

CICS for MVS/ESA



Installation Guide

Version 4 Release 1

CICS for MVS/ESA



Installation Guide

Version 4 Release 1

Note!

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

Second edition (April 1997)

This edition applies to Version 4 Release 1 of the IBM licensed program Customer Information Control System/Enterprise Systems Architecture (CICS/ESA), program number 5655-018, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Consult the latest edition of the applicable IBM system bibliography for current information on this product.

This is the second edition of the Installation Guide for CICS/ESA 4.1. It is based on the first edition, SC33-1163-00, which is now obsolete. Changes from the first edition are marked by the '+' sign to the left of the changes. The vertical lines in the left-hand margins indicate changes made between the CICS/ESA 3.3 edition and the CICS/ESA 4.1 first edition.

The CICS/ESA 3.3 edition remains applicable and current for users of CICS/ESA 3.3.

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DATABASE 2	DB2
DFSMS	DFSMSdss
DFSMS/MVS	Enterprise Systems Architecture/370
Hiperbatch	IBM
IBMLink	IMS
IMS/ESA	Language Environment
MVS/DFP	MVS/ESA
MVS/SP	MVS/XA
NetView	Processor Resource/Systems Manager
PR/SM	RACF
RETAIN	RMF
SAA	System/390
VTAM	3090

Preface

What this book is about

This book is intended to help you install CICS/ESA Version 4 Release 1 (CICS/ESA 4.1) in an MVS/Enterprise System Architecture (MVS/ESA) environment. It contains guidance about tailoring CICS for use in your systems environment.

This book does not describe installing the Front End Programming Interface (FEPI) feature of CICS/ESA 4.1. For further information about loading the FEPI feature from the distribution tape, see the *CICS Program Directory*. For information about the FEPI feature, including how to configure it after it has been loaded from the distribution tape, see the *CICS/ESA Front End Programming Interface User's Guide*.

If you need to know where programming interface information is described, or about the definitions of the different types of information in the CICS library, you should read the *CICS Library Guide*.

Who is this book for?

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

What you need to know to understand this book

To fully understand the information in this book, you should have experience of the IBM MVS/ESA operating system, and the System Modification Program/Extended (SMP/E) licensed program needed to install CICS. To use the installation procedures, you should be familiar with the JCL and cataloged procedures for MVS/ESA. It helps if you are familiar with CICS concepts; if you need background information about CICS, see the *CICS/ESA 3.3 Facilities and Planning Guide*.

How to use this book

If you are installing CICS/ESA 4.1 from the product distribution tape, you should use the *CICS Program Directory* to load the CICS software from the tape and create the libraries used by CICS. You should then use this book to tailor CICS to your environment and to verify that CICS has installed correctly.

Some of the information in this book is also of interest if you have installed CICS/ESA 4.1 with either an MVS custom-built installation process offering (CBIPO) or an MVS custom-built product delivery offering (CBPDO). If you are installing CICS/ESA 4.1 with either CBIPO or CBPDO, you should first see one of the following books:

- To install CICS/ESA 4.1 with CBIPO, you should use the CBIPO Related Installation Materials (RIMs) provided with the CBIPO.
- To install CICS/ESA 4.1 with CBPDO, you should use the softcopy program directory provided on the CBPDO tape.

Notes on terminology

“CICS” is used throughout this book to mean CICS/ESA, although the formal abbreviation “CICS/ESA” is retained when quoting the titles of other CICS publications.

“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.

“MVS” is used throughout this book to mean the operating system MVS/Enterprise System Architecture.

“MVS/ESA SP 4.1” is used throughout this book to mean the MVS/ESA System Product Version 4 Release 1.

In the programming examples in this book, the dollar symbol (\$) is used as a national currency symbol. In countries where the dollar is not the national currency, the local currency symbol should be used.

IMS library names

The IMS libraries referred to in this chapter are identified by IMS.libnam (for example, IMS.RESLIB). If you are using your own naming conventions, change the IMS prefix to match those naming conventions. See also the DLIMACLIB parameter of DFHISTAR (described on page 73).

Determining if a publication is current

IBM regularly updates its publications with new and changed information. When first published, both hardcopy and BookManager softcopy versions of a publication are in step, but subsequent updates will probably be available in softcopy before they are available in hardcopy.

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

Here's how to determine if you are looking at the most current copy of a publication:

- A publication with a higher suffix number is more recent than one with a lower suffix number. For example, the publication with order number SC33-0667-02 is more recent than the publication with order number SC33-0667-01. (Note that suffix numbers are updated as a product moves from release to release, as well as for hardcopy updates within a given release.)
- When the softcopy version of a publication is updated for a new collection kit the order number it shares with the hardcopy version does not change. Also, the date in the edition notice remains that of the original publication. To compare softcopy with hardcopy, and softcopy with softcopy (on two editions of the collection kit, for example), check the last two characters of the publication's filename. The higher the number, the more recent the publication. For example, DFHPF104 is more recent than DFHPF103. Next to the

publication titles in the CD-ROM booklet and the readme files, asterisks indicate publications that are new or changed.

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

Bibliography

CICS/ESA 4.1 library

Evaluation and planning		
<i>Release Guide</i>	GC33-1161	April 1997
<i>Migration Guide</i>	GC33-1162	April 1997
General		
<i>CICS Family: Library Guide</i>	GC33-1226	April 1995
<i>Master Index</i>	SC33-1187	October 1994
<i>User's Handbook</i>	SX33-1188	April 1997
<i>Glossary (softcopy only)</i>	GC33-1189	n/a
Administration		
<i>Installation Guide</i>	GC33-1163	April 1997
<i>System Definition Guide</i>	SC33-1164	April 1997
<i>Customization Guide</i>	SC33-1165	April 1997
<i>Resource Definition Guide</i>	SC33-1166	April 1997
<i>Operations and Utilities Guide</i>	SC33-1167	April 1997
<i>CICS-Supplied Transactions</i>	SC33-1168	April 1997
Programming		
<i>Application Programming Guide</i>	SC33-1169	October 1994
<i>Application Programming Reference</i>	SC33-1170	April 1997
<i>System Programming Reference</i>	SC33-1171	April 1997
<i>Sample Applications Guide</i>	SC33-1173	October 1994
<i>Distributed Transaction Programming Guide</i>	SC33-1174	October 1994
<i>Front End Programming Interface User's Guide</i>	SC33-1175	October 1994
Diagnosis		
<i>Problem Determination Guide</i>	SC33-1176	October 1994
<i>Messages and Codes</i>	GC33-1177	April 1997
<i>Diagnosis Handbook</i>	LX33-6093	October 1994
<i>Diagnosis Reference</i>	LY33-6082	April 1997
<i>Data Areas</i>	LY33-6083	April 1997
<i>Supplementary Data Areas</i>	LY33-6081	October 1994
<i>Closely-Connected Program Interface</i>	LY33-6084	November 1996
Communication		
<i>Intercommunication Guide</i>	SC33-1181	April 1997
<i>Server Support for CICS Clients</i>	SC33-1591	February 1996
<i>CICS Family: Inter-product Communication</i>	SC33-0824	October 1996
<i>CICS Family: Communicating from CICS on System/390</i>	SC33-1697	October 1996
Special topics		
<i>Recovery and Restart Guide</i>	SC33-1182	October 1994
<i>Performance Guide</i>	SC33-1183	October 1994
<i>CICS-IMS Database Control Guide</i>	SC33-1184	October 1994
<i>CICS-RACF Security Guide</i>	SC33-1185	October 1994
<i>Shared Data Tables Guide</i>	SC33-1186	October 1994
<i>External CICS Interface</i>	SC33-1390	April 1997
<i>CICS ONC RPC Feature for MVS/ESA Guide</i>	SC33-1119	February 1996
<i>CICS Web Interface Guide</i>	SC33-1892	November 1996

The book that you are reading was republished in hardcopy format in April 1997 to incorporate updated information previously available only in softcopy. The right-hand column in the above table indicates the latest hardcopy editions of the CICS/ESA books available in April 1997. A book with a date earlier than April 1997 remains the current edition for CICS/ESA 4.1. Note that it is possible that other books in the library will be updated after April 1997.

When a new order is placed for the CICS/ESA 4.1 product, the books shipped with that order will be the latest hardcopy editions.

The style of IBM covers changes periodically. Books in this library have more than one style of cover.

For information about the softcopy books, see “Determining if a publication is current” on page viii. The softcopy books are regularly updated to include the latest information.

Other CICS books

- *CICS Application Migration Aid Guide*, SC33-0768
- *CICS Application Programming Primer (VS COBOL II)*, SC33-0674
- *CICS/ESA Facilities and Planning Guide* for CICS/ESA Version 3 Release 3, SC33-0654
- *CICS/ESA XRF Guide* for CICS/ESA Version 3 Release 3, SC33-0661
- *CICS Family: API Structure*, SC33-1007
- *CICS Family: General Information*, GC33-0155
- *IBM CICS Transaction Affinities Utility MVS/ESA*, SC33-1159

CICS Clients

- *CICS Clients: Administration*, SC33-1436
- *CICS Family: Client/Server Programming*, SC33-1435

Books from related libraries

Systems Network Architecture (SNA)

Systems Network Architecture - Function Description of Logical Unit Types, GC20-1868

Systems Network Architecture - Types of Logical Unit to Logical Unit Sessions, GC20-1869.

Advanced communications function for VTAM (ACF/VTAM)

Network Program Products General Information, GC30-3350

Advanced Communications Function for VTAM Installation and Resource Definition, SC23-0111

Advanced Communications Function for VTAM Customization, SC23-0112

Advanced Communications Function for VTAM Operation, SC23-0113

Advanced Communications Function for VTAM Messages and Codes, SC23-0114

Advanced Communications Function for VTAM Diagnosis Guide, SC23-0116

Advanced Communications Function for VTAM Diagnosis Reference, LY30-5582

Advanced Communications Function for VTAM Data Areas, LY30-5584

Advanced Communications Function for VTAM Programming, SC23-0115

Advanced Communications Function for VTAM Reference Summary, SC23-0135.

DATABASE 2 (DB2)

IBM DATABASE 2 Administration Guide, SC26-4888

IBM DATABASE 2 Application Programming and SQL Guide, SC26-4889

IBM DATABASE 2 Command and Utility Reference, SC26-4891.

Virtual Storage Access Method (VSAM)

MVS/ESA Access Method Services Reference for VSAM Catalogs, GC26-4075

MVS/ESA VSAM Administration Guide, GC26-4151

MVS/ESA Catalog User's Guide, GC26-4041.

Resource Access Control Facility (RACF)

Resource Access Control Facility (RACF): General Information, GC28-0722

System Programming Library: Resource Access Control Facility (RACF),
SC28-1343

Resource Access Control Facility (RACF) Command Language Reference,
SC28-0733

Resource Access Control Facility (RACF) Security Administrators Guide,
SC28-1340.

System Modification Program Extended (SMP/E)

System Modification Program Extended: User's Guide, SC28-1302

System Modification Program Extended: (SMP/E) Terminal User's Guide,
SC28-1109

System Modification Program Extended: General Information, GC28-1106

System Modification Program Extended: Reference, SC28-1107.

Sysplex planning

System/390 MVS Sysplex Application Migration, GC28-1211

MVS/Enterprise Systems Architecture (MVS/ESA)

Where necessary, this book references information in MVS/ESA books, using shortened versions of the book title. The following table shows the complete titles and order numbers for those MVS/ESA books:

Short title used in this book	Version 3 book	Version 4 book
<i>Authorized Assembler Programming Reference</i>	<i>MVS/ESA System Programming Library: Application Development Macro Reference</i> , GC28-1857	<i>MVS/ESA Application Development Reference: Services for Authorized Assembler Language Programs Volume 1</i> , GC28-1647
<i>Authorized Assembler Programming Reference Volume 2</i>	—	<i>MVS/ESA Application Development Reference: Services for Authorized Assembler Language Programs Volume 2</i> , GC28-1648
<i>Authorized Assembler Programming Reference Volume 3</i>	—	<i>MVS/ESA Application Development Reference: Services for Authorized Assembler Language Programs Volume 3</i> , GC28-1649

Short title used in this book	Version 3 book	Version 4 book
<i>Authorized Assembler Programming Reference Volume 4</i>	—	<i>MVS/ESA Application Development Reference: Services for Authorized Assembler Language Programs Volume 4</i> , GC28-1650
<i>Implementation Guide</i>	—	<i>MVS/ESA Implementation Guide</i> , GG24-3628
<i>Initialization and Tuning Guide</i>	<i>MVS/ESA System Programming Library: Initialization and Tuning</i> , GC28-1828	<i>MVS/ESA Initialization and Tuning Guide</i> , GC28-1634
<i>Initialization and Tuning Reference</i>	—	<i>MVS/ESA Initialization and Tuning Reference</i> , GC28-1635
# # # <i>MVS/ESA Routing and Descriptor Codes</i>	<i>MVS/ESA Message Library: Routing and Descriptor Codes</i> , GC28-1816	<i>MVS/ESA Routing and Descriptor Codes</i> , GC28-1666

Information Management System (IMS)

Title	IMS	
	ESA 3.1	ESA 4.1
<i>Utilities Reference: Database</i>	SC26-4627	SC26-4627
<i>Utilities Reference: Data Communication</i>	SC26-4628	SC26-4628
<i>Utilities Reference: Systems</i>	SC26-4629	SC26-4629

Summary of changes

+ Changes for this second CICS/ESA 4.1 edition

+ This book is the second edition of the *Installation Guide* for CICS/ESA 4.1.
+ Changes that were made for the first edition are still indicated by vertical bars to
+ the left of the changes. Changes made for this second edition are indicated by the
+ '+' symbol to the left of the changes. Users of the first edition can therefore see
+ what has changed since that first edition was published. Softcopy versions of this
+ book use both these revision indicators and use the '#' symbol to show further
+ changes since this second hardcopy edition of the book was published.

+ Significant changes to this edition are:

- + • Exploitation of the MVS automatic restart management facility
- + • How to determine if CICS is the caller of the SYMREC macro

| Changes for the first CICS/ESA 4.1 edition

| **Note:** The CICS installation process has not changed from CICS/ESA 3.3, except
| for some *extra* options to help you tailor more of the installation parameters.

| The major changes to CICS for CICS/ESA 4.1 that affect this book are:

- | • Installation of the CICS-DB2 attachment facility as part of CICS/ESA 4.1
- | • CICS/ESA 4.1 exploitation of MVS workload management
- | • Provision of a sample installation verification procedure, DFHIVPDB, to verify
| that the CICS-DBCTL interface can be used successfully
- | • Integration of the Front End Programming Interface (FEPI) feature into the base
| CICS/ESA 4.1 product
- | • Integration of the shared data tables feature into the base CICS/ESA 4.1
| product. As part of this:
 - | – The usermod DFH\$UMOD now contains the entries for LPA-eligible shared
| data tables modules (usermod DFH\$USDT is removed).
 - | – The DFHFC0404 message confirming shared data tables support at CICS
| startup has been removed.
- | • Ability to specify the name of the data set copy utility program (default
| IEBCOPY), for CICS installation-related jobs, on the UTILITIES parameter of
| the DFHISTAR job.

Changes for the CICS/ESA 3.3 edition

The major changes to CICS for CICS/ESA 3.3 that affect this book are:

- Provision of the SYS1.CICS330.SDFHLPA target library, which contains the modules that must be installed in the MVS link pack area (LPA).
- Provision of the SYS1.CICS330.SDFHLINK target library, which contains the modules that must be installed in the MVS linklist.
- Provision of the CICS330.SDFHPARM target library, which contains the DFHIPCSP module, the CICS IPCS imbed file that provides the CICS exit

control data for inclusion in the MVS-supplied BLSECT member in SYS1.PARMLIB.

- Provision of the LINDEX parameter of the DFHISTAR job, to specify the high-level index of the SDFHLPA and SDFHLINK libraries.
- Removal of the code that automatically adds a TIME parameter to the CICS-supplied jobs tailored by the DFHISTAR job.

Changes for the CICS/ESA 3.2.1 edition

The following information has been moved to other CICS/ESA books:

- Information about installing CICS from the distribution tape to DASD has been moved to the *Program Directory*.
- Information about the CICS sample application programs has been moved to the *CICS/ESA Sample Applications Guide*.

The major changes to CICS for CICS/ESA 3.2.1 that affect this book are:

- Changes to the installation process, to:
 - Enable CICS to be installed into an existing global zone and an existing CSI. (Any reasonable combination of zones and CSIs can be used.)
 - Enable CICS to be installed using JES2 or JES3.
 - Simplify the JCL that was generated by the DFHINST macro (and associated macros) and provide each piece of JCL in a skeleton form; that is, with customer-modifiable variables.
 - Provide a job to define values for the installation parameters, specific for your CICS environment. This job, called DFHISTAR, generates the CICS installation jobs and post-installation jobs from their skeleton forms, and substitutes the customer-defined values and all data required (by the various utilities used by the jobs) into the jobs.

Note: You must have TSO/E Version 1.4 or later to run the DFHISTAR job. However, you can run the DFHISTAR job in a different MVS image from the MVS image in which you intend running the jobs that it generates.
 - Remove SYSGEN and associated macros and provide the JCL needed to install local DL/I support, so that the installation process can substitute the required customer values into the JCL.
 - Provide jobs to unload the Japanese NLS feature, the optional source tapes, and the softcopy book files from the distribution tapes.
 - Provide jobs, DFHCOMDS, DFHDEFDS, and DFHALTDS, to create the CICS data sets (needed for the CICS-supplied installation verification procedures (IVPs) and useful as a basis for the customer's own data sets).
 - Provide a new CICS startup procedure that can be used to start CICS, or as a basis for your own startup procedures.
 - Simplify the CICS-supplied IVPs (DFHIVPBT, DFHIVPOL, and DFHIVPAL) to make use of the data sets created by the jobs DFHCOMDS, DFHDEFDS, and DFHALTDS, and to include the CICS startup procedure in the IVP jobs.
 - Remove the DFHFMID, DFHINST, DFHIVP, DFHIVPD, and DFHJOB macros (as no longer used).

- Remove the SYSPUNCH distribution library (as no longer allowed under the MVS product packaging rules) and include all its members into the ADFHMOD distribution library.
- Change all the CICS library names known to SMP/E (see Table 1) to conform to the MVS product packaging rules, including changes to supplied JCL procedures containing references to the libraries. The library name changes and the removal of the SYSPUNCH distribution library are the only effects of the MVS product packaging rules on CICS that you should notice.

<i>Table 1. CICS/ESA 3.2.1 library name changes</i>		
Old library name	New distribution library	New target library
CEELIB	-	SDFHC370
COBLIB	-	SDFHCOB
DCEELIB	ADFHC370	-
DCOBLIB	ADFHCOB	-
DLOADLIB	ADFHMOD	-
DPL1LIB	ADFHPL1	-
JCLLIB	ADFHINST	SDFHINST
LOADLIB	-	SDFHLOAD
LOADLIB1	-	SDFHAUTH
MACLIB	ADFHMAC	SDFHMAC
PL1LIB	-	SDFHPL1
PROCLIB	ADFHPROC	SDFHPROC
SAMPLIB	ADFHSAMP	SDFHSAMP
SOURCE	ADFHSRC	SDFHSRC
-	ADFHAPD1	SDFHAPD1
-	ADFHAPD2	SDFHAPD2
-	ADFHMSGGS	SDFHMSGGS

Under the new installation process, most CICS libraries have both an SMP/E distribution library (ADFHxxxx) and an SMP/E target library (SDFHxxxx).

The ADFHAPD1 and ADFHAPD2 distribution libraries contain data members, to be installed in the associated SDFHAPD1 and SDFHAPD2 target libraries, used to initialize the VSAM data sets used by the CICS-supplied CUA sample applications. For information about these application programs, see the *CICS/ESA Sample Applications Guide*.

The ADFHMSGGS distribution library contains the data member DFHCMACD, to be installed in the associated SDFHMSGGS target library, and used to initialize the DFHCMACD data set (the CICS messages data set) used by the CICS-supplied CMAC transaction. For further information about the CICS messages data set, see “Creating the CICS messages data set, DFHCMACI job” on page 84.

Other changes are:

- MVS/SP Version 3 Release 1.3 or later required for CICS/ESA 3.2.1. When integrating CICS with your MVS operating system, you must install the CICS Type 3 SVC in the LPA, and define the SVC in an SVC Parm statement.
- Removal of CICS internal security. CICS now depends for security on an external security manager, such as RACF.
- Provide support for the Common Programming Interface Communications (CPI Communications).
- Provide support for Systems Applications Architecture Resource Recovery (SAA Resource Recovery).
- Provide support for CICS operations from TSO.
- Provide support for IMS/ESA 4.1 local DL/I.
- Provide support for extended recovery in a multi-MVS environment.
- Change some CICS startup messages.

Chapter 1. How to use this book

If you are installing CICS/ESA 4.1 from the product distribution tape, you should use the *Program Directory* to load the CICS/ESA 4.1 software from the distribution tape to DASD. You should then use this book to tailor CICS/ESA 4.1 to your environment; that is to:

- Integrate CICS with the MVS and ACF/VTAM
- Apply service to CICS (if required)
- Create the CICS data sets
- Install DL/I support (if required)
- Install DB2 support (if required)
- Install MRO and ISC support (if required)
- Run the installation verification procedures (if required).

Notes:

1. Appendix A, "Disk space needed for CICS/ESA 4.1" on page 179 gives values for the disk space required for the CICS/ESA 4.1 software.
2. "Defining IPCS exit control data to MVS" on page 51 gives details of the CICS modules that are needed in, and eligible for, the MVS link pack area.
3. If you installed CICS from the distribution tape, you do not need to run the DFHISTAR job again to specify the post-installation parameters. However, if you wish 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/ESA 4.1 with either an MVS custom-built installation process offering (CBIPO) or an MVS custom-built product delivery offering (CBPDO). If you are installing CICS/ESA 4.1 with either CBIPO or CBPDO, you should first see one of the following books:

- To install CICS/ESA 4.1 with CBIPO, you should use the CBIPO Related Installation Materials (RIMs) provided with the CBIPO.
- To install CICS/ESA 4.1 with CBPDO, you should use the softcopy program directory provided on the CBPDO tape.

In particular, if you have installed CICS/ESA 4.1 with either CBIPO or CBPDO, you should edit and run the DFHISTAR job, specifying the keyword POST, to define parameters needed to tailor your CICS environment.

Chapter 2. Integrating CICS with MVS and other products

The information about ACF/VTAM, MVS, RACF and other products given in this chapter is for guidance only. Always consult the current publications of the other products for the latest information. See “Books from related libraries” on page xi.

Note: The advice about using RACF applies only if you have security active in your system. If so, you must use an external security manager (such as RACF).

Before you run CICS:

- You must authorize the CICS410.SDFHAUTH library to enable certain CICS initialization modules to run in supervisor state.
- You should protect your CICS data sets using RACF.
- If you intend using RACF and VTAM, you should authorize each CICS region userid to OPEN the VTAM ACB for the region’s specified APPLID.
- If you intend using RACF, you must authorize each CICS region userid to access the category 1 system transactions.
- If you intend using RACF to authorize terminal users to access CICS resources, you should define a default CICS userid to RACF and specify it on the CICS system initialization parameter, DFLTUSER.
- If you intend using RACF to authorize terminal users to access CICS resources and user-defined resources, you must activate the RACF resource classes for those resources.
- You must install the CICS-required modules that are needed in the MVS linklist.
- You must define CICS as an MVS subsystem if you intend using multiregion operation (MRO) or CICS shared database, and to reduce operator intervention in certain circumstances when running CICS with XRF.
- You must install the CICS Type 3 SVC to MVS; and, if you are using the high-performance option (HPO), you must also install the Type 6 SVC to MVS.
- You should decide whether you are going to use the high-performance option (HPO), and load the DFHHP SVC module into the MVS nucleus.
- You can define some CICS properties to MVS.

If you are going to use MVS workload management with CICS, you should set up appropriate MVS definitions, and ensure that CICS performance parameters match those definitions.

If you are going to use MVS automatic restart manager with CICS, you should set up appropriate MVS definitions and CICS restart JCL.

- If you intend using VTAM with CICS (for example, to connect VTAM terminals or to use VTAM intercommunication facilities), you must define to VTAM each CICS region that is to use VTAM. You must also ensure that any VTAM terminal definitions are properly specified for connection to CICS.
- You must install the CICS-supplied modules that are needed in the MVS link pack area (LPA). You can also install other CICS and application modules in the LPA.

- You should define the release-specific CICS formatting routines for use under IPCS to MVS and make the CICS-supplied DFHIPCSP module available to your IPCS job.
- On MVS/ESA SP 4.1 or above, the SYMREC authorization exit, ASREXIT, must be in effect to allow CICS to use the SYMREC macro call.

Authorizing the CICS410.SDFHAUTH library

Although, in general, CICS runs in problem state, the CICS initialization program, DFHSIP, needs to run in supervisor state for part of its execution.

For a module to be able to get into 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 CICS410.SDFHAUTH library.

Define the CICS410.SDFHAUTH library as authorized by including its name in an IEAAPFxx member in SYS1.PARMLIB, and specify the suffix xx in the APF=xx keyword in the IEASYS00 (or other IEASYSxx) member specified at IPL time. (For further information, see the *MVS/ESA Initialization and Tuning Guide*.)

Authorization does not take effect until you re-IPL MVS. You must therefore re-IPL MVS before running the installation verification procedures described in Chapter 2, “Integrating CICS with MVS and other products” on page 3.

When you prepare your startup job stream, provide a STEPLIB DD statement for the CICS410.SDFHAUTH library. When you define your STEPLIB DD statement, remember that all other libraries concatenated with the CICS410.SDFHAUTH library must also be APF-authorized (for example, IMS.RESLIB). This is because, if any of the libraries in a STEPLIB concatenation are not authorized, MVS regards all of them as unauthorized.

The CICS410.SDFHLOAD library contains only programs that run in problem state, and should **not** be authorized. The CICS410.SDFHLOAD library must be included in the CICS DFHRPL library concatenation. There is an example of this library DD statement in the sample job stream provided in the *CICS/ESA System Definition Guide*.

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

Protecting CICS load module data sets

```
# To prevent unauthorized or accidental modification of CICS410.SDFHAUTH, you
# should RACF-protect this library. Without such protection, the integrity and security
# of your MVS system are at risk. To control the unauthorized start up of a CICS
# system using DFHSIP, you should also consider implementing the following:
#
# • If DFHSIP is in a library that has been placed in the MVS link list, protect
#   DFHSIP with a profile in the RACF PROGRAM RESOURCE CLASS. Give
#   READ access to this profile only to those users who are allowed to execute
#   CICS.
```


#

- If DFHSIP has been placed in the link pack area (LPA), it cannot be protected by the PROGRAM resource class. You should therefore control the start up of CICS by controlling the loading of any suffixed DFHSIT load module. Ensure that no DFHSIT load module is included in the LPA, then control the loading of DFHSIT by creating a generic 'DFHSIT' profile in the PROGRAM resource class. Give READ access to this profile only to those users who are allowed to execute CICS.

RCF11253

The following change was made by RCF 11253.

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 on the DFSMSdss (or DFDSS) release level by linking to the modules ADRELVL and ADRMCLVL. If access to these data set services modules is controlled by means of RACF PROGRAM general resource profiles, security violation messages are issued against the CICS region userid, unless the userid is authorized to access ADR-prefixed module names.

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

- If you have generic PROGRAM profiles protecting access ADR modules, create specific PROGRAM profiles for the ADDRELVL and ADRMCLVL modules, and ensure your CICS region userids 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.
 - Defining 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.

You should also RACF-protect the other libraries (including CICS410.SDFHLOAD) that make up the STEPLIB and DFHRPL library concatenations.

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

Controlling the opening of a CICS region's VTAM ACB

You can control which users among those who are running non-APF-authorized programs can OPEN the VTAM ACB associated with a CICS address space (CICS region). This ensures that only authorized CICS regions can present themselves as VTAM applications providing services with this APPLID, thus preventing unauthorized users impersonating real CICS regions. (Note that the CICS region userid needs the OPEN access, not the issuer of the SET VTAM OPEN command.)

To enable CICS to start up with external security, you must first have authorized
the CICS region userid to open the CICS region's VTAM ACB with the applid
specified on the APPLID system initialization parameter.

For each APPLID, create a VTAMAPPL profile, and give the CICS region userid
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 in effect), 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).

Notes:

1. The VTAMAPPL class must be active and RACLISTed for this protection to be
in effect; for example:

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

2. If a CICS region is not to use VTAM, you do not need to authorize the CICS
region userid for the CICS applid.

3. If you do not control the opening of a CICS region's VTAM ACB, a new VTAM
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 VTAM ACB and
issues message DFHZC0101.
- # • The running CICS region either terminates or continues, depending on your
use of the XXRSTAT exit. (The default is to terminate.) If the CICS region
continues, all TCAM sessions remain bound to the CICS region, but it no
longer uses VTAM.
- # • The new application opens the VTAM ACB with the specified applid.
- # • If the first running CICS region used VTAM persistent sessions, the new
application recovers any VTAM sessions persisting from that CICS region.

For information about creating VTAMAPPL profiles for CICS region applids, see the
CICS/ESA CICS-RACF Security Guide. For information about the XXRSTAT exit,
see the *CICS/ESA Customization Guide*.

Authorizing the region userid to access category 1 transactions

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

To give the region userid the authority to access the category 1 system
transactions, edit and submit the sample job stream in Figure 1 on page 7 to
execute the CICS-supplied sample CLIST, DFH\$CAT1. This job uses the RACF
commands in the CLIST to update the RACF database.

Note: Only a user with the RACF authority SPECIAL can execute 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 'CICS410.SDFHSAMP(DFH$CAT1)' LIST  
# /*  
# //
```

Figure 1. Batch job to execute the sample CLIST, DFH\$CAT1

For information about category 1 transactions and about determining the CICS
region userid, see the *CICS/ESA CICS-RACF Security 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, you must:

- Define resource classes for your resources.
- Activate the resource classes.
- Optionally RACLIST resource classes to be used for QUERY SECURITY commands. This builds in-storage profiles for those resource classes.

For information about RACF resource classes, see the *CICS/ESA CICS-RACF Security Guide*.

Defining the default CICS userid to RACF

If you intend using RACF to authorize terminal users to access CICS resources, you should define a default CICS userid to RACF and specify it on the CICS system initialization parameter, DFLTUSER. This default userid 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 userid. If it cannot be signed on (for example, if not defined), CICS issues message DFHSN0701 and terminates CICS initialization. After the valid RACF userid 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 userid 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 userid to RACF, see the *CICS/ESA CICS-RACF Security Guide*.

Installing CICS modules in the MVS linklist

CICS supplies a number of modules that are required, or may be required, in a
library in the MVS linklist because:

- # 1. They may be loaded by non-CICS regions, or
- # 2. They must be consistent across several CICS regions.

CICS does not attempt to load these modules from a library in the CICS STEPLIB
concatenation.

Compatibility with earlier CICS releases

Unless otherwise stated, the CICS/ESA 4.1 versions of these modules are
compatible with earlier releases of CICS.

You should install these modules into a library in the MVS linklist, as outlined in the
following sections.

These modules are installed in the library SYS1.CICS410.SDFHLINK when you
install CICS. You can give the SYS1.CICS410.SDFHLINK library your own index,
but if you do, you must specify the new index on the LINDEX parameter of the
DFHISTAR job.

CICS modules required in the MVS linklist

CICS supplies the following modules, required in an APF-authorized library in the MVS linklist, in the library SYS1.CICS410.SDFHLINK. You **must** add these modules to an APF-authorized library in the MVS linklist, either by defining the SYS1.CICS410.SDFHLINK library to the operating system as APF-authorized and adding it to the MVS linklist, or by adding the modules to another APF-authorized library in the MVS linklist.

- # **DFHPD410** CICS/ESA 4.1 dump formatting routine for use with IPCS
- # **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 initialization module.
- # **DFHSSMGT** CICS subsystem message table that contains the text of messages for the subsystem interface modules.
- # **DFHXCSVC** External CICS interface (EXCI) SVC services routine.

If you have RACF 1.9, and you are planning to use the CICS segment to define your users' CICS characteristics, you need to install the CICS-supplied interface routines for use by RACF. The routines must be accessible by the Security Administrator who executes the ADDUSER or ALTUSER commands under TSO. For information about the RACF interface routines, see the *CICS/ESA CICS-RACF Security Guide*.

Note: The DFHPD410 module is the IPCS formatting routine specific to
CICS/ESA 4.1. If you run more than one release of CICS, ensure that the correct
versions of the formatting routine are available; for example, DFHPD330 for
CICS/ESA 3.3.

CICS shared data tables modules for the MVS linklist
CICS supplies the following modules, for the shared data tables facility, in the
SYS1.CICS410.SDFHLINK. If you intend using the shared data tables facility, you
must install these in the MVS linklist or the MVS link pack area:

- # • DFHDT SVC and DFHDT CV, because all regions using shared data tables must
use the same level of SVC code
- # • DFHMVRMS, the RESMGR exit stub, because CICS JOBLIB/STEPLIB data
sets are unavailable at end-of-memory

Defining CICS as an MVS subsystem

You must define CICS as an MVS subsystem before you can run CICS with any of the following:

- Multiregion operation (MRO)
- Shared database
- The console message-handling facility
- MVS workload management

Also, if you are running CICS with XRF in a multi-MVS environment or a two-CEC configuration, defining CICS as an MVS subsystem can reduce operator intervention during takeover if MVS or a CEC fails while more than one CICS is running.

Defining CICS as an MVS subsystem involves three members of the SYS1.PARMLIB partitioned data set: IEASYSxx¹, IEFSSNaa¹, and DFHSSlly¹. DFHSSlly is a new member that you need only if you want the console message-handling facility.

Note: The subsystem definition does not take effect until the next time you re-IPL MVS.

For information about MRO, see the *CICS/ESA Intercommunication Guide*. For information about shared database and the console message-handling facility, see the *CICS/ESA Operations and Utilities Guide*.

Note that if you intend to start CICS with the START command you must either:

- 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 *MVS Systems Modification* manual for your version of MVS.

¹ aa,xx,yy represent suffixes used to distinguish different versions of members of the SYS1.PARMLIB library.

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 an initialization parameter for the CICS subsystem. The subsystem reformatting is enabled when at least one of the following is executing in the MVS image where the subsystem is defined.

- CICS/MVS version 2 release 1.2
- CICS/ESA version 3 release 1.1 with APAR PL66570
- CICS/ESA version 3 release 2.1 or later
- A message automation subsystem (such as NetView) which enables the MVS “subsystem console message broadcasting” service.

When this facility is used, it affects messages 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
Column number:	1	13	22

The “plus” sign (+) 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.

The applid inserted into the message is the specific application identifier. This is the identifier that is specified in the system initialization parameter `applid`. It is the only operand when `XRF=NO` is also specified, or the second operand when `XRF=YES` is also specified.

- The subsystem adds routecodes specified in the `ROUTECD` subsystem initialization parameter, so the messages might be sent to more destinations.
- The subsystem reformats messages for all CICS releases, even those issued by CICS/OS/VS version 1.
- The subsystem does not reformat messages that are issued by a CICS region that has not yet determined its applid. This includes messages 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’s 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, adding the applid might cause the message to exceed the maximum length for an MVS console message. In this case, the original message is suppressed (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 where the applid normally follows a time and date stamp, inserting the applid in the standard position would have resulted in the applid being duplicated within 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 applied is shown.

The IEASYSxx MVS initialization member

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 needed for this IPL of MVS, including the definition of CICS as an MVS subsystem.

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 the console message handling facilities, code the entry as follows*colon.

```
CICS,DFHSSIN,DFHSSIyy
```

This entry is used for every CICS region running under MVS that you have IPLed with this version of the IEFSSN member. Apart from the suffix yy, you **must** code the entry exactly as shown. The meanings of the terms are as follows:

CICS is the name of the CICS subsystem.

DFHSSIN is the name of the CICS subsystem routine that initializes the console message-handling facilities. If you omit this name, CICS is defined as an MVS subsystem, but none of the console message-handling facilities are enabled.

DFHSSIyy is the name of a SYS1.PARMLIB member, described below, in which you have defined message-formatting initialization parameters for the CICS subsystem. If you specify DFHSSIN but omit DFHSSIyy, the DFHSSIN routine tries to use the parameters defined in member DFHSSI00. If the DFHSSI00 member does not exist, it uses default values (defined in the DFHSSIN member) described in “Default message-formatting initialization parameters” on page 12.

The IEFSSNaa member in the SYS1.PARMLIB library also contains the definitions for all the other subsystems needed for this IPL of MVS, for example JES2, IRLM, and DATABASE 2 (DB2).

The DFHSSIyy message-formatting initialization member

You can specify message-formatting initialization parameters 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. These parameters, described in this section, are FORMATMSG, HIDEPASSWORD, and ROUTECODES. Code the parameters in columns 1 through 71 of the DFHSSIyy member, for example:

```
FORMATMSG=YES,HIDEPASSWORD=YES,ROUTECD= (1,2)
```

or

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 from MODIFY commands used to enter the CICS signon transaction at an MVS console.

YES Mask the password
NO Do not mask the password

ROUTECODES=(n1[,n2])

n1, n2... are numbers representing generic routecodes to be 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 is as follows:

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 *MVS/ESA Routing and Descriptor Codes* 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 defined in the DFHSSI00 member. If the DFHSSI00 member does not exist, it uses the default parameters defined in the DFHSSIN routine.

If you specify DFHSSlyy, but it does not exist, the DFHSSIN routine uses the default message-formatting initialization parameters defined in the DFHSSIN routine.

The default message-formatting initialization parameters defined in the DFHSSIN routine are:

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, inserting 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 (that is, 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.

Note: 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 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/ESA 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

After you have defined CICS as an MVS subsystem with support for the console message-handling facility (and have specified the message-formatting parameters in the DFHSSlyy member of the SYS1.PARMLIB library), the message-handling facility is activated by the next MVS subsystem to invoke the "subsystem console message broadcasting" service of MVS console support. This occurs when you start up a CICS/MVS 2.1.2, or later CICS release, region or if an automated-operation program, such as NetView, is active in the MVS image.

A newly-started CICS region determines its own applid during initialization. Until the applid is known, the message-formatting facility cannot operate. Therefore, messages issued very early in CICS initialization are not formatted.

Modules needed to use the console message-handling facilities

To use the console message-handling facilities provided by the MVS subsystem functions of CICS the following CICS modules must be available at MVS IPL time:

- DFHSSIN** The CICS subsystem initialization module.
- DFHSSGC** The subsystem generic connect module that connects an active CICS region to the CICS subsystem.
- DFHSSSEN** (Alias of DFHIRP.) The module that cleans up CICS resources at end-of-memory and at end-of-task.
- 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 WTO calls should be routed to the appropriate CICS-dependent modules.

These modules must reside in the LPA or in an APF-authorized library in the MVS linklist, as follows:

- The modules DFHSSIN and DFHSSMGT, installed in the SYS1.CICS410.SDFHLINK library, must reside in an APF-authorized library in the MVS linklist.
- The DFHIRP module (and its alias DFHSSSEN) installed in the SYS1.CICS410.SDFHLPA library, must reside in the LPA.
- The modules DFHSSGC and DFHSSWT, installed in the SYS1.CICS410.SDFHLPA library, must reside either in the LPA or in an APF-authorized library in the MVS linklist.

The CICS/ESA 4.1 versions of these modules are compatible with earlier CICS releases that support console message handling.

For information about adding modules installed in the SYS1.CICS410.SDFHLINK library to the MVS linklist, see “Installing CICS modules in the MVS linklist” on page 8.

For information about adding modules installed in the SYS1.CICS410.SDFHLPA library to the LPA, see “Installing CICS modules in the MVS link pack area” on page 35.

Coexistence considerations

If you want to use the message-handling facilities for CICS, you should note the following coexistence considerations:

Automated-operation programs

If your automation system needs to see the console messages before they are reformatted by CICS, its subsystem definition should be placed in IEFSSNXX before the definition for CICS. But if your automation system needs to 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.

Other CICS releases

If 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 is true:

- An automated-operation program, such as NetView, is active in the MVS image.
- A CICS region that supports message handling is running in the same MVS image. This includes CICS/ESA 4.1 regions, CICS/ESA 3.3 regions, and CICS/MVS 2.1.2 regions with console support, and CICS/ESA 3.1.1 regions with a PTF for APAR PL66570 applied.

Installing the CICS Type 3 SVC

You must install the CICS/ESA 4.1 Type 3 SVC, DFHCSVC, before you attempt to start a CICS/ESA 4.1 region. To install the CICS Type 3 SVC, you must:

1. Define the DFHCSVC module to MVS. (See “Defining the CICS SVCs to your MVS” on page 16.)
2. Install the DFHCSVC module into the LPA.

Do not change DFHCSVC attributes

Do **not** relink-edit the DFHCSVC module in order to install it into the LPA. The term *install* means move or copy a module into the LPA, 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 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 “Installing CICS modules in the MVS link pack area” on page 35.

3. Specify the DFHCSVC number on the CICSSVC system initialization parameter.

The CICS/ESA 4.1 version of the CICS SVC module is downward compatible with all earlier releases of CICS, which enables you to run your earlier CICS regions with CICS/ESA 4.1 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 the module is not at the CICS/ESA 4.1 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.

Coexisting with CICS Version 3 regions: If you want to continue using an old Type 3 SVC number on existing CICS/ESA Version 3 regions until you have completed system testing the installation of CICS/ESA 4.1, you must install the CICS/ESA 4.1 version of the CICS SVC module, DFHCSVC, in the LPA using a

different name. For further information about using more than one version of the CICS SVC, see “Using more than one version of the CICS Type 3 SVC” on page 16.

Coexisting with CICS Versions 1 and 2: If you want to, you can continue using a Type 2 SVC number on existing CICS Version 1 or Version 2 regions until you have completed system testing the installation of CICS/ESA 4.1. In addition to the Type 2 SVC installed in the MVS nucleus, add the CICS/ESA 4.1 SVC module, DFHCSVC, in the LPA, and specify an SVC number that is different from the Type 2 version. As soon as practicable, change over to the CICS/ESA 4.1 Type 3 SVC for all regions, and remove the Type 2 SVC from the MVS nucleus.

If you need to use the CICS/ESA 4.1 SVC with CICS Version 1 or Version 2 regions, you must regenerate some of the earlier release CICS modules that use the SVC number defined in them when they are generated. For more information, see “Regenerating DFHCRC for CICS Version 1 or Version 2” on page 18.

Defining the CICS SVCs to your MVS

You define both the CICS Type 3 SVC and the HPO SVC to your MVS system by specifying SVC Parm statements.

You must define the CICS SVCs in an IEASVCxx member of the SYS1.PARMLIB library, using SVC Parm statements. SVC Parm statements are described in the *MVS/ESA System Programming Library: Initialization and Tuning* manual and the *MVS/ESA Initialization and Tuning Reference* manual. If you are using the default SVC numbers, the CICS entries are as follows:

```
SVC Parm 216,REPLACE,TYPE(3),EPNAME(DFHCSVC)
SVC Parm 215,REPLACE,TYPE(6),EPNAME(DFHHPSVC) [Only required for HPO]
```

For the CICS/ESA 4.1 SVC modules, you must specify the EPNAME parameters as shown in the sample CICS entries.

Note: If you have a version of the DFHHPSVC module from an earlier release of CICS already link-edited into your MVS nucleus, you do not need to replace it with the latest version. Versions of the DFHHPSVC module from earlier releases of CICS are compatible with CICS/ESA 4.1. 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).

If you are not using the default SVC numbers, change the values 215 and 216 to the SVC numbers you have chosen.

You select the required IEASVCyy member by coding the SVC parameter (SVC=yy) in a SYS1.PARMLIB member (IEASYSxx) which you use to IPL your MVS. When you code new SVC numbers, they do not come into effect until you next IPL your MVS.

Using more than one version of the CICS Type 3 SVC

You may need 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 more information about using the latest SVC with earlier releases of CICS, see “Regenerating DFHCRC for CICS Version 1 or Version 2” on page 18.

To use more than one version of the CICS SVC, copy (or move) and rename the new SVC module into the LPA, then re-specify the SVC in the SVC Parm statements, as outlined in “Defining the CICS SVCs to your MVS” on page 16. 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. We recommend that you use SMP/E to move and rename the CICS SVC module into the LPA. By using the SMP/E MOVE and RENAME commands, SMP/E is informed 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, **not** the DFHCSVC module.

For example, you might want to use an SVC number 255 for a test CICS region, as well as the default CICS SVC numbered 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(HCI4100) .  
++RENAME (DFHCSVC) TONAME(newname) .
```

2. Create and apply an SMP/E USERMOD to MOVE the new, renamed, CICS SVC module into the LPA:

```
++USERMOD(umod2) .  
++VER(C150) FMID(HCI4100) PRE(umod1) .  
++MOVE(newname) SYSLIB(SDFHLOAD) TOSYSLIB(SDFHLPA) LMOD
```

Notes:

- a. You must create and apply two different USERMODS to rename then move the new CICS SVC module, because if the MOVE and RENAME commands occur in the same USERMOD, SMP/E always tries to complete the MOVE command first.
- b. You cannot run an APPLY CHECK, because SMP/E checks USERMOD *umod2*, and as the renamed CICS SVC module does not yet exist, replies NOGO. However, you can run an APPLY successfully.
- c. If you want to remove the usermods, you cannot run a RESTORE CHECK because when SMP/E attempts to backout the RENAME in USERMOD *umod1* it is unable to find LMOD *newname* in the CICS410.SDFHLPA library and replies NOGO. However, you can run a RESTORE S(*umod1,umod2*) successfully.

- You could then specify the number 255 for the new CICS SVC version by adding an appropriate statement to the list of SVC Parm statements. That list would then read:

```
SVC Parm 216,REPLACE,TYPE(3),EPNAME(DFHCSVC)
SVC Parm 215,REPLACE,TYPE(6),EPNAME(DFHHPSVC) [Only required for HPO]
SVC Parm 255,REPLACE,TYPE(3),EPNAME(newname) [New CICS SVC version]
```

Note: The EPNAME parameter for the new CICS SVC specifies the module name, not the CSECT name, for the new CICS SVC module.

All the SVC Parm statements apply to the same IEASVCxx member of the SYS1.PARMLIB library.

- Re-IPL MVS to enable all the SVC versions specified in the SVC Parm statements. After you re-IPL MVS, you can use both versions of the CICS SVC, as long as both regions do not use MRO concurrently. If both systems use MRO, then only the new, latest version of the SVC (and the latest DFHIRP module) must be used by both regions.
- In the system initialization table (SIT) for your production system, specify (by the system initialization parameter CICSSVC) the number of the current CICS SVC. Similarly, in the SIT for your test system, specify the number of the new CICS SVC version.

MRO between different CICS releases with a changed SVC number

If a CICS/ESA 4.1 region and other earlier release CICS regions in the same MVS
 # image use MRO, all the regions must use the CICS/ESA 4.1 SVC module. If when
 # you install the CICS/ESA 4.1 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 earlier release CICS region to use the CICS/ESA 4.1 SVC,
 # specify the new SVC number on the CICSSVC system initialization parameter.

For CICS Version 1 and Version 2 regions, you should also delete the old Type 2
 # SVC from your MVS nucleus. This ensures that all communicating regions are
 # using the new Type 3 SVC.

Regenerating DFHCRC for CICS Version 1 or Version 2

On CICS Version 1 and Version 2 regions, the interregion clean-up program,
 # DFHCRC, does **not** use the SVC number you specify as a system initialization
 # parameter; it uses the SVC number generated in the module, which you specify on
 # the CICSSVC parameter of the DFHSG TYPE=INITIAL macro. Therefore, if you
 # give the CICS/ESA 4.1 SVC a number different from the Type 2 SVC number used
 # by CICS Version 1 or Version 2 regions, you must generate a new version of the
 # DFHCRC program on those CICS regions. When you generate the new version of
 # the DFHCRC program, specify the new SVC number, but omit CSVC, DRPA, and
 # HPSVC from the MOD= parameter. (If you are using CICS shared database, you
 # must also specify DRPA; see "CICS shared database using a changed SVC
 # number.")

The result of running a copy of the DFHCRC program from CICS Version 1 or
 # Version 2, generated with a Type 2 SVC that is no longer in the MVS nucleus, is
 # an MVS abend SFxx (where xx is the SVC number).

CICS shared database using a changed SVC number

If your batch region is sharing the database with a CICS Version 1 or Version 2 region, you can continue to use the batch region controller program, DFHDRP, from before CICS/ESA Version 4. (The CICS/ESA Version 4 DFHIRP program supports earlier levels of the DFHDRP program.) However, if your batch region is sharing the database with a CICS/ESA 4.1 region, you are recommended to install the CICS/ESA 4.1 DFHDRP module in SYS1.LINKLIB, or another suitable APF-authorized library in the MVS linklist.

Regenerating DFHDRPA for earlier CICS releases

On CICS regions from before CICS/ESA 4.1, you must regenerate your earlier level of the DFHDRPA module with the new SVC number, if both the following are true:

1. You give the CICS/ESA 4.1 SVC a number different from the Type 2 SVC number used by the earlier release CICS regions.
2. You want to continue using the earlier-level batch region controller modules on the earlier release CICS regions.

This is because the DFHDRPA module uses the SVC number generated within it, which you specify on the CICSSVC parameter of the DFHSG TYPE=INITIAL macro for earlier release CICS regions. When you generate the new version of the DFHDRPA module, specify the new SVC number, but omit CRC, CSVC, and HPSVC from the MOD= parameter. (If you are also using MRO, you must also specify CRC; see “MRO between different CICS releases with a changed SVC number” on page 18.)

Selecting the high-performance option

The high-performance option (HPO) is provided 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 needed to service each request.

Note: 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 **VTAM authorized path** feature of HPO (the improved path through VTAM) is included in CICS. However, before you can use HPO, you must load the HPO SVC module into the MVS nucleus, as follows:

- If you are using MVS/ESA Version 3, you must link-edit the HPO SVC module DFHHPSVC into the MVS nucleus. DFHHPSVC must also be defined to MVS as a Type 6 SVC; the default HPO SVC number defined in the DFHSIT macro is 215.

If you have a version of the DFHHPSVC module from an earlier release of CICS already link-edited into your MVS nucleus, you do **not** need to replace it with the latest version. Versions of the DFHHPSVC module from earlier releases of CICS are compatible with CICS/ESA 4.1. The CSECT name of the version of the DFHHPSVC module from releases of CICS before CICS/ESA Version 3 is IGC215 (or IGCnnn, if SRBSVC=nnn was used as a CICS system parameter in the earlier release).

- If you are using MVS/ESA Version 4, you do not have to link-edit the DFHHP SVC module into the MVS nucleus. Instead, you can use either of the following methods:
 - On MVS/ESA 4.2.2 or later, copy the DFHHP SVC 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 SYS1.PARMLIB. The NUCLSTxx method provides you with greater flexibility in customizing the MVS nucleus than the NMLDEF method described in the next bullet.
 - On MVS/ESA 4.1 or later, copy the DFHHP SVC module into SYS1.NUCLEUS and specify it in a nucleus module list (NML) for CICS. This NML selects the CICS members in SYS1.NUCLEUS that are to be loaded into the MVS nucleus, and eliminates the need for the MVS nucleus to be re-link-edited for the DFHHP SVC module (or any other module needed in the MVS nucleus).

The DFHHP SVC module must also be defined to MVS as a Type 6 SVC; the default HPO SVC number defined in the DFHSIT module is 215. If you want to change the default Type 6 SVC number, you must:

1. Define the new number to MVS (See “Defining the CICS SVCs to your MVS” on page 16.)
2. Define the new number to CICS by the SRBSVC system initialization parameter.

If you are not using HPO, you are recommended **not** to load the DFHHP SVC module into the MVS nucleus. You choose to use HPO explicitly by coding HPO=YES in the system initialization table (SIT).

Link-editing DFHHP SVC into an MVS/ESA Version 3 nucleus

If you are using MVS/ESA Version 3, and you want to use the high-performance option, you may have to link-edit the DFHHP SVC module into the MVS nucleus, as shown in the sample job in Figure 2 on page 21.

To use the high-performance option in an MVS/ESA Version 3 image, you must link-edit the DFHHP SVC module into the MVS nucleus, unless you already have a version of the DFHHP SVC module installed in the MVS nucleus (for example, from an earlier release of CICS).

The default name of the MVS nucleus is SYS1.NUCLEUS(IEANUC01), and for convenience the sample job link-edits into the default member. This avoids having to IPL MVS from an alternative nucleus. If you use this sample job, ensure you make a backup copy of IEANUC01 before you run this job. You can do this by renaming the default SYS1.NUCLEUS member (for example, to IEANUC09, which is the name used on the include statement in the sample job). Unless you rename the existing MVS nucleus, running this link-edit job replaces your IEANUC01 system nucleus. You can either rename the existing nucleus using the ISPF data set utilities in TSO, or using an IEHPROGM job step within the link-edit job as shown in Figure 2 on page 21.

The DFHHP SVC module is in the CICS410.SDFHLOAD library. Copy the link-edit control statements for this job from the original MVS system generation job stream.

Check the control statements with your MVS system programmer before running the job in Figure 2 on page 21.

```

//LNKEDIT JOB 'accounting info',MSGCLASS=A,CLASS=A
//RENAME EXEC PGM=IEHPRGM
//SYSPRINT DD SYSOUT=A
//NUCLEUS DD DSN=SYS1.NUCLEUS,DISP=SHR
//SYSIN DD *
        RENAME DSNAME=SYS1.NUCLEUS,VOL=unit=volid,
                MEMBER=IEANUC01,NEWNAME=IEANUC09
/*
//LINKSVC EXEC PGM=IEWL,REGION=1024K,
//        PARM='LIST,XREF,NCAL,SCTR,LET,SIZE=(512K,128K),AMODE=31',
//        COND=(0,NE,RENAME)
//SYSPRINT DD SYSOUT=A
//SDFHLOAD DD DSN=CICS410.SDFHLOAD,DISP=SHR
//SYSLMOD DD DSN=SYS1.NUCLEUS,DISP=SHR
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(3,1))
//SYSLIN DD *
1 [CHANGE DFHHPSVC (newname) (CHANGE DEFAULT SVC NAME) ]
    INCLUDE SDFHLOAD(DFHHPSVC) (CICS HPO TYPE 6 SVC)
    INCLUDE SYSLMOD(IEANUC09) (OLD MVS NUCLEUS)
2 NAME IEANUC01 (NEW MVS NUCLEUS)
/*
//

```

Figure 2. Sample job stream to link-edit the CICS Type 6 SVC into the MVS nucleus

Notes:

1 If you need to rename a version of the CICS HPO SVC (DFHHPSVC), use the linkage editor CHANGE statement as shown in Figure 2, where newname is the new name of the CICS HPO SVC. It is highly unlikely that you would need to rename DFHHPSVC.

2 If you decide to use TSO to rename the nucleus, do **not** specify the replace (R) option on the link-edit NAME statement. This ensures that the existing nucleus is not replaced if you forget to rename the data set before submitting the link-edit job.

Output

The link-edit job replaces the original member of the SYS1.NUCLEUS called IEANUC01, and assumes that you have preserved the original member by renaming it IEANUC09.

Loading DFHHPSVC into an MVS/ESA SP Version 4 nucleus

If you are using MVS/ESA Version SP 4, and you want to use the high-performance option, you do **not** have to link-edit the DFHHPSVC module into the MVS nucleus. Instead, you can:

- Make any changes to the HPO SVC number. (See “Defining the CICS SVCs to your MVS” on page 16.)

Note: If you also need to rename the DFHHPSVC module, you should use one of the methods given for the CICS Type 3 SVC in “Using more than one version of the CICS Type 3 SVC” on page 16.

Removing existing DFHPSVC modules from the MVS nucleus
You can remove a link-edited version of the DFHPSVC module (from an earlier
release of CICS) 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.

Notes:

- # 1. If the existing nucleus-resident DFHPSVC module is known to SMP/E, use
the SMP/E UCLIN statement to remove the module entry.
- # 2. 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.

MVS ASREXIT - SYMREC Authorization Exit

The following information applies if you are running CICS on MVS/ESA SP 4.1 or
above.

A CICS program may call First Failure Symptoms, FFS. This uses the MVS
SYMREC macro to write a symptom record to the MVS SYS1.LOGREC dataset, 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 being called by CICS the ASREXIT must issue a return code
that permits the symptom records 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 the *MVS/ESA Installation Exits*
manual, GC28-1637. For further information about using the SYMREC macro call,
see the *MVS/ESA Application Development Guide: Services for Assembler*
Programs, GC28-1642.

PN92792

The following change was added by APAR PN92792.

The ASREXIT routine can determine if CICS is the caller by testing EPLPNAME for
the value 'DFHSIP' except:

- # • When DFHSIP has been 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, you may wish to code your ASREXIT routine to allow for
these exceptions.

An alternative method of coding the ASREXIT routine is shown in Figure 4 on
 # page 24. This method is not affected by the exceptions mentioned above.

```

#           TITLE 'SYMREC SAMPLE EXIT'
#           ASREPL
#           PRINT NOGEN
#           IHAPSA
#           IKJTCTB
#           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',AFTAFC Point at AFCS; is there one?
#           BZ SETRC           No, branch
#           DROP R1

```

Figure 4 (Part 1 of 2). An example of coding the ASREXIT routine.

```

#
#          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 *
# *  CONSTANTS
# 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
#

```

Figure 4 (Part 2 of 2). An example of coding the ASREXIT routine.

MVS definitions

There are some CICS properties that you can optionally define to MVS. Some such definitions are outlined in the following sections. For further guidance information about these definitions, see the *MVS/ESA Initialization and Tuning Guide*.

Program properties table entries

There are some CICS properties that you can optionally define to MVS. These are outlined in the following section.

You can define entries for CICS in the MVS program properties table (PPT). Figure 5 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)     */

```

Figure 5. Sample CICS PPT entry

```

/* 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 5. Sample CICS PPT entry

For information about defining options in the PPT, see the *MVS/ESA Initialization and Tuning Guide*.

RACF password checking

If your installation has a PPT entry for the DFHSIP program, you should ensure that the PPTNOPAS option is **not** set in the PPT because this bypasses password and RACF authorization checking. However, you should consider making your CICS regions non-swappable by specifying the PPTNSWP option in the PPT. For information about defining CICS PPT entries in the SCHEDxx member of the SYS1.PARMLIB library, see one of the following publications:

MVS/ESA System Programming Library: Initialization and Tuning (for Version 3)
MVS/ESA Initialization and Tuning Reference (for Version 4)

Non-swappable CICS regions

For performance reasons, you should consider making your CICS regions non-swappable, by specifying the NOSWAP option in the PPT. However, you should be aware that the use of certain functions causes CICS regions to be made non-swappable automatically, regardless of what is specified in the PPT (for example, regions using cross-memory services for MRO).

MVS protection key for CICS

CICS can run only in MVS protection key 8 (the default). You must not define any other protection keys for CICS.

If you want 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 the CICS storage protection facility, and how it affects the storage allocation for the dynamic storage areas, see the *CICS/ESA System Definition Guide*. For information about the hardware and software required by the CICS storage protection facility, see the *Program Directory*.

MVS performance definitions

```

#
#       You can use the MVS workload management facility to manage sysplex resources
#       across MVS subsystems, in parallel with the existing system resource management
#       facilities.

```

For information about MVS workload management, see the MVS publication
Planning: Workload Management, GC28-1493.

If you want to use the MVS workload manager facility, you should:

- # 1. Implement workload management on the MVS images that the CICS workload
is to run on, as outlined in “Implementing MVS workload management.”
- # 2. Ensure that CICS performance parameters correspond to the policies defined
for MVS workload management, as outlined in “Matching CICS performance
parameters to service policies” on page 28.

