CICS® Transaction Server for OS/390®

Migration Guide

Release 3

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Release 3

IBM

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Preface

What this book is about

This book is about migration to CICS® Transaction Server for OS/390® Release 3, providing information for users who plan to migrate from CICS TS Release 2. For the purposes of this book, "migration" is generally taken to mean running existing applications at the equivalent level of function provided by the existing release.

Note: If you are migrating from a release of CICS earlier than CICS TS Release 2, you are recommended to read the *Release Guide* and the *Migration Guide* (where applicable) for the intervening releases.

Who should read this book

This book is for those responsible for planning the migration to CICS Transaction Server for OS/390.

It describes externals, such as system definitions, resource definitions, and programming interfaces, that have changed, and which may require you to make changes to your existing CICS and CICSPlex® SM setup.

What you need to know to understand this book

This book assumes that you are familiar with CICS and CICSPlex SM, either as a systems administrator, or as a system or application programmer.

You should also have read about the new function in CICS TS Release 3 as described in the *CICS Transaction Server for OS/390 Release Guide*.

Notes on terminology

CICS refers to the CICS element of the CICS Transaction Server for OS/390.

CICS TS, unless stated otherwise, refers to Release 3 of CICS Transaction Server for OS/390.

CICSPlex SM refers to the CICSPlex System Manager element of the CICS Transaction Server for OS/390.

CICS/MVS® is used for Customer Information Control System/Multiple Virtual Storage.

CICS/ESA® is used for Customer Information Control System/Enterprise System Architecture.

MVS™ is used for the operating system, the Base Control Program (BCP) element of OS/390.

Bibliography

CICS Transaction Server for OS/390

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

CICS books for CICS Transaction Server for OS/390

General

CICS Master Index	SC33-1704
CICS User's Handbook	SX33-6104
CICS Transaction Server for OS/390 Glossary (softcopy only)	GC33-1705

Administration

CICS System Definition Guide	SC33-1682
CICS Customization Guide	SC33-1683
CICS Resource Definition Guide	SC33-1684
CICS Operations and Utilities Guide	SC33-1685
CICS Supplied Transactions	SC33-1686

Programming

CICS Application Programming Guide	SC33-1687
CICS Application Programming Reference	SC33-1688
CICS System Programming Reference	SC33-1689
CICS Front End Programming Interface User's Guide	SC33-1692
CICS C++ OO Class Libraries	SC34-5455
CICS Distributed Transaction Programming Guide	SC33-1691
CICS Business Transaction Services	SC34-5268

Diagnosis

CICS Problem Determination Guide	GC33-1693
CICS Messages and Codes	GC33-1694
CICS Diagnosis Reference	LY33-6088
CICS Data Areas	LY33-6089
CICS Trace Entries	SC34-5446
CICS Supplementary Data Areas	LY33-6090

Communication

CICS Intercommunication Guide	SC33-1695
CICS Family: Interproduct Communication	SC33-0824
CICS Family: Communicating from CICS on System/390	SC33-1697
CICS External Interfaces Guide	SC33-1944
CICS Internet Guide	SC34-5445

Special topics

CICS Recovery and Restart Guide	SC33-1698
CICS Performance Guide	SC33-1699
CICS IMS Database Control Guide	SC33-1700
CICS RACF Security Guide	SC33-1701
CICS Shared Data Tables Guide	SC33-1702
CICS Transaction Affinities Utility Guide	SC33-1777

CICS DB2 Guide	SC33-1939

CICSPlex SM books for CICS Transaction Server for OS/390

General

CICSPlex SM Master Index	SC33-1812
CICSPlex SM Concepts and Planning	GC33-0786
CICSPlex SM User Interface Guide	SC33-0788
CICSPlex SM View Commands Reference Summary	SX33-6099

Administration and Management

CICSPlex SM Administration	SC34-5401
CICSPlex SM Operations Views Reference	SC33-0789
CICSPlex SM Monitor Views Reference	SC34-5402
CICSPlex SM Managing Workloads	SC33-1807
CICSPlex SM Managing Resource Usage	SC33-1808
CICSPlex SM Managing Business Applications	SC33-1809

Programming

CICSPlex SM Application Programming Guide	SC34-5457
CICSPlex SM Application Programming Reference	SC34-5458

Diagnosis

CICSPlex SM Resource Tables Reference	SC33-1220
CICSPlex SM Messages and Codes	GC33-0790
CICSPlex SM Problem Determination	GC33-0791

Other CICS books

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

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

Determining if a publication is current

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

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

For CICS Transaction Server books, these softcopy updates appear regularly on the *Transaction Processing and Data Collection Kit* CD-ROM, SK2T-0730-xx. Each reissue of the collection kit is indicated by an updated order number suffix (the -xx part).

For example, collection kit SK2T-0730-06 is more up-to-date than SK2T-0730-05. The collection kit is also clearly dated on the cover.

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

Part 1. General changes to CICS externals

This part of the book deals with all the changes that affect CICS externals, such as system and resource definitions and programming interfaces. The topics covered are as follows:

Chapter 1. System initialization parameters

This chapter summarizes the changes to CICS® system initialization parameters.

Obsolete system initialization parameters

Table 1 shows those system initialization parameters that are obsolete.

Remove any of these obsolete parameters from your system initialization table, or from your CICS startup JCL (for example, the SYSIN data set) before migrating.

Table 1. Obsolete system initialization parameters

Obsolete keywords	Explanation
WEB	The CICS Web interface is now initialized automatically, making the WEB parameter obsolete.

Changed system initialization parameters

Table 2 shows those system initialization parameters that have changed in some way.

