXX parameter when options are passed to the compiler; otherwise, the C compiler is invoked. Do not specify CXX if a C program is to be compiled. See the *C/C++ for MVS Compiler and Run-Time Migration Guide Version 3 Release 2* for further information.

Language Environment support for PL/I

Language Environment is a prerequisite for application programs compiled using the IBM Enterprise PL/I for z/OS compiler. Language Environment incorporates the runtime libraries required for PL/I compilers.

PL/I support is also required if you use the web services support in CICS; in particular, it is required if you use the supplied SOAP 1.1 and SOAP 1.2 message handler programs.

To run CICS PL/I application programs:

- Install support for Language Environment, ensuring that CICS can initialize the Language Environment environment during startup.
- Install resource definitions for the programs with the LANGUAGE attribute specified as LANGUAGE(PLI) or leave blank.

For information about Language Environment, see z/OS Language Environment Customization. For information about installing program resource definitions, see Resource definition installation in Configuring.

Language Environment support for Java

Language Environment is a prerequisite for Java programs that run in JVMs in CICS. However, unlike the other languages, Java programs do not require the CICS-Language Environment interface.

Java programs run with Language Environment support using MVS services, not CICS services. Java programs require the Language Environment support provided by the SCEERUN and SCEERUN2 libraries only, which can either be defined in the CICS STEPLIB or included in the MVS linklist. The SCEERUN and SCEERUN2 libraries must also be added to DFHRPL.

Chapter 41. Enabling TCP/IP in a CICS region

The CICS sockets domain provides TCP/IP support, with network services supplied by z/OS.

About this task

The sockets domain provides listener support and outbound sockets support.

The listener
The listener monitors specified TCP/IP ports for incoming requests. You configure the listener with a TCPIPSERVICE resource definition to listen on a specific TCP/IP port and to attach a specified request receiver transaction to handle each connection. When the connection has been established between a client program and a particular request receiver, all subsequent requests from the client program over that connection flow to the same request receiver. The listener supports user applications initiated by TCP/IP services for the following protocols:

External Call Interface (ECI)
The ECI allows client applications to use a TCP/IP connection directly to a CICS region. The External Presentation Interface (EPI) and External Security Interface (ESI) are not supported.

Hypertext Transfer Protocol (HTTP)
HTTP messages are received and sent over the Internet, using CICS web support. See HTTP request and response processing for CICS(r) as an HTTP client for information about the transmission of HTTP messages on the web.

IP interconnectivity protocol (IPIC)

IPIC supports the following types of intercommunication functions for their respective product releases:

- Distributed program link (DPL) calls between CICS TS 3.2 or later regions.
- Distributed program link (DPL) calls between CICS TS and TXSeries Version 7.1 or later.
- Asynchronous processing of **EXEC CICS START**, **START CHANNEL**, and **CANCEL** commands, between CICS TS 4.1 or later regions.
- Transaction routing of 3270 terminals, where the terminal-owning region (TOR) is uniquely identified by an APPLID between CICS TS 4.1 or later regions.
- Enhanced method of routing transactions that are invoked by **EXEC CICS START** commands between CICS TS 4.2 or later regions.
- ECI requests from CICS Transaction Gateway Version 7.1 or later.
- Function shipping of all file control, transient data, and temporary storage requests between CICS TS 4.2 or later regions. Function shipping of file control and temporary storage requests using IPIC connectivity is threadsafe between CICS TS 4.2 or later regions. Function shipping of transient data requests using IPIC connectivity is threadsafe between CICS TS 5.1 or later regions.

- Threadsafe processing for the mirror program and the LINK command in CICS TS 4.2 or later regions to improve performance for threadsafe applications.

Outbound sockets
: Outbound socket support allows CICS to open sockets and communicate using one of the supported TCP/IP networking protocols, for example, HTTP or IPIC.

Using TCP/IP in a CICS region

To use TCP/IP in a CICS region, install Communications Server, set and define system initialization parameters, and provide resource definitions. Additional tasks are required if you use SSL authentication.

1. Install Communications Server. Make ports belonging to Communications Server available for use by the CICS region involved.
2. Set the **TCPIP** system initialization parameter to YES.
3. Provide TCPIPSERVICE resource definitions for each active port and the type of service associated with it. The CICS TCP/IP listener is activated for the specified ports when the TCPIPSERVICE is installed, if you also specify **TCPIP(YES)**.
4. If Secure Sockets Layer (SSL) authentication is used, you must define the KEYRING system initialization parameter, to identify the RACF key ring containing the keys and X.509 certificates used in the SSL handshake.

The TCPIPSERVICE resource definitions are for use only with the CICS-provided TCP/IP services, and are not related to the z/OS Communications Server IP CICS Sockets interface. The TCP/IP Socket Interface for CICS is supplied with z/OS Communications Server, which is an integral part of z/OS and does not use the CICS Sockets domain.

A TCPIPSERVICE supports either one specific IP address or all IP addresses (INADDR_ANY). Therefore, if two CICS regions are required to listen on the same port at the same IP address, you must use a form of network load balancing, for example, TCP/IP port sharing.

Related information:

TCPIPSERVICE attributes in Reference -> System definition

Chapter 42. Installing MRO, IPIC, and ISC support

You include MRO, IPIC, or ISC support in your CICS region.

- Multiregion operation (MRO); see "Installing MRO support."
- IP interconnectivity (IPIC); see "Activating IP interconnectivity (IPIC) connections" on page 280.
- Intersystem communication (ISC); see "Activating intersystem communication over z/OS Communications Server" on page 275

The information about ACF/SNA and z/OS that is given in these topics is for guidance only. Always consult the current ACF/SNA or z/OS publications for the latest information.

Installing MRO support

CICS multiregion operation (MRO) enables CICS regions that are running in the same z/OS image, or in the same z/OS sysplex, to communicate with each other. MRO does not support communication between a CICS system and a non-CICS system such as IMS.

The external CICS interface (EXCI) uses a specialized form of MRO link to support DCE remote procedure calls to CICS programs, and communication between z/OS batch programs and CICS .

MRO does not require ACF/Communications Server or SNA networking facilities. The CICS support that enables region-to-region communication is called interregion communication (IRC). IRC is implemented in three ways:

1. Through support in CICS terminal control management modules and by use of a CICS-supplied interregion program, DFHIRP, loaded in the z/OS link pack area. DFHIRP is invoked by a type 3 supervisory call (SVC).
2. By z/OS cross-memory services, which you can select as an alternative to the CICS type 3 SVC mechanism. Here, DFHIRP only opens and closes the interregion links.
3. By the cross-system coupling facility (XCF) of z/OS. XCF/MRO is required for links between CICS regions in different z/OS images of an z/OS sysplex. CICS selects XCF/MRO dynamically for such links, if available.

For information about the design and implementation of interregion communication, and about the benefits of cross-system MRO, see the *Intercommunication concepts and facilities* topic in the *CICS Intercommunication Guide*.

To install support for MRO, complete the following steps:

1. Define CICS as a z/OS subsystem. Multiregion operation with CICS requires z/OS Subsystem Interface (SSI) support. To obtain this support, you define CICS as an operating system subsystem.
2. Install the current versions of the DFHIRP and DFHCSVC modules in the LPA.
3. Specify appropriate system initialization parameters to enable MRO for each CICS region startup. To help you get started with MRO, a CICS job and a CICS startup procedure are supplied on the CICS distribution volume. For each MRO region, you must also create the CICS system data sets needed.

   To use cross-system MRO (XCF/MRO):

4. Install the required sysplex hardware and software.
5. Define the z/OS images as systems in an XCF sysplex.

   To use the MRO support:
6. Define and install the MRO connections appropriate to your CICS environment.

Provided you complete these steps, you can use MRO to communicate with all supported levels of CICS.

If MRO is used to communicate between different releases of CICS, the function provided on any connection is that of the lower-level release.

Installing the modules DFHIRP and DFHCSVC in the LPA

You must install the DFHIRP and DFHCSVC modules to enable your regions to communicate by MRO.

1. Install the current versions of the DFHIRP and DFHCSVC modules into the LPA, as described in Chapter 22, “Installing CICS modules in the MVS link pack area,” on page 155. If you are running CICS with MRO at different release levels, all communicating CICS regions must use the latest DFHIRP module and the latest SVC module, DFHCSVC, on the same z/OS image. If a previous version of CICS is already installed on this z/OS image, do not use the dynamic LPA function to replace DFHIRP unless you have a strategy whereby all users of DFHIRP on the z/OS image that is being upgraded can be quiesced. For more information about dynamically updating DFHIRP, see Upgrading multiregion operation (MRO). Failure to shut down all users of DFHIRP during the upgrade process can cause incompatibility between control blocks that results in abends that require an IPL of the z/OS image.

   Multiregion operation requires the CICS interregion communication modules to run in supervisor state to transfer data between different regions. CICS achieves this by using a normal supervisor call to this startup SVC routine, which is in the pregenerated system load library (CICSTS52.CICS.SDFHLOAD).
2. Define the SVC module, DFHCSVC, to z/OS, as described in Chapter 19, “Installing the CICS SVCs,” on page 137.

Installation requirements for XCF/MRO

For MVS images to communicate using MRO between CICS regions on different z/OS images, the z/OS images must be joined in a sysplex.

For the hardware and software that are required for z/OS systems in a sysplex, see the “Program Directories” on page 5.

A sysplex consists of multiple MVS images, coupled together by hardware elements and software services. In a sysplex, MVS images provide a platform of basic services that multisystem applications like CICS can exploit. As the workload for an installation grows, additional MVS images can be added to the sysplex so that the installation can meet the needs of the greater workload.

Usually, a specific function (one or more modules or routines) of the MVS application subsystem (such as CICS) is joined as a *member* (a member resides on one MVS image in the sysplex), and a set of related members is the *group* (a group can span one or more of the MVS images in the sysplex). A group is a complete logical entity in the sysplex. To use XCF to communicate in a sysplex, each CICS region joins an XCF group as a member, using services provided by DFHIRP.

For information about installing and managing MVS systems in a sysplex, see z/OS MVS Setting Up a Sysplex.

Generating XCF/MRO support

There are a number of steps you must complete to generate XCF/MRO support.

Procedure

1. Ensure that the version of DFHIRP in the extended link pack area (ELPA) is at the required level for all the MVS images containing CICS systems to be linked. Depending on the versions of CICS installed in the MVS images participating in XCF/MRO, the versions of DFHIRP installed in the images can be different. The DFHIRP module must be from the most current CICS release in the image, or higher.

   The CICS TS for z/OS, Version 5.2 DFHIRP module, which is required for multiple XCF group support, can be used only with z/OS, Version 1 Release 13 or later.
2. Ensure that each CICS APPLID is unique within the sysplex.
3. Ensure that the value of the **MAXMEMBER** MVS parameter, used to define the XCF couple data sets, is high enough to cater for the largest CICS XCF group. The maximum size of any XCF group within a sysplex is limited by this value. The theoretical maximum size of any XCF group is 2047 members.

   External CICS interface (EXCI) users that use an XCF/MRO link also join an XCF group. You must therefore set the value of **MAXMEMBER** high enough to allow all CICS regions and EXCI XCF/MRO users in the largest CICS XCF group to join the group concurrently.

   To list the CICS regions and EXCI users in an XCF group, use the MVS **DISPLAY** command. For example, to list the CICS regions and EXCI users in the DFHIR001 XCF group, use the command:

   ```
   DISPLAY XCF,GROUP,DFHIR001,ALL
   ```

   Do not rely on the default value of **MAXMEMBER**, which might be too low to allow all the CICS regions and EXCI users in the largest XCF group to join the group. This is especially important if you have only a few CICS XCF groups.

   Likewise, do not set a value much larger than you need, because this results in large couple data sets for XCF. The larger the data set, the longer it takes to locate entries.

   Make the value of **MAXMEMBER** 10-15 greater than the combined number of CICS regions and EXCI users in the largest CICS XCF group.

Results

Each CICS region joins an XCF group when it logs on to DFHIRP. Its member name is its APPLID (NETNAME) used for MRO partners. The XCF group name is specified on the XCFGROUP system initialization parameter. If **XCFGROUP** is not specified, the XCF group name defaults to DFHIR000.

At connect time, CICS invokes the IXCQUERY macro to determine whether the CICS region being connected to resides in the same MVS image. If it does, CICS uses IRC or XM as the MRO access method, as defined in the connection definition. If the partner resides in a different MVS image, CICS uses XCF as the access method, regardless of the access method defined in the connection definition.

CICS regions can use MRO or XCF/MRO to communicate only with regions in the same XCF group. Members of different XCF groups cannot communicate using MRO, or XCF/MRO, even if they are in the same MVS image.

Defining z/OS images as systems in an XCF sysplex

To use XCF/MRO, you define all participating z/OS images as part of the same sysplex.

In a parallel sysplex, where MRO communication between z/OS images is by XCF/MRO, the DFHIRP programs installed in the different z/OS images can be at different release levels. However, DFHIRP must be installed from the highest release of CICS running in an z/OS image. For example, a CICS TS for z/OS, Version 3.2 DFHIRP can communicate with another DFHIRP across XCF/MRO, but the CICS regions running in the z/OS with the CICS TS for z/OS, Version 3.2 DFHIRP cannot be later than CICS TS for z/OS, Version 3.2.

For more information, see Chapter 29, “MVS cross-system MRO definitions,” on page 191.

Enabling MRO for CICS startup

For each CICS region that is to use MRO, you must specify `ISC=YES` to include the intersystem communication program, DFHISP.

If you want a CICS region to establish MRO communication during startup, also specify `YES` on the IRCSTART system initialization parameter.

Alternatively, after your CICS region is running, you can establish MRO communication by using the CEMT SET IRC OPEN command or the EXEC CICS SET IRC OPENSTATUS(cvda) command.

Either method establishes MRO communication with every CICS region that meets the following criteria:

1. The MRO connection is currently active.
2. The MRO connection is defined to your region by CONNECTION and SESSIONS definitions that are installed from the CSD. To establish MRO communication between two CICS regions, the installed CONNECTION definition must specify `INSERVICE(YES)` in both regions.

Adding communications support between systems

You can include communications to other systems in a CICS region by using either ISC over SNA or IP interconnectivity (IPIC).

MRO can be used only for CICS-to-CICS connections in the same z/OS image or z/OS sysplex. If you connect CICS to both CICS and non-CICS systems, and the remote systems can be inside or outside the local z/OS sysplex, CICS offers intersystem communication over SNA (ISC over SNA) and intersystem communication over TCP/IP. Intersystem communication over TCP/IP is known as IP interconnectivity (IPIC).

Unlike MRO, no special z/OS operating system requirements apply to these methods of communication.

Activating intersystem communication over z/OS Communications Server

To provide the necessary protocols to support communication between CICS regions that are in different z/OS images, or in different z/OS sysplexes, ISC over SNA uses the ACF/Communications Server access method.

You can also use ISC over SNA in the same CPC, through the application-to-application facilities of ACF/Communications Server.

You must include the following management programs in your CICS regions, by specifying the system initialization parameters that are given in parentheses:

- DFHISC – the intersystem communication program (`ISC=YES`).
- DFHTCP – the terminal control program (`TCP=YES` is the default).

Establishing ISC over SNA

Intersystem communication over SNA requires z/OS Communications Server support. CICS regions cannot communicate until they have established the z/OS Communications Server connection.

Specify `VTAM=YES` as a system initialization parameter.

If the z/OS Communications Server is running during CICS initialization, CICS opens the z/OS Communications Server ACB.

If the z/OS Communications Server is started after CICS, opening the z/OS Communications Server ACB fails, and you must open it using the z/OS Communications Server CEMT SET VTAM OPEN command when the z/OS Communications Server is available.

ACF/SNA definition for CICS

When you define your CICS system to ACF/SNA, you need to include a number of operands in the SNA APPL statement.

About this task

`MODETAB=logon-mode-table-name`
: This operand names the SNA logon mode table that contains your customized logon mode entries. See "ACF/Communications Server LOGMODE table entries for CICS" on page 276 for more information. You can omit this operand if you choose to add your MODEENT entries to the IBM default logon mode table, without renaming it.

`AUTH=(ACQ,SPO,VPACE[,PASS])`
: ACQ is required to allow CICS to acquire LU type 6 sessions. SPO is required to allow CICS to issue the MVS MODIFY *snaname* USERVAR command. VPACE is required to allow pacing of the intersystem flows.

  PASS is required if you intend to use the **`EXEC CICS ISSUE PASS`** command, which passes existing terminal sessions to other SNA applications.

`VPACING=number`
: This operand specifies the maximum number of normal-flow requests that another logical unit can send on an intersystem session before waiting to receive a pacing response.

Take care when selecting a suitable pacing count. Too low a value can lead to poor throughput because of the number of line turnarounds required. Too high a value can lead to excessive storage requirements.

EAS=number
: This operand specifies the number of network-addressable units that CICS can establish sessions with. The number must include the total number of parallel sessions for this CICS system.

PARSESS=YES
: This option specifies LU type 6 parallel session support.

SONSCIP=YES
: This operand specifies session outage notification (SON) support. SON enables CICS, in particular cases, to recover a failed session without requiring operator intervention.

APPC=NO
: APPC=NO is required for CICS. This setting is the default. If you do not use APPC=NO, you receive message DFHZC2400E, referencing the SNA return code 1013.

For more information about the SNA APPL statement, refer to the *z/OS Communications Server: SNA Resource Definition Reference*.

ACF/Communications Server LOGMODE table entries for CICS:

For APPC sessions, you can use the MODENAME option of the CICS **DEFINE SESSIONS** command to identify a z/OS Communications Server logmode entry that in turn identifies the required entry in the z/OS Communications Server class-of-service table.

Every modename that you supply, when you define a group of APPC sessions to CICS, must be matched by a z/OS Communications Server LOGMODE name. You need to create entries in the z/OS Communications Server LOGMODE table using the following format:

```
MODEENT LOGMODE=modename
MODEEND
```

An entry is also required for the LU services manager modeset (SNASVCMG):

```
MODEENT LOGMODE=SNASVCMG
MODEEND
```

If you plan to use autoinstall for single-session APPC terminals, additional information is required in the MODEENT entry.

For CICS-to-IMS links that are cross-domain, you must associate the IMS LOGMODE entry with the CICS APPLID, using the **DLOGMOD** or **MODETAB** parameters.

ACF/SNA definition for IMS

When the IMS system is defined to SNA, the following operands should be included on the SNA APPL statement.

About this task

AUTH=(ACQ,VPACE)
: ACQ is required to allow IMS to acquire LU type 6 sessions. VPACE is required to allow pacing of the intersystem flows.

VPACING=number
: This operand specifies the maximum number of normal-flow requests that another logical unit can send on an intersystem session before waiting to receive a pacing response. An initial value of 5 is suggested.

EAS=number
: The number of network addressable units must include the total number of parallel sessions for this IMS system.

PARSESS=YES
: This operand specifies LU type 6 parallel session support.

For more information, see *z/OS Communications Server: SNA Programming*.

ACF/SNA LOGMODE table entries for IMS:

IMS allows the user to specify some BIND parameters in a z/OS Communications Server logmode table entry. The CICS logmode table entry must match that of the IMS system.

IMS uses, in order of priority, the mode table entry specified in the following places:

1. The MODETBL parameter of the TERMINAL macro
2. The mode table entry specified in CINIT
3. The DLOGMODE parameter in the VTAMLST APPL statement or the MODE parameter in the IMS /OPNDST command
4. The ACF/SNA defaults.

Figure 20 shows an IMS logmode table entry:

```
LU6NEGPS  MODEENT LOGMODE=LU6NEGPS,  NEGOTIABLE BIND
            PSNDPAC=X'01',           PRIMARY SEND PACING COUNT
            SRCVPAC=X'01',           SECONDARY RECEIVE PACING COUNT
            SSNDPAC=X'01',           SECONDARY SEND PACING COUNT
            TYPE=0,                  NEGOTIABLE
            FMPROF=X'12',            FM PROFILE 18
            TSPROF=X'04',            TS PROFILE 4
            PRIPROT=X'B1',           PRIMARY PROTOCOLS
            SECPROT=X'B1',           SECONDARY PROTOCOLS
            COMPROT=X'70A0',         COMMON PROTOCOLS
            RUSIZES=X'8585',         RU SIZES 256
            PSERVIC=X'060038000000380000000000'  SYSMSG/Q MODEL
          MODEEND
```

Figure 20. Example IMS logmode table entry

IMS system definition for intersystem communication

The IMS ISC-related macros that are used in IMS system definition are the COMM, NAME, SUBPOOL, TERMINAL, TYPE, and VTAMPOOL macros.

The COMM macro:

The COMM macro identifies the IMS system.

APPLID=name
: Specifies the APPLID of the IMS system. This APPLID is usually the name that you specify on the NETNAME option of DEFINE CONNECTION when you define the IMS system to CICS.

  However, consider the following points:

- If APPLID on the COMM macro is coded as NONE, the CICS NETNAME option should specify the label on the EXEC statement of the IMS startup job.
- If the IMS system is started as a started task, NETNAME should specify the started task name.
- For an IMS system with XRF, the CICS NETNAME option should specify the USERVAR (that is, the generic applid) that is defined in the DFSHSBxx member of IMS.PROCLIB, not the applid from the COMM macro.

RECANY=(number,size)
Specifies the number and size of the IMS buffers that are used for SNA "receive any" commands. For ISC sessions, the buffer size has a 22-byte overhead. It must therefore be at least 22 bytes larger than the CICS buffer size specified in the SENDSIZE option of DEFINE SESSIONS.

This size applies to all other ACF/SNA terminals attached to the IMS system, and must be large enough for input from any terminal in the IMS network.

EDTNAME=name
Specifies an alias for ISCEDT in the IMS system. For CICS-to-IMS ISC, an alias name must not be longer than four characters.

The NAME macro:

The NAME macro defines the logical terminal names associated with the subpool. Multiple LTERMs can be defined per subpool.

COMPT={1|2|3|4}
Specifies the output component associated with this session. The component specified determines the protocol that IMS ISC uses to process messages. An output component defined as SINGLE1 is strongly recommended.

ICOMPT={1|2|3|4}
Specifies the input component associated with this session. When IMS receives a message, it determines the input source terminal by finding the NAME macro that has the matching input component number. A COMPT1 input component must be defined for each session that CICS uses to send START commands.

EDIT=[{NO|YES}][,{ULC|UC}]
The first parameter specifies whether the user-supplied logical terminal edit routine (DFSCNTEO) is to be used.

The second parameter specifies whether the output is to be translated to uppercase (UC) or not (ULC) before transmission.

The SUBPOOL macro:

A SUBPOOL macro is required for each session to the remote system.

NAME=subpool-name
Specifies the IMS name for this session. A CICS-to-IMS session is identified by a "session-qualifier pair" formed from the CICS name for the session and the IMS subpool name.

The CICS name for the session is specified in the SESSNAME option of the DEFINE SESSIONS command for the session.

The IMS subpool name is specified to CICS in the NETNAMEQ option of the DEFINE SESSIONS command.

The TERMINAL macro:

The TERMINAL macro identifies the remote CICS system to IMS. It is comparable to DEFINE CONNECTION in CICS.

NAME=name
: Identifies the CICS node to IMS. It must be the same as the APPLID of the CICS system.

OUTBUF=number
: Specifies the size of the IMS output buffer. It must be equal to or greater than 256, and should include the size of any function management headers sent with the data. It must not be greater than the value specified in the RECEIVESIZE option of the DEFINE SESSIONS commands for the intersystem sessions.

SEGSIZE=number
: Specifies the size of the work area that IMS uses for deblocking incoming messages. We recommend that you use the size of the longest chain that CICS may send. However, if IMS record mode (VLVB) is used exclusively, you could specify the largest record (RU) size.

MODETBL=name
: Specifies the name of the z/OS Communications Server mode table entry to be used. You must omit this parameter if the CICS system resides in a different SNA domain.

OPTIONS=[NOLTWA|LTWA]
: Specifies whether Log Tape Write Ahead (LTWA) is required. For LTWA, IMS logs session restart information for all active parallel sessions before sending a syncpoint request. LTWA is recommended for integrity reasons, but it can adversely affect performance. NOLTWA is the default.

OPTIONS=[SYNCSESS|FORCSESS]
: Specifies the message resynchronization requirement following an abnormal session termination. SYNCSESS is the default. It requires both the incoming and the outgoing sequence numbers to match (or CICS to be cold-started) to allow the session to be restarted. FORCSESS allows the session to be restarted even if a mismatch occurs. SYNCSESS is recommended.

OPTIONS=[TRANSRESP|NORESP|FORCRESP]
: Specifies the required response mode.

  TRANSRESP
  : Specifies that the response mode is determined on a transaction-by-transaction basis. This is the default.

  NORESP
  : Specifies that response-mode transactions are not allowed. In CICS terms, this means that a CICS application cannot initiate an IMS transaction by using a SEND command, but only with a START command.

  FORCRESP
  : Forces response mode for all transactions. In CICS terms, this means that a CICS application cannot initiate an IMS transaction by using a START command, but only by means of a SEND command.

  TRANSRESP is recommended.

OPTIONS=[OPNDST|NOPNDST]
Specifies whether sessions can be established from this IMS system. OPNDST is recommended.

{COMPT1|COMPT2|COMPT3|COMPT4}={SINGLEn|MULTn}
Specifies the IMS components for the IMS ISC node. Up to four components can be defined for each node. The input and output components to be used for each session are then selected by the ICOMPT and COMPT parameters of the SUBPOOL macro.

The following types of component can be defined:

SINGLE1
Used by IMS for asynchronous output. One output message is sent for each SNA bracket. The message may or may not begin the bracket, but it always ends the bracket.

SINGLE2
Each message is sent with the SNA change-direction indicator (CD).

MULT1
All asynchronous messages for a given LTERM are sent before the bracket is ended. The end bracket (EB) occurs after the last message for the LTERM is acknowledged and dequeued.

MULT2
The same as MULT1, but CD is sent instead of EB.

SESSION=number
Specifies the number of parallel sessions for the link. Each session is represented by an IMS SUBPOOL macro and by a CICS DEFINE SESSIONS command.

EDIT=[{NO|YES}][,{NO|YES}]
Specifies whether user-supplied physical output and input edit routines are to be used.

The TYPE macro:

The TYPE macro specifies the terminal type. Parameters of the TERMINAL macro can also be specified in the TYPE macro if they are common to all the terminals defined for this type.

UNITYPE=LUTYPE6
Must be specified for ISC.

The VTAMPOOL macro:

The VTAMPOOL macro heads the list of SUBPOOL macros that define the individual sessions to the remote system.

Defining ISC over SNA connections

Before you can use ISC over SNA, you must define and install connections with attributes appropriate to your CICS and SNA environment.

Related information:

CONNECTION attributes in Reference -> System definition

Activating IP interconnectivity (IPIC) connections

IP interconnectivity requires CICS TCP/IP services to be activated.

System initialization parameters

To activate IPIC at CICS startup, specify `TCPIP=YES` and `ISC=YES` as system initialization parameters. The default value of the **TCPIP** and **ISC** parameters is NO.

Defining IPIC connections

Before you can use IPIC, you must:

- Define and install IPCONNs with attributes appropriate to your CICS environment.
- Define and install a TCPIPSERVICE definition with the PROTOCOL attribute set to IPIC.
- Review your MAXSOCKETS system initialization parameter settings. Ensure that you allocate enough sockets to support IPIC connections and other traffic that requires IP sockets.

Related information:

TCPIP system initialization parameter in Reference -> System definition

IPCONN resources in Reference -> System definition

TCPIPSERVICE resources in Reference -> System definition

MAXSOCKETS system initialization parameter in Reference -> System definition

Chapter 43. Verifying your Java components

The CICS components required to support Java applications are included in the base product. You must also install the IBM 64-bit SDK for z/OS, Java Technology Edition, on z/OS UNIX, to provide Java support. Before you begin to set up and configure Java support in your CICS regions, verify that the Java components are correctly installed on your system.

Procedure

1. Ensure that all of the required Java components are installed in the correct locations on your CICS system. You can use the checklist in "Verifying Java components checklist."
2. Authorize the *hlq*.SDFJAUTH library, as described in "Authorizing the hlq.SDFJAUTH library" on page 284.

What to do next

When you have verified that your Java components are correctly installed, set up your Java environment for CICS as described in Setting up Java support in Configuring.

Verifying Java components checklist

Check that the IBM 64-bit SDK for z/OS, Java Technology Edition is installed and that the files supplied by CICS have been created.

IBM 64-bit SDK for z/OS, Java Technology Edition installation

Check that the IBM 64-bit SDK for z/OS, Java Technology Edition is installed in z/OS UNIX. CICS Transaction Server for z/OS, Version 5 Release 2 uses Version 7
| or Version 7 Release 1 of the IBM 64-bit SDK for z/OS, Java Technology Edition for Java support. CICS TS for z/OS, Version 5.2 supports only the 64-bit version of the SDK and not the 31-bit version.

The **JAVADIR** parameter of the DFHISTAR installation job for CICS specifies the location for the IBM SDK for z/OS. This parameter is used to customize the sample JVM profiles and Java security policy, so that they point to the SDK installation. The value in the JVM profiles determines the SDK that is used for Java support in a CICS region.

The default for the **JAVADIR** parameter is `java/J7.0_64`. This value is appended to `/`*`pathprefix`*`/usr/lpp/` to specify the default location of the IBM 64-bit SDK for z/OS, Java Technology Edition.

Files supplied by CICS

The CICS components for Java are installed during the installation process. Confirm that they are all present in the specified locations. z/OS UNIX System Services must be active in full function mode during the installation process to enable files to be stored in its file system.

In all of the directory paths shown here, cicsts52 is a user-defined value, specified on the **USSDIR** parameter in the DFHISTAR installation job. This value determines the installation directory for CICS files on z/OS UNIX. This value is used as the *uss_path* variable in the DFHIJVMJ job, which creates the customized sample JVM profiles and Java security policy as z/OS UNIX files in the directories listed in the following table.

Table 21. Java components checklist

Java component	Location	Comments
Directory containing JAR files supplied by CICS	z/OS UNIX directory: */pathprefix*/usr/lpp/cicsts/cicsts52/lib	This directory is on the base library path and class path for all JVMs in CICS.
Directory containing the WebSphere Application Server Liberty profile	z/OS UNIX directory: */pathprefix*/usr/lpp/cicsts/cicsts52/wlp	This directory contains the Liberty profile for running web servlets in a JVM server.
Sample programs	z/OS UNIX directory: */pathprefix*/usr/lpp/cicsts/cicsts52/samples	The sample programs demonstrate the use of output redirection, the JCICS classes, JDBC, pipelines, and web services.
JVM profiles	z/OS UNIX directory: */pathprefix*/usr/lpp/cicsts/cicsts52/JVMProfiles	JVM profiles specify options used in creating JVMs. These sample JVM profiles are customized for your system during the installation process. You can edit them using CICS Explorer or any text editor. The JVM profiles must always be available to CICS.
hlq.SDFJAUTH library	MVS PDSE libraries	Contains components of the SJ domain. See "Authorizing the hlq.SDFJAUTH library" for more information.

For all z/OS UNIX files, case is important. CICS does not automatically convert the name of these files to uppercase. When you use the name of a JVM profile anywhere in CICS, you must enter it using the same combination of uppercase and lowercase characters that is present in the z/OS UNIX file name. The file extension .jvmprofile must always be lowercase.

Authorizing the hlq.SDFJAUTH library

This library is the partitioned data set extended (PDSE) version of SDFHAUTH, and it contains some of the components of the SJ domain. The SDFJAUTH library is required for Java support.

A separate library is required because these components are built using XPLINK (Extra Performance Linkage).

As for the SDFHAUTH library, to authorize SDFJAUTH:

1. APF-authorize the SDFJAUTH library by adding it to the list of APF-authorized libraries in the appropriate PROGxx (or IEAAPFxx) member in SYS1.PARMLIB.
2. Provide a STEPLIB DD statement for the hlq.SDFJAUTH library in your startup job stream.

The procedure for authorizing the SDFHAUTH library is described in Chapter 14, “Authorizing the CICS and CICSPlex SM libraries,” on page 105. Follow the same procedure to authorize the SDFJAUTH library.

Chapter 44. Defining DL/I support

CICS can provide DL/I database support by using the IBM IMS Database Manager.

For information about appropriate versions and releases, see Overview of Database Control (DBCTL) in Product overview. As they become available, versions of IMS newer than those versions listed are also compatible.

You can use DL/I support with CICS through these methods:
- Database control (DBCTL)
- CICS remote DL/I support, also known as *function shipping*

The IMS libraries referred to in the job streams are identified by IMS.libnam; for example, IMS.PGMLIB. If you use your own naming convention for IMS libraries, rename the IMS libraries accordingly.

CICS provides a CICS-DBCTL interface which enables DBCTL, IMS, or IMS DM/TM to satisfy DL/I requests that are issued from the CICS region. This method is simpler to install than local DL/I and provides additional function. Details of installing and using DBCTL are in Installing and generating DBCTL in Configuring.

CICS support for access to DL/I databases using the IBM Information Management System (IMS) product is included in the base product. No specific installation is required.

For more information about storage protection, see Storage protection.

For information about adding system and resource definitions for use with DBCTL, see the *CICS IMS Database Control Guide*.

Program specification blocks (PDIR)

A directory of program specification blocks (PDIR) is a list of program specification blocks (PSBs) that define, for DL/I, the use of databases by application programs.

Your CICS region requires a PDIR to access a database owned by a remote CICS region. Your CICS region does not require a PDIR to access a DL/I database owned by DBCTL. For information about accessing DL/I databases owned by DBCTL, see the *CICS IMS Database Control Guide*.

The modules that provide remote DL/I support are automatically loaded by CICS during startup when a DL/I PSB directory is specified with the PDIR= system initialization parameter.

Adding remote DL/I support

Remote DL/I support is included in CICS Transaction Server for z/OS, and works with one of the supported levels of IMS.

For information about appropriate IMS versions and releases, see Overview of Database Control (DBCTL) in Product overview.

Usually, you use remote DL/I support, with either MRO or ISC connections, to access databases owned by another CICS region. You can also use CICS remote DL/I support to access, through another CICS region connected to DBCTL, databases owned by DBCTL. CICS regions accessing databases owned by DBCTL (that is, connected to DBCTL) must be running on the same MVS image as the DBCTL system. An overview is given in Figure 21.

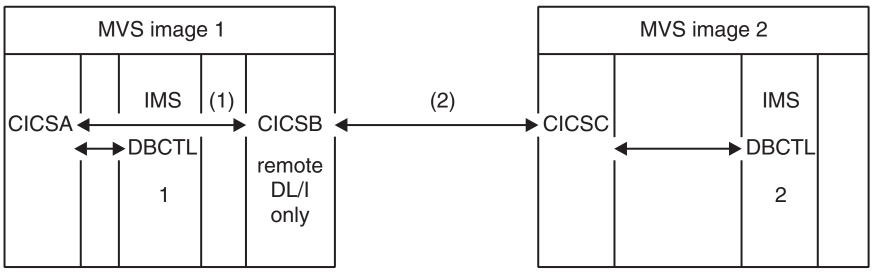


Figure 21. Using CICS remote DL/I support to access DBCTL databases

1. CICSB uses remote DL/I to access, through CICSA, databases owned by DBCTL 1 in MVS image 1. This support is only required if CICSB is not connected to DBCTL 1.
2. CICSB uses remote DL/I to access, through CICSC, databases owned by DBCTL 2 in MVS image 2.

For information about accessing DL/I databases owned by DBCTL, see the *CICS IMS Database Control Guide*.

To add support in CICS for remote database access:
1. Code, assemble, and link-edit a program specification blocks directory (PDIR).
2. Code the PDIR CICS system initialization parameter for remote DL/I support.

Defining a PSB directory

You code entries in a program specification block directory (PDIR), to indicate the identity of the remote CICS region, or regions, to which you want CICS to function ship DL/I requests.

You do this by coding the SYSIDNT parameter in DFHDLPSB TYPE=ENTRY macros, which you assemble and link-edit to create a PDIR. You must also code the MXSSASZ parameter. You can, optionally, code the RMTNAME parameter to define the name by which the PSB is known in the remote CICS region. For information about creating PDIRs, see the *CICS Resource Definition Guide*.

Coding CICS system initialization parameters for remote DL/I support

The following summary of the DL/I parameters specifies the parameters that you can, or must, code as CICS system initialization parameters:
- PDIR={*YES*|xx} Suffix of PSB directory (mandatory for remote DL/I)
- PSBCHK={*NO*|YES} Security check on remote terminals starting transactions

- XPSB={*YES*|name|NO} PSB entries to be checked by RACF

Chapter 45. Enabling REXX for CICS

The REXX Development System for CICS and the REXX Runtime Facility for CICS are two program products collectively referred to as REXX for CICS. With REXX for CICS, you can write and run REXX programs in a CICS region.

These programs have access to most EXEC CICS commands, the CICS CEDA and CEMT transactions, and DB2 databases through the EXEC SQL interface.

The next topics explain how you can customize your information for REXX and configure your CICS system to provide the facilities of REXX for CICS.

Customization information for REXX

To customize your REXX configuration, review your commands and settings before modifying your resource definitions to add REXX entries.

Modifying your RDO definitions to add required entries

The CICRDOR job, for the Runtime Facility, or the CICRDOD job, for Development System, in the CICSTS52.REXX.SCICJCL data set adds the entries that the product requires, including REXX/CICS profiles, VSAM files, programs, transactions, and transient data queues.

The transient data queues are used for REXX/CICS IMPORT and EXPORT commands. The jobs also contain the definitions for the REXX/CICS SQL interface that authorize the transactions to the DB2 plan.

1. Review "Changing supplied CICS transaction codes" if you plan to modify the transaction IDs and also review "Defining RFS filepools" on page 292 if you plan to change the REXX file system (RFS) pool names or the number of pools to install.
2. Edit the JCL, ensuring that you uncomment the entries as explained in comments at the beginning of the JCL, and run the job.

A return code of 4 is acceptable.

Verifying the installation

When you have completed these steps, you can verify that the installation has been successful, by entering `CALL CICIVP1` from the interactive REXX environment. The exec indicates what is happening.

Changing supplied CICS transaction codes

There are three transaction IDs supplied by the product, REXX, EDIT, and FLST. You can change these supplied transaction IDs.

The functions of REXX, EDIT, and FLST

REXX, EDIT, and FLST perform these functions:

REXX Is the default transaction ID.

- If no additional operands are supplied, the CICRXTRY exec starts. CICRXTRY allows the user to interactively enter REXX instructions and run them.
- If REXX is entered and is followed by a string, separated from REXX by blanks, the string is interpreted as a REXX exec name followed by operands that are passed to the named REXX exec. This action causes the named exec to run.

When the REXX exec ends, control is returned to CICS.

EDIT Is the transaction ID associated with the REXX Development System editor.

- If no additional operands are supplied, the CICEDIT exec starts and the file "NONAME" in the user's current RFS directory is opened for editing.
- If EDIT is entered with an additional operand, separated from the transaction ID with a blank, the operand is interpreted as the name of a particular file in the user's current directory, which is to be opened for editing.

When the EDIT session ends, control is returned to CICS.

FLST Is the transaction ID associated with the REXX Development System file list exec, CICFLST.

- If no additional operands are supplied, the CICFLST exec starts and the contents of the user's current RFS directory are displayed.
- If FLST is entered with an additional operand separated from the transaction ID with a blank, the operand is interpreted as the name of a particular RFS directory the contents of which are to be listed.

When the FLST session ends, control is returned to CICS.

Changing the supplied transaction IDs

You can change the names of the supplied transaction IDs, and you can add additional transactions that call your own EXEC commands.

- The DEFTRNID commands in the CICSTART member, in the CICSTS52.REXX.SCICEXEC data set, define the supplied transaction IDs REXX, EDIT, and FLST, and associate them with their EXEC commands.

  If you choose to change the supplied entries, make sure that you update the resource definitions to match your changes. If you do not want users to call the editor or file list EXEC commands directly from CICS, you can delete the DEFTRNID commands, for either or both of them, from CICSTART and also from the resource definitions. Users are not allowed access to these commands directly from CICS. Ensure that you do not remove the DEFTRNID statement for the CICRXTRY command.
- If you want to add additional transactions that call your own EXEC commands directly from CICS, add resource definitions for the transaction IDs and add further DEFTRNID commands to your CICSTART command. Your newly defined transactions become available to your users when you restart your CICS system. An authorized user can enter the DEFTRNID command directly to give immediate availability, but, until the CICSTART member is changed, these definitions are lost when CICS is restarted.

Defining RFS filepools

The supplied member, CICVSAM, in CICSTS52.REXX.SCICJCL, creates the VSAM data sets for two RFS filepools. You can change the names for these VSAM data sets to match your installation standards.

If you do change these names, you must also make matching changes to the CICRDOD member. Because the resource definitions supplied contain the data set names, DD statements are not required in the CICS startup job. You can use this technique to add additional files to an RFS pool or to add additional RFS filepools without restarting your CICS system.

The FILEPOOL DEFINE commands in CICSTART member in the CICSTS52.REXX.SCICEXEC data set have two purposes. The first is to define the names of the supplied filepools. They are: POOL1 and POOL2. You can modify these names to your installation standards. They can be from 1 to 8 characters. Do not use special characters, ":" or "\". The second purpose is to associate the filepool IDs to the resource definitions for the VSAM data set used for its directory and the first VSAM file used for data storage.

If you want to add additional RFS filepools to your system, you must add resource definitions and add FILEPOOL DEFINE commands to your CICSTART member. If you intend to allow users to add RFS files to the new filepool, you must define the filepool to include a `\USERS` directory.