If you do not want to use the MVS workload management facility, you should
review your MVS performance definitions to ensure that they are still appropriate for
CICS/ESA 4.1. To do this, review parameters in the IEAICS and IEAIPS members
of the MVS PARMLIB library. For more information about these MVS performance
definitions, see the *MVS/ESA Initialization and Tuning Guide*.

Implementing MVS workload management

The task of implementing MVS workload management is part of the overall task of
planning for, and installing, MVS.

Implementing MVS workload management generally involves the following steps:

- # 1. Establishing your workloads.
- # 2. Setting your business priorities.
- # 3. Understanding your performance objectives.
- # 4. Defining critical work.
- # 5. Defining performance objectives based on current:
 - # • Business needs
 - # • Performance:
 - # – Reporting and monitoring products
 - # – Capacity planning tools
 - # – IEAICS and IEAIPS parameters
- # 6. Get agreement for your workload performance objectives.
- # 7. Specify a service level agreement or performance objectives.
- # 8. Specify an MVS WLM service definition using the information from step 7.

Note: It is helpful at this stage to record your service definition in a form that
will help you to enter it into the MVS workload manager ISPF application. You
are recommended to use the worksheets provided in the *MVS/ESA Planning:*
Workload Management.
- # 9. Install MVS.
- # 10. Set up a sysplex with a single MVS image, and run in workload manager
compatibility mode.
- # 11. Upgrade your existing XCF couple data set.
- # 12. Start the MVS workload manager ISPF application, and use it in the following
steps.
- # 13. Allocate and format a new couple data set for workload management. (You
can 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 MVS image into goal mode.
- # 18. Start up a new MVS image in the sysplex. (That is, attach the new MVS image to the couple data set for workload management, and link it to the service policy.)
- # 19. Switch the new MVS image into goal mode.
- # 20. Repeat steps 18 and 19 for each new MVS image in the sysplex.

Notes:

- # 1. CICS/ESA 4.1 support for MVS workload manager is initialized automatically during CICS startup.
- # 2. All CICS regions (and other MVS subsystems) running on an MVS image with MVS workload management are subject to the effects of workload manager.

Matching CICS performance parameters to service policies

You must ensure that the CICS performance parameters are compatible with the workload manager service policies used for the CICS workload.

In general, you should define CICS performance objectives to the MVS workload manager first, and observe the effect on CICS performance. Once the MVS workload manager definitions are working correctly, you can then consider tuning the CICS parameters to further enhance CICS performance. However, you should use CICS performance parameters as little as possible.

Performance attributes that you might consider using are:

- # • Transaction priority, passed on dynamic transaction routing. (Use prioritization carefully, if at all.) The priority assigned by the CICS dispatcher must be compatible with the task priority defined to MVS workload manager.
- # • Maximum number of concurrent user tasks for the CICS region.
- # • Maximum number of concurrent tasks in each transaction class.

MVS automatic restart management definitions

You can exploit the MVS automatic restart management facility provided by MVS to implement a sysplex-wide integrated automatic restart mechanism.

If you want to use the MVS automatic restart manager facility, you should:

- # 1. Implement automatic restart management on the MVS images that the CICS workload is to run on.
- # 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.

If you do not wish to use the MVS automatic restart management facility, you can
use XRF to provide restart of failed CICS regions. For information about XRF, see
the *CICS/ESA 3.3 XRF Guide*.

Implementing MVS automatic restart management

The task of implementing MVS automatic restart management is part of the overall
task of planning for and installing MVS. For information about MVS automatic
restart management, see the *MVS/ESA Setting Up a Sysplex*.

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.
- # • Ensure that the system initialization parameter XRF=NO is specified for CICS
startup.

For further information on implementing automatic restart management, see the
CICS/ESA Recovery and Restart Guide.

MVS cross-system MRO definitions

You can use the CICS interregion communication (IRC) facility for multiregion
operation (MRO) between CICS regions across MVS images in a sysplex. This
exploits the cross-system coupling facility (XCF) of MVS, and makes it unnecessary
to use VTAM to communicate between MVS images within the same sysplex.

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 exploit. As an
installation's workload grows, additional MVS systems can be added to the sysplex
to enable the installation to meet the needs of the greater workload.

To use XCF to communicate in a sysplex, each CICS region joins an XCF group
called DFHIR000 by invoking the MVS IXCJOIN macro using services provided by
the CICS 4.1, or later, version of the DFHIRP module. The member name for each
CICS region is always the CICS generic APPLID (NETNAME on the CONNECTION
resource definition) used for MRO partners. Each CICS generic APPLID must be
unique within any sysplex regardless of the MVS levels involved. Within the
sysplex, CICS regions can communicate only with members of the CICS XCF
group (DFHIR000).

MVS XCF considerations for MRO

- # 1. You must install the CICS/ESA 4.1 version of the DFHIRP module in the
extended link pack area (ELPA) of all MVS images involved in cross-system
MRO.
- # 2. All the MVS images must be at the MVS/ESA 5.1, or later, level.

```

#       3. Each CICS generic APPLID must be unique within the sysplex, even if the level
#       of MVS/ESA in some MVS images is earlier than MVS/ESA 5.1, which is the
#       minimum level to support XCF/MRO.
#
#       4. When formatting the primary and alternate couple data sets to be used by the
#       XCF component of the MVS BCP, ensure that:
#
#           • The value specified for the MAXMEMBER parameter is large enough to
#             handle the number of CICS regions and users of the EXCI in the CICS
#             XCF group.
#
#       Each XCF group is limited to 511 members, which is therefore the
#       theoretical maximum number of CICS regions that can participate in
#       XCF/MRO in a single sysplex. 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 calculating the
#       maximum number of members in the CICS XCF group, allow one member
#       for:
#
#           – Each CICS region to run on an MVS image in the sysplex.
#
#           – Each pipe allocated by a user of the external CICS interface (EXCI).
#             For information about EXCI users and pipes, see the CICS/ESA
#             External CICS Interface manual.
#
#       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 could use the MVS command:
#
#       DISPLAY XCF,GROUP,DFHIR000,ALL
#
#           • The value specified for the MAXGROUP parameter is large enough for the
#             CICS XCF group to be established.

```

PR/SM policy for handling MVS/ESA SP 4.1 (or later) failures

If you are running CICS under MVS/ESA SP 4.1 or later in a Processor Resource/Systems Manager environment, you should define to MVS the preferred XCF PR/SM policy² for handling MVS failures in a PR/SM environment, and define to PR/SM the authorization for each LP to cause reset or deactivation of another LP.

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 (for the master console – information). 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 sometimes with route codes 1 and 3. Generally, these route codes are used by

² XCF PR/SM policy: The function that enables MVS images to take over the resources of other MVS images in the same sysplex. This function is also known as the PR/SM automatic reconfiguration facility (ARF). For information about the XCF PR/SM policy, and its effect in single and multi-CEC environments, see the *MVS/ESA Implementation Guide*.

CICS journal control and volume control programs, and the “Destination” shown for the messages in the *CICS/ESA Messages and Codes* indicates these as follows:

Destination: Console (and tape pool operator)

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 *MVS/ESA Initialization and Tuning Guide*.

Spool performance considerations

The CICS spool interface makes use of the MVS exit IEFDOIXT, which is provided
in the SYS1.LINKLIB library. If you have a high volume spool output, you should
install the IEFDOIXT exit in a library in the CICS STEPLIB concatenation, and
consider having a PLT startup program MVS load the exit during CICS initialization.
This will help optimize the performance of the CICS spool interface.

For further information about the MVS exit IEFDOIXT, see the *MVS/ESA*
Installation Exits manual, GC28-1637.

Defining CICS regions as applications to VTAM

To use VTAM terminals with CICS, you must ensure that your CICS regions are defined to VTAM before you attempt to run them.

To define your CICS regions to VTAM (as VTAM applications), you must:

- # 1. Define VTAM application program major nodes (APPL) to be used for your
CICS regions, as 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 definition for a CICS region
to be able to use that CICS region with VTAM.

For further information about defining CICS as a VTAM application, see the *VTAM*
Resource Definition Reference and *VTAM Network Implementation Guide*.

You must also ensure that your VTAM terminals are properly defined for connection to CICS. This is particularly important if you intend using the CICS autoinstall function. For those terminals for which you want to use autoinstall, you must code LOGON mode table entries that match the model TYPETERM/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 (CSD).

Note: If you do not have ACF/VTAM installed, you may get assembly errors if you try to apply service to CICS-supplied modules containing VTAM macros.

For programming information about matching VTAM LOGMODE definitions with CICS model definitions, see the *CICS/ESA Customization Guide*.

For information about defining model and VTAM terminal definitions to CICS, see the *CICS/ESA Resource Definition Guide*.

For further information about defining VTAM resources, see the *ACF/VTAM Installation and Resource Definition* manual.

Defining specific CICS APPL statements to VTAM

To define a VTAM APPL statement for a CICS region, you must specify the full name of the APPL on the VTAM APPL definition statement.

For example, you could use the following definition for the CICS region, CICSHTH1:

```
*****  
* Specific APPL definition for CICS region CICSHTH1  
*****  
CICSHTH1 APPL AUTH=(ACQ,VPACE,PASS),VPACING=0,EAS=5000,PARSESS=YES X  
          SONSCIP=YES  
*****
```

Note: Code CICSHTH1 on the CICS system initialization parameter APPLID to
define the VTAM application identifier to CICS.

For further information about the parameters that you must specify on the VTAM APPL definition statement, see below.

VTAM definitions required for CICS

When you define your CICS system to ACF/VTAM, include the following parameters on the VTAM APPL statement:

ACBNAME=acbname

Specifies the minor node name (*acbname*) assigned to this application. This name must be unique within the domain. If you do not specify this parameter, the name of the VTAM APPL statement is taken.

AUTH=(ACQ,VPACE[,PASS])

ACQ allows CICS to acquire LUTYPE6 sessions. VPACE allows pacing of the intersystem flows. PASS is needed if you intend to use the EXEC CICS ISSUE PASS command, which passes existing terminal sessions to other VTAM 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 is authorized to 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.

PARSESS=YES

Specifies LUTYPE6 parallel session support.

PERSIST=MULTI
Indicates that the application supports Multi Node Persistent Sessions (MNPS).
See the *VTAM Network Implementation Guide* for other MNPS configuration
requirements.

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.

VTAM version and release level indicator

CICS can communicate with different releases of VTAM. It can find out which level you are using, and hence what level of function is available. This means that you can upgrade CICS and VTAM at different times. CICS finds out whether extra function is available when a new version of VTAM is installed, and produces a message if the facilities are not being exploited fully.

The terminal control modules in CICS are assembled against the most recent release of VTAM that was available when the distribution tape was created. You can use any release of VTAM from ACF/VTAM Version 3 Release 1, or a later upward compatible release, or use the DCB interface only of ACF/TCAM. To use the full facilities of CICS/ESA 4.1, including model terminal support, your CICS must run with ACF/VTAM Version 3 Release 3. For details of the minimum level of products that you can use with CICS/ESA 4.1, see the *CICS/ESA Release Guide*.

#

Message DFHZC3473 on opening the VTAM ACB

If the master terminal operator opens the VTAM ACB for the first time, using the command CEMT SET VTAM OPEN, but CICS is not using all available VTAM 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.

Cross-domain considerations

If you want to use VTAM services to access a CICS region on another MVS image, you must ensure that the required cross-domain services are defined to the VTAMs involved.
#

For example, to be able to use a VTAM APPC connection between a CICS region (applid CICSHTH1) on MVS image MVSH and a CICS region (applid CICSHAJ1) on MVS image MVSJ, you must:

- # 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.
#

```

# For example, you could:
#
# 1. Create the following CDRSC definition in a member of the VTAMLST library on
# MVSJ:
#
# CDIDHAJ1 VBUILD TYPE=CDRSC
# *****
# * CDRSC for access to applid CICSHAJ1 on MVSJ
# *****
# CICSHAJ1 CDRSC CDRM=IYAMCDRM MVSJ
#
# 2. Issue the following command on MVSJ 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 MVSJ
# *****
# CICSHTH1 CDRSC CDRM=IYALCDRM MVSJ
#
# 4. Issue the following command on MVSJ to activate the cross-domain services to
# CICSHTH1 on MVSJ:
#
# /V NET,ACT,ID=CDIDHTH1

```

XRF considerations

If you are running CICS with XRF, you must define an ACF/VTAM APPL statement for the active CICS region and another for the alternate CICS region; that is, one for each **specific APPLID**. In addition, the active and alternate CICS regions share a common generic name, **the generic APPLID**.

```

# For example, you could use the following definitions (with HAVAIL=YES) for the
# XRF CICS regions, CICSHTX1 and CICSHTX2:

```

```

# *****
# * Specific APPL definition for CICS region CICSHTH1
# *****
# CICSHTH1 APPL AUTH=(ACQ,VPACE,PASS),VPACING=0,EAS=5000,PARSESS=YES X
# SONSCIP=YES, HAVAIL=YES
# CICSHTH2 APPL AUTH=(ACQ,VPACE,PASS),VPACING=0,EAS=5000,PARSESS=YES X
# SONSCIP=YES, HAVAIL=YES
# *****

```

Note: You define a specific APPLID as the name of the APPL statement or on the ACBNAME parameter.

In addition, the active and alternate CICS regions share a common generic name, **the generic APPLID**. You define a specific APPLID as the name of the APPL statement or on the ACBNAME parameter. The generic APPLID, however, is made known to VTAM only when CICS issues a MODIFY vtamname,USERVAR command during initialization of the active CICS region or during takeover by the alternate CICS region. CICS obtains the name from the APPLID parameter in the SIT or SIT overrides. You must ensure that you specify unique generic APPLIDs for your XRF systems.

For further guidance information about CICS APPLIDs in an XRF system, see the *CICS/ESA Recovery and Restart Guide*.

If you are running CICS with XRF, ensure that VTAM completes its initialization before attempting to start an alternate CICS region. Unlike an active CICS, which continues initialization if VTAM is not available, an alternate CICS region fails if VTAM is not present when needed.

Installing CICS modules in the MVS link pack area

This section describes:

- What you should consider before you install modules in the MVS link pack area. This is described below.
- What you should do to use CICS modules in the MVS link pack area. This is described in “What you must do to use modules in the MVS link pack area” on page 39, which provides specific information about the following:
 - “Space requirements for CICS modules in the MVS link pack area” on page 39
 - “Defining the CICS LPA library to your MVS” on page 39
 - “Installing CICS modules in the LPA” on page 40
 - “Controlling the use of modules from the MVS link pack area” on page 42

Preparing to install CICS modules in the MVS link pack area

Before you install modules in the MVS link pack area, you should consider the following points, described in subsequent topics:

- “Benefits of using the MVS link pack area”
- “What is meant by the MVS link pack area?” on page 36
- “Which modules must be in the MVS link pack area” on page 36
- “Which modules can be in the MVS link pack area?” on page 37
- “Service considerations” on page 38

Benefits of using the MVS link pack area

The benefits of placing code in the MVS link pack area are:

- The code is protected 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.
- Performance can be improved and the demand for real storage reduced 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 may 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, this can reduce the working set and therefore, the demand for real storage (paging).

- You can decrease the storage requirement in the private area by judicious allocation of the unused storage in the MVS link pack area created by rounding to the next segment.³

What is meant by the MVS link pack area?

The MVS link pack area comprises several areas, both above and below the 16MB line. In this publication, the term **MVS link pack area** is used to refer to the pageable link pack areas above and below the line, into which modules are normally installed to be used from the MVS link pack area.

Note: The MVS link pack area has both pageable and fixed parts. Although you can install CICS modules into the fixed parts, you are recommended to use the pageable areas for performance reasons.

The MVS link pack area areas below the 16MB line are specifically referred to by the term **LPA**, and those areas above the 16MB line are referred to by the term **ELPA**. 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 will not be used from the MVS link pack area until you re-IPL your MVS with CLPA specified. However, you can use the MVS modified link pack area (MLPA) to provide a temporary extension to the PLPA, existing only for the life of the current IPL. You can use this area to add or replace altered LPA-eligible modules without having to recreate the MVS link pack area. For further information about the MLPA, see the *MVS/ESA Initialization and Tuning Guide*.

Which modules must be in the MVS link pack area

The CICS modules listed in Table 2 must be in the MVS link pack area for the reasons given in the notes after the table.

Table 2 (Page 1 of 2). CICS modules required in the MVS link pack area

Module	Description	When needed in LPA	See notes after this table
DFHCSVC	CICS Type 3 SVC	Always	1, 2, 3, and 5
DFHDSPEX	CICS post exit stub	Always	1 and 4
DFHDUMPX	SDUMPX IEASDUMP QUERY exit	Always	1
DFHIRP	Interregion communication program	To use MRO, CICS shared database, or the console message-handling facility	1, 2, and 5

#

³ If you know the amount of space that you need in the LPA, and from that the total size of the MVS common area above the CICS private storage, you can determine on which 1MB segment lies the boundary between the two areas. This may indicate that there is some space in the MVS common area left unused, which you could use for CICS LPA-eligible modules. By moving some more modules from the CICS private storage to the LPA, you decrease the space needed for modules in the CICS private storage.

Table 2 (Page 2 of 2). CICS modules required in the MVS link pack area

Module	Description	When needed in LPA	See notes after this table
DFHSSSEN	Subsystem interface end-of-memory / end-of-task clean up routine (alias of DFHIRP)	To use the console message-handling facility	1, 2, and 5
DFHSSGC	Subsystem generic connect module	To use the console message-handling facility	6
DFHSSWT	Subsystem interface WTO router	To use the console message-handling facility	6
DFH99SVC	Dynamic alloaction - SVC services	Always	1

Notes:

- Can be used only from the MVS link pack area, and must be installed there before CICS can be started.
- You must always install the latest service level of the modules DFHCSVC, DFHIRP (if needed) and its alias DFHSSSEN.
- The DFHCSVC module supplied with CICS/ESA 4.1 works correctly with earlier CICS regions. Therefore, if you are running different releases of CICS on the same MVS image, you are recommended to use the CICS/ESA 4.1 version.
The DFHCSVC module must be defined to MVS as a Type 3 SVC (default SVC number is 216), and if you use a non-default SVC number, you must define it to CICS on the CICSSVC system initialization parameter. You should review the information in the *CICS/ESA Migration Guide* before installing the DFHCSVC module in the MVS link pack area.
- The DFHDSPEX module is downward-compatible with earlier releases of CICS. If you are running earlier releases of CICS with CICS/ESA 4.1, you must ensure that it is the CICS/ESA 4.1 module that is installed in the MVS link pack area. The DFHDSPEX module must be in the MVS link pack area for integrity reasons, but the post exit routine, DFHDSAUT, can reside either in the MVS link pack area, or in the CICS address space. This enables you to use different levels of the DFHDSAUT module in different CICS regions running in the same MVS image, because the DFHDSAUT module may not be compatible between CICS versions.
- To communicate by MRO, all CICS regions in the same MVS image must use the latest level of the modules DFHCSVC, DFHIRP and its alias DFHSSSEN in the MVS link pack area.
If a CICS/ESA 4.1 region detects that DFHIRP is at a lower level, when attempting to open interregion communication, it issues message DFHIR3799, and interregion communication fails to open.
- To use the console message-handling facility, these modules must reside either in the MVS link pack area or in an APF-authorized library in the MVS linklist.

Which modules can be in the MVS link pack area?

Besides those CICS modules that must be in the MVS link pack area, other CICS modules and user application program modules can also be used from the MVS link pack area.

CICS modules: A CICS module optionally installed in the MVS link pack area (that is, not a module required in the MVS link pack area) can be used only by the release of CICS to which it relates.

Those CICS modules that can reside above the 16MB line (for example, the CICS message table, DFHMGT), are loaded above the line. Such modules can also be installed in the extended link pack area (ELPA).

CICS modules eligible to be used from the MVS link pack area are listed in the CICS-supplied USERMODs, DFH\$UMOD (for base CICS modules), DFH\$UJPN (for Japanese Language Feature modules), installed in the CICS410.SDFHSAMP library. Details of LPA-eligible modules are given in “CICS modules required in the MVS link pack area” on page 181, to help you select those CICS modules that you want to install in the MVS link pack area.

User application programs: User application programs can be used from the MVS link pack area if they are read-only and:

- Written in COBOL, do not overwrite WORKING STORAGE, and are compiled using VS COBOL II. (The CICS translator generates a CBL statement with the required compiler options, RENT and RES.)
- Written in PL/I (do not overwrite STATIC storage) and compiled using PL/I Version 1 Release 5.1 or later. (The CICS translator inserts the required REENTRANT option into the PROCEDURE statement.)
- Written in C/370, compiled with the RENT option, and link-edited with the RENT option.
- Written in Assembler language, assembled with the RENT option, and link-edited with the RENT and REFR options.

BMS maps or programs compiled using OS/VS COBOL are not LPA-eligible.

Command-level user application programs compiled using VS COBOL II or PL/I Version 1 Release 5.1 or later, or written in Assembler language or C/370, may be loaded above the 16MB line. (For information about installing application programs, see the *CICS/ESA System Definition Guide*.)

A read-only module that may reside above the 16MB line is also eligible for the extended link pack area (ELPA).

Service considerations

Using modules with mismatching service levels 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 which 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 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 should also apply the service to the LPA version of the module, if one exists. This stipulation is made so that the MVS link pack area always contains tested load modules.

Use the SMP/E RESTORE function to back off the USERMOD before the LPA zone is updated or copied. Afterwards the USERMOD may be re-applied.

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 may like to reflect the changes in your version of the USERMOD.

What you must do to use modules in the MVS link pack area

To use CICS modules in the MVS link pack area, you must:

1. Check that you have enough space for the selected modules
2. Install the modules in the MVS link pack area
3. Control the usage of modules from the MVS link pack area.

These steps are described in the following sections..

Space requirements for CICS modules in the MVS link pack area

You must allow enough space in the MVS link pack area for you to install those CICS modules that you intend using from there. You can find out how much space you need by:

- Reviewing the sizes of the modules that you want to install in the MVS link pack area, as given in “CICS modules required in the MVS link pack area” on page 181.
- Reviewing the module index of a system dump for the CICS region started with the system initialization parameter LPA=NO.
- Calculating the module sizes given for each module in the listing of modules 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.

Note: The total space needed depends on how the modules are packaged into the MVS link pack area by the operating system.

What next?

Once you have determined the space in the MVS link pack area needed, you must next create a library with enough space, and define it to your MVS. This is described in the topic “Defining the CICS LPA library to your MVS.”

Defining the CICS LPA library to your MVS

CICS supplies the library SYS1.CICS410.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 which you want to use from the LPA.

You can give the SYS1.CICS410.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 SYS1.CICS410.SDFHLPA library to an LPALSTxx member of SYS1.PARMLIB. This ensures that the library contents are loaded into the PLPA at the next IPL of your system when CLPA is specified. Also APF-authorize the SYS1.CICS410.SDFHLPA library, by adding its name to an IEAAPFxx member of the SYS1.PARMLIB library. You should also RACF-protect the SYS1.CICS410.SDFHLPA library, to prevent unauthorized or accidental modification of this library. For information about protecting the CICS libraries, see the *CICS/ESA CICS-RACF Security Guide*.

What next?

During migration to CICS/ESA 4.1 use of the MVS link pack area, you may like to add a DD statement for the SYS1.CICS410.SDFHLPA library to the DFHRPL concatenation of your CICS startup job stream.

You can install into the SYS1.CICS410.SDFHLPA library the CICS modules to be used from the MVS link pack area. This is described in "Installing CICS modules in the LPA."

Installing CICS modules in the LPA

By *install*, we mean move or copy a module into a suitable LPA library, by using SMP/E, or by using a copying method that will re-block the copied module(s) when the target data set has a smaller block size than the data set you are copying from (for example, use the COPYMOD function of the IEBCOPY program). A procedure for installing modules into the MVS link pack area by using SMP/E is described in this section.

You should not relink-edit the modules in order to get them into the LPA library. CICS modules as supplied have the necessary attributes that cause MVS to load them automatically above the line (into the ELPA).

To install modules in the CICS LPA library, and to ensure that SMP/E can continue to service them, complete the following steps:

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.

You can use the CICS-supplied USERMOD, LPAMODS, or create and use your own version. To install modules in the LPA for the Japanese language feature, you can also use the CICS-supplied USERMOD, LPAJPN, or use your own version.

If you use your own version of a USERMOD, this can include ++MOVE statements from both CICS-supplied USERMODs.

2. Receive the USERMOD into the CICS global zone.

3. Apply the USERMOD to the LPA zone.

Note: When you have installed all your modules into the CICS LPA library (and defined it to MVS), you should re-IPL your MVS with CLPA specified to enable the modules to be used from the CICS LPA library.

These steps are described in the following sections.

Selecting modules for the MVS link pack area

You should install in the MVS link pack area only those modules that you want to use from the MVS link pack area. “CICS modules required in the MVS link pack area” on page 181 lists the CICS-supplied modules eligible for the MVS link pack area, and gives descriptions and other information to help you select those CICS modules that you want to use from the MVS link pack area.

To install modules in the MVS link pack area, you should 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 CICS410.SDFHSAMP library). This USERMOD contains ++MOVE statements for all CICS modules, in the CICS410.SDFHAUTH and CICS410.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. Your selection will generally include modules in the working set of the installation.

CICS also supplies an SMP/E USERMOD for the optional Japanese language feature. This USERMOD, called DFHUJPN, is in member DFH\$UJPN in the CICS410.SDFHSAMP library. If you have the Japanese language feature, you can use this USERMOD to install the modules it requires in the MVS link pack area. You must also install the resource definitions for this feature in the CSD. For information about installing definitions in the CSD, see the *CICS/ESA System Definition Guide*.

You can choose which of the CICS modules to install in the MVS link pack area, by creating your own SMP/E USERMOD, based on the 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 CICS410.SDFHSAMP library, for instance when changing user-replaceable programs, then you already have copies of the CICS-supplied USERMODs. If the original CICS410.SDFHSAMP library is serviced, and the USERMOD is modified, you may like to reflect the changes in your version.

Preparing the USERMOD

To choose which read-only modules to install in the MVS link pack area, edit your copy of the SMP/E USERMOD to:

1. Comment out the ++MOVE statements for the modules that you do not want to install in the LPA, and
2. 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.

3. 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.

Receiving and applying the USERMOD

Receive the USERMOD into the CICS global zone and apply it to the LPA target zone. This causes SMP/E to move those load modules you have specified from the named CICS target library (CICS410.SDFHLOAD or CICS410.SDFHAUTH) into the CICS LPA library. Applying the USERMOD will also update the corresponding LMOD entries within the target zone SMPCSI.

Do not accept the USERMOD into the distribution zone, and for the time being, do not apply it to any other target zone.

To receive and apply the CICS-supplied sample usermods, in DFH\$UMOD and
DFH\$UJPN, you can use the associated jobs, DFHLPUMD which are tailored to
your CICS environment and stored in the &libpf1..XDFHINST library when you run
the DFHISTAR job.

What next?

To enable CICS to use the modules that you have installed in the MVS link pack area, you must re-IPL your MVS with CLPA specified.

You must also specify to CICS that it is to use modules from the MVS link pack area. You can also control which modules are to be used from the MVS link pack area in several ways. This is described in the topic "Controlling the use of modules from the MVS link pack area."

Controlling the use of modules from the MVS link pack area

This topic describes what you must do to enable CICS to use modules from the MVS link pack area, and what you can do to specify that CICS **is not** to use eligible modules 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 can be used only from the MVS link pack area.

Modules in the MVS link pack area from CICS410.SDFHAUTH

CICS uses standard MVS load facilities for modules installed in the MVS link pack area from the CICS APF-authorized library, CICS410.SDFHAUTH. That is, such a module will be used from the first of the following locations that it is found in:

1. STEPLIB DD concatenation
2. MVS link pack area
3. MVS linklist

Using modules from the MVS link pack area: To use any of the CICS modules installed in the MVS link pack area from the CICS410.SDFHAUTH library you must remove any version of the module from the CICS410.SDFHAUTH library (or any other library in the STEPLIB concatenation).

Using modules from the STEPLIB: You can prevent CICS using modules installed in the MVS link pack area from the CICS410.SDFHAUTH library by installing versions of those modules in a library in the STEPLIB concatenation. CICS will then use the versions of the modules loaded from the STEPLIB concatenation into the CICS address space, rather than any versions that may be in the MVS link pack area.

Modules in the MVS link pack area from CICS410.SDFHLOAD

The use of CICS modules installed in the MVS link pack area from the CICS410.SDFHLOAD library is controlled by CICS system initialization parameters and resource definitions.

The CICS410.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.

Modules that may not be loaded from the MVS link pack area: Some CICS modules are loaded early in CICS initialization from the DFHRPL concatenation of the CICS startup job, even if they have been installed in the MVS link pack area and their associated PROGRAM resource definitions specifies USELPACOPY(YES). This is because the modules are loaded before their resource definitions. Modules that may affect you in this way include:

DFHAMP	DFHCSSC	DFHDMP	DFHEITSP
DFHJCC	DFHJCEOV	DFHPUP	DFHTBS
DFHTOR	DFHZCQ	DFHZNAC	DFHZRLG
DFHZXST			

#

For such modules loaded early in initialization, CICS issues message DFHLD01071.

When the resource definition for such a module is loaded later, the USELPACOPY() operand affects whether the module is later loaded from the MVS link pack area or the DFHRPL concatenation. If the resource definition specifies USELPACOPY(YES), CICS will try to make subsequent loads of that module from the MVS link pack area. If the version of such a module loaded from the DFHRPL concatenation at CICS initialization is still in use later, and CICS later loads the module from the MVS link pack area, you may have two versions of the module in use by CICS at the same time. Both versions of such modules must be kept at the same service level.

Using modules from the MVS link pack area: To use any of the CICS modules installed in the MVS link pack area from the CICS410.SDFHLOAD library, you must:

- Copy the modules into a CICS LPA library. (That is, you do not have to remove them from the CICS410.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, you have specified USELPACOPY(YES) 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 */
```

For each CICS-supplied LPA-eligible module that needs 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. This is because you cannot modify the CICS-supplied resource definitions. For example, you could use the DFHCSDUP utility program to:

1. Copy the CICS-supplied resource groups that contain the module definitions to new resource groups.
2. For each module that needs 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.
5. Remove the CICS-supplied groups that you have copied.
6. Specify your new group list on the GRPLIST system initialization parameter.
7. 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.

A sample DFHCSDUP job for all CICS LPA-eligible jobs is given in Figure 6 on page 48.

Note: In the above example, instead of steps 3 and 4, you could use the CEDA transaction to:

- 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.

Notes:

1. CICS will use eligible modules installed in the MVS link pack area, if:
 - You have **not** specified the name of the module on the CICS system initialization parameter PRVMOD.
 - The module has not been already loaded from the DFHRPL concatenation. (See “Modules that may not be loaded from the MVS link pack area” on page 43.)
2. 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 DFHLD01071 to warn you that the module is not in the MVS link pack area. (See page 47 for more information about this message.)
3. CICS assumes that the PL/1 modules, IBMBPSLA and IBMBPSMA, are installed in the MVS link pack area and issues message DFHLD01071 if it fails

to find them there. If you want your PL/I application programs to run with the PL/I shared library facility, you must ensure that the modules IBBPMSLA and IBBPMSMA are installed in the MVS link pack area, or in the CICS410.SDFHLOAD library (or another library in the CICS DFHRPL library concatenation).

4. 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 will issue message DFHLD0107I if it cannot find such a program there.
5. Likewise, 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 will issue message DFHLD0107I 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), you must ensure that you have specified USELPACOPY(YES) on the associated PROGRAM resource definition. Otherwise, CICS will not be able to find the module, and may fail to start up successfully.

Using modules from DFHRPL: You can prevent CICS using modules installed in the MVS link pack area from the CICS410.SDFHLOAD library by either:

- Specifying the LPA=NO system initialization parameter.

This will prevent CICS from using any modules installed into the MVS link pack area from the CICS410.SDFHLOAD library. CICS will try 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 could add the SYS1.CICS410.SDFHLPA library to the DFHRPL concatenation while testing CICS modules for the MVS link pack area. Once you have verified the use of those modules from the MVS link pack area, you should specify the LPA=YES system initialization parameter, and remove the SYS1.CICS410.SDFHLPA library from the DFHRPL concatenation.

- Specifying the name of the module on the PRVMOD system initialization parameter:

```
PRVMOD={name | (name1,name2,...)}
```

This will prevent 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.

You must 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 may 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 can 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, specifying 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: While verifying new versions of modules to be installed into the MVS link pack area, you can instruct a CICS region to use the new versions from the DFHRPL concatenation by any of the following options:

- 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 45

In all cases, you must install the new versions of the modules into the CICS410.SDFHLOAD library, or another library in the DFHRPL concatenation.

If you are verifying many CICS LPA-eligible modules, you might like to add the SYS1.CICS410.SDFHLPA library to the DFHRPL concatenation. This allows you to check that the modules you have installed in the MVS link pack area are being loaded from there. It will also enable you to determine those modules that are being loaded from the DFHRPL concatenation (perhaps because they are loaded early in CICS initialization), which must remain in a library in the DFHRPL concatenation.

Note: The CICS-supplied usermods use SMP/E to move CICS LPA-eligible modules into the SYS1.CICS410.SDFHLPA library. Similarly, if you use SMP/E to apply service to any of those modules, the versions in the SYS1.CICS410.SDFHLPA library will be updated. The updated versions of the modules will be used from the MVS link pack area after you next re-IPL your MVS with CLPA specified. Until then, if you add the SYS1.CICS410.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 will be used from the DFHRPL concatenation.

After you have installed and verified the use of modules from the MVS link pack area, you should 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.

The module-not-found warning message (DFHLD0107I): CICS will issue message DFHLD0107I if it searches the MVS link pack area for a module installed there from CICS410.SDFHLOAD and fails to find it.

If you encounter this 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 CICS410.SDFHLOAD library, see “Modules in the MVS link pack area from CICS410.SDFHLOAD” on page 43.

CICS uses console routing code 11 for this particular message, which allows you to control the output of this message. For example, you can:

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. For example:

```
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 this facility, code an entry specifying the CICS message number in the MPFLSTxx member of SYS1.PARMLIB.

Message DFHLD0107I may be produced for the following modules if they are not in the LPA, even if their CEDA definition states USELPACOPY=(NO):

DFHAMP	DFHCSSC	DFHDMP	DFHEITSP
DFHJCEOV	DFHPUP	DFHTBS	DFHTOR
DFHZCQ	DFHZNAC	DFHZRLG	DFHZXST

CICS assumes the following PL/1 modules are LPA eligible and issues message DFHLD0107I if it fails to find them there:

```
IBMBPSLA  
IBMBPSMA
```

Sample DFHCSDUP job to specify USELPACOPY(YES)

Figure 6 on page 48 gives a sample DFHCSDUP job for creating your own resource groups for all LPA-eligible modules that need USELPACOPY(YES) specified. The sample job:

1. Copies the CICS-supplied resource groups (DFHyyyy) to your own resource groups (xxxyyyy). For example:

```
COPY GROUP(DFHSPI) TO(xxxSPI)
```

2. Alters the PROGRAM definitions for LPA-eligible modules to specify USELPACOPY(YES). For example:

```
ALTER PROGRAM(DFHAMP) GROUP(xxxSPI) USELPACOPY(YES)
```
3. Adds the new resource groups (xxxxyyy) to a new group list, to be the first resource groups in the list. For example:

```
ADD GROUP(xxxSPI) LIST(yourlist)
```
4. Appends the CICS-supplied group list, DFHLIST, to the new group list by the command:

```
APPEND LIST(DFHLIST) TO(yourlist)
```
5. Removes the CICS-supplied resource groups replaced by the new resource groups. For example:

```
REM GROUP(DFHSPI) LIST(yourlist)
```

Notes:

1 On the DFHCSD DD statement, specify the name of your
CICS System Definition data set (CSD).

2 Replace *yourlist* with the name of your group list
to be used in your CICS startup.
(The DELETE LIST command is needed only if the group list already exists; otherwise, the
group list will be created.)

3 Replace xxx with a prefix for your own copies of
the CICS-supplied resource groups, or rename your own resource groups
according to your own naming conventions.

```
# //DEFULIST EXEC PGM=DFHCSDUP
# //STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
# //SYSPRINT DD SYSOUT=*
# //DFHCSD DD DSN=user.CICS410.DFHCSD,DISP=OLD 1
# //SYSIN DD *
# DELETE LIST(yourlist) 2
# COPY GROUP(DFHAI62) TO(xxxAI62) 3
# COPY GROUP(DFHBMS) TO(xxxBMS)
# COPY GROUP(DFHCMAC) TO(xxxCMAC)
# COPY GROUP(DFHDBCTL) TO(xxxDBCTL)
# COPY GROUP(DFHEDF) TO(xxxEDF)
# COPY GROUP(DFHEDP) TO(xxxEDP)
# COPY GROUP(DFHFEPI) TO(xxxFEPI)
# COPY GROUP(DFHINQUI) TO(xxxINQUI)
# COPY GROUP(DFHINTER) TO(xxxINTER)
# COPY GROUP(DFHISC) TO(xxxISC)
# COPY GROUP(DFHJRNL) TO(xxxJRNL)
# COPY GROUP(DFHMSWIT) TO(xxxMSWIT)
# COPY GROUP(DFHOPCLS) TO(xxxOPCLS)
# COPY GROUP(DFHOPER) TO(xxxOPER)
# COPY GROUP(DFHPGAIP) TO(xxxPGAIP)
# COPY GROUP(DFHRSEND) TO(xxxRSEND)
# COPY GROUP(DFHRSPLG) TO(xxxRSPLG)
# COPY GROUP(DFHSIGN) TO(xxxSIGN)
# COPY GROUP(DFHSPI) TO(xxxSPI)
# COPY GROUP(DFHSTAND) TO(xxxSTAND)
# COPY GROUP(DFHVTAM) TO(xxxVTAM)
```

Figure 6 (Part 1 of 4). Sample DFHCSDUP job for all CICS LPA-eligible modules

```

#
# * GROUP DFHAI62
#
#   ALTER PROGRAM(DFHZATDY) GROUP(XXXAI62) USELPACOPY(YES)
#
# * GROUP DFHBMS
#
#   ALTER PROGRAM(DFHTPQ) GROUP(XXXBMS) USELPACOPY(YES)
#   ALTER PROGRAM(DFHTPR) GROUP(XXXBMS) USELPACOPY(YES)
#   ALTER PROGRAM(DFHTPS) GROUP(XXXBMS) USELPACOPY(YES)
#
# * GROUP DFHCMAC
#
#   ALTER PROGRAM(DFHCMAC) GROUP(XXXCMAC) USELPACOPY(YES)
#
# * GROUP DFHDBCTL
#
#   ALTER PROGRAM(DFHDBAT) GROUP(XXXDBCTL) USELPACOPY(YES)
#   ALTER PROGRAM(DFHDBCT) GROUP(XXXDBCTL) USELPACOPY(YES)
#
# * GROUP DFHEDF
#
#   ALTER PROGRAM(DFHDBTI) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEDFBR) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEDFD) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEDFE) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEDFP) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEDFR) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEDFX) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEIGDS) GROUP(XXXEDF) USELPACOPY(YES)
#   ALTER PROGRAM(DFHEITAB) GROUP(XXXEDF) USELPACOPY(YES)
#
# * GROUP DFHEDP
#
#   ALTER PROGRAM(DFHEDP) GROUP(XXXEDP) USELPACOPY(YES)
#
# * GROUP DFHFPEI
#
#   ALTER PROGRAM(DFHEITSZ) GROUP(XXXFEPI) USELPACOPY(YES)
#
# * GROUP DFHINQUI
#
#   ALTER PROGRAM(DFHEITBS) GROUP(XXXINQUI) USELPACOPY(YES)
#
# * GROUP DFHINTER
#
#   ALTER PROGRAM(DFHECID) GROUP(XXXINTER) USELPACOPY(YES)
#   ALTER PROGRAM(DFHECIP) GROUP(XXXINTER) USELPACOPY(YES)
#   ALTER PROGRAM(DFHECSP) GROUP(XXXINTER) USELPACOPY(YES)

```

Figure 6 (Part 2 of 4). Sample DFHCSDUP job for all CICS LPA-eligible modules

```

#
# * GROUP DFHISC
#
# ALTER PROGRAM(DFHCCNV) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCHS) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCRNP) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCRQ) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCRR) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCRS) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCRSP) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHCRT) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHDPY) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHMIRS) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHMXP) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHRTC) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFH RTE) GROUP(XXXISC) USELPACOPY(YES)
# ALTER PROGRAM(DFHZLS1) GROUP(XXXISC) USELPACOPY(YES)
#
# * GROUP DFHMSWIT
#
# ALTER PROGRAM(DFHJCC) GROUP(XXXJRNL) USELPACOPY(YES)
# ALTER PROGRAM(DFHJCEOV) GROUP(XXXJRNL) USELPACOPY(YES)
#
# * GROUP DFHMSWIT
#
# ALTER PROGRAM(DFHMSWIT) GROUP(XXXMSWIT) USELPACOPY(YES)
#
# * GROUP DFHOPCLS
#
# ALTER PROGRAM(DFHFCU) GROUP(XXXOPCLS) USELPACOPY(YES)
#
# * GROUP DFHOPER
#
# ALTER PROGRAM(DFHEITMT) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHEITOT) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHEITST) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHEMTA) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHEMTD) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHEMTP) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHEOTP) GROUP(XXXOPER) USELPACOPY(YES)
# ALTER PROGRAM(DFHESTP) GROUP(XXXOPER) USELPACOPY(YES)
#
# * GROUP DFHPGAIP
#
# ALTER PROGRAM(DFHPGADX) GROUP(XXXPGAIP) USELPACOPY(YES)
#
# * GROUP DFHRSEND
#
# ALTER PROGRAM(DFHZRSP) GROUP(XXXRSEND) USELPACOPY(YES)
#
# * GROUP DFHRSPLG
#
# ALTER PROGRAM(DFHZRLG) GROUP(XXXRSPLG) USELPACOPY(YES)
#
# * GROUP DFHSIGN
#
# ALTER PROGRAM(DFHCEGN) GROUP(XXXSIGN) USELPACOPY(YES)
# ALTER PROGRAM(DFHCESG) GROUP(XXXSIGN) USELPACOPY(YES)
# ALTER PROGRAM(DFH SFP) GROUP(XXXSIGN) USELPACOPY(YES)
# ALTER PROGRAM(DFH SNP) GROUP(XXXSIGN) USELPACOPY(YES)

```

Figure 6 (Part 3 of 4). Sample DFHCSDUP job for all CICS LPA-eligible modules

```

#
# * GROUP DFHSPI
#
# ALTER PROGRAM(DFHAMP) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHDMP) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHEDAD) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHEDAP) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHEITSP) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHPOP) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHTBS) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHTOR) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHZATA) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHZATD) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHZATDX) GROUP(XXXSPI) USELPACOPY(YES)
# ALTER PROGRAM(DFHZCQ) GROUP(XXXSPI) USELPACOPY(YES)
#
# * GROUP DFHSTAND
#
# ALTER PROGRAM(DFHQRY) GROUP(XXXSTAND) USELPACOPY(YES)
# ALTER PROGRAM(DFHZXST) GROUP(XXXSTAND) USELPACOPY(YES)
#
# * GROUP DFHVTAM
#
# ALTER PROGRAM(DFHGMM) GROUP(XXXVTAM) USELPACOPY(YES)
# ALTER PROGRAM(DFHZNAC) GROUP(XXXVTAM) USELPACOPY(YES)
#
# * CREATE NEW LIST WITH YOUR GROUPS AT START
#
# ADD GROUP(XXXAI62) LIST(yourlist)
# ADD GROUP(XXXBMS) LIST(yourlist)
# ADD GROUP(XXXCMAC) LIST(yourlist)
# ADD GROUP(XXXDBCTL) LIST(yourlist)
# ADD GROUP(XXXEDF) LIST(yourlist)
# ADD GROUP(XXXEDP) LIST(yourlist)
# ADD GROUP(XXXFEPI) LIST(yourlist)
# ADD GROUP(XXXINQUI) LIST(yourlist)
# ADD GROUP(XXXINTER) LIST(yourlist)
# ADD GROUP(XXXISC) LIST(yourlist)
# ADD GROUP(XXXJRN) LIST(yourlist)
# ADD GROUP(XXXJRN) LIST(yourlist)
# ADD GROUP(XXXMSWIT) LIST(yourlist)
# ADD GROUP(XXXOPCLS) LIST(yourlist)
# ADD GROUP(XXXOPER) LIST(yourlist)
# ADD GROUP(XXXPGAIP) LIST(yourlist)
# ADD GROUP(XXXRSEND) LIST(yourlist)
# ADD GROUP(XXXRSPLG) LIST(yourlist)
# ADD GROUP(XXXSIGN) LIST(yourlist)
# ADD GROUP(XXXSPI) LIST(yourlist)
# ADD GROUP(XXXSTAND) LIST(yourlist)
# ADD GROUP(XXXVTAM) LIST(yourlist)
#
# * NOW LIST THE NEW GRPLIST
#
# LIST LIST(yourlist) OBJECTS
#
# * ALL DONE.
#
# /*

```

Figure 6 (Part 4 of 4). Sample DFHCSDUP job for all CICS LPA-eligible modules

Note:

When you have run the DFHULIST job, include the modified groups of
definitions that now contain USELPACOPY(YES) programs in your CICS
region by specifying your own list of definitions on the GRPLIST system
initialization parameter.

For example, specify GRPLIST=(DFHLIST,yourlist).

Defining IPCS exit control data to MVS

If you use the MVS interactive problem control system (IPCS) to format and analyze CICS system dumps, you should ensure that the release-specific CICS formatting routines are defined and available to MVS.

```
# In CICS/ESA 4.1, the formatting routine for use under IPCS is named with the
# release identifier as part of the name; that is, DFHPD510. This is the formatting
# routine you must define to IPCS when formatting CICS/ESA 4.1 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 the CICS-supplied DFHIPCSP module can be found by your IPCS job. The DFHIPCSP module is supplied in the CICS410.SDFHPARM library. You can either copy the DFHIPCSP module 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. For example:

```
//IPCSPARM DD DSN=SYS1.PARMLIB,DISP=SHR For BLSCECT
// DD DSN=CICS410.SDFHPARM,DISP=SHR For DFHIPCSP
```

Figure 7 shows the release-specific entries 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')
```

Figure 7. Release-specific entries in DFHIPCSP for DFHPDnnn routines.

To use the DFHIPCSP member as it is, rename the CICS-supplied version of DFHPDX for earlier releases to the names shown in the table.

For information about using IPCS to format CICS system dumps, see the *CICS/ESA Operations and Utilities Guide*.

Implementing changes described in this chapter

You probably need to re-IPL MVS to bring the changes described in this chapter into effect before you attempt to run the IVPs.

Chapter 3. Applying service to CICS

Service material for CICS/ESA 4.1 is distributed as APAR fixes (also referred to as “corrective service”) and PTFs (also referred to as “preventive service”)⁴. Both types of change are called SYSMODs (SYSstem 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 can be reversed using the **REJECT** control statement.
2. The **APPLY** control statement moves the SYSMOD into the target libraries. This operation can be reversed using 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 cannot easily be reversed.

When you are dealing with APAR fixes, you should **APPLY** the SYSMOD, but not accept it. If you later obtain a PTF that solves the problem in a different way, you may be asked to **RESTORE** (that is, remove) the APAR fix and **APPLY** the PTF instead.

When you are dealing with PTFs, you should **APPLY** the SYSMOD, then test it. Once it has been tested, you can **ACCEPT** it.

For background information about SMP/E operations, see the *System Modification Program Extended: General Information* manual. For more detailed information, see the *System Modification Program Extended: Reference* manual.

Load library secondary extents

CICS supports load library secondary extents that are created while CICS is executing. If you define libraries in the DFHRPL concatenation with primary and secondary extents, and secondary extents are added while CICS is running, as a result of link-editing into the DFHRPL library, the CICS loader detects the occurrence and closes then reopens the library. This means that 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, you should not attempt to apply service when CICS is running.

⁴ An APAR (Authorized Program Analysis Report) is raised when you and your IBM programming service representative agree that there is a CICS problem. You may then 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 CICS/ESA 4.1. The PTFs are usually packaged on a Program Update Tape (PUT). The PTFs are incorporated into any future CICS release.

The CICS-supplied SMP/E procedure

There is a CICS-supplied procedure for applying service to CICS/ESA 4.1, called DFHSMPE. This procedure is tailored to your CICS environment and stored in the CICS410.XDFHINST library when you run the DFHISTAR job.

For information about how to apply corrective service using SMP/E, see the *System Modification Program Extended: User's Guide*.

Whenever you do any SMP/E processing on CICS software, and you use any of the examples quoted in the *System Modification Program Extended: User's Guide*, you should 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 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 of the DFHISTAR job. If you do not specify any value for *zonename* for the TZONE parameter of the DFHISTAR job, *zonename* (and the ZNAME value) defaults to TZONE.

Note: The ZNAME parameter is also used to generate a SET BDY command in DFHAUPLE, the CICS procedure supplied for assembling and link-editing CICS control tables.

If you supply an **override** SMPCNTL DD statement in the job that executes DFHSMPE, remember that it must come **before** any DD statements that are additional to the procedure. Furthermore, if you provide an override, you will get 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 as a result of the SMPCNTL DD override. However, the message is not treated as a JCL error, and does not prevent the step running successfully with a return code of 0.

If you supply any SMP/E control statements in your job via the DFHSMPIN ddname, they are prefixed by a SET BDY for the zone that you specify on the ZNAME parameter. It does not matter if you are running SMP/E with a command that does not need this SET BDY statement; it does not affect the execution of your job.

Corrective service

Generally, you are recommended to **not** ACCEPT corrective service (APAR fixes) into distribution libraries. Subsequent preventive service (PTFs) may not include the APAR fix, and the APAR fix may need to be reapplied.

If two APAR fixes are dependent on one another, and each is a prerequisite of the other, you must apply them both in the same SMP/E APPLY processing step.

Preventive service

Preventive service (by IBM-supplied PTFs) is intended for installation by all users to avoid possible problems.

A PTF may contain fixes for several different problems. This means that several APAR fixes reported in RETAIN may all be superseded by the more permanent PTF, which:

- Provides card-image changes that are functionally equivalent to those in the APAR fix
- Contains object-module replacements for preassembled CICS programs.

For further information about applying preventive service using SMP/E, see the *System Modification Program Extended: User's Guide*.

Service considerations

If you use the CICS-supplied SMP/E usermod to install a module into the LPA (for example, into the SYS1.CICS410.SDFHLPA library), and later apply service to that module, it is the LPA-resident version of the module that is serviced. If you have not used the SMP/E usermod to install the module into the LPA, it is the original version in the CICS410.SDFHAUTH library or CICS410.SDFHLOAD library that is serviced.

Once you have installed CICS/ESA 4.1, and before you start the post-installation tasks described in this book, you should change the TEMPLIB parameter and the SYSPROC DD statement of the DFHISTAR job to refer to the CICS410.SDFHINST library. This ensures that if you need to apply service to any of the skeleton jobs, the changes (applied to the CICS410.SDFHINST library) are used in subsequent runs of the DFHISTAR job. In any such subsequent runs of the DFHISTAR job, you can use the SELECT parameter to select any jobs, affected by service, to be regenerated.

Notes:

+
+
+
+
+
+
+

1. If the DFHISTAR job is serviced, you should add the service changes to your DFHISTAR module in the CICS410.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 CICS410.SDFHINST library to the CICS410.TDFHINST library).
- 2.

+ **PQ00469**

+ The following change was made by APAR PQ00469.

+ Linkage editor messages IEW0461, IEW2454, IEW2646 and IEW2651 are
+ produced during the APPLY stage for unresolved external references. These
+ are issued, giving a return code of 4, when some CICS load modules are being
+ link-edited during PTF installation. You can ignore these IEWxxxx messages
+ because they are produced for component object modules of executable CICS
+ load modules.

Servicing the CICS messages data set

Some IBM-supplied service may include changes to CICS messages, and associated changes to the CICS messages data set, DFHMACD, used by the CICS-supplied transaction CMAC. When you have received and applied the service, you can update the CICS messages data set by running the job DFHMACU. DFHMACU is tailored to your CICS environment and stored in the CICS410.XDFHINST library when you run the DFHISTAR job.

+ If a PTF contains an update to the DFHMACD data set, you will see a ++HOLD
+ statement during the APPLY processing of the PTF to notify you that the
+ DFHMACD data set needs to be updated. The PTF will include a member called
+ DFHxxxxx, where xxxxx is the APAR number associated with the PTF. You should
+ amend the DFHMACU job so it refers to the appropriate service member of the
+ target library CICS410.SDFHMSGGS (that is, DFHxxxxx on the on the SYS01 card
+ corresponds to the DFHxxxxx part shipped by the PTF). When you submit the
+ DFHMACU job, it updates the entries in the DFHMACD data set for all
+ messages changed by the IBM supplied service.

+ If you are applying more than one PTF that changes the DFHMACD data set, you
+ should either run the DFHMACU job for each PTF, or include all the PTFs within
+ one job run, by altering the DFHMACU job as follows:

```
+ //CMACUPD EXEC PGM=IDCAMS  
+ //SYSRINT DD SYSOUT=*  
+ //AMSDUMP DD SYSOUT=*  
+ //SYS01 DD DSN=CICS410.SDFHMSGGS(DFHXXXXX),DISP=SHR  
+ //SYS02 DD DSN=CICS410.SDFHMSGGS(DFHYYYYY),DISP=SHR  
+ |  
+ |  
+ //DFHMACD DD DSN=&DSINDEX.DFHMACD,DISP=SHR  
+ //SYSIN DD *  
+ REPRO INFILE (SYS01) -  
+ REPLACE -  
+ OUTFILE (DFHMACD)  
+ REPRO INFILE (SYS02) -  
+ REPLACE -  
+ OUTFILE (DFHMACD)  
+ |  
+ |  
+ /*
```

Using XRF to service multiple sets of CICS target libraries

If you run CICS with XRF, you can use the alternate XRF region to perform planned takeovers and, with multiple sets of CICS target libraries, reduce the duration of the outages required for servicing and maintenance. This is shown in Figure 8 on page 58.

In the simplest case you will have two sets of target libraries from which your active and alternate CICS regions are running. The procedures for more complex configurations can be deduced from these basic procedures. The target libraries are shown in Figure 8 as CICS.A.LOADLIBs and CICS.B.LOADLIBs. At the time service is to be applied, the active CICS region is running from the CICS.A set, and the alternate CICS region from the CICS.B set (libraries “A” and “B” for short).

1. To apply service, you need a third set of target libraries (CICS.C in our example, or “C” for short), identical to the A and B libraries, together with the associated SMP/E data sets.

You can create another version of DFHINSTA to generate the third set, as described in the *Program Directory*.

2. RECEIVE the SYSMODs that constitute the service update.
3. APPLY the SYSMODs to the C libraries and their associated zone.
4. Test the service applied to the C libraries using a stand-alone test CICS region.

When you are satisfied with the service you have applied to the C libraries:

5. Shut down the alternate CICS region (which is running from the B libraries), and start a new alternate CICS region from the C libraries.
6. Perform a takeover by issuing the takeover command on the active CICS region: CEMT PERFORM SHUT TAKEOVER.

You now have an active CICS region running from the C libraries, without an alternate CICS region available for the time being. The A libraries are now free, so you can apply the same service to them:

7. APPLY the SYSMODs to the A libraries and their associated zone.
8. Start up the alternate CICS region from the A libraries.
9. Perform a second takeover, again by issuing the command CEMT PERFORM SHUT TAKEOVER on the active CICS region.

You now have the active CICS region running from the A libraries, without an alternate CICS region available for the time being. The B libraries are now free, so you can apply the same service to them:

10. APPLY the SYSMODs to the B libraries and their associated zone.
11. Start a new alternate CICS region from the B libraries.
12. Finally, if the SYSMOD is a PTF, you can now accept it into the distribution libraries.

If you use this method of applying service, you are back to running the active CICS region from the A libraries, with the alternate CICS region running from the B set, and C is free. If you do not want the disk space tied up by this third set of libraries, you can delete them until the next time you need to apply service.

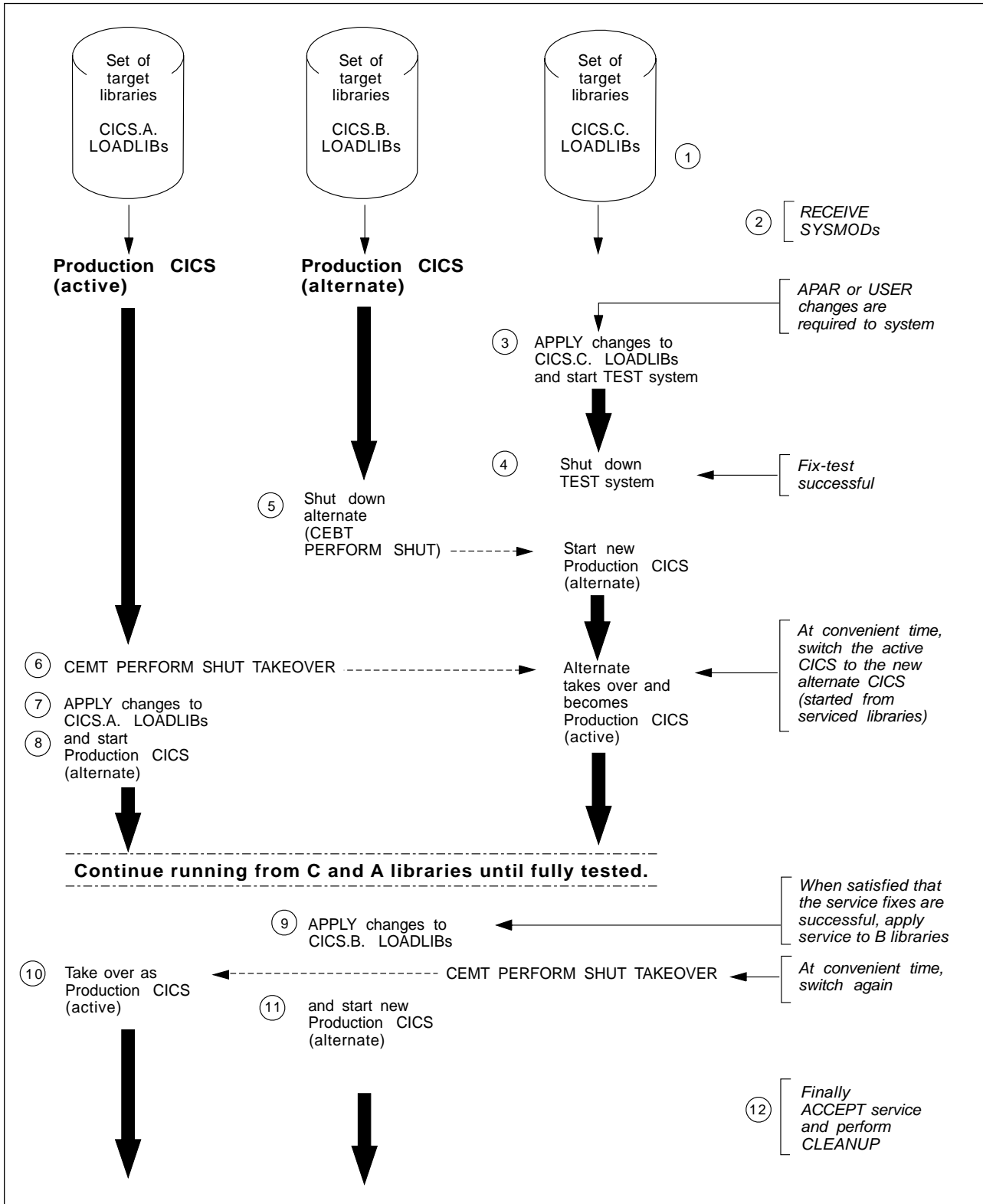


Figure 8. Operating with three sets of CICS libraries

Alternative ways of using multiple libraries

The method we have described above is not the only way of using multiple libraries, in conjunction with XRF, to apply service. It is intended for guidance only and to illustrate one particular approach.