Table 2. Changed system initialization parameters

Keywords	Operands	Explanation
CHKSTSK	{**NONE**│CURRENT}	The ALL option is obsolete.
FCT	{**NO**│YES│*xx*}	The default has changed from YES to NO.
INITPARM	(DFHD2INI='*name*')	The RCT suffix operand is obsolete on the DFHD2INI parameter, which now supports only the DB2® subsystem name.
SRT	{**1$**│YES│NO│*xx*}	The default is changed from YES to 1$, which is the suffix of the sample system recovery table supplied pregenerated in CICSTS13.CICS.SDFHLOAD.
TCT	{**NO**│YES│*xx*	The default is changed from YES to NO.
TRTRANSZ	{**16***number-of-kilobytes*	The default is changed from 40 to 16 kilobytes.

For more information on the changed parameters, see the *CICS System Definition Guide.*

New system initialization parameters

Table 3 on page 4 shows new system initialization parameters.

The default values for these parameters are designed to have minimal impact when you are migrating from an earlier release of CICS.

Table 3. New system initialization parameters

Keywords	Operands	Explanation
AICONS	{**NO**	YES	AUTO}	Specifies the terminal autoinstall function for MVS® consoles, and whether you want the fully automatic option, or want CICS to invoke your autoinstall control program.
DOCCODEPAGE	{**037**	number}	Specifies the default host code page to be used by the CICS document domain if the HOSTCODEPAGE option is omitted from CICS API DOCUMENT commands.
ENCRYPTION	{**NORMAL**	STRONG	WEAK}	Specifies the level of encryption you want to use for TCP/IP connections using the secure sockets layer.
FORCEQR	{**NO**	YES}	Specifies that all user application programs are to be forced to run under the CICS QR TCB.
DSRTPGM	{**NONE**	DFHDSRP	*program_name*	EYU9XLOP}	Specifies the name of the distributed routing program to be used for dynamically routing transactions that implement CBTS activities, and non-terminal-related transactions that are initiated by START commands.
KEYFILE	*keyring_pathname*	Specifies the fully-qualified HFS pathname of the keyring file created for the CICS region by the *mkkf* utility program.
MAXOPENTCBS	{**5**	*number*}	Specifies the maximum number of open TCBs that are allowed in the CICS region.
MROFSE	{**NO**	YES}	Specifies whether you want to extend the lifetime of the long-running mirror to keep it allocated until the end of the task rather than after a user syncpoint for function shipping applications.
NCPLDFT	{**DFHNC001**	*name*}	Specifies the name of the default named counter pool.
RRMS	{**NO**	YES}	Specifies whether CICS is to register as a resource manager with OS/390's recoverable resource management services (RRMS).
RUWAPOOL	{**NO**	YES}	Specifies whether CICS is to create pools of run-unit work areas for use by application programs that are compiled by LE-conforming compilers. Creating storage pools that can be reused for run-unit work areas improves performance of LE-conforming programs that run above 16MB. (Specifying RUWAPOOL does not affect storage management below 16MB.)

Table 3. New system initialization parameters (continued)

Keywords	Operands	Explanation
SSLDELAY	{**600**|number}	Specifies the timeout value for the secure sockets layer.
SSLTCBS	{**8**|number}	Specifies the number of CICS subtask TCBs to be dedicated to processing secure sockets layer connections, in the range 0 to 255. This controls the number of simultaneous SSL connections that CICS can establish; 0 means that no SSL connections are to be established.
TCPIP	{**NO**|YES}	Specifies whether CICS TCPIP services (HTTP and IIOP) are to be activated at CICS startup.

For information about the new function relating to these new system initialization parameters, see the *CICS Transaction Server for OS/390 Release Guide.*

Getting started with new and changed system initialization parameters

Here is a simple way of migrating with the changes to system initialization parameters described above:

Use the default system initialization table
The unsuffixed default system initialization table (DFHSIT) is supplied in the CICS SDFHAUTH library. You can use this to start a CICS region using most of the default values, and you don't even have to specify the table in your JCL—CICS loads DFHSIT by default if there is not a SIT parameter in your JCL.

Override defaults using the SYSIN data set
To override default values, specify system initialization parameters in a permanent member of a SYSIN data set.

You can vary these easily during testing, avoiding the need to reassemble suffixed system initialization tables. Nearly all system initialization parameters entered at run time are used even on a warm start (the exceptions are the FCT and CSD parameters).

The changes to some system initialization parameter default values, such as FCT=NO and SRT=1$, have been made to minimize the need for overriding default values.

Chapter 2. CICS-supplied transactions

This chapter summarizes the changes to CICS-supplied transactions.

Changed CEMT commands

Table 4 shows those CEMT commands that have changed in some way.