To make these new filepools available for use, restart CICS. However, you can also add filepools while your CICS system is active:

1. Add the RDS definitions for the new files and define them using a batch job.
2. Get an authorized user to enter the FILEPOOL DEFINE command and the FILEPOOL FORMAT command.
3. Modify CICSTART or you will lose your new definitions when you restart your CICS system.

You receive a condition code of 8 for the delete control statements if the VSAM data sets do not exist. You receive a condition code of 0 for the define cluster control statements if the job runs correctly.

Modifying TD queues for IMPORT and EXPORT commands

The REXX Development System uses dynamic allocation to IMPORT members from a partitioned data set or to EXPORT RFS files to a partitioned data set.

The CICRDOD member in the CICSTS52.REXX.SCICJCL data set defines three transient data entries used as input for IMPORT and three transient data entries for output for EXPORT, so that three users can concurrently IMPORT and three users can concurrently EXPORT from and to partitioned data sets.

Modify the number of TDQ entries to suit your requirements, but allow for at least one input and one output entry. The TDQUEUE NAME must begin with REX and be suffixed with a valid character. Do not have other applications using TDQUEUE names that begin with REX, because IMPORT and EXPORT use them and can cause files to become corrupted.

Modifying SQL definitions used for authorizing transactions to use DB2

The CICRDOD member in the CICSTS52.REXX.SCICJCL data set authorizes the REXX, EDIT, FLST, and DXB0 transactions to use the DB2 plan.

The first three of these transactions are REXX for CICS transactions and the DXB0 transaction is added if you have OfficeVision/MVS and want to use DB2 interface calls that might run under the OV/MVS transaction ID. If you choose to modify the supplied transactions for the REXX Development System, you must modify the DB2 entry definitions also.

If you implement new transactions that use the DB2 interface code, also add these DB2 entry definitions to your resource definition group.

Binding the CICSQL program to your DB2 plan

The CICBIND job in the CICSTS52.REXX.SCICJCL data set binds CICSQL to the correct DB2 package. Edit and run the job.

You might receive condition code 4 for the job depending on the level of DB2 being used.

Concatenating special exec data sets used by the REXX Development System

The REXX Development System uses three data set concatenations that do not have resource definitions in CICS. They are the CICCMDS, CICEXEC, and CICUSER DD names. These data sets are partitioned data sets and are accessed using MVS facilities.

CICCMDS
: The CICCMDS DD name concatenation starts by referencing the CICSTS52.REXX.SCICCMDS data set. This data set contains the execs that implement REXX Development System authorized commands. Only authorized users or execs authorized to use authorized commands can access these execs. If you choose to extend the REXX Development System with your own authorized commands, concatenate your data set to this DD name concatenation.

CICEXEC
: The CICEXEC DD name concatenation starts by referencing the CICSTS52.REXX.SCICEXEC data set. This data set contains the execs that are supplied by the REXX Development System that use authorized commands. If you choose to extend the REXX Development System with your own execs that use authorized commands, concatenate your data set to this DD name concatenation.

CICUSER
: The CICUSER DD name concatenation starts by referencing the CICSTS52.REXX.SCICUSER data set. This data set contains the execs that are supplied by the REXX Development System that do not use authorized commands. If you choose to extend the REXX Development System with your own execs that do not use authorized commands, concatenate your data set to this DD name concatenation.

The facilities used to access these data set concatenations use CICS WAIT EXTERNAL capabilities to avoid placing the CICS region into a wait.

Adding DD statements to your CICS startup job

Add the following DD statements to your CICS startup job:

```
//CICAUTH  DD    DSN=CICSTS52.REXX.SCICCMDS,DISP=SHR
//CICEXEC  DD    DSN=CICSTS52.REXX.SCICEXEC,DISP=SHR
//CICUSER  DD    DSN=CICSTS52.REXX.SCICUSER,DISP=SHR
```

A DD statement for the REXX data sets must also be added to the DFHRPL concatenation.

```
//DFHRPL   DD    DSN=CICSTS52.REXX.SCICLOAD,DISP=SHR
```

Identifying special user IDs and their usage

Use external security in the CICS environment. External security is required because individual user's information is maintained by the REXX Development System by the user ID designation.

Each user must be uniquely identified and each user must be signed on to the REXX Development System only once. Two users with the same user ID operating at the same time can create unusual results.

If a user is not signed on to the CICS region, then the special user ID of "*RCUSER*" is used to access the RLS and RFS facilities.

Authorized users are identified to the REXX Development System through the AUTHUSER command. This command is an authorized command and can be used only by an authorized user or an exec that is authorized to use authorized commands. CICSTART is such an exec because it is in the CICEXEC DD name concatenation.

Modify the CICSTART member, in the supplied data set CICSTS52.REXX.SCICEXEC, to contain an AUTHUSER statement to identify at least one user ID that is an authorized user. Add the AUTHUSER statement after the existing AUTHUSER statement for RCUSER. For example:

```
'AUTHUSER RCUSER'     IF RC ¬= 0 THEN EXIT RC     'AUTHUSER your-userid'     IF RC ¬= 0 THEN EXIT RC
```

You can also call another exec, in the CICEXEC concatenation, which can contain the user IDs of the authorized users.

Customizing the CICSTART member

The CICSTART member, in CICSTS52.REXX.SCICEXEC data set, contains default definitions for the REXX Development System. CICSTART runs when the first transaction that uses the CICREXD program is issued, after the CICS system starts. Update the CICSTART member with any changes in customization, if those changes are required across CICS executions.

With the REXX Development System, you can run programs in either pseudo-conversational or conversational mode. The system default for conversational mode is specified by the SETSYS PSEUDO statement in the CICSTART member, in the CICSTS52.REXX.SCICEXEC data set. The default supplied allows you to use the pseudo-conversational mode. CICSTART must run in conversational mode because the system has not yet been fully initialized to ensure correct operation.

The CICSTART member also contains EXECLOAD commands that are commented as shipped. Execs using EXECLOAD reduce the amount of storage used by the REXX Development System because users share the same exec. Performance might improve because these execs are not loaded into CICS memory each time they are run. Execs using EXECLOAD are always used before other execs. Name your programs carefully because, if you have two execs with the same name, one which resides in your RFS current directory, and one of which uses EXECLOAD, you cannot run your RFS copy. The authorization associated with special DD names is maintained when execs are loaded using EXECLOAD from DD name concatenations.

Formatting the RFS filepools

Follow the steps to format the RFS filepools.

1. Prepare the filepools for use by entering the command: `'FILEPOOL FORMAT pool1'`, where *pool1* is substituted by the filepool name you specified in the CICSTART exec. The command is entered as shown, including the apostrophes. The interactive environment echoes each command at the next available line on the screen and any requested output is also displayed. The `FILEPOOL FORMAT` command does not display any information. To determine whether the `FILEPOOL FORMAT` command worked successfully, enter `"SAY RC"`. If a `"0"` is displayed on the next available line, the `FILEPOOL FORMAT` command was successful.
2. Continue this process until all RFS filepools have been formatted. You have to format the filepool only when a new filepool has been defined or if you delete and redefine the clusters for an existing filepool.
3. Optional: If, in the process of formatting the filepools or interactively running REXX or REXX/CICS commands and instructions, you fill the screen, a `"MORE"` indicator appears at the bottom-right corner. To clear the screen, press the ENTER key. To clear the screen of data, press the CLEAR key. To exit from the interactive environment, press the F3 key, which simulates the entering of the `"EXIT"` REXX instruction. You can also enter the `"EXIT"` instruction.
4. Optional: The interactive environment also provides for the recall of previously entered commands. Press the RETRIEVE key. The system has a default setting for this key of F12. You can customize this setting by using the SETSYS RETRIEVE command. Pressing the RETRIEVE key causes the previously entered line to be redisplayed at the input location. You can then modify this area if required and rerun the instruction by pressing ENTER. Pressing the RETRIEVE key multiple times brings the next previously entered command to the input area.

Activating the online HELP facility and accessing documentation

You can use an online HELP facility as an example of the REXX/CICS panel. It allows you to search and display the LIST3270 manual that is supplied with the product. Perform the following steps sequentially to activate the online help.

In these steps, if PTF maintenance has been applied that affects data sets for this procedure, use the target library. Otherwise, use the distribution library.

1. Modify the CICSTART member in the CICSTS52.REXX.SCICEXEC data set to reflect the correct RFS filepool and path where the online help files are. If you choose to use the default, no changes to CICSTART are necessary.
2. Copy the supplied CICSTS52.REXX.SCICDOC data set to a data set with a highest level data set qualifier that matches the user ID of the user who runs the CICHPREP exec. The reason for this is that the supplied security exit for the REXX/CICS IMPORT and EXPORT commands checks the highest level qualifier and it must match the user ID for the user who issues the IMPORT command.
3. Copy the supplied CICSTS52.REXX.SCICPNL data set to a data set with a highest level data set qualifier that matches the user ID of the user who runs

the CICHPREP exec. This data set contains the panel definitions that are used by the online help. They must be IMPORTed into the RFS filepool and path defined for the online help.

4. Sign onto REXX/CICS using the REXX transaction ID. If you have changed the default transactions, this transaction ID is the one associated with the CICRXTRY exec. Issue the EXEC CICHPREP command. Follow the instructions issued by the exec. This exec reads the LIST3270 format of the manual from the data set you name into the RFS directory specified in CICSTART. It also splits the manual into multiple files for use by the online help. Additionally, the panels used by the online help are imported into the RFS system.

The online HELP facility is now ready for use.

The user can access the online HELP in several ways:

- Enter 'HELP' on the command line from the interactive environment to display a table of contents. You can also enter this command from the command line of the REXX/CICS editor or the REXX/CICS filelist.
- Enter 'HELP xxxxx' to search the INDEX of the manual for the xxxxx entry. If found, you are taken directly to that section of the manual.
- Use a HELP key defined for the editor and the filelist. It is defined in the customizing macros for the editor and the filelist. The supplied default for this key is F1. You can choose to modify the supplied default by modifying these profiles.

Accessing the supplied softcopy documentation

The supplied CICSTS52.REXX.SCICDOC data set contains two members:

- The CICR3270 member contains the manual in LIST3270 format, a format that has an 80-character record length. CICR3270 is used as input by the online help facility.
- The CICR3820 member contains the manual in LIST3820 format. The CICBPRNT job in the CICSTS52.REXX.SCICJCL data set contains a sample job, that prints the manual to a device that supports LIST3820 formatted data.

Chapter 46. Setting up a CICSPlex SM address space (CMAS)

Perform these steps to make a CICSPlex SM address space (CMAS) operational.

For a summary of the CMAS setup tasks that you use while performing them, see "CICSPlex SM setup checklist and worksheets" on page 13.

Before you set up a CMAS

Check your initialization values, changes between releases, release level compatibility and maintenance you might need to apply to your system.

Check the IEASYSxx member of SYS1.PARMLIB that you use for MVS initialization and make note of the initialization values that are referenced during installation. For details about the initialization values, see "Noting IEASYSxx values for CICSPlex SM" on page 125.

If you are converting your CICSPlex SM system or systems from a previous release to CICSPlex SM for CICS TS for z/OS, Version 5.2, read the upgrading information for your level of CICSPlex SM.

A CICSPlex SM CMAS runs only in a CICS system at the same release level. For example, a CICS TS 5.2 CMAS runs only in a CICS TS 5.2 region. During startup, the CMAS checks the CICS release level and ends with message EYUXL0142 if the releases do not match. Managed CICS CICS systems do not have the same restriction.

For details about applying corrective or preventive maintenance to CICSPlex SM, see Chapter 36, "Applying service to CICS Transaction Server for z/OS," on page 241.

Take note of the information in CICSPlex SM address space (CMAS) about appropriate uses of a CMAS.

CICSPlex SM auxiliary storage usage

When a CMAS is initialized, up to nine MVS data spaces are created.

CICSPlex SM uses these dataspaces to allow quick access to data from a CMAS and the MASs attached to it. Although the data spaces are logically owned by the CMAS, they are physically owned by the ESSS address space (EYUX520). The data spaces are deleted when the CMAS, which logically owns the data spaces, and all local MASs that are attached to that CMAS are stopped. The data spaces are re-created when the CMAS is initialized again.

The size of the data spaces depends on the amount of work (such as end-user interface, workload management, MAS resource monitoring, and real-time analysis processing) that the CMAS is performing and the number of MASs connected to the CMAS. The size ranges from 20 MB of storage in a relatively idle CICSPlex SM configuration to well over 100 MB of storage in a configuration that is complex in both the number of MASs and the amount of work requested. If you do not prepare for such an increase in storage usage, you might encounter auxiliary storage shortages when you first start to use CICSPlex SM.

As an effort to prevent such auxiliary storage shortages, ensure that your auxiliary storage can handle an increase of 100 MB of storage in the environment. Additionally, you can monitor CICSPlex SM's dataspace use by using an external monitor package to determine the amount of storage the EYUX520 job uses.

If you contact IBM support personnel because of auxiliary storage shortages, you might be asked to use CICSPlex SM online debugging transactions (COD0 and CODB) to evaluate the storage use of EYUX520. For information about the COD0 and CODB transactions, see Using the interactive debugging transactions (COD0 and CODB)l.

If auxiliary storage shortages do occur, you can alleviate the problem by either dynamically increasing your auxiliary storage capability or by causing CICSPlex SM to free the allocated data spaces:

1. To dynamically increase auxiliary storage capacity, allocate an additional page data set, and then use the MVS console command PAGEADD to make the new page data set available.
2. To cause CICSPlex SM to free the allocated data spaces, first stop the CICSPlex SM agent in all local MASs connected to the CMAS. To stop the agent, use the COSH transaction for each MAS or, if the MAS is a WUI server, use the COVC and COSH transactions.

   If a local MAS is acting as a CICSPlex SM WLM TOR, and the DTR program is specified as EYU9XLOP for that MAS, you must change the DTR program from EYU9XLOP before you can use the COSH transaction against that MAS. For example, you can change it to the IBM default program DFHDYP.
3. After the CICSPlex SM agent is stopped in all local MASs, stop the CMAS itself using the COSD transaction.
4. After the auxiliary storage capability is increased, you can restart the CMAS. To reconnect any local MASs that remained active after the CICSPlex SM agent was stopped, run the COLM transaction in those CICS regions.

You can run COLM using a modify command from the CONSOLE.

Preparing to transmit generic alerts to IBM Tivoli NetView

You can have the real-time analysis (RTA) component of CICSPlex SM transmit generic alerts to an IBM Tivoli® NetView system when one or more user-defined conditions occur during analysis.

To be sure that an IBM Tivoli NetView system is ready to receive the alerts, use the NPDA command:

```
DFILTER AREC
```

This command verifies that the Event Type record IMPD is being passed to the IBM Tivoli NetView database in the IBM Tivoli NetView system.

The resulting list shows an ACTION of PASS for ETYPES of IMPD and RSLV.

If you need to add these record types to the filter, you can issue the following NPDA commands:

```
SRFILTER AREC PASS E IMPD
SRFILTER AREC PASS E RSLV
```

If the name of the IBM Tivoli NetView Alert Receiver has been changed from the default value (NETVALRT), you can use the CICSPlex SM system parameter

ALERTRCVR to specify the required name. See Chapter 49, “CICSPlex SM system parameters,” on page 357 for details of the ALERTRCVR parameter.

Preparing to start a CMAS

You can start a CICSPlex SM address space (CMAS) during the IPL of an MVS system, from the system console, or as a batch job.

- To start a CMAS during the IPL of an MVS system, complete the following steps:
  - Verify that the CMAS startup procedure is in a system procedure library, such as SYS1.PROCLIB.
  - Verify that the CMAS startup procedure is in the 'Started Tasks' table of the external security manager (ESM).
  - Change the COMMNDaa member that is referenced by the IEASYSxx member of SYS1.PARMLIB, as described in “Noting IEASYSxx values for CICSPlex SM” on page 125, to include a START command for the CMAS.

    The START command to be included is described in “START command for a CMAS” on page 317.
- To start a CMAS from the system console, complete the following steps:
  - Verify that the CMAS startup procedure is in a system procedure library, such as SYS1.PROCLIB.
  - Verify that the CMAS startup procedure is in the 'Started Tasks' table of the external security manager (ESM).
  - Have the operator issue the START command described in “START command for a CMAS” on page 317.
- To start a CMAS as a batch job, complete the following steps:
  - Verify that the CMAS startup procedure is in a system procedure library, such as SYS1.PROCLIB.
  - Construct a job stream to invoke the CMAS procedure.
  - Submit the job to invoke a CMAS.

Whichever method you use to start a CMAS, you must verify that the procedure references the appropriate parameters:

- CICS SIT parameters, as described in “CMAS-related CICS system initialization parameters” on page 311.
- CICSPlex SM startup parameters, as described in Chapter 49, “CICSPlex SM system parameters,” on page 357.

The purpose of the CMAS is to manage a managed application system (MAS), so it is important that the CMAS runs at a higher dispatching priority than any MAS in the sysplex. The CMAS communicates with other CMASs that it is connected to; these CMASs need to run at an equal dispatching priority, so that a CMAS on one LPAR does not process and send information out faster than other CMASs that need to receive that data. Therefore, define the CMAS jobs to the MVS service class SYSSTC. Failure to do so can result in severe performance problems for CICSPlex SM.

After you start a CMAS for the first time, you must configure the CMAS to your environment. This configuration includes establishing the CICSplexes that the CMAS is to manage, and any communication links that are required between this CMAS and another CMAS.

A sample procedure that you can use to start a CMAS is supplied in the EYUCMASP member. This member was generated when you ran the DFHISTAR job. The member is stored in the library that you specified on the LIB parameter of the DFHISTAR job.

You must create the data sets for this CICS region. JCL to create the CICS region data sets for the CMAS is supplied in the EYUCMSDS member of CICSTS52.CPSM.XDFHINST. This member was generated when you ran the DFHISTAR job.

Figure 22 illustrates segments of the EYUCMASP procedure that highlight the additional CICSPlex SM requirements.

```
//EYUCMASP  PROC DSNCSD=CICSTS52.CPSM.CMAS01.DFHCSD, CSD Data Set name
//             DSNTBL=CICSTS52.CPSM.RGNLOAD, CICS Table Module library
//             RGNHLQ=CICSTS52.CPSM.CMAS01,             CICS Region DSN qualifier
//             CICSHLQ=CICSTS52.CICS
//             CPSMHLQ=CICSTS52.CPSM
//             PRMLIB=CICSTS52.XDFHINST
//             CICSPRM=EYUCMSSP,               CPSM Parameters
//             CPSMPRM=EYUCMS0P
//CICS    EXEC PGM=EYU9XECS,              CMAS Startup program
//             PARM='SYSIN',              CICS Parameters location
//             REGION=0K                  Region Size
//*
//STEPLIB  DD DISP=SHR,DSN=&CPSMHLQ..SEYUAUTH
//         DD DISP=SHR,DSN=&CICSHLQ..SDFHAUTH
//DFHRPL   DD DISP=SHR,DSN=&CPSMHLQ..SEYULOAD
//         DD DISP=SHR,DSN=&CICSHLQ..SDFHLOAD
//SYSIN    DD DISP=SHR,DSN=&PRMLIB,(&CICSPRM)

 ⋮
//EYULOG   DD SYSOUT=*

 ⋮
//EYUDREP  DD DISP=SHR,DSN=CICSTS52.CPSM.EYUDREP.cmasname
//EYUPARM  DD DISP=SHR,DSN=&PRMLIB(&CPSMPRM)
```

Figure 22. CMAS-specific JCL requirements

Review the following statements in the sample JCL that are illustrated in Figure 22. Verify that the JCL has been modified as follows:

EXEC PGM=EYU9XECS statement
: Starts the CMAS and either verifies the existence of, or creates, the ESSS. EYU9XECS, the CMAS startup program, must be run so that the CMAS initializes.

STEPLIB DD statement
: Includes the CICSTS52.CPSM.SEYUAUTH authorized load library.

DFHRPL DD statement
: Includes the CICSTS52.CPSM.SEYULOAD load library. Include the load library that contains the CICS resource definition table load modules. These must be link-edited into a user-supplied load library, which you specify in the DFHRPL concatenation.

: Do not include application load libraries in the DFHRPL concatenation.

SYSIN DD statement
: Identifies the library member that contains the CICS system initialization override parameters.

`EYULOG DD` statement
Identifies the log to which messages from the CMAS and its associated managed application systems (MASs) are to be directed.

When you are using a sequential data set for the EYULOG, allocate three primary cylinders and one secondary cylinder.

`EYUDREP DD` statement
Identifies the library to be used as the data repository by the CMAS, where *cmasname* is the name you specified for the CMASNAME parameter on the DFHISTAR job. The CMASNAME value is used by EYU9XDUT to create the CICSPlex SM data repository.

`EYUPARM DD` statement
Identifies the library that contains the CICSPlex SM system parameters.

Creating and managing the CICSPlex SM data repository

Use the EYUCMSDS postinstallation job to create the CICSPlex SM data sets. The EYUCMSDS job is generated when you run the DFHISTAR job.

"CICSPlex SM postinstallation members" on page 250 describes how to create a simple CICSPlex SM configuration. The EYUCMSDS job is stored in the library that you specified on the LIB parameter of the DFHISTAR job.

The alternate data repository file definition, EYUDREPN, is used by the CMAS in situations where logging are not needed. The current functions that bypass logging are importing or adding a CICSplex, and removing or deleting a CICSplex. In these situations, no backout is necessary, therefore no logging is required. Do not modify the recovery attributes of the EYUDREPN file definition.

The EYUDREP file definition is created dynamically during PLTPI by EYU9XLCD in the CMAS and specifies attribute LSRPOOLID(1). The CMAS does not create LSRPOOL 1, and if it does not exist, CICS file control DFHFCL calculates the size of LSRPOOL 1 and dynamically creates it when the EYUDREP is first opened in the CMAS. You can choose instead to define your own specifications for LSRPOOL 1 in the DFHCSD. If you choose to define your own LSRPOOL 1, monitor LSRPOOL 1 usage statistics to ensure adequate performance for the CMAS.

Creating the CICSPlex SM data repository

The CMAS-related data set is the data repository. Each CMAS must have a unique data repository associated with it. The data repository contains the CICSPlex SM administration definitions applicable to its associated CMAS.

The data repository is a critical component of CICSPlex SM system management. You must take regular backups that are associated with each CMAS in your environment.

The data repository is defined to CICS as being a recoverable file that participates in SYNCPOINT and SYNCPOINT ROLLBACK operations. The CMAS must have a CICS system log so that these operations work correctly. Do not, therefore, run a CMAS with a system log that is defined as type DUMMY because you will compromise data integrity on the CICSPlex SM data repository.

To create the data set that contains the data repository, you can use the EYUCMSDS postinstallation job.

If you are running multiple CMASs in the same MVS image, you must create a data repository for each CMAS. You can edit and resubmit the DFHISTAR job, which generates the EYUCMSDS postinstallation job.

To ensure that you do not overwrite your existing customized jobs, you can use the SELECT parameter, as described in Chapter 46, “Setting up a CICSPlex SM address space (CMAS),” on page 299. Alternatively, if you prefer not to resubmit DFHISTAR, you can edit the EYUCMSDS job, giving the SYSIDNT and CMASNAME parameters unique names each time you run the job.

The EYUCMSDS job includes the following steps relating to the creation of the data repository:

DELDREP
: This step deletes the data repository set. It allows you to resubmit the job.

DEFDREP
: This step allocates the VSAM KSDS cluster for the data repository data set:

```
dsindex.EYUDREP.cmasname
```

dsindex
: Is defined by the DSINFO parameter of the DFHISTAR job.

cmasname
: Is defined by the CMASNAME parameter of the DFHISTAR job.

CICSPlex SM does not support VSAM records that span control intervals. Make sure that the IDCAMS job that you use to create a CICSPlex SM data repository does not specify the SPANNED parameter. Accept the IDCAMS default of nonspanned records.

DREPINIT
: This step is used to set up the data repository for a CICS TS for z/OS, Version 5.2 CMAS.

The DREPINIT step is generated in the EYUCMSDS job if you did not specify a value with the OLDDREP parameter when you ran the DFHISTAR job. This step runs EYU9XDUT to initialize the new data repository that was allocated by step DREPALOC. The new data repository does not contain any records from a previous version of CICSPlex SM. The EYU9XDUT utility uses the following parameters for step DREPINIT:

CMASNAME=xxxxxxxx

- You cannot change this name after the data repository is initialized.
- This name must be unique in the CICSPlex SM environment. Do not use the same name as that of another CMAS, a CICSplex, a CICS system, or a CICS system group.
- Position 1 must be alphabetic or national, and cannot be numeric.
- Positions 2 through 8 can be alphabetic, national, or numeric.

SYSID=xxxx

- You cannot change this identifier after the data repository is initialized.
- This value must match the SYSIDNT (SIT parameter) for the CMAS; see “CMAS-related CICS system initialization parameters” on page 311.

- This value must not be the same as the SYSID for any other CMAS or CICS system that is defined to CICSPlex SM.
- Positions 1 through 4 can be alphabetic, national, or numeric.

TIMEZONE=x
x must be a single alphabetic character (B through Z), representing one of the Greenwich time zone codes.

ZONEOFFSET=nn
nn must be a two-digit numeric value (00 through 59), representing an adjustment (offset) to the TIMEZONE.

DAYLIGHT=x
x must be a single character (Y or N), representing daylight saving time.

The DREPINIT step requires a DD statement for EYUXDPRM, which sets up the WUI parameters:

WUI=YES|NO
The default of WUI=YES creates the CICSPlex SM resource definitions required to start a WUI server and its CICSplex.This parameter allows you to create the resource definitions required to start a WUI server and its CICSplex when you create the data repository. To add a WUI to an existing system, use the EYU9XDBT or BATCHREP utilities.

WUIAPPLID=xxxxxxxx
xxxxxxxx must be alphabetic, national, or numeric characters, specifying the APPLID allocated to a WUI. The first character must be alphabetic or national. This parameter is mandatory if WUI=YES is specified.

WUINAME=xxxxxxxx
xxxxxxxx must be alphabetic, national, or numeric characters, specifying the name allocated to a WUI. The first character must be alphabetic or national. If WUINAME is not specified, it takes the value specified for WUIAPPLID.

WUIPLEX=xxxxxxxx
xxxxxxxx must be alphabetic, national, or numeric characters, specifying the name allocated to a WUI CICSplex. The first character must be alphabetic or national. The default is created from the characters WUIP, followed by the CMSSYSID. For example, using the default CMSSYSID, CM01, the default WUIPLEX name is WUIPCM01.

WUISYSID=xxxx
xxxx must be alphabetic, national, or numeric characters, specifying the name allocated to a WUI system identifier. The first character must be alphabetic or national. This parameter is mandatory if WUI=YES is specified.

DREPCNVT
This step is generated if you specified the name of an existing data repository on the OLDDREP parameter. This step runs EYU9XDUT to convert existing data repository records from a previous release of CICSPlex SM for use by CICSPlex SM for CICS TS for z/OS, Version 5.2. All the records from the input data repository specified on the OLDDREP parameter are added to the new data repository that was allocated by step

DREPALOC. The input data repository is not modified. The EYU9XDUT utility uses the following parameter for step DREPCNVT:

TARGETVER=0520
0520 represents the version of the new output data repository.

See "CMAS-related CICS system initialization parameters"

Populating the CICSPlex SM data repository

You can use the CICSPlex SM-supplied extract routine EYU9BCSD to generate CICSPlex SM resource definition records for each CSD record identified in your input file.

The output from EYU9BCSD is used to populate the data repository.

For more information about EYU9BCSD, see Output from EYU9BCSD.

CMAS-related CICS system initialization parameters

The EYUCMSSP member is supplied, uncustomized, in TDFHINST and, customized by DFHISTAR, in XDFHINST. This contains the CICS system initialization parameters for a CMAS.

Table 22 identifies the CMAS-related CICS system initialization parameters and their default settings.

1. When the second column in the table contains an asterisk, before you start a CMAS supply your own value for the parameter listed in the first column.
2. When the second column of the table does not contain an asterisk, do not change the value of the parameter in the first column.

Table 22. CICS system initialization parameters for a CMAS

Parameter	Your value	Explanation
AIEXIT=DFHZATDX		z/OS Communications Server terminal autoinstall program.
APPLID=	*	z/OS Communications Server application ID for this CICS, which is acting as a CMAS. Used as CMAS name when NAME(*value*) is not specified as a CICSPlex SM system parameter.
AUXTR=ON		Auxiliary trace - exception records.
AUTORESETTIME=YES		Time-of-day synchronization.
AUXTRSW=NEXT		No continuous auxiliary trace switching.
CICSSVC=216	*	CICS SVC installed in LPA.
CPSMCONN=CMAS		Initialize this region as a CMAS.
CSDACC=READWRITE		Enable read and write updates to CSD.
CSDRECOV=ALL		CSD forward recovery and backout.
DFLTUSER=CICSUSER	*	Non-CESN RACF user ID.
DSALIM=5M		Limit of DSA storage below 16 MB. 5 MB is a minimum initial value.
DUMPDS=A	*	Transaction dump data set.
DUMPSW=NEXT	*	Switch to next transaction dump data set.

Table 22. CICS system initialization parameters for a CMAS (continued)

Parameter	Your value	Explanation
EDSALIM=800M		Limit of EDSA storage above 16 MB but below 2 GB. See "Controlling CICS storage in a CMAS" on page 316 for additional information.
FCT=NO		No file control table.
GMTEXT='CICSPlex System Manager CICS Transaction Server for z/OS'	*	Default logon message.
GRPLIST=DFHLIST		CICS group list. See "Overriding the dynamically created CICS resource definitions for CICSPlex SM" on page 260 for additional information.
ICV=100		Region exit interval.
ICVR=20000		Runaway task interval. For a CMAS running on a small processor and having a large number of resources defined through BAS, this value can be increased to about 90000.
ICVTSD=0		Terminal scan delay interval.
INTTR=ON		Activate main storage trace.
IRCSTRT=YES		IRC started at system initialization.
ISC=YES		Load programs required for interregion or intersystem communications during initialization.
MXT=500		Maximum tasks to exist. See "Controlling CICS storage in a CMAS" on page 316 for additional information.
PSTYPE=NOPS		No persistent sessions for CMAS
RENTPGM=PROTECT		Specifies that CICS allocates ERDSA from readonly key 0 protected storage.
SEC=NO	*	Indicates whether CICS external security checking is performed for this CMAS. The CICS security checking is independent of the CICSPlex SM external security checking, which is controlled with the CICSPlex SM SEC system parameter, as specified in the EYUPARM DD. For information about the SEC CICSPlex SM system parameter for CMAS, see Chapter 49, "CICSPlex SM system parameters," on page 357. You can specify the CICS external security checking system initialization parameter in the normal way, with the other CICS security related options; for example, XTRAN and XCMD. CICS command or resource security is not appropriate in a CMAS. The XTRAN system initialization parameter is typically used to control access to the various CICSPlex SM transactions used in a CMAS.No CICSPlex SM supplied transaction definitions have CMDSEC=YES or RESSEC=YES. If this definition is changed, or the CMDSEC=ALWAYS or RESSEC=ALWAYS system initialization parameters are set in a CMAS, and a CICSPlex SM transaction receives a NOTAUTH response, results are unpredictable.
SIT=6$		System initialization table suffix.

Table 22. CICS system initialization parameters for a CMAS (continued)

Parameter	Your value	Explanation
SPOOL=YES		System spooling interface. Required when you are going to use the CICSPlex SM batched repository-update facility.
START=AUTO		You can normally specify START=AUTO and let CICS initialization decide the type of start to perform. The first time that you start a CMAS, ensure the CICS global and local catalog data sets are newly initialized. Use DFHRMUTL and DFHCCUTL respectively, with AUTOINIT on the SET_AUTO_START parameter of DFHRMUTL, to make sure that the CMAS performs an initial start, which installs the necessary CICS resource definitions and establishes CMAS-to-CMAS connections. Subsequently, you can change the type of start for a CMAS by resetting the global catalog data set, using DFHRMUTL to specify either AUTOINT or AUTOCOLD. For more information, see "Restarting a CMAS" on page 321.
SYSIDNT=	*	CICS System ID. The SYSIDNT value must match the EYU9XDUT SYSID parameter value used to initialize the data repository that is being referenced by the EYUDREP DD statement.
SYSTR=OFF		No system activity trace.
TCT=NO		No terminal control table required.
TST=NO		No temporary storage table required.
USERTR=ON		Enable user trace facility.
WRKAREA=2048		Bytes for Common Work Area.
XAPPC=NO		RACF checking of APPC sessions.
XCMD=NO		For a CMAS you must specify NO for CICS commands.
XDB2=NO		RACF checking of DB2 resources.
XDCT=NO		RACF checking of transient data queues.
XFCT=NO		For a CMAS you must specify NO for files.
XHFS=NO		Security checking of Web client access to z/OS UNIX files. For a CMAS, you must specify XHFS=NO.
XJCT=NO		RACF checking of journals.
XPSB=NO		RACF checking of DL/I PSBs.
XRES=NO		RACF checking of CICS document templates.
XRF=NO		No XRF support. The extended recovery facility (XRF) is not supported because of the way in which a CMAS uses MVS data spaces.
XTRAN=NO		RACF checking of transaction-attach.
XTST=NO		RACF checking of temporary storage queues.

Expanding the CICSPlex SM data repository

The CICSPlex SM data repository might fill up and require expansion. To expand the CICSPlex SM data repository, use the IDCAMS utility REPRO function. An example of the JCL to do this is in the EYUJXDRP member of the CICSTS52.CPSM.SEYUSAMP library.

In that JCL, on the `RECORDS(xx,yy)` statement, specify a primary (`xx`) and a secondary (`yy`) value that are appropriate for your environment. The initial values are 500 and 3000.

Taking backups of the CICSPlex SM data repository

The CICSPlex SM data repository is defined to CICS as a VSAM file called EYUDREP. Because the data set is accessed using CICS File Control, all the normal CICS methods of taking backups of VSAM data sets for disaster recovery purposes are available for use with the data repository.

You can use the following techniques for taking copies of the data repository and for restoring the data repository after a data set failure.

- Use HSM, or DSS, or other utilities to take copies while the associated CMAS is not running, possibly using the Concurrent Copy technique to reduce the time during which the repository is unavailable.
- Use HSM or DSS to take copies while the associated CMAS is running using the Backup While Open technique, and possibly also using the Concurrent Copy technique, which improves the ease of use of Backup While Open. This procedure requires a forward recovery log; see “Defining a forward recovery log for the data repository.”
- Use HSM or DSS to restore the data set after a data set failure.
- Use a Forward Recovery product, such as CICS VSAM Recovery (CICS/VR), to reapply updates that were made to the data set after the most recent copy was taken. This procedure requires a forward recovery log.
- Use remote site recovery techniques if you require an up-to-date copy of the data set at a remote site for disaster recovery purposes. This requires a forward recovery log.

The *CICS Recovery and Restart Guide* provides information on all the terms referred to above. In particular, it provides information about forward recovery logs, forward recovery, the CICS/VR product, Backup While Open, Concurrent Copy and its associated hardware prerequisites, taking backups of data sets, restoring data sets from backup copies, and remote site recovery.

Defining a forward recovery log for the data repository

You define the data repository in the CMAS as a VSAM file called EYUDREP.

CICSPlex SM provides a default definition that defines this file without an associated forward recovery log, and therefore as not eligible for forward recovery.

If you use forward recovery, you require a journal logstream. Defining and setting up CICS log streams is described in Planning log streams for use by your forward recovery logs.

If you want to use forward recovery, Backup While Open, or remote site recovery, change the definition of EYUDREP. Specify the following keywords on the definition of EYUDREP to define it as having a forward recovery log:

```
RECOVERY(ALL)
FWDRECOVLOG(nn)
```

`nn` is a number between 1 and 99.

See "Overriding the dynamically created CICS resource definitions for CICSPlex SM" on page 260 for an example of how to do this.

The default definition of EYUDREP also does not define the repository as being eligible for Backup While Open. To make the repository eligible for Backup While Open, specify the following keywords:

```
RECOVERY(ALL)
FWDRECOVLOG(nn)
BACKUPTYPE(DYNAMIC)
```

where *nn* is a number between 1 and 99.

The RECOVERY, FWDRECOVLOG, and BACKUPTYPE parameters of DEFINE FILE are described in Define FILE attributes in Reference -> System definition.

1. Do not change any keywords on the EYUDREP definition other than RECOVERY, FWDRECOVLOG, and BACKUPTYPE. In addition, you must not set RECOVERY(NONE). Setting RECOVERY(NONE) causes repository corruption after transaction or CMAS failures.
2. Do not change the recovery options of the EYUDREPN FILE definition. This definition is used when CPSM determines that Data Repository file operations do not require logging. It is usual to receive LSR pool messages for EYUDREPN during CMAS initialization and ignore them. Make sure that the CICS JCL does not have a DD statement for EYUDREPN, and do not associate EYUDREPN with a data set name.
3. If CPSM Data Repository initialization fails (as reported by message EUIXD0105E) because the EYUDREP data set requires Batch Backout (for example, CICS issues message DFHFC0921), you must recover the EYUDREP data set and then delete and redefine the CMAS Local and Global catalogs in order to reset the CICS backout required status for the data set.
4. Requesting Backup While Open for the CICSPlex SM data repository data set using the IDCAMS DEFINE CLUSTER definition in the ICF catalog is not supported.

Editing CICSPlex SM system parameters

The EYUCMS0P member, in the CICSTS52.CPSM.XDFHINST or TDFHINST data set, contains sample parameters for a CMAS; you must edit this member.

Chapter 49, "CICSPlex SM system parameters," on page 357 gives a detailed description of each parameter.

When the CMAS is to connect to a MAS for which security is active (the CICS system initialization parameter for the MAS is SEC=YES), the CMAS must have CICSPlex SM security active. When CICSPlex SM security is not activated in the CMAS, the connection between the CMAS and the MAS cannot be established. If the connection is attempted, the following message is issued to the console, the CMAS joblog, and the CMAS EYULOG:

```
EYUCR0007E  Security mismatch between CMAS cmasname and
            MAS masname. Connection terminating.
```

To activate CICSPlex SM security in the CMAS, specify the CICSPlex SM system parameter SEC(YES). The default is SEC(NO). For more information about the SEC parameter, see Chapter 49, “CICSPlex SM system parameters,” on page 357. Specifying SEC=YES in the CICS system initialization parameters for the CMAS does not affect CICSPlex SM security.

CMAS-related CICS system initialization parameters

The EYUCMSSP member is supplied non-customized in TDFHINST, and customized by DFHISTAR in XDFHINST. The member contains the CICS system initialization parameters for a CMAS.

Table 23 identifies the CMAS-related CICS system initialization parameters and their default settings.

- If the second column in the table contains an asterisk, before you start a CMAS, you must supply your own value for the parameter listed in the first column.
- If the second column of the table does not contain an asterisk, do not change the value of the parameter in the first column.

Table 23. CICS system initialization parameters for a CMAS

Parameter	Your value	Explanation
AIEXIT=DFHZATDX		z/OS Communications Server terminal autoinstall program.
APPLID=	*	z/OS Communications Server application ID for this CICS, which is acting as a CMAS. Used as CMAS name when NAME(*value*) is not specified as a CICSPlex SM system parameter.
AUXTR=ON		Auxiliary trace exception records.
AUTORESETTIME=YES		Time-of-day synchronization.
AUXTRSW=NEXT		No continuous auxiliary trace switching.
CICSSVC=216	*	CICS SVC installed in LPA.
CPSMCONN=CMAS		Initialize this region as a CMAS.
CSDACC=READWRITE		Enable read and write updates to CSD.
CSDRECOV=ALL		CSD forward recovery and backout.
DFLTUSER=CICSUSER	*	Non-CESN RACF user ID.
DSALIM=5M		Limit of DSA storage below 16 MB. 5 MB is a minimum initial value.
DUMPDS=A	*	Transaction dump data set.
DUMPSW=NEXT	*	Switch to next transaction dump data set.
EDSALIM=800M	*	Limit of EDSA storage above 16 MB but below 2 GB. For more information see “Controlling CICS storage in a CMAS” on page 316.
FCT=NO		No file control table.
GMTEXT='CICSPlex System Manager CICS Transaction Server for z/OS'	*	Default logon message.
GRPLIST=DFHLIST		CICS group list. For more information see “Overriding the dynamically created CICS resource definitions for CICSPlex SM” on page 260.
ICV=100		Region exit interval.

Table 23. CICS system initialization parameters for a CMAS (continued)

Parameter	Your value	Explanation
ICVR=20000		Runaway task interval. For a CMAS running on a small processor and having a large number of resources defined through BAS, this value can be increased to about 90000.
ICVTSD=0		Terminal scan delay interval.
INTTR=ON		Activate main storage trace.
IRCSTRT=YES		IRC started at system initialization.
ISC=YES		Load programs required for interregion or intersystem communications during initialization.
MXT=500		Maximum tasks to exist. See "Controlling CICS storage in a CMAS" on page 316 for additional information.
PSTYPE=NOPS		No persistent sessions for CMAS.
RENTPGM=PROTECT		Specifies that CICS allocates ERDSA from readonly key 0 protected storage.
SEC=NO	*	Indicates whether CICS external security checking is performed for this CMAS. The CICS security checking is independent of the CICSPlex SM external security checking, which is controlled with the CICSPlex SM SEC system parameter, as specified in the EYUPARM DD. For information about the SEC CICSPlex SM system parameter for CMAS, see Chapter 49, "CICSPlex SM system parameters," on page 357. You can specify the CICS external security checking system initialization parameter in the normal way, with the other CICS security related options; for example, XTRAN and XCMD. CICS command or resource security is not appropriate in a CMAS. The XTRAN system initialization parameter is typically used to control access to the various CICSPlex SM transactions used in a CMAS.No CICSPlex SM supplied transaction definitions have CMDSEC=YES or RESSEC=YES. If this definition is changed, or the CMDSEC=ALWAYS or RESSEC=ALWAYS system initialization parameters are set in a CMAS, and a CICSPlex SM transaction receives a NOTAUTH response, results are unpredictable.
SIT=6$		System initialization table suffix.
SPOOL=YES		System spooling interface. Required when you are going to use the CICSPlex SM batched repository-update facility.