There are alternative ways of applying service, based on similar steps to those described above and illustrated in Figure 8 on page 58. For example, after the alternate CICS region running from the C libraries has completed the takeover and become the production CICS region running from serviced libraries, you may decide to delay applying the service to the A and B libraries. If you restart an alternate CICS region from either of the libraries to which service has not yet been applied, you can back out the service quickly by performing another takeover.

Using DFHSMPE to service multiple CICS regions

You execute three separate SMP/E APPLY commands, so it is important to ensure that you are applying service to the right libraries at the right time. You tell SMP/E which set of target libraries to update by the SET BDY command.

If you use the DFHSMPE procedure as supplied, the first SMP/E command issued is a SET BDY for the zone specified by the ZNAME parameter. In the DFHSMPE procedure, the default value for ZNAME is "TZONE." (TZONE is the CICS-supplied default for the name of the target zone defined on the TZONE parameter of the DFHISTAR job.)

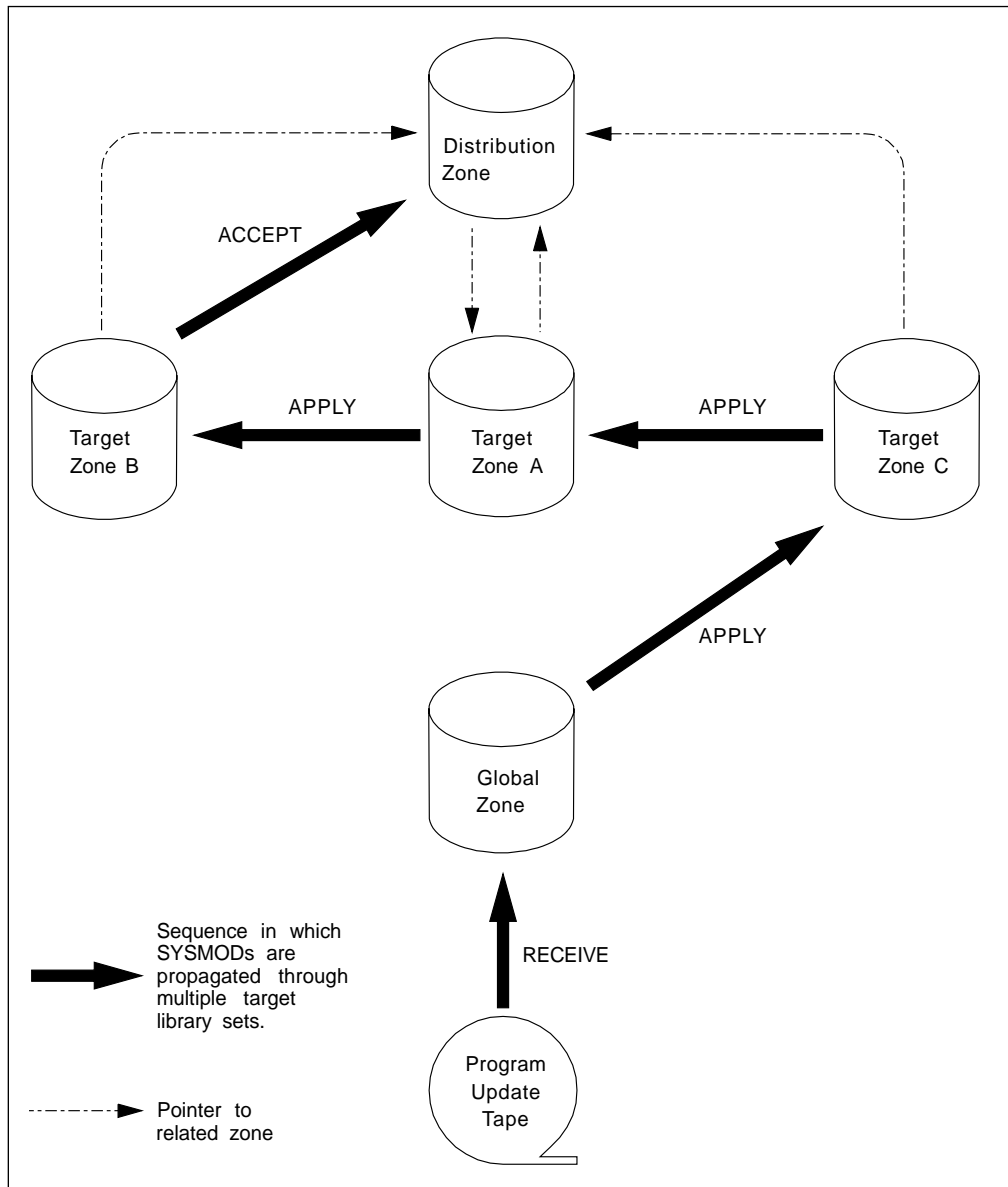


Figure 9. Servicing CICS in a multiple-library environment

Other XRF service considerations

The distribution zone contains a pointer to a single target zone called the **related target zone**. Initially, the related target zone is the one into which you installed the CICS/ESA 4.1 function SYSMOD, though you can change it using the UCLIN command. Similarly, each target zone has a **related distribution zone**.

A single distribution zone with several target zones is a distribution zone with several **relating** target zones (see Figure 9). In this situation you must be careful how you use the ACCEPT command. When you issue the ACCEPT command, SMP/E checks only that the SYSMOD being accepted has been applied to the **related target zone** before accepting it into the distribution zone.

Therefore, if you have several relating zones, but have applied a SYSMOD to one or two relating zones (but not all of them), SMP/E will not know about the zones

that have not had service applied. Use of the ACCEPT command in this situation will result in your distribution zone being at a higher level of service than those target zones to which the SYSMOD has not been applied.

This is probably a situation you don't want, unless you intend to apply the SYSMOD to the remaining target zones immediately. It compromises the ability of SMP/E to back out SYSMODs applied to a target zone but not accepted into the distribution zone. You should establish operating procedures to ensure that, for a particular distribution zone, each SYSMOD accepted has previously been applied to every relating target zone. For example, see the application of service depicted in Figure 9 on page 60.

Using the CLEANUP command

There is another consequence of the asymmetrical relationship between target zone and distribution zone. When you accept a SYSMOD into the distribution zone, SMP/E deletes entries corresponding to the SYSMOD from the SMP/E data sets (such as the SMPSCDS) of the **related target zone**. However, it does not do this for any other relating target zones. SMP/E provides a CLEANUP command to perform this task for the other relating target zones. **You must execute the CLEANUP command for each extra target zone.**

For information about using the CLEANUP command, see the *System Modification Program Extended: Reference* manual.

Fixes that cannot be brought into operation by an XRF takeover

Certain fixes cannot be brought into operation by performing an XRF takeover, because an alternate CICS region containing the changed code would be incompatible with old active CICS region. You should read PTF cover letters carefully, to determine whether this might be so. Possible examples include the following:

- Fixes that affect the format of any data that is accessed by both the active and the alternate CICS regions. For example:
 - The format of data in a system log record
 - The format of directory entry DSECTs in PDIR and DDIR generations
 - The format of CICS catalog records in the restart data set
 - The format of data in the CICS availability manager (CAVM) data sets.
- Fixes that affect file-control calculations that define record locations within a data set.
- Changes to modules that must reside in the LPA (in a one-CPC environment).
- Changes to the structure of CICS tables that affect data that will be accessed by both the active and alternate CICS regions – for example, transient data.

This list is by no means exhaustive, and you should rely upon the PTF cover letters to say whether the fix is such that you must stop CICS altogether in order to apply the service.

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If you have established multiple target libraries for your CICS region, and you receive service that cannot be brought into operation by an XRF takeover, you should apply the service to a set of test libraries first. Test the service from this set of libraries, if necessary using the same libraries for the active and alternate CICS regions to test XRF. When you are satisfied that the service can be applied to the production CICS region libraries, you must shut both active and alternate CICS regions, and restart using the new level of service.

Chapter 4. Tailoring the CICS-supplied skeleton jobs

If you have installed CICS with CBIPO or CBPDO, you must edit and run the DFHISTAR job to tailor the CICS-supplied skeleton jobs that you can use to create the CICS data sets, run the CICS-supplied IVPs, and add local DL/I support.

If you have installed CICS from the distribution tape, as described in the *Program Directory*, you would normally have tailored the skeleton jobs already, and should now be able to proceed to Chapter 5, "Creating the CICS data sets" on page 79.

Whichever method you used to install CICS, you can edit and run the DFHISTAR job several times, to create different copies of the skeleton jobs (for example, to create several copies of the DFHDEFDS job to define data sets unique to several CICS regions) or subsequently to change them (for example, if you have to apply service to any of the installation-related jobs). This enables you to 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 install CICS/ESA 4.1, you use the installation libraries shown in Figure 10. The names and use of these libraries are defined after the figure.

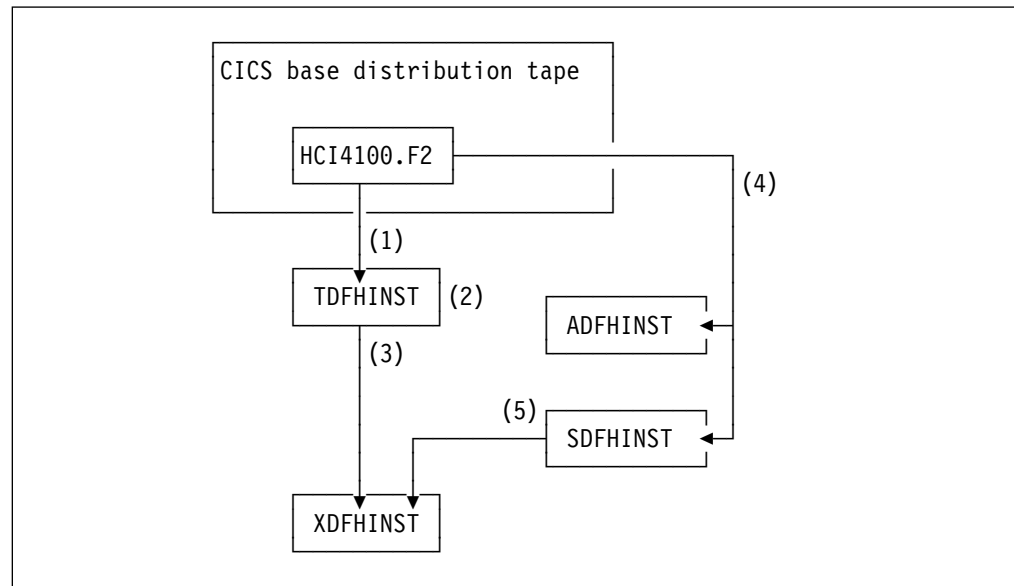


Figure 10. Installation libraries for CICS/ESA 4.1

The CICS installation libraries are used as follows:

1. Skeleton installation-related jobs are copied from the distribution tape into CICS410.TDFHINST.

CICS410.TDFHINST is used to store the DFHISTAR job 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 the DFHISTAR job in the CICS410.TDFHINST library, to specify CICS installation parameters specific to your CICS environment.
3. Before you have installed CICS, when you run the DFHISTAR job, the tailored copies of the skeleton jobs are copied from the CICS410.TDFHINST library to the CICS410.XDFHINST library.

CICS410.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 CICS-supplied installation jobs to transfer the CICS software from the distribution tape to the CICS410.ADFHINST and CICS410.SDFHINST libraries.

CICS410.ADFHINST is the SMP/E-supported distribution installation library.

CICS410.SDFHINST is the SMP/E-supported target installation library. After you have installed the CICS software into this and other SMP/E-supported libraries (named SDFHxxxx and ADFHxxxx), the SDFHINST library stores the skeleton jobs that you should use on any later runs of the DFHISTAR job.

Note: The actual names of the TDFHINST and XDFHINST libraries, and the suffix for those and other CICS libraries, are defined in the DFHISTAR job, which you edit as described in this chapter.

What you should do

To tailor the skeleton jobs, you should complete the following steps:

1. Edit the DFHISTAR job in the CICS410.TDFHINST library, as described in “Editing the DFHISTAR job.”
2. Run the DFHISTAR job, as described in “Running the DFHISTAR job” on page 76.

After you have run the DFHISTAR job, you can run the tailored jobs, in the CICS410.XDFHINST library, to perform required post-installation tasks, such as to create the CICS data sets, verify the CICS/ESA 4.1 installation, and so on. These tasks are described in Chapter 5, “Creating the CICS data sets” on page 79, Chapter 9, “Running the installation verification procedures” on page 109, and Chapter 6, “Installing DL/I support” on page 89.

Editing the DFHISTAR job

Edit the DFHISTAR job, in the CICS410.TDFHINST library, to suit your requirements, using the CICS-supplied post-installation parameters.

This section describes the process of editing the parameters in the DFHISTAR job, and contains other sections in an order that corresponds to the order of parameters in the DFHISTAR job.

To help you look up details about a particular parameter, Table 3 on page 65 lists the DFHISTAR parameters, in alphabetical order, with their CICS-supplied values. (The parameters in the DFHISTAR job are listed in associated groups.) These parameters are a subset of the parameters of the DFHISTAR job used to generate or regenerate the post-installation jobs.

The default values of the parameters are the same as the CICS-supplied values, except for the DLIMACLIB parameter, which has no default. Therefore, if you want to add local DL/I support, you must code DLIMACLIB parameters to specify the DL/I macro libraries to be used.

You can use the CICS-supplied values, define your own values, or let the CICS/ESA 4.1 installation process determine default values for you.

Note: You can enter your values for parameters of the DFHISTAR job in lower case; the DFHISTAR job translates the values into upper case when it is run.

Table 3. Alphabetical list of parameters for the DFHISTAR job

Parameter	CICS-supplied value	Your value ?	See page
ADDTVOL	CIC410 3380		74
AINDEX	CICS410.A		74
ALINDEX	SYS1.CICS410.A		74
ASMPSCDS	CICS410.A.SMPSCDS		74
AZONE	AZONE		74
AZONECSI	CICS410.A.AZONE		74
AZONELOG	CICS410.A.AZONE.SMPLOG		74
CMACVOL	CIC410		70
DEFVOL	CIC410 3380		70
DLI	3.1.0 TARGLIBS		73
DLIMACLIB	IMS.MTS DLIMITS		73
DLIMACLIB	IMS.GENLIB GENLIB		73
DLIMACLIB	IMS.GENLIBA GENLIBA		73
DLIMACLIB	IMS.GENLIBB GENLIBB		73
DLIMACLIB	IMS.OPTIONS OPTIONS		73
DSINFO	CICS410 CIC410 3380 . .		72
DZONE	DZONE		71
DZONECSI	CICS410.DZONE NEW CIC410 3380		71
DZONELOG	CICS410.DZONE.SMPLOG NEW		71
GZONECSI	CICS410.GZONE NEW CIC410 3380		71
INDEX	CICS410		69
JES	JES2		69
JOB	(No valid value)		68
LIB	CICS410.XDFHINST		67
LINDEX	SYS1.CICS410		69
PREFIX	DFH		69
SCOPE	ALL		68
SELECT	(No valid value)		67
TEMPLIB	CICS410.TDFHINST		67
TZONE	TZONE		71
TZONECSI	CICS410.TZONE NEW CIC410 3380		71
UTILITIES	IEV90 IEWL GIMSMP IEBCOPY		69
WORKUNIT	SYSDA		70

Considerations when editing the DFHISTAR job

When you edit the DFHISTAR job, you should specify:

- An appropriate value for the SCOPE parameter to determine what jobs are to be tailored. For the post-installation process, this parameter is normally set to POST, which specifies that all the post-installation jobs are to be tailored.

- The full name of the CICS410.SDFHINST library for the TEMPLIB parameter and the SYSPROC DD statement. This specifies that the skeleton jobs to be tailored by the DFHISTAR job are to be obtained from the CICS410.SDFHINST library. This ensures that if you need to apply service to any of the skeleton jobs, the changes (applied to the CICS410.SDFHINST library) are used in subsequent runs of the DFHISTAR job. In any such subsequent runs of the DFHISTAR job, you can use the SELECT parameter to select any jobs, affected by service, to be regenerated.

For example:

```
//DFHISTAR EXEC PGM=IKJEFT01,REGION=2M,DYNAMNBR=99
//SYSPROC DD DSN=CICS410.SDFHINST,DISP=SHR
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
    %DFHINST
/*
//IN DD *
TEMPLIB CICS410.SDFHINST
  :
SCOPE POST
  :
*
/*
```

Note: If the DFHISTAR job is serviced, you should add the service changes to your DFHISTAR module in the CICS410.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 CICS410.SDFHINST library to the CICS410.TDFHINST library).

- Your own values for other post-installation parameters. This includes specifying the name of the installation output library (default, CICS410.XDFHINST).

You can either edit the DFHISTAR job directly, or copy the DFHISTAR job (to preserve the CICS-supplied values) and edit and run your copy.

To generate all the post-installation jobs, specify the parameter SCOPE POST.

If you intend running the DFHALTDS job to create data sets for an alternate CICS region (for example, if you intend running the CICS-supplied IVPs with XRF), you should specify a valid data set qualifier on the *alternate_qualifier* option of the DSINFO parameter. This qualifier is used to distinguish the data sets for the alternate CICS region from those for the active CICS region in an XRF environment.

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 DFHISTAR job deletes any existing zone or zone log with name specified before redefining it. For example, if you specify the parameter

```
GZONECSI CICS330.GZONE NEW CICS330 3380
```

the DFHISTAR job deletes any existing SMP/E global zone log with the name CICS330.GZONE.SMPLOG before defining a new SMP/E global zone log with that name.

Select specific jobs to be tailored

You can select specific jobs to be tailored on the SELECT parameter. If you code this parameter, any SCOPE parameter is ignored.

SELECT jobname newname

Specifies the new name for a copy of a post-installation job to be generated when you run the DFHISTAR job. You can specify several SELECT parameters to select several post-installation jobs to be regenerated in one run of the DFHISTAR job. The SELECT parameter overrides the SCOPE parameter; that is, if you use the SELECT parameter in the DFHISTAR job, only those jobs specified by SELECT are generated.

Note: If you are using the SELECT parameter to generate copies of the post-installation jobs for a new CICS region, you should also change the DSINFO parameter to specify details of the data sets for the new CICS region.

For example, to create copies of the jobs DFHDEFDS and DFHIVPOL for the CICS region CICSINS you could specify the DSINFO and SELECT parameters of the DFHISTAR job:

```
DSINFO userid.CICS410 H3P061 3380 INS
SELECT DFHDEFDS INSDEFDS
SELECT DFHIVPOL INSIVPOL
```

If you then run the DFHISTAR job, it would create the INSDEFDS job as a copy of the DFHDEFDS job, and the INSIVPOL job as a copy of the DFHIVPOL job, substituting the values that you specified on DSINFO into the new jobs.

You could then change the DSINFO and SELECT parameters, and run the DFHISTAR job to create other copies of the post-installation jobs for another CICS region.

Specify the CICS/ESA 4.1 temporary installation libraries

Specify the data set names you want to use for the two temporary libraries that will be used to install CICS/ESA 4.1. If you do not want to use the default names, record your values for the TEMPLIB and LIB parameters.

TEMPLIB library_name

This specifies the name of the temporary installation library that contains the skeleton installation jobs.

For the post-installation tasks described in this book, you should specify the full name of the SDFHINST library for *library_name*, and on the SYSPROC DD statement of the DFHISTAR job, to refer to the CICS410.SDFHINST library. This ensures that if you need to apply service to any of the skeleton installation-related jobs, the changes (applied to the CICS410.SDFHINST library) are used in subsequent runs of the DFHISTAR job. In any such subsequent runs of the DFHISTAR job, you can use the SELECT parameter to select any jobs, affected by service, to be regenerated.

LIB library_name

Specifies the name of the installation output library to which the jobs generated by the DFHISTAR job are added. (See Figure 10 on page 63.)

Specify the JOB parameters for installation jobs

Decide what parameters you want to use on the JOB statements of the CICS/ESA 4.1 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. For 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
```

Notes:

1. Do not change XXXXXXXX given in the sample JOB statement in the DFHISTAR job. This 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. Delete (or comment out) extra lines of the JOB statement that you do not need.

Specify the scope of the installation

Specify the scope of the CICS/ESA 4.1 installation on the SCOPE parameter:

SCOPE ALL|BASE|POST|DLI

Specifies whether you want to generate all the CICS installation and post-installation jobs, only the post-installation jobs, or only the post-installation jobs that you can use for DL/I support. When tailoring CICS/ESA 4.1 after it has been installed from the distribution tape, you would normally specify SCOPE POST.

ALL

Specifies that you want to generate all the CICS installation jobs and all the post-installation jobs, as described in *Program Directory*.

BASE

Specifies that you want to generate only the six installation jobs DFHINST1 through DFHINST6 that you can use to install CICS from the distribution tape, as described in the *Program Directory*.

POST

Specifies that you want to generate only the post-installation jobs, that you can use to create the CICS data sets, run the IVPs, and add local DL/I support. (See Table 4 on page 76.)

DLI

Specifies that you want to generate only the post-installation jobs that you can use for local DL/I support. These jobs are: DFHIDLI, DFHIDLIJ, DFHISMPD, and DFHIVPDL. For more information about the jobs for local DL/I support, see Chapter 6, "Installing DL/I support" on page 89.

Specify the type of JES to be used

Specify the type of job entry subsystem (JES) that you intend to use to install CICS/ESA 4.1 on the JES parameter: This enables the DFHISTAR job to generate 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.

Specify the utilities to be used

Specify the utilities to be used to install CICS/ESA 4.1 on the UTILITIES parameter:

UTILITIES asmprog lkedprog smpeprog copyutil

Specifies the names of utility programs to be used when installing CICS and programs that it uses.

asmprog

is the program name of the assembler.

lkedprog

is the program name of the linkage editor.

smpeprog

is the program name of the SMP/E program.

copyutil

is the program name of the data set copy utility program.

Specify the prefix of CICS jobs

Specify the prefix, as one through six characters, 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

One through six characters.

Specify the indexes of CICS/ESA 4.1 data sets

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

INDEX library_prefix

Assigns a high-level index to the CICS distribution, target, and SMP/E libraries (except for the SDFHLINK and SDFHLPA target libraries) allocated by the installation process.

Notes:

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

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, INDEX CICS410.TEST).

LINDEX library_prefix

Assigns a high-level index to the SDFHLPA and SDFHLINK libraries allocated by the installation process. The *library_prefix* value must be defined 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.CICS410.TEST).

Specify 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.

Specify the disk volume for the DFHMACD data set

If you installed CICS/ESA 4.1 into disk space managed by the storage management subsystem (SMS)⁵ component of MVS/DFP, you do not need to specify your own disk volumes; device assignment can be determined by SMS. In this case, proceed to “Specify SMP/E zone attributes” on page 71.

To allow you to make the best use of your disk space, you can specify your own disk volumes and device types to be used for CICS/ESA 4.1. You will have specified the disk volumes when you installed CICS/ESA 4.1 from the distribution tape, but may wish to change the volume used for the DFHMACD data set at some later time. To do so, you can specify your own disk details on the following parameter:

CMACVOL volume

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

volume

is one of the following:

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

Note: If you omit the CMACVOL parameter, the DFHMACD data set will be 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

⁵ 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.

DFHCMACD data set will be put onto the same volume as the library specified by the `TEMPLIB` parameter.

For your information, the syntax of the `DEFVOL` parameter is:

DEFVOL volume disktype

Defines the default disk on which the contents of the CICS/ESA 4.1 disk volumes (including `CMACVOL`) will reside if the appropriate parameter is not coded in the `DFHISTAR` job. For example, if you do not code the `CMACVOL` parameter, the `DFHCMACD` data set will reside on the disk defined by `DEFVOL`.

volume

is one of the following:

- 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 will be put onto any available volume. The `CMACVOL` and `SMPVOL` volumes will be 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 altogether, all volumes that are not specifically defined by the appropriate parameter of the `DFHISTAR` job will be put onto the same volume as the library specified by the `TEMPLIB` parameter.

These and other disk volume parameters for CICS/ESA 4.1 are described in the *Program Directory*. You should not need to change the CICS/ESA 4.1 disk volume parameters, other than (perhaps) `CMACVOL`.

Specify SMP/E zone attributes

When tailoring CICS/ESA 4.1, you need to specify some of the SMP/E zone attributes, on the following parameters:

GZONECSI cluster NEW|OLD volume disktype

Specifies details of the global zone CSI, as defined when you installed CICS/ESA 4.1.

cluster

is the VSAM cluster name, minus 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

is 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/ESA 4.1 installation process.

disktype

is the UNIT parameter for the volume.

TZONE zonename

Specifies the name of the target zone, as defined when you installed CICS/ESA 4.1.

zonename

is 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.

TZONECSI cluster NEW|OLD volume disktype

Specifies details of the target zone CSI, as defined when you installed CICS/ESA 4.1.

cluster

is the VSAM cluster name, minus 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

is 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/ESA 4.1 installation process.

disktype

is the UNIT parameter for the volume.

Specify attributes of the CICS system data sets

Specify attributes of the CICS system data sets, to be created when you run the post-installation jobs DFHCOMDS, DFHDEFDS, and DFHALTDS jobs, on the DSINFO parameter. For more information about these jobs, and about data set naming conventions, see Chapter 5, "Creating the CICS data sets" on page 79.

DSINFO dsindex volume disktype qualifier alternate_qualifier

Defines the following attributes of CICS system data sets:

dsindex

Assigns a high-level index to all the data sets defined by the jobs, DFHCOMDS, DFHDEFDS, and DFHALTDS.

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, h1qname.IVP410).

volume

is the volume identifier of the volume.

disktype

is the UNIT parameter for the volume.

qualifier

is a partial qualifier added to the index for the data sets created by the jobs DFHCOMDS and DFHDEFDS. 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.

alternate_qualifier

is a partial qualifier added to the index for the data sets created by the DFHALTDS job, for use by alternate CICS regions. 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.

Notes:

1. If you specify *qualifier*, but omit *alternate_qualifier*, it is assigned the same value as *qualifier*.
2. If you intend running the DFHALTDS job to create data sets for an alternate CICS region (for example, if you intend running the CICS-supplied IVPs with XRF), you must specify a valid data set qualifier on the *alternate_qualifier* option of the DSINFO parameter. This qualifier is used to distinguish the data sets for the alternate CICS region from those for the active CICS region in an XRF environment.

For example, if you specify:

```
DSINFO hlqname.CICS410 H3P060 3380 IDA IDB
```

this defines the names for the CICS local catalogs created by the jobs DFHDEFDS and DFHALTDS as hlqname.CICS410.CICSIDA.DFHLCID and hlqname.CICS410.CICSIDB.DFHLCID respectively.

Specify IMS attributes

If you *do not* intend using CICS with IMS, proceed to “Specify attributes of any additional target libraries” on page 74.

DLI ims_release DISTLIBS|TARGLIBS

Specifies the release of IMS that CICS is to use and whether the CICS distribution libraries or target libraries are to be used for assembly of local DL/I support.

ims_release

is the release of IMS that CICS is to use. It can be one of the following:

Value	meaning
4.1.0	IMS/ESA 4.1
3.1.0	IMS/ESA 3.1

DISTLIBS|TARGLIBS

specifies whether the CICS distribution libraries (DISTLIBS) or target libraries (TARGLIBS) are to be used for assembly of local DL/I support.

DLIMACLIB ims_library_name ddname

Defines the name of an IMS macro library to be included in the SYSLIB concatenation. Repeat this parameter once for each IMS macro library to be included in the SYSLIB concatenation (for example, see Table 3 on page 65).

Note: If you do not specify any DLIMACLIB parameters in the DFHISTAR job, support for local DL/I is generated, but does not include any IMS macro libraries.

ims_library_name

is the complete name of an IMS macro library.

The names of the IMS libraries GENLIB, GENLIBA, GENLIBB, and OPTIONS are used in the DDEFs within the CICS SMPCSI, for the SMP/E target and distribution zones. The names are also used in the DL/I installation verification procedure, DFHIVPDL.

ddname

is the DD name to be used for the IMS library. If you do not specify a value for *ddname*, it assumes the last level of *ims_library_name*. For example, the parameter:

```
DLIMACLIB IMS.GENLIB
```

adds the IMS macro library, IMS.GENLIB, to the SYSLIB concatenation, and uses GENLIB as the DD name for the library.

Specify attributes of any additional target libraries

If you want to create extra copies of the CICS/ESA 4.1 target libraries, specify the attributes of those libraries on the following parameters:

ADDTVOL volume disktype

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

volume

is the volume serial identifier of the volume.

disktype

is the UNIT parameter for the volume.

AINDEX library_prefix

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

Notes:

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, DFHDEFDS and DFHALTDS 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 CICS410.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.CICS410.A.TEST).

ASMPSCDS dsname

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

dsname

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

AZONE zonenumber

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

zonenumber

is 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.

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

is the VSAM cluster name, minus the qualifier **.CSI**.

AZONELOG dsname

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

dsname

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

DZONE zonenumber

Specifies the name of the distribution zone.

zonenumber

is the name of the distribution zone to be used by SMP/E. This name must be unique within the global zone. It must not be longer than 7 characters, and the leading character must be alphabetic.

DZONECSI cluster NEW|OLD volume disktype

Specifies details of the distribution zone CSI.

cluster

is the VSAM cluster name, minus 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

is 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/ESA 4.1 installation process.

disktype

is the UNIT parameter for the volume.

DZONELOG dsname NEW|OLD

Specifies details of the SMP/E log for the distribution zone CSI.

dsname

is 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.

Running the DFHISTAR job

When you have edited the DFHISTAR job with the values for installation parameters for your CICS environment, submit the DFHISTAR job.

When you run the DFHISTAR job, it tailors the skeleton post-installation jobs selected in the DFHISTAR input (by the SCOPE or SELECT parameter) to your environment and adds them to the library that you specified on the LIB parameter of the DFHISTAR job (by default, CICS410.XDFHINST). If necessary, the DFHISTAR job creates the library specified on the LIB parameter. Table 4 lists those skeleton jobs installed in the CICS410.SDFHINST library that you can tailor by running the DFHISTAR job.

Note: 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 the DFHISTAR job (by default, CICS410.TDFHINST). For the post-installation tasks described in this book, you should specify TEMPLIB SDFHINST. For further information, see the TEMPLIB description on page 67.

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

- The output job log lists the values that were actually used for the parameters of the DFHISTAR job.
- If any error occurs when running the DFHISTAR job, an error code of 4 or 12 is returned. For error code 4, the skeleton jobs are tailored and added to the CICS410.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 the DFHISTAR job again.

Table 4 (Page 1 of 2). Skeleton post-installation jobs

Job	Function
DFHALTDS	Create data sets for each XRF alternate CICS region
DFHAUPL	Create CICS tables
DFHCMACI	Create CICS messages data set
DFHCMACU	Update (service) CICS messages data set
DFHCOMDS	Create data sets common to all CICS regions
DFHDDL	Remove local DL/I support from CICS modules and references to IMS macro libraries
DFHDSMPD	Remove local DL/I modules from SMP/E

#

<i>Table 4 (Page 2 of 2). Skeleton post-installation jobs</i>	
Job	Function
DFHDEFDS	Create data sets for each CICS region (not XRF alternate CICS regions)
DFHIDLI	Assemble and link-edit modules for local DL/I support, and add to the IMS macro libraries
DFHIDLIJ	Imbed in DFHISMPD
DFHINSTA	Create additional set of target libraries
DFHINSTJ	Load feature from distribution tape (See note)
DFHIPUBS	Load books from publications distribution tape
DFHISMPD	Define local DL/I modules to SMP/E
DFHIVPAL	IVP to run an alternate CICS (XRF=YES)
DFHIVPBT	IVP (batch) to verify CICS startup
DFHIVPDB	IVP to verify CICS-DBCTL interface
DFHIVPDL	IVP to verify CICS-local DL/I interface
DFHIVPOL	IVP to run an online CICS (with XRF=YES or XRF=NO)
DFHIVXRO	Run sample overseer
DFHLPJPN	Receive and apply sample SMP/E USERMOD DFH\$UJPN
DFHLPUMD	Receive and apply sample SMP/E USERMOD DFH\$UMOD
DFHOPSRC	Install optional source tapes (See note.)
DFHSMPE	Service CICS
DFHSTART	Start up CICS
DFH\$ARCH	Sample automatic journal archiving job
DFH0JCUS	Define and load sample applications details data set
DFH0JHLP	Define and load sample applications help data set
DFH99BLD	Create dynamic allocation sample program
Note: The jobs DFHINSTJ and DFHOPSRC are described in the <i>Program Directory</i> .	

Apar PQ05037

Documentation for Apar PQ05037 added 26/01/98

Chapter 5. Creating the CICS data sets

After you have installed CICS, and applied any necessary service, you can run the jobs DFHCOMDS, DFHDEFDS, DFHALTDS, and DFHMACI to create the CICS data sets.

Job	Function
DFHCOMDS	deletes and recreates data sets common to all CICS regions.
DFHDEFDS	deletes and recreates copies of data sets used only by one CICS region. You run a separate copy of this job to create the data sets for each CICS region.
DFHALTDS	deletes and recreates the XRF data sets used by an alternate CICS region. You run a separate copy of this job to create the XRF data sets for each alternate CICS region.
DFHMACI	deletes and recreates the CICS messages data set, dsindex.DFHMACD, and loads it with the data from the CICS-supplied file, DFHMACD, in the CICS410.SDFHMSG target library.
DFH0JCUS	deletes and recreates 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 CICS410.ADFHAPD2 library.
DFH0JHLP	deletes and recreates the sample applications help data set, dsindex.SAMPLE.DFHCTHLP, and loads it with the data from the CICS-supplied file, DFH0DHLP, in the CICS410.ADFHAPD1 library.

When you ran the DFHISTAR job, these jobs were tailored to your environment and stored in the library that you specified on the LIB parameter of the DFHISTAR job (by default, CICS410.XDFHINST). If you have not yet run DFHISTAR, you should do so before running any of the CICS post-installation jobs.

You can generate several copies of these jobs by rerunning the DFHISTAR job, selecting the jobs that you want to copy. To generate new copies of these jobs, edit the DFHISTAR job to specify new values for the DSINFO and SELECT parameters. Only those jobs that you name by the SELECT parameter are regenerated. For further information about generating new versions of the post-installation jobs, see page 67.

Data set naming conventions

There are no restrictions on the data set names you choose for CICS data sets, other than MVS constraints. In the examples in this book, CICS410 is used as the high-level qualifier, and the DD name as the lowest level. If you are running multiple CICS regions, and especially if you are running CICS with XRF, you can use the CICS APPLID as a second level qualifier.

You are recommended to use the *CTGI* naming convention, as described in the *System/390 MVS Sysplex Application Migration*⁶. For example, if CICSHTH1 is the APPLID, the data set name for the CSD would be:

```
DFHCSD DD DSN=CICS410.CICSHTH1.DFHCSD,DISP=SHR
```

If the data set is shared between an active CICS region and an alternate CICS region, use the generic APPLID, but if the data set is unique to either the active or the alternate CICS region, use the specific APPLID. For information about actively and passively shared data sets, see the *CICS/ESA System Definition Guide*.

Creating data sets common to all CICS regions, DFHCOMDS job

You can use the DFHCOMDS job to delete and recreate the following data sets common to all CICS regions:

Name	Data set
DFHCSD	CICS system definition
DFHJPDS	JCL data set containing DFH\$ARCH
SYSIN	SYSIN data set.

Notes:

1. The CICS-supplied 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, you should move and edit the appropriate statements into the jobs DFHDEFDS and DFHALTDS. For further information about creating multiple copies of these data sets, see “Creating several copies of the DFHCSD, DFHJPDS, and SYSIN data sets” on page 81.
2. If you change the sample JCL in the DFH\$ARCH job after you have created and loaded the DFHJPDS data set, you must reload that data set with your changed version of the DFH\$ARCH job, in order that your changes can be implemented. For example, you can:
 - a. Change the version of the DFH\$ARCH job in the CICS410.XDFHINST library.
 - b. Copy and edit the DFHCOMDS job in the CICS410.XDFHINST library to submit only the DEFJPDS step.
 - c. Submit the copy of the edited DFHCOMDS job to reload the DFHJPDS data set with your changed version of the DFH\$ARCH job.

This will reload the DFHJPDS data set with the changed version of the DFH\$ARCH job from the CICS410.XDFHINST library. If you want to restore the DFH\$ARCH job from its skeleton version on the CICS410.TDFHINST

⁶ The *CTGI* naming convention is a recommended example of a naming convention that you can use for CICS 4-character names, and is based on the 4-character *CTGI* symbol, where:

C identifies an entire CICSplex
T identifies the type of region
G identifies a group of regions
I identifies iterations of regions within a group

Where names are allowed to be up to eight characters long, as for CICS APPLIDs, the general recommendation is that the letters CICS are used for the first four characters, particularly for production regions.

library, you can resubmit the DFHISTAR job with only the DFH\$ARCH job selected by the SELECT parameter.

The DFHCOMDS job comprises four job steps:

1. **DELETE** deletes the data sets.
2. **DEFCS**D defines the VSAM cluster for the CICS system definition data set, dsindex.DFHCSD, where dsindex is defined by the DSINFO parameter of the DFHISTAR job.
3. **DEFJPDS** creates the automatic journal archiving JCL PDS, dsindex.DFHJPDS, and copies the DFH\$ARCH module from the CICS410.XDFHINST library. The name of the CICS410.XDFHINST library is set by the LIB parameter of the DFHISTAR job.
4. **DEFSYSIN** creates the SYSIN PDS and copies the following modules from the CICS410.SDFHSAMP library:

DFH\$SIPA	DFH\$SIPD	DFH\$SIPT	DFH\$SIP1
DFH\$SIP2	DFH\$SIP3	DFH\$SIP4	DFH\$SIP5
DFHRCNO	DFHRCYES		

Creating several copies of the DFHCSD, DFHJPDS, and SYSIN data sets

The CICS-supplied DFHCOMDS job creates one of each of the DFHCSD, DFHJPDS, and SYSIN data sets common to all CICS regions. If you use separate copies of any of these data sets for each CICS region, you should:

- 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 ®NAME1 for the region qualifier in the name of the data set.

You should move and edit the appropriate data set statements before you create copies of the DFHDEFDS job for each CICS region. When you run the DFHISTAR job to create the new copies of the DFHDEFDS job, it substitutes your values for the CICS region qualifier (®NAME1) and index (&INDEX) into the data set names. For further information about generating new versions of the post-installation jobs, see page 67.

For example: If you intend using a copy of the DFHCSD data set for each CICS region, you should copy the job steps DELCSD, DEFCSD, and INITCSD from the DFHCOMDS job to the DFHDEFDS job. You should also add the symbol ®NAME1 for the qualifier to the name of the DFHCSD data set to give &DSINDEX.CICS®NAME1.DFHCSD. If you edit the DFHISTAR job to select the DFHDEFDS job to be copied, and specify the following DSINFO parameter:

```
DSINFO userid.CICS410 H3P060 3380 IDA .
```

when you run the DFHDEFDS job, it creates the DFHCSD data set called userid.CICS410.CICSIDA.DFHCSD for the CICS region identified by the qualifier IDA. If you change the SELECT and DSINFO parameters of the DFHISTAR job (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, DFHJPDS, and SYSIN data sets for each CICS region.

Note: The DFHCSD and DFHJPDS data sets are passively shared by active and alternate regions in an XRF environment; therefore, you should not create separate copies of these data sets for XRF active and alternate CICS regions.

Creating data sets unique to each CICS region, DFHDEFDS job b

You can use the DFHDEFDS job to delete and recreate copies of the following data sets for each CICS region.

Note: You should not run the DFHDEFDS job for alternate CICS regions in an XRF environment. To create the XRF data sets needed by an alternate CICS region, run the DFHALTDS job, described in “Creating XRF data sets for each alternate CICS region, DFHALTDS job” on page 83.

Name	Data set
DFHAUXT	Non-VSAM auxiliary trace (A)
DFHBUXT	Non-VSAM auxiliary trace (B)
DFHDMPA	Non-VSAM dump (A)
DFHDMPB	Non-VSAM (B) dump
DFHGCD	Global catalog
DFHINTRA	Intrapartition transient data
DFHJACD	Automatic journal archive control
DFHJ01A	Journal (A)
DFHJ01B	Journal (B)
DFHJ01X	Emergency journal
DFHLCD	Local catalog
DFHRSD	Restart
DFHTEMP	Temporary storage
DFHXRCTL	XRF control
DFHXRMSG	XRF message
FILEA	Sample program data

Use the DFHISTAR job to create a copy of the DFHDEFDS job for each CICS region. Edit the DFHISTAR job, specifying the parameters DSINFO and SELECT, and run it once for each region.

In the DFHISTAR job, 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 the DFHISTAR job. The default is CICS410.

qualifier

is the region qualifier for the data sets used by this CICS region, specified on DSINFO parameter of the DFHISTAR job. 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 CICS410.CICS.DFHLCDD. For an example of the use of the qualifiers to distinguish between data sets for XRF active and alternate CICS regions, see page 72.

For convenience, the data sets for a CICS region are defined on one volume. To avoid takeover problems if there is an error on the volume for an active CICS region, you should define the XRF data sets on another volume. For information about defining the XRF data sets, see the *CICS/ESA System Definition Guide*.

The DFHDEFDS job comprises the following job steps:

1. **DELETE** any existing copies of the data sets.
2. **DEFINE** defines the clusters for the data sets.
3. **INITGCD** initializes the CICS global catalog for this region.
4. **INITLCD** initializes the CICS local catalog for this region.
5. **INITRSD** initializes the CICS restart data set for this region.
6. **DEFTRACE** defines the trace data sets for this region.
7. **DEFDUMP** defines the dump data sets for this region.
8. **FRMTJ01A** creates and formats the system journal data set DFHJ01A.
9. **FRMTJ01B** creates and formats the system journal data set DFHJ01B.
10. **FRMTJ01X** creates and formats the emergency system journal data set DFHJ01X.
11. **LOADFILE** loads the sample data into the FILEA data set for this region.

Creating XRF data sets for each alternate CICS region, DFHALTDS job

You can use the DFHALTDS job to delete and recreate the following XRF data sets used by an alternate CICS region:

Name	Data set
DFHAUXT	Non-VSAM auxiliary trace
DFHBUXT	Non-VSAM auxiliary trace
DFHDMPA	Non-VSAM dump
DFHDMPB	Non-VSAM dump
DFHLCDD	Local catalog

Use the DFHISTAR job to create a copy of the DFHALTDS job for each alternate CICS region. Edit the DFHISTAR job, specifying the parameters DSINFO and SELECT, and run it once for each region. In the DFHISTAR job, specify the following parameters:

- **SELECT DFHALTDS newname** to specify the new name that the copy of the DFHALTDS job is to be known by.

- **DSINFO** to specify the following details of the data sets for each alternate CICS region:
 - The high-level index (*dsindex*)
 - The serial number of the volume (*volume*)
 - The unit type of the volume (*disktype*)
 - The region qualifier (*alternate_qualifier*).

Note: You must specify a valid region qualifier on the *alternate_qualifier* option of the DSINFO parameter. This qualifier is used to distinguish the data sets for an alternate CICS region from those for the active CICS region in an XRF environment.

The format of the data set names is:

`dsindex.CICSalternate_qualifier.dsname`

dsindex

is the high-level index for the data sets, specified on the DSINFO parameter of the DFHISTAR job. The default is CICS410.

alternate_qualifier

is the region qualifier for the data sets used by this CICS region, specified on DSINFO parameter of the DFHISTAR job. The default is no qualifier.

dsname

is the name of the data set being defined.

The default name for the CICS local catalog created by the default DFHALTDS job is the same as the CICS local catalog created by the default DFHDEFDS job. For an example of the use of the qualifiers to distinguish between data sets for XRF active and alternate CICS regions, see page 72.

The DFHALTDS job comprises the following job steps:

1. **DELETE** deletes any existing copies of the data sets.
2. **DEFINE** defines a CICS local catalog to be used by an alternate CICS region.
3. **INITLCD** initializes the alternate CICS local catalog.
4. **DEFDMPTR** creates alternate trace and dump data sets.

Creating the CICS messages data set, DFHCMACI job

You can use the DFHCMACI job to delete and recreate the CICS messages data set DFHCMACD. This data set is used by the CICS messages facility (CICS-supplied transaction CMAC).

The DFHCMACI job comprises the following job steps:

1. **DELETE** deletes any existing copies of the DFHCMACD data set.
2. **DEFINE** defines the VSAM cluster for the CICS message data set `dsindex.DFHCMACD`, where `dsindex` is defined by the DSINFO parameter of the DFHISTAR job.
3. **CMACLOAD** loads the CICS message data set with data from the CICS-supplied file, DFHCMACD, in the CICS410.SDFHMSG target library.

Defining the DFHMACD file and associated CICS resources

You can use the CICS messages facility to provide the CICS messages and codes descriptions online. Before you can use this facility (to access the DFHMACD data set), you must define the resources needed by the facility, and make them available to your CICS region.

The DFHMACD data set is accessed by the file DFHMACD, managed by CICS file control. You must create a definition for this file in the CSD or FCT. The CICS-supplied definition for the DFHMACD file and other resources needed by the CICS messages facility are in the CSD group DFHMAC. The CICS startup procedure, DFHSTART, has a DD statement for the DFHMACD file, but for dynamic allocation you should copy the supplied resource definition for the DFHMACD file and add the DSNAME option.

To use the CICS messages facility in your CICS region, you must create your own CSD group list to include the CICS-supplied group list DFHLIST, the DFHMAC group for the CICS messages facility, and any other groups of resources that your CICS region needs. You must specify this group list by using the GRPLIST system initialization parameter when you start up your CICS region.

You should specify the DFHMAC group of resources for the CICS messages facility only in those CICS regions that need to use the facility; for example on some terminal-owning regions, but perhaps not on data-owning regions.

Defining the sample applications data sets

CICS provides a range of samples that you can use to help develop your own applications, and to test various CICS functions (for example, as an aid to verifying that CICS has installed correctly). These programs are described in the *CICS/ESA Sample Applications Guide* and the *CICS Application Programming Primer (VS COBOL II)*.

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 follows. You do not need to 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 VS COBOL II programs to display, overlay, and remove CUA style windows.

Creating the data sets: To create the data sets needed by the CUA text level application, submit the following jobs: DFH0JCUS and DFH0JHLP, installed in the CICS410.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 specified in the resource definitions: CICS410.SAMPLE.DFHCTCUS, CICS410.SAMPLE.DFHCTHLP, and

CICS410.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/ESA Sample Applications Guide*.

The FILEA sample application programs

This comprises four sets of command-level application programs that operate on the sample VSAM file FILEA. There is one set for each of the four programming languages supported, (Assembler, C/370, VS COBOL II, and PL/I). 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 all written prior to the publication of the Common User Access guidelines.

Creating the data set: A copy of the data set needed by the FILEA application is created when you submit the DFHDEFDS job, installed in the CICS410.XDFHINST library.

Making the data set available to CICS: When you tailor the CICS installation-related jobs, as described in Chapter 4, "Tailoring the CICS-supplied skeleton jobs" on page 63, 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, you should remove the DD statement and install a FILE resource definition with an appropriate DSNAMES. (For example, as supplied in the group DFH\$FILA.)

For information about this sample application see the *CICS/ESA Sample Applications Guide*.

The CICS Application Programming Primer sample application

You can use this sample application to demonstrate the design and programming of a traditional CICS application. It provides online inquiry and maintenance facilities 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 the publication of Common User Access guidelines, and provides similar function (without CUA support) as the CUA sample application.

Creating the data sets: To create the data sets needed by the Primer sample application, edit and submit the sample job shown in Figure 11 on page 87.

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 specified in the resource definitions: CICS410.ACCTFILE and CICS410.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 (VS COBOL II)*.

```

//DEFACCTF JOB (accounting parameters),MSGCLASS=A,MSGLEVEL=(1,1),
//      CLASS=A,NOTIFY=userid
//*
//*****
//*      CICS/ESA 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:
//*     . CICS410.ACCTFILE
//*     . CICS410.ACIXFILE
//*
//* THE HIGH-LEVEL-QUALIFIER(S) OF THE DATASETS: CICS410
//* THE VOLUME SERIAL                          CIC410
//* THE UNIT TYPE                               3380
//*
//*****
//DELETE EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
DELETE CICS410.ACCTFILE
DELETE CICS410.ACIXFILE
SET MAXCC=0
/*
//DEFINE EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
/*
DEFINE CLUSTER(NAME(CICS410.ACCTFILE)-
KEYS(5 0)-
INDEXED -
RECORDSIZE(383 383)-
REC(80)-
SHR(2 3)-
VOLUMES(CIC410)) -
DATA(NAME(CICS410.ACCTFILE.DATA)-
UNIQUE)-
INDEX(NAME(CICS410.ACCTFILE.INDEX)-
UNIQUE)
/*
DEFINE CLUSTER(NAME(CICS410.ACIXFILE)-
KEYS(17 0)-
INDEXED -
RECORDSIZE(63 63)-
REC(80)-
SHR(2 3)-
VOLUMES(CIC410)) -
DATA(NAME(CICS410.ACIXFILE.DATA)-
UNIQUE)-
INDEX(NAME(CICS410.ACIXFILE.INDEX)-
UNIQUE)
/*
//*

```

Figure 11. Example JCL to create the Primer sample data sets

Chapter 6. Installing DL/I support

CICS can provide DL/I database support by using the IBM Information Management System (IMS) product.

There are four ways through which you can use DL/I support with CICS:

- Local DL/I support
- Shared database support (for batch applications)
- Remote DL/I support, also known as **function shipping**
- Data Base Control (DBCTL), through an IMS/DM subsystem.

Note: CICS/ESA 4.1 is expected to be the last release of CICS/ESA to support the local DL/I interface to IMS/ESA, leaving DBCTL as the only supported interface to IMS databases. CICS/ESA 4.1 provides a number of enhancements to the CICS-DBCTL interface, notably an installation verification procedure (IVP) to ease migration to DBCTL, and a CICS-supplied transaction, CDBM, to simplify operator communication between CICS and DBCTL.

To use local DL/I, you must install local DL/I support as described in this chapter.

The four methods of providing DL/I support are described briefly below.

Local DL/I support

You can generate a CICS interface to IMS known as the **local DL/I interface**, that runs in the CICS address space. (This is equivalent to DL/I support that you could generate in releases of CICS prior to CICS/ESA Version 3.) The local DL/I interface allows application programs to store data in an IMS database and retrieve data from it. It also enables you to access the database from a batch region using shared database support. For information about how to generate the local DL/I interface, see "Installing local DL/I support" on page 90.

Shared database support

Shared database support allows a DL/I application program running in a batch region to access a database owned by a CICS region running with local DL/I support. Shared database support allows the database to be updated, concurrently from online and from batch, without loss of integrity. CICS includes shared database support, but you must generate the local DL/I support.

Remote DL/I support

CICS provides **remote DL/I support**, which allows application programs to access remote databases by function shipping requests to another CICS region. The databases can be IMS (DL/I) databases associated with a remote CICS/ESA, CICS/MVS, or CICS/OS/VS region, or DL/I DOS/VS databases associated with a remote CICS/VSE or CICS/DOS/VS region.

An IMS DB database can be associated with a remote CICS/ESA region that either:

- is generated with local DL/I support, and which owns the database

or

- uses DBCTL to access the database; typically a CICS region that is running in another MVS image.

This support enables the database to be updated from either CICS region, with full integrity. A CICS region with remote DL/I support only cannot also have its own locally owned databases. CICS is restricted to remote access using function shipping, or to access using DBCTL.

Database control

CICS provides a CICS-DBCTL interface which enables DBCTL, or IMS/ESA DM/TM, to satisfy DL/I requests issued from the CICS region. This method is recommended for new users because it is simpler to install than local DL/I and provides additional function. Details of installing and using DBCTL are covered in the *CICS/ESA CICS-IMS Database Control Guide*.

IMS data sharing

IMS provides **data sharing**, which allows a number of independent programs to use the same database. One or more of these programs can be CICS regions.

Do not confuse IMS data sharing with shared database support. IMS data sharing is not covered in this chapter; it is discussed in the *CICS/ESA Operations and Utilities Guide*.

Installing local DL/I support

To install local DL/I support, you need to carry out the following steps:

1. Install IMS. (See “IMS considerations” on page 91.)
2. If you are upgrading from one release of IMS to another, or if you are adding DL/I support for the first time, you must ensure that there is an orderly migration between the sets of CICS libraries at the different levels. For example, you may choose to use an additional set of CICS target libraries to add or modify DL/I support before moving that support to your production CICS regions.
3. Generate the CICS management modules you require. (See “Generating the modules needed for local DL/I support” on page 91.)
4. If you require shared database support, install the module DFHDRP in an APF-authorized library. (See “Installing the DFHDRP module for shared database support” on page 94.)

(Shared database support also requires MRO support; see Chapter 8, “Installing MRO and ISC support” on page 103 for information about MRO.)

5. Ensure IMS macros are available when you service your CICS region. (See “Servicing considerations” on page 96.)

For information about defining the required IMS resources to your CICS region (including data set definition), see the *CICS/ESA System Definition Guide*.

IMS considerations

To use DL/I facilities, you need Information Management System/Enterprise Systems Architecture (IMS/ESA) Database Manager Version 3 (5665-408) Release 1 or later.

Note: If you have generated the CICS local DL/I interface to support IMS/ESA 4.1, the system initialization parameter PISCHD is overridden, and program isolation scheduling is forced. It is therefore unnecessary to specify the PISCHD option if you are using IMS/ESA 4.1. If you use local DL/I and change from intent scheduling to program isolation scheduling, you must specify the size of ENQPOOLS that you need, by using the system initialization parameter ENQPL.

For information about adding DL/I support, and coding system initialization parameters, see the *CICS/ESA System Definition Guide*.

Installing IMS: You should install the IMS database system before generating the CICS-DL/I interface modules. (For guidance on installing IMS, see the *IMS Installation Guide*).

Generating DBDs and PSBs: Generate the IMS database description blocks (DBDs) and program specification blocks (PSBs). For guidance about defining DBDs and PSBs, see the *IMS Utilities Reference* manual.

Creating DDIRs and PDIRs: If you are updating from one release of IMS to another, edit the release level in the DDIRs and PDIRs, and reassemble and link-edit them. For information about creating DDIRs and PDIRs, see the *CICS/ESA System Definition Guide*.

Generating ACBs: Generate the IMS application control blocks. The CICS-DL/I interface uses the prebuilt blocks facility of IMS. After generating all the required program specification blocks (PSBs) and database descriptions (DBDs), you have to generate application control blocks (ACBs) in the IMS ACB library for all PSBs and DBDs that are to be used (including those that are to be accessed from sharing batch regions through CICS). For guidance about generating ACBs, see the *IMS Utilities Reference* manual.

CICS uses the IMS.ACBLIB instead of IMS.PSBLIB and IMS.DBDLIB, so you must run the IMS ACBGEN utility to create the ACBLIB data set before CICS execution.

Generating the modules needed for local DL/I support

You can use the jobs DFHISMPD and DFHDLI to generate the modules needed for local DL/I support, regenerate modules affected by service to IMS macro libraries, or to upgrade the level of DL/I support from one version of IMS to another.

When regenerating modules affected by service to IMS macro libraries, or upgrading the level of DL/I support from one version of IMS to another, you may prefer to use an additional set of CICS target libraries. This may help you implement the service or upgrade with minimal disruption to your production CICS regions (and their target libraries). For information about using an additional set of CICS target libraries to implement service or upgrade to DL/I support modules, see “Using additional target libraries to modify DL/I support” on page 93.

To generate the modules needed for local DL/I support, run the jobs DFHISMPD and DFHIDLI, as described in “Running the jobs DFHISMPD and DFHIDLI” on page 92.

To regenerate the modules needed for local DL/I support after you have applied service to IMS or to change the level of local DL/I support, you should:

1. Edit the DFHISTAR job (as described in “Editing the DFHISTAR job” on page 64) to:
 - Specify the parameter SCOPE DLI to select only the DL/I jobs, DFHISMPD, DFHIDLI, and DFHIVPDL, to be generated by the DFHISTAR job.
 - Specify the parameters for local DL/I support in your CICS environment.
2. Run the DFHISTAR job to regenerate the DL/I jobs with the values you specified in the DFHISTAR job.
3. Run the jobs DFHISMPD and DFHIDLI, to generate the modules needed for local DL/I support, as described in “Running the jobs DFHISMPD and DFHIDLI.”

Running the jobs DFHISMPD and DFHIDLI

To install support for local DL/I, you must run the jobs DFHISMPD and DFHIDLI. These jobs are generated in the CICS410.XDFHINST library when you run the DFHISTAR job.

You can generate several copies of these jobs by rerunning the DFHISTAR job, selecting the jobs that you want to copy. To generate new copies of these jobs, edit the DFHISTAR job to specify new values for the DSINFO and SELECT parameters. Only those jobs that you name by the SELECT parameter are regenerated. For more information about generating new versions of the post-installation jobs, see page 67.

To install support for local DL/I, first run the DFHISMPD job. This defines to SMP/E the modules, listed in Table 5, needed by local DL/I support.

Table 5. Modules needed for local DL/I support

Module	Description
DFHDBP	Dynamic backout program
DFHDLBP	DL/I backout program
DFHDLG	DL/I global command processor
DFHDLILP	DL/I local call processor
DFHDLIPD	PDIR search program for local DL/I PSBs
DFHDLQ 1	IMS quasi-application program
DFHDLR	IMS simulated routines
DFHDLS	DL/I status processor
DFHDLX	IMS internal routines
DFHJCP 2	Journal control
DFHRUP	Recovery utility program
Note:	
1 When you run the DFHIDLI job, it generates the DFHDLQ module into an APF-authorized library (by default, CICS410.SDFHAUTH). To use local DL/I support, you must add this library to your STEPLIB concatenation.	
2 The corresponding dummy program is supplied without the need to run the DFHISMPD job.	

After you have run the DFHISMPD job, run the DFHIDLI job. This assembles and link-edits the modules, listed in Table 5, needed for local DL/I support and includes the IMS macro libraries specified by the DLIMACLIB parameters in the DFHISTAR job.

Notes:

1. Before you run the DFHIDLI job, ensure that you have access to the APF-authorized library (by default, CICS410.SDFHAUTH) into which the DFHDLQ module is to be generated. If you want to use your own APF-authorized library, edit DFHIDLI accordingly.
2. The DFHIDLI job generates the module DFHDBP2\$ (along with other modules). To use the CICS local DL/I interface, specify the system initialization parameter DBP=2\$. If you want to use your own version of the DFHDBPxx module, edit DFHIDLI accordingly, and specify DBP=xx in the SIT, where xx is the suffix of your DFHDBPxx module.
3. When you run the DFHISMPD job, ignore the return code 8 (from SMP/E) for the ADDDLIT and ADDDLID steps, if the return code for the REPDIT and REPDID steps of the DFHISMPD job is 0.

Using additional target libraries to modify DL/I support

If you are already running a production CICS region, and you want either to service or upgrade your level of DL/I support, there are some steps you can take to ensure that the migration is done with the minimum disruption. These are as follows:

1. Generate and run a new version of the DFHINSTA job to generate an additional copy of your production CICS target libraries. For information about generating an additional set of CICS target libraries, see the *Program Directory*.
2. Edit the DFHISTAR job to specify:
 - details of the DL/I support to be added
 - details of the **additional** target zone on the TZONE, TZONECSI, and TZONELOG parameters
 - copies of the DFHISMPD and DFHIDLI jobs (using the SELECT parameter).

Note: The DFHIDLI and DFHISMPD jobs use the TZONE, TZONECSI, and TZONELOG parameters to identify the CICS target zone into which they will add DL/I support; in this case, they should identify the **additional** target zone.

3. Run the DFHISTAR job to create the DFHISMPD and DFHIDLI jobs.

For further information about editing and running the DFHISTAR job, see Chapter 4, “Tailoring the CICS-supplied skeleton jobs” on page 63.

4. Run the DFHIDLI and DFHISMPD jobs to generate the modules for DL/I support into the additional target library set you have created. For further information about adding DL/I support, see “Generating the modules needed for local DL/I support” on page 91.
5. Reapply, to the additional target library set, any SYSMODs that you have previously applied (but not accepted), to the production target library set. (This removes any regression caused by the later addition of DL/I support.)
6. Test the updated CICS region using the additional set of CICS target libraries with the new DL/I support added.

You may need to apply service to the production system before you complete the testing of the new additional target libraries containing the DL/I support. If this situation occurs, the same SYSMODs can easily be applied to the additional target library set, since it is under the control of the same SMP/E global zone. Similarly, you can back out SYSMODs in parallel from the production and test systems, and thus maintain parity of service level between the two target library sets.

7. When you have successfully completed testing the additional target library set containing the DL/I support, you can migrate to the new libraries to run the production CICS region.
8. You can maintain the old production CICS target library set as a backup set until you decide it is no longer required. You can then remove, from the SMP/E global zone, all reference to the old production CICS target library set by using the SMP/E ZONEDELETE function, and delete all the associated data sets.

Installing the DFHDRP module for shared database support

CICS includes the modules that are needed for shared database support, but one of these, DFHDRP, must be installed in an APF-authorized library before you can start a shared database batch region. It is usual to use a library in the MVS linklist for this purpose. Figure 12 on page 95 gives a sample job to link-edit the DFHDRP module into SYS1.LINKLIB, or another authorized library in the MVS linklist.

The DFHDRP module is compatible with releases before CICS/ESA 4.1, so there is no need to replace a copy of the DFHDRP module that you may have from an earlier CICS release. However, if your batch region is sharing the database with a CICS/ESA Version 3 region, we recommend that you install the CICS/ESA 4.1 DFHDRP module in SYS1.LINKLIB, or another suitable APF-authorized library in the MVS linklist.

You must regenerate your old level of the DFHDRPA module with a new SVC number if both of the following are true:

- You want to use the latest CICS SVC with your old-level batch region controller modules
- When you installed the latest CICS SVC in the LPA, you gave it a number different from the number defined in your DFHDRPA module.

For more information about using the latest CICS SVC with shared database support, see “CICS shared database using a changed SVC number” on page 18.