Table 4. Changed CEMT commands

CEMT command	Option	Explanation
INQUIRE AUTOINSTALL	CONSOLES ENABLESTATUS	Options added to indicate the status of autoinstall for consoles.
INQUIRE CONNECTION	CQP(*cvda*)	Option added to support APPC quiesce protocol.
INQUIRE EXCI	URID	Option added to display unit of recovery information relating to EXCI clients that are using 2-phase commit mode with RRMS.
INQUIRE FILE	LOADTYPE CFDTPOOL(*name*) TABLENAME(*name*) UPDATEMODEL KEYLENGTH(*length*) RECORDSIZE(*size*) TABLE(*type*)	Options added to display information about a coupling facility data table. TABLE now supports the new CF option to indicate a coupling facility data table.
INQUIRE PROGRAM	CONCURRENCY DYNAMSTATUS JAVA JVMCLASS JVMDEBUG RUNTIME	Options added to indicate (1) whether the program is threadsafe and can execute concurrently with other user programs, (2) whether, if the program is the subject of a program-link request, the request can be dynamically routed, and (3) to display information about a Java™ program object and about a program's runtime environment.
INQUIRE SYSTEM	ACTOPENTCBS DSRTPROGRAM FORCEQR MAXOPENTCBS	Options added to display • The number of open TCBs that are allocated to user tasks • The name of the distributed routing program that is currently active in the region • Whether all user application programs are to be forced to run on the QR TCB • The maximum number of open TCBs that are allowed in the CICS region.
INQUIRE TASK	ACTIVITY ACTIVITYID PROCESS PROCESSTYPE BRIDGE HVALUE TCB	Options added to display details of the CBTS activity and process for which the task is executing. The BRIDGE option now returns the name of the bridge *monitor* transaction. The bridge transaction, which is returned on the previous release, is no longer required to run a transaction in the 3270 bridge environment. The HVALUE option is extended to allow for 16-character resource names. The TCB option is added to indicate the mode of TCB under which the task is running.
INQUIRE TERMINAL	CONSOLE	Option added to display the MVS™ console name if the terminal is a console.

Table 4. Changed CEMT commands (continued)

	CEMT command	Option	Explanation
# #	INQUIRE TDQUEUE	MEMBER	Option added to display the 8-character member name if the queue is a member of a partitioned data set.
	INQUIRE TRANSACTION	ROUTSTATUS	Option added to indicate whether, if the transaction is the subject of an eligible EXEC CICS START command, the start request can be dynamically routed.
# # # # # # #	INQUIRE TSQUEUE	ACTION POOLNAME RECOVSTATUS	The ACTION field is a SET option, allowing you to delete a TS queue. POOLNAME enables you to inquire on TS queues in a coupling facility pool. RECOVSTATUS indicates whether the TS queue is recoverable. **Note:** You can also specify INQUIRE TSQNAME, where TSQNAME is an alias for the TSQUEUE keyword, and provides identical information.
	INQUIRE UOW	WAITCAUSE	A new wait cause, RRMS is added.
# # # # #	INQUIRE UOWENQ	DURATION ENQFAILS ENQSCOPE	New options are added to provide more information about enqueues held by units of work, indicating how long the enqueue has been held; how failed attempts there have been to enqueue on the resource since the enqueue was acquired; and whether the scope is local or sysplex wide.
# # #	INQUIRE UOWLINK	LINK PROTOCOL TYPE	A new LINK value, the CFDT pool name, is returned for a new TYPE value of CFTABLE. A new protocol value, RRMS is added.
	PERFORM STATISTICS	TCPIPSERVICE	Option added to write TCP/IP service resource statistics to SMF.
	SET AUTOINSTALL	FULLAUTO PROGAUTO NOAUTO	Options added to specify the level of autoinstall support for consoles.
	SET FILE	CFDTPOOL(*name*) CONTENTION	LOCKING KEYLENGTH(*length*) LOAD	NOLOAD RECORDSIZE(*size*) TABLENAME(*name*)	Options added to set changed attributes for a coupling facility data table.
# # #	SET PROGRAM	JVMCLASS DEBUG	NODEBUG JVM	NOJVM	Options added to specify the name of the JVM class; the JVM debug option; and whether the program is to execute under the control of a JVM.
# # #	SET SYSTEM	DSRTPROGRAM FORCE	NOFORCE MAXOPENTCBS	Option added to specify the name of the distributed routing program; whether or not the use of the quasireentrant TCB is to forced; and the maximum number of open TCBs.

New CEMT commands

Table 5 shows new CICS transactions.

Table 5. New CEMT commands

	CEMT command	Explanation
#	DISCARD DOCTEMPLATE	Command added to discard installed DOCTEMPLATE resource definitions.
#	DISCARD ENQMODEL	Command added to discard installed ENQMODEL resource definitions.
#	DISCARD PROCESSTYPE	Command added to discard installed PROCESSTYPE resource definitions.
#	DISCARD REQUESTMODEL	Command added to discard installed REQUESTMODEL resource definitions.

Table 5. New CEMT commands (continued)

	CEMT command	Explanation
#	DISCARD TCPIPSERVICE	Command added to discard installed TCPIPSERVICE resource definitions.
	DISCARD TSMODEL	Command added to discard installed TSMODEL resource definitions.
	INQUIRE CFDTPOOL	Command added to display status of a connection to a coupling facility data table server.
#	INQUIRE DOCTEMPLATE	Command added to display information about installed document templates.
# #	INQUIRE ENQ	Command added to display information about enqueues held by user tasks on named resources.
# #	INQUIRE ENQMODEL	Command added to display information about installed ENQMODEL resource definitions.
	INQUIRE PROCESSTYPE	Command added to display information about a CBTS process type.
	INQUIRE REQUESTMODEL	Command added to display information about IIOP request models.
	INQUIRE RRMS	Command added to display information on the status of CICS recoverable resource management services (RRMS)
	INQUIRE TCPIP	Command added to display the status of CICS internal TCP/IP support.
	INQUIRE TCPIPSERVICE	Command added to display information about TCP/IP ports on which CICS internal TCP/IP support is currently listening.
	INQUIRE TSMODEL	Command added to display information about TSMODEL resource definitions installed in the CICS region. Typically, your regions always have at least one of these resource definitions, called DFHWEB, installed from group DFHWEB, which is included in DFHLIST.
	INQUIRE TSPOOL	Command added to display information about TSPOOL resource definitions installed in the CICS region. There are no CICS-supplied TSPOOL definitions installed from DFHLIST.
	INQUIRE TSQNAME	New version of the INQUIRE TSQUEUE command, which continues to be supported. INQUIRE TSQNAME provides compatibility with the equivalent SPI command.
	INQUIRE WEB	Command added to display information about CICS Web support.
# #	SET ENQMODEL	Command added to enable you to change the attributes of an installed ENQMODEL resource definitions
	SET PROCESSTYPE	Command added to enable you to change the attributes of an installed CBTS process type.
	SET TCPIP	Command added to enable you to set CICS internal TCP/IP support open or closed.
	SET TCPIPSERVICE	Command added to enable you to change the attributes of installed TCPIPSERVICE definitions.
	SET TSQUEUE	Command added to enable you to delete a temporary storage queue.
	SET WEB	Command added to enable you to change some CICS Web support settings, and to open or close CICS internal sockets support.