Table 23. CICS system initialization parameters for a CMAS (continued)

Parameter	Your value	Explanation
START=AUTO		You can normally specify START=AUTO and let CICS initialization decide the type of start to perform. The first time that you start a CMAS, ensure the CICS global and local catalog data sets are newly initialized. Use DFHRMUTL and DFHCCUTL respectively, with AUTOINIT on the SET_AUTO_START parameter of DFHRMUTL, to make sure that the CMAS performs an initial start, which installs the necessary CICS resource definitions and establishes CMAS-to-CMAS connections. Subsequently, you can change the type of start for a CMAS by resetting the global catalog data set, using DFHRMUTL to specify either AUTOINT or AUTOCOLD. For more information see "Restarting a CMAS" on page 321.
SYSIDNT=	*	CICS System ID. The SYSIDNT value must match the EYU9XDUT SYSID parameter value used to initialize the data repository that is being referenced by the EYUDREP DD statement.
SYSTR=OFF		No system activity trace.
TCT=NO		No terminal control table required.
TST=NO		No temporary storage table required.
USERTR=ON		Enable user trace facility.
WRKAREA=2048		Bytes for Common Work Area.
XAPPC=NO		RACF checking of APPC sessions.
XCMD=NO		For a CMAS you must specify NO for CICS commands.
XDB2=NO		RACF checking of DB2 resources.
XDCT=NO		RACF checking of transient data queues.
XFCT=NO		For a CMAS you must specify NO for files.
XHFS=NO		Security checking of Web client access to z/OS UNIX files. For a CMAS, you must specify XHFS=NO.
XJCT=NO		RACF checking of journals.
XPSB=NO		RACF checking of DL/I PSBs.
XRES=NO		RACF checking of CICS document templates.
XRF=NO		No XRF support. The extended recovery facility (XRF) is not supported because of the way in which a CMAS uses MVS data spaces.
XTRAN=NO		RACF checking of transaction-attach.
XTST=NO		RACF checking of temporary storage queues.

Controlling tasks in a CMAS

Many operations in a CMAS are run by multiple asynchronous tasks, in particular a number of tasks that are performed between CMASs in a CMAS network.

Operations such as data repository synchronization, workload management state sharing and single system image can result in a number of interdependent asynchronous tasks being established or used to run the request. The number of tasks that can be used is based on other factors, such as the size of a CMAS network, how many MASs are being managed, how many CICSplexes are defined, how much API activity is performed, the scope of WUI/API/RTA requests and all the major functions offered by CICSPlex SM.

Although a CMAS can self-regulate its tasking model and has tolerance of delayed requests and responses through timeout mechanisms, maximum user tasks (MXT) does not apply to controlling an interdependent multitasked asynchronous tasking model. Set inappropriately, you might also experience WUI hanging for long durations if one or more of the asynchronous tasks required to run the requested function is delayed waiting for an MXT slot. Set MXT to avoid delays in task attachment.

As task usage in a CMAS grows with the additional requirements that are placed on it, for example, increased use of the API, more CMASs, more MASs, and new function use, set the MXT value to a level that continues to avoid MXT delays.

Monitor any MXT value for its relationship against the task activity in each CMAS at regular intervals. If the CMAS is starting to experience MXT delays, adjust the MXT value to avoid these delays.

To monitor the tasking activity in an individual CMAS, collect and study the statistics generated by the CICS system that underlies the CMAS that it hosts. CICS transaction manager global statistics contain information on the effect the MXT value has on task attachment.

Creating and customizing CMAS data sets

DFHISTAR allows you to create and customize your CMAS data sets, according to the parameters you set when you submit the DFHISTAR job.

DFHISTAR postinstallation members for a CMAS

When you run DFHISTAR, with a SCOPE of POST or ALL, it creates the following postinstallation members for a CMAS in the XDFHINST library:

- EYUCMSDS – creates and initializes all the data sets for a CMAS. EYUCMSDS includes steps to delete the data sets so that you can rerun the job, if required. These deletions are expected to fail the first time you run the job. EYUCMSDS contains the following steps:
  1. DELDREP and DEFDREP delete and define a new CMAS data repository.
  2. DREPINIT is included if you do not specify the DFHISTAR OLDDREP parameter. It initializes the new CMAS data repository using the EYU9XDUT utility. EYU9XDUT creates records on the data repository to define the CMAS and, by default, a WUI CICSplex. A WUI CICSplex is not created if you specify the DFHISTAR WUI=NO option.
  3. DREPCNVT is included if you specify the name of an existing data repository using the DFHISTAR OLDDREP parameter. It copies all the records from the existing repository to the new data repository, upgrading them to a format suitable for the CICS TS for z/OS, Version 5.2 release.
  4. DELREGDS deletes the CICS data sets.
  5. DEFTRACE defines the CICS auxiliary trace data sets, DFHAUXT and DFHBUXT.
  6. DEFHTML defines the CICS DFHHTML data set.

7. DEFDMPS defines the CICS transaction dump data sets, DFHDMPA and DFHDMPB.
8. DEFTSTD defines the CICS auxiliary temporary storage data set, DFHTEMP.
9. DEFINTD defines the CICS intrapartition transient data set, DFHINTRA.
10. DEFLCD defines the CICS local catalog, DFHLCD.
11. INITLCD uses the DFHCCUTL utility to initialize the CICS local catalog.
12. DEFGCD defines the CICS global catalog, DFHGCD.
13. INITGCD uses the DFHRMUTL utility to initialize the CICS global catalog.
14. DEFLRQ defines the CICS local request queue data set, DFHLRQ.
15. JES3DELA and JES3DELB are included if you specify the DFHISTAR JES=JES3 option. They delete and define the CICS DFHCSD data set.
16. DELCSD deletes the CICS DFHCSD data set.
17. DEFCSD defines the CICS DFHCSD data set.
18. INITCSD uses the DFHCSDUP utility to initialize the DFHCSD data set.

- EYUCMSSP – CICS system initialization overrides for a CMAS.
- EYUCMS0P – EYUPARM parameters for a CMAS.
- EYUCMASP – starts a CMAS.
- EYUCMASJ – JCL to start a CMAS. It runs EYUCMASP.

If you use the default values for the CICSPlex SM parameters, the EYUCMASP PROC statement is shown in the following code sample:

```
EYUCMASP  PROC DSNCSD='CICSTS52.CPSM.CMAS01.DFHCSD',
     RGNHLQ='CICSTS52.CPSM.CMAS01',
     CICSHLQ='CICSTS52.CICS',
     CPSMHLQ='CICSTS52.CPSM',
     PRMLIB='CICSTS52.XDFHINST'
     CICSPRM=EYUCMSSP,              CICS Parameters
     CPSMPRM=EYUCMS0P               CPSM Parameters
```

Customizing postinstallation jobs using DFHISTAR

You can use DFHISTAR to generate copies of the CMAS postinstallation jobs for a different CMAS. DFHISTAR has a SELECT parameter that allows you to specify a new name for a copy of a postinstallation job. It has the format:

```
SELECT jobname newname
```

jobname
Is the name of the job you want to regenerate.

newname
Is the name for the new copy.

You can specify more than one SELECT parameter to select multiple jobs to be regenerated in a single run of the DFHISTAR job. When you include a SELECT parameter in the DFHISTAR job, only those jobs specified by the SELECT are generated.

For a CMAS with the name CMAS02 and a CICS system identifier of CM02, you can change your DFHISTAR parameters to specify the following values:

```
CMASNAME CMAS02
CMSSYSID CM02
WUI YES
WUIPLEX WUIPCM02
```

```
WUINAME WUINCM02
WUISYSID WU02
SELECT EYUCMSDS CM02CMDS           JCL to create the data sets for CMAS02
SELECT EYUCMSSP CM02CMSP           CICS SIT overrides for CMAS02
SELECT EYUCMS0P CM02CM0P           CICSPlex SM EYUPARM parameters for CMAS02
```

Using these parameters, CM02CMDS includes a step to initialize the CMAS data repository with the definitions for a WUI called WUINCM02, in a CICSplex called WUIPCM02. You can then start CMAS CMAS02, using the procedure EYUCMASP, to specify these parameters:

```
START EYUCMASP, DSNCSD='CICSTS52.CPSM.CMAS02.DFHCSD',
RGNHLQ='CICSTS52.CPSM.CMAS02', CICSHLQ='CICSTS52.CICS',
CPSMHLQ='CICSTS52.CPSM', PRMLIB='CICSTS52.XDFHINST'
CICSPRM=CM02CMSP, CPSMPRM=CM02CM0P
```

If you are using EYUCMASJ to start the WUI, edit it to specify these values:

```
CICSPRM=CM02CMSP, CPSMPRM=CM02CM0P
```

Controlling CICS storage in a CMAS

A CICSPlex SM address space (CMAS) uses both MVS dataspace storage and storage provided by the CICS system that hosts the CMAS. You must set the EDSALIM value and monitor the CICS storage use in a CMAS to ensure that the CMAS operates effectively.

A CMAS is a special application dedicated to the management and control of managed application systems (MASs). A CMAS does not have a typical tasking model and uses MVS dataspace storage extensively. However, it also uses the storage provided by the CICS system that hosts the CMAS.

With an interdependent multitasked asynchronous tasking model, a CMAS relies on shared storage to communicate between the tasks and the functions being performed. Also, depending on the requirements of a CMAS, it relies heavily on shared storage to buffer requests and responses to be transmitted using CMAS-to-CMAS and CMAS-to-MAS links. The CICS system that hosts the CMAS manages this shared storage.

CICS storage use in a CMAS grows with the additional requirements that are placed on it. For example, CICS storage use increases with increased use of the API, more CMASs, more MASs, increased CMAS-to-CMAS network traffic, and new function uses.

The overall limit for the extended dynamic storage area (EDSA) is specified by the EDSALIM value. Set EDSALIM to a value that provides the CMAS with enough storage to operate unimpeded. In particular, sufficient storage for CMAS-to-CMAS and CMAS-to-MAS network traffic is critical to WUI response times, because large amounts of data might be awaiting shipment on any of the links on which a CMAS communicates.

Monitor any EDSALIM value for its effect on the storage use in each CMAS at regular intervals. If the CMAS experiences short on storage (SOS) conditions or storage fragmentation, or there is a trend towards such conditions, consider increasing the EDSALIM value to meet the storage requirements of the CMAS. Storage fragmentation below a largest free area of 64 KB can adversely affect throughput and response times.

To monitor the storage use in an individual CMAS, collect and study the statistics generated by the CMAS CICS system. CICS storage manager global statistics contain information about the overall usage of CICS storage by the CMAS that it hosts.

START command for a CMAS

The syntax of the command that you can use to start a CMAS is explained.

```
START procname [,DSNCSD=dsn][,RGNHLQ=idx][,CICSHLQ=idx] [,CPSMHLQ=idx] [,PRMLIB=lib]
[,CICSPRM=mem][,CPSMPRM=mem]
```

procname
Is the 1- to 8-character name of the procedure. EYUCMASP is the name of the sample procedure. It is supplied, uncustomized, in the TDFHINST library and, customized by DFHISTAR, in the XDFHINST library.

DSNCSD=dsn
Specifies the name of the data set that contains the CSD file for the CMAS.

RGNHLQ=idx
Specifies the high-level qualifier that is used with the DFHxxxx data sets that are unique to this CMAS.

CICSHLQ=idx
Specifies the high-level qualifier that is used with the SDFHAUTH and SDFHLOAD libraries.

CPSMHLQ=idx
Specifies the high-level qualifier that is used with the SEYUAUTH and SEYULOAD libraries.

PRMLIB=idx
Specifies the name of the library containing the members identified by CICSPRM and CPSMPRM.

CICSPRM=mem
Identifies the member that contains the CICS system initialization parameters. The EYUCMSSP sample is supplied, uncustomized, in the TDFHINST library and, customized by DFHISTAR, in the XDFHINST library.

CPSMPRM=mem
Identifies the member that contains the CICSPlex SM system parameters. The EYUCMS0P sample is supplied, uncustomized, in the TDFHINST library and, customized by DFHISTAR, in the XDFHINST library.

CMAS journaling

A CMAS can produce CICS journal records to track a variety of activities in the CICSplex. These journal records provide an audit trail that can aid in the recovery of data or the reconstruction of events that affected the CICSplex.

A journal record can be written under these circumstances:
- A definition in the data repository is added, removed, or updated.
- An operations action is issued against a MAS.
- A real-time analysis event is generated.

The journal records are stored in a 32 KB buffer and are flushed to the corresponding log streams when the buffer becomes full or when a normal shutdown of the CICS region is initiated.

To force the buffer to be flushed to a log stream when the CICS region is still active, you can specify the WAIT option on the WRITE JOURNALNAME command using EXEC CICS or the CECI transaction.

To request one or more of the record types, specify the appropriate CICSPlex SM system parameters in the startup JCL of a CMAS:

JRNLDEFCH(YES)
For data repository definition changes

JRNLOPACT(YES)
For operations actions

JRNLRTAEV(YES)
For real-time analysis events

For more information on these parameters, see Chapter 49, “CICSPlex SM system parameters,” on page 357.

If you do not want to use the default log stream name of EYUJRNL, define a JOURNALMODEL resource in the CSD that has the desired log stream name.

- To make the JOURNALMODEL resource definition available during CMAS initialization, include the JOURNALMODEL resource definition in a CSD group list. Include this group list in your CMAS startup using the system initialization GRPLIST parameter.
- To add the JOURNALMODEL resource to the CSD, either edit and run the JCL contained in sample member CICSTS52.CPSM.SEYUSAMP(EYUJRNE$) to run batch utility DFHCSDUP or use the CICS CEDA transaction.
- You must also update the CICS system initialization parameters used to start the CMAS by setting the GRPLIST parameter to reference the new group list.

The journal records produced by a CMAS contain data mapped by a DSECT called EYUBCPJR. Each record consists of a standard prefix and a variable data area. The contents of the data area are specific to the type of journal record being written.

Figure 23 on page 320 shows the format of EYUBCPJR.

```
*------------------------------------------------------------------------*
*              EYUBCPJR DSECT Prefix                                     *
*------------------------------------------------------------------------*
EYUBCPJR        DSECT
EYUBCPJR        DS   0D

CPJR_PREFIX     DS   0D                   Prefix of record
CPJR_CMASNAME   DS   CL8                  CMAS Name which produced record
CPJR_CONTEXT    DS   CL8                  Plex Name
CPJR_SCOPE      DS   CL8                  Scope Name
CPJR_USER       DS   CL8                  User Name
CPJR_STCK       DS   D                    Store clock
CPJR_VERSION    DS   H                    Current record version
CPJR_VER_ZERO   EQU  0000                 Version 0
CPJR_VER_ONE    EQU  0001                 Version 1
CPJR_VER_CURR   EQU  CPJR_VER_ONE         Current Version
CPJR_TYPE       DS   H                    Record type
CPJR_TYPE_DEFCH EQU  0001                 Definition Add/Change/Delete
CPJR_TYPE_RTAEV EQU  0002                 Rta Event
CPJR_TYPE_OPACT EQU  0003                 Operation action
CPJR_LENGTH     DS   F                    Length of entire record plus  x
                                          prefix area
                DS   FL8                  Available for use
CPJR_LEN        EQU  *-CPJR_PREFIX        Length of Prefix area
CPJR_DATA_AREA  DS   0H                   Data area

*------------------------------------------------------------------------*
*              Data record for RTA Events                                *
*------------------------------------------------------------------------*

CPJR_RTA_DATA      DS   0H
CPJR_RTA_TYPE      DS   X                     Record type
CPJR_RTATYPE_CRT   EQU  0001                  Event Created
CPJR_RTATYPE_REM   EQU  0002                  Event Removed
CPJR_RTATYPE_UPD   EQU  0003                  Event Updated
CPJR_RTATYPE_RES   EQU  0004                  Event Resolved
CPJR_RTA_GTYPE     DS   X                     Generated by type
CPJR_RTAGTYPE_SAM  EQU  0001                  Event produced by Sam
CPJR_RTAGTYPE_APM  EQU  0002                  Event produced by Apm
CPJR_RTAGTYPE_MRM  EQU  0003                  Event produced by Mrm
CPJR_RTA_EVENT     DS   CL8                   Event Name
CPJR_RTA_MSGSTRT   DS   CL30                  External Entry Message
CPJR_RTA_MSGEND    DS   CL30                  External Exit Message
CPJR_RTA_EVENTXT   DS   CL30                  Event Text
CPJR_RTA_SEVERITY  DS   CL3                   Severity Level
CPJR_RTA_DATA_L    EQU *-CPJR_RTA_DATA        Length of the record
```

```
*------------------------------------------------------------------*
*               Data record for Definition changes                 *
*------------------------------------------------------------------*

CPJR_DEF_DATA            DS   0H
CPJR_DEF_TYPE            DS   X              Record type
CPJR_DEFTYPE_ADD           EQU  0001           Definition Added
CPJR_DEFTYPE_DEL           EQU  0002           Definition Deleted
CPJR_DEFTYPE_UPD           EQU  0003           Definition Update
                           DS   X              Reserved
CPJR_DEF_MAJORNM           DS   CL8            Major Name
CPJR_DEF_MAJORID           DS   CL8            ADMIN Restype
CPJR_DEF_MAJORVR           DS   XL4            Major Version
CPJR_DEF_MAJORVR_NONE           EQU  -1             Major Version None
CPJR_DEF_MINORNM           DS   CL8            Minor Name
CPJR_DEF_MINORID           DS   CL8            ADMIN Restype
CPJR_DEF_MINORVR           DS   XL4            Minor Version
CPJR_DEF_MINORVR_NONE           EQU  -1             Minor Version None
CPJR_DEF_SYSID             DS   CL8            System Id where change       x
                                             was originated
CPJR_DEF_DATA_L            EQU *-CPJR_DEF_DATA  Length of the record

*------------------------------------------------------------------*
*               Data record for Operation commands                 *
*------------------------------------------------------------------*

CPJR_OPS_DATA      DS   0H
CPJR_OPS_LENGTH    DS   H                   Length of fixed and variable x
                                              portion of data area
CPJR_OPS_NUMFLDS   DS   H                   Number of fields
CPJR_ACTION        DS   CL12                Name of action

CPJR_RESNAME       DS   CL8                 Resource Name
CPJR_OPS_STRTENT   DS   0C                  Start of data entries
CPJR_OPS_DATA_L    EQU *-CPJR_OPS_DATA      Length of the record
*
CPJR_OPS_ENTRY     DS   0C
CPJR_OPS_FIELD     DS   CL12                Field Name
CPJR_OPS_DATALEN   DS   X                   Length of the Data
CPJR_OPS_ENTLEN    DS   X                   Length of entire entry
CPJR_OPS_FLDDATA   DS   0C                  Start of the Data
CPJR_OPS_ENT_L     EQU  *-CPJR_OPS_ENTRY    Fixed portion length
```

Figure 23. The EYUBCPJR DSECT

For information about writing a program to access and format CICS journal records, see The CICS log manager.

Shutting down a CMAS

You can shut down a CMAS using the WUI shutdown action button or the COSD transaction.

You can use the CMASSTOP command of the CODB system-level debugging transaction to shut down the CMAS, but CODB is restricted and must be used only at the request of IBM customer support personnel. Do not attempt to shut down a CMAS in these ways:

- Issue the CEMT PERFORM SHUTDOWN command against a CMAS
- Cancel the CMAS job from MVS

If you take either of these actions, the CMAS cannot shut itself down properly.

If you shut down more than one CMAS at the same time, you might receive message EYUCP0205S. In this situation, the message does not indicate a problem, and CICSPlex SM does not produce a diagnostic SVC dump as it normally would when this message is issued. You can avoid the message by staggering your CMAS shutdowns.

Using the Shutdown button

1.
   - From the main menu, click **CICSPlex SM operations views > CMASs known to local CMAS** to open the **CMASs known to local CMAS** tabular view.
   - Select the record check box beside the CMAS and click **Shutdown...**. The **Shutdown** confirmation view is displayed.
   - Click **Yes** to confirm. The **CMASs known to local CMAS** tabular view is displayed again, showing a status of INACTIVE for that CMAS.
2.
   - From the main menu, click **CICSPlex SM operations views > MASs known to CICSplex** to display the **MASs known to CICSplex** tabular view.
   - Click the CMAS name to display the **CMAS detail** view.
   - Click **Shutdown...**. The **Shutdown** confirmation view is displayed.
   - Click **Yes** to confirm. The **MASs known to CICSplex** tabular view is displayed again.

Using the COSD transaction

You can issue the transaction ID, COSD, from any terminal, including an MVS console:

```
COSD
```

Restarting a CMAS

You can restart a CMAS automatically, by performing a cold restart, or by doing an emergency restart.

Automatic restart

You can perform an automatic restart for a CMAS that you stopped normally either with the COSD transaction, or the WUI **SHUTDOWN** button. Automated restart is the preferred way of restarting a CMAS because it delegates the decision on whether to do an initial, cold, warm or emergency restart to CICS. CICS makes the decision by inspecting two records in the global catalog: the recovery manager control record, and the recovery manager autostart override record.

To do an automatic restart:

- Specify the `AUTO` option on the **`START`** system initialization parameter.

Cold restart

A manual cold restart is necessary if you have modified any of the CICS resource definitions that are used by the CMAS. You must also perform a manual cold restart if you have added or removed any of the CMAS-to-CMAS (CMTCMDEF) connection definitions.

To do a cold restart:

- Specify the `COLD` option on the **START** system initialization parameter.

Emergency restart

A manual emergency restart is necessary if a CMAS ends abnormally (in any way other than from the COSD transaction, or from using the WUI **SHUTDOWN** button). During an emergency restart, CICS performs essential backout processing. If the CMAS is registered with the MVS automatic restart manager (ARM), an emergency restart occurs automatically. If the CMAS is not registered with ARM you must perform the emergency restart yourself.

To do an emergency restart:

- Specify the `AUTO` option on the **START** system initialization parameter.

A CMAS initializes and functions properly after an emergency restart, provided that you have made no changes to the CICS resource definitions or CICSPlex SM connection definitions.

If you have made changes since the last run of the CMAS (that is, the run that ended abnormally), the CMAS might not function properly. In this situation, you must shut down the CMAS using either the COSD transaction, or the WUI **SHUTDOWN** button and restart the CMAS, specifying the **START=COLD** option. For information about shutting down a CMAS, see "Shutting down a CMAS" on page 320.

Chapter 47. Setting up a CICSPlex SM Web User Interface server

To use the CICSPlex SM Web User Interface, you work through a number of tasks, including specifying parameters, creating data sets, and setting security.

Preparing a CICS system to act as the Web User Interface server

High-level planning guidance and steps are provided to help you set up your CICS system to act as your Web User Interface server and to enable web support.

- The CICS system that you select to act as your Web User Interface server must be a dedicated CICS Transaction Server for z/OS, Version 5 Release 2 CICSPlex SM MAS connected to a CICS Transaction Server for z/OS, Version 5 Release 2 CMAS. For information about how to set up a MAS, see Chapter 48, “Setting up a CICS managed application system (MAS),” on page 345.
- Decide how many Web User Interface servers you require:
  - If you intend to support more than one national language, you require a Web User Interface server for every language you want to support.
  - You can have Web User Interface servers on multiple MVS images.
  - You can have more than one Web User Interface server for availability reasons.
  - The Web User Interface server creates and maintains state data when a user signs on using a web browser (or when an application using the data interface DATA/CONNECTs). Because of this state data, an affinity between the web browser or the application using the data interface and the server is created.

    The use of techniques like dynamic virtual IP addresses (DVIPA) or distributed DVIPA might not be able to preserve this affinity. If this affinity is not preserved, web browsers usually redisplay the sign-on screen, or data interface applications receive a BADSTUB status.
  - If the Web User Interface server has a different local IP address or name from the one used by users in their web browsers, for example, because of a firewall or another reason that causes network address translation, you can use the TCPIPHTTPHOST Web User Interface server initialization parameter to control the way the Web User Interface server generates web addresses sent to web browsers.

To set up your CICS system to act as a Web User Interface server, follow these steps:

1. Create the CICS system and confirm that it is operational using the CICS-supplied installation verification procedures.
2. Configure a separate CICSplex for your Web User Interface servers.
3. Ensure that the CMAS to which the Web User Interface connects is managing all CICSplexes to which the Web User Interface server requires access, because the Web User Interface server acts as an CICSPlex SM API application. However, the CMAS, to which the Web User Interface connects, does not have to manage any of the MASs in these CICSplexes.

If more than one CMAS is on the MVS image on which the Web User Interface server runs, consider which CMAS the Web User Interface connects to depending on which CICSplexes the CMAS is managing. You have two ways to control this connection:

- Ensure that the CICSplex to which the Web User Interface server local MAS belongs is managed only by the CMAS or CMASs to which the Web User Interface connects, or
- Ensure that the Web User Interface server connects to a specific CMAS by specifying the CMASSYSID EYUPARM for the server local MAS.

4. Define the Web User Interface server CICS system to CICSPlex SM as a local MAS and ensure that the CICS system has been set up correctly using the CICSPlex SM installation verification procedures.
5. Consider basic monitoring of your Web User Interface servers. You can use standard CICSPlex SM monitoring because the Web User Interface server is defined as a MAS.

Configuring CICS web support

You can configure the Web User Interface to provide web support.

1. On Web User Interface initialization, a TCPIPSERVICE resource definition is created and opened for you by the Web User Interface. However, you must create a temporary TCPIPSERVICE resource definition to run the CICS web support sample applications. Discard this temporary TCPIPSERVICE resource definition after CICS web support has been tested and before Web User Interface initialization has begun.
2. For SSL, the Web User Interface can either use the default certificate in the key database or a named certificate. However, it can only use a named certificate only if the label contains only alphanumeric characters and is a maximum of 32 characters.

Configuring CICS web support components in Configuring explains how to set up the base components of CICS web support and verify its operation using the supplied sample programs.

Configuring CICS to use SSL explains the additional configuration that is required if you want to use the secure sockets layer (SSL).

Reviewing CICS system initialization parameters for the WUI

Review these system initialization parameters when setting up a CICSPlex SM Web user Interface server to ensure that CICS is properly configured.

1. Specify the storage key for the CICS common work area (CWA) and the amount of storage required for the CWA on the CWAKEY and WRKAREA CICS system initialization parameters.

   Use the following format:

   ```
   CWAKEY=CICS
   WRKAREA=2048
   ```
2. To ensure that Web User Interface exception trace entries are written to the CICS auxtrace data set, as required to achieve first failure data capture, specify the USERTR, SYSTR, and AUXTR CICS system initialization parameters:

   ```
   USERTR=ON
   SYSTR=OFF
   AUXTR=ON
   ```

3. Specify the CPSMCONN CICS system initialization parameter to start CICSPlex SM code automatically during CICS initialization and initialize the region as a CICSPlex SM Web User Interface server. Using the system initialization parameter is the alternative to specifying the CICSPlex SM WUI initialization and shutdown programs in initialization and shutdown program list tables (PLTPI and PLTSD).

   ```
   CPSMCONN=WUI
   ```
4. Specify the action CICS takes if, at the next local midnight, the CICS time-of-day differs from the system time-of-day by more than 30 minutes (for example, after setting clocks forward or back to adjust for Summer and Winter time):

   ```
   AUTORESETTIME=YES
   ```

   Clients continue to issue the CEMT PERFORM RESET command.
5. In addition to specifying the necessary CICS system initialization parameters for running CICSPlex SM local MAS, specify the appropriate CICS system initialization parameters to provide CICS Web Interface support, for your release of CICS.

Specifying language and code page information for the WUI

The Web User Interface requires an INITPARM system initialization parameter to specify the server language and the client code page.

Code EYU9VKEC to represent the language of the Web User Interface server and EYU9VWAN to represent the code page of the client on the INITPARM parameter.

You can select the server language and the client code page from Table 24 and specify them on the INITPARM parameter:

```
INITPARM=(EYU9VKEC='xxx',EYU9VWAN='yyyy')
```

xxx is the language identifier of the Web User Interface server and yyyy is the code page identifier of the client.

Table 24. Language and code page identifiers for INITPARM

Language	Language identifier (EYU9VKEC)	Client code page	Default client code page identifier (EYU9VWAN)
US English	ENU	ISO-8859-1 (819)	ENU1
Japanese	JPN	Shift-JIS (943)	JPN1
Simplified Chinese	CHS	GB2312 (1381)	CHS1
Simplified Chinese	CHS	GB18030 (05488)	CHS2

For example, if your chosen language is English, code the INITPARM parameter:

```
INITPARM=(EYU9VKEC='ENU',EYU9VWAN='ENU1')
```

1. You can override the code page identifier for individual user requests by placing it in the web address used to access the Web User Interface, as shown in this example:

   http://*hostname:port*/CICSPlexSM/*codepage*

   hostname is the name specified on the TCPIPHOSTNAME Web User Interface server initialization parameter and *port* is the value specified on the

TCPIPPORT Web User Interface server initialization parameter. For information about the Web User Interface server initialization parameters, see “Web User Interface server initialization parameters” on page 330.

2. If the INITPARM system initialization parameter is not specified or if a value is not specified for EYU9VKEC or EYU9VWAN, the default values are ENU for the language and ENU1 for the code page. However, operator messages are issued every time default values are used.
3. A simplified Chinese WUI server can support client Web browsers using either GB2312 (CHS1) or GB18030 (CHS2). For GB2312 clients, the server uses the EBCDIC code page, 935. For GB18030 clients, the server assumes a second EBCDIC code page, 1388, which is a superset of code page 935.

   View sets and menus edited using a GB2312 client Web browser are stored in 935 and can be used in either client code page. However, if a view set or menu is edited using a GB18030 client and characters not available in 935 are used, the resulting views set or menu are not displayed correctly on GB2312 clients.
4. Some Web browsers do not support all the available client code pages. For example, many older Web browsers do not support GB18030.

Preparing the code page conversion table for the WUI

You can use the default version of DFHCNV, provided in the SDFHLOAD library, which includes the CICSPlex SM code pages automatically.

If you use your own version of the DFHCNV source module, assemble and link-edit it using the CICS procedures for maintaining conversion table load modules.

A sample copybook is provided in CICSTS52.CPSM.SEYUSAMP called EYU$CNV1, to show which entries are automatically added to DFHCNV when you assemble the table. This copybook contains an entry for every language and client code page combination that is supported:

EYUENU1
Entry for English

EYUJPN1
Entry for Japanese

EYUCHS1
Entry for simplified Chinese (GB2312 clients)

EYUCHS2
Entry for simplified Chinese (GB18030 clients)

You do not have to include a copy statement for EYU$CNV1 in the DFHCNV source.

Note: You should use the DFHCNVW $ sample not the EYU$CNV1 sample. The EYU$CNV1 sample is included just to show what the CPSM conversion definitions are, however the definitions are generated automatically by the DFHCNV macro and do not have to be explicitly added to any DFHCNV table. The DFHCNV table included with CICS also contains entries for DFHWBUD and DFHWBHH, but the only time you should modify these particular entries is when using different code pages.

Creating the Web User Interface server repository (EYUWREP)

The Web User Interface server repository, EYUWREP, contains the Web User Interface server view and menu definitions.

You can use the IDCAMS utility to create a VSAM file for these definitions:

```
DEFINE CLUSTER (                                  -
                NAME( dsname )                    -
                VOLUMES( dsvol )                  -
                RECORDS( 5000 5000 )              -
                RECORDSIZE( 8192 32000 )          -
                CONTROLINTERVALSIZE( 8192 )       -
                SPANNED                           -
                INDEXED                           -
                KEYS( 20 20 )                     -
                SHAREOPTIONS( 2 )                 -
               )
```

Figure 24. Sample definition to create a Web User Interface repository

By default, each Web User Interface server has its own Web User Interface server repository that is not shared with any other Web User Interface server.

Upgrade definitions using the import and export functions. For information, see the *Web User Interface administration* topic in the *CICSPlex System Manager Web User Interface Guide*.

Back up the Web User Interface server repository data as the repository is updated whenever changes are made using the View Editor or when definitions are imported using the COVC transaction. You can back up the Web User Interface repository by using IDCAMS, DFSMSdss, or an equivalent utility.

Sample JCL, EYUJWREP, creates the Web User Interface repository. The sample JCL is provided, uncustomized, in TDFHINST and customized by DFHISTAR in XDFHINST.

Sharing the Web User Interface server repository (EYUWREP) across servers

The Web User Interface server repository can be shared across WUI servers running at the same CICSPlex SM release, if the repository is accessed using VSAM RLS. Follow these steps to allow sharing of the WUI server repository:

1. Add the parameter **RLS=YES** to the DFHSIT table or when you override system initialization parameters.
2. Add the **LOG(UNDO)** parameter to the repository file definition when you use the IDCAMS facility to create the VSAM file.

During initialization, the Web User Interface server determines whether RLS should be enabled for the Web User Interface server repository and sets the appropriate attributes for the EYUWREP file and enqmodel definition.

The Web User Interface server caches objects in memory to improve performance. If a user logged on to one server creates or updates an object using the View Editor, the User Editor, or the Favorites Editor, users logged on to other servers which share the server repository might not see the changes until their local cache is reloaded. Cache is reloaded by restarting the server.

Creating and customizing the WUI data set

Use DFHISTAR to create and customize your Web User Interface (WUI) server data sets, according to the parameters that you set when you submit the DFHISTAR job.

DFHISTAR postinstallation members for a WUI

When you run DFHISTAR, with a SCOPE of POST or ALL, it creates the following postinstallation members for a CICSPlex SM Web User Interface (WUI) server in the XDFHINST library:

- EYUWUIDS – creates and starts all the data sets for a WUI. EYUWUIDS includes steps to delete the data sets so that you can rerun the job, if required. These deletions are expected to fail the first time that you run the job. EYUWUIDS contains the following steps:
  - DELWREP deletes the CICSPlex SM WUI data repository, EYUWREP.
  - DEFWREP defines the CICSPlex SM WUI data repository, EYUWREP.
  - DELCOVDS deletes the WUI import and export data sets, EYUCOVI and EYUCOVE
  - DEFCOVDS defines the WUI import and export data sets, EYUCOVI and EYUCOVE
  - JES3DELA and JES3DEFA are included if you specify the DFHISTAR JES=JES3 option. They delete and define the CICS local catalog, the global catalog, and the local request queue.
  - DELREGDS deletes the CICS data sets.
  - DEFTRACE defines the CICS auxiliary trace data sets, DFHAUXT and DFHBUXT.
  - DEFHTML defines the CICS DFHHTML data set.
  - DEFDMPS defines the CICS transaction dump data sets, DFHDMPA and DFHDMPB.
  - DEFTSTD defines the CICS auxiliary temporary storage data set, DFHTEMP.
  - DEFINTD defines the CICS intrapartition transient data set, DFHINTRA.
  - DEFLCD defines the CICS local catalog, DFHLCD.
  - INITLCD uses the DFHCCUTL utility to start the CICS local catalog.
  - DEFGCD defines the CICS global catalog, DFHGCD.
  - INITGCD uses the DFHRMUTL utility to start the CICS global catalog.
  - DEFLRQ defines the CICS local request queue data set, DFHLRQ.
  - JES3DELA and JES3DELB are included if you specify the DFHISTAR JES=JES3 option. They delete and define the CICS DFHCSD data set.
  - DELCSD deletes the CICS DFHCSD data set.
  - DEFCSD defines the CICS DFHCSD data set.
  - INITCSD uses the DFHCSDUP utility to start the DFHCSD data set.
- EYUJWREP – creates the WUI data repository, EYUWREP. EYUWUIDS includes steps to delete and define EYUWREP. You can run EYUJWREP if you want to delete and define only EYUWREP but none of the other data sets for a WUI.
  - DELWREP: delete the CICSPlex SM WUI data repository, EYUWREP.
  - DEFWREP: define the CICSPlex SM WUI data repository, EYUWREP.
- EYUWUISP – CICS system initialization parameter overrides for a WUI.
- EYUWUI0P – CICSPlex SM EYUPARM parameters for a WUI.
- EYUWUIIN – CICSPlex SM EYUWUI parameters for a WUI.

- EYUWUIP – starts a WUI.
- EYUWUIJ – invokes EYUWUIP.

If you use the default values for the CICSPlex SM parameters, the EYUWUIP PROC statement is shown in the following code sample:

```
EYUWUIP  PROC DSNCSD='CICSTS52.CPSM.WUINCM01.DFHCSD',
    RGNHLQ='CICSTS52.CPSM.WUINCM01',
    CICSHLQ='CICSTS52.CICS',
    CPSMHLQ='CICSTS52.CPSM',
    PRMLIB='CICSTS52.XDFHINST',
    CICSPRM=EYUWUISP,                CICS Parameters
    CPSMPRM=EYUWUI0P,                CPSM Parameters
    WUIPRM=EYUWUIIN                  WUI Parameters
```

Customizing postinstallation jobs using DFHISTAR

You can use DFHISTAR to generate copies of the WUI postinstallation jobs for a different CICS region. Use the DFHISTAR SELECT parameter to specify a new name for a copy of a postinstallation job. It has this format:

```
SELECT jobname newname
```

jobname
: Is the name of the job you that want to regenerate

newname
: Is the name for the new copy.

You can specify more than one SELECT parameter to select multiple jobs to be regenerated in a single run of the DFHISTAR job. When you include a SELECT parameter in the DFHISTAR job, only those jobs specified by the SELECT are generated.

For a WUI with the name WUINCM02 and a CICS system identifier of WU02, which connects to a CMAS with the name CMAS02 and CICS system identifier CM02, you can change your DFHISTAR parameters to specify these options:

```
CMASNAME CMAS02
CMSSYSID CM02
WUIPLEX WUIPCM02
WUINAME WUINCM02
WUISYSID WU02
TCPIPHST TCP/IP host name for this WUI
TCPIPPRT TCPIP port number for this WUI
SELECT EYUWUIDS WU02WUDS            JCL to create the data sets for WUINCM02
SELECT EYUWUISP WU02WUSP            CICS SIT overrides for WUINCM02
SELECT EYUWUI0P WU02WU0P            CICSPlex SM EYUPARM parameters for WUINCM02
SELECT EYUWUIIN WU02WUIN            CICSPlex SM EYUWUI parameters for WUINCM02
SELECT EYUWUIJ  CW02WUIJ            JCL statement
SELECT EYUWUIP  CW02WUIP            PROC statement
```

You can then start the WUI WUINCM02, using the procedure EYUWUIP with these commands:

```
START EYUWUIP, DSNCSD='CICSTS52.CPSM.WUINCM02.DFHCSD',
RGNHLQ='CICSTS52.CPSM.WUINCM02', CICSHLQ='CICSTS52.CICS',
CPSMHLQ='CICSTS52.CPSM', PRMLIB='CICSTS52', CICSPRM=WU02WUSP, CPSMPRM=WU02WU0P,
WUIPRM=WU02WUIN
```

If you are using EYUWUIJ to start the WUI, edit it to specify these values:

```
CICSPRM=WU02WUSP, CSMPRM=WU02WU0P, WUIPRM=WU02WUIN
```

Specifying the WUI customizable view and menu help data set

The Web User Interface allows a site to provide customized help for individual views and menus.

This help takes the form of HTML documents that can be served by the Web User Interface server or by an external server. If the Web User Interface is to serve the HTML documents, you must provide a partitioned data set to contain the HTML documents.

You can use the View Editor to customize your views and menus to include a link to the customizable view and menu help data set. With the View Editor you can specify these options:

- No help to be available for this view or menu
- Member name of a help page to be served by the Web User Interface from DFHHTML
- Web address of an external help page to be served by another HTTP server

For information about the View Editor, see Customizing the Web User Interface.

The customizable view and menu help data set (DFHHTML) must be a single data set and not concatenated with any other data set.

Web User Interface server initialization parameters

Specify the Web User Interface server initialization parameters in the startup job or in a fixed block 80 data set.

See "Specifying the JCL DD statements for the WUI" on page 339 for the DD name. All of these parameters are subject to the following conditions unless otherwise stated:

- Lines with an asterisk in column 1 are comments and are ignored.
- Values must not contain lowercase characters.
- Values must be specified in parentheses immediately following the parameter.
- Values must not be greater than 32 characters.

For example:

```
* An EYUWUI parameter data set
DEFAULTMENU(OURHOME)
TCPIPHOSTNAME(MVSXX.COMPANY.COM)
TCPIPPORT(4445)
CMCIPORT(4446)
```

Required parameters for the WUI

Set the TCPIPHOSTNAME and TCPIPPORT parameters to initialize the Web User Interface server. The Web User Interface supports names up to 44 characters in length for all parameters.