```

//LINKS      JOB, accounting information
//LINK       EXEC PGM=IEWL,REGION=2048K,
//           PARM='LIST,XREF,NCAL,LET,RENT,REFR'
//SYSPRINT   DD SYSOUT=A
//SDFHLOAD   DD DSN=CICS410.SDFHLOAD,DISP=SHR
//SDFHAUTH   DD DSN=CICS410.SDFHAUTH,DISP=SHR
//SYSMOD     DD DSN=SYS1.LINKLIB,DISP=SHR
//SYSUT1     DD UNIT=SYSDA,SPACE=(CYL,(3,1))
//SYSLIN     DD *
              INCLUDE SDFHAUTH(DFHDRP)
              ENTRY DFHDRPNA
              SETCODE AC(1)
              NAME DFHDRP(R)
/*
//

```

Figure 12. Link-editing the DFHDRP module into SYS1.LINKLIB

Note: Shared database support requires MRO support; for information about MRO, see Chapter 8, “Installing MRO and ISC support” on page 103.

For information about starting a batch region for DL/I shared database, and a sample job stream, see the *CICS/ESA Operations and Utilities Guide*.

Global user exits for DL/I

The following global user exits, if enabled, can be invoked when you have DL/I applications:

XDBDERR

This exit is invoked when the DL/I backout program detects an error; its error message is routed to the transient data destination CSMT and exit XDBDERR is given control.

XDLIPRE and XDLIPOST

These exits are invoked following the issue of an EXEC DLI command or DL/I call. Exit XDLIPRE is invoked before the request is processed and XDLIPOST is invoked after the request is processed. If you are running CICS with remote DL/I support, these exits are invoked in both the CICS region executing the DL/I transactions (the AOR) and the CICS region to which the DL/I requests are function shipped (the DOR). However there are restrictions on what actions can be performed by an exit program running at exit point XDLIPRE or XDLIPOST when running in a DOR.

XRCINIT

At emergency restart, updates made to recoverable CICS resources that were not committed when CICS failed must be backed out. For DL/I resources, the DL/I backout program is used in the backout process. This exit is invoked at the beginning and end of the DL/I backout program. To enable this exit, you must either specify the name of your user exit program on the TBEXITS system initialization parameter or enable the exit during the first stage of CICS initialization by using a PLTPI program.

XRMIIN and XRMIOUT

You can use these exits to monitor activity across the resource manager interface (RMI). For example, you can monitor control being passed to and from DFHEDP for EXEC DLI requests, DFHDBAT for DBCTL requests, or

DSNCSQL for DB2 commands. XRMIIN is invoked just before control is passed from the RMI to a task-related user exit. XRMIOUT is invoked just after control is passed back to the RMI.

For programming information about these exits, see the *CICS/ESA Customization Guide*.

Servicing considerations

You can use the CICS-supplied procedure DFHSMPE to apply service.

If you apply service to your IMS system that changes the macros in OPTIONS, GENLIB, GENLIBA, or GENLIBB, you may need to reassemble some CICS modules that use these macros to ensure compatibility between your CICS and IMS regions.

After you have applied service to IMS, regenerate and run the jobs DFHISMPD and DFHIDLI to specify any new IMS macro libraries. For further information, see “Generating the modules needed for local DL/I support” on page 91.

Verifying local DL/I support

You can use the CICS-supplied job, DFHIVPDL, to verify CICS operation with local DL/I, as described in “Verifying CICS local DL/I support” on page 169.

Apar PQ05037

Documentation for Apar PQ05037 added 26/01/98

Removing local DL/I support

If you are running with generated local DL/I support but want to remove it, you must tell SMP/E that the IMS macro libraries are no longer needed and that CICS modules with local DL/I support should no longer be assembled.

To remove local DL/I support::

1. Edit DFHISTAR to add **SELECT** statements

```
SELECT DFHDSMPD
SELECT DFHDDLI
```

and delete or comment-out the five DLIMACLIB and DL/I parameters.

2. Submit JCL to run job DFHISTAR. This creates the members DFHDSMPD and DFHDDLI in XDFHINST.

3. Submit the newly generated DFHDSMPD job in the XDFHINST dataset. This changes the assembly SYSLIB concatenation so that it no longer refers to the DL/I libraries.

4. After DFHDSMPD has run successfully, submit DFHDDLI from the XDFHINST dataset. This re-assembles and re-links DFHJCP and DFHRUP so that they are **CICS only** and do not contain **local DL/I**. It removes indicators in SMP/E that cause the assembly of **local DL/I** modules.

Note: This does not remove modules from the load library. The following modules can be deleted manually:

DFHDBP2\$

```
# DFHDLBP
# DFHDLG
# DFHDLILP
# DFHDLIPD
# DFHDLQ
# DFHDLR
# DFHDLS
# DFHDLX
```


Chapter 7. Installing DB2 support

This chapter outlines what you must do to install CICS support for IBM DATABASE 2 (DB2), which is based on the CICS-attachment facility supplied with CICS/ESA 4.1.

The information about DB2 given in this chapter is for guidance only. Always consult the current DB2 publications for the latest information. See “Books from related libraries” on page xi.

The CICS/ESA 4.1 CICS-attachment facility

You can use the CICS/ESA 4.1 CICS-attachment facility with CICS/ESA 4.1 regions **only**. If you wish to use CICS regions from before CICS/ESA 4.1 with DB2, those CICS regions must continue to use the CICS-attachment facility provided before CICS/ESA 4.1. (An attachment facility that is compatible with earlier releases of CICS is included on the DB2 product tape.)

The CICS/ESA 4.1 CICS-attachment facility enables application programs running under CICS/ESA 4.1 to process commands from DB2 Release 2.3 or later.

Figure 13 illustrates the CICS–DB2 connection.

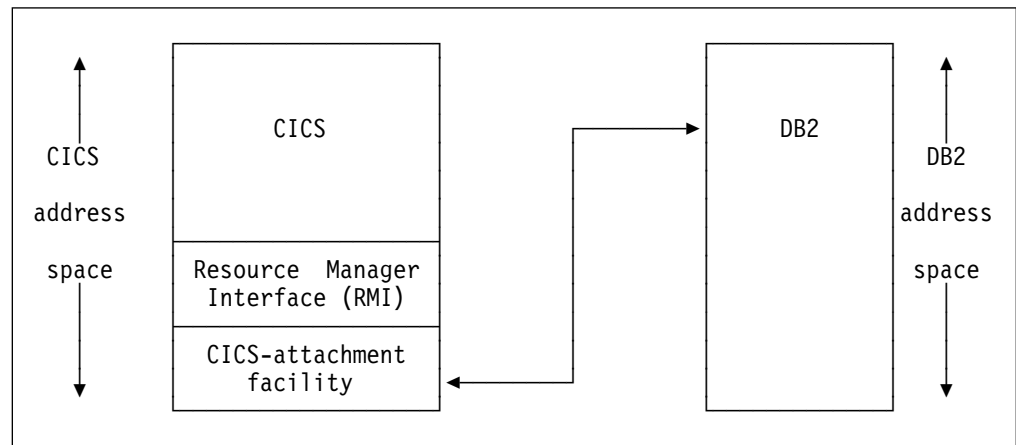


Figure 13. Overview of the CICS–DB2 connection

To install CICS-DB2 support, complete the following steps:

1. Install and test DB2, as described in the *IBM DATABASE 2 Administration Guide*.
2. Assemble and link-edit the resource control table (RCT), DSN2CTxx, for the CICS attachment facility.

Notes:

- a. The resource control table, DSN2CTxx, is for use with CICS/ESA 4.1 **only**. If you have CICS regions from before CICS/ESA 4.1 attached to DB2, those CICS regions should continue to use the RCT, DSNCRCTx.
- b. The macro used to assemble the RCT is called DSNCRCT (as for RCTs from before CICS/ESA 4.1), in the CICS410.SDFHMAC library. This enables you to use the JCL and data that you used for your RCTs from before CICS/ESA 4.1, and only change ASM.SYSLIB to specify the CICS410.SDFHMAC library, to generate the DSN2CTxx module for the new CICS-DB2 attachment facility.

You can use the DFHAUPLE procedure to assemble and link edit your resource control table. The following is an example of JCL that you can use to assemble your resource control table:

```
//RCT EXEC DFHAUPLE,SMPPGM=IEFBR14
// PARM.LNKEDT='AMODE=24,RMODE=24,LIST,XREF,LET,NCAL'
//ASSEM.SYSUT1 DD DSN=DSNxxx.SDSNSAMP(DSN8FRCT),DISP=SHR
//LNKEDT.SYSLMOD DD DSN=DSNxxx.SDSNLOAD,DISP=SHR
```

This job does not need to reference the DB2 macro library (DSNxxx.SDSNMACS). However, if the DB2 macro library has been added to the SYSLIB statement of the ASM step in the DFHAUPLE procedure, it must be concatenated **after** the CICS macro library. The LNKEDT.SYSLMOD library can be any library that is concatenated in the STEPLIB DD statement of your CICS initialization JCL.

Note: The resource control table must be linked RMODE(24).

3. Modify your CICS startup JCL as follows:
 - Concatenate the following libraries on the STEPLIB DD statement:
 - CICS410.SDFHAUTH, for access to some of the the CICS-attachment facility modules
 - DSNxxx.SDSNLOAD (after the CICS libraries)
 - The library containing the DSN2CTxx module.
 - There should be no DB2 libraries in the DFHRPL DD statement. If DB2 libraries are required in the DFHRPL concatenation by an application or other product, they should be placed after the CICS libraries.
4. Remove programs DSNCCOM0, DSNCCOM1, and DSNCCOM2 from your PLTs, if those programs are specified there.
5. (Optional) Enable CICS to access appropriate CICS-attachment facility modules during the PLT initialization stage of CICS startup.

To enable CICS to connect to DB2 during the PLT initialization stage of CICS startup, you must specify the program, DSN2COM0 in your startup PLT. DSN2COM0 should be placed after the DFHDELIM entry in your startup PLT. SQL programs can run in PLT initialization after DSN2COM0 has run.
6. (Optional) Enable CICS to access appropriate CICS-attachment facility modules during the PLT termination stage of CICS shutdown.

To enable CICS to disconnect from DB2 during the PLT termination stage of CICS shutdown, you must specify the DSN2COM2 program in your shutdown

PLT. DSN2COM2 should be placed before the DFHDELIM entry in your shutdown PLT.

7. (Optional) Specify the suffix of the RCT and DB2 subsystem ID to be used.

You can specify the suffix of the RCT to be used during the PLT initialization stage of CICS startup, by using the DSN2STRT option on the INITPARM system initialization parameter, as follows:

```
INITPARM=(DSN2STRT='xx,yyyy')
```

where xx is the 2-character RCT suffix and yyyy is the 4-character DB2 subsystem ID.

If you specify a DB2 subsystem ID in INITPARM, it is used during PLT processing at startup, or by a DSNCL command that omits to specify a resource control table suffix and DB2 subsystem ID. If you do not specify the DSN2STRT option, the default RCT, DSN2CT00, is used.

Table 6 gives examples of how the values specified determine which DB2 suffix and subsystem ID are used.

INITPARM parameter	DSNC STRT command	DB2 suffix	DB2 subsystem ID
INITPARM=AA,BBBB	None	AA	BBBB
INITPARM=AA,BBBB	DSNC STRT CC	CC	BBBB
INITPARM=AA,BBBB	DSNC STRT ,DDDD	AA	DDDD
INITPARM=AA,BBBB	DSNC STRT EE,FFFF	EE	FFFF
None specified	None specified	00 (default suffix)	Taken from resource control table

8. Code the MVS REGION parameter on the JOB statement, and the CICS system initialization parameters, to provide resources for threads. For more information about storage requirements for a CICS region, see *CICS/ESA System Definition Guide*. Allow sufficient LSQA storage outside the dynamic storage areas to support DB2 and user requirements. For example, allow a minimum number of bytes for each thread.

9. Define the CICS-attachment facility programs and transactions to CICS. CICS/ESA 4.1 supplies a resource group, DFHDB2, for all the programs and transactions of the CICS/ESA 4.1 CICS-attachment facility. When you initialize the CICS system definition data set (CSD), this resource group is installed in the CSD and added to the default startup group list, DFHLIST.

To ensure that the resource definitions required for DB2 support are available when you initialize your CICS system, ensure that the DFHDB2 and DFHRMI resource groups⁷ are added to the group list that you use to start your CICS/ESA 4.1 regions.

⁷ The DFHRMI resource group defines CICS task-related user exit modules and the DFHDB2 resource group defines modules and transactions which are specifically designed to attach CICS to DB2.

Note: If you share your CSD between CICS/ESA 4.1 and earlier releases of CICS that use DB2, you must use separate group lists for the different CICS releases. That is, the CICS/ESA 4.1 DB2 definitions must be in a different group list to the DB2 definitions for earlier releases. For more information about sharing the CSD between CICS releases, see *CICS/ESA System Definition Guide*.

Verifying CICS-DB2 support

To verify CICS-DB2 support, you can use Phase 5 of the DB2 installation verification procedure, as outlined in “Testing the CICS-DB2 environment” on page 176.

Chapter 8. Installing MRO and ISC support

This chapter describes what you have to do to include the following communication facilities in your CICS region:

- Multiregion operation (MRO)
- Intersystem communication (ISC).

The information about ACF/VTAM and MVS/ESA given in this chapter is for guidance only. Always consult the current ACF/VTAM or MVS/ESA publications for the latest information. See “Books from related libraries” on page xi.

Installing MRO support

This section describes how to install support for multiregion operation (MRO) in your CICS regions.

CICS multiregion operation (MRO) enables CICS regions that are running in the same MVS image, or in the same MVS sysplex, to communicate with each other. MRO does not support communication between a CICS system and a non-CICS system such as IMS⁸

ACF/VTAM and SNA networking facilities are not required for MRO. The support within CICS that enables region-to-region communication is called **interregion communication (IRC)**. IRC can be implemented in three ways:

- Through support in CICS terminal control management modules and by use of a CICS-supplied interregion program, DFHIRP, loaded in the MVS link pack area. DFHIRP is invoked by a type 3 supervisory call (SVC).
- By MVS cross-memory services, which you can select as an alternative to the CICS type 3 SVC mechanism. Here, DFHIRP is used only to open and close the interregion links.
- By the cross-system coupling facility (XCF) of MVS/ESA. XCF is required for MRO links between CICS regions in different MVS images of an MVS sysplex. It is selected dynamically by CICS for such links, if available.

Note: IRC is also used by CICS to support IMS/ESA DB batch regions accessing DL/I databases controlled by CICS through the CICS shared database facility.

For information about the design and implementation of interregion communication, and about the benefits of cross-system MRO, see the *CICS/ESA Intercommunication Guide*.

To install support for MRO, complete the following steps, which are outlined in more detail in this chapter:

1. Define CICS as an MVS subsystem.

⁸ The external CICS interface (EXCI) uses a specialized form of MRO link to support DCE remote procedure call to CICS programs, and communication between MVS batch programs and CICS.

2. Install the CICS/ESA 4.1 DFHIRP and DFHCSVC modules in the LPA.
3. For CICS shared database support, you are recommended to install the CICS/ESA 4.1 DFHDRP module in SYS1.LINKLIB or another APF-authorized library in the MVS linklist.
4. If you give the CICS/ESA 4.1 SVC a new number, and you have CICS Version 1 or Version 2 regions that use MRO, regenerate the CICS modules DFHCRC and DFHDRPA for those CICS versions, specifying the CICS/ESA 4.1 SVC number.
5. Specify appropriate system initialization parameters to enable MRO for each CICS region startup.

If you intend using cross-system MRO (XCF/MRO) you must also:

6. Install the required sysplex hardware and software.
7. Define the MVS images as systems in an XCF sysplex.

To use the MRO support, you must also:

8. Define and install the MRO connections appropriate to your CICS environment.

Providing you complete the above steps, you can use MRO to communicate between CICS/ESA 4.1 regions and between CICS/ESA 4.1 and CICS/ESA Version 3, CICS/MVS Version 2, and CICS/OS/VS 1.7 regions. Also, any earlier release levels of CICS can use MRO to communicate (for example, between CICS/ESA 3.3 and CICS/OS/VS 1.7). If you use MRO between different release levels, for example between CICS/ESA 4.1 and CICS/MVS 2.1.2, the function provided on any connection is that of the lower-level release involved in the connection.

Defining CICS as an MVS subsystem

Multiregion operation with CICS requires MVS Subsystem Interface (SSI) support, and to obtain this you must define CICS as an operating system subsystem, as described in “Cross-domain considerations” on page 33.

Installing the modules DFHIRP and DFHCSVC in the LPA

To enable your CICS/ESA 4.1 regions to communicate by MRO, you must:

1. Install the CICS/ESA 4.1 versions of the DFHIRP and DFHCSVC modules into the LPA, as described in “Installing CICS modules in the MVS linklist” on page 8.
Note: 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.
2. Define the CICS/ESA 4.1 Type 3 SVC module, DFHCSVC, to MVS, as described in “Installing the CICS Type 3 SVC” on page 15.
3. If you are using CICS interregion communication support for CICS shared database, you should install the CICS/ESA 4.1 DFHDRP module in SYS1.LINKLIB or another APF-authorized library in the MVS linklist.

Regenerating CICS Version 1 or Version 2 modules

If a CICS/ESA 4.1 region and CICS Version 1 or Version 2 regions in the same MVS image use MRO, all the regions must use the CICS/ESA 4.1 SVC. If you have given that SVC a new number, you must regenerate the following modules on any CICS Version 1 and Version 2 regions, and specify the new SVC number:

- The interregion clean-up program, DFHCRC, as described in “Regenerating DFHCRC for CICS Version 1 or Version 2” on page 18.
- The batch region initialization module, DFHDRPA, (if you use IRC support for CICS shared database) as described in “CICS shared database using a changed SVC number” on page 18.

Installing required hardware and software for XCF/MRO

To be able to use the cross-systems MRO to communicate between CICS regions on different MVS images, those MVS images must be running with appropriate hardware and software. The hardware and software required for MVS systems in a sysplex is described in the *Program Directory*.

Defining MVS images as systems in an XCF sysplex

To use XCF/MRO, all participating MVS images must be defined as part of the same sysplex, as described in “MVS cross-system MRO definitions” on page 29.

Defining MRO connections

Before you can use MRO, you must define and install connections with attributes appropriate to your CICS environment. For information about defining connections, see the *CICS/ESA Intercommunication Guide*.

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, you should also specify the following system initialization parameter:

IRCSTRT=YES

Alternatively, once 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 is (1) currently active and (2) defined to your region by CONNECTION and SESSIONS definitions installed from the CSD. (To establish MRO communication between two CICS regions, the installed CONNECTION definition must specify INSERVICE(YES) in both regions.) However, before deciding on the method you will use to start IRC, read the section “MRO restriction when running with DB2 support” on page 106.

MRO restriction when running with DB2 support

If you are running CICS with DB2 support, there is a restriction that affects the start of interregion communication in the CICS region. The restriction applies only if your CICS region is using both of the following facilities:

1. Multiregion operation, or CICS shared database, where any of the installed MRO or CICS shared database IRC resource definitions specify ACCESSMETHOD(XM)
2. The DB2 CICS-attachment to run DB2 applications.

You must not initialize the DB2 CICS-attachment (either by submitting the DSNCL startup transaction, or by coding the DB2 program DSN2COM0 in a CICS post-initialization program list table) **before** you have started CICS interregion communication. If you initialize the CICS-DB2 attachment first, the start of IRC will fail with the following message:

```
DFHIR3780 applid Unable to start interregion communication. Return
code=X'code'.
```

You should start CICS with IRCSTRT=YES as a system initialization parameter, to ensure that this IRC failure doesn't happen. You can stop IRC (with CEMT SET IRC CLOSED), and restart it again after DSNCL has been run, but the **first** start of IRC in a CICS execution must precede the running of the DSNCL transaction in that CICS.

Note to reviewers

If the sample CICSplex IVP jobs are included in CICS/ESA 4.1, they will provide a better example, and be referred to here.

To help you get started with CICS interregion communication, CICS supplies a job and startup procedure for some MRO starter systems from which you can build your own MRO configurations. For information about these starter systems, see the *CICS/ESA System Definition Guide*.

Adding ISC support

For communication between CICS regions that are in different MVS images, you can use a SNA access method, such as ACF/VTAM, to provide the necessary communication protocols. This form of communication between regions via SNA is called **intersystem communication** (ISC). (You can also use ISC in the same CPC, through the application-to-application facilities of ACF/VTAM.) This section outlines how to include ISC in a CICS region. For information about the design and implementation of intersystem communication facilities, see the *CICS/ESA Intercommunication Guide*. For background information about running CICS with XRF, and its extra considerations for ISC, see the *CICS/ESA 3.3 XRF Guide*.

Unlike MRO, there are no special MVS operating system requirements for CICS intersystem communication.

Running a CICS region with ISC

You must include the following management programs in your CICS regions, (by specifying the system initialization parameters given in parentheses):

- DFHISC – the intersystem communication program (ISC=YES)
- DFHTCP – the terminal control program (TCP=YES is the default).

Establishing ISC

Intersystem communication requires VTAM support, and you must specify VTAM=YES as a system initialization parameter. If VTAM is running during CICS initialization, CICS opens the VTAM ACB. If VTAM is started after CICS, opening the VTAM ACB fails, and you must open it using the CEMT SET VTAM OPEN command when VTAM is available. CICS regions cannot communicate until they have established the VTAM connection.

Defining ISC connections

Before you can use ISC, you must define and install connections with attributes appropriate to your CICS (and VTAM) environment. If you intend using APPC for your ISC communications, you can take advantage of the autoinstall for APPC connections function. For information about defining connections, and about using the autoinstall for APPC connections function, see the *CICS/ESA Resource Definition Guide*.

Chapter 9. Running the installation verification procedures

After you have installed CICS, and applied any necessary service, you can use the CICS-supplied installation verification procedures (IVPs) to confirm that CICS is operational.

Before you run the IVP jobs

Before you run the IVP jobs described in this chapter, read the notes given in “General notes on the IVP jobs.” These notes describe special points to be considered when preparing, modifying, and running the IVP jobs.

General notes on the IVP jobs

The IVP jobs DFHIVPBT, DFHIVPOL, and DFHIVPAL include the procedure DFHSTART to start up CICS. (This procedure is included in the IVP jobs when you run the DFHISTAR job.) You can use this procedure as a basis for your own CICS startup procedures.

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 (as described under “Installing CICS modules in the MVS linklist” on page 8), do so now before attempting 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 VTAM with a CICS region started by any of the CICS IVP jobs, you must create and activate a VTAM APPL definition for the CICS regions’s application identifier (applid). The applid defined to VTAM must match the applid specified on the APPLID system initialization parameter used by the IVP job. For example, to be able to logon to the CICS region started by the DFHIVPOL job, you must do one of the following:

- 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 VTAM APPL definitions for CICS, see “Defining CICS regions as applications to VTAM” on page 31.

Further, if you want to use VTAM cross-domain services to communicate between CICS regions on separate MVS images, you must create and activate VTAM CDRSC definitions in both MVS images involved in the communication. For more information about creating and activating VTAM CDRSC definitions for CICS, see “Cross-domain considerations” on page 33.

Creating the CICS data sets for the IVP jobs

Before you can run any of the CICS-supplied IVP jobs, you must create the data sets that they use. If you intend running the IVP jobs to verify CICS with XRF, create the data sets needed by the active and alternate CICS regions, by running the DFHDEFDS and DFHALTDS jobs. If you do not intend running the IVPs to verify CICS with XRF, you need not create data sets for an alternate CICS region (that is, you do not need to run the DFHALTDS job). For further information about creating the data sets for the IVP jobs, see Chapter 5, “Creating the CICS data sets” on page 79.

Specifying XRF qualifiers for the IVP jobs

If you intend running the IVP jobs with XRF, you must specify appropriate qualifiers to distinguish between the data sets for the active and alternate CICS regions. You specify the active and alternate qualifiers on the DSINFO parameter of the DFHISTAR job, before you submit it to generate the IVP jobs and the data set definition jobs. For example, the following DSINFO parameter was specified in the DFHISTAR job used to generate the IVP jobs for the sample job logs in this chapter:

```
DSINFO IVPUSER.CICS410 HCI4100 3380 ACT ALT
```

For further information about the DSINFO parameter of the DFHISTAR job, see page 72.

For further information about running the IVP jobs with XRF, see “Verifying CICS with XRF=YES” on page 151.

Using security with the IVP jobs

You can run the IVP jobs with or without external security.

As supplied, the default system initialization table, DFHSIT6\$, used by the IVP jobs specifies that external security is to be used. It also specifies that the IVP jobs are subject to transaction security (XTRAN=YES), resource security (Xyyy=YES), and command security (XCMD=YES).

Note: As supplied, the DFH\$SIP2 member of the SYSIN data set used by the DFHIVPBT job specifies the SIT override SEC=NO, so that you can run this job without external security.

If you choose to run the IVP jobs with external security, you must:

- Define CICS resource profiles to RACF
- Define an IVP default CICS userid to RACF
- Specify the IVP userid on the DFLTUSER=userid system initialization parameter.

You must also give the IVP userid sufficient authority to use the transactions and resources needed to run the IVP jobs. That is, you must:

- Authorize the IVP userid to run the transactions used as part of the IVP jobs. (See Table 7 on page 113.) To do this you must add the IVP userid, with READ access, to the access list of the RACF profiles for the transaction member class (TCICSTRN) or the transaction group class (GCICSTRN).

If you define the transactions as prefixed resources, you must also specify the system initialization parameter SECPRFX=YES for the IVP jobs.

- Authorize the IVP userid to access the resources used by the transactions. To do this you must add the IVP userid, with appropriate authority, to the access list for the resource class profiles.
- Authorize the IVP userid to issue SP-type commands through the CEMT master terminal transaction. To do this, you must add the IVP userid, 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 userid UPDATE access for the SHUTDOWN resource class, otherwise the userid will not be able to terminate the IVP jobs. You should also give the IVP userid 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 the *CICS/ESA CICS-RACF Security Guide*.

Alternatively, you can run the IVP jobs with limited security, for example:

- Without command security (XCMD=NO), the IVP userid would be able to run the IVP jobs without the need for authority to use the CEMT SP-type commands and the resources that they access.
- With only transaction security (Xyyy=NO including XCMD=NO), the IVP userid would be able to run the IVP jobs if authorized only to use the transactions used as part of the IVP jobs.

If you choose to run the IVP jobs without external security, you should change the DFH\$SIPn members of the SYSIN data set for the IVP jobs to specify the system initialization parameter SEC=NO.

System initialization parameters for the IVP jobs

All the IVP jobs use the system initialization parameters specified in the associated DFH\$SIPn member of the SYSIN data set. The DFH\$SIPn members, as supplied by CICS, specify the parameter SIT=6\$ (the CICS-supplied sample system initialization table (SIT), DFHSIT6\$ in the CICS410.SDFHSAMP library) 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. If you decide to run the DFHIVPOL job with many terminals, or add additional function, you need to modify some of the system initialization parameters. In particular, you need to re-specify those parameters that affect the amount of storage available to CICS, like the DSA-related parameters such as CDSASZE and CSCS, you may need to review task-related parameters, such as MXT and AMXT.

The DFH\$SIPn members of the SYSIN data set also contain some SIT overrides to exclude CICS resources not required by the IVP jobs, or to include some not specified by the sample SIT.

One such override is TCT=5\$, specifying the CICS sample terminal control table, in the CICS410.SDFHLOAD library. This TCT defines the pair of sequential input and output devices, CARDIN and PRINTER. (These are the only devices defined in DFHTCT5\$.)

For the sample job streams given in this chapter, the CICS-supplied DFH\$SIPn members were edited to specify values for other system initialization parameters;

for example, CICSSVC=218, SECPRFX=YES, DFLTUSER=IVPUSER, STGPROT=YES. These parameters are outlined below:

- The example SVC number that was used for the IVP jobs is 218. If you do not want to use the default SVC number (216), you should determine the SVC number you want to use, define it in your SVC table, and specify it as a SIT override (CICSSVC=nnn) in the appropriate DFH\$SIPn member for the IVP job. For more information about defining CICS SVCs, see “Defining the CICS SVCs to your MVS” on page 16.

The IVP jobs do not require the Type 6 SVC.

- Apart from the DFHIVPBT job, the IVP jobs were run with external security switched on. Therefore, before running the IVP jobs, an IVP userid, IVPUSER, was defined to RACF, with authority to run the transactions used as part of the IVP jobs, and specified the SIT override DFLTUSER=IVPUSER in the appropriate DFH\$SIPn member for the IVP job. For more information about defining the IVP userid, see “Access authority for the IVP userid” on page 113.

The transactions used as part of the IVP jobs were defined as prefixed resources, using the IVP userid, IVPUSER, as the prefix (for example, IVPUSER.CEMT) and specified the SIT override SECPRFX=YES in the appropriate DFH\$SIPn member for the IVP job. This enabled the 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 to be used and identifies them as IVPUSER.xxxx, where xxxx is the transaction ID (CWTO, CEMT, and so on).

- The IVP jobs were run on hardware and an MVS release that support storage protection, and storage protection was requested by the SIT override STGPROT=YES in the DFH\$SIPn members for the IVP jobs.

If storage protection is requested, but the support is not available, message DFHSM0114 is issued.

If storage protection is not requested (STGPROT=NO, the default), message DFHSM0113 is issued.

- The IVPs were run with some non-default CICS functions; for example, the CICS messages facility and C/370 support. To use these and any other non-default functions, you must define the resources needed and add them to your own resource group list. You must specify your group list on the GRPLIST system initialization parameter in the appropriate DFH\$SIPn member for the IVP job. If your group list does not include the DFHLIST list of resource groups, you must also specify DFHLIST on the GRPLIST parameter; For example, GRPLIST=(MYLIST,DFHLIST,CICSHT#1), where MYLIST and CICSHT#1 are customer-created group lists.

- The resources for the CICS messages facility were defined, as described in “Resources for the CICS messages facility, CMAC” on page 113, and the DFHCMAC resource group added to a group list used for the IVP jobs.

- Support for VS COBOL II and C/370 was added, as described in the *CICS/ESA System Definition Guide*, and the resources needed were defined in a group that was added to a group list used for the IVP jobs. The inline CICS startup procedure was also edited to specify DD statements for data sets needed for this language support.

If support for VS COBOL II is not available, message DFHAP1021 is issued.

+

If support for C/370 is not available, message DFHAP1202 is issued.

- The IVP jobs run with auxiliary trace switched on (SIT override AUXTR=ON), and the auxiliary trace data set switching facility set to switch once only (SIT override AUXTRSW=NEXT).

Other notes about changes to the SIT overrides for the IVP jobs, and about the IVP jobs generally, are provided in the sections describing the IVP jobs.

If you want to use system initialization parameters to modify or enhance the scope of the IVP jobs, see the *CICS/ESA System Definition Guide* for details about the parameters.

Access authority for the IVP userid

To run the IVP jobs with external security, you must define to RACF an IVP default CICS userid that has authority to run the transactions used as part of the IVP jobs. These transactions include the CICS-supplied transactions listed in Table 7. The level of authority required by the IVP userid depends on what security you want to use for the IVP jobs. For more information, see “Using security with the IVP jobs” on page 110.

Note: On a production system the default user should **not** have access to any CICS-supplied transactions except those you need in your CICS environment. The resource access authorizations that you give to the default user should clearly be limited to those resources that you intend should be universally available, and therefore do not need to be restricted in any way.

For information about the security requirements for CICS-supplied transactions, and about CICS security in general, see the *CICS/ESA CICS-RACF Security Guide*.

Table 7. 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

Resources for the CICS messages facility, CMAC

You can use the CICS messages facility (CICS-supplied transaction CMAC) to provide the messages and codes descriptions online. Before you can use this facility, you must create and initialize the CICS messages data set DFHCMACD, define the resources needed by the facility, and make them available to your CICS region.

For information about creating and initializing the DFHMACD data set, see “Creating the CICS messages data set, DFHMACI job” on page 84.

The DFHMACD data set is accessed by the file DFHMACD, managed by CICS file control. You must create a definition for this file in the CSD or FCT. The CICS-supplied definition for the DFHMACD file and other resources needed by the CICS messages facility are in the CSD group DFHMAC. The CICS startup procedure (in the IVP jobs) has a DD statement for the CMAC file, but for dynamic allocation you should copy the supplied resource definition for the DFHMACD file and add the DSNNAME option.

You should specify the DFHMAC group of resources for the CICS messages facility only in those CICS regions that need to use the facility; for example on some terminal-owning regions, but perhaps not on data-owning regions.

Overview of the IVP jobs

There are three non-DL/I IVP jobs:

1. **DFHIVPBT (verify batch)** This job 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 executes a number of CICS transactions that are read from CARDIN. The last transaction in the input stream shuts down CICS.
2. **DFHIVPOL (verify online)** This job can run CICS with either XRF=NO, or XRF=YES. It is generated with XRF=NO specified as an override, which you change when you are ready to verify CICS with XRF.

You can use this CICS region to automatically install (**autoinstall**) an IBM 3270 Information Display System terminal, with which you can:

- Use the master terminal transaction, CEMT. You can also use CEMT from the MVS system console. For information about using CEMT, see the *CICS/ESA CICS-Supplied Transactions* manual.
 - Use the resource definition online transaction, CEDA. For information about using CEDA, see the *CICS/ESA Resource Definition Guide* manual.
 - Use the sample application transaction AMNU, to access the sample VSAM file, FILEA. For a description of the FILEA sample applications, see the *CICS/ESA Sample Applications Guide*.
3. **DFHIVPAL (verify an alternate CICS region)** This job starts an alternate CICS region, and is for use when you are running the DFHIVPOL job with XRF=YES specified.

The CICS startup procedure, DFHSTART

All the IVP jobs include a procedure to start up CICS. This procedure, DFHSTART, comprises the following steps:

1. CICSNTL—determine whether CICS is to be started
2. DTCNTL—determine whether dump and trace analysis is to be performed
3. CICS—execute 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.

The following symbolic parameters are defined in the IVP jobs:

- INDEX1** is the high-level index of the CICS run-time data sets, as specified on the DSINFO parameter of the DFHISTAR job.
Default: INDEX1=CICS410
- INDEX2** is the high-level index of the CICS load libraries, as specified on the INDEX parameter of the DFHISTAR job. **Default:** INDEX2=CICS410
- REGNAM1** is the region name qualifier for the data sets used by the XRF active region or an MRO region, as specified on the DSINFO parameter of the DFHISTAR job. **Default:** (no qualifier)
- REGNAM2** is the region name qualifier for the data sets used by the XRF alternate region or an MRO region, as specified on the DSINFO parameter of the DFHISTAR job. **Default:** (no qualifier)
- REG** defines the MVS region size for the CICS step. **Default:** REG=32M
- START** is the type of CICS startup to be performed. **Default:** START=AUTO
- DUMPTR** specifies whether dump and trace analysis is required.
Default: DUMPTR=YES
- RUNCICS** specifies whether CICS is to be started. **Default:** RUNCICS=YES
- OUTC** is the output print class. **Default:** OUTC='*'
- RDRC** is the JES internal reader class. **Default:** RDRC=A
- SIP** is the suffix of the DFH\$SIP member (in the SYSIN data set) to be used during CICS startup. **Default:** SIP=T

Notes:

1. For an XRF active region or an MRO region, REGNAME1 and REGNAME2 must have the same value. Before you run the DFHIVPOL job with XRF, you must edit it to change the value of REGNAME2 to be the same as REGNAME1.
2. The step CICS (to start up CICS) is executed only if you code RUNCICS=YES (the default). Code RUNCICS=NO if you want to perform dump and trace analysis without starting CICS.
3. The steps PRTDMPA, PRTDMPB, DFHAUXT, and DFHBUXT are executed only if you specify DUMPTR=YES (the default).
4. When you run the DFHISTAR job, it overrides the default values in the IVP jobs with the values you specified in the DFHISTAR job.

DD statements for CICS data sets

The startup job step contains DD statements for the CICS data sets listed in Table 8.

<i>Table 8 (Page 1 of 2). DD statements for CICS data sets in the DFHSTART procedure</i>	
ddname	Description
DFHXRMSG	CAVM message data set, needed to run the online versions of the IVP jobs with XRF.
DFHXRCTL	CAVM control data set, needed to run the online versions of the IVP jobs with XRF.
SYSIN	SYSIN data set, containing the DFH\$SIPn members that specify system initialization parameter overrides.
DFHCMACD	Messages data set, needed for the CICS messages transaction, CMAC.
FILEA	Sample VSAM data set, needed by the FILEA sample applications.
DFHTEMP	Auxiliary temporary storage data set, needed by the FILEA sample applications.
DFHINTRA	Transient data intrapartition data set, needed 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 needed because the IVP jobs run with auxiliary trace switched on, and the auxiliary trace data set switching facility set to switch once only.
DFHJ01A	Journal data set (A) for the CICS system log.
DFHJ01B	Journal data set (B) for the CICS system log.
DFHJ01X	Emergency journal data set (X), for the CICS system log.
DFHJACD	Automatic journal archive control data set, to provide control information for automatic journal archiving.
DFHJPDS	Journal archive partitioned data set, to provide the jobs that are submitted by the automatic journal archiving submission program, DFHJASP, to archive journals ready to be archived.
DFHJOUT	Automatic journal archiving output data set, to receive the automatic journal archive job submitted by the DFHJASP program. It is normally coded as a SYSOUT data set, directed to the internal reader.
DFHRSD	Restart data set (VSAM), needed only during an emergency restart, and is included in the procedure for use when running the online versions of the IVP jobs with XRF. The DFHIVPAL job is coded with START=STANDBY, which means this job always causes CICS to perform an emergency restart to initialize as an alternate CICS region.
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.

Table 8 (Page 2 of 2). DD statements for CICS data sets in the DFHSTART procedure

ddname	Description
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 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.
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.
PLIMSG	Data set for the extrapartition transient data destinations used by PL/I application programs. This data set is the destination for PL/I statistics and messages (CPLI) and, indirectly, PL/I dumps (CPLD).
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 CICS410.XDFHINST library when you run the DFHISTAR job.

#

Note: Before submitting the DFHIVPBT job, run the DFHRMUTL program to reset the global catalog control record to perform an INITIAL start on the next CICS startup.

This IVP comprises the following job steps:

- Job step GENINPT** unloads the member DFH\$BTCH from the CICS410.SDFHSAMP library into the CARDIN data set (using the MVS utility program, IEBGENER).
- Job step DFHSTART** invokes the CICS initialization program, DFHSIP, to startup CICS. The DFHSIP program reads startup system initialization parameters from the DFH\$\$SIP2 member of the SYSIN data set.

The DFH\$BTCH data set (see Figure 14 on page 118) is used as terminal input, and this should produce a printout similar to the sample output shown in Figure 16 on page 120.

```

CWTO START OF BATCH STREAM DFH$BTCH\
CEMT S TIME(120)\
CEMT S DUMPDS SWITCH\
CEOT\
CSFE\
PRINT\
THIS MESSAGE HAS BEEN RECEIVED FROM THE TERMINAL AND IS BEING SENT BACK\
END\
CSXX\
CWTO END OF BATCH STREAM DFH$BTCH - SHUTTING DOWN CICS\
CEMT P SHUT I\
EXIT TIME INTVL TO 120 MILLISEC
SWITCH FROM DUMP A TO B
INQUIRE TERMINAL STATUS
F. E. TERMINAL TEST REQUEST
TO SEND ALL CHARACTERS
TO END THE TEST
INVALID TRANSACTION IDENT.
IMMEDIATE TERMINATION OF CICS

```

where \ is the End Of Data Input character X'E0'.

Figure 14. DFH\$BTCH data set, input to the DFHIVPBT job

Sample job log for the DFHIVPBT job

When you run the DFHIVPBT job, your job log should look like the example shown in Figure 15.

```

JES2 JOB LOG -- SYSTEM MVSH -- NODE WINMVSH

JOB03163
↓
09.01.51 . IRR010I USERID userid IS ASSIGNED TO THIS JOB.
09.01.52 . ICH70001I userid LAST ACCESS AT 09:01:25 ON TUESDAY, APRIL 12, 1994
09.01.52 . $HASP373 DFHIVPBT STARTED - INIT 1 - CLASS A - SYS MVSH
09.01.52 . IEF403I DFHIVPBT - STARTED - TIME=09.01.52
09.01.52 . -
--TIMINGS (MINS.)--
09.01.52 . -JOBNAME STEPNAM PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
09.01.52 . -DFHIVPBT GENINPT 00 29 .00 .00 .0 1386 64 0 0 0 0
09.01.52 . -DFHIVPBT CICS CICSCTRL 01 23 .00 .00 .0 1274 64 0 0 0 0
09.01.52 . -DFHIVPBT CICS DTCNTL 01 21 .00 .00 .0 1227 64 0 0 0 0
09.01.53 . 1 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
09.01.53 . DFHPA1927 DBDCCICS SIT=6$,
09.01.53 . DFHPA1927 DBDCCICS TCT=5$, SEQUENTIAL DEVICES
09.01.53 . DFHPA1927 DBDCCICS TS=(,0),
09.01.53 . DFHPA1927 DBDCCICS AUXTR=ON,
09.01.53 . DFHPA1927 DBDCCICS AUXTRSW=NEXT,
09.01.53 . DFHPA1927 DBDCCICS FCT=NO,
09.01.53 . DFHPA1927 DBDCCICS JCT=NO,
09.01.53 . DFHPA1927 DBDCCICS XRF=NO,
09.01.53 . DFHPA1927 DBDCCICS SEC=NO,
09.01.53 . DFHPA1927 DBDCCICS CICSSVC=218,
09.01.53 . DFHPA1927 DBDCCICS .END
09.01.53 . DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
09.01.53 . DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:37).
09.01.53 . +DFHTR0103 TRACE TABLE SIZE IS 64K
09.01.54 . 2 +DFHSM0122I DBDCCICX Limit of DSA storage below 16MB is 5,120K.
09.01.54 . +DFHSM0123I DBDCCICX Limit of DSA storage above 16MB is 20M.
09.01.54 . +DFHSM0113I DBDCCICX Storage protection is not active.

```

Figure 15 (Part 1 of 2). Sample job log for the DFHIVPBT job

```

09.01.54 . +DFHSM0126I DBDCCICX Transaction isolation is not active.
09.01.54 . +DFHDM0101I DBDCCICX CICS is initializing.
09.01.54 . +DFHSI1500 DBDCCICX CICS/ESA Version 4.1.0 Startup is in progress.
09.01.54 . +DFHXS1100I DBDCCICX Security initialization has started.
09.01.54 . 3+DFHXS1102I DBDCCICX Security is inactive.
09.01.54 . +DFHDU0304I DBDCCICX Transaction Dump Data set DFHDMPB opened.
09.01.54 . +DFHXS1101I DBDCCICX Security initialization has ended.
09.01.54 . +DFHSI1501I DBDCCICX Loading CICS nucleus.
09.01.57 . +DFHTR0113 DBDCCICX Auxiliary trace is being started on data set DFHAUXT.
09.01.58 . +DFHMN0105I DBDCCICX Using default Monitoring Control Table.
09.01.58 . +DFHMN0110I DBDCCICX CICS Monitoring is inactive.
09.01.58 . 4+DFHSI1518 DBDCCICX No control record on global catalog data set. Cold start forced.
09.01.58 . +DFHSI1502I DBDCCICX CICS startup is Cold.
09.01.58 . +DFHSI1503I DBDCCICX Terminal data sets are being opened.
09.01.58 . F NET,USERVAR,ID=DBDCCICS,VALUE=DBDCCICX
09.01.58 . +DFHSI1592 DBDCCICX CICS applid not (yet) active to VTAM.
09.01.58 . 5+DFHSI1572 DBDCCICX Unable to OPEN VTAM ACB - RC=00000008, ACB Code=5A.
09.01.58 . +DFHCP0101I DBDCCICX CPI initialization has started.
09.01.58 . +DFHPR0104I DBDCCICX Partner resource manager initialization has started.
09.01.59 . +DFHAI0101I DBDCCICX AITM initialization has started.
09.01.59 . +DFHTD0100I DBDCCICX Transient Data initialization has started.
09.01.59 . +DFHFC0100I DBDCCICX File Control initialization has started.
09.01.59 . 6IEC130I CEEMSG DD STATEMENT MISSING
09.01.59 . IEC130I CEEOUT DD STATEMENT MISSING
09.01.59 . +DFHFC0101I DBDCCICX File Control initialization has ended.
09.01.59 . IEC161I 080-053,DFHIVPBT,CICS,DFHINTRA,,
09.01.59 . IEC161I CICS410.CNTL.CICS.DFHINTRA,
09.01.59 . IEC161I CICS410.CNTL.CICS.DFHINTRA.DATA,ICFCAT.HC.CATALOGA
09.02.00 . +DFHTD0101I DBDCCICX Transient Data initialization has ended.
09.02.00 . +DFHCP0102I DBDCCICX CPI initialization has ended.
09.02.00 . +DFHPR0105I DBDCCICX Partner resource manager initialization has ended.
09.02.00 . +DFHAI0102I DBDCCICX AITM initialization has ended.
09.02.00 . 7+DFHSI1511I DBDCCICX Installing group list DFHLIST .
09.02.01 . IEC031I D37-04,IFG0554T,DFHIVPBT,CICS,DFHAUXT,809,HHDA12,
09.02.01 . IEC031I CICS410.CICSALT.DFHAUXT
09.02.01 . +DFHTR0110 - AUXILIARY TRACE DATA SET DFHAUXT FULL - SWITCHING TO DFHBUXT
09.02.02 . IEC031I D37-04,IFG0554T,DFHIVPBT,CICS,DFHBUXT,818,HHDA16,
09.02.02 . IEC031I CICS410.CICSALT.DFHBUXT
09.02.02 . +DFHTR0109 - AUXILIARY TRACE DATA SET DFHBUXT FULL - AUXILIARY TRACE HAS BEEN STOPPED
09.02.04 . F NET,USERVAR,ID=DBDCCICS,VALUE=DBDCCICX
09.02.04 . +DFHSI1517 DBDCCICX Control is being given to CICS.
09.02.04 . +DFHIVPBT SAMA START OF BATCH STREAM DFH$BTCH
09.02.05 . +DFHDU0303I DBDCCICX Transaction Dump Data set DFHDMPB closed.
09.02.05 . +DFHDU0304I DBDCCICX Transaction Dump Data set DFHDMPA opened.
09.02.05 . +DFHDU0305I DBDCCICX Transaction Dump Data set switched to DFHDMPA
09.02.06 . +DFHIVPBT SAMA END OF BATCH STREAM DFH$BTCH - SHUTTING DOWN CICS
09.02.07 . 8+DFHTM1703 DBDCCICX CICS/ESA is being terminated by userid CICSUSER in transaction CEMT at terminal SAMA.
09.02.07 . +DFHDU0303I DBDCCICX Transaction Dump Data set DFHDMPB closed.
09.02.07 . +DFHKE1799 DBDCCICX TERMINATION OF CICS/ESA IS COMPLETE.
09.02.07 . -DFHIVPBT CICS CICS 00 2428 .03 .00 .2 587K 64 0 56 0 1
09.02.08 . -DFHIVPBT CICS PRTDMPA 00 368 .00 .00 .0 3409 64 0 0 0 0
09.02.09 . -DFHIVPBT CICS PRTDMPB 00 379 .00 .00 .0 3420 64 0 0 0 0
09.02.17 . -DFHIVPBT CICS PRTAUXT 00 1734 .08 .00 .1 468K 64 0 0 0 0
09.02.25 . -DFHIVPBT CICS PRTBUXT 00 1721 .08 .00 .1 487K 64 0 0 0 0
09.02.25 . IEF404I DFHIVPBT - ENDED - TIME=09.02.25
09.02.25 . -DFHIVPBT ENDED. NAME=userid TOTAL CPU TIME= .20 TOTAL ELAPSED TIME= .5
09.02.25 . $HASP395 DFHIVPBT ENDED

```

Figure 15 (Part 2 of 2). Sample job log for the DFHIVPBT job

Notes:

1 For information about the system initialization parameters used by the IVP jobs, see page 111. (See also **2** below.)

2 The DFHSM0122 and DFHSM0123 messages inform you of the limits available for the dynamic storage areas below and above the 16MB boundary. For information about these storage areas, see the *CICS/ESA System Definition Guide*.

Note: Storage for the extended read-only DSA, ERDSA, is obtained from read-only key 0 protected storage, because the sample SIT specifies RENTPGM=PROTECT (the default).

3 The DFHIVPBT job was run without external security active, because the sample SIT specifies SEC=NO (the default).

4 The global catalog is used for the first time for this run of the DFHIVPBT job, and CICS performs a cold start.

5 The specific applid DBDCCICX is defined in the sample SIT, but is not known to VTAM. This does not matter for this job, as the specific applid is not used.

6 The DD statements for the Language Environment/370 destinations have not been added to the DFHIVPBT startup job.

7 The default group list, DFHLIST, is used for this run of the DFHIVPBT job. Non-default functions (for example, the CICS messages facility) are not available, because their CICS resources are not defined in this group list.

7 The DFH1703 message is issued in response to the CEMT PERFORM SHUTDOWN IMMEDIATE (CEMT P SHUT I) command in the DFH\$BTCH batch terminal input.

Output from the DFHIVPBT job

Output from the DFHIVPBT job (see Figure 16) includes CICS messages written to one of the extrapartition destinations, responses to the transactions in the DFH\$BTCH data set, and an auxiliary trace.

```
----- JES2 JOB STATISTICS -----
:
DFHPG0210 04/12/94 09:01:58 DBDCCICX CICSUSER CSSY PPT entry for DFHJCRP has been system autoinstalled.
DFHPG0210 04/12/94 09:01:58 DBDCCICX CICSUSER CSSY PPT entry for DFHTORP has been system autoinstalled.
:
DFHZC5966 I 04/12/94 09:01:59 DBDCCICX INSTALL started for CONNECTION ( CICS ) (Module name: DFHBSS ).
DFHZC5966 I 04/12/94 09:01:59 DBDCCICX INSTALL started for TERMINAL ( CERR ) (Module name: DFHBSTZ ).
DFHPG0210 04/12/94 09:02:00 DBDCCICX CICSUSER CSSY PPT entry for DFHAMP has been system autoinstalled.
:
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGAMP has been added.
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGAPT has been added.
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGADX has been added.
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGAHX has been added.
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGALX has been added.
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGAOX has been added.
DFHPG0101 04/12/94 09:02:02 DBDCCICX CICSUSER CSSY PPT entry for DFHPGAPG has been added.
:
DFHAI0202I 04/12/94 09:02:03 DBDCCICX Terminal Model DFHLU2 has been installed.
:
DFHXM0201 04/12/94 09:02:03 DBDCCICX CICSUSER CSSY TRANCLASS definition entry for DFHTCL01 has been added.
:
DFHFC0204I 04/12/94 09:02:03 DBDCCICX CICSUSER CSSY FCT entry for DFHCSD has been updated.
MESSAGE HAS BEEN SENT
```

Figure 16 (Part 1 of 3). Sample printout from the DFHIVPBT job

```

AGing( 00001 )
AKp( 00000 )
CDsasize( 00524288 )
CMDPROTEct( CMDPROT )
DFltuser( CICSUSER )
DSalimit( 05242880 )
DTTrprogram( DFHDYP )
ECdsasize( 0002097152 )
EDsalimit( 0020971520 )
ERdsasize( 0003145728 )
ESdsasize( 0000000000 )
EUdsasize( 0001048576 )
MAxtasks( 020 )
MRobatch( 001 )
OPRel( 22 )
OPSys( X )
PROGAUTOctlg( CTLGMODIFY )
PROGAUTOExit( DFHPGADX )
PROGAUTOInst( AUTOINACTIVE )
Rdsasize( 00262144 )
REENTPROTEct( REENTPROT )
RELease( 0410 )
RUnaway( 0020000 )
SCandelay( 0100 )
SDsasize( 00262144 )
SOSStatus( NOTSOS )
SToreprotect( INACTIVE )
TIme( 0000120 )
TRanisolate( INACTIVE )
Udsasize( 00000000 )
NORMAL
RESPONSE: NORMAL TIME: 09.02.05 DATE: 04.12.94
SYSID=CICS APPLID=DBDCCICS

```

```

Dum Cur(A) Ope          NORMAL
RESPONSE: NORMAL TIME: 09.02.05 DATE: 04.12.94
SYSID=CICS APPLID=DBDCCICS

```

```

Ter(SAMA) Tra(CEOT) Pri(000) Aut Ins   Tti
CEOT SYNTAX:
< PAgeable | AUtopageable >
< ATi | NOAti >
< TTi | NOTti >
RESPONSE: NORMAL TIME: 09.02.05 DATE: 04.12.94
SYSID=CICS APPLID=DBDCCICS

```

DFHFE3304 Enter PRINT for character set, END to terminate. All other data will be echoed.

```

ABCDEFGHIJKLMNPOQRSTUVWXYZ
0123456789

```

```

$@<>%+*( )_=#~|"&;,;..?/

```

THIS MESSAGE HAS BEEN RECEIVED FROM THE TERMINAL AND IS BEING SENT BACK

DFHFE3301 Transaction complete

DFHAC2001 04/12/94 09:02:06 DBDCCICX Transaction 'CSXX' is unrecognized.

Check that the transaction name is correct.

MESSAGE HAS BEEN SENT

DFHTM1703 DBDCCICX CICS/ESA is being terminated by userid CICSUSER in transaction CEMT at terminal SAMA.

CICS/ESA - AUXILIARY TRACE FROM 04/12/94 - APPLID DBDCCICX

PAGE 000001

CICS/ESA SELECTIVE TRACE PRINT PARAMETERS:

ALL

Figure 16 (Part 2 of 3). Sample printout from the DFHIVPBT job

```

CICS/ESA - AUXILIARY TRACE FROM 04/12/94 - APPLID DBDCCICX                                PAGE 000002

KE 0101 KETI  ENTRY - FUNCTION(INQ_LOCAL_DATETIME_DECIMAL)

TASK-DM    KE_NUM-0016 TCB-007D9150 RET-84C93C0A TIME-09:01:57.7555246564 INTERVAL--*
          1-0000 00580000 00000043 00000000 00000000 A7040000 00000000 05000000 00000000
          0020 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
          0040 00000000 00000000 00000000 00000000 00000000 00000000
          :
          (The rest of the output is more auxiliary trace print from DFHTU410)

```

Figure 16 (Part 3 of 3). Sample printout from the DFHIVPBT job

Verify interactive job, DFHIVPOL

The verify interactive job, DFHIVPOL, is put into the CICS410.XDFHINST library when you run the DFHISTAR job. You can use the DFHIVPOL job to start up a CICS region. You can use this CICS region to try out CICS/ESA 4.1 facilities; for example you can use the master terminal transaction, CEMT, and the resource definition transaction, CEDA. You can also run some CICS sample application programs (for example, the FILEA applications).

You need either an IBM 3270 Information Display System terminal or a **console device**⁹. You can use both if you wish.

If you use an IBM 3270 Information Display System terminal 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 executed from a console device.

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, see “Defining an MVS console” on page 126.

If you are running CICS under MVS/ESA SP 4.1 or later, and 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 a TSO user as a console device” on page 127.

The DFHIVPOL job invokes the CICS initialization program DFHSIP to startup CICS. The DFHSIP program reads system initialization parameters from the DFH\$SIP1 member of the SYSIN data set. This member specifies SIT=6\$, the sample system initialization table in the CICS410.SDFHSAMP library. You should also note the following overrides in the DFH\$SIP1 member:

⁹ If you are running CICS under a release of MVS before MVS/ESA SP 4.1, a console device is a locally-attached system console. However, if you are running CICS under MVS/ESA SP 4.1 or later, a console device can be a locally-attached system console, a TSO user defined as a console, or an automated process such as NetView.

- **XRF=NO**, overriding the XRF=YES parameter that is coded in the sample SIT. You should first run the DFHIVPOL job without XRF, and change this override only when you are satisfied that the DFHIVPOL job runs successfully with XRF=NO.
- **APPLID=DBDCCICS,DBDCCIC1**. The APPLID parameter is coded with both a generic and specific applid, as a reminder that, if you decide to run with XRF=YES, you must also code specific and generic APPLIDs that are known to your VTAM system.

For further information about these and other system initialization parameters specified as overrides for the run of the DFHIVPOL job, see “System initialization parameters for the IVP jobs” on page 111.

The system initialization table, DFHSIT6\$, specifies TCT=NO, which causes CICS to use the dummy terminal control table, DFHTCTDY. This dummy TCT contains only the CICS and VTAM control blocks that you need for use with VTAM terminals: there are no terminal entries.

Automatic journal archiving: The sample journal control table, DFHJCT2\$, specifies the automatic journal archiving option. This option uses the sample JCL from the DFH\$ARCH member of the CICS410.XDFHINST library that is loaded into the CICS410.DFHJPDS data set when you run the DFHCOMDS job. You need not perform the archive step in the DFH\$ARCH job, but you must run the CHECK and UPDATE steps if you want to rerun the DFHIVPOL job more than once. These two job steps execute the journal archive control data set utility program, DFHJACDU, to perform the CHECK and UPDATE commands.

Note: If you change the sample JCL in the DFH\$ARCH job, you must reload the DFHJPDS data set with your changed version of the DFH\$ARCH job, in order that your changes can be implemented. For further information about creating and loading the DFHJPDS data set, see “Creating data sets common to all CICS regions, DFHCOMDS job” on page 80.

When you shut down CICS to end the DFHIVPOL job, the automatic archive job submission program, DFHJASP, submits the sample DFH\$ARCH job found in the CICS410.DFHJPDS data set. This ensures that the status of the journal data set in use at shutdown is changed from “not ready” to “ready” in the journal archive control data set. If the status of the system log data sets is not set to “ready” after the first and second run of the DFHIVPOL job, you cannot start the job a third time because, according to the CICS410.DFHJACD data set, there will be no journal data set available for use.

For information about the DFHJACDU utility program, see the *CICS/ESA Operations and Utilities Guide*.

Defining a terminal for the online IVP

You can define a VTAM terminal by either of the following two methods:

1. Use the autoinstall facility, which is the recommended method, avoiding the need to define terminals to CICS explicitly before they can be used.
2. Define a terminal explicitly in the CSD, using the DEFINE command of DFHCSDUP, the batch utility for updating the CSD.

Using autoinstall for a VTAM terminal

If you use the autoinstall function of CICS, you avoid the need for each VTAM terminal that requires access to CICS being explicitly defined in the CSD. 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 needed.

When using autoinstall, you should be aware that when CICS processes an autoinstall request, it uses data from the VTAM logmode table. This is an important consideration. An autoinstall request will succeed 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. For programming information about the LOGMODE definitions that match the CICS-supplied model definitions for autoinstall, see the *CICS/ESA Customization Guide*. Before attempting to start CICS and autoinstall a terminal for this IVP, check your VTAM definitions with those given in the *CICS/ESA Customization Guide*. If CICS fails to match model and logmode data, you receive message DFHZC6987I. For information about the suggested course of action if you receive message DFHZC6987I, see the *CICS/ESA Messages and Codes* manual.

CSD resource definitions for autoinstall: The CSD is defined and initialized for all the IVP jobs when you run the DFHCOMDS job (see Chapter 5, “Creating the CICS data sets” on page 79), and includes some IBM-supplied definitions for use with autoinstall. These are defined in the following groups:

Group Name	Description
DFHTERM	Model terminal definitions for use with the autoinstall facility. For example, two of the TERMINAL definitions are 3270 and LU2.
DFHTYPE	Partial terminal definitions (TYPETERMs) defining common terminal properties, or attributes. For example, two of the TYPETERM definitions are DFH3270 (to define a non-SNA 3270 terminal) and DFHLU2E2 (to define a SNA 3270 model 2 terminal). The DFHLU2E2 resource definition matches the VTAM-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 in the sample SIT. 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 terminal you will have to do this offline, using the DFHCSDUP utility program. For information about autoinstall definitions, see the *CICS/ESA Resource Definition Guide* manual.

Autoinstall also requires a user program to assign terminal 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 terminal 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 terminals, the sample autoinstall user program is called DFHZATDY.)

Defining a VTAM terminal in the CSD

If you want to use an explicitly defined terminal, rather than let CICS autoinstall a terminal, you will need to 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 terminal, but without a terminal you can only do this using the DFHCSDUP utility program. For an example of a DFHCSDUP job to define a VTAM terminal in the CSD, see Figure 17. For information about the keywords and operands of the DFHCSDUP DEFINE commands, see the *CICS/ESA Resource Definition Guide* manual.