For detailed information on all the new and changed CEMT transactions and options, see the *CICS Supplied Transactions* manual.

Changes to CETR

The CETR transaction is enhanced to handle special tracing for the following new components:

BA	CICS business application manager domain for BTS
DH	Document handling domain
EM	Event manager domain for BTS
RX	Recoverable EXCI domain
SH	Scheduler services domain for BTS
SO	Sockets domain

Changes to CDBM

The CICS-DBCTL Operator Transaction panel displayed by the CDBM transaction is enhanced to allow you to store IMS™ commands in a new CICS system data set, DFHDBFK. This is used as the CDBM group command file, in which you can store DBCTL commands.

The group command file, DFHDBFK, is a file-control-managed VSAM® KSDS file, and requires a file resource definition installed from the CSD if you want to use the new function. It also requires either a DD statement in your startup job stream, or the fully-qualified DSNAME specified in the resource definition. See the *CICS System Definition Guide* for IDCAMS information on how to define the KSDS for DFHDBFK.

Changes to CEBR

The CEBR transaction is enhanced to support 16-character queue names. It also allows the names to be displayed in 32-character hexadecimal format.

New CBAM transaction

CBAM is provided to enable you to browse BTS objects, such as process-types, processes, activities and so on. It is described in CICS Business Transaction Services.

CWBC obsolete

The CICS Web interface transaction, CWBC, is obsolete, together with its associated data set, DFHWBCD. For more information about changes affecting the CICS Web interface, see "Chapter 16. Migration planning for CICS Web support" on page 61.

Note: Although this transaction is obsolete, it has been left in the DFHWEB group in the CSD. However, if it is invoked, CICS issues message DFHWB1551 07/08/99 15:29:23 CICSHT61 The CWBC Transaction is no longer used to manage CICS Web resources.

Additions to CICS RACF category 1 transactions

There are new CICS internal system transactions added to the list of category one transactions. These are the transactions that need to be defined to RACF, and to which the CICS region userid must be authorized, to enable CICS to initialize successfully when you are running CICS with security enabled (SEC=YES). The new transactions are:

- CFCL— File control CFDT load
- CFSL— File control SDT load

• CIOD—IIOP ORB function
• CIOF—CORBA GenericFactory
• CIOR—IIOP receiver program
• CSHA—CICS BTS scheduler services handle-abend transaction
• CSHQ—Scheduler services domain long running task
• CSOL—CICS sockets listener transaction
• CTSD—TS delete recoverable queue
• CWBG—CICS Web support cleanup transaction
• CWXN—CICS Web support attach transaction.

For a full list of all the CICS category 1 transactions, see the DFH$CAT1 CLIST,
supplied in the SDFHSAMP library.

Chapter 3. Resource definition (online) changes

This chapter summarizes the changes to CICS resource definition parameters for resources defined in the CICS system definition data set (DFHCSD).

Changed resource definition parameters

Table 6 shows changes to resource definition parameters.

Table 6. Changed resource definition parameters

Resource type	Affected keywords	Explanation
FILE	MAXNUMRECS	There is a new operand, NOLIMIT, on this option, and the range is extended to 1 through 99 999 999. Also, for a coupling facility data table, this value is used from the file resource definition only once—when the coupling facility data table is being created. Thereafter, it is controlled by the coupling facility data table server. You can use a CFDT server command to change the MAXNUMRECS value dynamically.
	KEYLENGTH	The maximum key length for a coupling facility data table is 16 bytes.
	TABLE	The CF option is added to the TABLE attribute to specify a coupling facility data table.
TERMINAL	USERID	The userid parameter now supports two special options for use with the autoinstall for consoles function. You can now specify *FIRST or *EVERY to indicate that CICS is to use the userid passed on the MVS MODIFY command, either once only or every time.
TRANSACTION	BREXIT	The meaning of this parameter is changed. It now names the default bridge exit to be used by the user transaction and program named on the transaction definition. **Note:** This change causes an incompatibility when sharing an upgraded CSD with a CICS TS Release 2 region. See page 19 for information about a CICS TS Release 2 APAR that fixes this incompatibility.

New resource definition parameters

Table 7 shows new resource definition parameters.