TCPIPHOSTNAME(name)
Specify the TCP/IP host name of this Web User Interface server. This name is normally the host name and domain name of the MVS system; that is, a fully-qualified name, but can be a specific IP address in colon hexadecimal or dotted decimal format. The host name is normally used by the Web User Interface to construct Web addresses, depending on the client HTTP version and the value of the TCPIPHTTPHOST Web User Interface server parameter.

This value is always returned in the TCPIPHOSTNAME header of a DATA/CONNECT Web User Interface Data Interface request.

TCPIPPORT(value)
Specify the TCP/IP port number of the port that you have allocated for the Web User Interface.

Optional parameters for the WUI

You can specify a number of optional initialization parameters when setting up your Web User Interface server. Certain parameters are required in certain circumstances. For example, if you want to use the CICS management client interface (CMCI) with CICSPlex SM, you must set the CMCIPORT parameter.

Additional TCP/IP options

You can specify additional TCP/IP options to configure your TCP/IP connections. The Web User Interface supports names up to 44 characters in length for all options:

CMCIPORT(*value*)
Specifies the TCP/IP port number allocated to the CICS management client interface (CMCI). This parameter is required so that you can use CMCI in a CICSPlex SM environment. Specify a number in the range 1 - 65535 but do not use the same port number as specified for the WUI in the TCPIPPORT parameter. When you set this parameter, TCPIPSERVICE and URIMAP definitions are autoinstalled to support CMCI. The level of security for CMCI is derived from the SEC CICS system initialization parameter and the TCPIPSSL WUI server initialization parameter.

TCPIPADDRESS(name | INADDR_ANY)
Specifies the dotted decimal or colon hexadecimal IP address on which the Web User Interface listens for incoming requests. If INADDR_ANY is specified (the default), the Web User Interface listens on any of the addresses known to the TCP/IP for z/OS host.

You do not normally have to specify the TCPIPADDRESS option unless the z/OS host has multiple TCP/IP addresses.

TCPIPHTTPHOST(NO|YES)
Indicates whether you require the TCP/IP host name used to construct Web addresses to be generated based on the incoming HTTP request for HTTP version 1.1 requests or later.

This option has no effect on HTTP requests sent before 1.1 to the Web User Interface server. The Web User Interface server always constructs Web addresses using the host name specified in the TCPIPHOSTNAME Web User Interface server parameter for HTTP 1.0 (and earlier) requests.

NO For HTTP 1.1 (or later) requests, the host name used in Web addresses constructed by the Web User Interface server is based on the value specified in the TCPIPHOSTNAME Web User Interface server parameter.

YES For HTTP 1.1 (or later) requests, the host name used in Web addresses constructed by the Web User Interface server is based on the incoming URI or HTTP 'Host' header, according to the HTTP 1.1 specification.

When HTTP 1.1 clients are used with a Web User Interface server running TCPIPHTTPHOST(YES), the IP address or name used on the server, does not have to be the same as that used by the HTTP 1.1 client. In this way the Web User Interface can be used when name address translation (NAT) is performed, perhaps because of a firewall.

If TCPIPSSL(YES) is used with TCPIPHTTPHOST(YES) and HTTP 1.1 clients are used with different IP address names, you might receive SSL certificate warnings because of host name mismatches.

TCPIPSSL(YES | NO)
Indicates whether you require data encryption between your Web User Interface server and web browser. If you select YES, specify the appropriate system initialization parameters to enable SSL support in the CICS Web Interface. For information, see SSL with CICS web support in Securing.

TCPIPSSLCERT(*name*)
Specifies the label for the SSL certificate that is to be used for the connection between the Web User Interface and the web browser. If you specify an explicit certificate, the label must be no longer than 44 characters. The certificate label must not contain spaces.

The default is the default certificate in the key ring. This field is case-sensitive and is not converted to uppercase.

TCPIPSSLCIPHERS(*cipher_list*)
The **TCPIPSSLCIPHERS** attribute can be specified in either of two ways:

- A string of up to 44 hexadecimal digits that is interpreted as a list of up to 22 2-digit cipher suite codes.
- The name of the SSL cipher suite specification file, which is a z/OS UNIX file in the `security/ciphers` subdirectory of the directory that is specified by the **USSCONFIG** system initialization parameter. For example if **USSCONFIG** is set to `/var/cicsts/dfhconfig` and **CIPHERS** is set to `strongciphers.xml`, the fully qualified file name is `/var/cicsts/dfhconfig/security/ciphers/strongciphers.xml`. For more information, see SSL cipher suite specification file.

The cipher suite codes are used to describe the set of algorithms that are supported by the Web User Interface server for SSL communications. If the TCPIPSSLCIPHERS parameter is not specified, the cipher suite is set using the ENCRYPTION system initialization option that the Web User Interface server is using. For more details about specifying cipher suites, see Cipher suites.

Import options

The import options allow you to automatically import WUI data repository definitions from the Web User Interface. The WUI data repository includes view sets and menus, WUI map objects, user objects, and user group profiles. Definitions can be imported from a specified transient data queue or a data set, or both.

Auto-import is an alternative to the import function of the COVC transaction. When you use auto-import, you can use all three parameters to specify a transient data queue and a data set. When using COVC, you are restricted to specifying either a transient data queue or a data set in one import operation.

AUTOIMPORTDSN(*dsn_name*)
Specifies the name of the data set containing IBM-supplied view and menu definitions. The data set cannot be longer than 31 characters. Currently, the supplied set of WUI view and menu definitions is in the SEYUVIEW data set.

If you specify an AUTOIMPORTDSN name, you must specify the name of a data set member using the AUTOIMPORTMEM parameter.

Use the AUTOIMPORTDSN and AUTOIMPORTMEM parameters when you want to import specific IBM-supplied view set and menu definitions as a result of service (by a PTF).

AUTOIMPORTMEM(*member_name*)
Specifies the name of the data set member containing the specific IBM-supplied view and menu definitions that you want to import. You can use an asterisk at the end of the name to specify a group of data set members that begin with the same characters. For example, specifying AUTOIMPORTMEM(EYUEA*) with the IBM-supplied SEYUVIEW data set in AUTOIMPORTDSN imports all of the members beginning with the characters EYUEA.

Use the AUTOIMPORTDSN and AUTOIMPORTMEM parameters when you want to import specific IBM-supplied view set and menu definitions as a result of service (by a PTF).

AUTOIMPORTTDQ(*tdq_name*)
Specifies the name of the CICS extrapartition transient data queue from which you want the server to import a complete set of WUI data repository definitions during server initialization. To use this option, you enter a value explicitly. There is no automatic default; however, queue name COVI (DD name EYUCOVI) is defined as shown in sample EYU£WDEF.

You use the AUTOIMPORTTDQ parameter when starting a WUI server for the first time or if you are already a CICSPlex SM user and want to import other data repository definitions, including your own customized definitions, into an existing data set. Avoid using this parameter at other times because of the resources required to perform the import operation.

Data formatting options

These options determine how data appears on Web User Interface displays.

CVDASTYLE(MIXED | UPPER)
Indicates whether the CVDAs and EYUDAs are displayed in uppercase or mixed case characters.

MIXED
Mixed case text, that is, the first character uppercase and the rest lowercase, for example, 'Enabled'.

UPPER
Text is displayed in uppercase only.

DATEFORMAT (format)
Specifies the format to be used to display the date on Web User Interface displays:

YYMMDD

DDMMYY

MMDDYY

YYYYMMDD

DDMMYYYY

MMDDYYYY

where:

DD is the day.

MM is the month.

YY and YYYY
are the year in two-digit or four-digit format, respectively.

DATESEPARATOR(character | /)
Specifies the character to be used to separate the date elements on Web User Interface displays.

DECIMALSEPARATOR(character | .)
Specifies the character to be used to denote the decimal point on Web User Interface displays.

GMMTEXTMSG(NO | YES | BEFORE | AFTER)
Specifies how the CICS "good morning" message is handled.

NO The message is not issued

YES The message is issued before and after sign-on.

BEFORE
The message is issued before sign-on only.

AFTER
The message is issued after sign-on only.

MSGCASE (MIXED | UPPER)
Indicate whether messages destined for the operator or EYULOGs should be displayed in mixed case or upper case characters.

MIXED
Mixed case text is displayed, that is, the first character uppercase and the rest lowercase, for example, 'Enabled'.

If you specify MIXED, output may be displayed incorrectly on Katakana display terminals, where lower case characters are displayed as Katakana symbols.

UPPER
Text is displayed in upper case only.

Note that while MSGCASE(MIXED) is the default, it takes effect after all the EYUWUI parameters have been read. Certain EYUWUI parameters such as TCPIPSSLCERT may contain values that are in mixed case. They will be echoed back in the EYULOG in upper case unless MSGCASE(MIXED) is the first parameter in the EYUWUI input stream.

THOUSNDSEPARATOR(character | ,)
Specifies the character to be used to separate thousands on Web User Interface displays, when required. For example, 100 000 is displayed as 100,000 if the default is used.

1. The space character (hex 40) is a valid THOUSNDSEPARATOR value, allowing digits to be grouped by a space.
2. Use 0 (zero) to suppress the THOUSNDSEPARATOR value.
3. The THOUSNDSEPARATOR value is used only when required by the individual view definition.

TIMESEPARATOR(character | :)
Specifies the character to be used to separate hours, minutes, and seconds on Web User Interface displays.

Environment options

These options specify the context and scope values, the home menu and navigation frame, default map objects, and the appearance of newly opened maps.

AUTOREFRESH(YES | NO)
Disables the automatic refresh option for a WUI server. The default setting, YES, displays automatic refresh control, based on the view definition. When NO is specified, automatic refresh control is not displayed, even if automatic refresh control is set on the view definition. For more information about the automatic refresh option, see Refreshing views in Tutorials and demos.

DEFAULTCMASCTXT(name | EYUCMS1A)
Specifies the CMAS context that is set when the user signs on to the Web User Interface.

DEFAULTCONTEXT(name | EYUPLX01)
Specifies the context that is set when the user signs on to the Web User Interface.

DEFAULTMAPBAS(name | EYUSTARTMAPBAS)
Specifies the name of the map object used to generate maps of business application services definitions.

DEFAULTMAPCOLL(value | 0)
Specifies the number of rows in a generated map below which a map opens in the expanded state. If the number of rows to be displayed is above this number, the map opens in a fully collapsed state. The default value of 0 means that in every generated map all of the rows are visible when opened.

DEFAULTMAPMON(name | EYUSTARTMAPMON)
Specifies the name of the map object used to generate maps of monitoring definitions.

DEFAULTMAPRTA(name | EYUSTARTMAPRTA)
Specifies the name of the map object used to generate maps of real-time-analysis definitions.

DEFAULTMAPWLM(name | EYUSTARTMAPWLM)
Specifies the name of the map object used to generate maps of workload management definitions.

DEFAULTMENU(name | EYUSTARTMENU)
Specifies the name of the menu that is presented to users after sign-on to the Web User Interface.

DEFAULTNAVIGATE(name | EYUSTARTNAVIGATE)
Specifies the name of the navigation frame that is presented to users after sign-on to the Web User Interface.

DEFAULTSCOPE(name | EYUPLX01)
Specifies the scope that is set when the user signs on to the Web User Interface.

DEFAULTWARNCNT(value)
Specifies the number of records required to trigger the record count warning mechanism. This integer value is in the range of 0 to 99999999, the default value is 0 meaning that no warnings are issued. This option affects the behavior of both the WUI and the CICS management client interface (CMCI).

For the WUI only, you can also set a record count warning value applying to a group of users when setting up a WUI user group; setting DEFAULTWARNCNT in a user group applies to the WUI only if the WUI is running with security switched on. A value set in a user group takes precedence over a value set in the DEFAULTWARNCNT parameter for the users in that group.

GLOBALPREFILTER(YES | NO)
Specifies filter parameters the first time that a view is displayed; that is, before data is collected. You can also specify this parameter when setting up a WUI user group if the WUI is running with security enabled. A value set in a user group takes precedence, for users in that group, over the value set in the GLOBALPREFILTER parameter.

RESOURCELIMIT(WARNING | FAIL)
Specifies whether a warning or failure is issued when the resource limit is reached. The default setting, WARNING, issues message EYUVC1258W, and the user can select OK to bypass the warning threshold. Specify FAIL to issue message EYUVC1267E and to deny the new resource request. The WUI server can be used to change the RESOURCELIMIT filter, however the WUI server cannot be used to bypass the warning threshold.

Operation options

These options name the default view set to be used if the Web User Interface receives an external request that does not specify a view set name but specifies an object name. The view sets that you name in these options must represent the objects that can be specified. For more information, see Providing access to WUI views and menus in Administering.

You can ignore these parameters if you do not intend to launch Web User Interface displays in this manner.

DEFAULTCICSPLEX(name | EYUSTARTCICSPLEX)
Specifies the name of the default CICSplex view set.

DEFAULTCICSRGN(name | EYUSTARTCICSRGN)
Specifies the name of the default CICS region view set.

DEFAULTCONNECT(name | EYUSTARTCONNECT)
Specifies the name of the default connection view set.

DEFAULTCSYSGRP(name | EYUSTARTCSYSGRP)
Specifies the name of the default CICS system group view set.

DEFAULTDB2SS(name | EYUSTARTDB2SS)
Specifies the name of the default DB2 subsystem view set.

DEFAULTEJCOBEAN(name | EYUSTARTEJCOBEAN)
Specifies the name of the default Enterprise Bean in a CorbaServer view set.

DEFAULTEJDJBEAN(name | EYUSTARTEJDJBEAN)
Specifies the name of the default Enterprise Bean in a CICS-deployed JAR file view set.

DEFAULTEVENT(name | EYUSTARTEVENT)
Specifies the name of the default event view set.

DEFAULTLOCFILE(name | EYUSTARTLOCFILE)
Specifies the name of the default local file view set.

DEFAULTLOCTRAN(name | EYUSTARTLOCTRAN)
Specifies the name of the default local transaction view set.

DEFAULTPROGRAM(name | EYUSTARTPROGRAM)
Specifies the name of the default program view set.

DEFAULTREMFILE(name | EYUSTARTREMFILE)
Specifies the name of the default remote file view set.

DEFAULTREMTRAN(name | EYUSTARTREMTRAN)
Specifies the name of the default remote transaction view set.

DEFAULTTASK(name | EYUSTARTTASK)
Specifies the name of the default task view set.

User options

These options specify user settings that you can configure.

INACTIVETIMEOUT(value | 30)
Specifies the period, in minutes, after which inactive user sessions are ended. The maximum period allowed is 10080 minutes (7 days).

MAXUSERS(value | 20)
Specifies the maximum number of concurrent users of the Web User Interface. The maximum number of concurrent users allowed is 50.

SIGNONPANEL(BASIC | ENHANCED)
Specifies, if the Web user Interface server has CICS security active (SEC=YES in the system initialization parameter), whether the Web User Interface sign on panel takes one of the following actions:

- Displays a GROUP option
- Saves previously used USER and GROUP values
- Positions the cursor in the sign-on field requiring input

When the default value, ENHANCED, is specified, the GROUP option is displayed on the sign-on screen and the following events occur:

- If the user enters a value, sign on proceeds and if:
  - The user ID is connected to the specified group, the group is used for the WUI user group profile
  - The user ID is not connected to the specified group or the group name is not valid, sign on continues, but the WUI group profile is set to the default group of the user, and message EYUVC1227W is issued to the WUI user after sign on is complete. Message EYUVS0024W is written to the WUI server's EYULOG.
- If the user does not enter a value, the user group profile is set to the default group of the user

The GROUP option does not change the current connect group of the user being signed on. The security environment built by the WUI is always based on the default group of the user. The group option on the WUI sign-on screen specifies which WUI user group profile the user should be associated with and does not change any security decisions that might be made by the External Security Manager.

When the SIGNONPANEL(ENHANCED) option is set and JavaScript is enabled in the web browser, the sign-on process performs the following actions:

- Saves the user ID and group values in a cookie, so that when the sign-on process next runs, the form is filled with previously entered values
- Positions the cursor to the sign-on field requiring input

When the value, BASIC, is specified, the GROUP option is not displayed on the sign on screen, and the user group profile is set to the default group of the user. Values are not saved and the cursor is not positioned on the sign-on panel.

Whether the Web User Interface user group profile is set based on the default group, or specified on the GROUP option, if no matching Web User Interface group profile is found, the values usually set using a user group profile are set to the system default.

The SIGNONPANEL option is ignored if the Web User Interface server is running with CICS Security inactive (SEC=NO in the system initialization parameter).

Accessibility options

These options specify the default colors for the Web User Interface displays.

The accessibility options are not normally changed as they affect all users of the Web User Interface server. If you want to change these options for reasons of accessibility, take care to ensure that the Web User Interface displays do not become unreadable.

Each option specifies a color as six hexadecimal digits. Each pair of digits describes the red, green, and blue components of the color, respectively. For example, FFFFFF represents white, 000000 represents black, FF0000 represents bright red, 00FF00 represents bright green, and 0000FF represents bright blue.

COLORPAPER(color)
Main work frame background color.

COLORPAPERHEAVY(color)
Navigation and assistance frame background color.

COLORPAPERLIGHT(color)
Background color used for many interface items; for example, information messages, table column headings, detail view labels, view selection and refresh area.

COLORPAPERWARN(color)
Background color for warning messages.

COLORPAPERERROR(color)
Background color for error messages.

COLORPAPERALT(color)
Background color for alternate rows on tabular displays.

COLORPAPERRULE(color)
Background color for assistance frame bar containing the navigation and help icons.

COLORINK(color)
Main work frame text color.

COLORINKBANNER(color)
Navigation and assistance frame text color.

COLORINKLINK(color)
Unvisited link text color.

COLORINKVLINK(color)
Visited link text color.

Problem determination option

This option allows you to specify the level of tracing you require for the Web User Interface server.

Attention: Only activate trace at the request of IBM Support Center personnel.

WUITRACE(trace levels)
Specifies the level of tracing for the Web User Interface server.

The trace levels that you specify must be separated by a comma, as shown in this example:

```
WUITRACE(8,11,13,15,18)
```

You can define a range of trace levels as shown in these examples:

```
WUITRACE(1:5)
    activates trace levels 1 through 5

WUITRACE(1:5,13,28:31)
     activates trace levels 1 through 5, 13, and 28 through 31
```

Transient data queue definitions for the WUI

You require definitions for the COVP, COLG, COVI and COVE transient data queues (TDQs).

COVP The Web User Interface server initialization parameters data set, EYUWUI. This data set is a fixed block 80 input data set.

COLG The CICSPlex SM output log, EYULOG. This data set is a variable-length output data set.

COVI Sample definition for the Web User Interface import data set, EYUCOVI. This data set is a variable-length input data set.

COVE Sample definition for the Web User Interface export data set, EYUCOVE. This data set is a variable-length output data set.

CICS Transaction Server definitions

The transient data queue (TDQ) definitions are provided in the EYU$WDEF sample, which is supplied in the SEYUSAMP library. COVI and COVE are provided as samples that can be used to create additional import and export transient data queues.

Specifying the JCL DD statements for the WUI

Add DD statements to the Web User Interface server for the EYUWUI, EYUWREP, EYULOG, DFHHTML, EYUCOVI and EYUCOVE data sets.

EYUWUI
The Web User Interface server initialization parameters data set. See “Web User Interface server initialization parameters” on page 330.

EYUWREP
The Web User Interface server repository data set. See “Creating the Web User Interface server repository (EYUWREP)” on page 327.

EYULOG
The CICSPlex SM output log.

DFHHTML
The customizable view and menu help data set. See "Specifying the WUI customizable view and menu help data set" on page 330. This statement is optional.

EYUCOVI
The Web User Interface server import data set. For more information, see "Transient data queue definitions for the WUI" on page 339. This statement is optional.

EYUCOVE
The Web User Interface server export data set. For more information see "Transient data queue definitions for the WUI" on page 339. This is statement optional.

Here is an example:

```
//*
//DFHHTML  DD DISP=SHR,DSN=data set name
//EYUWREP  DD DISP=SHR,DSN=data set name
//EYUCOVI  DD DISP=SHR,DSN=data set name
//EYULOG   DD SYSOUT=*
//EYUWUI   DD *
DEFAULTMENU(OURHOME)
TCPIPHOSTNAME(MVSXX.COMPANY.COM)
TCPIPPORT(4445)
/*
```

Web User Interface security

You can set Web User Interface security requirements for CICS security, Secure Sockets Layer (SSL) support, and access to MVS data sets.

User security access summary

Table 25 summarizes the security accesses required by users of the Web User Interface.

Table 25. Security accesses required by users of the Web User Interface

User Roles	CICS Web Support	Administrator	User	View Editor
Transactions	COVP COVE COVU	COVG COVC	COVA	COVA
CICS surrogate user security		Yes		
View Editor profile				Yes
CICSPlex SM and CICS security			As appropriate for individual users	As appropriate for individual users

CICS security in your Web User Interface server region

If your Web User Interface server region is running with CICS security active, you must define the security access required for the CICS Web Support, by the administrator and by the users of the View Editor.

You can use CICS transaction security to limit the users who are allowed to control the Web User Interface server using the COVC transaction.

See Security considerations in Administering for information about how to control users of the Web User Interface and to limit what resources they are allowed to access.

Security access for the CICS Web Interface

If CICS transaction security is in use, the CICS DFLTUSER must be given access to the COVP, COVU, and COVE transactions.

Security access for the administrator

The user ID that starts the Web User Interface (the terminal user of COVC or PLTPIUSR, if started automatically using PLTPI) must have access to the COVC and COVG transactions. If CICS surrogate user security checking is active in the Web User Interface server region, the user ID that started the Web User Interface (the terminal user of COVC or PLTPIUSR, if started automatically using PLTPI) must have READ access to wui-userid.DFHSTART in the SURROGAT class for all Web User Interface users.

Security access for users of the View Editor

Users of the Web User Interface require access to the COVA transaction and CICSPlex SM. Users of the View Editor require access to the COVA transaction, CICSPlex SM, and the View Editor profile. For more information about access to the View Editor, see Security considerations in Administering.

All users who are successfully signed on to the Web User Interface have access to all of the customizable view and menu help pages, if the customizable view and menu help is served by the Web User Interface.

Secure Sockets Layer support

You can provide secure connections by using the Secure Sockets Layer (SSL) support to provide encryption on the connection. For information about SSL support, see “Web User Interface server initialization parameters” on page 330 for information about the **TCPIPSSL** and **TCPIPSSLCERT** Web User Interface server initialization parameters that you must specify for SSL support and for more guidance on SSL, see Configuring CICS to use SSL.

Web User Interface SSL support uses server authentication only. User authentication is by the external security manager (ESM) user ID and password.

Authorizing access to MVS data sets

In addition to standard CICS and CICSPlex SM requirements, the CICS region user ID must have the authority to access the data sets associated with the DD names described in the table.

Table 26. Security access required for MVS data sets

DDnames	Access required
EYUWUI	READ
DFHHTML	READ
EYUCOVI (and clones)	READ
EYUWREP	UPDATE
EYULOG	UPDATE
EYUCOVE (and clones)	UPDATE

Starting and stopping the Web User Interface

After you have set up the Web User Interface you must complete some additional tasks.

Submitting startup JCL

Submit the startup JCL for the Web User Interface server to start it for the first time.

Messages on the job log are displayed to confirm that the Web User Interface server has started successfully.

```
08.52.33 JOB03331  +EYUVS0001I IYCQCTA5 CICSPLEX SM WEB USER INTERFACE INITIALIZATION STARTED.
08.52.37 JOB03331  +EYUVS0002I IYCQCTA5 CICSPlex SM Web User Interface initialization complete.
```

If you choose not to start the Web User Interface server during PLTPI processing, you can start it using the COVC transaction Start command.

Checking the web browser connection

Check the connection between the Web User Interface and the web browser by typing in the web address: `http://`*`hostname:port`*`/CICSPlexSM`.

hostname is the name specified on the TCPIPHOSTNAME Web User Interface server initialization parameter and *port* is the value specified on the TCPIPPORT Web User Interface server initialization parameter.

For information about the Web User Interface server initialization parameters, see "Web User Interface server initialization parameters" on page 330. You are presented with the Web User Interface server Welcome panel containing a **Begin Signon** button.

Obtaining view and menu definitions

When the Web User Interface has been started, you can obtain some view and menu definitions. You can obtain these views in two ways:

- Log in to the CICS terminal and run the COVC transaction. Use the Import option of the COVC transaction to import the starter set views and menus. The starter set views and menus are provided in CICSTS52.CPSM.SEYUVIEW. For information about the COVC transaction, see The CICSPlex SM Web User Interface transaction (COVC) in Administering.
- Use the View Editor, which is described in The view editor in the CPSM WUI Guide.

Shutting down the Web User Interface server

You can shut down the Web User Interface server by shutting down the CICS system in which the Web User Interface server is running, or by using the COVC transaction. For more information about the COVC transaction, see The CICSPlex SM Web User Interface transaction (COVC) in Administering.

Chapter 48. Setting up a CICS managed application system (MAS)

There are a number of steps you must perform so that a CICS system can be known as a managed application system (MAS) to CICSPlex SM.

A CICS TS MAS is referred to as an MVS MAS.

Note: If a MAS specifies a CMASSYSID and the CMAS is active but does not manage the CICSplex, the MAS waits until the specified CMAS is managing the CICSplex before it joins the CICSplex. This behavior is the same as when CMASSYSID is not specified.

Before you set up a MAS

Check your initialization values, changes between releases and maintenance you might need to apply to your system.

Check the IEASYSxx member of SYS1.PARMLIB that you use for MVS initialization and note the initialization values that are referenced during installation. For details about initialization values, see "Noting IEASYSxx values for CICSPlex SM" on page 125.

If you are converting your CICSPlex SM system or systems from a previous release to CICSPlex SM for CICS Transaction Server for z/OS, Version 5 Release 2, read the upgrading information for your level of CICSPlex SM.

Using CICS global user exits and user-replaceable modules

You can use CICS global user exits and the user replaceable module, DTRPROG to monitor a MAS.

The way these exits are used by CICSPlex SM conforms to the standard described in Developing system programs. CICSPlex SM uses these exits only to acquire information; the application environment is not altered.

The XMNOUT and XSTOUT exits are used when monitoring services are enabled for a managed application system (MAS):

- The XMNOUT exit obtains task and CICS monitoring data. XMNOUT is used only with a local MAS.
- The XSTOUT exit obtains statistical data before the data is reset by CICS.

These exits obtain monitoring and statistics information and always return a "continue processing" return code. They are not available when a shutdown request for the MAS is received.

The XMEOUT, XDUREQ, XDUREQC, XRSINDI, XSNOFF, and XDUOUT exits are used when topology requests are enabled for a local MAS:

- The XMEOUT exit detects short-on-storage events.
- The XDUREQ exit detects system dump and transaction dump events.
- The XDUREQC exit detects the completion of dump action.

- The XRSINDI exit detects topology resource changes.
- The XSNOFF exit detects user sign-off events.
- The XDUOUT exit detects transaction dump events.

CICSPlex SM uses the dynamic routing program user replaceable module (DTRPROG) as part of workload balancing.

Controlling the use of modules from the LPA

You can control whether CICS uses modules from the LPA, either by specifying the LPA and PRVMOD CICS system initialization parameters, or by including or excluding the SYS1.CICSTS52.CPSM.SEYULPA library (defined to MVS as an LPA library) in the STEPLIB or DFHRPL concatenations.

1. A module that is link-edited with the RMODE(ANY) attribute is loaded into the ELPA.
2. It is important to remember that the LPA-resident version of a module that is usually loaded from STEPLIB is not used from the LPA if it is left in the STEPLIB DD concatenation of libraries. If a module is found in the STEPLIB concatenation, it is loaded into the private area of the address space, and the LPA version ignored. You can avoid this situation by moving the LPA-eligible modules into an LPA library, as described in "Installing CICSPlex SM modules into the LPA" on page 177.

For further information about controlling the use of LPA-eligible modules, see Chapter 23, "Installing CICSPlex SM modules in the MVS link pack area," on page 177, taking particular note of information concerning:

- The module-not-found warning message DFHLD0109I
- CICS system initialization parameters related to LPA modules

Preparing to start a z/OS MAS

Before you start a MAS, create your data sets, change startup JCL, activate external connections, review system initialization parameters, and prepare your logs.

Start any MASs (that is, the CICS systems the CMAS is to manage) after the CMAS, because a CICS system is unknown to CICSPlex SM until the CMAS with which the CICS system is associated is started.

Note: If a MAS specifies a CMASSYSID and the CMAS is active but does not manage the CICSplex, the MAS waits until the specified CMAS is managing the CICSplex before it joins the CICSplex. This behavior is the same as when CMASSYSID is not specified.

Creating and customizing MAS data sets

Use DFHISTAR to create and customize your managed CICS system (MAS) data sets, according to the parameters that you set when you submit the DFHISTAR job.

DFHISTAR postinstallation members for a MAS

When you run DFHISTAR, with a SCOPE of POST or ALL, it creates the following postinstallation members for a managed CICS system (MAS) in the XDFHINST library:

- EYUCSYDS – creates and starts all the data sets for a MAS. EYUCSYDS includes steps to delete the data sets so that you can rerun the job, if required. These deletions are expected to fail the first time that you run the job. EYUCSYDS contains the following steps:
  1. DELHIST and DEFHIST delete and define CICSPlex SM history data sets EYUHISTA and EYUHISTB.
  2. HISTINIT uses the EYU9XHID utility to start the history data sets.
  3. JES3DELA and JES3DEFA are included if you specify the DFHISTAR JES=JES3 option. They delete and define the CICS local catalog, the global catalog, and the local request queue.
  4. DELREGDS deletes the CICS data sets.
  5. DEFTRACE defines the CICS auxiliary trace data sets, DFHAUXT and DFHBUXT.
  6. DEFHTML defines the CICS DFHHTML data set.
  7. DEFDMPS defines the CICS transaction dump data sets, DFHDMPA and DFHDMPB.
  8. DEFTSTD defines the CICS auxiliary temporary storage data set, DFHTEMP.
  9. DEFINTD defines the CICS intrapartition transient data set, DFHINTRA.
  10. DEFLCD defines the CICS local catalog, DFHLCD.
  11. INITLCD uses the DFHCCUTL utility to start the CICS local catalog.
  12. DEFGCD defines the CICS global catalog, DFHGCD.
  13. INITGCD uses the DFHRMUTL utility to start the CICS global catalog.
  14. DEFLRQ defines the CICS local request queue data set, DFHLRQ.
  15. JES3DEFA and JES3DELB are included if you specify the DFHISTAR JES=JES3 option. They delete and define the CICS DFHCSD data set.
  16. DELCSD deletes the CICS DFHCSD data set.
  17. DEFCSD defines the CICS DFHCSD data set.
  18. INITCSD uses the DFHCSDUP utility to start the DFHCSD data set.
- EYUJHIST creates a pair of CICSPlex SM history data sets. EYUCSYDS includes steps to create two history data sets, EYUHISTA and EYUHISTB. You can use EYUJHIST if you want to add more history data sets (up to a maximum of 26). It contains the following steps:
  – DELHIST and DEFHIST delete and define a pair of CICSPlex SM history data sets.
  – HISTINIT uses the EYU9XHID utility to start the history data sets.
- EYULMSSP provides CICS system initialization overrides for a managed CICS system.
- EYULMS0P provides CICSPlex SM EYUPARM parameters for a managed CICS system.
- EYUCSYSP starts a managed CICS system.
- EYUCSYSJ starts a managed CICS system. It runs EYUCSYSP.

If you use the default values for the CICSPlex SM parameters, the EYUCSYSP PROC statement is shown in the following code sample:

```
EYUCSYSP  PROC DSNCSD='CICSTS52.CPSM.CSYS01.DFHCSD',
     RGNHLQ='CICSTS52.CPSM.CSYS01',
     CICSHLQ='CICSTS52.CICS',
```

```
CPSMHLQ='CICSTS52.CPSM',
PRMLIB='CICSTS52.XDFHINST',
CICSPRM=EYULMSSP,              CICS Parameters
CPSMPRM=EYULMS0P               CPSM Parameters
```

Customizing postinstallation jobs using DFHISTAR

You can use DFHISTAR to generate copies of the managed CICS system postinstallation jobs for a different CICS region. Use the DFHISTAR SELECT parameter to specify a new name for a copy of a postinstallation job. It has this format:

```
SELECT jobname newname
```

jobname
Is the name of the job that you want to regenerate

newname
Is the name for the new copy.

You can specify more than one SELECT parameter to select multiple jobs to be regenerated in a single run of the DFHISTAR job. When you include a SELECT parameter in the DFHISTAR job, only those jobs specified by the SELECT are generated.

For a MAS with the name CSYS02 and a CICS system identifier of CS02, you can change your DFHISTAR parameters to specify these options:

```
CMASNAME name of the CMAS to which this managed system connects
CMSSYSID CICS system identifier of the CMAS to which this managed system connects
CSYSPLEX name of the CICSplex to which this managed system is to be associated
CSYSNAME CSYS02
CSYSYSID CS02
SELECT EYUCSYDS CS02CSDS               JCL to create the data sets for CSYS02
SELECT EYULMSSP CS02CSSP               CICS system initialization overrides for CSYS02
SELECT EYULMS0P CS02CS0P               CICSPlex SM EYUPARM parameters for CSYS02
```

You can then start the managed CICS system, CSYS02, using the procedure EYUCSYSP:

```
START EYUCSYSP, DSNCSD='CICSTS52.CPSM.CSYS02.DFHCSD',
RGNHLQ='CICSTS52.CPSM.CSYS02', CICSHLQ='CICSTS52.CICS',
CPSMHLQ='CICSTS52.CPSM', PRMLIB='CICSTS52.XDFHINST'
CICSPRM=CM02CSSP, CPSMPRM=CM02CS0P
```

If you are using EYUCSYSJ to start the WUI, edit it to specify these options:

```
CICSPRM=CS02CSSP, CPSMPRM=CS02CS0P
```

Changing startup JCL before starting a MAS

Change the startup JCL for the system by modifying your DD statements to include the CICSPlex SM data sets and verifying that the appropriate CICS system initialization parameters are included.

The DD statements that you must modify are shown in Figure 25.

Figure 25. z/OS MAS-specific JCL requirements

```
  ...
//STEPLIB  DD DSN=CICSTS52.CPSM.SEYUAUTH,DISP=SHR
//DFHRPL   DD DSN=CICSTS52.CPSM.SEYULOAD,DISP=SHR
//EYUPARM  DD DSN=(Any PO or PS data set with LRECL=80)
```

```
//EYUHISTA  DD DSN=(Optional 1st history dataset)
//EYUHISTB  DD DSN=(Optional 2nd history dataset)
//EYUHISTn  DD DSN=(Optional nth history dataset)
  ...
```

When you change these DD statements in the startup JCL for a CICS system, code these statements as follows:

STEPLIB DD statement
: Includes the CICSTS52.CPSM.SEYUAUTH authorized load library.

DFHRPL DD statement
: Includes the CICSTS52.CPSM.SEYULOAD load library.

EYUPARM DD statement
: Identifies the library containing the CICSPlex SM parameters.
- Member EYULMS0P, in the CICSTS52.CPSM.SEYUPARM data set, contains sample system parameters for a local MAS; you must edit this member. See Chapter 49, "CICSPlex SM system parameters," on page 357 for a detailed description of each parameter. EYULMS0P is supplied, uncustomized, in TDFHINST and customized in XDFHINST.
- If you want to use Business Application Services to install CICS resources in a MAS, you must specify the CICSPlex SM system parameter MASPLTWAIT(YES) for that system. This parameter suspends CICS PLT processing until all CICS resources are installed and the CICSPlex SM MAS is fully initialized.
- If you want to include a MAS in a platform, you must also specify the CICSPlex SM system parameter MASPLTWAIT(YES) for that system. This parameter is required to automatically install CICS resources for an application or platform when the CICS region is initialized.

EYUHISTx DD statement
: Identifies the history data sets for the MAS. Each MAS must have its own set of CICSPlex SM history data sets. You allocate the data sets to the MAS region by means of DD cards in the JCL with DD names of the form EYUHISTx, where x is a character suffix taking values A through Z. Dynamic allocation is not supported. Allocate the data sets with a disposition of OLD. Use the suffix letters in ascending sequence and omit no letters. For example, if four history data sets are required, use DD names EYUHISTA, EYUHISTB, EYUHISTC, and EYUHISTD. See "Preparing the MAS for history recording" on page 353.

Activating DB2 and Websphere MQ connections during CICS startup

If you are using DB2 or Websphere MQ with CICS, you must make special arrangements to define and activate your connections.

DB2 connections

When you use CICS Transaction Server for z/OS, Version 5 Release 2 CICS systems with the CICS DB2 attachment facility, you make special arrangements when you use BAS to install a DB2 connection defined to CICSPlex SM. When BAS is used to define and then install a DB2 connection, the connection starts in NOTCONNECTED status. You can use the WUI to cause the connection to the DB2 subsystem to be activated in the following way:

1. From the WUI Main menu, click **CICS operations views > DB2, DBCTL** and **WebSphere MQ operations views > Connections** (under DB2 operations views).
2. Select the objects to change.
3. Click the **Connect** button.

In a test environment, you might be able to wait for the MAS to start and then install the BAS definition. Then issue a CONNECT command against the resulting DB2CONN.

However, in a production system, you might want the connection to be automatically activated when the MAS starts up, as part of the PLT processing sequence, so that the DB2 subsystem can be accessed immediately by programs and users. Specifying the CICS system initialization parameter DB2CONN=YES does not by itself activate the connection, because at the time the system initialization parameters are processed, CICSPlex SM has not yet installed any DB2CDEF objects.

Activate a DB2 connection during CICS startup in the following way:
1. Ensure that you can install an appropriate DB2CDEF resource definition for CICSPlex SM, and that the definition is set up for automatic installation.
2. Specify the MASPLTWAIT(YES) CICSPlex SM parameter, which causes the DB2CDEF resource definition (as well as all other BAS resource definitions) to be installed during PLT processing.
3. Arrange for the appropriate DB2 connect program to be started *after* the MAS startup program (EYU9NXLM for a local MAS).

Websphere MQ connections

You cannot use BAS to define and install a WebSphere MQ for z/OS connection before the CICSPlex SM environment has been initialized.

z/OS MAS-related CICS system initialization parameters

Verify that the sequential data set or partitioned data set member identified by the CICS SYSIN statement includes the appropriate CICS system initialization parameters.

Table 27 on page 351 describes the parameters in more detail.

Review all of the listed parameters for each MAS, to ensure that the values specified are appropriate. When you specify YES for a specific resource type (XCMD, XFCT, XPCT, or XPPT), a CICSPlex SM security profile must exist for that resource type. See the CICSPlex SM security in Securing for information about creating security profiles.

Note: To get all data available for the TASK and MLOCTRAN views, MCT must have a value specified, CICS monitoring for performance classes must be activated, and you must be collecting performance class data. See the note for MCT, MONITOR, MN, and MNPER parameters in the following table .

Table 27. CICS system initialization parameters for a z/OS MAS

Parameter	Explanation
APPLID=	z/OS Communications Server application ID for this CICS system. Used as MAS name when NAME(*value*) is not specified as a CICSPlex SM system parameter.
AIEXIT=DFHZATDX	z/OS Communications Server terminal autoinstall program.
AUTORESETTIME=YES	Time-of-day synchronization.
AUXTR=ON	Auxiliary trace - exception records.
AUXTRSW=NEXT	No continuous auxiliary trace switching.
CPSMCONN=LMAS	Initialize the region as a local MAS.
DFLTUSER=userid	Specify the user identifier that is to be used for security checking when a user is not defined to the ESM.
DSALIM=5M	Limit of DSA storage in 24-bit (below-the-line) storage. Set this value to at least 5 MB.
EDSALIM=800M	Limit of EDSA storage in 31-bit (above-the-line) storage.
DSRTPGM=EYU9XLOP	Distributed START routing program.
DTRPGM=EYU9XLOP	Dynamic routing program.
DUMPDS=A	Transaction dump data set.
DUMPSW=NEXT	Switch to next transaction dump data set.
FCT=NO	A file control table is not used.
GMTEXT='CICSPlex System Manager - CICS Transaction Server for z/OS'	Default logon message.
GRPLIST=DFHLIST	Add group lists for your application resource definitions. See "CICS resource definitions for CICSPlex SM" on page 260 for additional information.
ICV=100	Region exit interval.
ICVR=5000	Runaway task interval.
ICVTSD=0	Terminal scan delay interval.
INTTR=ON	Activate main storage trace.
IRCSTRT=YES	IRC started at system initialization.
ISC=YES	Code YES to include the CICS programs that are required for interregion and intersystem communications.
MCT=	Monitoring control table. If you have CICS performance class monitoring active, you must specify a value for this parameter. You can use 2$ (the default) or an existing table. See note.
MN=ON	Activates CICS Monitor. See note.
MNFREQ=001500	Writes performance class data every 15 minutes.
MNPER=ON	Tells CICS to monitor performance classes. See note.
Note for MCT, MONITOR, MN, and MNPER parameters: To obtain all data available for the TASK and MLOCTRAN views, MCT must have a value specified, CICS monitoring for performance classes must be activated, and you must be collecting performance class data. If you do not want this data written to an SMF data set, you can suppress the monitor records. See the description of the SUPPRESSCMF parameter in Chapter 49, "CICSPlex SM system parameters," on page 357.	