```
//DEFTERM JOB (accounting information),MSGCLASS=A,
//          MSGLEVEL=(1,1),CLASS=A,NOTIFY=userid
//VTAMDEF  EXEC PGM=DFHCSDUP
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//DFHCSD  DD DSN=CICS410.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 17. Defining a terminal by using the DFHCSDUP utility program

You must substitute your own values for the operands that are coded in lowercase in the DEFTERM job shown in Figure 17:

TYPETERM Specify a unique name to identify the resource definition that matches the properties of the type of terminal you are using. For example, to define a SNA 3270 model 2 terminal, specify the CICS-supplied TYPETERM definition DFHLU2E2. For a list of the CICS-supplied TYPETERM definitions, or for information about

creating your own definitions, see the *CICS/ESA Resource Definition Guide* manual.

GROUP	Code a unique name for the group to which the terminal resource definition is to belong.
TERMINAL	Code a unique four-character terminal identifier as the name by which CICS is to know the terminal.
NETNAME	Code the eight-character VTAM name that identifies this terminal to your VTAM system.
TO/LIST	Code a unique name for <i>yourlist</i> . This new list of resource definition groups to be installed at CICS startup must include all the CICS-supplied resources as well as your own.

To include the new definitions in a group list, you must create a new list by copying the CICS-supplied list 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, make sure you define your new group list to CICS, by adding a SIT override to the SYSIN data set in the DFHIVPOL job stream.

Defining the CICS APPLID to VTAM

You must ensure that either (1) VTAM knows the CICS application identifier (APPLID) or (2) you change the CICS APPLID to one that is already known to your VTAM system. If you use the default APPLID (DBDCCICS), define this to VTAM as described in “VTAM definitions required for CICS” on page 32, before starting the DFHIVPOL job.

Defining an MVS console

If you want to use an MVS console with the DFHIVPOL job, you must define it using the DFHCSDUP utility program. The CICS-supplied TYPETERM group, DFHTYPE, contains a typeterm definition called DFHCONS, which is predefined with the required console properties. The DFHTERM group, however, does not contain any corresponding terminal entries for MVS consoles. You identify the console by one of the following:

- CONSOLE(number) for CICS running under MVS before MVS/ESA SP 4.1
- CONSNAME(name) for CICS running under MVS/ESA SP 4.1 or later.

For an example of the DEFINE command required to define a console, see Figure 18 on page 127.

For information about defining MVS consoles to CICS, see the *CICS/ESA System Definition Guide*.

Defining a TSO user as a console device

If you are running CICS under MVS/ESA SP 4.1 or later, you can enter MODIFY commands from terminals connected to TSO. CICS treats the TSO user as a console device. To define a TSO user as a console, you must use the CONSNAME(name) operand of the DEFINE TERMINAL command. We recommend that you define consoles to CICS with preset security by using the USERID operand, so that the CESN transaction does not have to be used by the TSO user. Otherwise, the TSO user's CICS signon password is displayed when entered for the CESN transaction.

For an example of a DEFINE command to define a TSO user, see Figure 18.

```
//DEFTERM JOB (accounting information),MSGCLASS=A,
//          MSGLEVEL=(1,1),CLASS=A,NOTIFY=userid
//CONSDEF EXEC PGM=DFHCSDUP
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICS410.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
* Define a console for use under MVS before MVS/ESA SP 4.1
DEFINE TERMINAL(trmidnt) GROUP(grpname) TYPETERM(DFHCONS)
        CONSOLE(number) DESCRIPTION(MVS CONSOLE number)
* Define a console for use under MVS/ESA SP 4.1 or later
DEFINE TERMINAL(trmidnt) GROUP(grpname) TYPETERM(DFHCONS)
        CONSNAME(consname) DESCRIPTION(MVS CONSOLE consname)
* Define a TSO user as a console device for MVS/ESA SP 4.1 or later
DEFINE TERMINAL(trmidnt) GROUP(grpname) TYPETERM(DFHCONS)
        CONSNAME(tsouser) DESCRIPTION(TSO USER tsouser)
        USERID(tsouser)
*
APPEND LIST(DFHLIST) TO(yourlist)
*
ADD GROUP(grpname) LIST(yourlist)
*
LIST LIST(yourlist) OBJECTS
/*
//
```

Figure 18. Defining a console and a TSO user by using the DFHCSDUP utility program

Notes:

1. You must substitute your own values for the operands that are coded in lowercase in the DEFTERM job shown in Figure 18:

GROUP Code a unique name for the group to which the console resource definition is to belong.

TERMINAL Code a unique four-character terminal identifier as the name by which CICS is to know the console.

CONSOLE(number)

A number that defines a console device to CICS. It must match one of the identification numbers assigned to the consoles according to their sequence in the MVS SYS1.PARMLIB member, CONSOLnn.

If you are running CICS under MVS before MVS/ESA 4.1, you can specify numbers in the range 0 through 99.

If you are running CICS under MVS/ESA 4.1 or later, you can specify numbers in the range 0 through 250, excluding 128. Numbers in the range 100 through 250 are for migration purposes only, and can be specified only by using the CEDA transaction. You are recommended to specify console names for all consoles used by CICS under MVS/ESA 4.1 or later.

CONSNAME If CICS is running under MVS/ESA SP 4.1 or later, use this parameter to define a console device to CICS. This uniquely identifies the console within a sysplex, regardless of which MVS image the console is connected to. The names correspond to the names defined in the MVS SYS1.PARMLIB member, CONSOLnn.

To define a system console, code the console name, up to eight characters. For migration purposes, you can still code CONSOLE(number) instead of CONSNAME(consname).

To define a TSO user as a console device, code the TSO userid. This uniquely identifies the TSO user as a console device within a sysplex, regardless of which MVS image the TSO session is connected to.

USERID The CICS preset security userid to be used for all security at this console device. This userid is permanently signed on when the console device is installed.

TO/LIST Code a unique name for *yourlist*. This new list of resource definition groups to be installed at CICS startup must include all the CICS-supplied resources as well as your own.

To include the new definitions in a group list, you must create a new list by copying the CICS-supplied list 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, make sure you define your new group list to CICS, by adding a SIT override to the SYSIN data set in the DFHIVPOL job stream.

Running the DFHIVPOL job

The DFHIVPOL job includes a procedure, DFHSTART, to startup CICS. When you have successfully logged on to CICS, you can carry out any of the interactive operations described on page 133.

While logged on to CICS, you should perform a CEMT SET DUMPDS SWITCH to ensure that both dump data sets are initialized before DFHDU410 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 should look like the sample log shown in Figure 19.

```

JES2 JOB LOG -- SYSTEM MVSH -- NODE WINMVSH

JOB05407
↓
10.26.18 . IRR010I USERID userid IS ASSIGNED TO THIS JOB.
10.26.19 . ICH70001I userid LAST ACCESS AT 09:28:48 ON MONDAY, APRIL 18, 1994
10.26.19 . $HASP373 DFHIVPOL STARTED - INIT 3 - CLASS A - SYS MVSH
10.26.19 . IEF403I DFHIVPOL - STARTED - TIME=10.26.19
10.26.21 . - --TIMINGS (MINS.)-- ----PAGING COUNTS----
10.26.21 . -JOBNAME STEPNAM PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
10.26.21 . -DFHIVPOL CICS CICSNTL 01 10 .00 .00 .0 1094 64 0 0 0 1
10.26.21 . -DFHIVPOL CICS DTCNTL 01 11 .00 .00 .0 972 64 0 0 0 0
10.26.35 . 1 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
10.26.35 . DFHPA1927 DBDCCICS SIT=6$,
10.26.35 . DFHPA1927 DBDCCICS XRF=NO,
10.26.35 . DFHPA1927 DBDCCICS AUXTR=ON,
10.26.35 . DFHPA1927 DBDCCICS AUXTRSW=NEXT,
10.26.35 . 2 DFHPA1927 DBDCCICS APPLID=CICSHTH1
10.26.35 . DFHPA1927 DBDCCICS GRNAME=CICSH###,
10.26.35 . DFHPA1927 DBDCCICS SYSIDNT=HTH1,
10.26.35 . DFHPA1927 DBDCCICS SIT=6$,
10.26.35 . DFHPA1927 DBDCCICS CICSSVC=218,
10.26.35 . DFHPA1927 DBDCCICS DFLTUSER=IVPUSER,
10.26.35 . 3 DFHPA1927 DBDCCICS GRPLIST=(DFHLIST,MYTERMS,CICSHT#1),
10.26.35 . DFHPA1927 DBDCCICS SECPRFX=YES,
10.26.35 . 4 DFHPA1927 DBDCCICS STGPROT=YES,
10.26.35 . DFHPA1927 DBDCCICS TRANISO=YES,
10.26.35 . DFHPA1927 DBDCCICS PGAIPGM=ACTIVE,
10.26.35 . 5 DFHPA1927 DBDCCICS PLTPI=TR,
10.26.35 . DFHPA1927 DBDCCICS .END
10.26.35 . DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
10.26.35 . DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:37).
10.26.35 . +DFHTR0103 TRACE TABLE SIZE IS 64K
10.26.35 . 6 +DFHSM0122I CICSIDC Limit of DSA storage below 16MB is 5,120K.
10.26.35 . +DFHSM0123I CICSIDC Limit of DSA storage above 16MB is 20M.
10.26.36 . 4 +DFHSM0115I CICSIDC Storage protection is active.
10.26.36 . +DFHSM0125 CICSIDC Transaction isolation is active.
10.26.36 . +DFHDM0101I CICSIDC CICS is initializing.
10.26.36 . 7 +DFHXS1100I CICSIDC Security initialization has started.
10.26.36 . +DFHSI1500 CICSIDC CICS/ESA Version 4.1.0 Startup is in progress.
10.26.38 . 7 +DFHXS1105 CICSIDC Resource profiles for class ACICSPCT have been built.
10.26.38 . +DFHXS1105 CICSIDC Resource profiles for class CCICSCMD have been built.
10.26.38 . +DFHXS1105 CICSIDC Resource profiles for class DCICSDCT have been built.
10.26.38 . +DFHXS1105 CICSIDC Resource profiles for class FCICSFCT have been built.
10.26.38 . +DFHXS1105 CICSIDC Resource profiles for class JCICSJCT have been built.
10.26.38 . +DFHXS1105 CICSIDC Resource profiles for class MCICSPPT have been built.
10.26.39 . +DFHXS1105 CICSIDC Resource profiles for class PCICSPSB have been built.
10.26.39 . +DFHXS1105 CICSIDC Resource profiles for class SCICSTST have been built.
10.26.39 . +DFHXS1105 CICSIDC Resource profiles for class TCICSTRN have been built.
10.26.41 . +DFHXS1105 CICSIDC Resource profiles for class SURROGAT have been built.

```

Figure 19 (Part 1 of 3). Sample job log for the DFHIVPOL job

```

10.26.41 . +DFHXS1103I CICSIDC Default security for userid IVPUSER has been established.
10.26.41 . +DFHSI1501I CICSIDC Loading CICS nucleus.
10.26.43 . +DFHXS1101I CICSIDC Security initialization has ended.
10.26.43 . +DFHUU0304I CICSIDC Transaction Dump Data set DFHMPA opened.
10.26.43 . +DFHTR0113 CICSIDC Auxiliary trace is being started on data set DFHAUXT.
10.26.44 . +DFHMN0105I CICSIDC Using default Monitoring Control Table.
10.26.44 . +DFHMN0110I CICSIDC CICS Monitoring is inactive.
10.26.44 . 8 +DFHSI1502I CICSIDC CICS startup is Cold.
10.26.44 . +DFHSI1503I CICSIDC Terminal data sets are being opened.
10.26.44 . +DFHSI1510I CICSIDC Journal control subtask is being attached/entered.
10.26.44 . IEC161I 056-084,DFHVPOL,CICS,DFHRSD,,CICS410.DFHRSD,
10.26.44 . IEC161I CICS410.DFHRSD.DATA,ICFCAT.HC.CATALOGA
10.26.44 . IEC161I 056-084,DFHVPOL,CICS,DFHRSD,,CICS410.DFHRSD,
10.26.44 . IEC161I CICS410.DFHRSD.INDEX,ICFCAT.HC.CATALOGA
10.26.44 . IEC161I 062-086,DFHVPOL,CICS,DFHRSD,,CICS410.DFHRSD,
10.26.44 . IEC161I CICS410.DFHRSD.DATA,ICFCAT.HC.CATALOGA
10.26.44 . IEC161I 056-084,DFHVPOL,CICS,DFHJACD,,,
10.26.44 . IEC161I CICS410.DFHJACD,
10.26.44 . IEC161I CICS410.DFHJACD.DATA,ICFCAT.HC.CATALOGA
10.26.44 . IEC161I 062-086,DFHVPOL,CICS,DFHJACD,,,
10.26.44 . IEC161I CICS410.DFHJACD,
10.26.45 . IEC161I CICS410.DFHJACD.DATA,ICFCAT.HC.CATALOGA
10.26.45 . +DFHCP0101I CICSIDC CPI initialization has started.
10.26.45 . +DFHPR0104I CICSIDC Partner resource manager initialization has started.
10.26.45 . IEC031I D37-04,IFG0554T,DFHVPOL,CICS,DFHAUXT,74C,HCD64,
10.26.45 . IEC031I CICS410.DFHAUXT
10.26.45 . +DFHTR0110 - AUXILIARY TRACE DATA SET DFHAUXT FULL - SWITCHING TO DFHBUXT
10.26.45 . +DFHSI1516I CICSIDC Opening journal data sets.
10.26.45 . +DFHFC0100I CICSIDC File Control initialization has started.
10.26.45 . +DFHAI0101I CICSIDC AIMT initialization has started.
10.26.46 . +DFHTD0100I CICSIDC Transient Data initialization has started.
10.26.46 . IEC161I 056-084,DFHVPOL,CICS,DFHTEMP,,,
10.26.46 . IEC161I userid.XB1.INC58.CNTL.CICS.DFHTEMP,
10.26.46 . IEC161I userid.XB1.INC58.CNTL.CICS.DFHTEMP.DATA,ICFCAT.HC.CATALOGA
10.26.46 . IEC161I 062-086,DFHVPOL,CICS,DFHTEMP,,,
10.26.46 . IEC161I userid.XB1.INC58.CNTL.CICS.DFHTEMP,
10.26.46 . IEC161I userid.XB1.INC58.CNTL.CICS.DFHTEMP.DATA,ICFCAT.HC.CATALOGA
10.26.46 . IEC130I CEEMSG DD STATEMENT MISSING
10.26.46 . IEC130I CEEOUT DD STATEMENT MISSING
10.26.46 . +DFHFC0101I CICSIDC File Control initialization has ended.
10.26.46 . +DFHTD0101I CICSIDC Transient Data initialization has ended.
10.26.46 . +DFHJC4508 CICSIDC CICS SYSTEM LOG. SECONDARY DATA SET NOW RECEIVING OUTPUT ON 68B
10.26.46 . +DFHJC4500 CICSIDC 01 of 01 journals successfully opened
10.26.46 . +DFHCP0102I CICSIDC CPI initialization has ended.
10.26.46 . +DFHPR0105I CICSIDC Partner resource manager initialization has ended.
10.26.47 . +DFHAI0102I CICSIDC AIMT initialization has ended.
10.26.47 . +DFHSI1511I CICSIDC Installing group list DFHLIST .
10.26.47 . +DFHSI1511I CICSIDC Installing group list MYTERMS .
10.26.47 . +DFHJC4553 04/18/94 10:26:47 CICSIDC Archive job submitted for 01 A.
10.26.48 . IEC031I D37-04,IFG0554T,DFHVPOL,CICS,DFHBUXT,68B,HCD64,
10.26.48 . IEC031I CICS410.DFHBUXT
10.26.48 . +DFHTR0109 - AUXILIARY TRACE DATA SET DFHBUXT FULL - AUXILIARY TRACE HAS BEEN STOPPED
10.26.50 . +DFHSI1511I CICSIDC Installing group list CICSHT#1.
10.26.51 . +DFHAP1204I CICSIDC COBOL2 is being initialized.
10.26.52 . +DFHAP1205I CICSIDC C/370 is being initialized.
10.26.52 . 5 +DFHSI8430I CICSIDC About to link to PLT programs during the third stage of initialization.
10.26.52 . +CICSIDC - PLTPI PHASE 2 PROCESSING START
10.26.52 . +CICSIDC WILL SHUT DOWN AT 18.00
10.26.52 . +DFHSI8434I CICSIDC Control returned from PLT programs during the third stage of initialization.
10.26.52 . +DFHSI1517 CICSIDC Control is being given to CICS.
10.27.20 . 9 +DFHTM1715 CICSIDC CICS/ESA is being quiesced by userid IVPUSER in transaction CEMT at netname IG2S2CA8.

```

Figure 19 (Part 2 of 3). Sample job log for the DFHVPOL job

```

10.27.20 . +DFHDM0102I CICSIDC CICS is quiescing.
10.27.21 . +DFHTM1782I CICSIDC All non-system tasks have been successfully terminated.
10.27.21 . +DFHZC2305I CICSIDC Termination of VTAM sessions beginning
10.27.21 . +DFHZC2316 CICSIDC VTAM ACB is closed
10.27.22 . +DFHJC4553 04/18/94 10:27:22 CICSIDC Archive job submitted for 01 B.
10.27.23 . +DFHJC4510I CICSIDC All open journals now closed
10.27.23 . +DFHWK0105I CICSIDC Warm keypoint successful.
10.27.24 . +DFH DU0303I CICSIDC Transaction Dump Data set DFHDMPA closed.
10.27.24 . +DFHKE1799 CICSIDC TERMINATION OF CICS/ESA IS COMPLETE.
10.27.24 . -DFHIVPOL CICS CICS 00 3449 .07 .00 1.0 883K 64 0 72 0 7
10.27.24 . -DFHIVPOL CICS PRTDMPA FLUSH 0 .00 .00 .0 0 64 0 0 0 0
10.27.24 . -DFHIVPOL ENDED. NAME-userid TOTAL CPU TIME= .07 TOTAL ELAPSED TIME= 1.0
10.27.24 . $HASP395 DFHIVPOL ENDED

```

Figure 19 (Part 3 of 3). Sample job log for the DFHIVPOL job

Notes:

1 For information about the system initialization parameters used by the IVP jobs, see page 111. (See also **2** and **3** below.)

2 To produce this sample log for the DFHIVPOL job, the SIT override APPLID in the DFH\$SIP1 member of the SYSIN data set was edited to specify the applid CICSHTH1 that was already known to our VTAM. Alternatively, another applid (for example, the default DBDCCIC1) could be defined as a new APPL name to VTAM, to match the APPLID specified in the SYSIN member used by the DFHIVPOL job. For more information about defining an applid for the CICS IVP jobs, see “Defining CICS regions as applications to VTAM” on page 31.

+ **3** The group lists DFHLIST, MYTERMS, and CICSHT#1 were installed in that order. The group lists MYTERMS and CICSHT#1 are example group lists created specifically for the IVPs. The group list DFHLIST is the CICS-supplied default group list.

+ MYTERMS was installed after DFHLIST to ensure that the user-defined TYPETERM resource definitions, as supplied in MYTERMS, override the CICS supplied TYPETERM definitions, as provided in DFHLIST.

+ For information about installing TERMINAL and TYPETERM definitions, see the *CICS/ESA Resource Definition Guide*.

4 Storage protection and transaction isolation were requested by the STGPROT and TRANISO system initialization parameters, and are active, because the DFHIVPOL job was run on hardware and an MVS release that support those functions.

5 This CICS region uses a PLT for some phase 2 PLT programs. The first PLT program only displays the message indicating that PLTPI phase 2 processing has started. The second PLT program invokes a started task to shut down CICS at 18.00.

6 The DFHSM0122 messages inform you of the limits available for the dynamic storage areas below and above the 16MB boundary. For information about these storage areas, see the *CICS/ESA System Definition Guide*.

Note: Storage for the extended read-only DSA, ERDSA, is obtained from read-only key 0 protected storage, because the sample SIT specifies RENTPGM=PROTECT (the default).

7 The DFHIVPOL job was run with external security active (after preparing for external security, as described in “Using security with the IVP jobs” on page 110).

The DFHXS1105 messages indicate that the security resource profiles for the associated classes have been successfully loaded into storage by the external security manager. The profiles are used in subsequent resource checks to determine users’ authorizations to access resources in the named class.

8 CICS performs a cold start because the DFHIVPBT job was run first and ended without taking a warm keypoint. The DFHIVPOL job specifies the startup parameter START=AUTO, which on the first run of the DFHIVPOL job resolves to a cold start.

In the sample job stream for the DFHIVPOL job, you can see that CICS shuts down normally and takes a warm keypoint. Therefore, for subsequent runs of the DFHIVPOL job (recommended if you want to use the job again, perhaps to test XRF), initializations do not take so long because the START=AUTO parameter resolves to a warm start.

9 The DFHTM1715 message is issued because the CICS region was shut down by the terminal user (with netname IG2S2CA8) issued a CEMT PERFORM SHUTDOWN command.

Logging on at a VTAM terminal

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 when you log on through your VTAM terminal. For example, unless you changed the APPLID parameter in the sample SIT (it is DBDCCICS), enter LOGON APPLID(DBDCCICS).

If you are using autoinstall, your logon request is passed to CICS and, provided all the autoinstall requirements described in “Using autoinstall for a VTAM terminal” on page 124 have been met, CICS installs your terminal. It does this by creating a TCT terminal entry (TCTTE) using the model definitions defined in the group list, DFHLIST, and the terminal identifier returned by the autoinstall user program (DFHZATDX in this case).

If you are using a terminal 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 VTAM net name, and creates the required TCTTE.

When you log on onto CICS, your terminal can display a “good morning” message, by the transaction specified on the GMTRAN system initialization parameter. The default transaction, CSGM, displays the message shown in Figure 20 on page 133, as defined by the GMTEXT system initialization parameter.


```

DFHZC2312 *** WELCOME TO CICS/ESA *** 09:35:42

*****\ *****\ *****\ *****\          *\ *****\ *****\ *****\
*****\ *****\ *****\ *****\          **\ *****\ *****\ *****\
**\ \ \ \ \ **\ \ \ \ \ **\ \ \ \ \ **\ \ \ \ \ **\ \ \ \ \ \ \ \ \ \ **\ \ \ \ \ **\ \ \ \ \
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```

Figure 20. Screen layout for default logon message transaction, CSGM

Using CICS-supplied transactions through a terminal

After you have started CICS with the DFHIVPOL job, you can use the CICS-supplied 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 and, if you defined one, the system console.

Table 9 shows some typical terminal interactions, including use of the CEMT transaction. For information about the CICS transactions that you can try with the DFHIVPOL job, and about the message-switching responses to those transactions, see the *CICS/ESA CICS-Supplied Transactions* manual.

Table 9 (Page 1 of 2). Typical terminal interactions	
Operator Input	System Response
CEMT	Status: ENTER ONE OF THE FOLLOWING Discard Inquire Perform Set
I	ENTER ONE OF THE FOLLOWING OR HIT ENTER FOR DEFAULT (Followed by a list of options)
PROG Press ENTER key	STATUS: RESULTS - OVERTYPE TO MODIFY Prog(DFHACP) Len(0008504) Ass Pro Ena Pri Res(001) Use(0000001) Any Cex Ful
Press PF3 key Press CLEAR key	
CEMT PERFORM STATISTICS	
Press PF3 key Press CLEAR key	SESSION ENDED
CETR	See screen layout on page 135

Table 9 (Page 2 of 2). Typical terminal interactions

Operator Input	System Response
Press PF3 key Press CLEAR key	Clear or PF3 pressed Normal termination of CETR
CEMT I TA	Displays list of tasks in the system
Press PF3 key Press CLEAR key	SESSION ENDED
CEMT I PROG(DFHFEF)	Prog(DFHFEF)Len(000248) Ass Pro Ena Pri Res(000) Use(0000000) Any Cex Ful Res(000) Use(000000)
Press PF3 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 PF3 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 bottom right of screen) HELLO (at top left of screen)

You may 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 PF3 key as indicated.

If you enter the CETR transaction, CICS displays the status of the various trace options. The screen layout in Figure 21 on page 135 shows what the CETR display looks like. For information about the CETR transaction, and the other information panels available by using specified PF keys, see the *CICS/ESA CICS-Supplied Transactions* manual.

```

CETR                                CICS/ESA Trace Control Facility      sysid applid
Type in your choices.
Item                                Choice      Possible choices
Internal Trace Status               ==> STARTED  STArtd, STOpped
Internal Trace Table Size           ==> 64      K      16K - 1048576K
Auxiliary Trace Status              ==> STOPPED  STArtd, STOpped, Paused
Auxiliary Trace Dataset             ==> B       A, B
Auxiliary Switch Status            ==> NO      NO, NExt, All
GTF Trace Status                   ==> STOPPED  STArtd, STOpped
Master System Trace Flag            ==> ON      ON, OFF
Master User Trace Flag              ==> ON      ON, OFF

When finished, press ENTER.

PF1=Help      3=Quit      4=Components      5=Ter/Trn      9=Error List

```

Figure 21. Screen layout for the CETR transaction

You can alter the status of any of the trace options by overtyping the current value, indicated by ==> on the CETR display.

Using the CEDA transaction

When DFHIVPOL starts up CICS, it specifies SIT=6\$ in the SYSIN data set. This system initialization table specifies GRPLIST=DFHLIST, causing all the CICS resource definitions needed for normal running to be installed. You can see which resources are included in DFHLIST by using the CEDA transaction. For example, CEDA EXPAND LIST(DFHLIST) gives a screen like that in Figure 22 on page 136.

Press PF8 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/ESA Resource Definition Guide*.

```

EXPAND LIST(DFHLIST)
ENTER COMMANDS
NAME      TYPE      LIST      DATE      TIME
DFHAKP    GROUP      DFHLIST   94.096    14.14.48
DFHBACK   GROUP      DFHLIST   94.096    14.14.48
DFHBMS    GROUP      DFHLIST   94.096    14.14.48
DFHCONS   GROUP      DFHLIST   94.096    14.14.48
DFHDBCTL  GROUP      DFHLIST   94.096    14.14.48
DFHDB2    GROUP      DFHLIST   94.096    14.14.48
DFHDLI    GROUP      DFHLIST   94.096    14.14.48
DFHEDF    GROUP      DFHLIST   94.096    14.14.48
DFHEDP    GROUP      DFHLIST   94.096    14.14.49
DFHFE     GROUP      DFHLIST   94.096    14.14.49
DFHHARDC  GROUP      DFHLIST   94.096    14.14.49
DFHINQUI  GROUP      DFHLIST   94.096    14.14.49
DFHINTER  GROUP      DFHLIST   94.096    14.14.49
DFHISC    GROUP      DFHLIST   94.096    14.14.49
DFHJRNL   GROUP      DFHLIST   94.096    14.14.49
DFHMISC   GROUP      DFHLIST   94.096    14.14.49
+ DFHMSWIT GROUP      DFHLIST   94.096    14.14.49

                                SYSID=HTH1 APPLID=CICSIDC
RESULTS: 1 TO 17 OF 32          TIME: 10.21.42 DATE: 94.102
PF 1 HELP          3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL

```

Figure 22. Screen layout for CEDA EXPAND LIST(DFHLIST) command

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 needed for the FILEA applications. You can do this by the command:

```

CEDA INSTALL GROUP(DFH$AFLA)

```

2. Make the FILEA data set available to CICS. You can do this by one of the following:

- Install a FILE resource definition for the FILEA data set. You can do this by the command:

```

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=CICS410.CICSHTH1.FILEA

```

To end the CEDA session, press PF3.

Invoking and executing sample programs

To try the assembler-language version of the FILEA sample application, enter the AMNU transaction.

For information about the CICS sample application programs, see the *CICS/ESA Sample Applications Guide*.

Using transactions from a console device

CICS transactions (other than CECI) can be invoked 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 in conjunction with multiregion operation. Normal operating-system use of the console device is not inhibited, and CICS supports multiple console devices where present.

Note: 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`, this displays a list of console devices. This list identifies the console devices by one of the following means:

- Numbers for CICS running under MVS before MVS/ESA SP 4.1
- Names for CICS running under MVS at MVS/ESA SP 4.1 or later.

You can use a console device to submit MODIFY commands from your job stream if you define a console device in your CSD as one of the following:

- CONSOLE(00) for CICS running under MVS before MVS/ESA SP 4.1
- CONSNAME(INTERNAL) for CICS running under MVS at MVS/ESA SP 4.1 or later.

For further information about defining consoles, see “Defining an MVS console” on page 126. For further information about defining TSO users as consoles, see “Defining a TSO user as a console device” on page 127.

To enter a command, use:

```
{MODIFY|F} jobname, [']command[']
```

where:

jobname is the region identifier for the CICS region. This is either the name of the job being used to execute 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 will be prompted in the same way as any normal terminal operator. The message from CICS will contain a reply number that must be quoted in the reply.

You can use the commands shown in Figure 23 on page 138 to verify the CEMT and CEOT transactions from the MVS console. (For information about these transactions, see the *CICS/ESA CICS-Supplied Transactions* manual.)

Entering commands from TSO: If you are running CICS under MVS/ESA SP 4.1 or later, a TSO user can enter CICS commands as above after invoking the TSO command CONSOLE, in either of the following formats:

```

CONSOLE {MODIFY|F} cicsid,[']command[']

CONSOLE
{MODIFY|F} cicsid,[']command[']
END

```

When the TSO command CONSOLE 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 jou'	Displays status of journal data sets

Figure 23. Using an MVS console for master terminal operations

Terminating CICS

To terminate CICS, enter: CEMT P SHUT from the VTAM terminal or MVS console. (This is a short form of CEMT PERFORM SHUTDOWN.) The system responds with message DFH1713, and those that follow, as shown in the sample job log shown on page 129.

Verifying CICS in a CICSplex

This section describes how you can demonstrate the use of CICS/ESA 4.1 regions in a sample CICSplex, to verify the communication between CICS regions and functions that use such communication.

If you intend using CICS with CICSplex SM, you should consider using the CICSplex SM starter set, which provides a more comprehensive set of samples, and uses a naming convention proposed for CICSplex SM.

The information in the chapter is based on the sample CICSplex shown in Figure 24.

Note to reviewers

This section is intended to provide a sample way of verifying a basic CICSplex that matches the topology of the CICSplex/SM starter set. For more information, see Appendix C, “Sample JCL for CICSplex IVPs” on page 195.

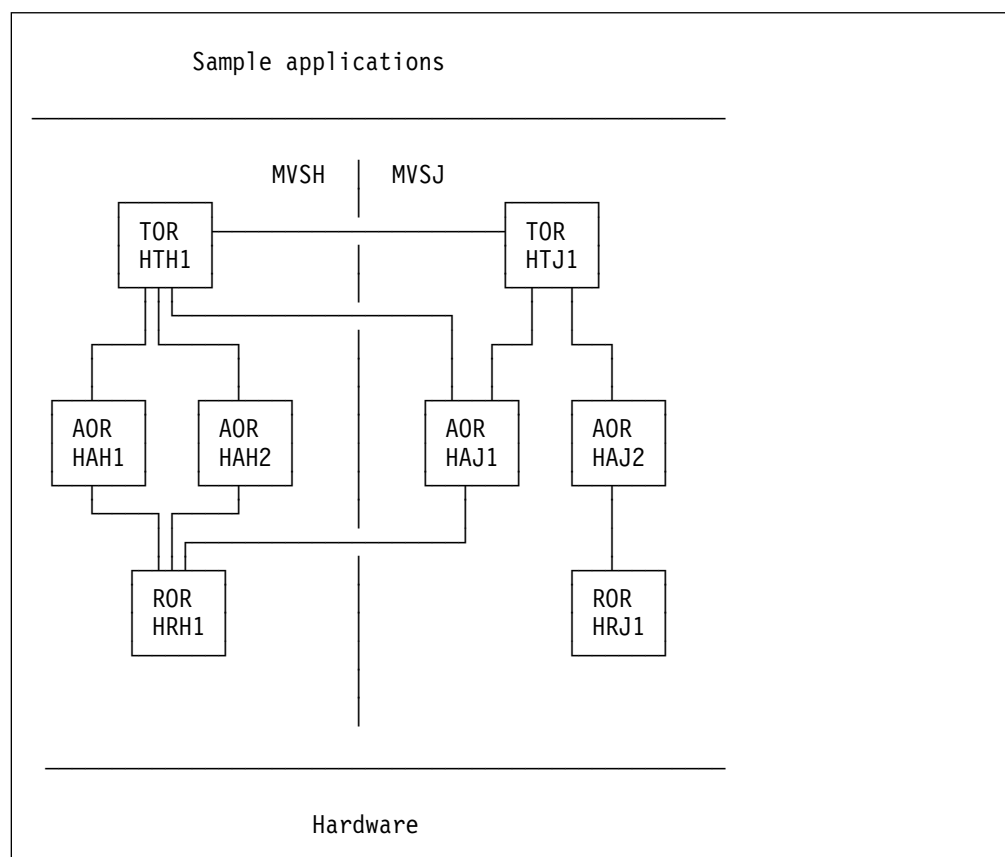


Figure 24. Sample CICSplex environment

Setting up the sample CICSplex

To set up the sample CICSplex:

1. Create and run a copy of the DFHCOMDS job, to define the CICS data sets common to all the CICS regions in the CICSplex. As an example, see “JCL to create common data sets” on page 195. For information about tailoring and running the DFHCOMDS job, see “Creating data sets common to all CICS regions, DFHCOMDS job” on page 80.
2. Create and run copies of the DFHDEFDS job, to define the CICS data sets unique to each of the CICS regions in the CICSplex. As an example, see “JCL to create data sets specific to each CICS region” on page 198, which lists the

sample JCL used to create the data sets specifically for the TOR HTH1. For information about tailoring and running the DFHDEFDS job, see “Creating data sets common to all CICS regions, DFHCOMDS job” on page 80.

3. Create a copy of the DFHSTART procedure, to create a startup procedure for regions in the CICSplex, and install it into a cataloged procedure library (for example, SYS1.PROCLIB).
4. Create the following members in the CICS410.SYSIN data set, to specify system initialization parameters appropriate to your CICS environment:
CICSHA#1 - System initialization parameters for the application-owning regions
CICSHR#1 - System initialization parameters for the resource-owning regions
CICSHT#1 - System initialization parameters for the terminal-owning regions
5. Create the CONNECTION and SESSIONS resource definitions for the CICS regions in the CICSplex, and add them to the following group lists:
CICSHA#1 - CONNECTION and SESSIONS definitions for the application-owning regions
CICSHR#1 - CONNECTION and SESSIONS definitions for the resource-owning regions
CICSHT#1 - CONNECTION and SESSIONS definitions for the terminal-owning regions
6. Define a console for use with the AOR and RORs. This is a sensible precaution when running the AORs and ROR, because it enables you to submit CICS transactions to those regions, for example, to shut down the regions.
7. Create job members, or a procedure, to start the regions in the CICSplex.

Starting a sample region of the CICSplex

You may like to start one CICS region of the CICSplex only. This is useful to verify that the CICSplex environment has been set up correctly before starting the whole CICSplex. To start one CICS region only, you can do either of the following:

- Create a job member, which invokes the procedure CIVPTASK, and that you can submit to start a CICS region. For example:

```
//CICSHTH1 JOB account,userId,MSGCLASS=A,MSGLEVEL=(1,1),
//          CLASS=C,NOTIFY=userId
//*****
/* THIS JOB CAN BE USED TO START THE CICS/ESA 4.1 TOR, HTH1
//*****
//*
//CICS410 EXEC CIVPTASK,
// START=COLD,
// REG=7M,
// APPLID='CICSHTH1',          APPLID OF CICS REGION
// SYSIDNT='HTH1',           SYSID OF CICS REGION
// CLONE='HT#1',             CLONE CICS REGION
// COMIND='CICSH###'        QUALIFIER FOR COMMON CICS DATA SETS
//*
```

Submit the job to start the CICS region.

- Define, in a cataloged procedure library, procedure to start the CICS region as a started task. For example, the following procedure, DFHIVPXT, contains the command to start the TOR HTH1, using the startup procedure CIVPTASK:


```

//CICSTASK PROC
//*
//DUMMY EXEC PGM=IEFBR14
//*
// START CIVPTASK.CICSHTH1,APPLID='CICSHTH1',SYSIDNT='HTH1',
//      CLONE='HT#1', START=COLD
//*
//* END OF CICS START PROCEDURE

```

To start that CICS region, you can type the following at the system console:

```
/S DFHIVPXT
```

This causes the procedure DFHIVPXT to start the CICS region HTH1 as an MVS started task.

Figure 25 shows the output from starting the TOR, HTH1.

Starting the sample CICSplex

To start the sample CICSplex, you can do either of the following:

- Submit a job for each of the regions in the CICSplex.
- Type the following at the system console:

```
/S DFHIVPXL
```

This causes the procedure DFHIVPXL to start all regions in the sample CICSplex as MVS started tasks.

Figure 25 shows the output from starting the TOR, HTH1, by submitting the job CIDCHTH1. The output for other CICS regions in the CICSplex is very similar to the output shown for the TOR.

```

      JES2 JOB LOG -- SYSTEM MVSH -- NODE WINMVSH

      JOB04877
      ↓
14.55.13 . IRR010I USERID userid IS ASSIGNED TO THIS JOB.
14.55.13 . 1 V NET,ACT,ID=APIDH1
14.55.13 . V NET,ACT,ID=CDIDHAJ1
14.55.13 . ICH70001I userid LAST ACCESS AT 14:55:02 ON FRIDAY, APRIL 15, 1994
14.55.13 . $HASP373 CIDCITH1 STARTED - INIT 2 - CLASS C - SYS MVSH
14.55.13 . IEF403I CIDCITH1 - STARTED - TIME=14.55.13
14.55.14 . 2 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
14.55.14 . DFHPA1927 DBDCCICS * *****
14.55.14 . DFHPA1927 DBDCCICS * CICS system initialization parameters common to all clone TORs *
14.55.14 . DFHPA1927 DBDCCICS * *****
14.55.14 . 2 DFHPA1927 DBDCCICS CICSSVC=218 The default CICS SVC number
14.55.14 . 3 DFHPA1927 DBDCCICS CWAKEY=CICS CICS key for the CWA
14.55.14 . DFHPA1927 DBDCCICS DBP=1$ Dynamic backout program - no local DL/I support
14.55.14 . DFHPA1927 DBDCCICS DCT=2$ The default/sample destination control table
14.55.14 . 4 DFHPA1927 DBDCCICS DFLTUSER=IVPUSER Default userid is IVPUSER
14.55.14 . 5 DFHPA1927 DBDCCICS DTRPGM=DFHDPY Dynamic transaction routing required
14.55.14 . DFHPA1927 DBDCCICS FCT=NO No file control table (using RDO for files)

```

Figure 25 (Part 1 of 3). Console messages for startup of TOR – CICSHTH1

```

14.55.14 . 6 DFHPA1927 DBDCCICS GMTEXT='An Information Development CICS/ESA 4.1 Terminal-Owning Region' TOR) - CICSHTH1
14.55.14 . 7 DFHPA1927 DBDCCICS GRNAME=CICSHT##          Generic resource name
14.55.14 . 8 DFHPA1927 DBDCCICS GRPLIST=(CICSHT#1,COMLIST) Initialize with TOR and common group lists
14.55.14 . DFHPA1927 DBDCCICS * The IRC & ISC parameters required for MRO
14.55.14 . 9 DFHPA1927 DBDCCICS IRCSTRT=YES              Start IRC during initialization
14.55.14 . DFHPA1927 DBDCCICS ISC=YES                  Include the intersystem communication program
14.55.14 . DFHPA1927 DBDCCICS JCT=2$                   The CICS sample journal control table
14.55.14 . DFHPA1927 DBDCCICS MXT=32                   Set maximum tasks to 32
14.55.14 . 10 DFHPA1927 DBDCCICS PGAIPGM=ACTIVE         Program autoinstall is active
14.55.14 . 11 DFHPA1927 DBDCCICS RENTPGM=PROTECT        Read-only ERDSA required.
14.55.14 . DFHPA1927 DBDCCICS SEC=NO                   Switch off security
14.55.14 . DFHPA1927 DBDCCICS SPOOL=YES                SPOOL interface open for STAT
14.55.14 . DFHPA1927 DBDCCICS SRT=1$                   The CICS sample System Recovery Table
14.55.14 . 12 DFHPA1927 DBDCCICS STGPROT=YES           Storage protection required
14.55.14 . DFHPA1927 DBDCCICS TCT=5$                   Sequential terminals required
14.55.14 . 13 DFHPA1927 DBDCCICS TCTUAEY=CICS          CICS key for TCT User Areas
14.55.14 . DFHPA1927 DBDCCICS TRTABSZ=200             Trace table size
14.55.14 . DFHPA1927 DBDCCICS XRF=NO                  Start a non-XRF active CICS region
14.55.14 . DFHPA1103 DBDCCICS END OF FILE ON SYSIN.
14.55.14 . DFHPA1101 DBDCCICS DFHSIT  IS BEING LOADED.
14.55.14 . DFHPA1108 DBDCCICS DFHSIT  HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:49).
14.55.14 . +DFHTR0103 TRACE TABLE SIZE IS 200K
14.55.14 . 14 +DFHSM0122I CICSHTH1 Limit of DSA storage below 16MB is 5,120K.
14.55.14 . +DFHSM0123I CICSHTH1 Limit of DSA storage above 16MB is 20M.
14.55.14 . 15 +DFHSM0115I CICSHTH1 Storage protection is active.
14.55.14 . +DFHSM0126I CICSHTH1 Transaction isolation is not active.
14.55.14 . +DFHDM0101I CICSHTH1 CICS is initializing.
14.55.15 . +DFHSI1500 CICSHTH1 CICS/ESA Version 4.1.0 Startup is in progress.
14.55.15 . +DFHXS1100I CICSHTH1 Security initialization has started.
14.55.15 . +DFHSI1501I CICSHTH1 Loading CICS nucleus.
14.55.16 . +DFHDM0304I CICSHTH1 Transaction Dump Data set DFHDMPA opened.
14.55.16 . +DFHXS1102I CICSHTH1 Security is inactive.
14.55.16 . +DFHXS1101I CICSHTH1 Security initialization has ended.
14.55.18 . 17 +DFHMN0105I CICSHTH1 Using default Monitoring Control Table.
14.55.18 . +DFHMN0110I CICSHTH1 CICS Monitoring is inactive.
14.55.18 . +DFHSI1502I CICSHTH1 CICS startup is Cold.
14.55.18 . +DFHSI1503I CICSHTH1 Terminal data sets are being opened.
14.55.18 . +DFHSI1510I CICSHTH1 Journal control subtask is being attached/entered.
14.55.19 . +DFHCP0101I CICSHTH1 CPI initialization has started.
14.55.19 . +DFHPR0104I CICSHTH1 Partner resource manager initialization has started.
14.55.20 . +DFHFC0100I CICSHTH1 File Control initialization has started.
14.55.20 . +DFHTD0100I CICSHTH1 Transient Data initialization has started.
14.55.20 . +DFHSI1516I CICSHTH1 Opening journal data sets.
14.55.20 . +DFHAI0101I CICSHTH1 AITM initialization has started.
14.55.20 . +DFHJC4508 CICSHTH1 CICS SYSTEM LOG. PRIMARY  DATA SET NOW RECEIVING OUTPUT ON 68C
14.55.20 . +DFHJC4500 CICSHTH1 01 of 01 journals successfully opened
14.55.20 . +DFHFC0101I CICSHTH1 File Control initialization has ended.
14.55.20 . +DFHTD0101I CICSHTH1 Transient Data initialization has ended.
14.55.20 . +DFHCP0102I CICSHTH1 CPI initialization has ended.
14.55.20 . +DFHPR0105I CICSHTH1 Partner resource manager initialization has ended.
14.55.20 . +DFHAI0102I CICSHTH1 AITM initialization has ended.
14.55.20 . +DFHSI1511I CICSHTH1 Installing group list CICSIT#1.
14.55.23 . +DFHSI1511I CICSHTH1 Installing group list IPLLST .
14.55.25 . +DFHSI1519I CICSHTH1 The interregion communication session was successfully started.
14.55.25 . +DFHAP1204I CICSHTH1 COBOL2 is being initialized.
14.55.25 . +DFHAP1205I CICSHTH1 C/370 is being initialized.
14.55.25 . +DFHSI1517 CICSHTH1 Control is being given to CICS.
15.05.55 . +DFHTM1715 CICSHTH1 CICS/ESA is being quiesced by userid IVPUSER in transaction CEMT at netname IG2S2CA8.
15.05.55 . +DFHDM0102I CICSHTH1 CICS is quiescing.
15.05.55 . +DFHTM1782I CICSHTH1 All non-system tasks have been successfully terminated.

```

Figure 25 (Part 2 of 3). Console messages for startup of TOR – CICSHTH1

```

15.05.55 . +DFHZC2305I CICSHTH1 Termination of VTAM sessions beginning
15.05.56 . +DFHZC2316 CICSHTH1 VTAM ACB is closed
15.05.57 . +DFHJC4553 04/15/94 15:05:57 CICSHTH1 Archive job submitted for 01 A.
15.05.57 . +DFHJC4510I CICSHTH1 All open journals now closed
15.05.58 . +DFHWK0105I CICSHTH1 Warm keypoint successful.
15.05.58 . +DFHDU0303I CICSHTH1 Transaction Dump Data set DFHDMPA closed.
15.05.58 . +DFHKE1799 CICSHTH1 TERMINATION OF CICS/ESA IS COMPLETE.
15.05.58 . -
15.05.58 . - -TIMINGS (MINS.)--
15.05.58 . -JOBNAME STEPNAME PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
15.05.58 . -CIDCITH1 CICS410 INITCICS 00 2923 .05 .00 10.7 887K 64 0 162 0 1
15.05.58 . IEF404I CIDCITH1 - ENDED - TIME=15.05.58
15.05.58 . -CIDCITH1 ENDED. NAME-userid TOTAL CPU TIME= .05 TOTAL ELAPSED TIME= 10.7
15.05.58 . $HASP395 CIDCITH1 ENDED

```

Figure 25 (Part 3 of 3). Console messages for startup of TOR – CICSHTH1

Notes:

1 The applid CICSHTH1, and cross domain services to access the applid CICSIAJ1 were activated by issuing two VTAM VARY ACT commands. This is because the applids were not part of the default VTAM environment, and the CICS region HTH1 on MVS image MVSH was to use VTAM APPC to communicate with the CICS region HAJ1 on MVS image MVSJ.

2 The APPLID in messages DFHPA1102I and DFHPA1101I is shown as DBDCCICS, even though there is an APPLID parameter in SYSIN which specifies a different name. However, the SYSIN parameters have not yet been processed; CICS has only scanned the SYSIN data set for a SIT= parameter, displaying the SYSIN parameters on the console as it does so. The individual SYSIN parameters are processed only after the SIT has been loaded. Later messages which include the APPLID show the name correctly as CICSHTH1.

The applid CICSHTH1 is defined by a SIT override on the PARM statement of the CICS startup job; such overrides are not shown in the job log.

2 The SVC value of 218 is only an example; you should specify the SVC value to be used, defined in your SVC table.

3 CICS obtains storage for the CWA in CICS key. (CICS is operating with storage protection, specified by STGPROT=YES.) This means that only programs executing in CICS key can modify the CWA, and user-key programs have read-only access.

4 You must define the default CICS userid, by the SIT parameter DFLTUSER, before you can attempt to bring up a CICS region. On a production system the default user should **not** have access to any unnecessary CICS-supplied transactions. The resource access authorizations that you give to the default user should clearly be limited to those resources that you intend should be universally available, and therefore do not need to be restricted in any way. For information about defining the attributes of the default userid, see the *CICS/ESA CICS-RACF Security Guide*.

5 The dynamic transaction routing program, DFHDYP, is to be used for routing transactions that are defined with the DYNAMIC attribute.

6 This specifies the message text that is to be displayed on the screen by the CSGM (good morning) transaction when a terminal is logged on to CICS through VTAM or by the CESN transaction if used to sign on to CICS.

7 The CICS region registered to VTAM under the generic resource name CICSHT##. Other terminal-owning regions in the CICSplex could also register under the same generic resource name.

8 The resource group list shows the use of the *CTGI* naming convention. The groups of resource definitions included in the group list are installed only during a cold start; in a warm restart the resource definitions installed at shutdown are reinstated from CICS global catalog.

9 Interregion communication is started during system initialization (IRCSTRT=YES), and the CICS programs required are made available (ISC=YES).

10 The program autoinstall function is enabled.

11 CICS allocates the read-only DSAs, RDSA and ERDSA, from read-only key-0 protected storage.

12 Storage protection is active (is enabled and CICS runs on hardware and an MVS release that supports storage protection).

13 CICS obtains the storage for the terminal control user area (TCTUA) in CICS key. This means that only programs executing in CICS key can modify the TCTUA, and user-key programs have read-only access.

14 The DFHSM0122 message informs you of the limit of DSA storage areas below the 16MB boundary. The DFHSM0123 message informs you of the limit of DSA storage areas above the 16MB boundary. These limits are set by the DSALIM and EDSALIM system initialization parameters respectively. For information about these storage areas, see the *CICS/ESA System Definition Guide*.

15 CICS storage protection is active without transaction isolation (STGPROT=YES and TRANISO=NO were specified). All storage in the CICS address space is addressable as in earlier releases.

16 If you specify the MCT=NO (default) system initialization parameter, the CICS monitoring domain builds a default monitoring control table. This ensures that default monitoring control table entries are always available for use when monitoring is active. In the sample job log, the next message indicates that monitoring is inactive.

Verifying shared data tables support

To verify that the shared data tables function can be used, you can:

1. Start up a CICS/ESA 4.1 region on which you have installed support for shared data tables.

Note: To use shared data tables, you must install the following modules in either an authorized system library in the MVS linklist (LNKLST concatenation of the MVS system) or in the LPA: DFHDTVCV, DFHDTVCV, and DFHMVRMS. When you install CICS/ESA 4.1, these modules are installed into the

SYS1.CICS410.SDFHLINK library (which you should normally 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 should see a normal response. If shared data tables is not operational, you would see an INVREQ response.

Note: This verification process uses user-maintained data tables throughout, because the behavior of CICS-maintained data tables is transparent 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:

4. Start up a second CICS region (the **requester**) that has an interregion communication (IRC) connection to the first CICS region (the **server**, which contains the user-maintained data table and source data set).

5. On the requester CICS region, do the following:

- 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 will 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 should see a normal response.

6. 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

As an example verification test of shared data tables, the following steps were completed for the CICS shared data tables environment shown in Figure 26 on page 147:

1. A CICS/ESA 4.1 region, CICSIDC, was started with support for shared data tables. (CICSIDC is the server CICS region in this example.)
2. On CICSIDC, the following steps were completed:
 - a. The user-maintained data table, MYSDDT, was defined and installed. The MYSDDT data table was based on the sample data set, CICS/ESA 4.1.CICSIDC.FILEA, installed on that region.

b. The following generic READ command was entered at a terminal:

```
CECI READ FILE(MYSDT) RIDFLD(00092) KEYLENGTH(5) GE GTEQ
```

Figure 27 on page 147 shows the initial response (LOADING), and Figure 28 on page 148 shows the subsequent response when the command was repeated after the data table had completed loading.

Note: Figure 29 on page 148 shows the response (INVREQ with EIBRESP2=44) when the generic READ command was used on the user-maintained data table MYSDT, but without support for shared data tables.

The following steps were completed to verify the cross-memory services of shared data tables:

3. A second CICS/ESA 4.1 region, CICSIDA, was started with support for shared data tables. (CICSIDA is the requester CICS region in this example.)
4. The following IRC connections and sessions were defined and installed on the associated CICS regions:

Region	CONNECTION	SESSION
CICSIDA	CICA	ATOC
CICSIDC	CICC	CTOA

See Figure 32 on page 150 and Figure 33 on page 150 for the parameters used for the CICA and ATOC resource definitions. The parameters for the CICC and CTOA resource definitions were similar.

5. On CICSIDA, the following steps were completed:

- a. The file, REMSDT, was defined and installed as remote, referring to the MYSDT data table on CICSIDC. See Figure 34 on page 151 for the parameters used for the REMSDT resource definition.
- b. The file, REMFIL, was defined and installed as remote, referring to the FILEA sample file on CICSIDC.
- c. The CEMT SET IRC CLOSED command was used to close the IRC connection to CICSIDC.
- d. The following generic READ command was entered at a terminal:

```
CECI READ FILE(REMFIL) RIDFLD(00092) KEYLENGTH(5) LENGTH(80) GE GTEQ
```

Figure 30 on page 149 shows the response (SYSIDERR), because the remote file cannot be accessed by function-shipping. (This response would also be observed for the remote data table, REMSDT, if either CICS region did not support shared data tables, and the IRC connection was closed.)

- e. The following generic READ command was entered at a terminal:

```
CECI READ FILE(REMSDT) RIDFLD(00092) KEYLENGTH(5) LENGTH(80) GE GTEQ
```

Figure 31 on page 149 shows the response (NORMAL). This only works if MYSDT is already open on CICSIDC, as achieved by step 2b on page 145.

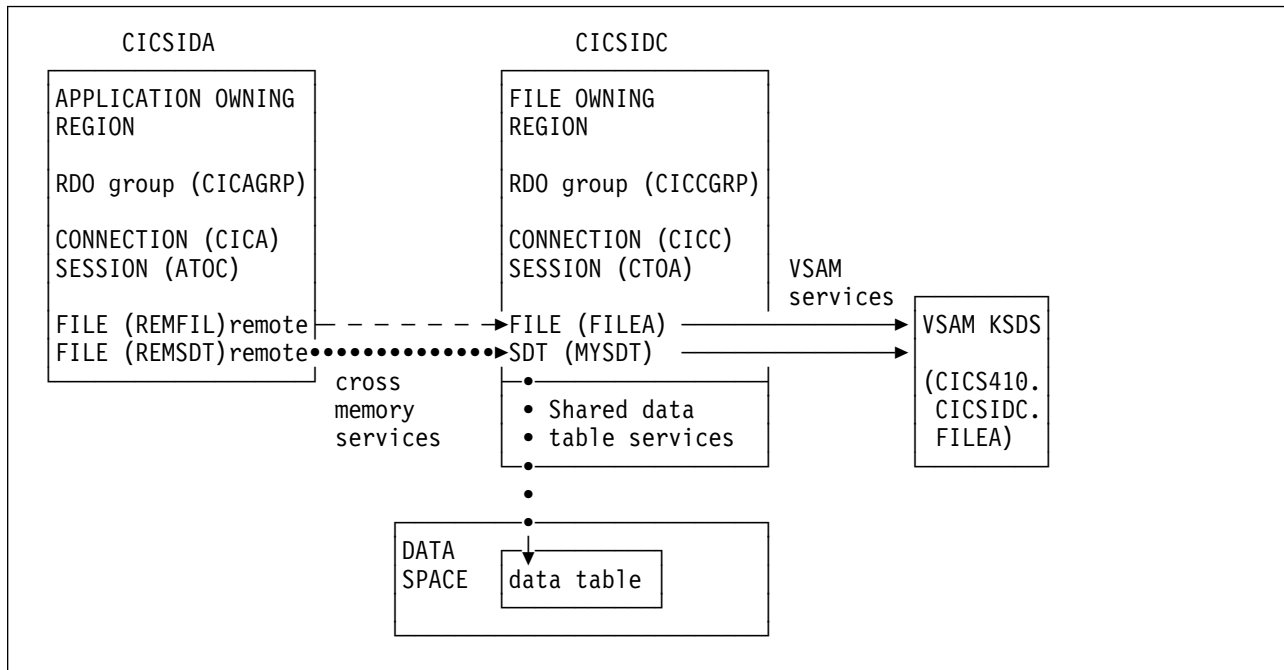


Figure 26. CICS environment for example verification of shared data tables

```

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 ) < GGeneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < Update < Token() > >

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 27. 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(MYS DT) ridfld(00092) keylength(5) ge gteq
STATUS: COMMAND EXECUTION COMPLETE          NAME=
EXEC CICS READ
  File( 'MYS DT ' )
  < SYsid() >
  ( SET()
    | Into( ' 000983J. S. TILLING      WASHINGTON, DC      34512' ... ) )
  < Length( +00080 ) >
  RIDfld( '00092' )
  < Keylength( +00005 ) < GEneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < Update < Token() > >

```

```

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 28. On CICSIDC, response to CECI generic READ FILE command with SDT support. Normal response

```

READ FILE(MYS DT) RIDFLD(00092) KEYLENG(5) GE GTEQ
STATUS: COMMAND EXECUTION COMPLETE          NAME=
EXEC CICS READ
  File( 'MYS DT ' )
  < SYsid() >
  ( SET() | Into( '' ) )
  < Length( +00000 ) >
  RIDfld( '00092' )
  < Keylength( +00005 ) < GEneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < Update < Token() > >

```

```

RESPONSE: INVREQ          EIBRESP=+0000000016 EIBRESP2=+0000000044
PF 1 HELP 2 HEX 3 END 4 EIB 5 VAR 6 USER 7 SBH 8 SFH 9 MSG 10 SB 11 SF

```

Figure 29. On CICSIDC, response to CECI generic READ FILE command without SDT support. INVREQ response with EIBRESP2=44


```

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 ) < GGeneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < Update < Token() > >

```

```

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 30. 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 ) < GGeneric > >
  < RBa | RRn | DEBRec | DEBKey >
  < GTeq | Equal >
  < Update < Token() > >

```

```

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 31. 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 = 0410

Connection      : CICA
Group           : CICAGRP
Description     : MRO CONNECTION CICSIDA TO CICSIDC
CONNECTION IDENTIFIERS
Netname        : CICSIDC
INDsys         :
REMOTE ATTRIBUTES
REMOTESystem   :
REMOTENAME     :
CONNECTION PROPERTIES
ACessmethod    : 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 32. Example CONNECTION resource definition, CICA, installed on CICSIDA. Only relevant parameters are shown; other parameters were allowed to default

```

OBJECT CHARACTERISTICS                                CICS RELEASE = 0410

Sessions       : ATOC
Group          : CICAGRP
Description    : SESSION FOR MRO CICA TO CICC
SESSION IDENTIFIERS
Connection     : CICA
SESSName      :
NETname       :
MOnename      :
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 33. Example SESSION resource definition, ATOC, associated with connection, CICA. Only relevant parameters are shown; other parameters were allowed to default

```

OBJECT CHARACTERISTICS                                CICS RELEASE = 0410

File          : REMSDT
Group         : CICCGRP
DEscription  :
VSAM PARAMETERS
DSNAme       :
Password     :                PASSWORD NOT SPECIFIED
Lsrpoolid    : 1                1-8 | None
DSNSharing   : Allreqs         Allreqs | Modifyreqs
STRings      : 001             1-255
Nsrgr       :
REMOTE ATTRIBUTES
REMOTESystem : CICC
REMOTEName   : MYSDT
RECORDSize   :                1-32767
Keylength    :                1-255
INITIAL STATUS
STATus       : Enabled         Enabled | Disabled | Unenabled

```

Figure 34. Example remote FILE resource definition, REMSDT, installed on CICSIDA. Only relevant parameters are shown; other parameters were allowed to default

Verifying CICS with XRF=YES

The CICS IVP jobs, DFHIVPOL and DFHIVPAL, can be used to verify the installation of CICS with XRF¹⁰.