Table 7. New resource definition parameters

Resource type	New keywords	Explanation
DOCTEMPLATE	TEMPLATENAME FILE TSQUEUE TDQUEUE PROGRAM EXITPGM DDNAME MEMBERNAME APPENDCRLF	DOCTEMPLATE is a new type of resource definition to enable you define the names of document templates, and to specify where the templates are stored.
ENQMODEL	ENQMODEL ENQSCOPE STATUS ENQNAME	ENQMODEL is a new type of resource definition added to support the CICS sysplex-wide ENQ and DEQ function.
FILE	CFDTPOOL TABLENAME UPDATEMODEL LOAD	These file attributes are added for coupling facility data tables: • CFDTPOOL names the pool in which the CFDT resides • TABLENAME names the table if different from the file name. • UPDATEMODEL specifies either the locking or contention models. • LOAD specifies whether the table is initially loaded from a source data set.
PROCESSTYPE	PROCESSTYPE STATUS FILE AUDITLOG AUDITLEVEL	PROCESSTYPE is a new type of resource definition for defining a CICS business transaction services (BTS) process-types in the CSD.
PROGRAM	CONCURRENCY DYNAMIC JVM JVMCLASS	Attributes added to indicate (1) if the program is written to threadsafe or CICS quasi-reentrancy standards; (2) if the program is the subject of a program-link request, that the request can be dynamically routed; and (3) whether the program is a Java program object, and its class name.
REQUESTMODEL	REQUESTMODEL OMGMODULE OMGINTERFACE OMGOPERATION TRANSID	REQUESTMODEL is a new type of resource definition for mapping an Internet Inter-ORB Protocol (IIOP) inbound request to the name of the CICS transaction that is to be initiated.
TCPIPSERVICE	TCPIPSERVICE URM PORTNUMBER CERTIFICATE STATUS SSL TRANSACTION BACKLOG TSQPREFIX IPADDRESS SOCKETCLOSE	TCPIPSERVICE is a new type of resource definition for defining the TCP/IP services that use CICS internal sockets support. The internal CICS services that you can define are IIOP and the CICS Web interface. The TCPIPSERVICE resource definition for the CICS Web interface removes the need for the CICS Web data set, DFHWBCD, which is obsolete.

Table 7. New resource definition parameters (continued)

Resource type	New keywords	Explanation
TRANSACTION	ROUTABLE	This attribute is added to indicate, if the transaction is the subject of an eligible EXEC CICS START request, that the request can be dynamically routed.
TSMODEL	TSMODEL PREFIX LOCATION RECOVERY SECURITY POOLNAME REMOTESYSTEM REMOTEPREFIX	TSMODEL is a new type of resource definition for defining temporary storage queue attributes in the CSD. This form of definition is now the recommended method, instead of using DFHTST macro definitions to create a temporary storage table. It is also the only way you can define prefixes that are greater than 8 characters. See "Migrating TST entries to the CSD" on page 22 for information about migrating TSTs to the CSD and future withdrawal of support for the DFHTST macro. See also "Change to search order for TS definitions" for information about a change in the search order for TSMODELs compared with TSTs.

Other resource definition changes

This section describes some general changes to resource definitions. The topics covered are:

- Change to search order for TS definitions
- Upgrading the CSD
- Additions to IBM®-supplied resource definitions
- Changes to IBM-supplied resource definitions
- Sharing the CSD between different releases of CICS

Change to search order for TS definitions

If you use a temporary storage table to define the attributes of TS queues, CICS searches the TST for the first prefix that satisfies the particular search criteria. For example, if CICS searches for temporary storage queue ABCDEFGH, and the TST contains prefix A followed by prefix AB, A is selected. This "first-match" rule does not apply when you use TSMODEL definitions instead of a TST.

When you use TSMODEL definitions, CICS searches the installed models to find the best match, and uses the TSMODEL with the most specific prefix. For example, if there are installed TSMODEL definitions for DF, DFH, and DFHX, CICS selects the DFHX model for a TS request that specifies the DFHX123 queue, regardless of the order in which the TSMODELs are installed from the CSD.

Upgrading the CSD

Run the DFHCSDUP utility program, specifying the UPGRADE command, to upgrade the IBM-supplied definitions in your CSD to the latest CICS TS level. You can create a new CSD using the DFHCSDUP INITIALIZE command. For information about running DFHCSDUP with the UPGRADE command, see the *CICS Operations and Utilities Guide.*

Additions to IBM-supplied resource definitions

There are new groups of resource definitions added to your CSD when you run
the UPGRADE command:
- DFHCBTS
- DFHCFC
- DFHDOC
- DFHIIOP
- DFHTERMC
- DFH$CBTS
- DFH$CFCS
- DFH$IIOP
- DFH$JAVA
- DFH$JVM
- DFH$SOT

DFHCBTS and DFH$CBTS

The IBM-supplied group DFHCBTS contains resource definitions for CICS business
transaction services (BTS). This group contains the file resource definition for the
BTS local request queue data set, DFHLRQ, which is required by scheduler
services.

The DFHCBTS group is included in list DFHLIST when you initialize or upgrade
the CSD.

Modifying the DFHLRQ file definition: DFHLRQ is a file-control managed
VSAM KSDS that CICS opens at the end of initialization. CICS issues the open
request for DFHLRQ whether you are using CICS BTS or not. If you are not using
CICS BTS, you need not provide a DFHLRQ file. However, the open request for
DFHLRQ then fails, and CICS issues error messages, which you can ignore. The
messages are from File Control or Scheduler Services, or both; examples of these
include:

If the name of the data set is not specified

> DFHFC0951-- ″OPEN of file DFHLRQ failed. DSNAME not available from
> JCL or FCT.″

If the name of the data set is specified, but that data set is not available

> DFHSH0109 -- ″ date time applid An error has occurred when attempting
> to access the Local Request Queue data set (DFHLRQ). {The file could not
> be found. ∕ The file was closed. ∕ The file was disabled. ∕ There was
> insufficient space. ∕ An I∕O error occurred. ∕ The data set is being copied.}
> The Local Request Queue is now unavailable.″

To avoid the resulting error messages, create a DFHLRQ KSDS, and define it to
CICS.