Table 27. CICS system initialization parameters for a z/OS MAS (continued)

Parameter	Explanation
MXT=500	Maximum tasks. Increase by 20 from your normal value for the CICS region to accommodate the CICSPlex SM MAS tasks. CICSPlex SM rarely uses all 20 of these additional tasks. If you are using the MXT value alone to control application transactions, increasing this value can allow more application transactions to run concurrently. To prevent this situation from occurring, you can define a transaction class for the application. Then, set a class maximum task (CMXT) value that limits the number of concurrent transactions.
SEC= {YES|NO}	Indicate whether external security checking is to be performed for this CICS system: **YES** When READ access is granted: • READ is permitted • UPDATE is refused. When UPDATE access is granted: • READ is permitted • UPDATE is permitted. **NO** Security checking is not performed. 1. For CICS security, the value specified with SEC= for a CMAS overrides the value specified with SEC= for a MAS. 2. For CICSPlex SM security to be active, set SEC=YES for a MAS. The CMAS to which it connects must have the CICSPlex SM system parameter SEC(YES). When CICSPlex SM security is not activated in the CMAS, the connection between the CMAS and the MAS cannot be established. If the connection is attempted, message EYUCR0007E is issued to the console, the CMAS joblog, and the EYULOG. For more information about the SEC parameter for the CMAS, see Chapter 49, "CICSPlex SM system parameters," on page 357.
SECPRFX={YES | NO | prefix}	Specify whether the user ID is used as the prefix that is added to the beginning of all resource names to distinguish this CICS system from other CICS systems.
SIT=6$	System initialization table suffix.
SPOOL=YES	System spooling interface.
START=AUTO	Cold start overriding other options.
SYSIDNT=	Indicate the ID of the CICS system. This name must be unique in a CICSplex.
SYSTR=OFF	Auxiliary trace - no system activity.
TCT=NO	A terminal control table is not used.
TS=(COLD,3)	Cold start temporary storage.
TST=NO	A temporary storage table is not used.
USERTR=ON	Auxiliary trace - enable user trace.
XAPPC=NO	RACF checking of APPC sessions.
TCPIP=YES	Activate CICS TCPIP services.
XCMD= {YES|name|NO}	Indicate whether EXEC CICS system commands are to be included in security checking.
XDB2= {No|name}	Indicate whether DB2 resources are to be included in security checking.
XDCT=NO	RACF checking of transient data queues.

Table 27. CICS system initialization parameters for a z/OS MAS (continued)

Parameter	Explanation
XFCT= {YES | name | NO}	Indicate whether files are to be included in security checking.
XHFS=NO	Security checking of Web client access to z/OS UNIX files.
XPCT= NO	RACF checking of EXEC-started transactions.
XPPT= {YES | name | NO}	Indicate whether programs are to be included in security checking.
XRES=NO	Security checking of access to CICS resources subject to XRES security checks. For a list of resources subject to XRES security checks, see .
XRF=NO	XRF support is not generated.
XPSB=NO	RACF checking of DL/I PSBs.
XTRAN=NO	RACF checking of transaction-attach.
XTST=NO	RACF checking of temporary storage queues.
XUSER={YES | NO}	Indicates whether CICS is to perform surrogate user checks. If you specify YES, you must define the CICS region user ID as a surrogate of the user ID that starts a MAS using the COLM or CORM transaction.

Preparing the MAS for history recording

With CICSPlex SM, you can save and view data for completed tasks; that is, historical task data.

When an active task completes, its data is stored in a historical data store. The data store is made up of a number of VSAM KSDS data sets. You need a minimum of two data sets and a maximum of twenty six data sets.

Each MAS must have its own set of CICSPlex SM history data sets. Allocate the data sets to the MAS region by means of DD cards in the JCL with DD names of the form EYUHISTx, where x is a character suffix taking values A through Z. Dynamic allocation is not supported. Allocate the data sets with a disposition of OLD. Use the suffix letters in ascending sequence with no letters omitted. For example, if four history data sets are required, use DD names EYUHISTA, EYUHISTB, EYUHISTC, and EYUHISTD.

Define the CICSPlex SM history data sets with the REUSE keyword. Task history recording uses the least recently used data set, or, when starting for the first time, EYUHISTA. When EYUHISTA becomes full, it switches to use EYUHISTB and so on in sequence. Each full data set remains open with its data available until the history recorder has filled all data sets and starts reusing the data sets. At this time, EYUHISTA is set closed, emptied, reopened, and reused first, followed by EYUHISTB and so on in sequence. If a data set is reused, its previous contents are destroyed.

Until the history recorder has to empty a data set to reuse it, the historical task data is available for use. The data is maintained across CMAS and MAS restarts. You do not have to define the history data sets as recoverable because unit-of-work recoverability is not required. However, the CICSPlex SM history recorder does require files to be defined as nonrecoverable to avoid unnecessary logging in the MAS region.

In addition, do not define the history data sets to use VSAM compression. The CPSM history function initializes the data sets to calculate how many records fit in the data set, so that it can safely use sequential writes to the data set, thereby reducing I/O use. Use of VSAM compression spoils that calculation and causes data to be lost when the data set becomes full and a data set switch is required.

CICSPlex SM provides a tuning aid, the HISTRECSMSG EYUPARM parameter, to determine the optimum size for history data sets. HISTRECSMSG can activate the periodic output of messages detailing how many thousand records have been written to the data set. Each completed task has one record. Because CICS file control supports extended format KSDS data sets, you can define large history data sets over 4 GB in size. However, when considering the use of very large data sets, take into account that when the CICSPlex SM history recorder reuses a data set by emptying it, a large amount of data is lost and not available for subsequent queries. An alternative approach to a small number of very large data sets is to spread the data over more data sets. For example, by having 25 data sets, each one capable of holding one hour's worth of completed task data, at least one day's worth of data can always be maintained. When the oldest data set is reused, only one hour's worth of data is lost.

CICSPlex SM provides a sample job, EYUJHIST, for defining and initializing two history data sets. It is supplied, uncustomized, in TDFHINST and customized by DFHISTAR in XDFHINST.

Stopping and restarting management of a CICS system

You can stop and restart management of a MAS in an active CICS system. You can also check that MAS shutdown processing is properly installed.

Stopping management of a CICS system

You can stop the MAS agent code in an active CICS system in two ways:

- From the WUI Main menu, click **CICSPlex SM operations views > MASs known to CICSplex >** , select the CICS systems and click **Stop**, or
- Run transaction COSH in the MAS. You start COSH at a 3270 terminal, at a console, or using ATI.

When you stop the MAS agent, CICSPlex SM cannot access the MAS until either the CICS system is restarted (see “Preparing to start a z/OS MAS” on page 346) or the COLM or CORM transaction is issued.

When a MAS is active as a CICSPlex SM workload management routing region, and the dynamic routing program is set to EYU9XLOP, the STOP command is not run. In this situation, before you issue the STOP command, you must use the WUI CICS regions operations view to change the dynamic routing program from EYU9XLOP to the CICS default dynamic routing program, DFHDYP, or another valid dynamic routing program.

Restarting management of a CICS system

To reactivate a running CICS system as a MAS, issue the CICS COLM transaction.

If you want a local MAS to be recognized as a workload management routing region when CICSPlex SM resumes managing the system, set the dynamic routing program to EYU9XLOP. To change the dynamic routing program, use the CICS CEMT transaction before you reactivate the local MAS.

Terminating a MAS

To verify that the CICSPlex SM MAS shutdown processing is properly installed, you can end the CICS system and check the log for the following shutdown message.

```
EYUXL0016I  MAS shutdown complete
```

To end a CICS system running the MAS agent code:

1. From the WUI Main menu click **CICS regions >**
2. Select the CICS system(s)
3. Click **Shutdown**

Controlling the number of long running tasks in a MAS

The MAS agent contains one primary long running task (LRT), which runs under transaction CONL. By default, this task handles most requests directed to the MAS through the API, WUI, and RTA. The CONL task also handles internal requests for the MAS, including collecting information on dynamically installed resources and delivering this information to the CMAS. If the LRT becomes busy handling one request, all subsequent requests directed to the MAS are delayed until the current request ends.

Alternate LRTs, which run under the CONA transaction, can be requested by specifying a non-zero value for the MASALTLRTCNT EYUPARM. If activated, the alternate LRTs handle the API, WUI, and RTA requests normally handled by the primary LRT. Only one alternate LRT is active at a given time. If the active alternate LRT becomes busy for longer than the value specified by the MASALTLRTTIM EYUPARM, subsequent API, WUI, and RTA requests directed to the MAS are directed to another CONA task.

Using alternate LRTs allows subsequent requests to be processed even though a previous request has yet to be completed. This also allows the primary LRT to process internal requests without being delayed by the processing of a WUI, API, or RTA request.

The number of alternate long running tasks (MASALTLRTCNT) can be tuned using the EYUNL0911I, EYUNL0912I, and EYUNL0913I messages issued when a MAS terminates or goes into restart mode. EYUNL0911I displays the number of active CONA tasks for this execution. EYUNL012I displays the maximum number of concurrently busy CONA tasks. If this value is less than the value displayed by EYUNL0911I, then you might want to lower the MASALTLRTCNT so that it equals the value displayed by EYUNL0912I or is one greater. If the value of EYUNL0912I is equal to the value displayed by EYUNL0911I, then the value displayed by EYUNL0913I, the number of times all active CONA tasks were busy at the same time, is non-zero. Based upon this value you can increase the value of MASALTLRTCNT.

The priority of the alternate LRTs can be controlled by the MASALTLRTPRI EYUPARM. Specifying this less than the default value of 255 can adversely affect the response time of API and WUI users, and might result in RTA EVENTs not being created or resolved in a timely manner.

Note: Specifying different values for MASALTLRTCNT for multiple WLM target regions might result in an uneven distribution of transactions to those regions because of differing long running task counts.

Chapter 49. CICSPlex SM system parameters

You can use a number of system parameters to identify or alter CICSPlex SM attributes. An extrapartition transient data queue called COPR specifies these parameters.

You can assign these parameters to a DD * file, sequential data set, or a partitioned data set member. The DD name for the extrapartition transient data queue is EYUPARM.

Code the system parameters as 80-byte records. You can specify multiple system parameters on a single record if they are separated by commas and do not exceed a total of 71 characters in length. The format of the system parameters is as follows:

```
keyword(v)
```

keyword
The name of a CICSPlex SM system parameter.

v An alphanumeric data value that you can specify with the system parameter.

Table 28 identifies the CICSPlex SM parameters used in the CMAS and MAS and indicates whether these parameters are required or optional.

For CMASs, MASs, and WUI servers, the following members of the TDFHINST and XDFHINST libraries contain samples of these parameters:

EYUCMS0P
CMAS parameters

EYULMS0P
Local MAS parameters

EYUCMS0P and EYULMS0P are supplied uncustomized in TDFHINST and customized in XDFHINST. Before using these members to start a CMAS, MAS, or WUI server, remove the comments from the samples and supply the appropriate values.

Table 28. CICSPlex SM parameters used in CMAS, MAS, and WUI servers.

Parameter	CMAS	MAS and WUI server	Default
ALERTRCVR	Optional	n/a	NETVALRT
ALERTVER	Optional	n/a	0
APISIGNMSG	Optional	n/a	YES
BASASSOCBLK	Optional	n/a	14301
BASLOGMSG	n/a	Optional	NO
CICSPLEX	n/a	Required	
CMASSYSID	n/a	Optional	See description

Table 28. CICSPlex SM parameters used in CMAS, MAS, and WUI servers. (continued)

Parameter	CMAS	MAS and WUI server	Default
CMTCMLNKACQ	Optional	n/a	RECONN
COHTTASKPRI	n/a	Optional	200
COIRTASKPRI	n/a	Optional	200
COMMTSBLOCKS	Optional	Optional	128 (MAS)
			512 (CMAS)
HISTORYONLY	n/a	Optional	NO
HISTRECSMSG	n/a	Optional	0
HISTSECS	n/a	Optional	30
JRNLDEFCH	Optional	n/a	NO
JRNLOPACT	Optional	n/a	NO
JRNLRTAEV	Optional	n/a	NO
MASALTLRTCNT	n/a	Optional	0
MASALTLRTPRI	n/a	Optional	255
MASALTLRTTIM	n/a	Optional	10
MASINITTIME	n/a	Optional	10
MASPLTWAIT	n/a	Optional	NO
MASTASKPROT	Optional	n/a	NO
MAXAUXCPSM	Optional	n/a	50
MAXAUXTOTL	Optional	n/a	70
MAXHISTRECS	n/a	Optional	1
MSGBUCKETS	n/a	Optional	1024
NAME	Optional	Optional	
RESSTATUS	Optional	n/a	NOTIFY
SEC	Optional	n/a	NO
SECLOGMSG	Optional	n/a	NO
SECRPTLVL	Optional	n/a	RESPONSE
SECTIMEOUT	Optional	n/a	30
SPOOLCLASS	Optional	Optional	P
STALLCONTSK	n/a	Optional	2
STALLCONCNT	n/a	Optional	3
STALLDBCTSK	n/a	Optional	4
STALLDBCCNT	n/a	Optional	4
STALLDB2TSK	n/a	Optional	4

Table 28. CICSPlex SM parameters used in CMAS, MAS, and WUI servers. (continued)

Parameter	CMAS	MAS and WUI server	Default
STALLDB2CNT	n/a	Optional	4
STALLDLITSK	n/a	Optional	4
STALLDLICNT	n/a	Optional	4
STALLDSPTSK	n/a	Optional	4
STALLDSPCNT	n/a	Optional	2
STALLEJBCNT	n/a	Optional	3
STALLEJBTSK	n/a	Optional	2
STALLENQTSK	n/a	Optional	4
STALLENQCNT	n/a	Optional	4
STALLFLETSK	n/a	Optional	3
STALLFLECNT	n/a	Optional	4
STALLILKTSK	n/a	Optional	2
STALLILKCNT	n/a	Optional	3
STALLIPCTSK	n/a	Optional	2
STALLIPCCNT	n/a	Optional	3
STALLLCKTSK	n/a	Optional	4
STALLLCKCNT	n/a	Optional	4
STALLLGRCNT	n/a	Optional	3
STALLLGRTSK	n/a	Optional	2
STALLITVTSK	n/a	Optional	0
STALLITVCNT	n/a	Optional	0
STALLJNLTSK	n/a	Optional	1
STALLJNLCNT	n/a	Optional	3
STALLMQSCNT	n/a	Optional	3
STALLMQSTSK	n/a	Optional	2
STALLPGMTSK	n/a	Optional	2
STALLPGMCNT	n/a	Optional	4
STALLRMITSK	n/a	Optional	2
STALLRMICNT	n/a	Optional	3
STALLSESTSK	n/a	Optional	2
STALLSESCNT	n/a	Optional	3
STALLSOCTSK	n/a	Optional	2
STALLSOCCNT	n/a	Optional	3

Table 28. CICSPlex SM parameters used in CMAS, MAS, and WUI servers. (continued)

Parameter	CMAS	MAS and WUI server	Default
STALLSTGTSK	n/a	Optional	1
STALLSTGCNT	n/a	Optional	2
STALLTDQTSK	n/a	Optional	3
STALLTDQCNT	n/a	Optional	4
STALLTRMTSK	n/a	Optional	0
STALLTRMCNT	n/a	Optional	0
STALLTSKTSK	n/a	Optional	0
STALLTSKCNT	n/a	Optional	0
STALLTSQTSK	n/a	Optional	3
STALLTSQCNT	n/a	Optional	4
STALLUSRCNT	n/a	Optional	0
STALLUSRTSK	n/a	Optional	0
STALLWEBCNT	n/a	Optional	3
STALLWEBTSK	n/a	Optional	2
STALLXMGTSK	n/a	Optional	4
STALLXMGCNT	n/a	Optional	2
STALLXRFTSK	n/a	Optional	1
STALLXRFCNT	n/a	Optional	2
SUPPRESSCMF	n/a	Optional	NO
TOBATCHREQ	Optional	n/a	0
TOONLINEREQ	Optional	n/a	0
TOPOLLINT	Optional	n/a	300
WLMLCUSH	n/a	Optional	20

Note: Support for the WLMLOADCOUNT and WLMLOADTHRSH EYUPARM values is discontinued in CICS TS for z/OS, Version 4.1. For more information, see Upgrading CICSPlex SM workload management in Upgrading.

ALERTRCVR(NETVALRT | name)
Identifies the 1- 8-character name of the NetView Alert Receiver to be used by the CMAS if the CMAS sends NetView Generic Alerts to NetView.

ALERTVER(0 | 1)
Identifies the version of the CPSM generic alert record that the CMAS sends to NetView. See Generic alert and resolution structures in Monitoring for details about the generic alert Records that CICSPlex SM sends to NetView.

ALERTVER is relevant only for a CMAS that is named in an ACTNDEF as a CMAS that sends generic alerts to NetView.

APISIGNMSG(YES | NO)
Indicates whether the successful signon and signoff message, EYUXD0807I, is issued when a CICSPlex SM API user connects to, or disconnects (TERMINATE) from, the CICSPlex SM API.

BASASSOCBLK(value | 14301)
Specifies the number of BAS association blocks that can be acquired from a single association element. The default EYUPARM value creates an association segment size requiring approximately 1.2 MB of storage. If you specify the maximum value of 114597 blocks-per-segment is specified, then the resultant segment size is just over 8 MB.

BASLOGMSG(YES | NO)
Indicates whether CICS resources defined using BAS must have their definitions logged to the CSDL Transient Data Queue of the MAS when they are installed.

If the CICS version used by the MAS does not support the LOGMESSAGE option of the EXEC CICS CREATE command, BASLOGMSG has no effect.

CICSPLEX(name)
Identifies the 1- to 8-character name of the CICSplex to which the local MAS is to be associated.

The name of a CICSplex must not be the same as the name of a CMAS, a CICS system, or a CICS system group.

CMASSYSID(name)
Identifies the 1- to 4-character name of the CMAS to which a MAS is to be attached. If a MAS specifies a CMASSYSID and the CMAS is active but does not manage the CICSplex, the MAS waits until the specified CMAS is managing the CICSplex before it joins the CICSplex.

You can also use this parameter when a local MAS is to attach to a specific CMAS in the same MVS image.

Note: This parameter is optional. However; for a specific release of CICSPlex SM, if you do not specify a value for the CMASSYSID parameter and you have multiple CMASs on an MVS system, a local MAS will connect to the last CMAS initialized on the MVS system that manages the CICSplex specified by the CICSPLEX parameter.

CMTCMLNKACQ(ALWAYS | RECONN)
Specifies whether you want the CMAS to attempt to reacquire LU6.2 CMAS to CMAS links (CMTCMLNKs) if the initial acquire attempt made by CICS fails. The initial acquire attempt is made by CICS when a CMAS is started, a z/OS Communications Server ACB is opened, or a CMAS to CMAS definition (CMTCMDEF) is installed. If the initial acquire attempt fails, CICSPlex SM network surveillance might attempt to re-acquire the LU6.2 CMAS to CMAS links depending on the value of CMTCMLNKACQ:

- If CMTCMLNKACQ is set to ALWAYS, the CMAS attempts to acquire CMTCMLNKs, independent of whether the links were established in the current CMAS run.
- If CMTCMLNKACQ is set to RECONN, the CMAS attempts to re-acquire CMTCMLNKs only where CMTCMLNKs were established in the current CMAS run.

If the CMTCMLNKs were not acquired in the current CMAS run and the initial acquire attempts fail, CMTCMLNK must manually be acquired.

Depending on the CMTCMLNKACQ option that you are using, repeated failed acquire attempts can produce messages DFHZC3437, DFHZC3462 and DFHZC2405 and z/OS Communications Server IST663 and IST664.

CMTCMLNKACQ can be dynamically changed in a CMAS using the COD0 SET command.

COHTTASKPRI(value | 200)
Specifies the CICS task priority for the MAS COHT task. COHT is invoked in a MAS when an API or Web User Interface query for completed task history records (HTASK records) is directed to the MAS. Use this parameter to tune the priority of HTASK requests so that a resource-intensive query does not affect the performance of other tasks in the MAS.

COIRTASKPRI(value | 200)
Specifies the task priority of COIR, in the range 0 - 255. COIR is a CICSPlex SM task that you can use to process evaluation definitions, EVALDEFs, independent of the MAS.

For each EVALDEF that requests a separate task, an instance of COIR is started at the specified priority. If you specify a priority of 0, no separate COIR tasks are started; all EVALDEFs are processed by the MAS long running task (LRT).

COMMTSBLOCKS((value | 512/128)
Specifies the number of sets of control blocks allocated at CMAS or MAS startup for CPSM Communications Transport Services. These control blocks are used when data must be shipped between a CMAS or MAS and other CMASs or MASs.

The default and minimum values for this parameter are 512 in a CMAS and 128 in a MAS. The maximum value is 8192 in either a CMAS or MAS.

Each set requires 1204 bytes of storage allocated in ESDSA in the CMAS or MAS. If the defaults are used, this amount of total storage is allocated:

```
CMAS - 512 * 1204 = 616,448 bytes
MAS - 128 * 1204 = 154,112 bytes
```

If the maximum value is specified, this amount of total storage is allocated:

```
CMAS - 8192 * 1204 = 9,863,168 bytes
MAS - 8192 * 1204 = 9,863,168 bytes
```

If a shortage occurs while running a CMAS or MAS, message EYUCT0105E is issued. At termination of the CMAS or MAS, message EYUCT0106W is issued. The later message includes a value equal to the highest concurrent shortage of sets (high-water mark). Increase the COMMTSBLOCKS parameter for the CMAS or MAS by at least the amount specified by the EYUCT0106W message before restarting the CMAS or MAS.

HISTORYONLY(YES | NO)
Specifies whether history data is collected without collecting normal CICSPlex SM monitoring data as well. For example, if MLOCTRAN and MREMTRAN data is not required set HISTORYONLY(YES) to prevent this data from being collected.

HISTRECSMSG(value | 0)
Specifies that message EYUNL0179I 'Task History Recorder data set EYUHISTx has accrued nnnn records' is produced each time 'value' thousand records are written to the history data sets. The maximum

allowed value is 1000 which specifies that a message is produced every time 1 million records are written to the history data sets.

The message is an aid to determining the optimum size of the history data sets. A value of 0 means that no EYUNL0179I messages are to be produced.

HISTSECS(value | 30)
Specifies the number of seconds to use as the default when API or Web User Interface users specify a parameter of RECENT(HISTSECS) when requesting completed task (HTASK) resource table records. The maximum allowed value is 86400 seconds (24 hours).

JRNLDEFCH(YES | NO)
Causes a journal record to be written for each data repository add, delete, and update operation.

JRNLOPACT(YES | NO)
Causes a journal record to be written for each successful action command issued against a MAS or CMAS.

JRNLRTAEV(YES | NO)
Causes a journal record to be written each time a real-time analysis (RTA) event is generated.

MASALTLRTCNT(0 - 5 | 0)
Indicates the number of alternate long-running tasks (CONA) started in the MAS during MAS agent initialization. These tasks remain active until the MAS agent stops or goes into restart mode and handles all API, WUI, or RTA requests normally handled by the CONL task, allowing the CONL task to perform other processing in the MAS. At any time, only one of the CONA tasks processes requests. If the CONA task that is currently processing requests becomes busy (as determined by the value of the MASALTLRTTIM EYUPARM), subsequent requests are directed to another CONA task.

If you specify zero (0), no CONA tasks are started and the CONL task services the API, WUI or RTA requests that are normally directed to the long running task. Specifying different values for MASALTLRTCNT for multiple WLM target regions, you might cause an uneven distribution of transactions to those regions because of differing long-running task counts.

MASALTLRTPRI(0 - 255 | 255)
Specifies the priority given to the CONA transaction for running the current MAS. If you specify this value as less than 255 you might adversely affect the response time of API and WUI users and stop RTA EVENTs from being created or resolved in a timely manner.

MASALTLRTTIM(1 - 3600 | 10)
Specifies the amount of time in seconds for which a CONA task can be busy before subsequent requests are directed to another active CONA task.

MASINITTIME(value | 10)
Specifies the number of minutes, from 5 to 59, that CICSPlex SM waits for the MAS to initialize.

- If you specify MASPLTWAIT(YES), the MASINITTIME value is the maximum length of time that PLT processing can be suspended for MAS initialization. (By suspending PLT processing, the chance of completing MAS initialization in a specified time is increased, because you are asking for less work to be done in a given time interval and thereby reducing the scope for contention during that time).

- If you specify MASPLTWAIT(NO), the MASINITTIME value is the maximum length of time that can elapse before MAS initialization is halted if it does not complete.

MASPLTWAIT(YES | NO)

Indicates whether CICSPlex SM suspends all PLT processing until the MAS is fully initialized and connected to the CMAS.

- When you specify MASPLTWAIT(YES), no CICS applications can be started and no users can sign on to the system until CICSPlex SM completes the installation of resources and resumes PLT processing.
- If CICSPlex SM does complete the installation of resources and resume PLT processing in the time interval specified by MASINITTIME, message EYUTS0003I is issued.
- If it does not complete in the time interval specified by MASINITTIME, message EYUNL0090W is issued, the MAS initialization is halted, and the PLT processing resumes to allow the region to function as a CICS region without CICSPlex SM control.
- MAS initialization can be retried by entering the COLM transaction manually.
- When you specify MASPLTWAIT(NO), CICSPlex SM still observes the MASINITTIME value waiting for the MAS agent to complete the topology connect.
- If CICSPlex SM does not complete the topology connect in the time interval specified by MASINITTIME or its default value, message EYUNL0090W is issued, the MAS initialization is halted, and the PLT processing resumes to allow the region to function as a CICS region without CICSPlex SM control.
- MAS initialization can be retried by entering the COLM transaction manually.

If you are including a CICS system in a platform, or if you are using Business Application Services (BAS) to automatically install resources at CICS system initialization, specify MASPLTWAIT(YES) for that system. MASPLTWAIT(YES) is required to automatically install resources for an application or platform, or BAS resources, when the CICS region is initialized. If you are using Business Application Services (BAS) to automatically install a DB2 connection, and you want the connection to be activated during CICS startup, see the information in “Activating DB2 and Websphere MQ connections during CICS startup” on page 349.

MASTASKPROT (YES | NO)

Controls whether the CPSM API, Web User Interface (WUI), and CICS Management Client Interface (CMCI) are allowed to perform actions or set attribute values for CPSM MAS agent tasks with transaction IDs COIE, COI0, CONA, or CONL.

- If you specify MASTASKPROT(NO), the default, users of the CPSM API, WUI, and CMCI are allowed to FORCEPURGE or modify attribute values for CPSM MAS agent tasks.
- If you specify MASTASKPROT(YES), CPSM validates the transaction ID of all tasks before allowing actions to be performed, or attribute values to be modified for active tasks. If the transaction ID indicates that the task runs as part of the CPSM MAS agent, the request is not processed, and a CICS response is set as follows:
  - RESP = TASKIDERR

– RESP2 = 2 (The task is protected by CICS and is not eligible for modification with this command.)

The function code (EIBFN) is null, to indicate that the response is simulated and not set by the CICS SPI.

MAXAUXCPSM(value | 50)
Specifies the percentage of total auxiliary storage that can be committed to each CMAS, in the range of 0 to 99. A value of 0 stops CPSM from checking the amount of space used.

Important: Setting a value of 0 might result in a shortage of auxiliary storage, requiring an IPL of the MVS system.

Each CMAS requires 24,160 4 KB pages (94 MB) of cache storage at initialization. If a request for additional cache storage would cause the CMAS to exceed the MAXAUXCPSM threshold, an SDUMP is taken and the CMAS is terminated. If the threshold is exceeded during CMAS initialization, the CMAS was unable to acquire the initial allocations for all required component data cache areas. Either increase the value of MAXAUXCPSM, or increase the total amount of auxiliary storage by adding or expanding external page data sets. If this threshold is reached during an attempt to create or extend a data cache after CMAS initialization has completed, the automatic restart mechanism (ARM) is invoked to attempt to restart the CMAS.

MAXAUXTOTL(value | 70)
Specifies the maximum total auxiliary storage use at which the CMAS allows a request for additional cache storage to be made, in the range of 0 to 99. A value of 0 stops CPSM from checking the amount of space used.

Important: Setting a value of 0 might result in a shortage of auxiliary storage, requiring an IPL of the MVS system.

Setting a nonzero value for MAXAUXTOTL prevents the CMAS from requesting an amount of cache storage that would cause the MVS system to enter a state of auxiliary storage shortage. If a request for additional cache storage causes the CMAS to exceed this threshold, an SDUMP is taken and the CMAS is terminated. This parameter can cause a CMAS to shut down even though the CMAS is not the largest user of auxiliary storage. If such a shutdown occurs during CMAS initialization, the CMAS was unable to acquire the initial allocations for all required component data cache areas. You must increase the total amount of auxiliary storage available by adding or expanding external page data sets. If this threshold is reached during an attempt to create or extend a data cache after CMAS initialization has completed, the automatic restart mechanism (ARM) is invoked to attempt to restart the CMAS.

MAXHISTRECS(value | 1)
Specifies a value in thousands, in the range 1 to 50. This value is a limit on the number of records returned on a completed task query from the MAS. You can limit the amount of data in a request for completed task (HTASK) resource table records. When this limit is reached, the CICSPlex SM API GET request receives a WARNING response and MAXRECORDS reason.

MSGBUCKETS(value | 1024)
Specifies a value in the range 1 - 32768. This value specifies the number of buffers to be allocated for Topology data collection in the MAS. Each buffer is 64 bytes long. The buffer pool, allocated in the MAS cache data space, is

used by CICSPlex SM XMEOUT and XRSINDI global user exits and by the MAS Heartbeat task. The number of buffers must equal or exceed the total number of connections, DSNAMEs, GLUEs, TRUEs, and FEPI connections defined in the MAS. If the number of buffers is not sufficient for the Topology mapped resources in the MAS, a trace record with debug text XDATLOST is written at every other heartbeat interval when MAS Topology resource data is collected. Without sufficient buffers, resources are missing from Topology Resource Maps for the MAS in all CMASes in the CICSplex, and query or action requests entered from the WUI or API for specific resources can fail because the target resources are not known to Topology.

NAME(name)
Identifies the 1- to 8-character name of the CMAS or local MAS that is to be started. If you do not specify this parameter, the default is the z/OS Communications Server application ID.

RESSTATUS(NOTIFY | MSG | CONMSG)
Indicates how the CMAS is to respond when a CICS resource that is being reported to the resource status facility has a change in operational state:

NOTIFY
Issues event notifications in the form of ERESSTAT resource table records.

You can monitor these event notifications by using the LISTEN command of the CICSPlex SM API. For more information, see cpsm.api.listen.

MSG Writes external messages to EYULOG.

If you specify MSG, event notifications are produced in addition to the messages.

CONMSG
Writes external messages to the job log, console, and EYULOG.

If you specify CONMSG, event notifications are produced in addition to the messages. Use this option with care. It can cause many messages to be sent to the console.

SEC(YES | NO)
For a CMAS, indicates whether the CMAS is to perform security checking of CICSPlex SM requests directed to the CICS systems it manages.

If you specify NO, all security-related parameters are ignored.

If a CMAS manages any CICS regions that are running with security active (SEC=YES specified as a system initialization parameter), the CMAS must include SEC(YES) in EYUPARM. If you do not activate CICSPlex SM security in the CMAS, a connection cannot be established to a CICS system that specifies SEC=YES. If a connection is attempted, the following message is issued to the console, the CMAS job log, and the CMAS EYULOG:

```
EYUCR0007E Security mismatch between CMAS cmasname and MAS masname. Connection terminating.
```

If a CMAS that is started with SEC(NO) connects directly or indirectly to a CMAS started with SEC(YES), any request sent to the SEC(YES) CMAS fails.

- If the request originates from the CICSPlex SM API connected to the SEC(NO) CMAS, the API request receives: `RESPONSE 1031 NOTPERMIT REASON 1345 USRID`
- If the request originates from the CICSPlex SM Web User Interface server connected to a SEC(NO) CMAS, the Web browser receives the message EYUVC1220E

SECLOGMSG(NO | YES | ALL)
Controls whether CICSPlex SM issues message EYUCR0009I to the CMAS EYULOG to record security failures.

When you specify NO, the default, message EYUCR0009I is not issued.

Specify YES, or ALL, to cause message EYUCR0009I to be issued.

SECLOGMSG(YES) can be useful if the External Security Manager (ESM) does not issue messages when it cannot make a decision or when a failure occurs.

When you specify SECLOGMSG(YES), EYUCR0009I is issued only for requests that are to be logged to the ESM.

SECLOGMSG(ALL) causes EYUCR0009I to be issued even when the ESM permits access to the resource. The ALL operand can produce many EYUCR0009I messages and must normally be used only under the direction of IBM Support.

You can change SECLOGMSG dynamically in a CMAS with the COD0 SET command.

SECRPTLVL (NONE | RESPONSE | DETAIL)
Controls the level of detail available to a client API task when a response of NOTPERMIT with reason USRID is returned by a request.

When you specify NONE, all indications of a security validation exception are suppressed. A response of OK or NODATA, as appropriate, is returned to the client API task.

Specifying the default, RESPONSE, causes the original API response of NOTPERMIT and reason of USRID to be returned to the client task.

Specifying DETAIL causes a result set of MASQRYER resources to be built, identifying the regions in which the requesting user was denied access to a resource. MASQRYER resources can be retrieved by running a FETCH command, passing the QUERYERROR parameter.

Note: The SECRPTLVL parameter controls the response from the CMAS in which it is processed even though the API request might have originated in a different CMAS. Thus a CMAS which manages MASes containing sensitive resources can be started with SECRPTLVL(NONE), while other CMASes managing MASes with lower sensitivity can be started with SECRPTLVL(RESPONSE) or SECRPTLVL(DETAIL).

SECTIMEOUT(value | 30)
Specifies the time in minutes, in the range of 1 through 1440 (1 day), that idle user IDs are to remain signed on in the CMAS before being considered for timeout.

You can also use this value to control how often the CMAS checks for idle users to timeout. For example, with the default value of 30, the CMAS checks every 30 minutes for users who have not used the CMAS for 30 minutes. However, because the times are not synchronized the user ID might not be timed out for up to double the SECTIMEOUT value. Setting a low value increases the number of calls to the External Security Manager (ESM). Setting a high value means that users might have to wait a long time before automatically picking up security changes that affect the user ID (for example, adding the user to a new group).

You can use the CMAS or CMASLIST PURGE request, available from the API and WUI, to force a CMAS to check for users to time out immediately.

You can use the CMAS or CMASLIST RESET USERID request, available from the API and WUI, to force the CMAS to rebuild the user's security information the next time it is used. This request is used after adding or removing a user ID to or from a group, and the user does not want to wait to be timed out to pick up the change.

SPOOLCLASS(class | P)
Specifies a SYSOUT class value, from A to Z or 0 to 9, that identifies where CICSPlex SM spool output is to be sent.

Spool output can be generated by these CICSPlex SM functions:

- The online utility transaction COLU
- The PRINT and CAPTURE commands of the interactive debugging transaction COD0

STALL*xxx*CNT
xxx represents a CICSPlex SM suspend class. The values for *xxx* are shown in Table 29.

Identifies the number of consecutive occurrences of an entry in the suspend class required for CICSPlex SM to report a STALL. The value can be 0 - 999. Use 0 to indicate that STALL detection for the *xxx* suspend class is not active. The default value for each task is shown in Table 28 on page 357.

STALL*xxx*TSK
xxx represents a CICSPlex SM suspend class. The values for *xxx* are shown in Table 29.

Identify the minimum number of concurrent tasks required to enter the suspend class. The value can be 0 - 999. Use 0 to indicate that STALL detection for the *xxx* suspend class is not active. The default value for each task is shown in Table 28 on page 357.

Table 29. CICSPlex SM suspend classes

Suspend class	CICS suspend types	Value in STALL*xxx* parameters	Text in EYUPN*xxxx* messages
Allocate Session	ALLOCATE	SES	ALLCSESS
Console	CQSYSTEM	CON	CONSOLE
DBCTL	DBCTL	DBC	DBCTRL
DB2	CDB2CONN CDB2RDYQ CDB2TCB DB2_INIT DB2 DB2CDISC DB2EDISA	DB2	DB2
DLI	DLI	DLI	DLI

Table 29. CICSPlex SM suspend classes (continued)

Suspend class	CICS suspend types	Value in STALL*xxx* parameters	Text in EYUPN*xxxx* messages
Dispatcher	DS_HELD DISPATCH	DSP	DISP
Enterprise Java	EJ.ST.DJ. EJ.ST.DC.	EJB	EJB
Enterprise Java	RZRSTRAN	EJB	EJB
Enterprise Java	RZRSTRIG	EJB	EJB
Enterprise Java	SHREQEST	EJB	EJB
Enterprise Java	SHSYSTEM	EJB	EJB
Enqueue	KC_ENQ ENQUEUE	ENQ	ENQUEUE
File	FC*xxxxxx* CFDT*xxxx*	FLE	FILE
File	FCBFSUSP	FLE	FILE
File	FCWAITQ	FLE	FILE
Interval Control	IC*xxxxxx*	ITV	INTV
Interval Control	TIEXPIRY	ITV	INTV
IP Interconnectivity	IS_*xxxx*	IPC	IPIC
Journal	JASUBTAS JC*xxxxxx*	JNL	JOURNAL
Lock Manager	LMQUEUE	LCK	LOCK
Logger	LG*xxxxxx*	LGR	LOGGER
Log Manager	LG*xxxxxx*	LGR	LOGGER
MQSeries®	MQSERIES WMQ_INIT WMQCDISC	MQS	MQSERIES
Program Loader	APRDR	PGM	PROGRAM
Program Loader	CPI	PGM	PROGRAM
Program Loader	EDF	PGM	PROGRAM
Program Loader	PROGRAM	PGM	PROGRAM
Resource manager	DFHPTTW	RMI	RM
Resource manager	PRM	RMI	RM
Resource manager	RMCLIENT	RMI	RM
Resource manager	RMUOWOBJ	RMI	RM
Resource manager	UNSHUNT	RMI	RM
Sockets domain	CCACHE	SOC	SOCKETS
Sockets domain	SOCKETS	SOC	SOCKETS
Storage	SMSYSTEM	STG	STORAGE
Storage	*x*DSA E*x*DSA	STG	STORAGE
Terminal	NOTI	ILK	IRLINK
Transaction manager	FOREVER	XMG	TRANSACT
Transaction manager	RESYNC	XMG	TRANSACT

Table 29. CICSPlex SM suspend classes (continued)

Suspend class	**CICS suspend types**	**Value in STALL*xxx* parameters**	**Text in EYUPN*xxxx* messages**
Transaction manager	SOCBNOTI	XMG	TRANSACT
Transaction manager	SOCFNOTI	XMG	TRANSACT
Transaction manager	TRANDEF	XMG	TRANSACT
Transaction manager	XMCHILD	XMG	TRANSACT
Transaction manager	XMPARENT	XMG	TRANSACT
Transient Data	MBCB_*xxx* MRCB_*xxx* TDEPLOCK TDIPLOCK TD_INIT TD_READ	TDQ	TSDATA
Terminal Control	ZC*xxxxxx*	TRM	TERM
Task Wait	EKCWAIT KCCOMPAT	TSK	TASKWAIT
Temporary Storage	TS*xxxxxx*	TSQ	TEMPSTOR
Terminal	IRLINK	ILK	IRLINK
Terminal Control	AITM	TRM	TERM
Transaction Manager	XM_HELD MXT TCLASS	XMG	TRANSACT
User wait	USERWAIT EDF	USR	USERWAIT
Web services	WBALIAS WEB_ECB	WEB	WEBSERV
Webservices	PIISLSTN	WEB	WEBSERV
Webservices	PIPELINE	WEB	WEBSERV
Webservices	RZCBNOTI	WEB	WEBSERV
XRF	XR*xxxxxx*	XRF	XRF

EYUPN*xxxx* messages are issued when a stall condition occurs that generates a real-time analysis system availability monitoring (SAM) event.

SUPPRESSCMF(YES | NO)
For a local MAS, indicates whether the records collected by the CICS Monitor Facility are written to SMF.

The parameter suppresses only CICS type 3 performance class records. Type 4 exception records and type 5 transaction resource records are not suppressed. The type 3 performance records are suppressed only if the CICS region has an active CICSPlex SM monitor definition installed for the MTRAN monitoring class. You can verify which CICS regions have active monitoring for the MTRAN class by using the WUI Active monitor specifications (POLMON) tabular view.

TOBATCHREQ(value | 0)
Specifies the time in seconds before a batch request directed to a MAS is timed out. This time includes RTA requests and API requests initiated from non-CICS programs. Specify zero or a value in the range 10 - 1800.

- If you specify zero, the default value of 240 seconds (4 minutes) is applied. This value is then doubled when the request is transmitted to the MAS.
- If you specify a non-zero value in the range 10 - 1800, that value is used.
- If you specify a non-zero value less than 10, TOBATCHREQ is set to 10.

Depending on the value specified for TOBATCHREQ, more timeouts can be received. You can check in the following ways:

RTA requests
No data is processed for any MAS that times out and no external message is displayed. This occurrence might mean that an event is not created or might lead to premature termination of existing events.

API requests initiated from non-CICS programs
All API requests initiated from non-CICS programs receive a RESPONSE of ENVIRONERROR (1030) and REASON of REQTIMEOUT (1342) and no data records are returned, regardless of the CONTEXT and SCOPE of the request.

TOONLINEREQ(value | 0)
Specifies the time in seconds before an online request directed to a MAS is timed out, including WUI requests and API requests initiated from CICS programs. Specify zero, or a value in the range 10 - 1800.