To verify CICS running with XRF, run the DFHIVPOL job again, but this time with the XRF override parameter in the DFH\$SIP1 member of the SYSIN data set changed from XRF=NO to XRF=YES.

Running the DFHIVPOL job with XRF=YES, starts an active CICS region. Running the DFHIVPAL job starts the alternate CICS region.

Before you run the XRF IVP jobs

Before you run the XRF IVP jobs:

- If you plan to run CICS with XRF in a multi-MVS¹¹ environment, ensure that all CICS SMP/E data sets, distribution libraries, and production target libraries intended for use with XRF, are on shared DASD. This gives you maximum flexibility in the operation and maintenance of your multiple CICS regions.

¹⁰ Using CICS with XRF means that you have started CICS with the system initialization table (SIT) XRF parameter, or SIT XRF override, specified as XRF=YES. Throughout this book, the expression “running CICS with XRF” means that CICS is running with XRF=YES defined as a SIT or startup parameter.

¹¹ Multi-MVS environment: An environment that supports more than one MVS image. For example, this could be one physical processing system (such as an IBM 3090) that is partitioned into one or more processors, where each partition can run under the control of a single MVS operating system. Alternatively, if you are running MVS with the processor resource / systems manager (PR/SM), this could be multiple logical partitions, with each logical partition operating a copy of MVS. For further information about multi-MVS environments that support CICS running with XRF, and about XRF terminology, see the *CICS/ESA 3.3 XRF Guide*.

- Establish that your MVS environment is capable of running CICS with XRF in the way you want, and decide whether you are going to use one or two MVS images. For example:
 - In a multi-MVS environment, ensure that unique SMF ids are defined for each MVS image (SMF must be active for all XRF=YES systems).
 - If you are using two MVS images in a JES2 environment, the two images must operate as members of a JES2 shared spool system (and if you are using JES3, the two images must operate with the JES3 equivalent).
 - If you are using two MVS images, define CICS as an MVS subsystem (see page 33), to minimize operator intervention if an MVS failure causes several active CICS regions to fail simultaneously.
 - In a multi-MVS environment, ensure close synchronization of time-of-day clocks.
- Create the data sets for the active and alternate CICS regions, by running the DFHDEFDS and DFHALTDS jobs as described in Chapter 5, “Creating the CICS data sets” on page 79.

Ensure that, when you ran the DFHISTAR job to generate the DFHDEFDS and DFHALTDS jobs, you specified appropriate qualifiers on the DSINFO parameter of the DFHISTAR job to distinguish between the data sets for the active and alternate CICS regions. These qualifiers are used by the DFHDEFDS and DFHALTDS jobs, and by the XRF IVP jobs DFHIVPOL and DFHIVPAL.

For general information about XRF environments and XRF dependencies on other products, see the *CICS/ESA 3.3 XRF Guide*.

This additional stage of verification proves that a CICS region with the SIT option XRF=YES can be initialized as the alternate or the active CICS, and that the alternate CICS region can take over from the active CICS region.

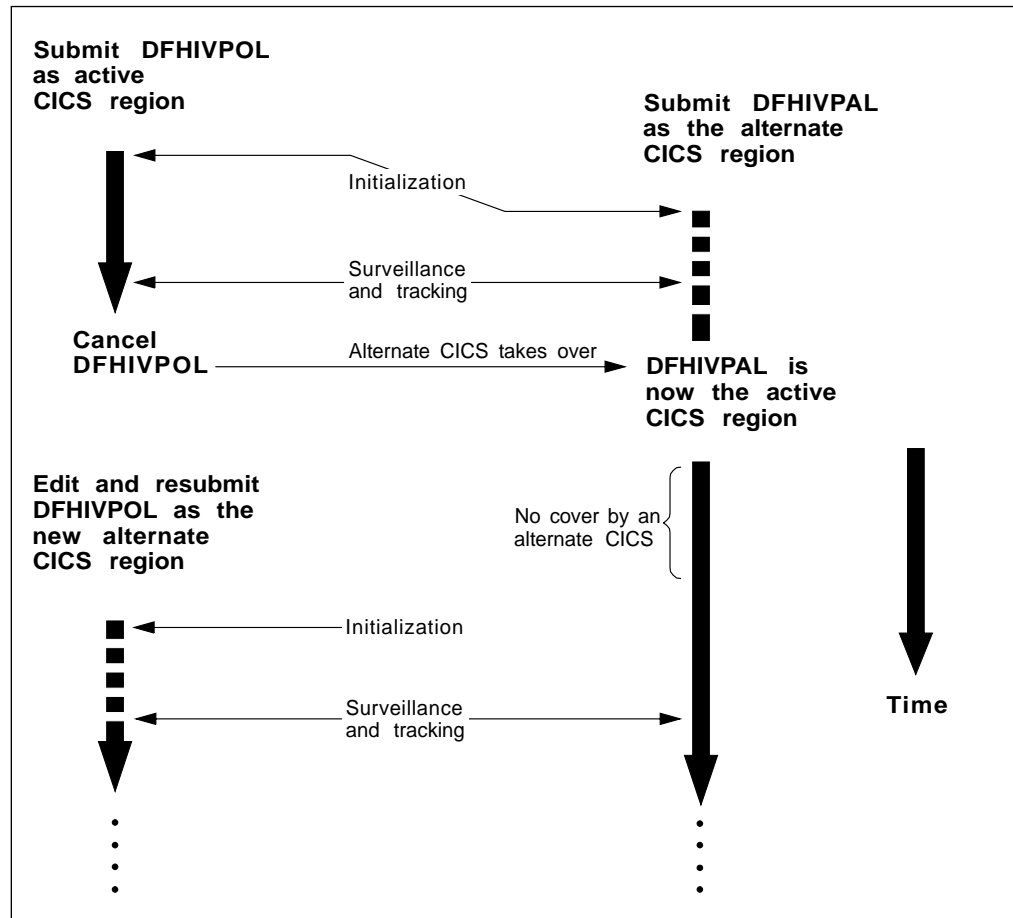


Figure 35. An XRF sequence for the IVP jobs

Running the XRF example IVP jobs

All the XRF example IVP job logs shown here were run in the sequence shown in Figure 35. The following information may help your understanding of the messages in the sample job logs:

- The DFHIVPOL job was submitted first to start the active CICS region.
- The DFHIVPAL job was submitted while the active CICS was initializing.
- A terminal was autoinstalled on the active CICS when control was given to CICS, and the assembler versions of the FILEA application programs installed. The command for this is: `CEDA INSTALL GROUP(DFH$AFLA)`. When the installation was successfully completed, the sample applications were used, starting with the AMNU transaction.
- After adding some records to the FILEA data set, a takeover was forced by issuing the `CEBT PERFORM TAKEOVER` command to the alternate CICS.
- Takeover by the alternate CICS region was successful, and the autoinstalled terminal that was in use on the active CICS region is reconnected automatically (to APPLID CICSIDB).
- The DFHIVPOL job was modified and submitted to start a new alternate CICS region started on the MVS image used for the original active CICS region.

- After further testing using the FILEA applications, a normal shutdown was used performed by issuing CEMT PERFORM SHUTDOWN, causing both the active and the alternate CICS regions to shut down.

Selecting specific APPLIDs for the active and alternate CICS

When you are running CICS with XRF, code the APPLID parameter in the SIT, or as a SIT override, specifying both a generic APPLID and a specific APPLID. The generic and specific APPLIDs for a CICS must not be the same. Also, the specific APPLID of the alternate CICS must be different from that of the active CICS. For information about the system initialization parameter APPLID, see the *CICS/ESA System Definition Guide*.

In the jobs DFHIVPOL and DFHIVPAL, the APPLID override parameter defines the CICS default generic APPLID as DBDCCICS, with DBDCCIC1 as the specific APPLID for the active CICS region, and DBDCCIC2 for the alternate CICS. If the APPLIDs DBDCCIC1 and DBDCCIC2 are not defined as VTAM APPL names to your VTAM system, change the APPLID parameters to names that are. Alternatively, you can define new VTAM APPL definitions statements, to specify the names DBDCCIC1 and DBDCCIC2 for use in this XRF test.

Submitting the sample jobs

To start the active CICS region, run the DFHIVPOL job with XRF=YES. When the active begins initializing, submit the DFHIVPAL job, to start the alternate CICS region. Sample job logs from this sequence of events are shown in Figure 36 on page 155 and Figure 37 on page 157.

If, after both CICS regions have started, you cancel the DFHIVPOL job (or force a takeover by issuing a CEBT PERFORM TAKEOVER command to the alternate), the alternate CICS region will attempt to take over as the active. Figure 37 on page 157 shows the job log messages sent by the DFHIVPAL job as the alternate CICS region is initialized, and as it eventually takes over from the active CICS region and completes an emergency restart.

The XRF examples shown in Figure 36 and Figure 37 were run on two MVS images under MVS/ESA 3.1.3, with JES2 shared spool. The MVS images were identified to SMF as MVSH and MVSJ.

Both jobs were submitted from the same node, MVSH. For this reason, a JES2 /*JOBPARM SYSAFF=node statement was added to each job to specify the appropriate destination node (MVSH or MVSJ).

J E S 2 J O B L O G -- S Y S T E M M V S H -- N O D E W I N M V S H

JOB05864

```

08.56.27 . IRR010I USERID userid IS ASSIGNED TO THIS JOB.
08.56.29 . ICH70001I userid LAST ACCESS AT 08:56:09 ON TUESDAY, APRIL 19, 1994
08.56.29 . 1 $HASP373 DFHIVPOL STARTED - INIT 3 - CLASS A - SYS MVSH
08.56.29 . IEF403I DFHIVPOL - STARTED - TIME=08.56.29
08.56.29 . -
08.56.29 . --TIMINGS (MINS.)--
08.56.29 . -JOBNAME STEPNAME PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
08.56.29 . -DFHIVPOL CICS CICSCTRL 01 10 .00 .00 .0 1150 64 0 0 0 0
08.56.29 . -DFHIVPOL CICS DTCNTL 01 11 .00 .00 .0 1156 64 0 0 0 0
08.56.31 . 2 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
08.56.31 . DFHPA1927 DBDCCICS SIT=6$,
08.56.31 . DFHPA1927 DBDCCICS XRF=YES,
08.56.31 . DFHPA1927 DBDCCICS AUXTR=ON,
08.56.31 . DFHPA1927 DBDCCICS AUXTRSW=NEXT,
08.56.31 . 3 DFHPA1927 DBDCCICS APPLID=(CICSID,CICSIDC),
08.56.31 . DFHPA1927 DBDCCICS CICS SVC=218,
08.56.31 . DFHPA1927 DBDCCICS DFLTUSER=IVPUSER,
08.56.31 . DFHPA1927 DBDCCICS GRPLIST=(DFHLIST,CICSHT#1),
08.56.31 . DFHPA1927 DBDCCICS SECPRFX=YES,
08.56.31 . DFHPA1927 DBDCCICS STGPROT=YES,
08.56.31 . DFHPA1927 DBDCCICS .END
08.56.31 . DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
08.56.31 . DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:37).
08.56.31 . +DFHTR0103 TRACE TABLE SIZE IS 64K
08.56.31 . +DFHSM0122I CICSIDC Limit of DSA storage below 16MB is 5,120K.
08.56.31 . +DFHSM0123I CICSIDC Limit of DSA storage above 16MB is 20M.
08.56.31 . +DFHSM0115I CICSIDC Storage protection is active.
08.56.31 . +DFHSM0126I CICSIDC Transaction isolation is not active.
08.56.31 . +DFHDM0101I CICSIDC CICS is initializing.
08.56.32 . +DFHSI1500 CICSIDC CICS/ESA Version 4.1.0 Startup is in progress.
08.56.32 . +DFHXS1100I CICSIDC Security initialization has started.
08.56.32 . +DFHDX0304I CICSIDC Transaction Dump Data set DFHDMPA opened.
08.56.33 . +DFHXS1105 CICSIDC Resource profiles for class ACICSPCT have been built.
08.56.33 . +DFHSI1501I CICSIDC Loading CICS nucleus.
08.56.33 . +DFHXS1105 CICSIDC Resource profiles for class CCICSCMD have been built.
08.56.33 . +DFHXS1105 CICSIDC Resource profiles for class DCICSDCT have been built.
08.56.34 . +DFHXS1105 CICSIDC Resource profiles for class FCICSFCT have been built.
08.56.34 . +DFHXS1105 CICSIDC Resource profiles for class JCICSJCT have been built.
08.56.34 . +DFHXS1105 CICSIDC Resource profiles for class MCICSPPT have been built.
08.56.34 . +DFHXS1105 CICSIDC Resource profiles for class PCICSPSB have been built.
08.56.34 . +DFHXS1105 CICSIDC Resource profiles for class SCICSTST have been built.
08.56.35 . +DFHXS1105 CICSIDC Resource profiles for class TCICSTRN have been built.
08.56.36 . +DFHXS1105 CICSIDC Resource profiles for class SURROGAT have been built.
08.56.37 . +DFHXS1103I CICSIDC Default security for userid IVPUSER has been established.
08.56.38 . +DFHXS1101I CICSIDC Security initialization has ended.
08.56.40 . +DFHTR0113 CICSIDC Auxiliary trace is being started on data set DFHAUXT.
08.56.40 . +DFHXG6400I CICSIDC Signing on to the CAVM as active with generic APPLID CICSID
08.56.40 . +DFHXG6401I CICSIDC Sign on to the CAVM as active accepted
08.56.41 . +DFHMN0105I CICSIDC Using default Monitoring Control Table.
08.56.41 . +DFHMN0110I CICSIDC CICS Monitoring is inactive.
08.56.41 . +DFHSI1502I CICSIDC CICS startup is Cold.
08.56.41 . +DFHSI1503I CICSIDC Terminal data sets are being opened.
08.56.41 . F NET,USERVAR,ID=CICSID,VALUE=CICSIDC
08.56.41 . +DFHSI1510I CICSIDC Journal control subtask is being attached/entered.
08.56.42 . +DFHTR0110 - AUXILIARY TRACE DATA SET DFHAUXT FULL - SWITCHING TO DFHBUXT
08.56.43 . +DFHCP0101I CICSIDC CPI initialization has started.
08.56.43 . +DFHPR0104I CICSIDC Partner resource manager initialization has started.
08.56.43 . +DFHFC0100I CICSIDC File Control initialization has started.
08.56.43 . +DFHTD0100I CICSIDC Transient Data initialization has started.
08.56.43 . +DFHSI1516I CICSIDC Opening journal data sets.

```

Figure 36 (Part 1 of 2). Sample job log for the DFHIVPOL job started with XRF=YES

```

08.56.43 . +DFHAI0101I CICSIDC AITM initialization has started.
08.56.44 . +DFHFC0101I CICSIDC File Control initialization has ended.
08.56.44 . +DFHTD0101I CICSIDC Transient Data initialization has ended.
08.56.44 . +DFHJC4508 CICSIDC CICS SYSTEM LOG. SECONDARY DATA SET NOW RECEIVING OUTPUT ON 819
08.56.44 . +DFHJC4553 04/19/94 08:56:44 CICSIDC Archive job submitted for 01 A.
08.56.44 . +DFHJC4500 CICSIDC 01 of 01 journals successfully opened
08.56.44 . +DFHCP0102I CICSIDC CPI initialization has ended.
08.56.44 . +DFHPR0105I CICSIDC Partner resource manager initialization has ended.
08.56.44 . +DFHAI0102I CICSIDC AITM initialization has ended.
08.56.44 . +DFHSI1511I CICSIDC Installing group list DFHLIST .
08.56.45 . +DFHTR0109 - AUXILIARY TRACE DATA SET DFHBUXT FULL - AUXILIARY TRACE HAS BEEN STOPPED
08.56.47 . +DFHSI1511I CICSIDC Installing group list CICSHT#1.
08.56.50 . F NET,USERVAR,ID=CICSID,VALUE=CICSIDC
08.56.50 . +DFHSI1517 CICSIDC Control is being given to CICS.
08.57.32 . 4 +DFHXG6403I CICSIDC Sign on of CICSIDB to the CAVM as alternate detected.
08.57.32 . +DFHDX8310I CICSIDC Initiating catch-up tasks.
08.59.48 . 5 +DFHXG6415I CICSIDC CICS is being taken over. Execution will be terminated.
08.59.48 . +DFHSR0606 CICSIDC Abend (code ---/0206) has been detected.
08.59.48 . +DFHME0116 CICSIDC
      (Module:DFHMEME) CICS symptom string for message DFHSR0606 is
      PIDS/565501800 LVLS/410 MS/DFHSR0606 RIDS/DFHSRP PTFS/ESA410 AB/U0206
08.59.48 . +DFHXG6408I CICSIDC SIGNING OFF ABNORMALLY FROM THE CAVM.
08.59.48 . +DFHXG6409I CICSIDC SIGN OFF ABNORMAL FROM THE CAVM ACCEPTED.
08.59.49 . +DFHDX0303I CICSIDC Transaction Dump Data set DFHDMPA closed.
08.59.49 . +DFHKE1800 CICSIDC ABNORMAL TERMINATION OF CICS/ESA IS COMPLETE.
08.59.49 . IEF450I DFHIVPOL CICS CICS - ABEND=S000 U1800 REASON=00000000
      TIME=08.59.49
08.59.49 . -DFHIVPOL CICS CICS U1800 3697 .07 .00 3.3 990K 64 0 74 0 1
08.59.49 . -DFHIVPOL CICS PRTDMPA FLUSH 0 .00 .00 .0 0 64 0 0 0 0
08.59.49 . -DFHIVPOL CICS PRTDMPB FLUSH 0 .00 .00 .0 0 64 0 0 0 0
08.59.49 . -DFHIVPOL CICS PRTAUXT FLUSH 0 .00 .00 .0 0 64 0 0 0 0
08.59.49 . -DFHIVPOL CICS PRTBUXT FLUSH 0 .00 .00 .0 0 64 0 0 0 0
08.59.49 . IEF404I DFHIVPOL - ENDED - TIME=08.59.49
08.59.49 . -DFHIVPOL ENDED. NAME=userid TOTAL CPU TIME= .07 TOTAL ELAPSED TIME= 3.3
08.59.49 . $HASP395 DFHIVPOL ENDED

```

Figure 36 (Part 2 of 2). Sample job log for the DFHIVPOL job started with XRF=YES

Notes:

- 1 The sample job was submitted from the MVS image, MVSH, and ran on that image under MVS/ESA 3.1.3, with JES2 shared spool.
- 2 For information about the system initialization parameters used by the IVP jobs, see page 111. (See also 3 and 4 below.)
- 3 To produce this sample log for the DFHIVPOL job, the SIT override APPLID in the DFH\$SIP1 member of the SYSIN data set was edited to specify the generic applid CICSID and the specific applid CICSIDC that was already known to the VTAM on MVSH. This solution was preferred to defining DBDCCIC1 as a new APPL name to VTAM, to match the applid specified in SYSIN in the CICS-supplied IVP.
- 4 The DFHIVPAL jon was submitted to start the alternate CICS region, CICSIDB. The active CICS region detects this startup.
- 5 The active CICS region, CICSIDC, is being taken over by the alternate CICS region, CICSIDB, after a CEBT PERFORM TAKEOVER command was issued at a console attached to CICSIDB. (See Figure 37 on page 157.)

J E S 2 J O B L O G -- S Y S T E M M V S H -- N O D E W I N M V S H

JOB05866

```

08.57.07 . IRR010I USERID userid IS ASSIGNED TO THIS JOB.
08.57.12 . ICH70001I userid LAST ACCESS AT 08:56:49 ON TUESDAY, APRIL 19, 1994
08.57.12 . 1 $HASP373 DFHIVPAL STARTED - INIT 17 - CLASS A - SYS MVSJ
08.57.13 . IEF403I DFHIVPAL - STARTED - TIME=08.57.13
08.57.13 . -
08.57.13 . --TIMINGS (MINS.)--
08.57.13 . -JOBNAME STEPNAME PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
08.57.13 . -DFHIVPAL CICS CICSCTRL 01 10 .00 .00 .0 930 64 0 0 0 0
08.57.13 . -DFHIVPAL CICS CICSCTRL 01 11 .00 .00 .0 952 64 0 0 0 0
08.57.14 . 2 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
08.57.14 . DFHPA1927 DBDCCICS SIT=6$,
08.57.14 . DFHPA1927 DBDCCICS XRF=YES,
08.57.14 . DFHPA1927 DBDCCICS START=STANDBY,
08.57.14 . 3 DFHPA1927 DBDCCICS CLT=1$,
08.57.14 . 4 DFHPA1927 DBDCCICS APPLID=(CICSID,CICSIDB),
08.57.14 . DFHPA1927 DBDCCICS CICSVC=218,
08.57.14 . DFHPA1927 DBDCCICS DFLTUSER=IVPUSER,
08.57.14 . DFHPA1927 DBDCCICS GRPLIST=(DFHLIST,CICSHT#1),
08.57.14 . DFHPA1927 DBDCCICS SECPRFX=YES,
08.57.14 . DFHPA1927 DBDCCICS STGPROT=YES,
08.57.14 . DFHPA1927 DBDCCICS .END
08.57.14 . DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
08.57.14 . DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:37).
08.57.14 . +DFHTR0103 TRACE TABLE SIZE IS 64K
08.57.14 . +DFHSM0122I CICSIDB Limit of DSA storage below 16MB is 5,120K.
08.57.14 . +DFHSM0123I CICSIDB Limit of DSA storage above 16MB is 20M.
08.57.14 . +DFHSM0115I CICSIDB Storage protection is active.
08.57.14 . +DFHSM0126I CICSIDB Transaction isolation is not active.
08.57.14 . +DFHDM0101I CICSIDB CICS is initializing.
08.57.15 . +DFHSI1500 CICSIDB CICS/ESA Version 4.1.0 Startup is in progress.
08.57.15 . +DFHXS1100I CICSIDB Security initialization has started.
08.57.15 . +DFHDU0304I CICSIDB Transaction Dump Data set DFHDMPA opened.
08.57.16 . +DFHXS1105 CICSIDB Resource profiles for class ACICSPCT have been built.
08.57.16 . +DFHSI1501I CICSIDB Loading CICS nucleus.
08.57.16 . +DFHXS1105 CICSIDB Resource profiles for class CCICSCMD have been built.
08.57.16 . +DFHXS1105 CICSIDB Resource profiles for class DCICSDCT have been built.
08.57.16 . +DFHXS1105 CICSIDB Resource profiles for class FCICSFCT have been built.
08.57.17 . +DFHXS1105 CICSIDB Resource profiles for class JCICSJCT have been built.
08.57.17 . +DFHXS1105 CICSIDB Resource profiles for class MCICSPPT have been built.
08.57.17 . +DFHXS1105 CICSIDB Resource profiles for class PCICSPSB have been built.
08.57.17 . +DFHXS1105 CICSIDB Resource profiles for class SCICSTST have been built.
08.57.18 . +DFHXS1105 CICSIDB Resource profiles for class TCICSTRN have been built.
08.57.19 . +DFHXS1105 CICSIDB Resource profiles for class SURROGAT have been built.
08.57.19 . +DFHXS1103I CICSIDB Default security for userid IVPUSER has been established.
08.57.19 . +DFHXS1101I CICSIDB Security initialization has ended.
08.57.29 . +DFHXG6500I CICSIDB Signing on to the CAVM as alternate with generic APPLID CICSID
08.57.30 . +DFHXG6501I CICSIDB Sign on to the CAVM as alternate accepted
08.57.30 . +DFHSI1502I CICSIDB CICS startup is Emergency.
08.57.30 . DFHXA6567I CICSIDB APPLID 'CICSIDB ' NOT FOUND IN 'DFHCLT1$'.
08.57.30 . DFHXA6574I CICSIDB ERROR FOUND WITH 'DFHCLT1$'.
08.57.30 . +DFHSI1503I CICSIDB Terminal data sets are being opened.
08.57.30 . +DFHSI1510I CICSIDB Journal control subtask is being attached/entered.
08.57.31 . +DFHTD0100I CICSIDB Transient Data initialization has started.
08.57.31 . +DFHTD0103I CICSIDB Transient Data initialization has been suspended pending takeover.
08.57.31 . +DFHXG6503I CICSIDB Sign on of CICSIDC to the CAVM as active detected.
08.57.31 . +DFHTC1041I CICSIDB Terminal control tracking started.
08.57.32 . 3 DFHXA6567I CICSIDB APPLID 'CICSIDB ' NOT FOUND IN 'DFHCLT1$'.
08.57.32 . DFHXA6569I CICSIDB MVS SYSTEM IDENTIFIER 'MVSH' NOT FOUND IN 'DFHCLT1$'.
08.57.32 . DFHXA6574I CICSIDB ERROR FOUND WITH 'DFHCLT1$'.
08.57.34 . +DFHTC1044I CICSIDB Terminal control catch-up started.

```

Figure 37 (Part 1 of 3). Sample job log for the DFHIVPAL job during initialization of the alternate CICS region and takeover

```

08.57.34 . +DFHTC1045I CICSIDB Terminal control catch-up complete.
08.59.45 . 5+CEBT PERFORM TAKEOVER
08.59.45 . +DFHXG6512I CICSIDB Takeover request passed to the CAVM
08.59.45 . +DFHXG6513I CICSIDB Takeover request accepted by the CAVM
08.59.45 . + TAKEOVER ACCEPTED
08.59.45 . DFHXA6567I CICSIDB APPLID 'CICSIDB ' NOT FOUND IN 'DFHCLT1$'.
08.59.45 . DFHXA6576I CICSIDB CLT PROCESSING NOT POSSIBLE OWING TO ERROR IN 'DFHCLT1$'.
08.59.45 . DFHXA6577I CICSIDB NOT AUTHORIZED TO CANCEL JOB05864 DFHIVPOL ON CEC MVSH.
08.59.50 . DFHXA6564I CICSIDB TERMINATION OF JOB05864 DFHIVPOL DETECTED.
08.59.50 . +DFHTC1043I CICSIDB Terminal control tracking ended - 14 records received.
08.59.50 . F NET,USERVAR,ID=CICSID,VALUE=CICSIDB
08.59.51 . IEC161I 056-084,DFHIVPAL,CICS,DFHGCD,,,CICS410.CICS.DFHGCD,
08.59.51 . IEC161I CICS410.CICS.DFHGCD.DATA,ICFCAT.HC.CATALOGA
08.59.51 . IEC161I 056-084,DFHIVPAL,CICS,DFHGCD,,,CICS410.CICS.DFHGCD,
08.59.51 . IEC161I CICS410.CICS.DFHGCD.INDEX,ICFCAT.HC.CATALOGA
08.59.51 . IEC161I 062-086,DFHIVPAL,CICS,DFHGCD,,,CICS410.CICS.DFHGCD,
08.59.51 . IEC161I CICS410.CICS.DFHGCD.DATA,ICFCAT.HC.CATALOGA
08.59.51 . +DFHMN0105I CICSIDB Using default Monitoring Control Table.
08.59.51 . +DFHMN0110I CICSIDB CICS Monitoring is inactive.
08.59.52 . IEC161I 056-084,DFHIVPAL,CICS,DFHRSD,,,CICS410.CICS.DFHRSD,
08.59.52 . IEC161I CICS410.CICS.DFHRSD.DATA,ICFCAT.HC.CATALOGA
08.59.52 . IEC161I 056-084,DFHIVPAL,CICS,DFHRSD,,,CICS410.CICS.DFHRSD,
08.59.52 . IEC161I CICS410.CICS.DFHRSD.INDEX,ICFCAT.HC.CATALOGA
08.59.52 . IEC161I 062-086,DFHIVPAL,CICS,DFHRSD,,,CICS410.CICS.DFHRSD,
08.59.52 . IEC161I CICS410.CICS.DFHRSD.DATA,ICFCAT.HC.CATALOGA
08.59.52 . +DFHTD0104I CICSIDB Transient Data initialization has been resumed following takeover.
08.59.52 . IEC161I 056-084,DFHIVPAL,CICS,DFHJACD,,,
08.59.52 . IEC161I CICS410.CICS.DFHJACD,
08.59.52 . IEC161I CICS410.CICS.DFHJACD.DATA,ICFCAT.HC.CATALOGA
08.59.52 . IEC161I 062-086,DFHIVPAL,CICS,DFHJACD,,,
08.59.52 . IEC161I CICS410.CICS.DFHJACD,
08.59.52 . IEC161I CICS410.CICS.DFHJACD.DATA,ICFCAT.HC.CATALOGA
08.59.53 . +DFHCP0101I CICSIDB CPI initialization has started.
08.59.53 . +DFHPR0104I CICSIDB Partner resource manager initialization has started.
08.59.53 . +DFHFC0100I CICSIDB File Control initialization has started.
08.59.54 . IEC161I 056-084,DFHIVPAL,CICS,DFHTEMP,,,
08.59.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP,
08.59.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP.DATA,ICFCAT.HC.CATALOGA
08.59.54 . IEC161I 062-086,DFHIVPAL,CICS,DFHTEMP,,,
08.59.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP,
08.59.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP.DATA,ICFCAT.HC.CATALOGA
08.59.54 . +DFHRU2820I CICSIDB DFHRUP in progress
08.59.54 . +DFHRU2800I CICSIDB DFHRUP completed
08.59.54 . +DFHSI1516I CICSIDB Opening journal data sets.
08.59.54 . +DFHAI0101I CICSIDB AITM initialization has started.
08.59.55 . IEC130I CEEMSG DD STATEMENT MISSING
08.59.55 . +DFHER5760 CICSIDB Message and ISC state recovery beginning
08.59.55 . +DFHER5761 CICSIDB No message or ISC state recovery required
08.59.55 . +DFHER5762 CICSIDB Message and ISC state recovery completed
08.59.55 . IEC130I CEEOUT DD STATEMENT MISSING
08.59.55 . +DFHJC4508 CICSIDB CICS SYSTEM LOG. EMERGENCY DATA SET NOW RECEIVING OUTPUT ON 749
08.59.55 . +DFHJC4500 CICSIDB 01 of 01 journals successfully opened
08.59.55 . IEC161I 056-084,DFHIVPAL,CICS,DFHINTRA,,,
08.59.55 . IEC161I CICS410.CNTL.CICS.DFHINTRA,
08.59.55 . IEC161I CICS410.CNTL.CICS.DFHINTRA.DATA,ICFCAT.HC.CATALOGA
08.59.55 . IEC161I 062-086,DFHIVPAL,CICS,DFHINTRA,,,
08.59.55 . IEC161I CICS410.CNTL.CICS.DFHINTRA,
08.59.55 . IEC161I CICS410.CNTL.CICS.DFHINTRA.DATA,ICFCAT.HC.CATALOGA
08.59.55 . +DFHTD0101I CICSIDB Transient Data initialization has ended.
08.59.56 . +DFHER5730 CICSIDB User recovery beginning
08.59.56 . +DFHER5731 CICSIDB No active user records on the system log
08.59.56 . +DFHER5732 CICSIDB User recovery completed

```

Figure 37 (Part 2 of 3). Sample job log for the DFHIVPAL job during initialization of the alternate CICS region and takeover

```

08.59.56 . +DFHJC4553 04/19/94 08:59:56 CICSIDB Archive job submitted for 01 B.
08.59.57 . +DFHFC5740I CICSIDB File backout beginning.
08.59.57 . +DFHFC5741I CICSIDB No file backout required.
08.59.57 . +DFHFC5742I CICSIDB File backout complete.
08.59.57 . +DFHFC0101I CICSIDB File Control initialization has ended.
08.59.57 . +DFHCP0102I CICSIDB CPI initialization has ended.
08.59.57 . +DFHPR0105I CICSIDB Partner resource manager initialization has ended.
08.59.57 . +DFHAI0102I CICSIDB AITM initialization has ended.
08.59.58 . +DFHJC4508 CICSIDB CICS SYSTEM LOG. PRIMARY DATA SET NOW RECEIVING OUTPUT ON 81A
08.59.58 . +DFHJC4553 04/19/94 08:59:58 CICSIDB Archive job submitted for 01 X.
08.59.59 . F NET,USERVAR,ID=CICSID,VALUE=CICSIDB
08.59.59 . +DFHSI1517 CICSIDB Control is being given to CICS.
09.00.00 . +DFHXG6490I CICSIDB Reconnecting VTAM session - pass number 1
09.01.01 . +DFHXG6490I CICSIDB Reconnecting VTAM session - pass number 2
09.01.01 . +DFHXG6484I CICSIDB Autoconnect processing now complete.
09.02.33 . 6 +DFHXG6403I CICSIDB Sign on of CICSIDC to the CAVM as alternate detected.
09.02.33 . +DFHDX8310I CICSIDB Initiating catch-up tasks.
09.02.58 . 7 +DFHTM1715 CICSIDB CICS/ESA is being quiesced by userid IVPUSER in transaction CEMT at netname IGKS203 .
09.02.58 . +DFHDM0102I CICSIDB CICS is quiescing.
09.02.58 . +DFHTM1781 CICSIDB CICS shutdown cannot complete because some non-system user tasks have not terminated.
09.03.56 . +DFHTM1782I CICSIDB All non-system tasks have been successfully terminated.
09.03.57 . +DFHZC2305I CICSIDB Termination of VTAM sessions beginning
09.03.58 . +DFHZC2316 CICSIDB VTAM ACB is closed
09.03.59 . +DFHJC4553 04/19/94 09:03:59 CICSIDB Archive job submitted for 01 A.
09.03.59 . +DFHJC4510I CICSIDB All open journals now closed
09.03.59 . +DFHWK0105I CICSIDB Warm keypoint successful.
09.04.00 . +DFHXG6404I CICSIDB SIGNING OFF NORMALLY FROM THE CAVM.
09.04.00 . +DFHXG6405I CICSIDB SIGN OFF NORMAL FROM THE CAVM ACCEPTED.
09.04.00 . +DFHDU0303I CICSIDB Transaction Dump Data set DFHDMPA closed.
09.04.01 . +DFHKE1799 CICSIDB TERMINATION OF CICS/ESA IS COMPLETE.
09.04.01 . -DFHVPAL CICS CICS 00 3796 .07 .00 6.7 903K 64 0 64 0 1
09.04.02 . -DFHVPAL CICS PRTDMPA 00 449 .00 .00 .0 14086 64 0 0 0 0
09.04.03 . -DFHVPAL CICS PRTDMPB 00 376 .00 .00 .0 3588 64 0 0 0 0
09.04.03 . TIME=09.04.03
09.04.03 . -DFHVPAL CICS PRTAUXT 00 1360 .09 .00 6.1 290K 64 0 0 0 0
09.04.03 . -DFHVPAL CICS PRTBUXT 00 1514 .08 .00 3.1 246K 64 0 0 0 0
09.04.03 . IEF404I DFHVPAL - ENDED - TIME=09.04.03
09.04.03 . -DFHVPAL ENDED. NAME=userid TOTAL CPU TIME= .08 TOTAL ELAPSED TIME= 6.8
09.04.03 . $HASP395 DFHVPAL ENDED

```

Figure 37 (Part 3 of 3). Sample job log for the DFHVPAL job during initialization of the alternate CICS region and takeover

Notes:

1 The sample job was submitted from the MVS image, MVSH, but ran on the image MVSJ under MVS/ESA 3.1.3, with JES2 shared spool. A JES2 /* JOBPARM SYSAFF=MVSJ statement was added to the job to specify the destination node MVSJ.

2 For information about the system initialization parameters used by the IVP jobs, see page 111. (See also **3**, **4**, and **5** below.)

3 The CLT specified in SYSIN is DFHCLT1\$ (the default CLT supplied with CICS). You see from the initialization messages for the alternate CICS region (see Figure 37 on page 157) that this table is referred to during initialization. In this instance, CICS cannot use the CLT because the APPLID specified in the startup (CICSIDB) and the MVS system ID (MVSH) are not defined in the DFHCLT1\$ table. Although in this case the error did not prevent a successful takeover, a takeover normally is at risk if CLT commands cannot be executed. If you wish to test the use of the CLT, you must either keep to the default APPLIDs (DBDCCICS, DBDCCIC1, and DBDCCIC2) and MVS system IDs (MBHQ and MBHR) or define your own APPLIDs and MVS system IDs in the CLT, and reassemble the table.

4 For this run of the DFHIVPAL job, the SIT override APPLID in the DFH\$SIP3 member of the SYSIN data set was edited to change the generic APPLID DBDCCICS to CICSID, and the specific APPLID to CICSIDB, the latter being the name known to the VTAM system on MVSJ.

5 A CEBT PERFORM TAKEOVER command was issued to cause the alternate CICS region, CICSIDB, to take over from the active CICS region, CICSIDC. This caused the DFHIVPOL job to abend. (See Figure 36 on page 155.)

6 The DFHIVPOL job was edited (to specify STARTUP=STANDBY) and resubmitted to start an alternate CICS region, CICSIDC, for the now active CICS region, CICSIDB.

7 A user signed on to CICS as the default userid, IVPUSER, at the terminal with netname IGKS203. After trying some of the CICS transactions, the user entered a CEMT PERFORM SHUTDOWN command to shut down the CICSIDB region (and the associated XRF alternate region, CICSIDC).

Verifying CICS with XRF=YES on one MVS image

You can use the jobs DFHIVPOL and DFHIVPAL as described in “Verifying CICS with XRF=YES” on page 151 to verify the installation of CICS with XRF on one MVS image. The only differences are:

- Do not use the JES2 /* JOBPARM SYSAFF=node statement in either job. By default, this specifies that both jobs are to run on the same node, at which they are entered.
- Use APPLIDs that are known to VTAM on the node at which both jobs are entered.

Running the FILEA sample applications

Using a suitable VTAM terminal, you can try the sample transactions that operate on FILEA.

Note: To test fully the XRF capability, you should use an XRF-capable terminal¹². If that is not possible, you can still carry out the steps outlined below, but your terminal session may not automatically be reestablished when the alternate CICS region takes over.

When you are successfully signed on to CICS, select either the “file add” or the “file update” option and make some additions or changes to FILEA. If possible, arrange for a takeover to be forced while you are running the sample transactions on the active CICS region. This can be done either by entering the MVS command CANCEL DBCICJS1 (the active job name) at the active CICS console, or by entering a MODIFY DBCICJS2, CEBT PERFORM TAKEOVER command at the alternate CICS system’s console.

If you are using an XRF-capable terminal, and CICS displays the recovery message, you can rerun the sample transaction. This time, select the “file inquiry” option and check that the earlier additions or changes are correctly recorded. (Note that it is unlikely that any file backout will occur as a result of using the FILEA transaction at the time of the takeover.)

If you are using an XRF-capable terminal or a class 2 non XRF-capable terminal you do not normally have to sign on again after a takeover has switched the terminal session to a new active CICS region. This depends on the sign-on options set. For general information about classes of terminal and sign-on options, see the *CICS/ESA 3.3 XRF Guide*.

Using master terminal commands with XRF

Using CICS transactions through the MVS console is described on page 137. When you are running the XRF IVP jobs, you should be aware that the CEMT master terminal command can only be used on the active CICS region. To control the alternate CICS, you must use the CEBT master terminal command. For information about CEBT, see the *CICS/ESA CICS-Supplied Transactions* manual. Figure 19 on page 129 shows the typical messages sent to the job log by DFHIVPOL job during the initialization of the active CICS region.

Signing on to the active CICS region

You can define your VTAM system to allow users to log on using a generic APPLID that is common to the active and the alternate CICS systems, so that end users don’t need to know which CICS job is the active CICS region. To enable VTAM to translate the generic APPLID to a specific APPLID, you code the required VTAM resource definitions. For further information, see the *ACF/VTAM Installation and Resource Definition* manual.

¹² A CICS XRF-capable terminal is a Class 1 remote SNA VTAM terminal that can have its active session to the active CICS matched by a corresponding backup session to the alternate CICS region. For further information about classes of terminal, see the *CICS/ESA 3.3 XRF Guide*.

The generic APPLID is defined to VTAM by CICS as the identifier of a user variable (USERVAR). CICS issues a MODIFY NET, USERVAR command during startup, to initialize the user variable with the specific APPLID (obtained from the APPLID in the SIT or startup override parameter). The specific APPLID is DBDCCIC1 for the active CICS region in the DFHIVPOL job, and DBDCCIC2 for the alternate CICS region in the DFHIVPAL job. VTAM uses the USERVAR value to translate the generic APPLID into the required specific application name by means of logon interpret tables.

You can sign on to DBDCCIC1 (or whatever name you have chosen), and then sign on again to DBDCCIC2 after the alternate CICS region takes over.

Starting another alternate CICS region after a successful takeover

If you cancel the DFHIVPOL job (or force a takeover by issuing a CEBT PERFORM TAKEOVER command to the alternate, as shown in Figure 37 on page 157), and the DFHIVPAL job takes over successfully as the new active CICS region, you no longer have an alternate CICS region acting as standby in the event of failure. This is shown in the XRF sequence illustrated in Figure 35 on page 153. To start another alternate CICS region in this situation requires a third job stream. You can create a job to start another alternate CICS by modifying the DFHIVPOL job to change the START= override to specify START=STANDBY.

Figure 38 gives a sample job log from a modified DFHIVPOL job submitted to start a new alternate in the same MVS image (MVSH) as the original active CICS started by the DFHIVPOL job.

```

      JES2 JOB LOG -- SYSTEM MVSH -- NODE WINMVSH

      JOB05871
      ↓
09.02.20 . IRR010I USERID userid IS ASSIGNED TO THIS JOB.
09.02.21 . ICH70001I userid LAST ACCESS AT 09:01:39 ON TUESDAY, APRIL 19, 1994
09.02.21 . $HASP373 DFHIVPOL STARTED - INIT 3 - CLASS A - SYS MVSH
09.02.21 . IEF403I DFHIVPOL - STARTED - TIME=09.02.21
09.02.22 . -
09.02.22 . --TIMINGS (MINS.)--
09.02.22 . -JOBNAME STEPNAME PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
09.02.22 . -DFHIVPOL CICS CICSCTRL 01 10 .00 .00 .0 1066 64 0 0 0 0
09.02.22 . -DFHIVPOL CICS DTCNTL 01 11 .00 .00 .0 1112 64 0 0 0 0
09.02.23 . IEC161I 056-084,DFHIVPOL,CICS,DFHLCD,,,CICS410.CICS.DFHLCD,
09.02.23 . IEC161I CICS410.CICS.DFHLCD.DATA,ICFCAT.HC.CATALOGA
09.02.23 . IEC161I 056-084,DFHIVPOL,CICS,DFHLCD,,,CICS410.CICS.DFHLCD,
09.02.23 . IEC161I CICS410.CICS.DFHLCD.INDEX,ICFCAT.HC.CATALOGA
09.02.23 . IEC161I 062-086,DFHIVPOL,CICS,DFHLCD,,,CICS410.CICS.DFHLCD,
09.02.23 . IEC161I CICS410.CICS.DFHLCD.DATA,ICFCAT.HC.CATALOGA
09.02.23 . 1 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
09.02.23 . DFHPA1927 DBDCCICS SIT=6$,
09.02.23 . DFHPA1927 DBDCCICS XRF=YES,
09.02.23 . 2 DFHPA1927 DBDCCICS START=STANDBY,
09.02.23 . 3 DFHPA1927 DBDCCICS CLT=1$,

```

Figure 38 (Part 1 of 2). Sample job log for the DFHIVPOL job running a new alternate CICS in MVS image 1

```

09.02.23 . DFHPA1927 DBDCCICS APPLID=(CICSID,CICSIDC),
09.02.23 . DFHPA1927 DBDCCICS CICSSVC=218,
09.02.23 . DFHPA1927 DBDCCICS DFLTUSER=IVPUSER,
09.02.23 . DFHPA1927 DBDCCICS GRPLIST=(DFHLIST,CICSHT#1),
09.02.23 . DFHPA1927 DBDCCICS SECPFRX=YES,
09.02.23 . DFHPA1927 DBDCCICS STGPROT=YES,
09.02.23 . DFHPA1927 DBDCCICS .END
09.02.23 . DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
09.02.23 . DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:37).
09.02.23 . +DFHTR0103 TRACE TABLE SIZE IS 64K
09.02.23 . +DFHSM0122I CICSIDC Limit of DSA storage below 16MB is 5,120K.
09.02.23 . +DFHSM0123I CICSIDC Limit of DSA storage above 16MB is 20M.
09.02.23 . +DFHSM0115I CICSIDC Storage protection is active.
09.02.23 . +DFHSM0126I CICSIDC Transaction isolation is not active.
09.02.23 . +DFHDM0101I CICSIDC CICS is initializing.
09.02.24 . +DFHS11500 CICSIDC CICS/ESA Version 4.1.0 Startup is in progress.
09.02.24 . +DFHXS1100I CICSIDC Security initialization has started.
09.02.24 . +DFHDU0304I CICSIDC Transaction Dump Data set DFHDMPB opened.
09.02.25 . +DFHXS1105 CICSIDC Resource profiles for class ACICSPCT have been built.
09.02.25 . +DFHSI1501I CICSIDC Loading CICS nucleus.
09.02.25 . +DFHXS1105 CICSIDC Resource profiles for class CCICSCMD have been built.
09.02.26 . +DFHXS1105 CICSIDC Resource profiles for class DCICSDCT have been built.
09.02.26 . +DFHXS1105 CICSIDC Resource profiles for class FCICSFCT have been built.
09.02.26 . +DFHXS1105 CICSIDC Resource profiles for class JCICSJCT have been built.
09.02.26 . +DFHXS1105 CICSIDC Resource profiles for class MCICSPPT have been built.
09.02.26 . +DFHXS1105 CICSIDC Resource profiles for class PCICSPSB have been built.
09.02.28 . +DFHXS1105 CICSIDC Resource profiles for class SCICSTST have been built.
09.02.28 . +DFHXS1105 CICSIDC Resource profiles for class TCICSTRN have been built.
09.02.30 . +DFHXS1105 CICSIDC Resource profiles for class SURROGAT have been built.
09.02.30 . +DFHXS1103I CICSIDC Default security for userid IVPUSER has been established.
09.02.30 . +DFHXS1101I CICSIDC Security initialization has ended.
09.02.33 . +DFHXG6500I CICSIDC Signing on to the CAVM as alternate with generic APPLID CICSID
09.02.33 . 2 +DFHXG6501I CICSIDC Sign on to the CAVM as alternate accepted
09.02.33 . 2 +DFHSI1502I CICSIDC CICS startup is Emergency.
09.02.33 . 3 DFHXA6567I CICSIDC APPLID 'CICSIDC ' NOT FOUND IN 'DFHCLT1$'.
09.02.33 . DFHXA6574I CICSIDC ERROR FOUND WITH 'DFHCLT1$'.
09.02.33 . +DFHSI1503I CICSIDC Terminal data sets are being opened.
09.02.33 . +DFHSI1510I CICSIDC Journal control subtask is being attached/entered.
09.02.33 . +DFHTD0100I CICSIDC Transient Data initialization has started.
09.02.33 . +DFHTD0103I CICSIDC Transient Data initialization has been suspended pending takeover.
09.02.34 . +DFHXG6503I CICSIDC Sign on of CICSIDB to the CAVM as active detected.
09.02.34 . +DFHTC1041I CICSIDC Terminal control tracking started.
09.02.35 . DFHXA6567I CICSIDC APPLID 'CICSIDC ' NOT FOUND IN 'DFHCLT1$'.
09.02.35 . DFHXA6569I CICSIDC MVS SYSTEM IDENTIFIER 'MVSJ' NOT FOUND IN 'DFHCLT1$'.
09.02.35 . DFHXA6574I CICSIDC ERROR FOUND WITH 'DFHCLT1$'.
09.02.35 . +DFHTC1044I CICSIDC Terminal control catch-up started.
09.02.35 . +DFHTC1045I CICSIDC Terminal control catch-up complete.
09.04.02 . 4 +DFHXG6507I CICSIDC Sign off normal from the CAVM detected.
09.04.02 . +DFHXG6520I CICSIDC CICS shutdown initiated by CAVM event.
09.04.02 . +DFHTM1715 CICSIDC CICS/ESA is being quiesced by userid IVPUSER in transaction CSSY.
09.04.02 . +DFHTM1782I CICSIDC All non-system tasks have been successfully terminated.
09.04.16 . +DFHXG6404I CICSIDC SIGNING OFF NORMALLY FROM THE CAVM.
09.04.16 . +DFHXG6405I CICSIDC SIGN OFF NORMAL FROM THE CAVM ACCEPTED.
09.04.17 . +DFHDU0303I CICSIDC Transaction Dump Data set DFHDMPB closed.
09.04.17 . +DFHKE1799 CICSIDC TERMINATION OF CICS/ESA IS COMPLETE.
09.04.17 . -DFHIVPOL CICS CICS 00 2022 .05 .00 1.9 502K 64 0 76 0 1
09.04.19 . -DFHIVPOL CICS PRTDMPA 00 439 .00 .00 .0 13810 64 0 0 0 0
09.04.20 . -DFHIVPOL CICS PRTDMPB 00 377 .00 .00 .0 3977 64 0 0 0 0
09.04.31 . -DFHIVPOL CICS PRTAUXT 00 1689 .07 .00 .1 427K 64 0 0 0 0
09.04.43 . -DFHIVPOL CICS PRTBUXT 00 1721 .08 .00 .2 465K 64 0 0 0 0
09.04.43 . IEF404I DFHIVPOL - ENDED - TIME=09.04.43
09.04.43 . -DFHIVPOL ENDED. NAME=userid TOTAL CPU TIME= .21 TOTAL ELAPSED TIME= 2.3
09.04.43 . $HASP395 DFHIVPOL ENDED

```

Figure 38 (Part 2 of 2). Sample job log for the DFHIVPOL job running a new alternate CICS in MVS image 1

Notes:

- 1** For information about the system initialization parameters used by the IVP jobs, see page 111. (See also **2** and **3** below.)
- 2** The DFHIVPOL job was edited to specify the parameter START=STANDBY to start up the CICS region CICSIDC as an alternate CICS region.
- 3** The DFH\$SIP1 member of the SYSIN data set was edited to specify the override CLT=1\$ to identify the suffix of the command list table for the new alternate CICS region.

You see from the initialization messages for the alternate CICS region (see Figure 38 on page 162) that this table is referred to during initialization. In this instance, CICS cannot use the CLT because the APPLID specified in the startup (CICSIDB) and the MVS system ID (MVSJ) are not defined in the DFHCLT1\$ table. Although in this case the error did not prevent a successful takeover, a takeover normally is at risk if CLT commands cannot be executed.

- 4** The CICSIDC region is shut down in response to the active CICS region CICSIDB being shutdown by a CEMT PERFORM SHUTDOWN command (without the IMMEDIATE option).

The sample overseer program

There is an IBM-supplied job called DFHIVXRO, which runs a sample overseer program called DFH\$AXRO. The DFHIVXRO job is loaded into the CICS410.XDFHINST library when you run the DFHISTAR job, and the DFH\$AXRO program is in CICS410.SDFHAUTH.

Although it is not intended primarily for use with these XRF IVP jobs, you can run this overseer job in conjunction with the active and alternate IVP jobs. For programming information about the purpose of a CICS overseer in an XRF environment, and the sample job and program, see the *CICS/ESA Customization Guide*.

Verifying the CICS-DBCTL interface

This section describes how to use the installation verification procedure, DFHIVPDB, which you can use to verify that the CICS-DBCTL interface can be used successfully.

Before you can run the DFHIVPDB job successfully, you must:

1. Tailor the DFHIVPDB job to your CICS and IMS environment.

You can do this as part of the process of tailoring all CICS sample post-installation jobs, as described in Chapter 6, “Installing DL/I support” on page 89. When you run the DFHISTAR job as part of the CICS installation process, the DFHIVPDB job is installed in the CICS410.XDFHINST library.

Note: Change the prefix of the IMS.RESLIB library in the DFHIVPDB job to the prefix that you use for your IMS libraries.

2. Create the data sets needed by the CICS region used by the the DFHIVPDB job.

To do this, 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 needed for each CICS region.

When you run the DFHISTAR job as part of the CICS installation process, these jobs are installed in the CICS410.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 you 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 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.RESLIB library.
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 following job steps:

1. **GEN.** This step unloads the member DFH\$DBAN from the CICS410.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.

Note: 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 CICS410.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 executes the DFHSTART procedure to start up 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 shutdown the CICS region.

Note: If the DBCTL system, IVP3, is not running, the sample DLI transactions will abend.

If you want to examine the sample members used by this IVP, here is a list of them, and where you can find each one:

- DFHIVPDB** This IVP contains some explanatory comments, and was installed in the CICS410.XDFHINST library when you ran the DFHISTAR job. For details of the DFHISTAR job, see Chapter 4, “Tailoring the CICS-supplied skeleton jobs” on page 63.
- DFHSIT6\$** This is the sample system initialization table used by all the CICS IVPs, both DL/I and non-DL/I. For this reason, system initialization parameters are included in the SYSIN data set, overriding the DL/I-related parameters (for example, the source statements of the sample SIT are in the CICS410.SDFHSAMP library).
- DFH\$SIP5** This is the member of the CICS410.SYSIN data set that contains the system initialization parameter overrides specific to the DFHIVPDB job.
- Note:** You will probably want to specify other system initialization parameters (for example, APPLID, CICSSVC, and DFLTUSER) for the DFHIVPDB job; the DFH\$SIP5 member of the CICS410.SYSIN data set is a convenient place to do so.
- DFHTCT5\$** This 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 member, DFH\$TCTS, of the CICS410.SDFHSAMP library.

Running the DFHIVPDB job

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.

Notes:

1. The first transaction copied from the DFH\$DBAN member of the CICS410.SDFHSAMP library to CRADIN is CDBC CONNECT SUFFIX(IV). This connects CICS to DBCTL, using the sample DRA startup table, DFSPZPIV.
2. The final transaction copied from the DFH\$DBAN member of the CICS410.SDFHSAMP library to CARDIN is CEMT PERFORM SHUT IMMEDIATE.

If you want to use some commands online before CICS shuts down, then delete the CEMT command before you run the job. You will then be able to 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 an MVS

console” on page 126. If you are running CICS under MVS/ESA SP 4.1 or later, and you want to enter MODIFY commands from terminals connected to TSO, you must define the TSO users as console devices, as described in “Defining a TSO user as a console device” on page 127.

A sample job log from a run of the DFHIVPDB job is given in Figure 39. The results you get from the transaction processing should be the same as those shown in Figure 39.

```

      JES2 JOB LOG -- SYSTEM MVSH -- NODE WINMVSH

JOB00301
↓
15.33.25 . IRR010I USERID userid  IS ASSIGNED TO THIS JOB.
15.33.44 . ICH70001I userid  LAST ACCESS AT 15:33:04 ON WEDNESDAY, APRIL 6, 1994
15.33.44 . $HASP373 IPLIVPDB STARTED - INIT 21 - CLASS A - SYS MVSH
15.33.44 . IEF403I IPLIVPDB - STARTED - TIME=15.33.44
15.33.44 . -
15.33.44 . --TIMINGS (MINS.)--
15.33.44 . ----PAGING COUNTS----
15.33.44 . -JOBNAME STEPNAME PROCSTEP  RC  EXCP  CPU  SRB  CLOCK  SERV  PG  PAGE  SWAP  VIO  SWAPS
15.33.44 . -IPLIVPDB      GEN          00   50   .00  .00   .0  1486  64   0    0    0    0
15.33.44 . -IPLIVPDB CICS  CICSCTRL  01   11   .00  .00   .0  1165  64   0    0    0    0
15.33.45 . -IPLIVPDB CICS  DTCNTL   01   10   .00  .00   .0  1091  64   0    0    0    0
15.33.46 . 1 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
15.33.46 . DFHPA1927 DBDCCICS SIT=6$,
15.33.46 . DFHPA1927 DBDCCICS GRPLIST=DFH$IVPL,  INCLUDE DLI SAMPLE PROGRAMS & TRANSACTIONS
15.33.46 . DFHPA1927 DBDCCICS FCT=NO,
15.33.46 . DFHPA1927 DBDCCICS TCT=5$,          TCT INCLUDES SEQ DEVICES
15.33.46 . DFHPA1927 DBDCCICS XRF=NO,
15.33.46 . DFHPA1927 DBDCCICS STNTR=OFF,
15.33.46 . DFHPA1927 DBDCCICS STNTRFC=1,      TRACE FILE CONTROL AND DLI EVENTS
15.33.46 . DFHPA1927 DBDCCICS AUXTR=ON,
15.33.46 . DFHPA1927 DBDCCICS AUXTRSW=NEXT,
15.33.46 . DFHPA1927 DBDCCICS CICSSVC=218,
15.33.46 . DFHPA1927 DBDCCICS SEC=NO,
15.33.46 . DFHPA1927 DBDCCICS .END
15.33.46 . DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
15.33.46 . DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 02/09 HH:MM= 21:37).
15.33.46 . +DFHTR0103 TRACE TABLE SIZE IS 64K
15.33.47 . +DFHSM0122I DBDCCICX Limit of DSA storage below 16MB is 5,120K.
15.33.47 . +DFHSM0123I DBDCCICX Limit of DSA storage above 16MB is 20M.
15.33.47 . +DFHSM0113I DBDCCICX Storage protection is not active.
15.33.47 . +DFHSM0126I DBDCCICX Transaction isolation is not active.
15.33.47 . +DFHDM0101I DBDCCICX CICS is initializing.
15.33.47 . +DFHSI1500 DBDCCICX CICS/ESA Version 4.1.0 Startup is in progress.
15.33.47 . +DFHXS1100I DBDCCICX Security initialization has started.
15.33.47 . +DFHXS1102I DBDCCICX Security is inactive.
15.33.47 . +DFHXS1101I DBDCCICX Security initialization has ended.
15.33.47 . +DFHSI1501I DBDCCICX Loading CICS nucleus.
15.33.48 . +DFHDM0304I DBDCCICX Transaction Dump Data set DFHDMPA opened.
15.33.51 . +DFHTR0113 DBDCCICX Auxiliary trace is being started on data set DFHAUXT.
15.33.51 . IEC161I 056-084,IPLIVPDB,CICS,DFHGCD,,CICS410.CICS.DFHGCD,
15.33.51 . IEC161I CICS410.CICS.DFHGCD.DATA,ICFCAT.HC.CATALOGA
15.33.51 . IEC161I 056-084,IPLIVPDB,CICS,DFHGCD,,CICS410.CICS.DFHGCD,
15.33.51 . IEC161I CICS410.CICS.DFHGCD.INDEX,ICFCAT.HC.CATALOGA
15.33.51 . IEC161I 062-086,IPLIVPDB,CICS,DFHGCD,,CICS410.CICS.DFHGCD,
15.33.51 . IEC161I CICS410.CICS.DFHGCD.DATA,ICFCAT.HC.CATALOGA
15.33.51 . +DFHMN0105I DBDCCICX Using default Monitoring Control Table.
15.33.51 . +DFHMN0110I DBDCCICX CICS Monitoring is inactive.