To enable you to modify the DFHLRQ file entry in the DFHCBTS group directly,
the group is *not* locked. You cannot overlay the DFHLRQ file definition by
installing another definition from another group list defined after DFHLIST,
because its status, CLOSED ENABLED, does not permit the definition to be
replaced. Being able to modify DFHLRQ directly in group DFHCBTS allows you to
use DFHLIST without having to copy and modify it.

Before modifying the DFHLRQ definition, you are recommended to make a
backup.

The DFH$CBTS group defines the CICS BTS sample application resources—mapsets, programs, transactions, and the sample order processtype. It is not included in DFHLIST.

DFHCFC and DFH$CFCS
The IBM-supplied group DFHCFC contains the program resource definition for the CICS C++ classes DLL, ICCFCDLL, which is required for CICS object-oriented programming interface support.

The DFHCFC group is included in list DFHLIST when you initialize or upgrade the CSD.

The DFH$CFCS group defines the CICS C++ set of sample applications programs and transactions. It is not included in DFHLIST.

DFHDOC
The IBM-supplied group DFHDOC contains the program resource definition for the CICS document handler template reader.

The DFHDOC group is included in list DFHLIST when you initialize or upgrade the CSD.

DFHIIOP and DFH$IIOP
The new IBM-supplied group DFHIIOP contains resource definitions for IIOP inbound requests.

The DFHIIOP group is included in list DFHLIST when you initialize or upgrade the CSD.

In addition to some required program and transaction definitions, DFHIIOP includes one request model. For more information about IIOP inbound to Java applications, and the use of REQUESTMODEL reosurce definitions, see the *CICS Internet Guide*.

The DFH$IIOP group defines a set of IIOP sample client applications. It is not included in DFHLIST.

DFHTERMC
The IBM-supplied group DFHTERMC contains a TYPETERM resource definition that supports autoinstall for consoles. None of the existing TYPETERM definitions supplied in DFHTYPE support autoinstall for consoles.

The DFHTERMC group is *not* included in list DFHLIST. If you want to use the TYPETERM in this group for autoinstall for consoles, add the group to one of your own group lists.

DFH$JAVA and DFH$JVM
The IBM-supplied groups DFH$JAVA and DFH$JVM contain Java sample application programs and transactions. These groups define the same set of sample programs and transactions, the difference being that the set of programs in group DFH$JVM are defined to run as bytecode objects in a JVM, and the DFH$JAVA set are defined to run as conventional CICS programs. Both these groups refer to the same set of programs supplied in source form in the samples library, SDFHSAMP.

These groups are not included in DFHLIST.

DFH$SOT

The IBM-supplied group DFH$SOT contains the following sample TCPIPSERVICE resource definitions:

- HTTPNSSL, a sample CICS Web TCPIPSERVICE with no secure sockets layer (SSL) support.
- HTTPSSL, a sample CICS Web TCPIPSERVICE with SSL support
- IIOPNSSL, a sample IIOP TCPIPSERVICE with no SSL support.

Changes to IBM-supplied resource definitions

Some IBM-supplied resource definitions are changed or obsolete, and are moved to a new compatibility group, DFHCOMP7. The resource definitions removed and defined in DFHCOMP7 are:

- **From the DFHWEBF group**:

  File definition, DFHWBCD. This file, which is used in earlier releases for recording the CICS Web interface status, is now obsolete. CICS Web support and status is new defined in a TCPIPSERVICE resource definition. DFHWBCD was the only definition in the DFHWEBF group, which is removed from the CSD.

- **From the DFHWEB group**:

  Program definitions DFHWBM, DFHWBTRU, and DFHWBWB.

- **From the DFH$BR group**:

  All the 3270 bridge transactions—BRG2, BRG3, BRG4, BRG5, BRG6, BRG7, and BRG8.

Updating user-modified IBM-supplied definitions

When you run the UPGRADE function of the CSD utility program (DFHCSDUP), ensure that you manually upgrade any IBM-supplied definitions that you may have modified. The safest way to do this is to copy the upgraded IBM-supplied definitions and reapply your modifications. This action is required because the UPGRADE command does not operate on your own groups, or on IBM groups that you have copied.

It is important to upgrade these modified definitions to ensure that they are defined correctly with non-default values for attributes that are new. If you fail to upgrade modified definitions, CICS assigns default values to any new attributes, and these may be inappropriate for IBM-supplied resource definitions.

If you are not sure whether your CSD contains any modified IBM definitions, use the DFHCSDUP SCAN function to compare the IBM-supplied resource definitions with any user-modified versions.

The SCAN function searches for the IBM-supplied version of a specified resource name of a specific resource type and compares it with any other resource definition of the same name and type. DFHCSDUP reports any differences it finds between the IBM-supplied definition and a user-modified version. If you have copied and changed the name of an IBM-supplied definition, the SCAN command enables you to specify the changed name as an alias.

See the *CICS Operations and Utilities Guide* for details of the DFHCSDUP SCAN command.

Sharing the CSD between different releases of CICS

Beginning with CICS/ESA® Version 3, there have been changes in each release of CICS to the IBM-supplied groups of resource definitions that are included in the

DFHLIST group list. In all cases, the old versions of the CICS resource definitions are retained in compatibility groups, which are needed to support earlier releases if you share the CSD between different levels of CICS.

If, after upgrading a CSD, you plan to share the CSD with earlier releases of CICS, include the appropriate DFHCOMP*x* compatibility groups in your startup group list to provide the required support for earlier releases. Table 8 on page 20 shows you which DFHCOMP groups you need to include for the earlier releases. Do not attempt to share a CSD with a CICS region running at a higher level than the CSD.