- If you specify zero, the default value of 240 seconds (4 minutes) is applied. This value is then doubled when a CMAS-to-CMAS link is crossed. For example, you might have a WUI connected to CMAS-1 and MAS-2 is connected to CMAS-2. If you inquire from the WUI to MAS-2, the TOONLINEREQ default value of 240 seconds is doubled to 480 seconds because the request is transmitted from CMAS-1 to CMAS-2.
- If you specify a non-zero value in the range 10 - 1800, that value is used.
- If you specify a non-zero value less than 10, TOONLINEREQ is set to 10.

Depending on the value specified for TOONLINEREQ, more timeouts can be received. You can check in the following ways:

WUI requests
All WUI requests receive the following message and no data records are displayed, regardless of the CONTEXT and SCOPE of the request.
EYUVC1220E
CICSPlex SM API command (GET) failed. (Environerror, Reqtimeout)

API requests initiated from CICS programs
All API requests initiated from CICS programs receive a RESPONSE of ENVIRONERROR (1030) and REASON of REQTIMEOUT (1342) and no data records are returned, regardless of the CONTEXT and SCOPE of the request.

TOPOLLINT(value | 300)
Specifies the time in seconds that a CMAS delays between checking all requests to check if they exceed their timeout time. Because polling is used to check when to timeout a request, more reliable timeouts occur if this value is set less than or equal to both TOBATCHREQ and TOONLINEREQ.

When a request is directed to a MAS that is not connected to the originating CMAS, it is transmitted from the originating CMAS to the remote CMAS to which the MAS is connected. In this case, the remote CMAS performs the timeout processing, based on the TOBATCHREQ and TOONLINEREQ values specified in the originating CMAS and the TOPOLLINT value specified in the remote CMAS. For this reason, timeout processing is more consistent if all CMASes in the network have the same TOPOLLINT value.

WLMLCUSH(value | 20)
Specifies the percentage of additional pre-allocated storage that CICSPlex SM WLM list management uses in addition to the value of MAXTASK at region initialization. This value is in the range of 0 to 100.

Important: If this value is lower than the known variance of MAXTASK from the initial **MXT** value, additional allocation and deallocation of storage in the routing region occurs, leading to degraded performance. In such circumstances, you must increase the initial values of **MXT** or WLMLCUSH and restart the routing region.

Part 6. Verifying the CICS installation

After you have installed CICS and applied any necessary service, you can use the DFHIVPBT and DFHIVPOL CICS-supplied installation verification procedures (IVPs) to confirm that CICS is operational.

You must have installed both the base component and activation module before you run the IVP jobs.

Chapter 50. Preparing to run the IVPs

You must perform a number of tasks to prepare CICS for running the CICS installation verification procedures.

Creating and defining activities for the IVP jobs

In preparation for running the IVP jobs, create the CICS data sets, install the CICS SVC, define and activate the CICS applids, and define log streams.

Creating the CICS data sets for the IVP jobs

Before you can run any of the CICS-suppled IVP jobs, create the data sets that they use. For further information about creating the data sets for the IVP jobs, see Chapter 39, "Jobs for creating the CICS data sets," on page 253.

Installing the CICS SVC for the IVP jobs

All the IVP jobs require the CICS Type 3 SVC, which must be installed in the LPA.

If you have not already installed the CICS SVC in the LPA, described in Chapter 22, "Installing CICS modules in the MVS link pack area," on page 155, do so now before you attempt to run any of the IVP jobs. The IVP jobs do not use the Type 6 SVC (DFHHPSVC).

Defining and activating the CICS applids

If you want to use SNA with a CICS region started by any of the CICS IVP jobs, create and activate an SNA APPL definition for the CICS region application identifier (applid).

The applid defined to SNA must match the applid that is specified on the APPLID system initialization parameter that is used by the IVP job. For example, to be able to log on to the CICS region that is started by the DFHIVPOL job, you must perform one of the following actions:

- Create and activate an APPL definition for your own applid, which you specify on the APPLID parameter of the DFH$SIP1 member of the SYSIN data set.
- Define and activate an APPL definition for the default applid DBDCCICS, which you specify on the APPLID parameter of the DFH$SIP1 member of the SYSIN data set.

For more information about creating and activating SNA APPL definitions for CICS, see Chapter 21, "Defining CICS regions as applications to SNA," on page 143 and "Data set naming conventions" on page 253.

Further, if you want to use SNA cross-domain services to communicate between CICS regions on separate MVS images, you must create and activate SNA CDRSC definitions in both MVS images involved in the communication. For more information about creating and activating SNA CDRSC definitions for CICS, see "Defining cross-domain services when using SNA" on page 145.

Defining log streams

CICS automatically attempts to connect to its system log stream, unless you define a journal model resource definition to define the log stream as TYPE(DUMMY). You decide whether you want to run the IVPs with system logs or to run with dummy logging.

If you decide to run with real log streams, see Chapter 34, “Defining the logger environment for CICS,” on page 205 for information about defining log streams.

Alternatively, you can define a CICS JOURNALMODEL resource definition with TYPE(DUMMY) to avoid having to define log streams. To run the IVPs with the minimum effort:

- Define JOURNALMODEL resource definitions in the CSD for the primary and secondary system logs, DFHLOG and DFHSHUNT respectively, specifying TYPE(DUMMY); see Figure 26 for a sample job.
- Add the CSD group that contains your dummy system log journal models to your own group list, and include your group list on the GRPLIST system initialization parameter.

  Note that your group list must *follow* the IBM-supplied list DFHLIST. DFHLIST includes group DFHLGMOD, which contains DFHLOG and DFHSHUNT JOURNALMODEL definitions. Concatenating your list after DFHLIST ensures that your DUMMY definitions replace the IBM definitions.

```
//CSDUP EXEC PGM=DFHCSDUP,REGION=1M,PARM='CSD(READWRITE)'
//STEPLIB DD DSN=CICSTS52.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS52.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
*
* DEFINE JOURNAL MODELS FOR CICS LOG STREAMS AS DUMMY *
DEFINE JOURNALMODEL(DFHLOG) GROUP(LOGTEST)
DESCRIPTION(DEFINE SYSTEM LOG AS DUMMY)
JOURNALNAME(DFHLOG) TYPE(DUMMY)
ADD GROUP(LOGTEST) LIST(mylist)
/*
//
```

Figure 26. Sample job to define DUMMY JOURNALMODELs for CICS system logs

Reviewing and defining IVP security

You can run the IVP jobs with or without external security. To run the IVP jobs with external security, you must define to RACF an IVP default CICS user ID that has authority to run the transactions used as part of the IVP jobs.

Reviewing security requirements

As supplied, the system initialization parameters specify that external security is on. However, the IVP jobs have been set up with SEC=NO, indicating that external security is not on. The system initialization parameters also specify that the IVP jobs are subject to transaction security (XTRAN=YES), resource security (Xyyy=YES), and command security (XCMD=YES).

As supplied, the DFH$SIP2 member of the SYSIN data set used by the DFHIVPBT job specifies SEC=NO, so that you can run this job without external security.

To run the IVP jobs with external security:

1. Define CICS resource profiles to RACF.
2. Define an IVP default CICS user ID to RACF.
3. Specify the IVP user ID on the DFLTUSER=userid system initialization parameter.

You must also give the IVP user ID sufficient authority to use transactions and resources that are required to run the IVP jobs:

1. Authorize the IVP user ID to run the transactions that are used as part of the IVP jobs. (See Table 30 on page 378.) To do so, add the IVP user ID, with READ access, to the access list of the RACF profiles for the transaction member class (TCICSTRN) or the transaction group class (GCICSTRN).
2. If you define the transactions as prefixed resources, you must also specify the system initialization parameter SECPRFX={YES |prefix} for the IVP jobs.
3. Authorize the IVP user ID to access the resources that are used by the transactions. To do so, you add the IVP user ID, with appropriate authority, to the access list for the resource class profiles.
4. Authorize the IVP user ID to issue SP-type commands using the CEMT master terminal transaction. To do so, you add the IVP user ID, with appropriate authority, to the access list of the RACF profiles for the resource member class (CCICSCMD) or the resource group class (VCICSCMD). You must give the IVP user ID UPDATE access for the SHUTDOWN resource class; otherwise, the user ID cannot end the IVP jobs. Give the IVP user ID UPDATE access for the DUMPDS and SYSTEM resource classes, if the DFHIVPBT job is to be run with external security.

For information about implementing external security, see RACF security overview in Securing. Alternatively, you can run the IVP jobs with limited security, for example:

- Without command security (XCMD=NO), the IVP user ID runs the IVP jobs without requiring authority to use the CEMT SP-type commands and the resources that they access.
- With transaction security only (Xyyy=NO including XCMD=NO), the IVP user ID runs the IVP jobs if authorized to use only the transactions used as part of the IVP jobs.

Authorizing the IVP user ID

To run the IVP jobs with external security, you must define to RACF an IVP default CICS user ID that has authority to run the transactions used as part of the IVP jobs.

These transactions include the CICS-supplied transactions that are listed in Table 30 on page 378. The level of authority that is required by the IVP user ID depends on the security that you want to use for the IVP jobs. On a production system, the default user must not have access to any CICS-supplied transactions except those that you require in your CICS environment. Make the resource access authorizations that you give to the default user clearly limited to those resources that you intend to be universally available, and therefore not restricted in any way.

For information about the security requirements for CICS-supplied transactions, and about CICS security in general, see Security for CICS-supplied transactions in Securing.

Table 30. Transactions used as part of the IVP jobs

Application	Transactions
DFH$BTCH	CWTO, CEMT, CEOT, CSFE
FILEA samples	
DFH$MNU	AMNU, MENU, PMNU, DMNU
DFH$ALL	AINQ, INQY, PINQ, DINQ AADD, ADDS, PADD, DADD AUPD, UPDT, PUPD, DUPD
DFH$xBRW	ABRW, BRWS, PBRW, DBRW
DFH$REN	AORD, OREN, PORD, DORD
DFH$xCOM	AORQ, OREQ, PORQ, DORQ
DFH$REP	AREP, REPT, PREP, DREP
Other functions	CETR, CEDA, CMAC, CMSG, CSGM

Specifying system initialization parameters for the IVP jobs

All the IVP jobs use the system initialization parameters that are specified in the associated DFH$SIPn member of the SYSIN data set.

The DFH$SIPn members, as supplied by CICS, use system initialization defaults, and the resources defined to CICS are adequate only for a basic CICS region. For example, in the case of the DFHIVPOL job, the resources defined limit the number of terminals you can use.

The DFH$SIPn members of the SYSIN data set also contain some system initialization parameters to exclude CICS resources that are not required by the IVP jobs, or to include some not specified by the default system initialization parameters.

One such parameter is TCT=5$, specifying the CICS sample LU control table, in the *hlq*.SDFHLOAD library. This LU control table defines the pair of sequential input and output devices, CARDIN and PRINTER. (These are the only devices that are defined in DFHTCT5$.)

You can edit the DFH$SIPn members of the SYSIN data set to make these changes:

- The default SVC number is 216. To use a different SVC number, specify CICSSVC=nnn as a parameter to the DFHSTART proc in the appropriate IVP job. For more information about defining CICS SVCs, see Chapter 19, “Installing the CICS SVCs,” on page 137.

  The IVP jobs do not require the Type 6 SVC.
- The applid used is CICSIVP1. To use a different applid, change the APPLID=CICSIVP1 system initialization parameter in the appropriate DFH$SIPn member.
- The IVP jobs have external security switched off. To run with security (SEC=YES), define a suitable default user ID (for example, IVPUSER) with the required authority to run the IVP transactions. Add DFLTUSER=IVPUSER in the

appropriate DFH$SIPn member. For more information about defining the IVP user ID, see "Reviewing and defining IVP security" on page 376.

You can define transactions as prefixed resources by using the IVP user ID, IVPUSER, or any other prefix, as the prefix (for example, IVPUSER.CEMT or prefix.CEMT). To do so, add SECPRFX=YES or SECPRFX=prefix in the appropriate DFH$SIPn member for the IVP job.

The use of a prefix enables transactions to be run as part of the IVP jobs without affecting other CICS regions. For example, when the DFH$BTCH batch stream is run, CICS sends authorization requests to RACF for the transactions and identifies them as IVPUSER.*xxxx*, where *xxxx* is the transaction ID (for example, CWTO or CEMT).

- CICS provides Language Environment support, for all the high-level language sample programs. For the Language Environment modules, CICS requires either predefined CSD definitions to be installed or program autoinstall to be active.

  The IVP jobs include as comments the required DD statements for the Language Environment libraries.
- The IVP jobs run with auxiliary trace switched on (AUXTR=ON), and the auxiliary trace data set switching facility is set to switch once only (AUXTRSW=NEXT).
- TCT=NO is specified as a system initialization override, which causes CICS to use the dummy LU control table, DFHTCTDY. This dummy LU control table contains only the CICS and SNA control blocks for use with SNA LUs but no LU entries.
-

Resources for the CICS messages facility, CMAC

You can use the CICS messages facility, the CICS-supplied transaction CMAC, to provide the messages and codes descriptions online. Before you can use CMAC, you must create and initialize the CICS messages data set DFHCMACD, define the resources required by the facility, and make them available to your CICS region.

For information about creating and initializing the DFHCMACD data set, see "DFHCMACI job for creating the messages data set" on page 257.

The file DFHCMACD, managed by CICS file control, accesses the DFHCMACD data set. You must create a definition for this file in the CSD. The CICS-supplied definition for the DFHCMACD file and other resources that are required by the CICS messages facility are in the CSD group DFHCMAC. The CICS startup procedure (in the IVP jobs) has a DD statement for the CMAC file, but for dynamic allocation copy the supplied resource definition for the DFHCMACD file and add the DSNAME option.

Specify the DFHCMAC group of resources for the CICS messages facility only in those CICS regions that use the facility; for example, on some terminal-owning regions, but perhaps not on data-owning regions.

The CICS startup procedure, DFHSTART

All the IVP jobs include a procedure to start CICS. You can use this procedure as a basis for your own CICS startup procedures.

The DFHSTART procedure comprises the following steps:

1. CICSCNTL: determine whether CICS is to be started.

2. DTCNTL: determine whether dump and trace analysis is to be performed.
3. CICS: run CICS.
4. PRTDMPA: print any contents of the CICS DFHDMPA dump data set.
5. PRTDMPB: print any contents of the CICS DFHDMPB dump data set.
6. PRTAUXT: print any contents of the auxiliary trace DFHAUXT data set.
7. PRTBUXT: print any contents of the auxiliary trace DFHBUXT data set.

When you run the DFHISTAR job, it overrides the default values in the IVP jobs with the values you specified in the DFHISTAR job.

The following symbolic parameters are defined in the IVP jobs:

INDEX1(hlq)
: Is the high-level index of the CICS runtime data sets, as specified on the DSINFO parameter of the DFHISTAR job.

INDEX2(hlq)
: Is the high-level index of the CICS load libraries, as specified on the INDEX parameter of the DFHISTAR job.

REGNAM(TR)
: Is the REGION name for a single or MRO region.

REG(80M)
: defines the MVS region size for the step to run CICS.

MEMLIM(8G)
: The z/OS MEMLIMIT parameter limits the amount of 64-bit (above-the-bar) storage that the CICS address space can use.

START(AUTO)
: Is the type of CICS startup to be performed.

DUMPTR(YES)
: Specifies whether dump and trace analysis is required. The steps PRTDMPA, PRTDMPB, DFHAUXT, and DFHBUXT are run only if you specify DUMPTR=YES.

RUNCICS(YES)
: Specifies whether CICS is to be started. The step to run CICS runs only if you code RUNCICS=YES (the default). To perform dump and trace analysis without starting CICS, code RUNCICS=NO.

OUTC(*)
: Is the output print class.

SIP(T)
: Is the suffix of the DFH$SIP member (in the SYSIN data set) to be used during CICS startup.

CICSSVC(216)
: Specifies the CICSSVC number that you have assigned to the CICS type 3 SVC.

USSHOME(`/usr/lpp/cicsts/cicsts52`)
: Specifies the name and path of the root directory for CICS Transaction Server files on z/OS UNIX.

DD statements for CICS data sets

The startup job step, DFHSTART, contains DD statements for the CICS data sets.

The IVP jobs include as comments the required DD statements for the Language Environment libraries.

Table 31. DD statements for CICS data sets in the DFHSTART procedure

DD name	Description
SYSIN	SYSIN data set, containing the DFH$SIPn members that specify system initialization parameter overrides.
DFHCMACD	Messages data set, required for the CICS messages transaction, CMAC.
FILEA	Sample VSAM data set, required by the FILEA sample applications.
DFHTEMP	Auxiliary temporary storage data set, required by the FILEA sample applications.
DFHINTRA	Transient data intrapartition data set, required by the FILEA sample applications.
DFHAUXT DFHBUXT	First auxiliary trace (A) data set. Second auxiliary trace (B) data set. The auxiliary trace data sets, DFHAUXT and DFHBUXT, are required because the IVP jobs run with auxiliary trace switched on, and the auxiliary trace data set switching facility is set to switch once only.
DFHLCD	(Mandatory) CICS local catalog data set (VSAM), used by the CICS domains to save some of their information between CICS runs, and to preserve this information across a cold start.
DFHGCD	(Mandatory) CICS global catalog data set (VSAM) has a variety of uses, including: during a CICS run, holding resource definitions that are installed; and, during a controlled shutdown, recording part of the warm keypoint information.
DFHCXRF	Transient data extrapartition data set, used by CICS as the target for messages sent to any transient data destination before CICS has completed intrapartition transient data initialization. Use of this DDname is optional, but if it is not used, any messages that are written here are lost.
DFHLRQ	The local request queue data set is used to store pending BTS requests;for example, timer requests or requests to run activities. It is recoverable and used to ensure that, if CICS fails, no pending requests are lost. For more information, see the *CICS Business Transaction Services*.
LOGUSR	Data set for the extrapartition transient data destination, LOGA, used by the CICS sample programs.
MSGUSR	Data set for the extrapartition transient data destination, CSSL, used by a number of CICS services.
COUT	Data set for the extrapartition transient data destinations used by C/370 application programs. This data set is the destination for the C/370 output data streams, stdout (CCSO) and, indirectly, stderr (CCSE).
DFHDMPA DFHDMPB	First transaction dump (A) data set. Second transaction dump (B) data set. The dump data sets are included because CICS always tries to open a transaction dump data set, and issues a warning message if it is unable to do so for any reason.
DFHCSD	(Mandatory) CICS system definition data set (VSAM).

Verify batch job, DFHIVPBT

The CICS-supplied verify batch job, DFHIVPBT, is tailored to your CICS environment and stored in the *hlq*.XDFHINST library when you run the DFHISTAR job.

For more information about installing CICS using DFHISTAR, see Installing CICS TS using DFHISTAR.

DFHIVPBT starts up CICS, specifying a pair of sequential input and output devices (CARDIN and PRINTER) to be used instead of an ordinary terminal. It then runs a number of CICS transactions that are read from CARDIN. The last transaction in the input stream shuts down CICS. If you want to verify support for the COBOL, C, C++, and PL/I languages, remove the comment marks from the SCEERUN and SCEERUN2 libraries, and increase the memory size for the job.

This IVP comprises the following job steps:

1. Job step GENINPT unloads the member DFH$BTCH from the *hlq*.SDFHSAMP library into the CARDIN data set, using the MVS utility program, IEBGENER.
2. Job step DFHSTART invokes the CICS initialization program, DFHSIP, to start CICS. The DFHSIP program reads startup system initialization parameters from the DFH$SIP2 member of the SYSIN data set. For information about the system initialization parameters used by the IVP jobs, see "Specifying system initialization parameters for the IVP jobs" on page 378.

The DFH$BTCH data set, as described in Figure 27, is used as terminal input.

```
CWTO START OF BATCH STREAM DFH$BTCH\
CEMT S TIME(120)\                       EXIT TIME INTVL TO 120 MILLISEC
CEMT S DUMPDS SWITCH\                   SWITCH FROM DUMP A TO B
CEOT\                                   INQUIRE TERMINAL STATUS
CSFE\                                   F. E. TERMINAL TEST REQUEST
PRINT\                                  TO SEND ALL CHARACTERS
THIS MESSAGE HAS BEEN RECEIVED FROM THE TERMINAL AND IS BEING SENT BACK\
END\                                    TO END THE TEST
CSXX\                                   INVALID TRANSACTION IDENT.
CWTO END OF BATCH STREAM DFH$BTCH - SHUTTING DOWN CICS\
CEMT P SHUT\                            NORMAL TERMINATION OF CICS

    where \ is the End Of Data Input character X'E0'.
```

Figure 27. DFH$BTCH data set, input to the DFHIVPBT job

Check the job log for the DFHIVPBT job to verify that CICS startup and shutdown completed successfully. Verify that the following messages are issued:

```
DFHSI1517 CICSIVP1 Control is being given to CICS.
DFHKE1799 CICSIVP1 TERMINATION OF CICS IS COMPLETE.
```

The output from the DFHIVPBT job includes CICS messages written to one of the extrapartition destinations, responses to the transactions in the DFH$BTCH data set, and an auxiliary trace.

When CICS is initialized by DFHIVPBT, the log streams do not exist. CICS issues a request to create a log stream dynamically using MVS define log stream services. If system log initialization fails, CICS abends.

Verify interactive job, DFHIVPOL

The verify interactive job, DFHIVPOL, is tailored to your CICS environment and stored in the *hlq*.XDFHINST library when you run the DFHISTAR job.

You can use the DFHIVPOL job to start a CICS region to try out some functions, for example:
- Use the master LU transaction, CEMT. You can also use CEMT from the MVS system console. For information about CEMT, see CEMT - master terminal in Reference > System definition.
- Use the resource definition online transaction, CEDA. For information about using CEDA, see Resource management transaction CEDA commands in Reference -> System definition.
- Use the sample application transaction AMNU, to access the sample VSAM file, FILEA.

You require either an IBM 3270 Information Display System LU or a console device, or both.

If you use an IBM 3270 Information Display System LU with this IVP, you can try CEDA, CEMT, and the sample applications.

From a console device, the CEDA transaction can be used only to INSTALL resource definitions. The sample programs cannot be run from a console device.

Defining an SNA LU for the online IVP

You can define an SNA LU by using one of these methods:
- Use the autoinstall facility, to avoid defining LUs to CICS explicitly before they can be used, see "Autoinstalling for an SNA LU."
- Define a LU explicitly in the CSD, using the DEFINE command of DFHCSDUP (the batch utility for updating the CSD), see "Defining an SNA LU in the CSD" on page 384.

Autoinstalling for an SNA LU

With autoinstall, the resource definitions you create using RDO can act as models or templates for many resources of the same type. You then leave CICS to match real resources with one of the models. CICS installs table entries for these real resources dynamically, as and when they are required.

When using autoinstall, be aware that when CICS processes an autoinstall request, it uses data from the SNA logmode table. Be aware of this important consideration. An autoinstall request succeeds only when the logmode data, which is passed to CICS in the BIND image, matches one of the model terminal definitions recorded in the autoinstall model table (AMT) from the CSD. Before attempting to start CICS and autoinstall a LU for this IVP, check your SNA definitions with those given in Coding entries in the z/OS Communications Server LOGON mode table. If CICS fails to match model and logmode data, you receive message DFHZC6987I.

The CSD is defined and initialized for all the IVP jobs when you run the DFHCOMDS job and includes some IBM-supplied definitions for use with autoinstall. These definitions are defined in the following groups:

DFHTERM
Model LU definitions for use with autoinstall. For example, two of the TERMINAL definitions are 3270 and LU2.

DFHTYPE
Partial LU definitions (TYPETERMs) defining common LU properties, or attributes. For example, two of the TYPETERM definitions are DFH3270 (to define a non-SNA 3270 LU) and DFHLU2E2 (to define an SNA 3270 model 2 LU). The DFHLU2E2 resource definition matches the SNA-supplied logmode SNX32702.

The DFHTERM and DFHTYPE groups are included in the CICS-defined group list called DFHLIST, which is defined in the GRPLIST operand. If the CICS-supplied definitions are not suitable for your installation, you can create additional TYPETERM and model TERMINAL definitions in the CSD, but without a LU you must do this offline, using the DFHCSDUP utility program. For information about autoinstall definitions, see Autoinstall in Configuring.

Autoinstall also requires a user program to assign LU identifiers, and, if necessary, to control access to the system. When you run the online IVP, you are unlikely to have any special requirements for LU identifiers, or to control access, in which case you can use the IBM-supplied autoinstall user program, DFHZATDX. If you are using autoinstall for APPC connections and LUs, the sample autoinstall user program is called DFHZATDY.

Defining an SNA LU in the CSD

If you want to use an explicitly defined LU, rather than allow CICS to autoinstall a LU, define it offline using the DFHCSDUP utility program.

The normal way to create resource definitions in the CSD is to use the CEDA DEFINE command from a CICS master LU, but without a LU you can only do this using the DFHCSDUP utility program. For an example of a DFHCSDUP job to define an SNA LU in the CSD, see Figure 28.

```
//DEFTERM  JOB (accounting information),MSGCLASS=A,
//         MSGLEVEL=(1,1),CLASS=A,NOTIFY=userid
//VTAMDEF  EXEC PGM=DFHCSDUP
//STEPLIB  DD DSN=CICSTS52.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD DSN=CICSTS52.CICS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
*
DEFINE TERMINAL(trmidnt)   NETNAME(vtamname)  GROUP(grpname)
       TYPETERM(name)      INSERVICE(NO)      AUTINSTMODEL(NO)
*
APPEND LIST(DFHLIST) TO(yourlist)

*
ADD GROUP(grpname) LIST(yourlist)
*
LIST   LIST(yourlist)  OBJECTS
/*
//
```

Figure 28. Defining a LU by using the DFHCSDUP utility program

GROUP(name)
Code a unique name for the group to which the LU resource definition is to belong.

NETNAME(name)
Code the 8-character SNA name that identifies this LU to your SNA system.

TERMINAL(name)
Code a unique 4-character LU identifier as the name by which CICS is to know the LU.

TO(yourlist) and LIST(yourlist)
Code a unique name for *yourlist*. If your new group list does not include all the CICS-supplied resources as well as your own, you must specify DFHLIST and *yourlist* on the GRPLIST system initialization parameter of your CICS startup job.

TYPETERM(name)
Specify a unique name to identify the resource definition that matches the properties of the type of LU you are using. For example, to define an SNA 3270 model 2 LU, specify the CICS-supplied TYPETERM definition DFHLU2E2.

To include the CICS-supplied list of resources in a new group list, create a new list by copying the CICS-supplied list, DFHLIST, using the APPEND command. The CICS-supplied group list, DFHLIST, is a protected group that you cannot modify. You can then add your resource definition groups to the new list. Before you run the IVP, define your new group list to CICS, by adding a system initialization override to the SYSIN data set in the DFHIVPOL job stream.

Defining the CICS APPLID to SNA

Ensure that either SNA knows the CICS application identifier (APPLID) or you change the CICS APPLID to one that is already known to your SNA system.

If you use the default APPLID (DBDCCICS), define this to SNA as described in "Defining specific APPL definitions and APPL parameters to SNA" on page 143, before starting the DFHIVPOL job.

Communicating with CICS from an MVS console or a TSO session

If you want to communicate with CICS from an MVS console, you must define a console in the CSD before starting the IVP. You cannot define a console in the TCT. For more information about defining consoles, see Defining console devices to CICS in Configuring.

If you want to communicate with CICS from a TSO session, you must define the TSO user as a console device in the CSD before starting the IVP. For more information, see Defining console devices to CICS in Configuring.

Running the DFHIVPOL job

The DFHIVPOL job includes a procedure, DFHSTART, that calls the CICS initialization program, DFHSIP, to start CICS.

When you have successfully logged on to CICS, you can carry out any of the interactive operations described in "Verifying SNA LU operations" on page 388.

While logged on to CICS, perform a CEMT SET DUMPDS SWITCH to ensure that both dump data sets are initialized, before the dump utility program is run when you shut down CICS.

Finally, you can shut down CICS.

Sample job log for the DFHIVPOL job

When you run the DFHIVPOL job, your job log looks similar to the sample log shown.

```
1 J E S 2  J O B  L O G  --  S Y S T E M  M V 2 6  --  N O D E  W I N M V S 2 C
0
 17.17.29 JOB35727 ---- TUESDAY,   24 APRIL 2007 ----
 17.17.29 JOB35727  ICH70001I CICINST  LAST ACCESS AT 16:24:15 ON TUESDAY, APRIL 24, 2007
 17.17.29 JOB35727  $HASP373 DFHIVPOL STARTED - INIT 69   - CLASS A - SYS MV26
 17.17.29 JOB35727  IEF403I DFHIVPOL - STARTED - TIME=17.17.29
 17.17.29 JOB35727  -                                         --TIMINGS (MINS.)--            ----PAGING COUNTS---
 17.17.29 JOB35727  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP    CPU    SRB  CLOCK   SERV  PG   PAGE   SWAP    VIO SWAPS STEPNO
 17.17.29 JOB35727  -DFHIVPOL CICS     CICSCNTL    01     23    .00    .00    .00    167   0      0      0      0     0     1
 17.17.29 JOB35727  -DFHIVPOL CICS     DTCNTL      01     19    .00    .00    .00    147   0      0      0      0     0     2
 17.17.30 JOB35727  DFHPA1101  CICSIVP1 DFHSIT   IS BEING LOADED.
 17.17.30 JOB35727  DFHPA1108  CICSIVP1 DFHSIT   HAS BEEN LOADED. (GENERATED AT: MM/DD= 01/12 HH:MM= 13:57).
 17.17.30 JOB35727  DFHPA1100  CICSIVP1 OVERRIDE PARAMETERS FROM JCL EXEC STATEMENT: START=AUTO,SYSIN
 17.17.30 JOB35727  DFHPA1102  CICSIVP1 OVERRIDE PARAMETERS FROM SYSIN:  1
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 XRF=NO,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 AUXTR=ON,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 AUXTRSW=NEXT,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 APPLID=CICSIVP1,  2
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 FCT=NO,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 TCT=NO,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 SRT=NO,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 SEC=NO,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 TRTABSZ=64,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 PGRET=P/,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 PGPURGE=T/,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 PGCOPY=C/,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 PGCHAIN=X/,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 CICSSVC=233,
 17.17.30 JOB35727  DFHPA1927  CICSIVP1 .END
 17.17.30 JOB35727  DFHPA1103  CICSIVP1 END OF FILE ON SYSIN.
 17.17.31 JOB35727  +DFHTR0103 TRACE TABLE SIZE IS 64KB
 17.17.31 JOB35727  +DFHSM0122I CICSIVP1 Limit of DSA storage below 16MB is 5 120KB.  3
 17.17.31 JOB35727  +DFHSM0123I CICSIVP1 Limit of DSA storage above 16MB is 48MB.
 17.17.31 JOB35727  +DFHSM0113I CICSIVP1 Storage protection is not active.
 17.17.31 JOB35727  +DFHSM0126I CICSIVP1 Transaction isolation is not active.
 17.17.32 JOB35727  +DFHDM0101I CICSIVP1 CICS is initializing.
 17.17.32 JOB35727  +DFHWB0109I CICSIVP1 Web domain initialization has started.
 17.17.32 JOB35727  +DFHSO0100I CICSIVP1 Sockets domain initialization has started.
 17.17.32 JOB35727  +DFHRX0100I CICSIVP1 RX domain initialization has started.
 17.17.32 JOB35727  +DFHRX0101I CICSIVP1 RX domain initialization has ended.
 17.17.33 JOB35727  +DFHLG0101I CICSIVP1 Log manager domain initialization has started.
 17.17.33 JOB35727  +DFHEJ0101 CICSIVP1  296
    296              Enterprise Java domain initialization has started. Java is a
    296              trademark of Sun Microsystems, Inc.
 17.17.33 JOB35727  +DFHDH0100I CICSIVP1 Document domain initialization has started.
 17.17.33 JOB35727  +DFHXS1100I CICSIVP1 Security initialization has started.
 17.17.33 JOB35727  +DFHSI1500 CICSIVP1 CICS startup is in progress for CICS Transaction Server Version 4.1.0
 17.17.33 JOB35727  +DFHDU0304I CICSIVP1 Transaction Dump Data set DFHDMPA opened.
 17.17.33 JOB35727  +DFHXS1102I CICSIVP1 Security is inactive.
 17.17.33 JOB35727  +DFHSI1501I CICSIVP1 Loading CICS nucleus.
 17.17.34 JOB35727  +DFHTR0113 CICSIVP1 Auxiliary trace is being started on data set DFHAUXT.
 17.17.34 JOB35727  +DFHCQ0100I CICSIVP1 Console queue initialization has started.
 17.17.34 JOB35727  +DFHCQ0101I CICSIVP1 Console queue initialization has ended.
 17.17.34 JOB35727  +DFHCQ0103I CICSIVP1 MVS console queue is open.
 17.17.34 JOB35727  +DFHCQ0200I CICSIVP1 CEKL transaction enabled.
 17.17.34 JOB35727  +DFHXS1101I CICSIVP1 Security initialization has ended.
 17.17.34 JOB35727  +DFHRM0141 CICSIVP1 Recovery manager autostart override record is not present.
                       Normal processing continues.
 17.17.34 JOB35727  +DFHDH0101I CICSIVP1 Document domain initialization has ended.
 17.17.34 JOB35727  +DFHMN0105I CICSIVP1 Using default Monitoring Control Table.
 17.17.34 JOB35727  +DFHMN0110I CICSIVP1 CICS Monitoring is inactive.
 17.17.34 JOB35727  +DFHSO0101I CICSIVP1 Sockets domain initialization has ended.
```

```
17.17.35 JOB35727  IEC031I D37-04,IFG0554P,DFHIVPOL,CICS,DFHAUXT,D306,P2P0C6,INST.CICSTS52.CICS.DFHAUXT
17.17.35 JOB35727  +DFHTR0110 - AUXILIARY TRACE DATA SET DFHAUXT  FULL - SWITCHING TO DFHBUXT
17.17.35 JOB35727  +DFHWB0110I CICSIVP1 Web domain initialization has ended.
17.17.35 JOB35727  IEC031I D37-04,IFG0554P,DFHIVPOL,CICS,DFHBUXT,D50B,P2P14B,INST.CICSTS52.CICS.DFHBUXT
17.17.35 JOB35727  +DFHTR0109 - AUXILIARY TRACE DATA SET DFHBUXT  FULL - AUXILIARY TRACE HAS BEEN STOPPED
17.17.35 JOB35727  +DFHSI1502I CICSIVP1 CICS startup is Warm.
17.17.35 JOB35727  +DFHTS0100I CICSIVP1 Temporary Storage initialization has started.
17.17.35 JOB35727  +DFHLG0103I CICSIVP1 System log (DFHLOG) initialization has started.
17.17.35 JOB35727  +DFHLG0104I CICSIVP1  322
   322              System log (DFHLOG) initialization has ended. Log stream
   322              CICINST.CICSIVP1.DFHLOG is connected to structure LOG_GENERAL_008.
17.17.35 JOB35727  +DFHLG0103I CICSIVP1 System log (DFHSHUNT) initialization has started.
17.17.35 JOB35727  +DFHSI1503I CICSIVP1 Terminal data sets are being opened.
17.17.36 JOB35727  +DFHLG0104I CICSIVP1  327
   327              System log (DFHSHUNT) initialization has ended. Log stream
   327              CICINST.CICSIVP1.DFHSHUNT is connected to structure LOG_GENERAL_008.
17.17.36 JOB35727  +DFHLG0102I CICSIVP1 Log manager domain initialization has ended.
17.17.36 JOB35727  +DFHKE0406I CICSIVP1  329
   329              CICS is about to wait for predecessors defined in the MVS automatic
   329              restart management policy for this region.
17.17.36 JOB35727  +DFHKE0412I CICSIVP1 CICS WAITPRED call to automatic restart manager has completed.
17.17.36 JOB35727  +DFHCP0101I CICSIVP1 CPI initialization has started.
17.17.36 JOB35727  +DFHPR0104I CICSIVP1 Partner resource manager initialization has started.
17.17.36 JOB35727  +DFHAI0101I CICSIVP1 AITM initialization has started.
17.17.36 JOB35727  +DFHFC0100I CICSIVP1 File Control initialization has started.
17.17.36 JOB35727  +DFHTD0100I CICSIVP1 Transient Data initialization has started.
17.17.39 JOB35727  +DFHTS0101I CICSIVP1 Temporary Storage initialization has ended.
17.17.39 JOB35727  +DFHER5730 CICSIVP1 User recovery beginning
17.17.39 JOB35727  +DFHLG0745I CICSIVP1 System log full scan has started.
17.17.39 JOB35727  +DFHLG0748I CICSIVP1 System log selective scan has started.
17.17.39 JOB35727  +DFHLG0749I CICSIVP1 System log scan has completed.
17.17.40 JOB35727  +DFHER5731 CICSIVP1 No active user records on the system log
17.17.40 JOB35727  +DFHER5732 CICSIVP1 User recovery completed
17.17.40 JOB35727  +DFHTD0101I CICSIVP1 Transient Data initialization has ended.
17.17.40 JOB35727  +DFHFC0101I CICSIVP1 File Control initialization has ended.
17.17.40 JOB35727  +DFHTC1575 CICSIVP1 No TCT entry for SAMA
17.17.40 JOB35727  +DFHCP0102I CICSIVP1 CPI initialization has ended.
17.17.40 JOB35727  +DFHPR0105I CICSIVP1 Partner resource manager initialization has ended.
17.17.40 JOB35727  +DFHAI0102I CICSIVP1 AITM initialization has ended.
17.17.40 JOB35727  +DFHAP1203I CICSIVP1 Language Environment is being initialized.
17.17.40 JOB35727  +DFHAP1200 CICSIVP1 A CICS request to the Language Environment has failed. Reason code '0011020'.
17.17.40 JOB35727  +DFHAP1208 CICSIVP1 Language Environment cannot support the Cobol language.    5
17.17.40 JOB35727  +DFHAP1209 CICSIVP1 Language Environment cannot support the C/C++ languages.   5
17.17.40 JOB35727  +DFHAP1210 CICSIVP1 Language Environment cannot support the PL/I language.     5
17.17.40 JOB35727  +DFHAP1211I CICSIVP1 Language Environment initialization completed.
17.17.40 JOB35727  +DFHWB1007 CICSIVP1 Initializing CICS Web environment.
17.17.40 JOB35727  +DFHWB1008 CICSIVP1 CICS Web environment initialization is complete.
17.17.40 JOB35727  +DFHSI1517 CICSIVP1 Control is being given to CICS.
17.17.40 JOB35727  +DFHEJ0102 CICSIVP1 Enterprise Java domain initialization has ended.
17.23.42 JOB35727  +DFHFC0208I CICSIVP1  069
   069              LSR pool 1 is being built dynamically by CICS because all of the
   069              necessary parameters have not been supplied. Either there is no
   069              LSRPOOL definition or it is incomplete. The following are not
   069              defined:  'CI SIZE' 'STRINGS' 'MAXKEYLENGTH'. A delay is possible.
17.24.17 JOB35727  +DFHFC0208I CICSIVP1  137
   137              LSR pool 1 is being built dynamically by CICS because all of the
   137              necessary parameters have not been supplied. Either there is no
   137              LSRPOOL definition or it is incomplete. The following are not
   137              defined:  'CI SIZE' 'STRINGS' 'MAXKEYLENGTH'. A delay is possible.
17.24.28 JOB35727  +DFHTM1715 CICSIVP1 CICS is being quiesced by userid CICSUSER in transaction CEMT
                        at netname IYCQTC70.   4
17.24.28 JOB35727  +DFHDM0102I CICSIVP1 CICS is quiescing.
17.24.28 JOB35727  +DFHTM1782I CICSIVP1 All non-system tasks have been successfully terminated.
17.24.28 JOB35727  +DFHZC2305I CICSIVP1 Termination of VTAM sessions beginning
17.24.28 JOB35727  +DFHCESD  CICSIVP1 SHUTDOWN ASSIST TRANSACTION CESD STARTING. SHUTDOWN IS NORMAL.
17.24.29 JOB35727  +DFHZC2316 CICSIVP1 VTAM ACB is closed
17.24.29 JOB35727  +DFHCQ0104I CICSIVP1 MVS console queue is closed.
17.24.31 JOB35727  +DFHRM0204 CICSIVP1 There are no indoubt, commit-failed or backout-failed UOWs.
17.24.32 JOB35727  +DFHRM0130 CICSIVP1 Recovery manager has successfully quiesced.
17.24.32 JOB35727  +DFHDU0303I CICSIVP1 Transaction Dump Data set DFHDMPA closed.
17.24.32 JOB35727  +DFHKE1799 CICSIVP1 TERMINATION OF CICS IS COMPLETE.
```

```
17.24.33 JOB35727  -DFHIVPOL CICS     CICS       00   5757    .02    .00   7.05  21599   0      0      0      0     0     3
17.24.33 JOB35727  -DFHIVPOL CICS     PRTDMPA    00    136    .00    .00    .00    286   0      0      0      0     0     4
17.24.34 JOB35727  -DFHIVPOL CICS     PRTDMPB    00    135    .00    .00    .00    285   0      0      0      0     0     5
17.24.37 JOB35727  -DFHIVPOL CICS     PRTAUXT    00   1559    .01    .00    .05  13828   0      0      0      0     0     6
17.24.37 JOB35727  $HASP375 DFHIVPOL ESTIMATED  LINES EXCEEDED
17.24.38 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY            5,000  LINES
17.24.38 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY           10,000  LINES
17.24.38 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY           15,000  LINES
17.24.38 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY           20,000  LINES
17.24.39 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY           25,000  LINES
17.24.39 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY           30,000  LINES
17.24.39 JOB35727  $HASP375 DFHIVPOL ESTIMATE EXCEEDED BY           35,000  LINES
17.24.40 JOB35727  -DFHIVPOL CICS     PRTBUXT    00   1572    .01    .00    .05  13923   0      0      0      0     0     7
17.24.40 JOB35727  IEF404I DFHIVPOL - ENDED - TIME=17.24.40
17.24.40 JOB35727  -DFHIVPOL ENDED.  NAME-CICINST            TOTAL CPU TIME=   .06  TOTAL ELAPSED TIME=  7.18
17.24.40 JOB35727  $HASP395 DFHIVPOL ENDED
```

Figure 29. Sample job log for the DFHIVPOL job

Note: VTAM is now z/OS Communications Server.