```

Figure 39 (Part 1 of 2). Sample job log output from the DFHIVPDB job

```

15.33.52 . +DFHSI1502I DBDCCICX CICS startup is Cold.
15.33.52 . +DFHSI1503I DBDCCICX Terminal data sets are being opened.
15.33.52 . F NET,USERVAR,ID=DBDCCICS,VALUE=DBDCCICX
15.33.52 . +DFHSI1592 DBDCCICX CICS applid not (yet) active to VTAM.
15.33.52 . +DFHSI1572 DBDCCICX Unable to OPEN VTAM ACB - RC=00000008, ACB Code=5A.
15.33.52 . +DFHSI1510I DBDCCICX Journal control subtask is being attached/entered.
15.33.53 . IEC161I 056-084,IPLIVPDB,CICS,DFHRSD,,CICS410.CICS.DFHRSD,
15.33.53 . IEC161I CICS410.CICS.DFHRSD.DATA,ICFCAT.HC.CATALOGA
15.33.53 . IEC161I 056-084,IPLIVPDB,CICS,DFHRSD,,CICS410.CICS.DFHRSD,
15.33.53 . IEC161I CICS410.CICS.DFHRSD.INDEX,ICFCAT.HC.CATALOGA
15.33.53 . IEC161I 062-086,IPLIVPDB,CICS,DFHRSD,,CICS410.CICS.DFHRSD,
15.33.53 . IEC161I CICS410.CICS.DFHRSD.DATA,ICFCAT.HC.CATALOGA
15.33.53 . +DFHCP0101I DBDCCICX CPI initialization has started.
15.33.53 . +DFHPR0104I DBDCCICX Partner resource manager initialization has started.
15.33.54 . +DFHFC0100I DBDCCICX File Control initialization has started.
15.33.54 . +DFHTD0100I DBDCCICX Transient Data initialization has started.
15.33.54 . IEC161I 056-084,IPLIVPDB,CICS,DFHTEMP,,,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP.DATA,ICFCAT.HC.CATALOGA
15.33.54 . +DFHSI1516I DBDCCICX Opening journal data sets.
15.33.54 . IEC161I 062-086,IPLIVPDB,CICS,DFHTEMP,,,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHTEMP.DATA,ICFCAT.HC.CATALOGA
15.33.54 . +DFHAI0101I DBDCCICX AITM initialization has started.
15.33.54 . IEC130I CEEMSG DD STATEMENT MISSING
15.33.54 . IEC130I CEEOUT DD STATEMENT MISSING
15.33.54 . +DFHFC0101I DBDCCICX File Control initialization has ended.
15.33.54 . +DFHJC4508 DBDCCICX CICS SYSTEM LOG. PRIMARY DATA SET NOW RECEIVING OUTPUT ON 749
15.33.54 . +DFHJC4500 DBDCCICX 01 of 01 journals successfully opened
15.33.54 . IEC161I 056-084,IPLIVPDB,CICS,DFHINTRA,,,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHINTRA,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHINTRA.DATA,ICFCAT.HC.CATALOGA
15.33.54 . IEC161I 062-086,IPLIVPDB,CICS,DFHINTRA,,,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHINTRA,
15.33.54 . IEC161I CICS410.CNTL.CICS.DFHINTRA.DATA,ICFCAT.HC.CATALOGA
15.33.54 . +DFHTD0101I DBDCCICX Transient Data initialization has ended.
15.33.54 . +DFHCP0102I DBDCCICX CPI initialization has ended.
15.33.54 . +DFHPR0105I DBDCCICX Partner resource manager initialization has ended.
15.33.54 . +DFHAI0102I DBDCCICX AITM initialization has ended.
15.33.54 . +DFHSI1511I DBDCCICX Installing group list DFH$IVPL.
15.33.59 . F NET,USERVAR,ID=DBDCCICS,VALUE=DBDCCICX
15.33.59 . +DFHSI1517 DBDCCICX Control is being given to CICS.
15.35.05 . 2 +DFHTM1703 DBDCCICX CICS/ESA is being terminated by userid CICSUSER in transaction CEMT at terminal SAMA.
15.35.05 . +DFHDB8122 I 04/06/94 15:35:05 DBDCCICX CICS is about to disconnect from DBCTL for CICS shutdown.
15.35.06 . +DFHDB8123 I DBDCCICX
04/06/94 15:35:06 DBDCCICX CICS disconnection from DBCTL for CICS
shutdown has completed successfully.
15.35.06 . +DFHJC4553 04/06/94 15:35:06 DBDCCICX Archive job submitted for 01 A.
15.35.06 . +DFHJC4510I DBDCCICX All open journals now closed
15.35.07 . +DFHJU0303I DBDCCICX Transaction Dump Data set DFHDMPA closed.
15.35.07 . +DFHKE1799 DBDCCICX TERMINATION OF CICS/ESA IS COMPLETE.
15.35.08 . -IPLIVPDB CICS CICS 00 2612 .04 .00 1.3 545K 64 0 58 0 1
15.35.09 . -IPLIVPDB CICS PRTDMPA 00 401 .00 .00 .0 386K 64 0 0 0 0
15.35.23 . -IPLIVPDB CICS PRTDMPB 00 1675 .01 .00 .2 81327 64 0 0 0 0
15.35.55 . -IPLIVPDB CICS PRTAUXT 00 1507 .06 .00 .5 359K 64 0 0 0 0
15.35.57 . IEC020I 001-4,IPLIVPDB,PRTBUXT,DFHAUXT,74D,HCDA65,
15.35.57 . -IPLIVPDB CICS PRTBUXT 00 394 .00 .00 .0 5281 64 0 0 0 0
15.35.57 . IEF404I IPLIVPDB - ENDED - TIME=15.35.57
15.35.57 . -IPLIVPDB ENDED. NAME=userid TOTAL CPU TIME= .11 TOTAL ELAPSED TIME= 2.2
15.35.57 . $HASP395 IPLIVPDB ENDED

```

Figure 39 (Part 2 of 2). Sample job log output from the DFHIVPDB job

Notes:

- 1 The DFHIVPDB job uses the sample SIT, DFHSIT6\$, as used by all the CICS IVPs. It also uses some system initialization parameters included in the DFH\$SIP5 member of the SYSIN data set, to override the parameters in DFHSIT6\$. 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 page 111.

2 The DFH\$DBAN member issues a CEMT PERFORM SHUT IMMEDIATE command to shut down the CICS region. The DFHDB8122 message indicates that CICS was still attached to DBCTL when the shutdown request was made, and that CICS will try to disconnect from DBCTL. The DFHDB8123 message indicates that CICS has disconnected from DBCTL successfully, and is continuing to shut down.

Verifying CICS local DL/I support

This section describes how to use the installation verification procedure, DFHIVPDL, which you can use to verify that the local DL/I interface can be used successfully.

Before you can run the DFHIVPDL job successfully, you must:

1. Tailor the DFHIVPDL job to your CICS and IMS environment.

You can do this as part of the process of tailoring all CICS sample post-installation jobs, as described in Chapter 6, “Installing DL/I support” on page 89. When you run the DFHISTAR job as part of the CICS installation process, the DFHIVPDL job is installed in the CICS410.XDFHINST library.

2. Create the data sets needed by the CICS region used by the DFHIVPDL job.

To do this, 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 needed for each CICS region.

When you run the DFHISTAR job as part of the CICS installation process, these jobs are installed in the CICS410.XDFHINST library.

3. Install local DL/I support, as described in Chapter 4, “Tailoring the CICS-supplied skeleton jobs” on page 63.
4. Run the IMS installation verification procedures, as outlined in “The IMS installation requirements for the DFHIVPDL job.”

The IMS installation requirements for the DFHIVPDL job

The DFHIVPDL job depends on you running the IMS installation verification procedures, as part of the INSTALL/IVP process described in the *IMS Installation Guide*. The following assumptions are made:

1. That the PSBLIB, DBDLIB, and ACBLIB libraries needed by the DFHIVPDL job were created during the IMS installation, and that the names are:

imspref.PSBLIB
imspref.DBDLIB
imspref.ACBLIB

The default value of *imspref* is IMS.

To enable the DFHIVPDL job to use these libraries, you must remove the comment from the IMS DD statements in the DFHIVPDL job and change the value of *imspref* to the value used in your IMS installation.

2. That you have generated the DBD for the sample database, and that the DBD is in the IMS DBD library.

3. That the IMS sample database, DI21PART, has been successfully defined. This comprises two data sets:

DI21PART
DI21PARO

4. That you have loaded the database with the IMS-supplied sample data.

5. That you have installed the following IMS-supplied procedures in an executable procedure library.

ACBGEN
PSBGEN

Assuming that these steps have been successfully carried out, the DFHIVPDL job contains the remaining preparatory job steps for generating the PSBs and the ACB required by the CICS sample DL/I applications programs.

For information about installing IMS, the INSTALL/IVP process, and running the IMS IVPs, see the IMS *Installation Guide*.

Generating the DDIR and PDIR

Before you can run the DFHIVPDL job, you must generate a directory of program specification blocks (a PDIR), and a directory of data management blocks (a DDIR).

You generate these by assembling and link-editing DFHDLPSB and DFHDLDBD macro instructions. The sample macro instructions that you need to generate the PDIR and DDIR for the DL/I IVP are in members DFHPSB1\$ and DFHDMB1\$, respectively, which are in the CICS410.SDFHSAMP library. These are supplied in source form only, because you must assemble them against the version of IMS that you intend to use. The DLI parameter in the sample macros specifies IMS/ESA 3.1 (DLI=3.1.0). Change this to 4.1.0 if you are using IMS/ESA Version 4.1.0. (For information about coding DFHDLPSB and DFHDLDBD macro instructions, see the *CICS/ESA Resource Definition Guide*.)

You can use the CICS-supplied procedure, DFHAUPLE, to assemble and link-edit these tables. For information about the DFHAUPLE procedure, see the *CICS/ESA System Definition Guide*.

Note: PDIRs and DDIRs must be link-edited as AMODE(24) and RMODE(24).

When running with DBCTL, you must define the PDIR and DDIR to DBCTL by using IMS-supplied macros, during the sysgen of the IMS/DM system.

The DFHIVPDL job steps

The DFHIVPDL job consists of the following job steps:

1. **PSB04 and PSB05.** These two steps execute the IMS procedure, PSBGEN, to generate into the IMS PSB library the PSBs used by the two assembler versions of the DL/I sample applications. The two assembler versions of the sample applications are:

DFH\$DLAE

The assembler version of the sample program that uses the EXEC DL/I interface.

DFH\$DLAC

The assembler version of the sample program that uses the CALL DL/I interface.

The PSBs generated by PSB04 and PSB05 are used by these two applications for adding, deleting, and updating database records; Job step PSB05 is used to get database records in response to inquiries.

Note: Only the assembler versions of these DL/I sample applications are provided in executable form, in the CICS410.SDFHLOAD library. Before you can use the COBOL and PL/I versions of the DL/I sample applications, you must first translate, compile, and link-edit them into a suitable library.

2. **PSB14 and PSB15.** These two steps execute the IMS procedure, PSBGEN, to generate into the IMS PSB library the PSBs used by the two PL/I versions of the DL/I sample applications. The two PL/I versions of the sample applications are:

DFH\$DLPE

The PL/I version of the sample program that uses the EXEC DL/I interface.

DFH\$DLPC

The PL/I version of the sample program that uses the CALL DL/I interface.

If you want to run these PL/I applications, you must first translate, compile, and link-edit them into a suitable library. They are supplied in source form only, in CICS410.ADFHSAMP.

Job step PSB14 is used by these two applications for adding, deleting, and updating database records; Job step PSB15 is used to get database records in response to inquiries.

3. **PSB24 and PSB25.** These two steps execute the IMS procedure, PSBGEN, to generate into the IMS PSB library the PSBs used by the two COBOL versions of the DL/I sample applications. The two COBOL versions of the sample applications are:

DFH0DLCE

The COBOL version of the sample program that uses the EXEC DL/I interface.

DFH0DLCC

The COBOL, or VS COBOL II, version of the sample program that uses the CALL DL/I interface.

Notes:

- a. If you want to run the DFH0DLCC program, you must edit the source program according to whether you want to compile it using the OS/VS COBOL compiler or the VS COBOL II compiler. The source contains language statements for both types of COBOL. The language variations are confined to two sections of the program; the LINKAGE-SECTION, and a section in the PROCEDURE-DIVISION called SCHED. For details of the sections you must edit, see the instructions contained in the source module.
- b. When compiling the DFH0DLCC program, we strongly recommend that you use the NOOPT compiler option. However, if you choose to use the OPT option when compiling the DFH0DLCC program, you must insert appropriate SERVICE RELOAD statements into the DFH0DLCC program, after each statement that modifies addressability to an area defined in the linkage section. For information about the OPT|NOOPT compiler option, see the *CICS/ESA Application Programming Guide*.

If you want to run these COBOL applications, you must first translate, compile, and link-edit them into a suitable library. They are provided in source form only, in the CICS410.SDFHSAMP library.

Job step PSB24 is used by these two applications for adding, deleting, and updating database records; Job step PSB25 is used to get database records in response to inquiries.

4. **ACB.** This step generates access control blocks from the PSBs and DBDs into the IMS ACBLIB library.
5. **GEN.** This step unloads the member DFH\$DLAN from the CICS410.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.

Note: The sequential data set CARDIN is defined in the sample TCT as a simulated terminal.

The COBOL version, DFH0DLCB, and the PL/I version, DFH\$DLPL, of the sample DL/I transactions are also in the CICS410.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.

6. **CICS.** This job step executes the DFHSTART procedure to start up CICS.
7. **PRTLOG.** This job step prints the CICS region log using the IMS utility program, DFSERA10.

If you want to examine the various sample members used by this IVP, here is a list of them, and where you can find each one:

- DFHIVPDL** This IVP contains some explanatory comments, and was installed in the CICS410.XDFHINST library when you ran the DFHISTAR job. For details of the DFHISTAR job, see Chapter 4, “Tailoring the CICS-supplied skeleton jobs” on page 63.
- DFHSIT6\$** This is the sample system initialization table used by all the CICS IVPs, both DL/I and non-DL/I. For this reason, system initialization parameters are included in the SYSIN data set, overriding the DL/I-related parameters (for example, DL/I=(YES,COLD), and the PDIR and DDIR parameters specifying the PSB and DMB directories respectively). The source statements of the sample SIT are in the CICS410.SDFHSAMP library.
- DFHTCT5\$** This 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 member, DFH\$TCTS, of the CICS410.SDFHSAMP library.

Running the DFHIVPDL job

When you are satisfied that you have made all the necessary preparations, and that all the prerequisite jobs have been run, submit the DFHIVPDL job. The PSBs and the ACB will be generated, and the transactions loaded into CARDIN. CICS will read the transactions, and send the output to the PRINTER sequential data set.

Note: The final transaction copied from the DFH\$DLAN member of the CICS410.SDFHSAMP library to CARDIN is CEMT PERFORM SHUT IMMEDIATE.

If you want to use some commands online before CICS shuts down, then delete the CEMT command before you run the job. You will then be able to 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 DFHIVPDL, as described in “Defining an MVS console” on page 126. If you are running CICS under MVS/ESA SP 4.1 or later, and you want to enter MODIFY commands from terminals connected to TSO, you must define the TSO users as console devices, as described in “Defining a TSO user as a console device” on page 127.

A sample job log from a run of the DFHIVPDL job is given in Figure 40 on page 174. The results you get from the transaction processing should be the same as those shown in Figure 40.

J E S 2 J O B L O G -- S Y S T E M M V S H -- N O D E W I N M V S H

```

17.01.40 IRR010I USERID userid IS ASSIGNED TO THIS JOB.
17.01.44 ICH70001I userid LAST ACCESS AT 17:00:37 ON TUESDAY, DECEMBER 14, 1993
17.01.44 $HASP373 DFHIVPDL STARTED - INIT 1 - CLASS A - SYS MVSH
17.01.44 IEF403I DFHIVPDL - STARTED - TIME=17.01.44
17.01.45 -
17.01.45 --TIMINGS (MINS.)--
17.01.45 ----PAGING COUNTS----
17.01.45 -JOBNAME STEPNAME PROCSTEP RC EXCP CPU SRB CLOCK SERV PG PAGE SWAP VIO SWAPS
17.01.45 -DFHIVPDL PSB04 C 00 92 .00 .00 .0 4355 10 0 0 0 0
17.01.46 -DFHIVPDL PSB04 L 00 32 .00 .00 .0 1275 10 0 0 0 0
17.01.48 -DFHIVPDL PSB05 C 00 93 .00 .00 .0 4193 10 0 0 0 0
17.01.48 -DFHIVPDL PSB05 L 00 31 .00 .00 .0 1103 10 0 0 0 0
17.01.50 -DFHIVPDL PSB14 C 00 99 .00 .00 .0 4444 10 0 0 0 0
17.01.51 -DFHIVPDL PSB14 L 00 32 .00 .00 .0 1096 10 0 0 0 0
17.01.52 -DFHIVPDL PSB24 C 00 93 .00 .00 .0 4222 10 0 0 0 0
17.01.53 -DFHIVPDL PSB24 L 00 31 .00 .00 .0 1078 10 0 0 0 0
17.01.55 -DFHIVPDL PSB15 C 00 99 .00 .00 .0 4456 10 0 0 0 0
17.01.55 -DFHIVPDL PSB15 L 00 33 .00 .00 .0 1136 10 0 0 0 0
17.01.57 -DFHIVPDL PSB25 C 00 92 .00 .00 .0 4259 10 0 0 0 0
17.01.58 -DFHIVPDL PSB25 L 00 31 .00 .00 .0 1128 10 0 0 0 0
17.02.04 1 DFS627I IMS RTM CLEANUP ( EOT ) COMPLETE FOR JS DFHIVPDL.G .ACB ,RC=00
17.02.04 -DFHIVPDL ACB G 00 426 .00 .00 .1 10684 10 0 0 0 0
17.02.05 -DFHIVPDL GEN 00 48 .00 .00 .0 1281 10 0 0 0 0
17.02.05 -DFHIVPDL CICS CICSNTL 01 11 .00 .00 .0 968 10 0 0 0 0
17.02.05 -DFHIVPDL CICS DTCNTL 01 11 .00 .00 .0 972 10 0 0 0 0
17.02.08 2 DFHPA1102 DBDCCICS READING OVERRIDE PARAMETERS FROM SYSIN.
17.02.08 DFHPA1927 DBDCCICS SIT=6$,
17.02.08 DFHPA1927 DBDCCICS GRPLIST=IPL$IVDL
17.02.08 DFHPA1927 DBDCCICS DFLTUSER=IVPUSER,
17.02.08 DFHPA1927 DBDCCICS FCT=NO,
17.02.08 DFHPA1927 DBDCCICS TCT=5$, TCT INCLUDES SEQ DEVICES
17.02.08 DFHPA1927 DBDCCICS XRF=NO,
17.02.08 DFHPA1927 DBDCCICS AUXTR=(ON,ONCE),
17.02.08 DFHPA1927 DBDCCICS DLI=(YES,COLD), PARAMETERS FOR CICS-DL/I INTERFACE
17.02.08 DFHPA1927 DBDCCICS DBP=2$, ( SUFFIX DEPENDS ON IMS VERSION
17.02.08 DFHPA1927 DBDCCICS DDIR=1$, ( SUFFIX DEPENDS ON IMS VERSION
17.02.08 DFHPA1927 DBDCCICS PDIR=1$, ( SUFFIX DEPENDS ON IMS VERSION
17.02.08 DFHPA1927 DBDCCICS DLDBRC=NO, ( NO DATA SHARING SUPPORT
17.02.08 DFHPA1927 DBDCCICS DLLPA=NO, (
17.02.08 DFHPA1927 DBDCCICS DLMON=NO, ( NO DATABASE MONITORING
17.02.08 DFHPA1927 DBDCCICS DLTHRED=5, ( NO. OF INTERFACE THREADS
17.02.09 DFHPA1927 DBDCCICS DLXCPVR=NO, ( NO PAGE FIXING
17.02.09 DFHPA1927 DBDCCICS DMBPL=4, ( MAX SIZE OF DMB POOL
17.02.09 DFHPA1927 DBDCCICS ENQPL=2, ( ENQ CONTROL SPACE
17.02.09 DFHPA1927 DBDCCICS PISCHD=YES, ( PROGRAM ISOLATION SCHEDULING REQ
17.02.09 DFHPA1927 DBDCCICS PSBCHK=NO, ( NO REMOTE TERMINAL CHECK
17.02.09 DFHPA1927 DBDCCICS PSBPL=4, ( PSB POOL SIZE IN 1024-BYTE BLKS
17.02.09 DFHPA1927 DBDCCICS .END
17.02.09 DFHPA1101 DBDCCICS DFHSIT6$ IS BEING LOADED.
17.02.09 DFHPA1108 DBDCCICS DFHSIT6$ HAS BEEN LOADED. (GENERATED AT: MM/DD= 11/08 HH:MM= 17:25).
17.02.09 +DFHTR0103 TRACE TABLE SIZE IS 64K
17.02.10 +DFHSM0122I DBDCCICX Limit of DSA storage below 16MB is 5,120K.
17.02.10 +DFHSM0123I DBDCCICX Limit of DSA storage above 16MB is 20M.
17.02.10 +DFHSM0113I DBDCCICX Storage protection is not active.
17.02.10 +DFHSM0126I DBDCCICX Transaction isolation is not active.
17.02.10 +DFHDM0101I DBDCCICX CICS is initializing.
17.02.11 +DFHSI1500 DBDCCICX CICS/ESA Version 8.8.4.4 Startup is in progress.
17.02.11 +DFHXS1100I DBDCCICX Security initialization has started.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class ACICSPCT have been built.

```

Figure 40 (Part 1 of 3). Sample job log output from the DFHIVPDL job

```

17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class CCICSCMD have been built.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class DCICSDCT have been built.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class FCICSFCT have been built.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class JCICSJCT have been built.
17.02.12 +DFHDU0304I DBDCCICX Transaction Dump Data set DFHDMPA opened.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class MCICSPPT have been built.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class PCICSPSB have been built.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class SCICSTST have been built.
17.02.12 +DFHSI1501I DBDCCICX Loading CICS nucleus.
17.02.12 +DFHTR0113 DBDCCICX Resource profiles for class TCICSTRN have been built.
17.02.12 +DFHXS1105 12/14/93 17:02:12 DBDCCICX Resource profiles for class SURROGAT have been built.
17.02.12 +DFHXS1103I DBDCCICX Default security for IVPUSER has been established.
17.02.12 +DFHXS1101I DBDCCICX Security initialization has ended.
17.02.12 +DFHTR0113 DBDCCICX Auxiliary trace is being started on data set DFHAUXT.
17.02.36 IEC031I D37-04,IFG0554T,DFHIVPDL,CICS,DFHAUXT,58E,11DA01,
17.02.36 IEC031I userid.CICS410.CICS.DFHAUXT
17.02.36 +DFHTR0110 - AUXILIARY TRACE DATA SET DFHAUXT FULL - SWITCHING TO DFHBUXT
17.02.37 +DFHMN0105I DBDCCICX Using default Monitoring Control Table.
17.02.37 +DFHMN0110I DBDCCICX CICS Monitoring is inactive.
17.02.37 +DFHSI1518 DBDCCICX No control record on global catalog data set. Cold start forced.
17.02.37 +DFHSI1502I DBDCCICX CICS startup is Cold.
17.02.38 +DFHSI1503I DBDCCICX Terminal data sets are being opened.
17.02.38 F NET,USERVAR,ID=DBDCCICS,VALUE=DBDCCICX
17.02.38 +DFHSI1510I DBDCCICX Journal control subtask is being attached/entered.
17.02.38 +DFHSI1514I DBDCCICX DL/I initialization started.
17.02.52 +DFHCP0101I DBDCCICX CPI initialization has started.
17.02.52 +DFHPR0104I DBDCCICX Partner resource manager initialization has started.
17.02.53 +DFHTD0100I DBDCCICX Transient Data initialization has started.
17.02.53 +DFHSI1516I DBDCCICX Opening journal data sets.
17.02.53 +DFHAI0101I DBDCCICX AITM initialization has started.
17.02.53 IEC031I D37-04,IFG0554T,DFHIVPDL,CICS,DFHBUXT,58E,11DA01,
17.02.53 IEC031I userid.CICS410.CICS.DFHBUXT
17.02.53 +DFHTR0109 - AUXILIARY TRACE DATA SET DFHBUXT FULL - AUXILIARY TRACE HAS BEEN STOPPED
17.02.53 +DFHFC0100I DBDCCICX File Control initialization has started.
17.02.55 IEC161I 080-053,DFHIVPDL,CICS,DFHTEMP,,
17.02.55 IEC161I userid.CICS410.CNTL.CICS.DFHTEMP,
17.02.55 IEC161I userid.CICS410.CNTL.CICS.DFHTEMP.DATA,ICFCAT.C11.CATALOGA
17.02.56 +DFHJC4508 DBDCCICX CICS SYSTEM LOG. PRIMARY DATA SET NOW RECEIVING OUTPUT ON 58E
17.02.56 +DFHJC4500 DBDCCICX 01 of 01 journals successfully opened
17.02.58 IEC161I 080-053,DFHIVPDL,CICS,DFHINTRA,,
17.02.58 IEC161I userid.CICS410.CNTL.CICS.DFHINTRA,
17.02.58 IEC161I userid.CICS410.CNTL.CICS.DFHINTRA.DATA,ICFCAT.C11.CATALOGA
17.03.02 +DFHTD0101I DBDCCICX Transient Data initialization has ended.
17.03.03 +DFHFC0101I DBDCCICX File Control initialization has ended.
17.03.07 +DFHCP0102I DBDCCICX CPI initialization has ended.
17.03.07 +DFHPR0105I DBDCCICX Partner resource manager initialization has ended.
17.03.07 +DFHAI0102I DBDCCICX AITM initialization has ended.
17.03.07 +DFHSI1511I DBDCCICX Installing group list IPL$IVPL.
17.03.30 +DFHAP1204I DBDCCICX COBOL2 is being initialized.
17.03.30 +DFHAP1205I DBDCCICX C/370 is being initialized.
17.03.31 F NET,USERVAR,ID=DBDCCICS,VALUE=DBDCCICX
17.03.31 +DFHSI1517 DBDCCICX Control is being given to CICS.
17.03.32 +DFHTM1701 DBDCCICX CICS/ESA is being terminated by operator at terminal SAMA
17.03.33 +DFHJC4553 12/14/93 17:03:33 DBDCCICX Archive job submitted for 01 A.
17.03.33 +DFHJC4510I DBDCCICX All open journals now closed
17.03.34 IMS RTM CLEANUP ( EOT ) COMPLETE FOR ST DFHIVPDL.CICS .CICS ,RC=00
17.03.34 +DFHDU0303I DBDCCICX Transaction Dump Data set DFHDMPA closed.
17.03.34 +DFHKE1799 DBDCCICX TERMINATION OF CICS/ESA IS COMPLETE.
17.03.35 -DFHIVPDL CICS CICS 00 5186 .13 .00 1.5 1124K 10 0 0 0 0
17.03.39 -DFHIVPDL CICS PRTDMPA 00 362 .00 .00 .0 3324 10 0 0 0 0

```

Figure 40 (Part 2 of 3). Sample job log output from the DFHIVPDL job

17.03.42	-DFHIVPDL CICS	PRTDMPB	00	366	.00	.00	.0	3186	10	0	0	0	0
17.04.07	-DFHIVPDL CICS	PRTAUXT	00	1674	.16	.00	.4	457K	10	0	0	0	0
17.04.33	-DFHIVPDL CICS	PRTBUXT	00	1703	.16	.00	.4	439K	10	0	0	0	0
17.04.34	-DFHIVPDL	PRTLOG	00	21	.00	.00	.0	2283	10	0	0	0	0
17.04.34	IEF404I DFHIVPDL - ENDED - TIME=17.04.34												
17.04.34	-DFHIVPDL ENDED.	NAME-userid			TOTAL CPU TIME=		.49	TOTAL ELAPSED TIME=		2.8			
17.04.34	\$HASP395 DFHIVPDL ENDED												

Figure 40 (Part 3 of 3). Sample job log output from the DFHIVPDL job

Notes:

1 The IMS resource termination manager (RTM) produces the message, DFS627I, with return code X'00' when all TCBS complete without errors and cleanup finishes successfully at the end of task. This message is issued, during the DFHIVPDL job, once for the ACB job step and once for the CICS job step.

2 The DFHIVPDT job uses the sample SIT, DFHSIT6\$, as used by all the CICS IVPs. It also uses some system initialization parameters included in the DFH\$SIP4 member of the SYSIN data set, to override the DL/I-related parameters in DFHSIT6\$ (for example, DL/I=(YES,COLD), and the PDIR and DDIR parameters specifying the PSB and DMB directories respectively). Further, the DFH\$SIP4 member was edited to specify other system initialization parameters to create the DFHIVPDL job log shown. For information about these extra system initialization parameters used by the IVP jobs, see page 111.

Testing the CICS-DB2 environment

This section outlines how you can test the CICS-DB2 environment. It uses Phase 5 of the DB2 installation verification procedure. It is intended as an overview of what is involved, and what you would expect to see.

To use the DB2 installation verification procedure, and Phase 5 in particular, see the *IBM DATABASE 2 Administration Guide*. That publication gives the latest information about the procedure, and describes the steps involved in much more detail.

Run DB2 jobs DSNTEJ5C and DSNTEJ5P

To prepare the sample applications to be used in a CICS-DB2 environment, run the jobs DSNTEJ5C and DSNTEJ5P supplied with DB2.

Job DSNTEJ5C installs the sample application transactions in COBOL and prepares the organization application. Job 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 following CICS transaction codes:

- D8PP, which starts the PL/I project version
- D8PS, which starts the PL/I organization version
- D8CS, which starts the COBOL organization version.

If you enter one of these transaction codes, the panels shown in Figure 41 or Figure 42 are displayed.

```
                ACTION SELECTION
MAJOR SYSTEM ...: 0          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 41. 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 42. Initial panel for the DB2 project application in CICS

For detailed information about running the organization and project applications, see the *IBM DATABASE 2 Administration Guide*.

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.

Appendix A. Disk space needed for CICS/ESA 4.1

This appendix gives information useful when planning DASD space for CICS/ESA 4.1. More comprehensive values are given in the *CICS Program Directory*. Check the values against those given in the *CICS Program Directory* and PSP bucket; if there are any differences, use the values in the *CICS Program Directory* or PSP bucket.

Table 10 gives the space (in cylinders) needed to install CICS/ESA 4.1 from the distribution tape.

Table 11 lists the operations during which the DASD volumes are used.

Identification	3380	3390
CICS410.TDFHINST	1	1
CICS410.XDFHINST	1	1
Relfile data sets on SMPVOL	138	131
SMP/E non-VSAM data sets on SMPVOL	26	25
DISTVOL	117	112
TARGVOL	186	177
DZONE	11	11
TZONE	11	11
GZONE	11	11
Total during installation	500	362
Total after installation	413	347

Notes:

1. Allow up to 15% on the values given, for servicing requirements. Secondary allocations are 10% of the primary allocations.
2. The values listed against xZONE identifiers are for zones and their associated logs.

<i>DFHISTAR</i> Volume Parameter	<i>Installing</i>	<i>Applying Service</i>	<i>Customiz- ing</i>	<i>Assembling Resource Tables</i>	<i>Running CICS</i>
SMPVOL	*	*	*	*	
DISTVOL	*	*	*		
TARGVOL	*	*	*	*	*
DZONE	*	*	*		
TZONE	*	*	*	*	
GZONE	*	*	*	*	

Applying service or customizing CICS: SMPVOL, DISTVOL, TARGVOL, DZONE, TZONE, and GZONE are needed whenever you apply service or customize your CICS programs.

SMPVOL and GZONE are needed whenever you apply service or customize your **alternative** libraries for use with XRF.

Assembling CICS tables: SMPVOL, TARGVOL, TZONE, and GZONE are needed whenever you assemble your CICS tables.

SMPVOL and GZONE are needed whenever you assemble CICS tables for an XRF alternate CICS region.

Using SMP/E

Always use SMP/E for the following tasks:

- Applying service
- Customizing CICS
- Assembling CICS tables

Running CICS: Only TARGVOL is needed to run CICS.

Appendix B. CICS modules eligible for the MVS link pack area

This topic provides information about the CICS modules that are required in the MVS link pack area, and other CICS modules that are eligible for the MVS link pack area. This information is intended to help you plan for and install CICS modules in the MVS link pack area, for the functions that your CICS regions use.

The following terms are used in this appendix:

Term	Meaning
MVS link pack area	The MVS link pack area generally.
LPA	The area of the MVS link pack area below the 16MB line.
ELPA	The area of the MVS link pack area above the 16MB line.

For further information about installing CICS modules into the MVS link pack area, and about controlling their use from the MVS link pack area, see “Default message-formatting initialization parameters” on page 12.

CICS modules required in the MVS link pack area

CICS modules that are required in the MVS link pack area are loaded into the CICS410.SDFHLPALPA library when you install CICS/ESA 4.1. Details of these modules is given in Table 12 on page 185. These modules are not affected by any CICS parameters or options, and CICS does not use the standard MVS search order for them. For further information about these modules, see “The IEASYSxx MVS initialization member” on page 11.

CICS modules eligible for the MVS link pack area

Other CICS/ESA 4.1 modules that are eligible for installation in the MVS link pack area are specified in the CICS-supplied USERMODs: DFH\$UMOD (for base CICS modules), DFH\$UJPN (for Japanese Language Feature modules). Details of these modules is given in Table 13 on page 185.

Information about modules eligible for the MVS link pack area

The following information is provided in Table 12 on page 185 and Table 13 on page 185. Some of the information applies only to the modules listed in Table 13.

Name	The name of the module.
Description	A brief description of the module. This gives some clues to the associated function, useful if the module does not have a controlling CICS option.
Library	(Table 13 only.) The library in which the module is installed:
Library	DS name
AUTH	CICS410.SDFHAUTH
LOAD	CICS410.SDFHLOAD
LINK	CICS410.SYS1.SDFHLINK

You can use the CICS-supplied usermods to move the modules from these libraries to the CICS410.SDFHLPALPA library.

LPA/ELPA	(Table 13 only.) In this column, the terms LPA and ELPA are used to indicate whether a module will be loaded into the part of the MVS link pack area that is below (LPA) or above (ELPA) the 16MB line.
Priority	(Table 13 only.) A nominal “priority” to help you decide whether a module should be in the MVS link pack area and to choose between modules if your MVS link pack area is short on space.
Size	The size of the module.
Notes	Notes about the use of the module from the MVS link pack area and any associated CICS options to be specified for the function that uses the module.

Some of these information categories are described in more detail in the following sections.

Priority

The priority of the modules eligible for the LPA are as follows:

1. Must be in the MVS link pack area. Information about these modules, installed in the CICS410.SDFHLPA library, is given in Table 12 on page 185.
2. Generally a good candidate for inclusion in the MVS link pack area. You should include these modules in the LPA to support the associated option.
3. A good candidate for inclusion in the MVS link pack area. You should include these modules in the MVS link pack area if you are a heavy user of the associated function.

Size

The module sizes were taken from the latest information available at the time of publishing, but may be different in your CICS environment depending on the options selected and if any PTFs applied affect the modules. The sizes are given here to help you plan the amount of storage that you need for the modules that you want to install in the MVS link pack area. You can get the actual sizes for these modules from a directory listing of the modules or from the module index provided at the back of a formatted SDUMP taken with the LPA=NO system initialization parameter specified.

Notes

This column refers to the following list for any notes about the use of modules from the MVS link pack area.

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. The DFHAFMT program is used by ADD, DELETE, UPDATE, and INQUIRE commands for FILE resource definitions.
3. You must always install the latest service level of the CICS SVC module, DFHCSVC. You should 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, using SVC Parm statements. You select the required

IEASVCxx member by coding the SVC parameter (SVC=xx) in a SYS1.PARMLIB member (IEASYSy), which you use to IPL your MVS.

You can run several CICS regions, at different release levels, in the same MVS image, with each region using its own version of the DFHCSVC module. However, if some of those regions use MRO, then all regions that use MRO must use the latest DFHCSVC module and the latest DFHIRP module.

If you have some CICS/MVS Version 2 regions that are to use the CICS/ESA 4.1 DFHCSVC module, and you give the CICS/ESA 4.1 SVC a number different from the Type 2 SVC number used by the CICS/MVS Version 2 regions, you must generate a new version of the DFHCRC program on the CICS/MVS Version 2 regions.

For information about defining and using the DFHCSVC module, see the *Program Directory*.

4. If your batch region is sharing the database with a CICS/OS/VS 1.7 region or a CICS/MVS Version 2 region, you can continue to use the batch region controller program, DFHDRP, from before CICS/ESA Version 3. (The CICS/ESA Version 3 DFHIRP program supports earlier levels of the DFHDRP program.) However, if your batch region is sharing the database with a CICS/ESA 4.1 region, you are recommended to install the CICS/ESA 4.1 DFHDRP module in SYS1.LINKLIB, or another suitable APF-authorized library in the MVS linklist.
5. The DFHDSPEX module is downward-compatible with earlier Version 3 releases of CICS. If you are running earlier Version 3 releases of CICS with CICS/ESA 4.1, you must ensure that it is the CICS/ESA 4.1 version that is installed in the LPA. The DFHDSPEX module must be in the LPA for integrity reasons, but the post exit routine itself can reside either in the LPA, or in the CICS address space. This enables you to use different versions of the DFHDSAUT module in different CICS regions running in the same MVS image, because the DFHDSAUT module may not be compatible from release to release.
6. The use of this pre-CICS/ESA Version 3 programmable interface to the master terminal program, DFHEMTA, is supported for compatibility reasons only. You are strongly recommended to use the equivalent EXEC CICS INQUIRE|SET commands instead, and retain the old programmable interface only where no equivalent SPI command is available (for example, for CEMT INQUIRE|SET DLIDATABASE). The documentation for this interface is available only in the CICS libraries for the releases prior to CICS/ESA Version 3.
7. 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.

The system initialization parameters that you can use are:

Parameter	Use
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 using the CETR transaction to control the tracing status, see the *CICS/ESA Problem Determination Guide*.

8. The DFHIRP module needs to 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 its alias, DFHSEN.

You must always install the latest service level of the DFHIRP (if needed) and its alias DFHSEN.

If you are running CICS with MRO at different release levels, all regions in the same MVS-image must use the latest DFHIRP module.

9. 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 linklist. 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 “The console message-handling facility” on page 10.

10. CICS needs the following load modules, supplied with CICS/ESA 4.1, to use data table services:

DFHDTINT
DFHDTOC
DFHDTLD
DFHDTRD
DFHDTES

The modules are all eligible for the MVS link pack area, but DFHDTRD and DFHDTES are probably the only ones which are used sufficiently frequently to be worth considering.

11. The following modules, used by the Shared Data Tables facility, are eligible for the MVS link pack area:

DFHDTAM
DFHDTAOR
DFHDTCV
DFHDTFOR
DFHDT SVC
DFHDTXS
DFHMVRMS

All these modules, except for DFHMVRMS, are listed in the usermod, DFH\$UMOD, supplied with the CICS/ESA 4.1. Only DFHDTAM, DFHDTAOR,

DFHDTFOR, and possibly DFHDTCV are used sufficiently frequently to be worth considering for the MVS link pack area.

The following modules, installed in the CICS410.SDFHLINK library, must be installed in the MVS linklist, or in the MVS link pack area:

DFHDT SVC
DFHDTCV
DFHMVRMS

12. CICS needs the DFHMET1K module, supplied with the CICS/ESA Japanese Language feature, to issue messages for that feature.
13. This module may be loaded early in CICS initialization from the DFHRPL concatenation of the CICS startup job, even if it has been installed in the MVS link pack area and its PROGRAM resource definition specifies USELPACOPY(YES). This is because the module is loaded before its resource definition.

For such modules loaded early in initialization, CICS issues message DFHLD0107I (DFHJC4511 for DFHJCC).

When the resource definition for the module is loaded later, the USELPACOPY() operand affects whether the module is loaded from the MVS link pack area or the DFHRPL concatenation. If the version of such a module loaded from the DFHRPL concatenation at CICS initialization is still in use later, and CICS later loads the module from the MVS link pack area, you may have two versions of the module in use by CICS at the same time. Both versions of such modules must be kept at the same service level.

This column also gives any associated options that you must specify to use the function associated with the LPA-eligible module. Unless otherwise stated, the options are specified by system initialization parameters as defined in the *CICS/ESA System Definition Guide*. Any special information about a particular module is given in a note in the list starting on page 182.

Table 12. LPA-required modules, supplied in CICS410.SDFHLPA

Name	Description	LPA/ ELPA	Size	Option/Note (See page 182)
DFHCSVC	CICS SVC startup	ELPA		CICSSVC (3)
DFHDSPEX	DS domain - MVS POST exit stub	ELPA		(5)
DFHDUMPX	SDUMPX IEASDUMP QUERY exit	ELPA		-
DFHIRP	Interregion communication program	ELPA		(8)
DFHSEN	Interregion communication program (Alias of DFHIRP)	ELPA		-
DFHSSGC	Subsystem interface generic connect	ELPA		(9)
DFHSSWT	Subsystem interface WTO router	ELPA		(9)
DFH99SVC	Dyn alloc - SVC services	ELPA		-

Table 13 (Page 1 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHAFMT	AFCT manager	LOAD	ELPA	3		(2)
DFHAIIN	AITM Manager initialization	LOAD	ELPA	3		AIEXIT
DFHAIIQ	AITMM - locate/unlock/inquire/browse	LOAD	ELPA	2		AIEXIT

Table 13 (Page 2 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHAIP	Application Interface program	LOAD	LPA	2	11184	-
DFHAIRP	AITMM - initialization/recovery	LOAD	ELPA	3		-
DFHAITM	AITMM - add replace/delete	LOAD	ELPA	3		AIEXIT
DFHALP	Terminal allocation	LOAD	ELPA	2		AIEXIT
DFHAMP	RDO allocation manager	LOAD	ELPA	3		(1,13)
DFHAPATT	AP domain - entrypoint attach	LOAD	ELPA	2		-
DFHAPDM	AP domain - initialization/termination	LOAD	ELPA	3		-
DFHAPDN	AP domain - transaction definition notify	LOAD	ELPA	3		-
DFHAPEP	AP domain - user exit service	LOAD	ELPA	2		-
DFHAPIN	AP domain - special initialization for programs and user-replaceable modules	LOAD	ELPA	2		-
DFHAPIQ	AP domain - user exit data access service	LOAD	ELPA	3		-
DFHAPJC	AP domain - journal control gate service	LOAD	ELPA	3		-
DFHAPLI	AP domain - language interface program	LOAD	ELPA	2		-
DFHAPNT	AP domain - MXT notify gate	LOAD	ELPA	3		-
DFHAPPG	AP domain - optimize initial_link for	LOAD	ELPA	2		-
DFHAPRM	AP domain - transaction attach/detach	LOAD	ELPA	2		-
DFHAPRT	AP Domain - route transaction gate	LOAD	ELPA	3		-
DFHAPSTL	AP domain - statistics collection program	LOAD	ELPA	2		-
DFHAPTD	AP domain - transient data gate service	LOAD	ELPA	2		DCT=YES xx
DFHAPTI	AP domain - timer notify gate	LOAD	ELPA	2		-
DFHAPTIX	AP domain - expiry analysis task	LOAD	ELPA	2		-
DFHAPXM	AP domain - transaction initialization and termination services	LOAD	LPA	2	4144	-
DFHAPXME	AP domain - XM exception handler	LOAD	ELPA	3		-
DFHASV	Authorized services interface	AUTH	LPA	2	2984	-
DFHCCNV	Data conversion for CICS OS/2 ISC users	LOAD	ELPA	2		(1)
DFHCEGN	Goodnight transaction stub	LOAD	ELPA	3		(1)
DFHCESC	Terminal, XRF, and enable timeout routines	LOAD	ELPA	3		(1,13)
DFHCHS	CICS/ESA mirror for CICS OS/2 and CICS/VM	LOAD	ELPA	2		(1)
DFHCMAC	ME domain - CICS messages and codes transaction (CMAC)	LOAD	ELPA	2		(1)
DFHCMP	CICS monitoring compatibility interface	LOAD	ELPA	2		-
DFHCPIC	SAA communications interface program	LOAD	ELPA	2		-
DFHCPIN	CPI initialization program	LOAD	ELPA	3		-
DFHCPIRR	SAA resource recovery interface program	LOAD	ELPA	2		-
DFHCPSM	Translator for CICSplex SM commands	LOAD	LPA	3	3192	-
DFHCRNP	Interregion connection manager	LOAD	ELPA	2		(1)
DFHCRQ	ATI purge program	LOAD	ELPA	2		(1)

Table 13 (Page 3 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHCRR	Interregion session recovery program	LOAD	ELPA	3		(1)
DFHCRS	Remote scheduler program	LOAD	ELPA	2		(1)
DFHCRSP	CICS IRC startup module	LOAD	ELPA	3		(1)
DFHCRT	Transaction routing relay program for APPC devices	LOAD	ELPA	2		(1)
DFHDBAT	CICS-DBCTL adapter/transformer	LOAD	ELPA	2		(1)
DFHDBCT	CICS-DBCTL control program	LOAD	ELPA	3		(1)
DFHDBMOX	CICS-DBCTL monitoring exit	LOAD	ELPA	2		-
DFHDBREX	CICS-DBCTL resume exit	LOAD	ELPA	2		-
DFHDBSPX	CICS-DBCTL suspend exit	LOAD	ELPA	2		-
DFHDBSSX	CICS-DBCTL status exit	LOAD	ELPA	3		-
DFHDBSTX	CICS-DBCTL statistics exit	LOAD	ELPA	3		-
DFHDBTI	EXEC DLI LD table	LOAD	LPA	3	8440	(1)
DFHDBTOX	CICS-DBCTL token exit	LOAD	ELPA	3		-
DFHDCCP	Dump control program	LOAD	ELPA	3		-
DFHDEDM	DCE services domain - services	LOAD	ELPA	3		-
DFHDIP	Data interchange program	LOAD	ELPA	2		DIP=YES
DFHDIPDY	Data interchange program (dummy)	LOAD	ELPA	2		DIP=NO
DFHDKMR	DCE services domain - table manager	LOAD	ELPA	3		-
DFHDLI	DL/I call router	LOAD	LPA	2	5008	DLI=YES
DFHDLIDP	DBCTL call processor	LOAD	ELPA	2		-
DFHDLRP	DL/I restart program	LOAD	LPA	3	1008	DLI=YES
DFHDMP	CICS definition file (CSD) manager	LOAD	ELPA	3		(1,13)
DFHDRP	Batch region control module	AUTH	LPA	3	296	(4)
DFHDRPE	DL/I request handling module	AUTH	LPA	2	17464	DLI=YES
DFHDSAUT	DS domain - authorized services	AUTH	ELPA	2		-
DFHDSBA\$	BMS data stream build (standard)	LOAD	ELPA	2		BMS=STANDARD
DFHDSB1\$	BMS data stream build (full)	LOAD	ELPA	2		BMS=FULL
DFHDTAM	Shared data tables: access manager	AUTH	ELPA	2		(11)
DFHDTAOR	Shared data tables: AOR module	AUTH	ELPA	2		(11)
DFHDTCV	Shared data tables connection validation	LINK	ELPA	2		(11)
DFHDTES	Data tables - table entry services	AUTH	ELPA	2		-
DFHDTFOR	Shared data tables: FOR module	AUTH	ELPA	2		(11)
DFHDTINT	Data tables - initialization	LOAD	ELPA	3		-
DFHDTLD	Data tables - load program	AUTH	ELPA	3		-
DFHDTOC	Data tables - open/close	AUTH	ELPA	3		-
DFHDTRD	Data tables - read	AUTH	ELPA	2		-
DFHDT SVC	Shared data tables: SVC services	LINK	ELPA	3		(11)
DFHDTXS	Shared data tables connection security	AUTH	ELPA	3		(11)
DFHDUIO	DU domain - open/close/switch/write	LOAD	LPA	2	5008	-
DFHDUSVC	DU domain - SVC processing routine	AUTH	ELPA	2		-
DFHDYP	Dynamic routing program	LOAD	ELPA	2		DTRPGM=DFHDYP (1)
DFHEBU	EXEC FMH construction	LOAD	ELPA	2		ISC=YES xx
DFHECID	CECI service program	LOAD	ELPA	3		(1)
DFHECIP	Command interpreter (CECI) program	LOAD	ELPA	3		(1)
DFHECSP	Command syntax check (CECS) program	LOAD	ELPA	3		(1)
DFHEDAD	RDO (CEDA) service program	LOAD	ELPA	3		(1)
DFHEDAP	RDO (CEDA) program	LOAD	ELPA	3		(1)

Table 13 (Page 4 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHEDC	EXEC interface for dump control	LOAD	ELPA	2		-
DFHEDCP	EXEC interface for dump system/transaction	LOAD	ELPA	3		-
DFHEDFBR	Temporary-storage browse transaction, CEBR	LOAD	ELPA	3		(1)
DFHEDFD	EDF display program	LOAD	ELPA	3		(1)
DFHEDFE	EDF attach error handler	LOAD	ELPA	3		(1)
DFHEDFP	EDF control program	LOAD	ELPA	3		(1)
DFHEDFR	EDF response table	LOAD	ELPA	3		(1)
DFHEDFX	EDF task switch program	LOAD	ELPA	3		(1)
DFHEDI	EXEC interface for data interchange	LOAD	ELPA	2		DIP=YES
DFHEDP	EXEC DLI command stub	LOAD	LPA	2	6416	DLI=YES (1)
DFHEEI	EXEC interface for HANDLE, ADDRESS, ASSIGN	LOAD	ELPA	2		-
DFHEEX	EXEC FMH extraction	LOAD	ELPA	2		-
DFHEFRM	EXEC file control syncpoint processor	LOAD	ELPA	2		-
DFHEGL	EXEC interface for unmapped LU6.2 commands	LOAD	ELPA	2		VTAM=YES
DFHEIACQ	EXEC ACQUIRE TERMINAL	LOAD	ELPA	3		-
DFHEIDLI	DL/I load table	LOAD	LPA	3	9032	DLI
DFHEIDTI	EXEC ask-time, format-time program	LOAD	ELPA	2		-
DFHEIGDS	Translator table (GDS commands)	LOAD	LPA	3	2752	(1)
DFHEIGDX	EXEC interface load table	LOAD	LPA	3	4664	-
DFHEIIC	EXEC interface IC module	LOAD	ELPA	2		-
DFHEIPRT	EXEC interface for perform resettime	LOAD	ELPA	3		-
DFHEIPSE	EXEC interface for perform security	LOAD	ELPA	3		SEC=YES
DFHEIPSH	EXEC interface for perform shutdown	LOAD	ELPA	3		-
DFHEIQDE	EXEC inquire/set for DCE services domain	LOAD	ELPA	3		-
DFHEIQDN	EXEC inquire/set for external data sets	LOAD	ELPA	3		-
DFHEIQDS	EXEC inquire/set/discard for files	LOAD	ELPA	3		-
DFHEIQDU	EXEC inquire/set for dump data sets and dump codes	LOAD	ELPA	3		-
DFHEIQIR	EXEC inquire/set for IRC	LOAD	ELPA	3		-
DFHEIQMS	EXEC inquire/set for monitor and stats	LOAD	ELPA	3		-
DFHEIQMT	EXEC inquire/set for CEMT-only commands	LOAD	ELPA	3		-
DFHEIQRQ	EXEC inquire for queued requests (REQIDs)	LOAD	ELPA	3		-
DFHEIQSA	EXEC inquire/set for system attributes	LOAD	ELPA	3		-
DFHEIQSC	EXEC inquire/set for connections	LOAD	ELPA	3		-
DFHEIQSJ	EXEC inquire/set for journals	LOAD	ELPA	3		-
DFHEIQSK	EXEC inquire/set for tasks	LOAD	ELPA	3		-
DFHEIQSM	EXEC inquire/set for modenames	LOAD	ELPA	3		-
DFHEIQSP	EXEC inquire/set/discard for programs	LOAD	ELPA	3		-
DFHEIQSQ	EXEC inquire/set for TD queues	LOAD	ELPA	3		-
DFHEIQST	EXEC inquire/set for terminals	LOAD	ELPA	3		-
DFHEIQSV	EXEC inquire/set for volumes	LOAD	ELPA	3		-

Table 13 (Page 5 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHEIQSX	EXEC inquire/set/discard for transactions	LOAD	ELPA	3		-
DFHEIQSZ	EXEC CICS SPI commands for FEPI	LOAD	ELPA	3		-
DFHEIQTR	EXEC inquire/set for trace	LOAD	ELPA	3		-
DFHEIQUE	EXEC inquire for exit programs	LOAD	ELPA	3		-
DFHEIQVT	EXEC inquire/set for VTAM and autoinstall	LOAD	ELPA	3		-
DFHEITAB	Translator table (basic commands)	LOAD	LPA	3	44192	(1)
DFHEITBS	Translator table (special commands)	LOAD	LPA	3	39072	(1)
DFHEITHG	EXEC interface hired gun lookup table	LOAD	LPA	2	12000	-
DFHEITMT	Command language table for CEMT	LOAD	ELPA	3		(1)
DFHEITOT	Command language table for CEOT	LOAD	ELPA	3		(1)
DFHEITSP	Language definition table	LOAD	ELPA	3		(1,13)
DFHEITST	CEST language definition table	LOAD	ELPA	3		(1)
DFHEITSZ	EXEC CICS language definition table	LOAD	LPA	3	8648	(1)
DFHEJJC	EXEC interface for journal control	LOAD	ELPA	2		JCT=YES
DFHEKCC	EXEC interface for task control	LOAD	ELPA	2		-
DFHEMEX	EXEC interface for ME domain	LOAD	ELPA	3		-
DFHEMS	EXEC interface for BMS	LOAD	ELPA	2		BMS
DFHEMTA	Programmable interface to Master terminal program	LOAD	ELPA	3		(1,6)
DFHEMTD	Master terminal (CEMT) service program	LOAD	ELPA	3		(1)
DFHEMTP	Master terminal (CEMT) program	LOAD	ELPA	3		(1)
DFHEOP	EXEC interface for write operator	LOAD	ELPA	3		-
DFHEOTP	CEOT service program	LOAD	ELPA	3		(1)
DFHEPC	EXEC interface for program control	LOAD	ELPA	2		-
DFHEPS	System spooling interface stub	LOAD	ELPA	2		SPOOL=YES
DFHERM	Resource manager interface (RMI) module	LOAD	LPA	2	11560	-
DFHESC	EXEC interface for storage control	LOAD	ELPA	2		-
DFHESE	EXEC interface for query security	LOAD	ELPA	2		-
DFHESN	EXEC interface for signon and sign-off	LOAD	ELPA	2		-
DFHESP	EXEC interface for syncpoint control	LOAD	ELPA	2		-
DFHESTP	CEST service program	LOAD	ELPA	3		(1)
DFHESZ	EXEC CICS API commands for FEPI	LOAD	ELPA	3		-
DFHETC	EXEC interface for terminal control	LOAD	ELPA	2		-
DFHETD	EXEC interface for transient data	LOAD	ELPA	2		DCT=YES xx
DFHETL	LU6.2 EXEC interface stub	LOAD	ELPA	2		-
DFHETR	EXEC interface for trace control	LOAD	ELPA	2		(7)
DFHETRX	EXEC interface for enter tracenum, monitor	LOAD	ELPA	2		USERTR
DFHETS	EXEC interface for temporary storage	LOAD	ELPA	2		TST=YES xx
DFHFCA	File control catalog manager	LOAD	ELPA	2		-
DFHF CBD	File control BDAM request processor	LOAD	LPA	2	5064	FCT=YES xx
DFHFCDN	File control DSN block manager	LOAD	ELPA	3		FCT=YES xx
DFHFCDT	File control data table request processor	LOAD	ELPA	2		FCT=YES xx (10)
DFHFCD2	File control shared data tables record request handler	LOAD	ELPA	2		FCT=YES xx (11)
DFHFCEI	File control EXEC interface module	LOAD	ELPA	2		FCT=YES xx
DFHF CFR	File control file request handler	LOAD	ELPA	2		FCT=YES xx

Table 13 (Page 6 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHFCFS	File control file state program	LOAD	ELPA	2		FCT=YES xx
DFHFCIN	File control initialization program	LOAD	ELPA	3		FCT=YES xx
DFHFCMT	File control table manager	LOAD	ELPA	3		FCT=YES xx
DFHFCRL	File control VSAM SHRCTL block manager	LOAD	ELPA	3		FCT=YES xx
DFHFCRM	File control syncpoint processor	LOAD	ELPA	2		FCT=YES xx
DFHFCRP	File control restart program	LOAD	ELPA	3		FCT=YES xx
DFHFCSD	File control shutdown program	LOAD	ELPA	2		FCT=YES xx
DFHFCST	File control statistics program	LOAD	ELPA	3		FCT=YES xx
DFHFCU	File open utility program	LOAD	LPA	3	576	FCT=YES xx (1)
DFHFCVS	File access VSAM request processor	LOAD	ELPA	2		FCT=YES xx
DFHFDP	Formatted dump program	LOAD	ELPA	3		DUMP=YES
DFHGMM	VTAM LU startup message	LOAD	ELPA	2		(1)
DFHICP	Interval control program	LOAD	ELPA	2		-
DFHICXM	AP domain - bind, inquire, and release facility IC functions	LOAD	ELPA	2		-
DFHIIPA\$	BMS non-3270 input mapping (standard)	LOAD	ELPA	3		BMS=STANDARD
DFHIIP1\$	BMS non-3270 input mapping (full)	LOAD	ELPA	3		BMS=FULL
DFHIRW10	IRC work delivery exit program	AUTH	ELPA	2		-
DFHISP	Intersystem communication program	LOAD	ELPA	2		ISC=YES
DFHJAP	Journal archive program	LOAD	ELPA	3		JCT=YES xx
DFHJASP	Journal archive submission program	LOAD	LPA	3	6824	JCT=YES xx
DFHJCC	Journal control close	LOAD	ELPA	3		JCT=YES xx (1,13)
DFHJCEOV	Journal control EOVS	LOAD	ELPA	3		JCT=YES xx (1,13)
DFHJCOAT	Journal control tape open-ahead	LOAD	ELPA	3		JCT=YES xx
DFHJCPDY	Journal control program (dummy)	LOAD	ELPA	2		JCT=NO
DFHJCRM	Journal control syncpoint processor	LOAD	ELPA	2		JCT=YES xx
DFHKCP	Transaction manager startup routine	LOAD	ELPA	2		-
DFHKCSC	DFHKCQ chain scanning for discard	LOAD	ELPA	3		-
DFHKESVC	KE domain - authorized service routine	AUTH	ELPA	2		-
DFHLDDMI	LD domain - secondary initialization	LOAD	ELPA	3		-
DFHLDNT	LD domain - storage notify handler	LOAD	ELPA	2		-
DFHLDST	LD domain - statistics collection	LOAD	ELPA	3		-
DFHLDSVC	LD domain - authorized service routine	AUTH	LPA	2	2224	-
DFHLIRET	Language interface return program	LOAD	LPA	2	136	-
DFHMCPA\$	BMS mapping control program (standard)	LOAD	ELPA	2		BMS=STANDARD
DFHMCPE\$	BMS mapping control program (minimum)	LOAD	ELPA	2		BMS=MINIMUM
DFHMCP1\$	BMS mapping control program (full)	LOAD	ELPA	2		BMS=FULL
DFHMCX	BMS fast path module	LOAD	ELPA	2		BMS
DFHMET1E	DFHMEU base messages link-edit module	AUTH	ELPA	2		NATLANG
DFHMET5E	DFHMEU ONC RPS messages link-edit module	AUTH	ELPA	2		-
DFHMET9E	DFHMEU user messages link-edit module	AUTH	ELPA	2		-
DFHMGP	Message writer program	LOAD	ELPA	3		-
DFHMGT	Message generation table	LOAD	ELPA	3		-

Table 13 (Page 7 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHMIRS	DFHMIRS	LOAD	ELPA	2		ISC=YES (1)
DFHML1	BMS LU1 printer mapping program	LOAD	ELPA	2		BMS
DFHMNDML	MN domain - initialization/termination	LOAD	ELPA	2		-
DFHMNSVC	MN domain - authorized service routine	AUTH	ELPA	2		-
DFHMSP	Message switching program	LOAD	ELPA	2		(1)
DFHMXP	Local queuing shipper	LOAD	ELPA	2		(1)
DFHM32A\$	BMS 3270 mapping (standard)	LOAD	ELPA	2		BMS=STANDARD
DFHM321\$	BMS 3270 mapping (full)	LOAD	ELPA	2		BMS=FULL
DFHPBPA\$	BMS page and text build (standard)	LOAD	ELPA	2		BMS=STANDARD
DFHPBP1\$	BMS page and text build (full)	LOAD	ELPA	2		BMS=FULL
DFHPCP	Program control program	LOAD	ELPA	2		-
DFHPCPC2	PCP interface to COBOL stub for OS/VS COBOL V1 R2.3 or R2.4 application programs	LOAD	LPA	2	824	-
DFHPGADX	Program autoinstall exit - Assembler	LOAD	ELPA	2		(1)
DFHPGDM	PG domain - initialize, quiesce, and terminate domain functions	LOAD	ELPA	2		-
DFHPGRP	PG domain - recovery program	LOAD	ELPA	2		-
DFHPHP	Partition handling program	LOAD	ELPA	2		BMS
DFHPRCM	Partner resource manager command interface	LOAD	ELPA	3		-
DFHPRFS	Partner resource manager interface to SAA communications interface	LOAD	ELPA	2		-
DFHPRIN	Partner initialization load program	LOAD	ELPA	3		-
DFHPRPT	Partner resource table (PRT) manager	LOAD	ELPA	3		-
DFHPSP	System spooling interface program	LOAD	LPA	2	14512	SPOOL=YES
DFHPSSVC	System spooling interface, retrieve a data set name	AUTH	ELPA	2		SPOOL=YES
DFHPUP	RDO parameter utility program	LOAD	ELPA	3		(1,13)
DFHQRY	Query transaction	LOAD	ELPA	2		(1)
DFHRCP	Recovery control program	LOAD	ELPA	3		-
DFHRLRA\$	BMS route list resolution (standard)	LOAD	ELPA	2		BMS=STANDARD
DFHRLR1\$	BMS route list resolution (full)	LOAD	ELPA	2		BMS=FULL
DFHRTC	CRTE cancel command processor	LOAD	ELPA	2		(1)
DFHRTE	Transaction routing program	LOAD	ELPA	2		(1)
DFHSAIQ	AP domain - system data inquire & set	LOAD	ELPA	2		-
DFHSFP	Sign-off program	LOAD	ELPA	2		(1)
DFHSKP	Subtask management program	LOAD	ELPA	2		-
DFHSKTSK	General purpose subtask entry point	AUTH	ELPA	3		-
DFHSMSVC	SM domain - authorized service routine	AUTH	ELPA	3		-
DFHSMTAB	CICSPLex SM commands language table	LOAD	LPA	3	632	-
DFHSNP	Signon program	LOAD	ELPA	2		(1)
DFHSNUS	US domain - local and remote signon	LOAD	ELPA	2		-
DFHSPP	Syncpoint program	LOAD	ELPA	2		-
DFHSPZ	Syncpoint resource manager	LOAD	ELPA	2		-
DFHSTDML	ST domain - initialization/termination	LOAD	ELPA	3		-
DFHSUSX	XRF signon	LOAD	ELPA	2		XRF=YES xx
DFHSUWT	WTO/WTOR interface subroutine	LOAD	ELPA	3		-
DFHSUZX	ZC trace controller	LOAD	ELPA	3		-

Table 13 (Page 8 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHSZATR	FEPI adaptor program	LOAD	ELPA	3		-
DFHTBS	Builder interface	LOAD	ELPA	2		(1,13)
DFHTBSSP	Builder syncpoint processor	LOAD	ELPA	2		-
DFHTCRP	Terminal control recovery program	LOAD	ELPA	3		-
DFHTDP	Transient data program (macro entry)	LOAD	LPA	2	16184	DCT=YES xx
DFHTDQ	Transient data program (internal entry)	LOAD	ELPA	2		DCT=YES xx
DFHTDRM	Transient data recovery manager processor	LOAD	ELPA	2		DCT=YES xx
DFHTDRP	Transient data recovery program	LOAD	ELPA	3		DCT=YES xx
DFHTDXM	XM domain - TD facility management services	LOAD	ELPA	2		-
DFHTFBF	Terminal facility manager bind facility functions	LOAD	ELPA	2		-
DFHTFIQ	Terminal facility manager inquire/set functions	LOAD	ELPA	2		-
DFHTFRF	Terminal facility manager release function	LOAD	ELPA	2		-
DFHTIDM	TI domain - initialization/termination	LOAD	ELPA	3		-
DFHTMP	Table manager program	LOAD	ELPA	2		-
DFHTON	Terminal object resolution module	LOAD	ELPA	2		-
DFHTOR	Terminal object resolution program	LOAD	ELPA	2		(1,13)
DFHTORP	Terminal object recovery program	LOAD	ELPA	3		-
DFHTPPA\$	BMS terminal page processor (standard)	LOAD	ELPA	2		BMS=STANDARD
DFHTPP1\$	BMS terminal page processor (full)	LOAD	ELPA	2		BMS=FULL
DFHTPQ	BMS terminal page cleanup program	LOAD	ELPA	2		BMS (1)
DFHTPR	BMS terminal page retrieval program	LOAD	ELPA	2		BMS (1)
DFHTPS	BMS terminal page scheduling program	LOAD	ELPA	2		BMS (1)
DFHTRAO	TR domain - auxiliary trace output	LOAD	LPA	3	1480	AUXTR=ON
DFHTSP	Temporary-storage control program	LOAD	ELPA	2		TST=YES xx
DFHTSUT	Temporary-storage unit table abstract type	LOAD	ELPA	2		-
DFHUEH	User exit handler (AP domain)	LOAD	ELPA	2		-
DFHUEM	User exit manager	LOAD	ELPA	3		-
DFHUSDM	US domain - initialize, quiesce, and terminate domain functions	LOAD	ELPA	3		-
DFHVCP	Volume control program	LOAD	ELPA	3		JCT=YES xx
DFHVCPDY	Volume control program (dummy)	LOAD	ELPA	3		JCT=NO
DFHWSMS	Initialize XRF static area	AUTH	ELPA	2		XRF=YES xx
DFHWSSON	CAVM state management signon request handler	AUTH	ELPA	2		XRF=YES xx
DFHWTI	XRF takeover initiation program	AUTH	ELPA	3		XRF=YES xx
DFHXCI	External CICS interface (EXCI) program	LOAD	LPA	3	3160	-
DFHXCSVC	EXCI SVC services	LINK	ELPA	3		-
DFHXCTAB	EXCI language table	LOAD	LPA	3	504	-
DFHXFP	Online data transformation program	LOAD	LPA	2	28432	ISC=YES
DFHXFX	Optimized data transformation program	LOAD	ELPA	2		ISC=YES
DFHXJCC	User-replaceable journal close exit	LOAD	ELPA	3		JCT=YES xx
DFHXJCO	User-replaceable journal open exit	LOAD	ELPA	3		JCT=YES xx
DFHXMAB	XM domain - abend handler	LOAD	ELPA	2		-

Table 13 (Page 9 of 9). LPA-eligible modules

Name	Description	Library	LPA/ ELPA	Pri	LPA size	Option/Note (See page 182)
DFHXRP	XRF request program	LOAD	ELPA	2		XRF=YES xx
DFHXRSP	XRF surveillance program	LOAD	ELPA	2		XRF=YES xx
DFHXSS	XS domain - supervisor request services	AUTH	ELPA	3		SEC-=NO
DFHXSWM	XRF message manager for security manager	LOAD	ELPA	2		XRF=YES xx
DFHXTP	Terminal sharing transformation program	LOAD	ELPA	2		ISC=YES
DFHZATA	Autoinstall program	LOAD	ELPA	2		(1)
DFHZATD	Autoinstall delete program	LOAD	ELPA	2		(1)
DFHZATDX	User-replaceable autoinstall exit	LOAD	ELPA	2		AIEXIT (1)
DFHZATDY	User-replaceable autoinstall exit with APPC	LOAD	ELPA	2		AIEXIT (1)
DFHZBAN	Terminal control bind analysis	LOAD	LPA	2	10432	-
DFHZCA	VTAM working set module	LOAD	ELPA	2		VTAM=YES
DFHZCB	VTAM working set module	LOAD	ELPA	2		VTAM=YES
DFHZCC	VTAM working set module	LOAD	ELPA	2		VTAM=YES
DFHZCP	Terminal management program	LOAD	ELPA	2		VTAM=YES
DFHZCQ	Terminal control install interface	LOAD	ELPA	2		VTAM=YES (1,13)
DFHZCUT	Persistent verification signed-on-from list management program	LOAD	ELPA	2		VTAM=YES
DFHZCW	VTAM nonworking set module	LOAD	ELPA	3		VTAM=YES
DFHZCX	LOCATE, ISC/IRC request	LOAD	ELPA	2		ISC=YES
DFHZCXR	Transaction routing module address list	LOAD	ELPA	2		ISC=YES
DFHZCY	VTAM nonworking set module	LOAD	ELPA	3		VTAM=YES
DFHZCZ	VTAM nonworking set module	LOAD	ELPA	3		VTAM=YES
DFHZGAI	APPC autoinstall - create APPC clones	LOAD	ELPA	2		AIEXIT
DFHZGBM	APPC manipulate bitmap	LOAD	ELPA	2		VTAM=YES
DFHZGCA	LU6.2 CNOS actioning	LOAD	ELPA	3		VTAM=YES
DFHZGCC	Catalog CNOS services	LOAD	ELPA	3		VTAM=YES
DFHZGCN	LU6.2 CNOS negotiation	LOAD	ELPA	3		VTAM=YES
DFHZGPR	VTAM persistent sessions resource handler	LOAD	ELPA	3		VTAM=YES
DFHZGXA	LU6.2 extended attach security	LOAD	ELPA	3		VTAM=YES
DFHZHPRX	Authorized path SRB mode VTAM EXECRPL	AUTH	ELPA	2		HPO=YES
DFHZLS1	LU6.2 CNOS request transaction program	LOAD	ELPA	3		VTAM=YES (1)
DFHZNAC	Node abnormal condition program (NACP)	LOAD	ELPA	2		(1,13)
DFHZRLG	Response logger	LOAD	ELPA	2		TCP=YES xx (1,13)
DFHZRSP	Resync send program	LOAD	ELPA	2		TCP=YES xx (1)
DFHZXST	XRF ZCP session-state tracking	LOAD	ELPA	2		XRF=YES xx (1,13)

Appendix C. Sample JCL for CICSplex IVPs

This section

Provides sample JCL that was used to verify the installation of CICS/ESA 4.1 in a basic CICSplex. The aim is to demonstrate the start up of a sample CICSplex that matches the topology of the CICSplex SM starter set, and uses the naming convention recommended in the *System/390 MVS Sysplex Application Migration*.

When creating the sample JCL given in the following sections, the DFHISTAR job (in the CICS410.TDFHINST library) was edited to change only those parameter needed. Other parameters were left to default or use the values specified when CICS/ESA 4.1 was installed (that is, specific to the installed CICS environment). Some such parameters worth noting are:

```
TEMPLIB    CICS410.SDFHINST
LIB        CICS410.XDFHINST
JOB        //XXXXXXXX JOB 24116475,IVPUSER,MSGCLASS=A,MSGLEVEL=(1,1),
JOB        //          CLASS=A,NOTIFY=IVPUSER
JOB        //*JOBPARM SYSAFF=MVSH
JOB        //*ROUTE PRINT WINVMC.IVPUSER
INDEX      CICS410
```

Notes:

1. The TEMPLIB parameter specifies the library from which the skeleton JCL members are obtained.
2. The LIB parameter specifies the library into which the tailored sample JCL members are stored.
3. The JOB parameter specifies the job card attributes added to all the sample JCL.
4. The INDEX parameter specifies the high-level qualifier of the CICS/ESA 4.1 target libraries (SDFHAUTH, SDFHLOAD, SDFHSAMP, and so on).

JCL to create common data sets

The sample JCL shown in Figure 43 on page 196 was created by running the DFHISTAR job (in the CICS410.TDFHINST library), with the following parameters:

```
SELECT     DFHCOMDS  H###COMD
SELECT     DFHMACI   H##CMACI
SELECT     DFHMACU   H##CMACU
*
DSINFO     CICS410.CICSH### CIC410 3380 . .
```

Notes:

1. The SELECT parameter specifies that the skeleton DFHCOMDS member of the CICS410.TDFHINST library will be tailored and installed in the CICS410.XDFHINST library as member H###COMD.
2. The first operand of the DSINFO parameter specifies the high-level qualifier for the common CICS data sets to be created by the H###COMD job.

3. The DFHCMACI and DFHCMACU jobs were also tailored at this stage, as they are used to create a DFHCMACD data set common to all CICS regions in the CICSplex.

```

//H#COMDS JOB accounting,userid,MSGCLASS=A,MSGLEVEL=(1,1),
//      CLASS=A,NOTIFY=userid
//*
//*****
//*                                     *
//* THE JOB DELETES AND RECREATES *
//*   CICS CSD                       *
//*   JCL PDS                         *
//*   SYSIN PDS                       *
//*                                     *
//*****
//*
//* THE STEPS ARE:
//*
//* . DELETE
//*   DELETE THE CLUSTER FOR CICS SYSTEM DEFINITION
//*     - CICS410.CICSh.DFHCSO
//*   DELETE THE JOURNAL PARTITIONED DATASET
//*     - CICS410.CICSHZ.JPDS
//*   DELETE THE SYSIN PARTITIONED DATASET
//*     - CICS410.CICSH###.SYSIN
//* . DEFCSO
//*   DEFINE THE CLUSTER FOR CICS SYSTEM DEFINITION
//*     - CICS410.CICSH###.DFHCSO
//* . INITCSO
//*   RUN THE CICS OFFLINE UTILITY TO INITIALIZE THE CSO
//* . DEFJPDS
//*   CREATE THE JCL PDS AND COPY MEMBER DFH$ARCH FROM
//*   THE XDFHINST DATASET.
//*   THE JCL PDS IS CICS410.CICSH###.DFHJPDS
//*   THE INSTLIB DATASET IS LARNER.CICS410.XDFHINST
//* . DEFSYSIN
//*   CREATE THE SYSIN PDS AND COPY MEMBERS
//*   COPY THE FOLLOWING MEMBERS FROM THE SDFHSAMP
//*   DATASET
//*     DFH$SIPA, DFH$SIPD, DFH$SIPT, DFH$SIP1, DFH$SIP2, DFH$SIP3,
//*     DFH$SIP4, DFH$SIP5, DFHRCYES, DFHRCNO
//*   CREATE MEMBERS DFH FROM IN-LINE DATA
//*   OR MAYBE IT WILL BE FROM CICS410.XDFHINST
//*
//DELCSD EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
        DELETE CICS410.CICSH###.DFHCSO
        DELETE CICS410.CICSH###.DFHJPDS NONVSAM
        DELETE CICS410.CICSH###.SYSIN NONVSAM
        SET MAXCC=0
/*

```

Figure 43 (Part 1 of 2). Sample JCL to create common data sets for a CICSplex


```

//DEFCSO EXEC PGM=IDCAMS,REGION=1M
//SYSOPRINT DD SYSOOUT=*
//SYSIN DD *
      DEF CLUSTER(NAME(CICS410.CICSH###.DFHCSD) -
                IXD -
                REC(4000)-
                RECORDSIZE(100 500)-
                FREESPACE(5 5)-
                SHR(2)-
                VOLUMES(CIC410)) -
      DATA(NAME(CICS410.CICSH###.DFHCSD.DATA) -
            UNIQUE -
            KEYS(22 0))-
      INDEX(NAME(CICS410.CICSH###.DFHCSD.INDEX) -
            UNIQUE)
/* THE CSD IS NOW READY TO BE INITIALIZED BY PGM=DFHCSDUP */
/*
/**
//INITCSD EXEC PGM=DFHCSDUP,REGION=1M,COND=(0,LT,DEFCSO)
/**
/**      INITIALIZE THE CSD
/**
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICS410.CICSH###.DFHCSD,DISP=SHR
//SYSUT1 DD UNIT=SYSDA,SPACE=(1024,(100,100))
//SYSOPRINT DD SYSOOUT=*
//SYSIN DD *
      INITIALIZE
*      *-----*
*      * RETURN CODE 0 IS EXPECTED HERE      *
*      *-----*
/*
/**
//DEFJPDS EXEC PGM=IEBCOPY
//IN DD DSN=CICS410.XDFHINST,DISP=SHR
//OUT DD DSN=CICS410.CICSH###.DFHJPDS,DISP=(NEW,CATLG,DELETE),
// VOL=SER=CIC410,UNIT=3380,
// DCB=(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=400),
// SPACE=(TRK,(2,1,1))
//SYSOPRINT DD SYSOOUT=*
//SYSIN DD *
      COPY OUTDD=OUT,INDD=IN
      SELECT MEMBER=DFH$ARCH
/*
/**
//DEFSYSIN EXEC PGM=IEBCOPY
//SDFHSAMP DD DSN=CICS410.SDFHSAMP,DISP=SHR
//OUT DD DSN=CICS410.CICSH###.SYSIN,DISP=(NEW,CATLG,DELETE),
// VOL=SER=CIC410,UNIT=3380,
// DCB=(DSORG=PO,RECFM=FB,LRECL=80,BLKSIZE=400),
// SPACE=(TRK,(5,5,5))
//SYSOPRINT DD SYSOOUT=*
//SYSIN DD *
      COPY OUTDD=OUT,INDD=SDFHSAMP
      SELECT MEMBER=DFH$SIPA
      SELECT MEMBER=DFH$SIPD
      SELECT MEMBER=DFH$SIPT
      SELECT MEMBER=DFH$SIP1
      SELECT MEMBER=DFH$SIP2
      SELECT MEMBER=DFH$SIP3
      SELECT MEMBER=DFH$SIP4
      SELECT MEMBER=DFH$SIP5
      SELECT MEMBER=DFHRCYES
      SELECT MEMBER=DFHRCNO
/*

```

Figure 43 (Part 2 of 2). Sample JCL to create common data sets for a CICSplex

The sample JCL, H###COMD, was run to create the following data sets common to all CICS regions in the CICSplex.

```
CICS410.CICSH###.DFHCSD
CICS410.CICSH###.JPDS
CICS410.CICSH###.SYSIN
```

The sample JCL, H##CMACI, was run to create the following data set common to all CICS regions in the CICSplex.

```
CICS410.CICSH###.DFHCMACD
```

JCL to create data sets specific to each CICS region

The sample JCL to create CICS data sets needed by each CICS region in the CICSplex was created by editing and running the DFHISTAR job for each CICS region. The only difference between creating the sample JCL for one CICS region and another, was that the JCL member name and region identifier were changed on the SELECT and DSINFO parameters of the DFHISTAR job, as follows:

```
SELECT      DFHDEFDS  output_member_name
DSINFO      CICS410  CIC410 3380 region_identifier .
```

The values used are given in Table 14.

<i>Table 14. Member names and region identifiers for sample data set JCL</i>	
CICS Region	JCL Member
HTH1	HTH1DEFDS
HAH1	HAH1DEFDS
HAH2	HAH2DEFDS
HRH1	HRH1DEFDS
HAI1	HAI1DEFDS

Edit and run the DFHISTAR job once for each CICS region in the CICSplex.

Notes:

1. The SELECT parameter specifies that the skeleton DFHDEFDS member of the CICS410.TDFHINST library will be tailored and installed in the CICS410.XDFHINST library as member output_member_name.
2. The first operand of the DSINFO parameter specifies the high-level qualifier for the CICS data sets to be created. The fourth operand, region_identifier, specifies the CICS region identifier, and should match that specified later by the SYSIDNT system initialization parameter for that region.

Figure 44 on page 199 shows the sample JCL created for the terminal-owning region, HTH1. The sample JCL for the other regions is the same, except for the job name (set to the member name) and the effect of the region identifier. For example, the sample JCL to create data sets for the region HAH2 contained the lines:

```
//HAH2DEFD JOB 24116475,userid,MSGCLASS=A,MSGLEVEL=(1,1),
//          CLASS=A,NOTIFY=userid
:
DEFINE CLUSTER(NAME(CICS410.CICSHAH2.DFHGCD)-
:
:
```

```

//HTH1DEFD JOB accounting,userid,MSGCLASS=A,MSGLEVEL=(1,1),
//          CLASS=A,NOTIFY=userid
//*
//* THIS JOB DELETES AND RECREATES
//* CICS SYSTEM DATA SETS
//*
//* STEPS:
//* . DELETE AND DEFINE
//*   - DELETE/DEFINE THE CLUSTERS FOR:
//*     . A CICS GLOBAL CATALOG
//*       - CICS410.CICSHTH1.DFHGCD
//*     . A CICS LOCAL CATALOG
//*       - CICS410.CICSHTH1.DFHLCD
//*     . A TEMPORARY STORAGE DATA SET
//*       - CICS410.CNTL.CICSHTH1.DFHTEMP
//*     . AN INTRA TRANSIENT DATA SET
//*       - CICS410.CNTL.CICSHTH1.DFHINTRA
//*     . A RESTART DATASET
//*       - CICS410.CICSHTH1.DFHRSO
//*     . A JOURNAL ARCHIVE DATASET
//*       - CICS410.CICSHTH1.DFHJACD
//*     . A SAMPLE PROGRAM FILE
//*       - CICS410.CICSHTH1.FILEA
//*     . A XRF CONTROL DATASET
//*       - CICS410.CNTL.CICSHTH1.DFHXRCTL
//*     . A XRF MESSAGE DATASET
//*       - CICS410.CNTL.CICSHTH1.DFHXRMSG
//*   - DELETE STEP ALSO DELETES
//*     . THE TRACE, DUMP AND JOURNAL DATASETS FOR THIS REGION
//*
//* . INITGCD
//*   - INITIALIZE A CICS GLOBAL CATALOG DATASET
//*
//* . INITLCD
//*   - INITIALIZE A CICS LOCAL CATALOG DATASET
//*
//* . INITRSD
//*   - INITIALIZE CICS RESTART DATASET
//*
//* . DEFTRACE
//*   - CREATE THE TRACE DATASETS FOR THIS REGION
//*
//* . DEFDUMP
//*   - CREATE THE DUMP DATASETS FOR THIS REGION
//*
//* . DELJNLS
//*   - DELETE THE SYSTEM JOURNAL DATASETS
//* . FRMTJ01A, FRMTJ01B, FRMTJ01X
//*   - CREATE AND FORMAT THE SYSTEM JOURNAL DATASETS
//*
//* . LOADFILE
//*   - LOAD SAMPLE DATA
//*     - INTO CICS410.CICSHTH1.FILEA
//*
//*
//* IMPORTANT:
//*
//*   USE THE DFHISTAR JOB IN THE INSTLIB LIBRARY TO CREATE
//*   A DATASET DEFINITION JOB FOR EACH CICS REGION
//*   - USE THE DSINFO PARAMETER ON THE INPUT
//*     TO THE DFHINST CLIST TO SPECIFY
//*     . THE HIGH-LEVEL-QUALIFIER(S) OF THE DATASETS
//*     . THE SERIAL NUMBER OF THE VOLUME TO BE USED
//*     . THE UNIT TYPE OF THIS VOLUME
//*     . THE REGION IDENTIFIERS (2 TOKENS)

```

Figure 44 (Part 1 of 5). Sample JCL to create data sets for region CICSHTH1

```

/**
/** THE HIGH-LEVEL-QUALIFIER(S) OF THE DATASETS: CICS410
/** THE VOLUME SERIAL                CIC410
/** THE UNIT TYPE                    3380
/** THE REGION IDENTIFIER           ITH1
/**
/**
/**
//DELETE EXEC PGM=IDCAM,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
DELETE CICS410.CICSHTH1.DFHGCD
DELETE CICS410.CICSHTH1.DFHLCD
DELETE CICS410.CNTL.CICSHTH1.DFHTEMP
DELETE CICS410.CNTL.CICSHTH1.DFHINTRA
DELETE CICS410.CICSHTH1.DFHRSO
DELETE CICS410.CICSHTH1.DFHJACD
DELETE CICS410.CICSHTH1.FILEA
DELETE CICS410.CNTL.CICSHTH1.DFHXRCTL
DELETE CICS410.CNTL.CICSHTH1.DFHXRMSG
DELETE CICS410.CICSHTH1.DFHDMPA NONVSAM
DELETE CICS410.CICSHTH1.DFHDMPB NONVSAM
DELETE CICS410.CICSHTH1.DFHAXT NONVSAM
DELETE CICS410.CICSHTH1.DFHBXT NONVSAM
DELETE CICS410.CICSHTH1.DFHJ01A NONVSAM
DELETE CICS410.CICSHTH1.DFHJ01B NONVSAM
DELETE CICS410.CICSHTH1.DFHJ01X NONVSAM
SET MAXCC=0
/*
//DEFINE EXEC PGM=IDCAM,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
/* */
/* DEFINE A CICS GLOBAL CATALOG */
/* */
DEFINE CLUSTER(NAME(CICS410.CICSHTH1.DFHGCD)-
INDEXED -
CYL(1 1)-
SHR(2)-
FREESPACE(10 10)-
REUSE -
VOLUMES(CIC410)) -
DATA(NAME(CICS410.CICSHTH1.DFHGCD.DATA)-
CISZ(8192)-
KEYS(28 0)) -
INDEX(NAME(CICS410.CICSHTH1.DFHGCD.INDEX)-
IMBED -
REPLICATE)
/* */
/* DEFINE A CICS LOCAL CATALOG */
/* */
DEFINE CLUSTER(NAME(CICS410.CICSHTH1.DFHLCD)-
INDEXED -
TRK(5 1)-
SHR(2)-
FREESPACE(10 10)-
REUSE -
VOLUMES(CIC410)) -
DATA(NAME(CICS410.CICSHTH1.DFHLCD.DATA)-
KEYS(28 0)-
RECORDSIZE(45 124)-
CISZ(2048)) -
INDEX(NAME(CICS410.CICSHTH1.DFHLCD.INDEX)-
IMBED -
REPLICATE)

```

Figure 44 (Part 2 of 5). Sample JCL to create data sets for region CICSHTH1

```

/*          */
/* DEFINE TEMPORARY STORAGE DATASET */
/*          */
DEFINE CLUSTER(NAME(CICS410.CNTL.CICSHTH1.DFHTEMP)-
  RECORDSIZE(4089,4089)-
  REC(200)-
  NIXD -
  CISZ(4096)-
  SHR(2 3)-
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CNTL.CICSHTH1.DFHTEMP.DATA)-
  UNIQUE)
  REPLICATE)

/*          */
/* DEFINE AN INTRA-PARTITION */
/* TRANSIENT DATASET          */
/*          */
DEFINE CLUSTER(NAME(CICS410.CNTL.CICSHTH1.DFHINTRA)-
  RECORDSIZE(4089,4089)-
  REC(100)-
  NIXD -
  CISZ(4096)-
  SHR(2 3)-
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CNTL.CICSHTH1.DFHINTRA.DATA)-
  UNIQUE)

/*          */
/* DEFINE A RESTART DATASET */
/*          */
DEFINE CLUSTER(NAME(CICS410.CICSHTH1.DFHRSO) -
  KEYS(22 0)-
  INDEXED -
  RECORDSIZE(400 2000)-
  REC(100 100)-
  CISZ(2048)-
  SHR(2)-
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CICSHTH1.DFHRSO.DATA)-
  UNIQUE)-
  INDEX(NAME(CICS410.CICSHTH1.DFHRSO.INDEX)-
  UNIQUE)

/*          */
/* DEFINE A JOURNAL ARCHIVE DATASET */
/*          */
DEFINE CLUSTER(NAME(CICS410.CICSHTH1.DFHJACD)-
  NUMBERED -
  REC(199)-
  RECORDSIZE(505 505)-
  CISZ(512)-
  SHR(4)-
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CICSHTH1.DFHJACD.DATA))

/*          */
/* DEFINE A FILEA DATASET          */
/*          */
DEFINE CLUSTER(NAME(CICS410.CICSHTH1.FILEA)-
  REC(80)-
  IXD -
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CICSHTH1.FILEA.DATA)-
  RECSZ(80 80)-
  UNIQUE -
  KEYS(6 1)) -
  INDEX(NAME(CICS410.CICSHTH1.FILEA.INDEX)-
  UNIQUE -
  SHR(2 3))

```

Figure 44 (Part 3 of 5). Sample JCL to create data sets for region CICSHTH1

```

/*          */
/* DEFINE THE XRF DATASETS          */
/*          */
DEFINE CLUSTER(NAME(CICS410.CNTL.CICSHTH1.DFHXRCTL)-
  TRACKS(1)-
  NIXD -
  SPEED -
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CNTL.CICSHTH1.DFHXRCTL.DATA)-
  CISZ(4096)-
  SHR(3,3))
DEFINE CLUSTER(NAME(CICS410.CNTL.CICSHTH1.DFHXRMSG)-
  CYLINDERS(2)-
  SPEED -
  NIXD -
  VOLUMES(CIC410)) -
  DATA(NAME(CICS410.CNTL.CICSHTH1.DFHXRMSG.DATA)-
  CISZ(4096)-
  SHR(3,3))

/*
/**
//INITGCD EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//GCDREC DD DSN=CICS410.SDFHINST(DFHINST0),DISP=SHR
//GCD DD DSN=CICS410.CICSHTH1.DFHGCD,DISP=SHR
//SYSIN DD *
REPRO INFILE(GCDREC) OUTFILE(GCD)
/*
/**
//INITLCD EXEC PGM=DFHCCUTL
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//DFHLCD DD DSN=CICS410.CICSHTH1.DFHLCD,DISP=SHR
/*
/**
//INITRSD EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//RSD DD DSN=CICS410.CICSHTH1.DFHRSR,DISP=SHR
//SYSIN DD *
REPRO INFILE(RSDREC) OUTFILE(RSD)
/*
//RSDREC DD DSN=CICS410.SDFHINST(DFHINST0),DISP=SHR
/*
//DEFTRACE EXEC PGM=IEFBR14
//DD1 DD DISP=(NEW,CATLG,DELETE),
// DSN=CICS410.CICSHTH1.DFHAXT,
// SPACE=(CYL,(1)),UNIT=3380,VOL=SER=CIC410,
// DCB=(BLKSIZE=4096,RECFM=F,LRECL=4096)
//DD2 DD DISP=(NEW,CATLG,DELETE),
// DSN=CICS410.CICSHTH1.DFHBUXT,
// SPACE=(CYL,(1)),UNIT=3380,VOL=SER=CIC410,
// DCB=(BLKSIZE=4096,RECFM=F,LRECL=4096)
/*
//DEFDUMP EXEC PGM=IEFBR14
//DD1 DD DISP=(NEW,CATLG,DELETE),
// SPACE=(CYL,(5)),UNIT=3380,VOL=SER=CIC410,
// DSN=CICS410.CICSHTH1.DFHMPA
//DD2 DD DISP=(NEW,CATLG,DELETE),
// SPACE=(CYL,(5)),UNIT=3380,VOL=SER=CIC410,
// DSN=CICS410.CICSHTH1.DFHMPB
/*
//FRMTJ01A EXEC PGM=DFHJCJFP
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//JOURNAL DD DISP=(NEW,CATLG,DELETE),SPACE=(TRK,(4),,CONTIG),
// UNIT=3380,VOL=SER=CIC410,
// DSN=CICS410.CICSHTH1.DFHJ01A
/**

```

Figure 44 (Part 4 of 5). Sample JCL to create data sets for region CICSHTH1

```

//FRMTJ01B EXEC PGM=DFHJCJFP
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//JOURNAL DD DISP=(NEW,CATLG,DELETE),SPACE=(TRK,(4),,CONTIG),
// UNIT=3380,VOL=SER=CIC410,
// DSN=CICS410.CICSHTH1.DFHJ01B
//*
//FRMTJ01X EXEC PGM=DFHJCJFP
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//JOURNAL DD DISP=(NEW,CATLG,DELETE),SPACE=(TRK,(4),,CONTIG),
// UNIT=3380,VOL=SER=CIC410,
// DSN=CICS410.CICSHTH1.DFHJ01X
//*
//* LOAD VSAM DATA FILE
//*
//LOADFILE EXEC PGM=DFH$LDSP
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//FILEA DD DISP=SHR,
// DSN=CICS410.CICSHTH1.FILEA
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,
// DSN=CICS410.SDFHSAMP(DFH$FAIN)

```

Figure 44 (Part 5 of 5). Sample JCL to create data sets for region CICSHTH1

JCL to define communication resources

The sample JCL given in this section is used to create the resource definitions needed for communication between CICS regions in CICSplex. The JCL defines the communication resources in the CSD, then adds them to the group list for each CICS region.

The CICS regions generally use CICS MRO for communication. However, the connections between regions on different MVS images (for example, between the regions HTH1 and HTJ1) use ISC, to show the definition of VTAM APPC links, and because the IVPs were run on a release of MVS that did not support XCF/MRO. If you want to use your own choice of communication methods, specify appropriate values when creating the resource definitions.

Notes:

1. If you have access to Bookmanager, you may find it convenient to copy the following sample JCL from the softcopy version of the *CICS/ESA Installation Guide* into a member of an MVS data set.
2. In CICS/ESA 4.1 you do not have to specify send and receive prefixes when defining SESSIONS resource definitions for MRO connections. If you omit the prefix parameters from the command, or leave them blank on the CEDA define panel, CICS sets a default prefix of a greater-than symbol (>) for send sessions, and a less-than symbol (<) for receive sessions. CICS uses the prefix in conjunction with the send and receive counts to generate the session names.

If you allow the send and receive prefixes to default, CICS creates the last three characters of the session names from the alphanumeric characters A through Z, and 1 through 9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the SENDCOUNT or RECEIVECOUNT value. This method is the same as that for APPC sessions.

JCL to define communication resources for TOR HTH1

```
//HT#CSDEF JOB 24116475,userid,MSGCLASS=A,MSGLEVEL=(1,1),
//          CLASS=A,NOTIFY=userid
//*
//VTAMDEF EXEC PGM=DFHCSDUP,PARM='CSD(READWRITE),PAGESIZE(100)'
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICS410.CICSH###.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
*
DELETE CONNECTION(HAH1) GROUP(CONNHT#1)
DELETE CONNECTION(HAH2) GROUP(CONNHT#1)
DELETE CONNECTION(HAJ1) GROUP(CONNHT#1)
DELETE SESSIONS(TOR2HAH1) GROUP(CONNHT#1)
DELETE SESSIONS(TOR2HAH2) GROUP(CONNHT#1)
DELETE SESSIONS(TOR2HAJ1) GROUP(CONNHT#1)
*
*****
** CICSplex EYUPLX01
** CONNECTION and SESSIONS definitions for:
**                               TOR HTH1 to AORs HAH1, IA2, and HAJ1
** GROUP(CONNHT#1)
*
* CPSM 1A2A
DEFINE CONNECTION(HAH1) GROUP(CONNHT#1)
      NETNAME(CICSHAH1) ACCESSMETHOD(XM) INSERVICE(YES)
      DESC(Link to AOR HAH1 from TOR HTH1)
*
* CPSM 1A3A
DEFINE CONNECTION(HAH2) GROUP(CONNHT#1)
      NETNAME(CICSHAH2) ACCESSMETHOD(XM) INSERVICE(YES)
      DESC(Link to AOR HAH2 from TOR HTH1)
*
* CPSM 1A1B
* Change VTAM to XM if want to use XCF/MRO
DEFINE CONNECTION(HAJ1) GROUP(CONNHT#1)
      NETNAME(CICSHAJ1) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
      INSERVICE(YES)
      DESC(Link to AOR HAJ1 from TOR HTH1)
*
* CPSM 1A2A
DEFINE SESSIONS(TOR2HAH1) GROUP(CONNHT#1)
      CONNECTION(HAH1) PROTOCOL(LU61)
      SENDCOUNT(4) RECEIVECOUNT(4)
      IOAREALEN(4096,4096)
      DESC(TOR down sessions with AOR HAH1)
*
* CPSM 1A3A
DEFINE SESSIONS(TOR2HAH2) GROUP(CONNHT#1)
      CONNECTION(HAH2) PROTOCOL(LU61)
      SENDCOUNT(4) RECEIVECOUNT(4)
      IOAREALEN(4096,4096)
      DESC(TOR down sessions with AOR HAH2)
*
* CPSM 1A1B
* Change APPC to LU61 to use XCF/MRO
DEFINE SESSIONS(TOR2HAJ1) GROUP(CONNHT#1)
      CONNECTION(HAJ1) PROTOCOL(APPC)
      SENDSIZE(4096) RECEIVESIZE(4096)
      MAXIMUM(10,5)
      DESC(TOR down sessions with AOR HAJ1)
```

Figure 45 (Part 1 of 2). Sample JCL to define resources for CICSplex TOR


```

*
**
** ADD RESOURCE DEFINITIONS TO TOR GROUP LIST
**
*
ADD GR(CONNHT#1) LI(CICSHT#1)
*
APPEND LI(DFHLIST) TO(CICSHT#1)
*
* LIST GR(CONNHT#1) OBJECTS
* LIST LIST(CICSHT#1)
*
/*
//

```

Figure 45 (Part 2 of 2). Sample JCL to define resources for CICSplex TOR

JCL to define communication resources for AORs HAH1, HAH2, and HAJ1

```

//HA#CSDEF JOB 24116475,userid,MSGCLASS=A,MSGLEVEL=(1,1),
//          CLASS=A,NOTIFY=userid
//*
//VTAMDEF EXEC PGM=DFHCSDUP,PARM='CSD(READWRITE),PAGESIZE(100)'
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICS410.CICSH###.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
*
DELETE CONNECTION(HTH1) GROUP(CONNHA#1)
DELETE CONNECTION(HRH1) GROUP(CONNHA#1)
DELETE SESSIONS(AOR2HTH1) GROUP(CONNHA#1)
DELETE SESSIONS(AOR2HRH1) GROUP(CONNHA#1)
*
DELETE CONNECTION(HTH1) GROUP(CONNHA#2)
DELETE CONNECTION(HRH1) GROUP(CONNHA#2)
DELETE SESSIONS(AOR2HTH1) GROUP(CONNHA#2)
DELETE SESSIONS(AOR2HRH1) GROUP(CONNHA#2)
*
*****
** CICSplex EYUPLX01
** CONNECTION and SESSIONS definitions for:
**          AORs HAH1, IAH2, and HAJ1 to TOR HTH1 and ROR HRH1
** GROUP(CONNHA#1)
*
* CPSM 2A1A AND 3A1A
DEFINE CONNECTION(HTH1) GROUP(CONNHA#1)
      NETNAME(CICSHTH1) ACCESSMETHOD(XM) INSERVICE(YES)
      DESC(Link to TOR HTH1 from AORs)
*
* CPSM 2A4A AND 3A4A
DEFINE CONNECTION(HRH1) GROUP(CONNHA#1)
      NETNAME(CICSHRH1) ACCESSMETHOD(XM) INSERVICE(YES)
      DESC(Link to ROR HRH1 from AORs)
*

```

Figure 46 (Part 1 of 2). Sample JCL to define resources for CICSplex AORs

```

* CPSM 1B!A
* Change VTAM to XM and remove PROTOCOL(APPC) for XCF/MRO
DEFINE CONNECTION(HTH1) GROUP(CONNHA#2)
    NETNAME(CICSHTH1) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
    INSERVICE(YES)
    DESC(Link to ROR HRH1 from AOR ITJ1)
*
* CPSM 1B4A
* Change VTAM to XM and remove PROTOCOL(APPC) for XCF/MRO
DEFINE CONNECTION(HRH1) GROUP(CONNHA#2)
    NETNAME(CICSHRH1) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
    INSERVICE(YES)
    DESC(Link to ROR HRH1 from AORs)
**
** SESSIONS DEFINITIONS with: 1 TOR AND 1 ROR
**
* CPSM 2A1A AND 3A1A
DEFINE SESSIONS(AOR2HTH1) GROUP(CONNHA#1)
    CONNECTION(HTH1) PROTOCOL(LU61)
    SENDCOUNT(4) RECEIVECOUNT(4)
    IOAREALEN(4096,4096)
    DESC(AOR up sessions with TOR HTH1)
*
* CPSM 2A4A AND 3A4A
DEFINE SESSIONS(AOR2HRH1) GROUP(CONNHA#1)
    CONNECTION(HRH1) PROTOCOL(LU61)
    SENDCOUNT(4) RECEIVECOUNT(4)
    IOAREALEN(4096,4096)
    DESC(AOR down sessions with ROR HRH1)
*
* CPSM 1B1A
* Change APPC to LU61 for XCF/MRO.
DEFINE SESSIONS(AOR2HTH1) GROUP(CONNHA#2)
    CONNECTION(HTH1) PROTOCOL(APPC)
    SENDSIZE(4096) RECEIVESIZE(4096)
    MAXIMUM(10,5)
    DESC(AOR HAJ1 up sessions with TOR HTH1)
*
* CPSM 1B4A
DEFINE SESSIONS(AOR2HRH1) GROUP(CONNHA#2)
    CONNECTION(HRH1) PROTOCOL(APPC)
    SENDSIZE(4096) RECEIVESIZE(4096)
    MAXIMUM(10,5)
    DESC(AOR HAJ1 down sessions with ROR HRH1)
*
**
** ADD RESOURCE DEFINITIONS TO AOR GROUP LIST
**
*
ADD GR(CONNHA#1) LI(CICSHA#1)
ADD GR(CONNHA#2) LI(CICSHA#2)
*
APPEND LI(DFHLIST) TO(CICSHA#1)
APPEND LI(DFHLIST) TO(CICSHA#2)
*
* LIST GR(CONNHA#1) OBJECTS
* LIST LI(CICSHA#1)
*
/*
//

```

Figure 46 (Part 2 of 2). Sample JCL to define resources for CICSplex AORs

JCL to define communication resources for ROR HRH1

```

//HR#CSDEF JOB 24116475,userid,MSGCLASS=A,MSGLEVEL=(1,1),
//          CLASS=A,NOTIFY=userid
//*
//VTAMDEF EXEC PGM=DFHCSDUP,PARM='CSD(READWRITE),PAGESIZE(100)'
//STEPLIB DD DSN=CICS410.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICS410.CICSH###.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
*
DELETE CONNECTION(HAH1) GROUP(CONNHR#1)
DELETE CONNECTION(HAH2) GROUP(CONNHR#1)
DELETE CONNECTION(HAJ1) GROUP(CONNHR#1)
DELETE SESSIONS(ROR2HAH1) GROUP(CONNHR#1)
DELETE SESSIONS(ROR2HAH2) GROUP(CONNHR#1)
DELETE SESSIONS(ROR2HAJ1) GROUP(CONNHR#1)
*
*****
** CICSplex EYUPLX01
** CONNECTION and SESSIONS definitions for:
**                                ROR HRH1 to AORs HAH1, IAH2, and HAJ1
** GROUP(CONNHR#1)
*
* CPSM 4A2A
DEFINE CONNECTION(HAH1) GROUP(CONNHR#1)
      NETNAME(CICSHAH1) ACCESSMETHOD(XM) INSERVICE(YES)
      DESC(Link to AOR HAH1 from ROR)
*
* CPSM 4A3A
DEFINE CONNECTION(HAH2) GROUP(CONNHR#1)
      NETNAME(CICSHAH2) ACCESSMETHOD(XM) INSERVICE(YES)
      DESC(Link to AOR HAH2 from ROR)
*
* CPSM 4A2A
DEFINE SESSIONS(ROR2HAH1) GROUP(CONNHR#1)
      CONNECTION(HAH1) PROTOCOL(LU61)
      SENDCOUNT(4) RECEIVECOUNT(4)
      IOAREALEN(4096,4096)
      DESC(ROR up sessions with AOR HAH1)
*
* CPSM 4A3A
DEFINE SESSIONS(ROR2HAH2) GROUP(CONNHR#1)
      CONNECTION(HAH2) PROTOCOL(LU61)
      SENDCOUNT(4) RECEIVECOUNT(4)
      IOAREALEN(4096,4096)
      DESC(ROR up sessions with AOR HAH2)
*
* CPSM 4A1B
* Change VTAM to XM and remove PROTOCOL(APPC) for XCF/MRO
DEFINE CONNECTION(HAJ1) GROUP(CONNHR#1)
      NETNAME(CICSHAJ1) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
      INSERVICE(YES)
      DESC(Link to AOR HAJ1 from ROR)
*
* CPSM 4A1B
* Change VTAM to XM and remove PROTOCOL(APPC) for XCF/MRO
DEFINE SESSIONS(ROR2HAJ1) GROUP(CONNHR#1)
      CONNECTION(HAJ1) PROTOCOL(APPC)
      SENDSIZE(4096) RECEIVESIZE(4096)
      MAXIMUM(10,5)
      DESC(ROR up sessions with AOR HAJ1)
*

```

Figure 47 (Part 1 of 2). Sample JCL to define resources for CICSplex ROR

```

**
** ADD RESOURCE DEFINITIONS TO AOR GROUP LIST
**
*
ADD GR(CONNHR#1) LI(CICSHR#1)
*
APP LI(DFHLIST) TO(CICSHR#1)
*
* LIST GR(CONNHR#1) OBJECTS
*
/*
//

```

Figure 47 (Part 2 of 2). Sample JCL to define resources for CICSplex ROR

Sample CICS startup procedure

```

//CICSTASK PROC START='AUTO',
// INDEX1='CICS410',
// INDEX2='CICS410',
// COMIND='CICSH###',
// REG='32M',
// START='COLD',
// OUTC='*',
// RDRC='A',
// SYSIDNT='',
// APPLID='',
// PLTPI='NO',
// CLONE=''
/*
/** INDEX1 - HIGH-LEVEL QUALIFIER(S) OF CICS SYSTEM DATASETS
/** INDEX2 - HIGH-LEVEL QUALIFIER(S) OF CICS LOAD LIBRARIES
/** COMIND - QUALIFIER OF COMMON CICS DATA SETS
/** REGION - STORAGE REQUIRED
/** START - TYPE OF CICS START-UP REQUIRED
/** OUTC - PRINT OUTPUT CLASS
/** RDRC - JES INTERNAL READER CLASS
/** SYSIDNT - CICS REGION SYSID
/** APPLID - CICS REGION APPLID
/** PLTPI - PLT TO SHUTDOWN CICS; N2=1800 : N1=1400
/** CLONE - QUALIFIER TO IDENTIFY CLONE CICS REGIONS
/**
/*******
/******* EXECUTE CICS *****
/*******
//INITCICS EXEC PGM=DFHSIP,REGION=&REG,TIME=1440,
// PARM=('START=&START,SYSIDNT=&SYSIDNT',APPLID=CICS&SYSIDNT',
// 'INITPARM=(DFHDBCON='XX,IMSA')',
// 'PLTPI=&PLTPI,SYSIN')
/*
//SYSIN DD DISP=SHR,DSN=&INDEX1.&COMIND..SYSIN(CICS&CLONE)
/*******
/** THE CICS LIBRARY CONCATENATIONS
//STEPLIB DD DISP=SHR,DSN=&INDEX2..SDFHAUTH
/*******
/** THE CICS LIBRARY (DFHRPL) CONCATENATION
//DFHRPL DD DISP=SHR,DSN=&INDEX2..SDFHLOAD
// DD DISP=SHR,DSN=SYS2.COBOL2.V132.COB2CICS
// DD DISP=SHR,DSN=SYS2.COBOL2.V132.COB2LIB
// DD DISP=SHR,DSN=PP.C3700512.V120CICS.LOADLIB
// DD DISP=SHR,DSN=PP.PLI.V23.PLILINK

```

Figure 48 (Part 1 of 2). A sample CICS startup procedure

```

//*****
//*      THE CICS SYSTEM DEFINITION DATASET
//DFHCSD DD DISP=SHR,DSN=&INDEX1.&COMIND..DFHCSD
//*****
//*      THE AUXILIARY TEMPORARY STORAGE DATASET
//DFHTEMP DD DISP=SHR,DSN=&INDEX1..CNTL.CICS&SYSIDNT..DFHTEMP
//*****
//*      THE INTRAPARTITION DATASET
//DFHINTRA DD DISP=SHR,DSN=&INDEX1..CNTL.CICS&SYSIDNT..DFHINTRA
//*****
//*      THE AUXILIARY TRACE DATASETS
//DFHAUXT DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHAUXT
//DFHBUXT DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHBUXT
//*****
//*      THE DUMP DATASETS
//DFHMPA DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHMPA
//DFHMPB DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHMPB
//*****
//*      THE CICS SYSTEM LOG DATASETS
//DFHJ01A DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHJ01A
//DFHJ01B DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHJ01B
//DFHJ01X DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHJ01X
//*****
//*      AUTOMATIC JOURNAL ARCHIVING DATASETS
//DFHJACD DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHJACD
//DFHJPDS DD DISP=SHR,DSN=&INDEX1.&COMIND..DFHJPDS
//DFHJOUT DD SYSOUT=(&RDR,INTRDR)
//*****
//*      THE RESTART DATASET
//DFHRSD DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHRSD
//*****
//*      THE CICS LOCAL CATALOG DATASET
//DFHLCD DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHLCD
//*****
//*      THE CICS GLOBAL CATALOG DATASET
//DFHGCD DD DISP=SHR,DSN=&INDEX1..CICS&SYSIDNT..DFHGCD
//*      AMP=('BUFND=5,BUFNI=20,BUFSP=122880')
//*****
//* EXTRAPARTITION DATASETS
//DFHCXRF DD SYSOUT=&OUTC
//MASTOUT DD SYSOUT=&OUTC,DCB=(DSORG=PS,RECFM=V,BLKSIZE=136)
//BATCHRDR DD SYSOUT=(&RDR,INTRDR)
//LOGUSR DD SYSOUT=&OUTC,DCB=(DSORG=PS,RECFM=V,BLKSIZE=136)
//MSGUSR DD SYSOUT=&OUTC,DCB=(DSORG=PS,RECFM=V,BLKSIZE=136)
//PLIMSG DD SYSOUT=&OUTC,DCB=(DSORG=PS,RECFM=V,BLKSIZE=137)
//COUT DD SYSOUT=&OUTC,DCB=(DSORG=PS,RECFM=V,BLKSIZE=137)
//* LE/370 QUEUES
//CEMSG DD SYSOUT=A
//CEEOUT DD SYSOUT=A
//*****
//* CAFF TD QUEUE FOR ERROR MESSAGES
//CAFF DD SYSOUT=A
//*****
//TRACEOUT DD SYSOUT=&OUTC
//SYSABEND DD SYSOUT=&OUTC
//PRINTER DD SYSOUT=&OUTC,DCB=BLKSIZE=121
//CARDIN DD DISP=SHR,DSN=&INDEX1.&COMIND..SYSIN(CARD&CLONE)
//* END OF CICS JOB STEP

```

Figure 48 (Part 2 of 2). A sample CICS startup procedure

Sample MVS procedure to start CICSplex

```
//CICSTASK PROC
//*
//DUMMY EXEC PGM=IEFBR14
//*
// START CICSTASK.CICSHTH1,SYSIDNT='HTH1',CLONE='HT#1',
//     START=COLD
// START CICSTASK.CICSHAH1,SYSIDNT='HAH1',CLONE='HA#1',
//     START=COLD
// START CICSTASK.CICSHAH2,SYSIDNT='HAH2',CLONE='HA#1',
//     START=COLD
// START CICSTASK.CICSHRH1,SYSIDNT='HRH1',CLONE='HR#1',
//     START=COLD
//*
//* END OF CICS START PROCEDURE
```

Glossary of SMP/E terms used in this book

ACCEPT (function of SMP/E). SMP/E control statement that controls the placement (installing) of SYSMODs into the distribution libraries. Processing is similar to that during APPLY except that the distribution zone is updated, not the target zone, and JCLIN data is not processed by ACCEPT.

If the installing is successful, any entries in the SCDS created by APPLY are deleted, as are temporary libraries created by RECEIVE. Therefore, after a SYSMOD is accepted, it can no longer be removed by SMP/E.

APAR (authorized program analysis report).

IBM-supplied fixes of a temporary corrective nature to elements of IBM-supplied function SYSMODs. APAR fixes are called “corrective” service because they are installed to cure problems currently being experienced by an installation. The APAR fix is usually in the form of either a modification to a load module or an update to card-image data. It is intended as a temporary arrangement until a preventive service (PTF) is issued to fix the problem permanently. This PTF will supersede the APAR fix, and indeed specifies this relationship on its ++VER statement.

To get an APAR SYSMOD accepted into the distribution libraries, the APARS keyword must be specified in the ACCEPT control statement, which protects against inadvertent updating of distribution libraries that are to be kept free of temporary fixes.

The ++VER statement in the APAR SYSMOD must specify the FMID of the function that “owns” the elements being updated.

```
++APAR(AP12345)
++VER(C150) FMID(HCI4100)
```

You should not accept APARs into the distribution library, however, because the relevant PTF will become available in due course as a more permanent form of service.

APPLY (function of SMP/E). SMP/E control statement that applies SYSMODs to the CICS target libraries, where they can be tested. If the tests are not satisfactory, you can remove all or selected SYSMODs using the RESTORE function. If the test is successful, you can use the ACCEPT function to store the elements from the SYSMOD into the distribution libraries.

During JCLIN processing, every affected entry in the target zone is saved in the SCDS, in case the target system libraries and the target zone have to be restored to their original status.

CSI (consolidated software inventory). A keyed VSAM data set, logically divided by SMP/E into **zones**.

For further information on the CSI and the logical structure of zones, see the *System Modification Program Extended: User's Guide*.

Distribution zone. Describes the structure and contents of a set of distribution libraries.

Function SYSMOD. An IBM-supplied product that can be installed with SMP/E. CICS/ESA 4.1 is packaged as a function SYSMOD on a distribution tape. This contains distribution libraries and JCLIN data which SMP/E uses to create the target libraries.

FMID (keyword of CICS SYSMODs). Keyword identifying the release and option to which a SYSMOD is applicable. For CICS/ESA 4.1, it is always HCI4100.

Global zone. Logical division of the SMP/E consolidated software inventory (CSI), containing such information as:

- Definitions of all other related zones
- Descriptions of the SYSMODs present in the PTS
- Descriptions of the system utilities to be invoked during SMP/E processing
- DD definition entries for use by dynamic allocation.

load module. In the context of SMP/E, an executable load module in a target library (such as CICS410.SDFHLOAD). The standard SMP/E abbreviation for a load module is LMOD.

PTF (program temporary fix). IBM-supplied preventive fixes to elements of IBM-supplied function SYSMODs. PTFs are termed “preventive service” because they are intended for installation by all users to avoid possible problems.

A PTF may contain fixes for several different problems. This means that several APAR fixes reported in RETAIN may all be superseded by the more permanent PTF, which:

- Provides card-image changes that are identical to those in the APAR fix
- Contains object-module replacements for preassembled CICS programs.

Every PTF is introduced by a ++PTF header statement, and contains the FMID keyword on its ++VER modification control statement, identifying CICS (HCI4100) as the owner of the modules being serviced.

For example:

```
++PTF(UP12345)
++VER(C150) FMID(HCI4100)
```

PTS (PTF temporary store). SMP/E primary data set used to store temporarily SYSMODs that are in RECEIVE or APPLY status; that is, they have not been rejected or accepted.

RECEIVE (function of SMP/E). SMP/E control statement that initiates processing of a SYSMOD. RECEIVE reads the SYSMODs from the SMPPTFIN data set. Each SYSMOD must have been received before any other function can be executed.

RECEIVE updates the SMPPTS data set and performs syntax checking on input. Before any SYSMOD for CICS can be received, the global zone must have been initialized with a global zone entry.

Service SYSMODs can be received into the (PTS) before the function to which it applies has been received, and can be maintained there until the function is received. This allows all service for a product such as CICS to be installed with the base product.

REJECT (function of SMP/E). SMP/E control statement that removes SYSMODs from the PTS data set and deletes any temporary libraries that SMP/E may have allocated when the SYSMOD was received (RELFILES). If the SELECT or EXCLUDE option is not coded on the REJECT control statement, all SYSMODs not applied or accepted will be removed from the PTS. This is called a **mass rejection**. All other SYSMOD processing functions (RECEIVE, APPLY, RESTORE, and ACCEPT) can have SELECT or EXCLUDE specified, or may default to mass-processing mode.

RESTORE (function of SMP/E). SMP/E control statement that removes SYSMODs from the target system libraries after they have been applied, and restores the target libraries to their status prior to application of the SYSMODs. If necessary, RESTORE

reconstructs the target zone entries from the SCDS. If you select "mass restore", **all** SYSMODs that have been applied but not accepted will be removed from the target libraries.

SYSMOD (system modification). (1) An IBM-supplied product (function SYSMOD). (2) An IBM-supplied preventive service (PTF). (3) An IBM-supplied corrective service (APAR). (4) A user-supplied modification (USERMOD).

Target zone. Describes the structure and contents of a set of target system libraries.

UCLIN (function of SMP/E). SMP/E control statement that can be used to manipulate the various data sets that make up the SMP/E data base. The most common use of this function is to initialize the SMP/E database before the first attempt to use it. For CICS, this initialization is performed during installation, when DFHINST4 is run.

USERMOD (user modification). User-supplied modifications to elements of IBM-supplied function SYSMODs. USERMODs are similar to APAR fixes, but are supplied by the user and not by IBM. They may be:

- A local fix to bypass a problem until an official IBM fix is available
- A user modification to add or alter function within CICS.

The decision to modify CICS, either to add or to alter function, should be taken with caution, because it greatly increases the amount of research you must do before installing PTFs, and may also increase the installation time for PTFs. Furthermore, USERMODS will cause difficulty when you want to install future release of CICS.

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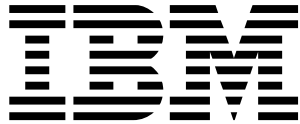
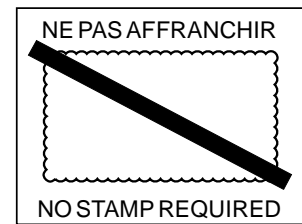
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