It is important that you install the compatibility groups in the correct order, as shown in Table 8 on page 20. For example, in a CICS/MVS® 2.1.2 region, you must append the compatibility group DFHCOMP7 followed by DFHCOMP6, DFHCOMP5, DFHCOMP4, by DFHCOMP3, DFHCOMP2, and DFHCOMP1, at the end of your group list.

BREXIT APAR: The change of meaning of the BREXIT parameter on transaction definitions can cause an incompatibility if you edit the BREXIT attribute using CICS TS 1.3. The problem occurs when you use the updated transaction in a CICS TS 1.2 region, in environments where the CSD is shared between CICS TS 1.2 and 1.3 regions. In CICS TS 1.2, a transaction definition that specifies a program name on the BREXIT parameter must leave the PROGRAM parameter blank, identifying the transaction as a *3270 bridge* transaction. In CICS TS 1.3, the BREXIT parameter is defined on the definition of a *user* transaction, and specifies the name of the default bridge exit. To fix this potential incompatibility, apply the PTF for APAR PQ22836 to CICS TS *1.2 only*.

Table 8. Required compatibility groups for earlier releases of CICS

CICS release the CSD is shared with	The CICS release level of the CSD				
	CICS TS Release 3	**CICS TS Release 2**	**CICS TS Release 1**	**4.1**	**3.3**
CICS TS Release 2	DFHCOMP7	None	Do not share	Do not share	Do not share
CICS TS Release 1	DFHCOMP7 DFHCOMP6	DFHCOMP6	None	Do not share	Do not share
4.1	DFHCOMP7 DFHCOMP6 DFHCOMP5	DFHCOMP6 DFHCOMP5	DFHCOMP5	None	Do not share
3.3	DFHCOMP7 DFHCOMP6 DFHCOMP5 DFHCOMP4	DFHCOMP6 DFHCOMP5 DFHCOMP4	DFHCOMP5 DFHCOMP4	DFHCOMP4	None
3.2.1	DFHCOMP7 DFHCOMP6 DFHCOMP5 DFHCOMP4 DFHCOMP3	DFHCOMP6 DFHCOMP5 DFHCOMP4 DFHCOMP3	DFHCOMP5 DFHCOMP4 DFHCOMP3	DFHCOMP4 DFHCOMP3	DFHCOMP3
3.1.1	DFHCOMP7 DFHCOMP6 DFHCOMP5 DFHCOMP4 DFHCOMP3 DFHCOMP2	DFHCOMP6 DFHCOMP5 DFHCOMP4 DFHCOMP3 DFHCOMP2	DFHCOMP5 DFHCOMP4 DFHCOMP3 DFHCOMP2	DFHCOMP4 DFHCOMP3 DFHCOMP2	DFHCOMP3 DFHCOMP2
CICS/MVS 2.1.2	DFHCOMP7 DFHCOMP6 DFHCOMP5 DFHCOMP4 DFHCOMP3 DFHCOMP2 DFHCOMP1	DFHCOMP6 DFHCOMP5 DFHCOMP4 DFHCOMP3 DFHCOMP2 DFHCOMP1	DFHCOMP5 DFHCOMP4 DFHCOMP3 DFHCOMP2 DFHCOMP1	DFHCOMP4 DFHCOMP3 DFHCOMP2 DFHCOMP1	DFHCOMP3 DFHCOMP2 DFHCOMP1

Chapter 4. Resource definition (macro) changes

This chapter summarizes the changes to the CICS resource definition macros for CICS control tables.

Obsolete control tables

Table 9 shows obsolete control tables.

Table 9. Obsolete control tables

Control table	Macro	Explanation
RCT	DSNCRCT	CICS no longer supports the DB2 RCT macro as a means of defining DB2 resources to a CICS region. The only way you can define DB2 resources to CICS is through the DB2CONN, DB2ENTRY, and DB2TRAN resource definition types in the CSD. See "Runtime support withdrawn for RCT" for more information about this change.

Runtime support withdrawn for RCT

CICS continues to support the DSNCRCT macros for migration purposes, but runtime support is withdrawn. All DB2 resource definitions must be installed from the CSD or by EXEC CICS CREATE commands.

Migrating RCT entries to the CSD

Before migrating RCT entries to the CSD, first reassemble your RCT using the DSNCRCT macro supplied in the CICS TS SDFHMAC library.

The GROUP and RDONAME options are provided to support the DFHCSDUP MIGRATE command and enable you to migrate your RCT to the CSD.

TYPE=GROUP specifies the CSD group name to which you want to migrate the RCT.

RDONAME specifies the name you want to give to the DB2 resource definition in the CSD for the TYPE=INIT (the DB2CONN name) and for the TYPE=ENTRY (the DB2ENTRY name).

Use the DFHCSDUP utility program to migrate RCTs to the CSD.

See the *CICS Resource Definition Guide* for information about migrating entries in RCT tables as groups of resource definitions in the CSD.

New control table parameters

Table 10 shows the new control table parameters.

Table 10. New control table parameters

Control table	New keywords	Description
DFHTST	MIGRATE	The MIGRATE parameter is added to the TYPE=INITIAL operand to enable you to migrate TST table entries to TSMODEL resource definitions to the CSD. See "Migrating TST entries to the CSD" for more information.

Migrating TST entries to the CSD

The DFHCSDUP MIGRATE command is enhanced to support migration of temporary storage tables to TSMODEL resource definitions in the CSD.