1. For information about the system initialization parameters that the IVP jobs use, see "Specifying system initialization parameters for the IVP jobs" on page 378. See also **2** and **3**.
2. For more information about defining an APPLID for the CICS IVP jobs, see Chapter 21, "Defining CICS regions as applications to SNA," on page 143. An APPLID of CICSIVP1 is used in Figure 29.
3. The DFHSM0122 and DFHM0123 messages inform you of the limits available for the dynamic storage areas below 16 MB, and above 16 MB but below 2 GB. For information about these storage areas, see CICS dynamic storage areas in Improving performance. Storage for the extended read-only DSA, ERDSA, is obtained from read-only key 0 protected storage, because the default system initialization specifies RENTPGM=PROTECT.
4. The DFHTM1715 message is issued because the CICS region was shut down by the terminal user, with netname IYCWTC30, issuing a CEMT PERFORM SHUTDOWN command.
5. If you want COBOL, C, C++, and PL/I languages, remove the comment marks from the SCEERUN and SCEERUN2 libraries, and increase the memory size for the job.
6. The DFHME0107 message `Module CJEMCT1E cannot be found in the library`, is displayed only when a CICS region is started without any CICSPlex System Manager libraries or infrastructure in place. This is informational and does not restrict any CICS functionality.

Verifying SNA LU operations

You can perform a number of activities to verify that CICS is working properly, for example, logging on, using transactions, running sample programs, and shutting CICS down.

Logging on to a SNA LU

When the DFHIVPOL job displays the console message `CONTROL IS BEING GIVEN TO CICS`, you can log on to CICS using an IBM 3270 Information Display system terminal.

Use the CICS application identifier that you specified when you started CICS to log on through your SNA LU. For example, unless you changed the APPLID as specified as at system initialization (CICSIVP1), enter LOGON APPLID(CICSIVP1).

If you are using autoinstall, your logon request is passed to CICS and, if all the autoinstall requirements described in Autoinstall in Configuring have been met, CICS installs your LU. It does so by creating a TCT terminal entry (TCTTE) using the model definitions defined in the group list, DFHLIST, and the LU identifier returned by the autoinstall user program (DFHZATDX in this case).

If you are using a LU defined in the CSD explicitly, and included in the group list specified in the startup job stream, CICS identifies the installed resource definitions by the SNA net name and creates the required TCTTE.

When you log on to CICS, your LU can display a “good morning” message as specified on the GMTRAN system initialization parameter. The default transaction, CSGM, displays a welcome message as defined by the GMTEXT system initialization parameter.

Using CICS provided transactions through a terminal

After you have started CICS with the DFHIVPOL job, you can use the CICS provided transactions to try out various functions of CICS to help you verify that CICS is working properly. You can use the transactions at a CICS terminal, for example, CEMT and, if you defined one, the system console.

For information about the CICS transactions that you can try with the DFHIVPOL job, and about the message-switching responses to those transactions, see Administering with CICS supplied transactions in Adminstering.

Table 32. Typical terminal interactions

Operator Input	System Response

CEMT	`Status: ENTER ONE OF THE FOLLOWING`
	`Discard`
	`Inquire`
	`Perform`
	`Set`

I	`Status:  ENTER ONE OF THE FOLLOWING`
	`OR PRESS ENTER FOR DEFAULT`
	(Followed by a list of options)

PROG
Press ENTER key
	`STATUS:  RESULTS - OVERTYPE TO MODIFY`
	`Prog(CEECBLDY) Len(0000000) Ass Pro Ena Pri`
	`Res(000) Use(0000000000) Any Cex Ful`

Press F3 key Press CLEAR key	
CEMT PERFORM STATISTICS	
Press F3 key Press CLEAR key	`SESSION ENDED`
CETR	
Press F3 key Press CLEAR key	Clear or F3 pressed Normal termination of CETR
CEMT I TA	Displays list of tasks in the system

Table 32. Typical terminal interactions (continued)

Operator Input	System Response
Press F3 key Press CLEAR key	`SESSION ENDED`
CEMT I PROG(DFHFEP)	`Prog(DFHFEP )Len(005848) Ass Pro Ena Pri` `Res(000) Use(0000000) Any Cex Ful Qua`
Press F3 key Press CLEAR key	`SESSION ENDED`
CEOT (Inquire about this terminal)	`Ter (tmid) Tra (CEOT) Pri (nnn) Pag Ins Ati Tti` (Remember 'tmid' for use in next transaction, CMSG)
Press F3 key Press CLEAR key	`SESSION ENDED`

CMSG 'HELLO',R=tmid,S	(Send the message 'HELLO' to your terminal)
	`MRS OK MESSAGE HAS BEEN ROUTED`
	(briefly at lower right of screen)
	`HELLO`
	(at upper left of screen)

You can enter your CEMT input in either uppercase or lowercase, because the master terminal transaction translates all input to uppercase. Use the CLEAR key and the F3 key as indicated.

If you enter the CETR transaction, CICS displays the status of the various trace options.

You can alter the status of any of the trace options by over typing the current value, indicated by ===> on the CETR display.

Using the CEDA transaction

When DFHIVPOL starts up CICS, system initialization specifies GRPLIST=DFHLIST, which causes all the CICS resource definitions that are required for normal running to be installed.

You can see which resources are included in DFHLIST by using the CEDA transaction; for example, by using the `CEDA EXPAND LIST(DFHLIST)` command.

Press F8 to see the continuation of the list. If you started the DFHIVPOL job with your own group list specified instead of the DFHLIST group list, specify the name of your list in the CEDA EXPAND command. The CICS-defined groups all begin with “DFH”. For information about CEDA and the interactions for a typical sequence of CEDA commands, see the *CICS Resource Definition Guide*.

The DFHLIST group list does not include any of the sample applications groups, the group names of which all begin with “DFH$”. To use the sample programs, therefore, you must first install the resource definitions for the required samples. For example, to use the FILEA sample application:

1. Install the sample programs that are required for the FILEA applications. Use this command:
   ```
   CEDA INSTALL GROUP(DFH$AFLA)
   ```
2. Make the FILEA data set available to CICS, by performing one of the following tasks:
   - Install a FILE resource definition for the FILEA data set:
     ```
     CEDA INSTALL GROUP(DFH$FILA)
     ```
   - Provide a DD statement for the FILEA data set in your CICS startup JCL. For example,
     ```
     //FILEA    DD DISP=SHR,DSN=CICSTS52.CICS.CICSHTH1.FILEA
     ```

To end the CEDA session, press F3.

Invoking and running sample programs

To try the assembler language version of the FILEA sample application, install group DFH$AFLA and then enter the AMNU transaction.

Using transactions from a console device

You can invoke CICS transactions other than CECI from a console device, and other CICS operators can communicate with the console operator. In particular, you can use the console device for CICS master terminal functions to control CICS terminals or to control several CICS regions with multiregion operation.

Normal operating-system use of the console device is not inhibited, and CICS supports multiple console devices where present.

- The CEDA transaction can be used from a console device only to INSTALL resource definitions.
- The CECI transaction and the sample programs cannot be used from a console device.

If you issue the MVS command `d consoles`, a list of console devices is displayed. This list identifies the console devices by name.

You can use a console device to submit MODIFY commands from your job stream if you define a console device in your CSD as CONSNAME(INTERNAL).

For further information about defining consoles, see Defining console devices to CICS in Configuring.

To enter a command, use:

```
{MODIFY|F}  jobname,[']command[']
```

where:

jobname
: Is the region identifier for the CICS region. This identifier is either the name of the job being used to run CICS, for example, DFHIVPOL, or the name of a procedure if CICS was initiated as a started task.

command
: Is a string of data, starting with a CICS transaction identifier. If the transaction requires further input, the operator is prompted in the same way as any normal terminal operator. The message from CICS contains a reply number that must be quoted in the reply.

You can use the commands shown in Figure 30 to verify the CEMT and CEOT transactions from the MVS console.

Entering commands from TSO

A TSO user can enter CICS commands after invoking the TSO command CONSOLE, in either of two formats.

```
CONSOLE {MODIFY|F}  cicsid,[']command[']

CONSOLE
{MODIFY|F}  cicsid,[']command[']
END
```

When the TSO CONSOLE command is used, TSO checks the user for authority to issue console commands. Further, if console operator command security is active, the TSO user must be specifically authorized to issue `MODIFY cicsid`.

The TSO user can interact with an alternate CICS by using the command `CONSOLE MODIFY altcics,CEBT`.

You can also use TSO CLIST processing to issue sequences of CICS commands.

```
Operator input                   System response

f dfhivpol,'cemt i terminal'     Displays a list of terminals attached
                                 to CICS

f dfhivpol,'cemt i dump'         Displays status of transaction dump
                                 data sets

f dfhivpol,'cemt p statistics'   CICS writes statistics to SMF data sets

f dfhivpol,'cemt i ta'           Displays number and types of tasks
                                 currently running

f dfhivpol,'cemt p dump'         CICS invokes SDUMP macro for system
                                 dump to be taken

f dfhivpol,'cemt i prog(dfhpep)' Displays details of DFHPEP module

f dfhivpol,'ceot'                Displays details of operator console

f dfhivpol,'cemt i journalname'  Displays status of CICS logs
```

Figure 30. Using an MVS console for master terminal operations

Stopping CICS

To stop CICS, enter `CEMT P SHUT` from the SNA LU or MVS console. CEMT P SHUT is a short form of CEMT PERFORM SHUTDOWN.

The system responds with message DFH1713 and following messages as shown in the sample job log shown in Figure 29 on page 388.

Chapter 51. Verifying shared data tables support

You can verify that shared data tables can be used in a number of ways.

1. Start a CICS region on which you have installed support for shared data tables. To use shared data tables, you must install the DFHDTSVC, DFHDTCV, and DFHMVRMS modules in either an authorized system library in the MVS linklist (LNKLST concatenation of the MVS system) or in the LPA. When you install CICS, these modules are installed into the *hlq*.SDFHLINK library, which you usually include in the MVS linklist.
2. Define and install a user-maintained data table.
3. Try a generic read command on your data table, using the CECI transaction. Generic reads of user-maintained data tables are allowed only with shared data tables. If shared data tables is operational, you see a normal response. If shared data tables is not operational, you see an INVREQ response. This verification process uses user-maintained data tables throughout, because the behavior of CICS-maintained data tables is not apparent to their users. For example, a normal response is returned for a generic read of a CICS-maintained data table, regardless of whether or not shared data tables is operational.

To verify that the cross-memory services of shared data tables are working:

1. Start a second CICS region (the *requester*) that has an interregion communication connection to the first CICS region (the *server*, which contains the user-maintained data table and source data set).
2. On the requester CICS region, do the following tasks:
   a. Define and install a remote file referring to (associated with) the user-maintained data table on the server CICS region.
   b. Close the interregion communication connection between the two CICS regions so that function shipping is impossible; that is, only the cross-memory services of shared data tables can be used to access the shared data table from the requester CICS region. To close the connection, you can enter the command:
      ```
      CEMT SET IRC CLOSED
      ```
      To verify that function shipping cannot work, try a remote READ of a file (not a data table) on the server CICS region; you get a SYSIDERR response.
   c. Try a generic read command on your data table, using the CECI transaction. If the cross-memory services of shared data tables can be used, you see a normal response.
3. To restore interregion communication between the two CICS regions, open the connection again. To do this, you can enter the command:
   ```
   CEMT SET IRC OPEN
   ```

Example verification of shared data tables

This example shows the steps to perform to verify the shared data tables for the CICS shared data tables environment.

1. A CICS region, CICSIDC, is started. CICSIDC is the server CICS region in this example.
2. On CICSIDC, the following steps are completed:

a. The user-maintained data table, MYSDT, is defined and installed. The MYSDT data table is based on the sample data set, *hlq*.CICSIDC.FILEA, installed on that region.
b. The following generic READ command is entered at a terminal:

```
CECI READ FILE(MYSDT) RIDFLD(00092) KEYLENGTH(5) GE GTEQ
```

Figure 32 on page 397 shows the initial response (LOADING), and Figure 33 on page 398 shows the subsequent response when the command is repeated after the data table has completed loading.

The following steps were completed to verify the cross-memory services of shared data tables:

1. A second CICS region, CICSIDA, is started with support for shared data tables. CICSIDA is the requester CICS region in this example.
2. The following IRC connections and sessions are defined and installed on the associated CICS regions:

Region	CONNECTION	SESSION
CICSIDA	CICA	ATOC
CICSIDC	CICC	CTOA

See Figure 36 on page 399 and Figure 37 on page 400 for the CICA and ATOC resource definitions attributes. The attributes for the CICC and CTOA resource definitions are similar.

3. On CICSIDA, the following steps are completed:
   a. The file, REMSDT, is defined and installed as remote, referring to the MYSDT data table on CICSIDC. See Figure 38 on page 400 for the parameters used for the REMSDT resource definition.
   b. The file, REMFIL, is defined and installed as remote, referring to the FILEA sample file on CICSIDC.
   c. The CEMT SET IRC CLOSED command is used to close the IRC connection to CICSIDC.
   d. The following generic READ command is entered at a terminal:

   ```
   CECI READ FILE(REMFIL) RIDFLD(00092) KEYLENGTH(5)
   LENGTH(80) GE GTEQ
   ```

   Figure 34 on page 398 shows the SYSIDERR response, because the remote file cannot be accessed by function-shipping. You also see this response for the remote data table, REMSDT, if the IRC connection is closed.
   e. The following generic READ command is entered at a terminal:

   ```
   CECI READ FILE(REMSDT) RIDFLD(00092) KEYLENGTH(5)
   LENGTH(80) GE GTEQ
   ```

   Figure 35 on page 399 shows the NORMAL response. You receive a NORMAL response only if MYSDT is already open on CICSIDC, as achieved in step 2b.

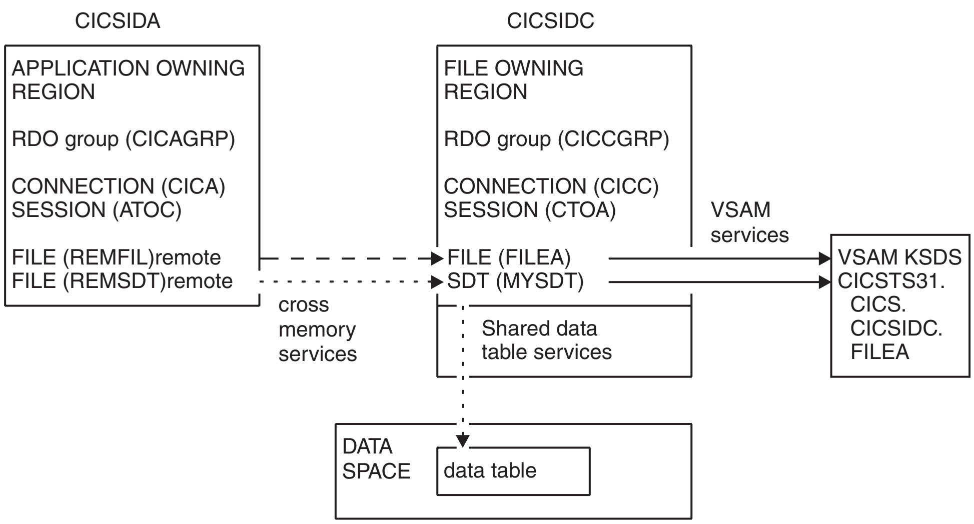


Figure 31. CICS environment for example verification of shared data tables.

```
read file(MYSDT) ridfld(00092) keylength(5) ge gteq
STATUS:  COMMAND EXECUTION COMPLETE                         NAME=
 EXEC CICS  READ
  File( 'MYSDT ' )
  < SYsid() >
  ( SEt() | Into( '' ) )
  < Length( +00000 ) >
  RIdfld( '00092' )
  < Keylength( +00005 ) < GEneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < UNcommitted | Consistent | REpeatable | UPdate <token()> >
  < Nosuspend >













 RESPONSE: LOADING               EIBRESP=+0000000094 EIBRESP2=+0000000104
PF 1 HELP 2 HEX 3 END 4 EIB 5 VAR 6 USER 7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

Figure 32. On CICSIDC, response to initial CECI generic READ FILE command with SDT support.. The data table is loaded on first reference, and generic READ commands are not allowed for a user-maintained data table while it is loading.

```
 read file(MYSDT) ridfld(00092) keylength(5) ge gteq
 STATUS:  COMMAND EXECUTION COMPLETE                         NAME=
  EXEC CICS  READ
   File( 'MYSDT ' )
   < SYsid() >
   ( SEt()
     | Into( ' 000983J. S. TILLING       WASHINGTON, DC      34512' ... ) )
   < Length( +00080 ) >
   RIdfld( '00092' )
   < Keylength( +00005 ) < GEneric > >
   < RBa | RRn | DEBRec | DEBKey >
   < GTeq | Equal >
   < UNcommitted | Consistent | REpeatable | UPdate <token()> >
   < Nosuspend >









  RESPONSE: NORMAL                EIBRESP=+0000000000 EIBRESP2=+0000000000
PF 1 HELP 2 HEX 3 END 4 EIB 5 VAR 6 USER 7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

Figure 33. On CICSIDC, response to CECI generic READ FILE command with SDT support.. Normal response.

```
 read file(FILEA) ridfld(00092) keylength(5) length(80) ge gteq
 STATUS:  COMMAND EXECUTION COMPLETE                         NAME=
  EXEC CICS  READ
   File( 'FILEA   ' )
   < SYsid() >
   ( SEt()
     | Into( '                                                    ' ... ) )
   < Length( +00080 ) >
   RIdfld( '00092' )
   < Keylength( +00005 ) < GEneric > >
   < RBa | RRn | DEBRec | DEBKey >
   < GTeq | Equal >
   < UNcommitted | Consistent | REpeatable | UPdate <token()> >

   < Nosuspend >









  RESPONSE: SYSIDERR              EIBRESP=+0000000053 EIBRESP2=+0000000130
PF 1 HELP 2 HEX 3 END 4 EIB 5 VAR 6 USER 7 SBH 8 SFH 9 MSG 10 SB 11
```

Figure 34. On CICSIDA, response to remote CECI generic READ FILE command, with IRC closed.. SYSIDERR response for file, REMFIL, attempting to use function shipping for associated file, FILEA, on CICSIDC.

```
read file(MYSDT) ridfld(00092) keylength(5) length(80) ge gteq
STATUS:  COMMAND EXECUTION COMPLETE                         NAME=
 EXEC CICS  READ
  File( 'MYSDT   ' )
  < SYsid() >
  ( SEt()
    | Into( ' 000983J. S. TILLING       WASHINGTON, DC      34512' ... ) )
  < Length( +00080 ) >
  RIdfld( '00092' )
  < Keylength( +00005 ) < GEneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < UNcommitted | Consistent | REpeatable | UPdate <token()> >
  < Nosuspend >









 RESPONSE: NORMAL                EIBRESP=+0000000000 EIBRESP2=+0000000000
PF 1 HELP 2 HEX 3 END 4 EIB 5 VAR 6 USER 7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

Figure 35. On CICSIDA, response to remote CECI generic READ FILE command, with IRC closed.. Normal response for file, REMSDT, using cross-memory services for associated shared data table, MYSDT, on CICSIDC.

```
OBJECT CHARACTERISTICS                                   CICS RELEASE = 0690

  Connection     : CICA
  Group          : CICAGRP
  DEscription    : MRO CONNECTION CICSIDA TO CICSIDC
 CONNECTION IDENTIFIERS
  Netname        : CICSIDC
  INDsys         :
 REMOTE ATTRIBUTES
  REMOTESystem   :
  REMOTEName     :
 CONNECTION PROPERTIES
  ACcessmethod   : IRc                Vtam | IRc | INdirect | Xm
  Protocol       :                    Appc | Lu61
  SInglesess     : No                 No | Yes
  DAtastream     : User               User | 3270 | SCs | STrfield | Lms
  RECordformat   : U                  U | Vb
 OPERATIONAL PROPERTIES
  AUtoconnect    : No                 No | Yes | All
  INService      : Yes                Yes | No
```

Figure 36. Example CONNECTION resource definition, CICA, installed on CICSIDA.. Only relevant parameters are shown; other parameters are allowed to default.

Note: VTAM is now the z/OS Communications Server.

```
OBJECT CHARACTERISTICS                                    CICS RELEASE = 0690

  Sessions       : ATOC
  Group          : CICAGRP
  DEscription    : SESSION FOR MRO CICA TO CICC
 SESSION IDENTIFIERS
  Connection     : CICA
  SESSName       :
  NETnameq       :
  MOdename       :
 SESSION PROPERTIES
  Protocol       : Lu61              Appc | Lu61
  MAximum        : 000 , 000         0-999
  RECEIVEPfx     : RB
  RECEIVECount   : 005               1-999
  SENDPfx        : SB
  SENDCount      : 003               1-999
  SENDSize       : 04096             1-30720
  RECEIVESize    : 04096             1-30720
  SESSPriority   : 100               0-255
```

Figure 37. Example SESSION resource definition, ATOC, associated with connection, CICA.. Only relevant parameters are shown; other parameters are allowed to default.

```
OBJECT CHARACTERISTICS                                    CICS RELEASE = 0690

  File           : REMSDT
  Group          : CICCGRP
  DEscription    :
 VSAM PARAMETERS
  DSNAme         :
  Password       :                   PASSWORD NOT SPECIFIED
  RLsaccess      : No                No  | Yes
  Lsrpoolid      : 1                 1-8 | None
  READInteg      : Uncommitted       Uncommitted | Consistent | Repeat
  DSNSharing     : Allreqs           Allreqs | Modifyreqs
  STRings        : 001               1-255
  Nsrgroup       :
 REMOTE ATTRIBUTES
  REMOTESystem   : CICC
  REMOTEName     : MYSDT
  RECORDSize     :                   1-32767
  Keylength      :                   1-255
 INITIAL STATUS
  STAtus         : Enabled           Enabled | Disabled | Unenabled
```

Figure 38. Example remote FILE resource definition, REMSDT, installed on CICSIDA.. Only relevant parameters are shown; other parameters are allowed to default.

Chapter 52. Verifying the CICS-DBCTL interface

You can use the installation verification procedure, DFHIVPDB, to verify that the CICS-DBCTL interface can be used successfully.

To run the DFHIVPDB job successfully:

1. Tailor the DFHIVPDB job to your CICS and IMS environment.

   You can tailor DFHIVPDB as part of the process of tailoring all CICS sample postinstallation jobs, as described in Chapter 44, "Defining DL/I support," on page 287. When you run the DFHISTAR job as part of the CICS installation process, the DFHIVPDB job is installed in the *hlq*.XDFHINST library.Change the prefix of the IMS.SDFSRESL library, previously called IMS.RESLIB, in the DFHIVPDB job to the prefix that you use for your IMS libraries.
2. Create the data sets required by the CICS region used by the DFHIVPDB job.

   To create the data sets, you can tailor and run copies of the following CICS sample jobs:

   DFHCOMDS
      This job creates the CICS data sets common to all CICS regions.

   DFHDEFDS
      This job creates the data sets required for each CICS region.

   When you run the DFHISTAR job as part of the CICS installation process, these jobs are installed in the *hlq*.XDFHINST library.
3. Run the IMS installation verification procedures, as outlined in "The IMS installation requirements for the DFHIVPDB job."

The IMS installation requirements for the DFHIVPDB job

The DFHIVPDB job depends on running the IMS installation verification procedures, as part of the INSTALL/IVP process described in the IMS *Installation Guide*.

The following assumptions about the IMS INSTALL/IVP process are made:

1. The IMS sample database, DI21PART, has been successfully defined. This database comprises two data sets:
   - DI21PART
   - DI21PARO
2. The DI21PART database has been loaded with the IMS-supplied sample data.
3. The following IMS-supplied procedures have been installed in an executable procedure library:
   - ACBGEN
   - PSBGEN
4. The sample DRA startup table, DFSPZPIV, has been built and installed in the IMS.SDFSRESL library, previously called IMS.RESLIB.
5. The sample DBCTL system, IVP3, is available.

For information about installing IMS, the INSTALL/IVP process, and running the IMS IVPs, see the *IMS Installation Guide*.

The DFHIVPDB job steps

The DFHIVPDB job consists of the GEN and CICS job steps.

1. **GEN**. This step unloads the member DFH$DBAN from the *hlq*.SDFHSAMP library into a temporary sequential data set called CARDIN. This member contains the transactions to invoke the assembler versions of the DL/I sample applications that CICS reads from CARDIN as soon as initialization is complete. The sequential data set CARDIN is defined in the sample terminal control table, DFHTCT5$, as a simulated terminal.

   The COBOL version, DFH$DBCB, and the PL/I version, DFH$DBPL, of the sample DL/I transactions are also in the *hlq*.SDFHSAMP library. If you want to run the COBOL or PL/I versions, modify this job step to load CARDIN with the appropriate member.

   Output generated by the transactions is sent to a similar device; a sequential data set defined as PRINTER.
2. **CICS**. This job step issues the DFHSTART procedure to start CICS, with the CICS-supplied resource group list DFH$IVPL. CICS attempts to connect to the DBCTL system IVP3, run the sample DLI transactions, and then shut down the CICS region. If the DBCTL system, IVP3, is not running, the sample DLI transactions stop with an abend message.

If you want to examine the sample members used by this IVP, here is a list of them, indicating where you can find each one:

DFHIVPDB
: This IVP contains some explanatory comments, and was installed in the *hlq*.XDFHINST library when you ran the DFHISTAR job. For details of the DFHISTAR job, see Chapter 38, "Tailoring the CICS-supplied skeleton jobs," on page 249.

DFH$SIP5
: DFH$SIP5 is the member of the *hlq*.SYSIN data set that contains the system initialization parameter overrides specific to the DFHIVPDB job. You can specify other system initialization parameters (for example, APPLID, CICSSVC, and DFLTUSER) for the DFHIVPDB job; the DFH$SIP5 member of the *hlq*.SYSIN data set is a convenient place to do so.

DFHTCT5$
: DFHTCT5$ is the sample TCT that specifies the sequential devices that CICS uses in this IVP as a simulated terminal, with a terminal name of SAMA. The source statements are in the DFH$TCTS member of the *hlq*.SDFHSAMP library.

Running the DFHIVPDB job

Before you submit the DFHIVPDB job, run the DFHRMUTL program to reset the global catalog control record to perform an INITIAL start on the next CICS startup.

Here is an example of the DFHRMUTL program:

```
//DFHRMUTI JOB 24116475,'DFHRMUTL',
//        CLASS=A,MSGCLASS=H,NOTIFY=userid
//*
//*-------------------------------------------------------*/
//*  RESET GLOBAL CATALOG CONTROL RECORD TO INITIAL START  */
//*-------------------------------------------------------*/
//DFHRMUTL EXEC PGM=DFHRMUTL,REGION=1M
//STEPLIB  DD DSN=CICSTS52.CICS.SDFHLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
```

```
//DFHGCD   DD DSN=CICSTS52.CICS.DBDCCICX.DFHGCD,DISP=OLD
//SYSIN    DD *
SET_AUTO_START=AUTOINIT
/*
```

When you are satisfied that you have made all the necessary preparations, and that all the prerequisite jobs have been run, submit the DFHIVPDB job. The job loads the DL/I transactions into CARDIN. CICS reads the transactions, and sends the output to the PRINTER sequential data set. The process is as follows:

- The first transaction copied from the DFH$DBAN member of the *hlq*.SDFHSAMP library to CARDIN is CDBC CONNECT SUFFIX(IV). This transaction connects CICS to DBCTL, using the sample DRA startup table, DFSPZPIV.
- The final transaction copied from the DFH$DBAN member of the *hlq*.SDFHSAMP library to CARDIN is CEMT PERFORM SHUT.
- If you want to use some commands online before CICS shuts down, delete the CEMT command before you run the job. You can then issue CEMT, CEDA, and other CICS-supplied transactions, and initiate a shutdown either from a CICS terminal or through an MVS console.
- If you want to communicate with CICS through an MVS console, you must define a console to CICS before you start DFHIVPDB, as described in Defining console devices to CICS in Configuring.
- If you want to enter MODIFY commands from terminals connected to TSO, you must define the TSO users as console devices, as described in Defining console devices to CICS in Configuring.

A sample job log from a run of the DFHIVPDB job is given in Figure 39 on page 405. The results you get from the transaction processing are similar to those shown in Figure 39 on page 405, Figure 40 on page 406, and Figure 41 on page 406.

```
1                J E S 2  J O B  L O G  --  S Y S T E M  M V 2 6  --  N O D E  W I N M V S 2 C
0
 09.36.19 JOB36923 ---- TUESDAY, 24 APR 2007 ----
 09.36.19 JOB36923  ICH70001I CICINST  LAST ACCESS AT 08:27:32 ON TUESDAY, APRIL 24, 2007
 09.36.19 JOB36923  $HASP373 DFHIVPDB STARTED - INIT 4    - CLASS A - SYS MV26
 09.36.19 JOB36923  IEF403I DFHIVPDB - STARTED - TIME=09.36.19
 09.36.19 JOB36923  -                                         --TIMINGS (MINS.)--            ----PAGING COUNTS---
 09.36.19 JOB36923  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP    CPU    SRB  CLOCK   SERV  PG   PAGE   SWAP    VIO SWAPS STEPNO
 09.36.19 JOB36923  -DFHIVPDB          GEN         00     53    .00    .00    .00    184  0      0      0      0     0     1
 09.36.19 JOB36923  -DFHIVPDB CICS     CICSCNTL    01     16    .00    .00    .00    148  0      0      0      0     0     2
 09.36.19 JOB36923  -DFHIVPDB CICS     DTCNTL      01     15    .00    .00    .00    161  0      0      0      0     0     3
 09.36.20 JOB36923  DFHPA1101  CICSIVP1 DFHSIT   IS BEING LOADED.
 09.36.20 JOB36923  DFHPA1108  CICSIVP1 DFHSIT   HAS BEEN LOADED. (GENERATED AT: MM/DD= 01/12 HH:MM= 13:57).
 09.36.20 JOB36923  DFHPA1100  CICSIVP1 OVERRIDE PARAMETERS FROM JCL EXEC STATEMENT: START=AUTO,SYSIN
 09.36.20 JOB36923  DFHPA1102  CICSIVP1 OVERRIDE PARAMETERS FROM SYSIN:   1
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 GRPLIST=DFH$IVPL,   INCLUDE DLI SAMPLE PROGRAMS & TRANSACTIONS         20000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 FCT=NO,                                                               30000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 TCT=5$,            TCT INCLUDES SEQ DEVICES                           40000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 XRF=NO,                                                               50000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 STNTR=OFF,                                                            53000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 STNTRFC=1,         TRACE FILE CONTROL AND DLI EVENTS                  56000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 AUXTR=ON,                                                             60000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 AUXTRSW=NEXT,                                                         70000000
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 SRT=NO,                                                               70000100
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 SEC=NO,                                                               70000200
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 TRTABSZ=64,                                                           70000300
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 APPLID=CICSIVP1,                                                      70000400
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 CICSSVC=233,                                                          70000500
 09.36.20 JOB36923  DFHPA1927  CICSIVP1 .END                                                                  80000000
 09.36.20 JOB36923  DFHPA1103  CICSIVP1 END OF FILE ON SYSIN.  09.36.21 JOB36923  +DFHTR0103 TRACE TABLE SIZE IS 64KB
 09.36.21 JOB36923  +DFHSM0122I CICSIVP1 Limit of DSA storage below 16MB is 5 120KB.
 09.36.21 JOB36923  +DFHSM0123I CICSIVP1 Limit of DSA storage above 16MB is 48MB.
 09.36.21 JOB36923  +DFHSM0113I CICSIVP1 Storage protection is not active.
 09.36.21 JOB36923  +DFHSM0126I CICSIVP1 Transaction isolation is not active.
 09.36.21 JOB36923  +DFHDM0101I CICSIVP1 CICS is initializing.
 09.36.23 JOB36923  +DFHWB0109I CICSIVP1 Web domain initialization has started.
 09.36.23 JOB36923  +DFHSO0100I CICSIVP1 Sockets domain initialization has started.
 09.36.23 JOB36923  +DFHRX0100I CICSIVP1 RX domain initialization has started.
 09.36.23 JOB36923  +DFHRX0101I CICSIVP1 RX domain initialization has ended.
 09.36.23 JOB36923  +DFHLG0101I CICSIVP1 Log manager domain initialization has started.
 09.36.23 JOB36923  +DFHEJ0101 CICSIVP1  790
    790              Enterprise Java domain initialization has started. Java is a
    790              trademark of Sun Microsystems, Inc.
 09.36.23 JOB36923  +DFHDH0100I CICSIVP1 Document domain initialization has started.
 09.36.23 JOB36923  +DFHXS1100I CICSIVP1 Security initialization has started.
 09.36.23 JOB36923  +DFHSI1500 CICSIVP1 CICS startup is in progress for CICS Transaction Server Version 4.1.0
 09.36.23 JOB36923  +DFHXS1102I CICSIVP1 Security is inactive.
 09.36.23 JOB36923  +DFHDU0304I CICSIVP1 Transaction Dump Data set DFHDMPB opened.
 09.36.23 JOB36923  +DFHSI1501I CICSIVP1 Loading CICS nucleus.
 09.36.26 JOB36923  +DFHTR0113 CICSIVP1 Auxiliary trace is being started on data set DFHAUXT.
 09.36.26 JOB36923  +DFHCQ0100I CICSIVP1 Console queue initialization has started.
 09.36.26 JOB36923  +DFHCQ0101I CICSIVP1 Console queue initialization has ended.
 09.36.26 JOB36923  +DFHCQ0103I CICSIVP1 MVS console queue is open.
 09.36.26 JOB36923  +DFHCQ0200I CICSIVP1 CEKL transaction enabled.
 09.36.26 JOB36923  +DFHXS1101I CICSIVP1 Security initialization has ended.
 09.36.26 JOB36923  +DFHRM0140 CICSIVP1 Recovery manager autostart override found with value: 'AUTOINIT'.
 09.36.26 JOB36923  +DFHRM0149I CICSIVP1 Recovery manager autostart override record will be deleted.
 09.36.26 JOB36923  +DFHDH0101I CICSIVP1 Document domain initialization has ended.
 09.36.26 JOB36923  +DFHMN0105I CICSIVP1 Using default Monitoring Control Table.
 09.36.26 JOB36923  +DFHSO0101I CICSIVP1 Sockets domain initialization has ended.
 09.36.26 JOB36923  +DFHWB0110I CICSIVP1 Web domain initialization has ended.
 09.36.26 JOB36923  +DFHMN0110I CICSIVP1 CICS Monitoring is inactive.
 09.36.26 JOB36923  +DFHSI1502I CICSIVP1 CICS startup is Initial.
 09.36.26 JOB36923  +DFHTS0100I CICSIVP1 Temporary Storage initialization has started.
 09.36.26 JOB36923  +DFHSI1503I CICSIVP1 Terminal data sets are being opened.
 09.36.27 JOB36923  +DFHLG0102I CICSIVP1 Log manager domain initialization has ended.
 09.36.27 JOB36923  IEC161I 080-053,DFHIVPDB,CICS    CICS,DFHTEMP,,,
 09.36.27 JOB36923  IEC161I INST.CICSTS52.CNTL.CICS.DFHTEMP,
 09.36.27 JOB36923  IEC161I INST.CICSTS52.CNTL.CICS.DFHTEMP.DATA,
 09.36.27 JOB36923  IEC161I ICFCAT.SYSPLEX2.CATALOGB
 09.36.27 JOB36923  +DFHTS0102I CICSIVP1 About to format the temporary storage data set (359 control intervals).
 09.36.27 JOB36923  +DFHKE0406I CICSIVP1  825
    825              CICS is about to wait for predecessors defined in the MVS automatic
    825              restart management policy for this region.
 09.36.27 JOB36923  +DFHKE0412I CICSIVP1 CICS WAITPRED call to automatic restart manager has completed.
 09.36.27 JOB36923  +DFHCP0101I CICSIVP1 CPI initialization has started.
 09.36.27 JOB36923  +DFHPR0104I CICSIVP1 Partner resource manager initialization has started.
 09.36.27 JOB36923  +DFHAI0101I CICSIVP1 AITM initialization has started.
```

```
09.36.27 JOB36923  +DFHFC0100I CICSIVP1 File Control initialization has started.
09.36.27 JOB36923  +DFHTD0100I CICSIVP1 Transient Data initialization has started.
09.36.27 JOB36923  +DFHFC0101I CICSIVP1 File Control initialization has ended.
09.36.27 JOB36923  +DFHTD0101I CICSIVP1 Transient Data initialization has ended.
09.36.27 JOB36923  +DFHTS0101I CICSIVP1 Temporary Storage initialization has ended.
09.36.27 JOB36923  +DFHCP0102I CICSIVP1 CPI initialization has ended.
09.36.27 JOB36923  +DFHPR0105I CICSIVP1 Partner resource manager initialization has ended.
09.36.27 JOB36923  +DFHAI0102I CICSIVP1 AITM initialization has ended.
09.36.28 JOB36923  +DFHSI1511I CICSIVP1 Installing group list DFH$IVPL.
09.36.29 JOB36923  IEC031I D37-04,IFG0554P,DFHIVPDB,CICS,DFHAUXT,D306,P2P0C6,INST.CICSTS52.CICS.DFHAUXT
09.36.29 JOB36923  +DFHTR0110 - AUXILIARY TRACE DATA SET DFHAUXT  FULL - SWITCHING TO DFHBUXT
09.36.29 JOB36923  IEC031I D37-04,IFG0554P,DFHIVPDB,CICS,DFHBUXT,D50B,P2P14B,INST.CICSTS52.CICS.DFHBUXT
09.36.29 JOB36923  +DFHTR0109 - AUXILIARY TRACE DATA SET DFHBUXT  FULL - AUXILIARY TRACE HAS BEEN STOPPED
09.36.30 JOB36923  +DFHLG0103I CICSIVP1 System log (DFHLOG) initialization has started.
09.36.31 JOB36923  +DFHLG0104I CICSIVP1  844
   844              System log (DFHLOG) initialization has ended. Log stream
   844              CICINST.CICSIVP1.DFHLOG is connected to structure LOG_GENERAL_008.
09.36.31 JOB36923  +DFHLG0103I CICSIVP1 System log (DFHSHUNT) initialization has started.
09.36.31 JOB36923  +DFHLG0104I CICSIVP1  846
   846              System log (DFHSHUNT) initialization has ended. Log stream
   846              CICINST.CICSIVP1.DFHSHUNT is connected to structure LOG_GENERAL_008.
09.36.31 JOB36923  +DFHAP1203I CICSIVP1 Language Environment is being initialized.
09.36.31 JOB36923  +DFHAP1200 CICSIVP1 A CICS request to the Language Environment has failed. Reason code '0011020'.
09.36.31 JOB36923  +DFHAP1208 CICSIVP1 Language Environment cannot support the Cobol language.  2
09.36.31 JOB36923  +DFHAP1209 CICSIVP1 Language Environment cannot support the C/C++ languages.  2
09.36.31 JOB36923  +DFHAP1210 CICSIVP1 Language Environment cannot support the PL/I language.  2
09.36.31 JOB36923  +DFHAP1211I CICSIVP1 Language Environment initialization completed.
09.36.31 JOB36923  +DFHWB1007 CICSIVP1 Initializing CICS Web environment.
09.36.32 JOB36923  +DFHWB1008 CICSIVP1 CICS Web environment initialization is complete.
09.36.32 JOB36923  +DFHSI1517 CICSIVP1 Control is being given to CICS.
09.36.32 JOB36923  +DFHEJ0102 CICSIVP1 Enterprise Java domain initialization has ended.
09.37.54 JOB36923  +DFHTM1715 CICSIVP1 CICS is being quiesced by userid CICSUSER in transaction CEMT at terminal SAMA.
09.37.54 JOB36923  +DFHDM0102I CICSIVP1 CICS is quiescing.
09.37.54 JOB36923  +DFHDB8122I CICSIVP1 CICS is about to disconnect from DBCTL for CICS shutdown.
09.37.54 JOB36923  +DFHCESD  CICSIVP1 SHUTDOWN ASSIST TRANSACTION CESD STARTING. SHUTDOWN IS NORMAL.
09.37.54 JOB36923  +DFHDB8123I CICSIVP1 CICS disconnection from DBCTL for CICS shutdown has completed successfully.
09.37.54 JOB36923  +DFHTM1782I CICSIVP1 All non-system tasks have been successfully terminated.
09.37.55 JOB36923  +DFHZC2305I CICSIVP1 Termination of VTAM sessions beginning
09.37.55 JOB36923  +DFHZC2316 CICSIVP1 VTAM ACB is closed
09.37.55 JOB36923  +DFHCQ0104I CICSIVP1 MVS console queue is closed.
09.37.58 JOB36923  +DFHRM0204 CICSIVP1 There are no indoubt, commit-failed or backout-failed UOWs.
09.37.59 JOB36923  +DFHRM0130 CICSIVP1 Recovery manager has successfully quiesced.
09.37.59 JOB36923  +DFHDU0303I CICSIVP1 Transaction Dump Data set DFHDMPB closed.
09.37.59 JOB36923  +DFHKE1799 CICSIVP1 TERMINATION OF CICS IS COMPLETE.
09.37.59 JOB36923  -DFHIVPDB CICS     CICS       00   4070    .03    .00   1.66  23769   0      0      0      0     0     4
09.38.00 JOB36923  -DFHIVPDB CICS     PRTDMPA    00    137    .00    .00    .00    289   0      0      0      0     0     5
09.38.00 JOB36923  -DFHIVPDB CICS     PRTDMPB    00    138    .00    .00    .00    291   0      0      0      0     0     6
09.38.03 JOB36923  -DFHIVPDB CICS     PRTAUXT    00   1935    .01    .00    .04  13326   0      0      0      0     0     7
09.38.04 JOB36923  $HASP375 DFHIVPDB ESTIMATED  LINES EXCEEDED
09.38.04 JOB36923  $HASP375 DFHIVPDB ESTIMATE EXCEEDED BY            5,000  LINES
09.38.05 JOB36923  $HASP375 DFHIVPDB ESTIMATE EXCEEDED BY           10,000  LINES
09.38.05 JOB36923  $HASP375 DFHIVPDB ESTIMATE EXCEEDED BY           15,000  LINES
09.38.05 JOB36923  $HASP375 DFHIVPDB ESTIMATE EXCEEDED BY           20,000  LINES
09.38.05 JOB36923  $HASP375 DFHIVPDB ESTIMATE EXCEEDED BY           25,000  LINES
09.38.06 JOB36923  $HASP375 DFHIVPDB ESTIMATE EXCEEDED BY           30,000  LINES
09.38.06 JOB36923  -DFHIVPDB CICS     PRTBUXT    00   1909    .01    .00    .05  13560   0      0      0      0     0     8
09.38.06 JOB36923  IEF404I DFHIVPDB - ENDED - TIME=09.38.06
09.38.06 JOB36923  -DFHIVPDB ENDED.  NAME-CICINST            TOTAL CPU TIME=   .06  TOTAL ELAPSED TIME=  1.78
09.38.06 JOB36923  $HASP395 DFHIVPDB ENDED
```

Figure 39. Sample job log output from the DFHIVPDB job

- The DFHIVPDB job uses some system initialization parameters included in the DFH$SIP5 member of the SYSIN data set, to override default system initialization parameters. Further, the DFH$SIP5 member was edited to specify other system initialization parameters to create the DFHIVPDB job log shown. For information about these extra system initialization parameters used by the IVP jobs, see “Specifying system initialization parameters for the IVP jobs” on page 378.
- If you want COBOL, C, C++, and PL/I languages, remove the comment marks from the SCEERUN and SCEERUN2 libraries, and increase the memory size for the job.

You see messages similar to those in Figure 40 on page 406 at the end of the MSGUSER section of the job output.

```
 DFHLG0302 04/24/2007 09:36:31 CICSIVP1 Journal name DFHLOG has been installed. Journal type: MVS
           CICINST.CICSIVP1.DFHLOG.
 DFHLG0302 04/24/2007 09:36:31 CICSIVP1 Journal name DFHSHUNT has been installed. Journal type: MVS
           CICINST.CICSIVP1.DFHSHUNT.
 DFHLG0744 04/24/2007 09:36:31 CICSIVP1 All records in log stream CICINST.CICSIVP1.DFHLOG have been deleted.
 DFHLG0744 04/24/2007 09:36:31 CICSIVP1 All records in log stream CICINST.CICSIVP1.DFHSHUNT have been deleted.
 DFHDB8116 I 04/24/2007 09:36:32 CICSIVP1 Connection to DBCTL IM7D is proceeding. Startup Table Suffix used is IV.
 DFHDB8101 I 04/24/2007 09:36:32 CICSIVP1 Connection to DBCTL IM7D is now complete. Startup Table Suffix used is IV.
 DFHZC3441 I 04/24/2007 09:37:55 CICSIVP1 Orderly termination of VTAM sessions requested.  ((1) Module name: DFHZSHU)
 DFHRM0205 04/24/2007 09:37:58 CICSIVP1 An activity keypoint has been successfully taken.
 DFHLG0743 04/24/2007 09:37:58 CICSIVP1 Tail of log stream CICINST.CICSIVP1.DFHLOG deleted at block id
           X'0000000000000FDD'.
```

Note: VTAM is now the z/OS Communications Server.

Figure 40. Sample job log output from the end of the MSGUSER section of the DFHIVPDB job

You see messages similar to those in Figure 41 in the Printer section of the job output.

```
1DFHDB8210D Connection to DBCTL is proceeding. Check CDBC TD queue.
 DFHDB8225I CICSIVP1 The DBCTL ID is IM7D. The DRA Startup Table suffix is IV.

 INPUT: ASMCDPA02MS16995-28
  PART=02MS16995-28     DESC= SCREW
    AREA  INV  PROJ  DIV    UNIT    CURRENT    ON       IN      TOTAL  COUNT BACK
         DEPT   CD          PRICE   REQMTS    ORDER    STOCK  DISBURSE TAKEN ORDR
 1.       AA   165   11     0.152     260        0       300     4030     N    0
 2.       BA   165   15     0.069      60        0        80     5000     N    0
 3.       FF   554   6D     0.069     440        0       430     5000     N    0
 4.  2    59   109   26     6.980     950        0      1000     5000     N    0


INPUT: ASMCDPA02JAN1N976B
  PART=02JAN1N976B      DESC= DIODE CODE-A
    AREA  INV  PROJ  DIV    UNIT    CURRENT    ON       IN      TOTAL  COUNT BACK
         DEPT   CD          PRICE   REQMTS    ORDER    STOCK  DISBURSE TAKEN ORDR
 1.  2    55   091   26     0.000     170     2000      170     4710     N    0
```

Figure 41. Sample job log output from the Printer section of the output of the DFHIVPDB job

Chapter 53. Testing the CICS DB2 environment

Use Phase 5 of the DB2 installation verification procedure to test the CICS DB2 environment.

To use the DB2 installation verification procedure, and Phase 5 in particular, see the DB2 administration documentation, which gives information about the procedure and describes the steps involved.

Running DB2 jobs DSNTEJ5C and DSNTEJ5P

To prepare the sample applications to be used in a CICS DB2 environment, run the DSNTEJ5C and DSNTEJ5P jobs supplied with DB2.

DSNTEJ5C installs the sample application transactions in COBOL and prepares the organization application. DSNTEJ5P installs the transactions in PL/I and prepares the organization, project, and phone applications.

Both these jobs perform the following functions:
- Compile and link-edit the CICS online applications.
- Bind the CICS online applications.
- Create the BMS maps for the online applications.

Starting a DB2 organization or project application

After logging on to CICS, you can start an organization or project application by entering one of the CICS transaction codes: D8PP, D8PS, or D8CS.
- D8PP starts the PL/I project version
- D8PS starts the PL/I organization version
- D8CS starts the COBOL organization version

If you enter one of these transaction codes, the panels shown in Figure 42 or Figure 43 on page 408 are displayed.

```
              ACTION SELECTION
MAJOR SYSTEM ...: O         ORGANIZATION
ACTION .........:
OBJECT .........:
SEARCH CRITERIA.:
DATA ...........:
SELECT AN ACTION FROM FOLLOWING LIST

   A     ADD (INSERT)
   D     DISPLAY (SHOW)
   E     ERASE (REMOVE)
   U     UPDATE (CHANGE)
```

Figure 42. Initial panel for the DB2 project application in CICS

```
              ACTION SELECTION
MAJOR SYSTEM ...: P          PROJECTS
ACTION .........:
OBJECT .........:
SEARCH CRITERIA.:
DATA ...........:
SELECT AN ACTION FROM FOLLOWING LIST

   A     ADD (INSERT)
   D     DISPLAY (SHOW)
   E     ERASE (REMOVE)
   U     UPDATE (CHANGE)
```

Figure 43. Initial panel for the DB2 project application in CICS

For detailed information about running the organization and project applications, see Overview of the CICS DB2 interface in Product overview.

Starting the DB2 phone application

To start the phone application, clear the screen and type in the transaction code D8PT. You can change the transaction codes when you install DB2. Check with your system administrator to find out if they have been changed from those shown.

Part 7. Getting started with CICSPlex SM

CICSPlex SM provides system management for your CICS regions. You can use a phased approach to adopt CICSPlex SM in your environment, gradually moving from setting up a single system image to providing a high availability environment. CICS provides samples to help you get started with setting up a simple CICSPlex SM environment.

Adopting CICSPlex SM in stages

CICSPlex SM provides different features for managing your CICS regions, but you do not have to set up everything straight away. Instead you can adopt the features in a staged approach, gradually improving your environment until you have a highly available system. The following roadmap outlines the different stages for system management:

Stage 1 - Single system image (SSI)
Create a single system image, also called a *topology*, for some or all of your CICS regions. CICSPlex SM can manage regions across logical partitions and provides a single point of management for your regions. Group your regions into a CICSplex to manage them together. The samples provided with CICS help you to set up the CMAS region, the management point for the CICS regions, and a WUI server, a region that you use to access the CMAS from CICS Explorer or Web User Interface. You can also create a MAS, a CICS region that can be managed by CICSPlex SM.

A single system image is a prerequisite for other CICS features, such as providing a platform. For more information about planning your CICSPlex SM environment, see Designing your CICSPlex SM environment in Configuring.

Stage 2 - Workload management (WLM)
Create workload specifications that dynamically route transactions to whichever CICS region is the most appropriate, based on its availability or specific criteria. Workload management removes the need to code specific links and routing between regions and optimizes a workload across your CICS regions. For more information about workload management, see Configuring workload management in Configuring.

Stage 3 - Business application services (BAS)
Move CICS resources from CSD files to the CICSPlex SM data repository. The data repository already contains definitions for the topology and workload management. By moving all resource definition to a central location, you can install a definition across many CICS regions. BAS provides other useful features such as saving different versions of a resource, and producing both local and remote instances of a resource from a single definition. For more information about BAS, see Administering BAS in Administering.

Stage 4 - Real-time analysis (RTA)
Create RTA specifications to monitor and analyze the status of CICS regions and generate notifications when a condition occurs. CICSPlex SM can issue warnings when a problem occurs in a CICS region, for example the region is short on storage, or when a particular resource is in the

wrong state, for example a connection goes down. For more information about RTA, see Real-time analysis in Monitoring.

Stage 5 - High availability
Add more regions to your environment to ensure your system can continue running when you want to apply maintenance or a problem occurs; for example, you can add additional CMAS and WUI server regions across logical partitions to continue managing the environment if a partition is unavailable. For more information about planning your CICSPlex SM environment, see Designing your CICSPlex SM environment in Configuring.

It is also possible to run CICS in a parallel sysplex. For more information about exploiting a parallel sysplex, see the IBM Redbooks publication: Exploiting Parallel Sysplex: A Customer Perspective.

Single system image sample

CICSPlex SM is included as part of the CICS installation process. If you run DFHISTAR during the installation, the job generates samples that you can use to create a basic CICSPlex SM configuration. The samples are saved in the XDFHINST library. You can use these samples to create a single system image of your CICS regions, and to verify that CICSPlex SM has been installed correctly. The samples create the following environment:

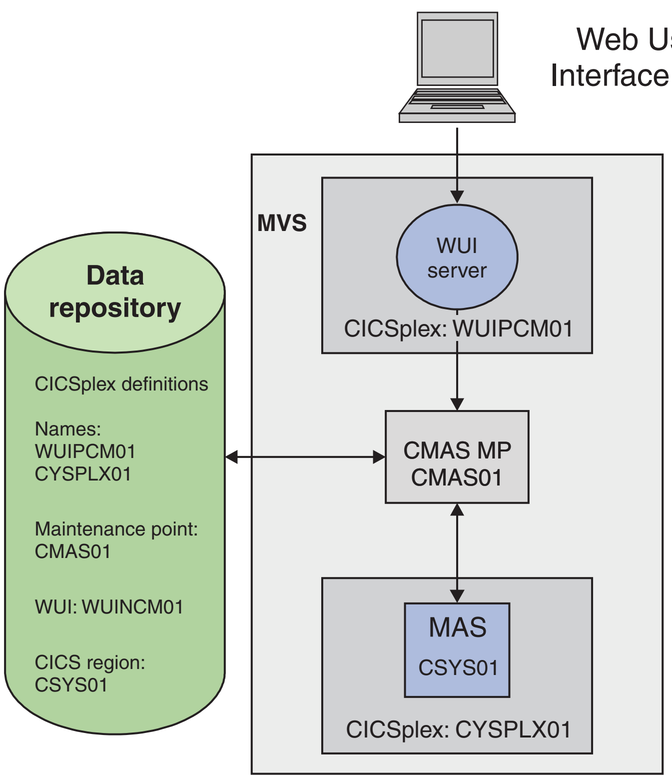


Figure 44. A simple CICSPlex SM environment

The CICSPlex SM members that provide the samples are supplied in the TDFHINST library. For a list of the members, see “CICSPlex SM postinstallation members” on page 250.

The samples do not include security. To set up security for CICSPlex SM, see CICSPlex SM security in Securing.

Chapter 54. Checking the MVS environment

Before you start working with CICSPlex SM, check that your MVS environment is correctly defined to support CICSPlex SM.

About this task

To record information about the installation and setup of your CICSPlex SM environment, you can use the checklists and worksheets in "CICSPlex SM setup checklist and worksheets" on page 13.

Procedure

1. Ensure that the CICSPlex SM SEYUAUTH library is defined to MVS as an APF-authorized library.
2. Ensure that the CICSPlex SM SEYULINK library is included in the MVS link list.
3. The number of linkage indexes increases by 1 for CICSPlex SM. Define it with the MVS NSYSLX parameter in IEASYSxx, which increases by one.
4. Check the IEASYSxx member of SYS1.PARMLIB that you use for MVS initialization and make a note of the initialization values. These values are referenced during the installation of a CMAS. For a detailed description of these values, see "Noting IEASYSxx values for CICSPlex SM" on page 125.
5. Ensure that enough MVS auxiliary storage is available to support the data spaces used by each CMAS. By default, a CMAS allocates nineteen MVS data spaces on startup. For details on how to increase auxiliary storage, see the *z/OS Initialization and Tuning Guide*.
6. Assign an SNA APPLID and SYSID for each of the CMAS, MAS, and Web User Interface regions. The SEYUDEF library members, EYUDVTIA and EYUDVTIB, contain sample SNA APPL statements that you can use and modify. See Chapter 21, "Defining CICS regions as applications to SNA," on page 143 for more information about SNA and CICS. You can record the APPLID and SYSID values on the planning worksheet.
7. Reserve a TCP/IP port for the Web User Interface server. You can record the port number on the planning worksheet.

Chapter 55. Generating samples using the DFHISTAR job

You can rerun the DFHISTAR job with the **SCOPE** parameter set to POST, to carry out further tailoring on the CICSPlex SM samples, or to generate new versions of the samples.

About this task

The minimum subset of parameters to tailor are shown in the following steps, but you can tailor any of the parameters mentioned on the IVP planning worksheet. You can record your values in the IVP planning worksheet; see "IVP planning worksheet" on page 18.

Procedure

1. Edit the **LIB** parameter to specify where you want to add the customized members generated by the DFHISTAR job. You can specify a 1- to 44-character name of a library. The default is CICSTS52.XDFHINST.
2. Edit the **SCOPE** parameter to specify POST.
3. Edit the **TCPIPHST** parameter to specify the address of the host server; for example, MVSXX.COMPANY.COM.
4. Edit the **TCPIPPRT** parameter to specify the port number to be used by the Web User Interface server.
5. Edit the **CMCIPORT** parameter to specify the port number to be used by the CICS management client interface (CMCI).
6. Edit the **TIMEZONE** parameter to specify which time zone is used for the data repository. For a full list of time zones, see *CICSPlex SM Administration*.
7. Run the tailored DFHISTAR job.

Results

- DFHISTAR creates the high-level qualifiers for the CICS and CICSPlex SM load libraries using two parameters:
  - **TINDEX** provides the highest-level index.
  - **XTRAQUAL** is an optional lower-level index.
- The index 'CICS' or 'CPSM' appears after the TINDEX and before the XTRAQUAL.
- DFHISTAR uses the same parameter for the system name and the applid.

See "CICSPlex SM postinstallation members" on page 250 for a complete list of samples generated by running DFHISTAR.

Chapter 56. Defining the data sets

The samples generated by DFHISTAR include members to create the CICS and CICSPlex SM data sets for a CMAS, WUI server, and MAS.

About this task

Run the following jobs:

Procedure

1. EYUCMSDS. This job creates the CICS and CICSPlex SM data sets for a CMAS. By default, DFHISTAR customizes the DREPINIT job step, in EYUCMSDS, to create a CMAS data repository and add definitions for the CMAS, a WUI server, and a CICSplex for that WUI server.
2. EYUWUIDS. This creates the CICS and CICSPlex SM data sets for a WUI server.
3. EYUCSYDS. This creates the CICS and CICSPlex SM data sets for a MAS.

Chapter 57. Creating a CICSPlex SM address space (CMAS)

To create a CMAS, complete these steps.

About this task

The sample member, EYUCMS0P, generated by DFHISTAR, contains customized data for this CICSPlex SM parameter:

```
NAME(CMAS01)       CMAS Name (Default is APPLID)
```

For a complete list of CICSPlex SM parameters, see Chapter 49, "CICSPlex SM system parameters," on page 357.

Procedure

1. Review and edit the EYUCMSSP sample member system initialization parameter. Edit the CICS SVC number (CICSSVC) if you use a number other than the CICS default SVC number.
2. Run the EYUCMASJ sample member to start the CMAS.

Results

The CICS region starts and the CMAS initializes. Check the job log for message:

```
EYUXL0010I applid CMAS initialization complete
```

Chapter 58. Creating a CICSPlex SM Web User Interface server

A Web User Interface (WUI) server region runs as a managed CICS system (MAS) and is managed by the CMAS. Its operation is controlled by the CICSPlex SM parameters that are required for a MAS and the WUI server initialization parameters. To create a CICSPlex SM Web User Interface server, complete these steps.

About this task

The sample member, EYUWUI0P, generated by DFHISTAR, contains customized data for a number of CICSPlex SM parameters:

```
NAME(WUINCM01)        WUI Name (Default is APPLID)
CICSPLEX(WUIPCM01)    CICSplex to which the WUI connects
CMASSYSID(CM01)       CMAS to which the WUI connects
```

For a complete list of CICSPlex SM parameters, see Chapter 49, “CICSPlex SM system parameters,” on page 357.

The sample member, EYUWUIIN, generated by DFHISTAR, contains customized data for the following WUI server initialization parameters:

```
TCPIPHOSTNAME(@tcpiphst@)  TCP/IP host name of this WUI Server
TCPIPPORT(@tcpipprt@)      TCP/IP port number
DEFAULTCMASCTXT(@cmasname@) CMAS context - CMAS name
DEFAULTCONTEXT(@wuiplex@)  Context - CICSplex name
DEFAULTSCOPE(@wuiplex@)    Scope - CICSplex, CICS group or MAS name
**********************************************************************
* AUTOIMPORTDSN is required only when importing view sets from
* a data set. Use it when starting the WUI for the first time
* or when importing new or modified view sets.
*
* The SEYUVIEW data set contains the IBM-supplied menus and view
* sets.
*
* To import menus and view sets for languages other than English,
* change AUTOIMPORTMEM to:
*
*  EYUSA* for Chinese
*  EYUKA* for Japanese
*
**********************************************************************
AUTOIMPORTDSN(@thlq@.CPSM.@tqual@.SEYUVIEW)
AUTOIMPORTMEM(EYUEA*)      Import the English menus and view sets
**********************************************************************
```

For a complete list of Web User Interface server initialization parameters, see “Web User Interface server initialization parameters” on page 330.

To create a CICSPlex SM Web User Interface server:

Procedure

1. Review and edit the WUI-related CICS system initialization parameters in sample member EYUWUISP.
   - Edit the CICS SVC number (CICSSVC) if you use a number other than the CICS default SVC number.

- The optional INITPARM parameter is set to the default of English. INITPARM sets the language and code page for the WUI. If you want to use another language, specify the value for INITPARM using this format:

  ```
  INITPARM=(EYU9VKEC='xxx',EYU9VWAN='yyyy')
  ```

  where xxx represents the language of the Web User Interface server and yyyy represents the code page of the client. For example, if your chosen language is Japanese, code:

  ```
  INITPARM=(EYU9VKEC='JPN',EYU9VWAN='JPN1').
  ```

  For a list of language and code page identifiers, see “Specifying language and code page information for the WUI” on page 325.

2. Prepare the code page conversion table DFHCNV, described in “Preparing the code page conversion table for the WUI” on page 326.
3. Run the EYUWUIJ sample member to start the WUI.

Results

EYUWUIJ automatically imports the Web User Interface views into the server repository. Check the EYULOG for messages:

```
EYUVS0002I CICSPlex SM Web User Interface initialization complete.

EYUVS0010I Server connected to CMAS, SYSID(sysid).
```

Chapter 59. Testing your Web User Interface

After the WUI views have been imported and WUI initialization has completed, you can test that your Web User Interface is running.

Procedure

1. Enter the following web address: `http://hostname:portnumber`
   - `hostname` is the TCP/IP host name on the TCPIPHOSTNAME parameter in the EYUWIIN member (specified as TCPIPHST for DFHISTAR).
   - `portnumber` is the TCP/IP port number on the TCPIPPORT parameter in the EYUWUIIN member (specified as TCPIPPRT for DFHISTAR).

   After you have signed on to your system, you see the main menu for the Web User Interface.
2. From the main menu, select the **CICS regions** option. Details of the WUI server region are displayed. By default, DFHISTAR customizes EYUWUIIN to set the DEFAULTCONTEXT and DEFAULTSCOPE to the name of the CICSplex defined for the WUI.

Chapter 60. Using the Web User Interface to define a CICSplex and a MAS

Use the WUI to define a CICSplex and add a MAS to it. Complete this task before you start the MAS.

Procedure

1. Define a CICSplex for your MAS, starting from the WUI main menu:
   - Click **Administration views > CMAS configuration administration views > CICSplex definitions**
   - Create a CICSplex definition:
     - Click **Create**.
     - Specify CICSplex using the name specified in the CICSPLEX parameter in the EYULMS0P member. You can leave the default values in the other fields.
     - Click **Yes**.
2. Add a MAS to your newly defined CICSplex, starting from the WUI main menu:
   - Change the **Context** and **Scope** fields to the name of the CICSplex and click **Set**. The name matches the CICSPLEX parameter in the EYULMS0P member.
   - Click **CICSPlex SM operations views > CICS system definitions**.
   - Click **Create** to create a CICS system definition.
   - Set the CICS system definition name using the NAME parameter from EYULMS0P.
   - Set the Primary CMAS name using the NAME parameter from EYUCMS0P.
   - You can leave the Period definition name blank. A PERIODEF is required to set time periods for the CICSPlex SM system availability resource monitoring (SAM). SAM is not activated in this IVP.
   - Set the MAS Application ID using the APPLID parameter from EYULMSSP.
   - Set the MAS System ID using the SYSIDNT parameter from EYULMSSP.

Chapter 61. Creating a CICSPlex SM managed CICS system (MAS)

To create a MAS, complete these steps.

About this task

The sample member, EYULMS0P, generated by DFHISTAR contains customized data for the following CICSPlex SM parameters:

```
NAME(CSYS01)        MAS Name (Default is APPLID)
CICSPLEX(CSYPLX01)  CICSplex to which the MAS is associated with
CMASSYSID(CM01)     CMAS to which the MAS connects
```

For a complete list of CICSPlex SM parameters, see Chapter 49, “CICSPlex SM system parameters,” on page 357.

Procedure

1. Review and edit the MAS-related CICS system initialization parameters in the EYULMSSP sample member. Edit the CICS SVC number (CICSSVC) if you use a number other than the CICS default SVC number.
2. Run the EYUCSYSJ sample member to start the MAS.

Results

The CICS region starts and the MAS initializes. Check the MAS job log for these messages:

```
EYUNL0099I LMAS LRT initialization complete.

EYUTS0003I Topology event for sysname Complete - APPLID (applid) CICSplex (plexname)
```

Check the CMAS job log for this message:

```
EYUTS0003I Topology event for sysname Complete - APPLID (applid) CICSplex (plexname)
```

Chapter 62. Verifying your CICSPlex SM environment using the WUI

Use the Web User Interface to view your CICSplexes and your managed CICS system.

Procedure

1. Click **CICS regions** from the WUI main menu. Ensure the **Context** and **Scope** fields are set to the CICSplex name used as the CICSPLEX parameter in EYULMS0P. Details of your managed CICS system are displayed.
2. Click **Administration views > CMAS configuration administration > CICSplex definitions**. Two CICSplexes are shown, one created by the EYU9XDUT step in the EYUCMSDS job and the other by you using the WUI.

Results

You have now completed the setup of your small CICSPlex SM environment. If you have been using these tasks as an installation verification procedure, the IVP is now complete.

Chapter 63. Shutting down the MAS, WUI server, and CMAS

When you have verified your CICSPlex SM environment, you can shut down the MAS, WUI server, and CMAS.

Procedure

- To shut down the MAS, see "Stopping and restarting management of a CICS system" on page 354.
- To shut down the WUI server, see "Starting and stopping the Web User Interface" on page 342.
- To shut down the CMAS, see "Shutting down a CMAS" on page 320.

Chapter 64. Setting up a more complex configuration

To set up a more complex configuration and thereby increase availability, you can have several WUIs. However, each CMAS does not require a unique WUI.

About this task

You can continue to define more managed CICS systems and add them to your CICSplex. In a larger configuration, you might have several CMASs. A CMAS that is specified as the context when you create a CICSplex definition is the maintenance point CMAS for that CICSplex. When applying service to CICSPlex SM, you must apply some PTFs to the maintenance points first, before the other regions are updated. For this reason, keep the number of maintenance point CMASs to a minimum.

When you connect a WUI to a CMAS, you can link the CMAS to others in your network. After building your CMAS-to-CMAS links, you can remove the WUIs and their CICSplex definitions from some of your CMASs to reduce the number of maintenance point CMASs.

Part 8. Appendixes

Appendix. Default CICS resource definitions for CICSPlex SM

These tables describe the default CICS resource definitions supplied for CICSPlex SM to start a CMAS, MAS, and WUI.

Default CICS resource definitions for a CMAS

The default CICS resource definitions supplied for CICSPlex SM to start a CMAS, MAS, and WUI. These are supplied in samples EYU$CDEF, EYU$MDEF, and EYU$WDEF in the SEYUSAMP library.

On an INITIAL start of a CMAS, CICSPlex SM uses the default CICS resource definitions supplied in sample EYU$CDEF. Table 33 lists these definitions.

Important: Do not change the recovery options of the EYUDREPN FILE definition. This definition is used when CPSM determines that Data Repository file operations do not require logging. It is usual to receive LSR pool messages for EYUDREPN during CMAS initialization and ignore them. Make sure that the CICS JCL does not have a DD statement for EYUDREPN, and do not associate EYUDREPN with a data set name.

Table 33. Sample resource definitions supplied in EYU$CDEF (Part 1)

Resource type	Name	Description
File	EYUDREP	CICSPlex SM data repository
	EYUDREPN	CICSPlex SM data repository, alternate definition
Profile	EYUCICSD	CICSPlex SM debugger

Table 33. Sample resource definitions supplied in EYU$CDEF (Part 1) (continued)

Resource type	Name	Description
Program	EYUTMMDT	CICSPlex SM monitor definition table
	EYUTXDDA	CICSPlex SM repository record control table
	EYUTXLNT	CICSPlex SM notification table
	EYUTXLPD	CICSPlex SM parameter table
	EYU9BA00	CICSPlex SM BAS object
	EYU9CM00	CICSPlex SM CMAS communications
	EYU9DBG0	CICSPlex SM debugger
	EYU9DBG1	CICSPlex SM debugger
	EYU9DBG2	CICSPlex SM debugger
	EYU9DBUG	CICSPlex SM debugger
	EYU9MN00	CICSPlex SM MAS monitor
	EYU9NA00	CICSPlex SM CMAS MAS component
	EYU9NXOP	CICSPlex SM CMAS MAS program
	EYU9PS00	CICSPlex SM CMAS real-time analysis (RTA)
	EYU9TS00	CICSPlex SM CMAS topology
	EYU9WM00	CICSPlex SM CMAS workload management
	EYU9XC00	CICSPlex SM CMAS cache
	EYU9XDBU	CICSPlex SM CMAS batch repository input/output utility
	EYU9XD00	CICSPlex SM CMAS data repository
	EYU9XLCI	CICSPlex SM debugger ATTACH program
	EYU9XLCS	CICSPlex SM PLTPI startup program
	EYU9XLEV	CICSPlex SM main initialization
	EYU9XLGR	CICSPlex SM global user abend exit
	EYU9XLME	CICSPlex SM message exit
	EYU9XLOP	CICSPlex SM object environment CREATE
	EYU9XLSR	CICSPlex SM system user abend exit
	EYU9XL00	CICSPlex SM CMAS kernel linkage
	EYU9XM00	CICSPlex SM CMAS message format
	EYU9XQ00	CICSPlex SM queue manager
	EYU9XS00	CICSPlex SM common services
	EYU9XSTR	CICSPlex SM CMAS-MAS task recovery task related user exit
	EYU9XZ00	CICSPlex SM CMAS trace

Table 33. Sample resource definitions supplied in EYU$CDEF (Part 1) (continued)

Resource type	Name	Description
Transaction	BMLT	CICSPlex SM BAS long-running task
	CODB	CICSPlex SM debugger
	COD0	CICSPlex SM debugger
	COD1	CICSPlex SM debugger
	COD2	CICSPlex SM debugger
	COLU	CICSPlex SM CICS online utility
	COSD	CICSPlex SM CMAS stop
	LCMU	CICSPlex SM Transmit must-complete remote message argument lists
	LCPP	CICSPlex SM check joining CMAS for plex export
	LECI	CICSPlex SM CMAS-MAS CPI-C initial contact - CMAS
	LECR	CICSPlex SM CMAS-MAS CPI-C RECEIVE manager - CMAS
	LECS	CICSPlex SM CMAS-MAS CPI-C SEND manager - CMAS
	LEEI	CICSPlex SM ESSS initial contact transient
	LEER	CICSPlex SM ESSS RECEIVE link manager
	LEMI	CICSPlex SM CMAS-MAS MRO initial contact - CMAS
	LEMS	CICSPlex SM CMAS-MAS MRO SEND manager - CMAS
	LENS	CICSPlex SM CMAS-NetView SEND link manager
	LMIR	CICSPlex SM MRO RECEIVE link - CMAS
	LNCI	CICSPlex SM CMAS-CMAS CPI-C initial contact
	LNCS	CICSPlex SM CMAS-CMAS CPI-C SEND link manager
	LNMI	CICSPlex SM CMAS-CMAS initial contact task
	LNMS	CICSPlex SM CMAS-CMAS MRO initial contact task
	LPDG	CICSPlex SM net direct address generation
	LPLK	CICSPlex SM network lock
	LPLT	CICSPlex SM connection long-running task
	LPRT	CICSPlex SM connection services remove link
	LPSC	CICSPlex SM repository synchronization check
	LPSM	CICSPlex SM CMAS - shutdown MAS
	LRLT	CICSPlex SM security long-running task
	LSGT	CICSPlex SM garbage collection long-running task
	LSRT	CICSPlex SM communications long-running task
	LWTM	CICSPlex SM timing transaction
	MCCM	CICSPlex SM data collector manager
	MCTK	CICSPlex SM monitor end-of-task data collector
	MMEI	CICSPlex SM end-of-interval processor
	MMIS	CICSPlex SM monitor MAS attach
	MMST	CICSPlex SM monitor initialization
	PEAD	CICSPlex SM RTA evaluation asynchronous data processor
	PELT	CICSPlex SM RTA evaluation long-running task
	PMLT	CICSPlex SM RTA MRM long-running task

Table 34. Sample resource definitions supplied in EYU$CDEF (Part 2)

Resource type	Name	Description
	PNLT	CICSPlex SM RTA ACT long-running task
	PPLT	CICSPlex SM RTA analysis point long-running task
	PRLT	CICSPlex SM RTA ANL long-running task
	PRPR	CICSPlex SM RTA analysis asynchronous data processor
	PSLT	CICSPlex SM POL long-running transaction
	TICT	CICSPlex SM topology long-running task map change
	TIRT	CICSPlex SM topology long-running task RODM
	TIST	CICSPlex SM topology long-running task services
	TSMH	CICSPlex SM topology resident map list task
	TSPD	CICSPlex SM topology CICSPlex delete
	TSSC	CICSPlex SM topology system start event
	TSSJ	CICSPlex SM topology join event
	WMCC	CICSPlex SM workload manager (WLM) create work
	WMGR	CICSPlex SM WLM long running task
	WMLA	CICSPlex SM WLM update AOR abend lists
	WMQB	CICSPlex SM query workloads for a CICSplex
	WMQM	CICSPlex SM manage query workload process
	WMQS	CICSPlex SM quiescing AOR task
	WMSC	CICSPlex SM update scope service class tables
	WMWC	CICSPlex SM WLM create workload
	WMWD	CICSPlex SM WLM AOR descriptor generation
	WMWT	CICSPlex SM WLM end workload
	WSCL	CICSPlex SM global lock service
	WSLW	CICSPlex SM locking task
	XDBM	CICSPlex SM batch repository mainline
	XDNC	CICSPlex SM API notification long-running task
	XDND	CICSPlex SM API disposition long-running task
	XDNE	CICSPlex SM API connection long-running task
	XDNR	CICSPlex SM API command-processing task
	XDNS	CICSPlex SM API service long-running task
	XDSR	CICSPlex SM build MPSYNCCR record queue
	XLEV	CICSPlex SM initialization transaction
	XLNX	CICSPlex SM notify long-running task
	XLST	CICSPlex SM selector transaction
	XMLT	CICSPlex SM consolidated message log long-running task
	XQST	CICSPlex SM asynchronous spooling of CICSPlex SM queue
	XZLT	CICSPlex SM CMAS-MAS trace processor
Transient data queue	COLG	CICSPlex SM log output
	COPR	CICSPlex SM parameters

Default CICS resource definitions for a MAS

On an INITIAL start of a MAS, or if a MAS is started by the COLM transaction, CICSPlex SM uses the default CICS resource definitions supplied in sample EYU$MDEF. Table 35 lists these definitions.

Table 35. Sample resource definitions supplied in EYU$MDEF

Resource type	Name	Description
Profile	EYUCICSD	CICSPlex SM debugger transaction

Table 35. Sample resource definitions supplied in EYU$MDEF (continued)

Resource type	Name	Description
Program	EYUTXLPD	CICSPlex SM parameter table
	EYU9AEDF	CICSPlex SM API EDF formatter
	EYU9BA01	CICSPlex SM MAS BAS object
	EYU9CM01	CICSPlex SM CMAS communications
	EYU9DBG0	CICSPlex SM debugger
	EYU9DBG1	CICSPlex SM debugger
	EYU9DBG2	CICSPlex SM debugger
	EYU9DBUG	CICSPlex SM debugger
	EYU9MN01	CICSPlex SM MAS monitor
	EYU9NA01	CICSPlex SM MAS agents
	EYU9NLDC	CICSPlex SM MAS XDUREQC exit
	EYU9NLDR	CICSPlex SM MAS XDUREQ exit
	EYU9NLID	CICSPlex SM MAS XRSINDI exit
	EYU9NLME	CICSPlex SM MAS XMEOUT exit
	EYU9NLSO	CICSPlex SM MAS XSNOFF exit
	EYU9NMST	CICSPlex SM MAS XSTOUT exit
	EYU9NMTE	CICSPlex SM MAS XMNOUT exit
	EYU9NPS2	CICSPlex SM MAS shutdown task
	EYU9NXLM	CICSPlex SM MAS PLTPI
	EYU9NXSD	CICSPlex SM MAS global shutdown exit
	EYU9NXSH	CICSPlex SM MAS global shutdown program
	EYU9PS01	CICSPlex SM MAS real-time analysis
	EYU9TS01	CICSPlex SM MAS topology
	EYU9WM01	CICSPlex SM MAS workload management
	EYU9WRAM	CICSPlex SM WLM route
	EYU9XC01	CICSPlex SM MAS cache
	EYU9XC02	CICSPlex SM MAS cache
	EYU9XD01	CICSPlex SM MAS data repository
	EYU9XLAP	CICSPlex SM API object environment CREATE
	EYU9XLEV	CICSPlex SM main initialization
	EYU9XLGR	CICSPlex SM global user abend XPCTA exit
	EYU9XLOP	CICSPlex SM object environment CREATE
	EYU9XLSR	CICSPlex SM system user abend XSRAB exit
	EYU9XL01	CICSPlex SM MAS kernel linkage
	EYU9XM01	CICSPlex SM MAS message format
	EYU9XQ01	CICSPlex SM MAS queue manager
	EYU9XSTR	CICSPlex SM CMAS-MAS task recovery task related user exit
	EYU9XS01	CICSPlex SM MAS common services
	EYU9XZ01	CICSPlex SM MAS trace

Table 35. Sample resource definitions supplied in EYU$MDEF (continued)

Resource type	Name	Description
Transaction	CODB	CICSPlex SM debugger
	COD0	CICSPlex SM debugger
	COD1	CICSPlex SM debugger
	COD2	CICSPlex SM debugger
	COIE	CICSPlex SM MAS status transaction
	COHT	CICSPlex SM MAS historical data collection transaction
	COIR	CICSPlex SM RTA evaluation definition task - MAS
	COI0	CICSPlex SM MAS communications receive transaction
	COLM	CICSPlex SM MAS startup
	COLU	CICSPlex SM CICS online utility
	CONA	CICSPlex SM MAS alternate long-running task transaction
	COND	CICSPlex SM MAS shutdown transaction
	CONH	CICSPlex SM MAS history task
	CONL	CICSPlex SM MAS initialization transaction
	CONM	CICSPlex SM MAS monitor task
	CORT	CICSPlex SM RTA task
	COSH	CICSPlex SM MAS shutdown
	COWC	CICSPlex SM MAS workload management garbage collection
Transient data queue	COPR	CICSPlex SM buffers

Default CICS resource definitions for a WUI

On an INITIAL start of a WUI, or if a WUI is started by the COVC transaction, CICSPlex SM uses the default CICS resource definitions supplied in sample EYU$WDEF. Table 36 lists these definitions. As a WUI server is a MAS, CICSPlex SM also uses the default CICS resource definitions supplied in sample EYU$MDEF, and listed in Table 35 on page 441.

Table 36. Sample resource definitions supplied in EYU$WDEF

Resource type	Name	Description
Enqmodel	EYUWREP	CICSPlex SM WUI repository update serialization
File	EYUWREP	CICSPlex SM WUI data repository
Mapset	EYU9VCE	CICSPlex SM WUI control mapset

Table 36. Sample resource definitions supplied in EYU$WDEF (continued)

Resource type	Name	Description
Program	EYU9VKEC	CICSPlex SM WUI server
	EYU9VKIT	CICSPlex SM WUI initialization
	EYU9VWAN	CICSPlex SM WUI analyzer
	EYU9VWCV	CICSPlex SM WUI converter
	EYUTVOSE	CICSPlex SM WUI resource table text strings (US English)
	EYUTVTGE	CICSPlex SM WUI GIF files (US English)
	EYUTVTHE	CICSPlex SM WUI HTML pages (US English)
	EYUTVTJE	CICSPlex SM Java classes (US English)
	EYUTVTME	CICSPlex SM WUI messages (US English)
	EYUTVTSE	CICSPlex SM WUI strings (US English)
	EYUTVOSK	CICSPlex SM WUI resource table text strings (Japanese)
	EYUTVTGK	CICSPlex SM WUI GIF files (Japanese)
	EYUTVTHK	CICSPlex SM WUI HTML pages (Japanese)
	EYUTVTJK	CICSPlex SM Java classes (Japanese)
	EYUTVTMK	CICSPlex SM WUI messages (Japanese)
	EYUTVTSK	CICSPlex SM WUI strings (Japanese)
	EYUTVOSS	CICSPlex SM WUI resource table text strings (Simplified Chinese)
	EYUTVTGS	CICSPlex SM WUI GIF files (Simplified Chinese)
	EYUTVTHS	CICSPlex SM WUI HTML pages (Simplified Chinese)
	EYUTVTJS	CICSPlex SM Java classes (Simplified Chinese)
	EYUTVTMS	CICSPlex SM WUI messages (Simplified Chinese)
	EYUTVTSS	CICSPlex SM WUI strings (Simplified Chinese)
Transaction	COVA	CICSPlex SM WUI user API task
	COVC	CICSPlex SM WUI server controller
	COVE	CICSPlex SM WUI HTTP error handler
	COVG	CICSPlex SM WUI global task
	COVP	CICSPlex SM WUI proxy
	COVU	CICSPlex SM WUI resource server
Transient data queue	COLG	CICSPlex SM log output
	COVE	CICSPlex SM WUI export data set
	COVI	CICSPlex SM WUI import data set
	COVP	CICSPlex SM WUI parameters

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Accessibility

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

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- using a 3270 emulator logged on to CICS
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IBM Personal Communications provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICS system.

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Version 5 Release 2
Installation Guide

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