If you decide to migrate TST entries to the CSD, first reassemble your TST with the MIGRATE option specified on the TYPE=INITIAL macro, as follows:

```
DFHTST    TYPE=(INITIAL,MIGRATE)
```

This ensures that the table is assembled and link-edited with AMODE(24), which is required by the MIGRATE function of the DFHCSDUP utility program. Failing to specify MIGRATE on the TYPE=INITIAL macro causes the DFHTST macro to force AMODE(31), which causes errors when you run DFHCSDUP with the MIGRATE command for the TST.

Use the DFHCSDUP utility program to migrate TSTs to the CSD, specifying the following command:

```
MIGRATE TABLE(tablename) TOGROUP(groupname)
```

Note the following points when migrating from a TST to TSMODELs:

LOCATION attribute
The TSMODEL resource definition has a LOCATION attribute, which indicates whether matching TS queues are held in main or auxiliary storage. When your TST entries are migrated to corresponding TSMODEL definitions, the LOCATION attribute is set to AUXILIARY. You can change this is using the ALTER command, through CEDA or DFHCSDUP.

TYPE=SHARED macro
The TYPE=SHARED macro in the TST is different from the other types in that it does not have a DATAID parameter on which you can specify a TS queue prefix. Thus, to map a TS request to a TS data sharing pool, CICS requires one of the following being specified in addition to a TYPE=SHARED macro:
- A TYPE=REMOTE macro that specifies a SYSIDNT that matches a SYSIDNT in the corresponding TYPE=SHARED macro.
- A SYSID specified explicitly, either on the TS API command or set by an XTSEREQ global user exit program.

This means that DFHCSDUP cannot migrate a TST TYPE=SHARED entry without its supporting TYPE=REMOTE entry, because it has no means of

knowing the DATAID from which to create the corresponding PREFIX attribute in the TSMODEL. The following recommendations are made to help you to migrate your TST to TSMODELs successfully:

- Migrate the TST exactly as it is in the release from which you are migrating. If you are *not* using TS data sharing, this creates TSMODELs that support remote, recoverable, and secure TS queues exactly as the TST does in your earlier release.

If you are using TS data sharing, supported by both TYPE=REMOTE and TYPE=SHARED entries, DFHCSDUP migrates these as data sharing TSMODELs with the pool name as the shared attribute. If temporary storage API requests do *not* specify a SYSID, CICS matches the queue name with PREFIX in the migrated TSMODEL, and shared TS works as in the earlier release.

- If your TST contains some standalone TYPE=SHARED entries, which are referenced by an explicit SYSID on TS API commands, continue to use the migrated TST in your CICS region to ensure that CICS can map the SYSID to a TS pool name. Do *not* add TYPE=REMOTE entries to the TST before migration to cause DFHCSDUP create TSMODELs, because these will not be used by CICS to route requests to a TS pool.

APAR PQ30438

Potential problems connected with TYPE=SHARED entries are addressed by the PTF for APAR PQ30438, which adds a new warning message to DFHCSDUP. This message serves two purposes:

- First, it can be issued to indicate that, while migrating a TST to the CSD, a TYPE=SHARED entry has been found without a corresponding TYPE=REMOTE entry and could not be migrated as a TSMODEL.

- Second, it can be issued to indicate that a TYPE=SHARED macro had a supporting TYPE=REMOTE entry and has been successfully migrated to a TSMODEL with the POOLNAME shared attribute. However, the message is issued because application programs that explicitly specify a SYSID, or which rely on a SYSID being specified in a global user exit program, may not function as intended with a TSMODEL as they did when using a TST. You should check whether the migrated TSMODEL for the shared queue works in the same way as the TST.

Using RDO, or TST, or both
The default TST=NO system initialization parameter means that CICS initializes with only RDO support for TS queues.

You can use RDO support for TSODELs *and* a TST if you use the TST system initialization parameter to specify a TST suffix. To use a TST as well as RDO, the specified TST load module must be assembled with the MIGRATE option. If the TST was not assembled with the MIGRATE option, CICS loads the TST only and does not provide any RDO support for TS queues, and any attempts to install TSMODELs are rejected.

If you use both a TST and TSMODELs, the use of the TST is limited to the following:

- Support for TS data sharing queues that are referenced by an explicit SYSID option specified on a TS API command.

- The TSAGE attribute, which is not supported on the TSMODEL definition.

Switching
You cannot switch between a TST and RDO for TS queues on a warm restart. Switching is permitted only on a COLD or INITIAL start.

CSD target group
The contents of a TST are migrated as a single CSD group. See the *CICS Resource Definition Guide* for more information about migrating temporary storage tables as resource definitions in the CSD.

Withdrawal of support for TSTs in future release

CICS continues its policy of providing runtime support for control tables generated by macros for one release following the introduction of equivalent resource definitions defined in the CSD. This means that CICS TS Release 3 is intended to be the last release to support TSTs as a means of defining recoverable, secure, remote, shared, and local TS queues through the various DFHTST TYPE= macros.

The replacement CSD resource definition type for TST entries is the TSMODEL, which provides equivalent function for the various DFHTST macro types. However, the TSMODEL resource definition does not provide support for application programs that rely on the mapping of SYSIDNTs between REMOTE and SHARED TST entries for queues held in a TS pool. If an application program explicitly specifies a SYSID on a DELETEQ, READQ, and WRITEQ TS command for a queue that resides in a TS data sharing pool, it requires the support of a TST. If you have application programs that specify a SYSID on API commands in this way, they need to be changed for the next release when runtime support for the TST is withdrawn.

Withdrawal of support for DCTs in future release

RDO for CICS transient data queues has been available since CICS TS Release 1, but runtime support of destination control tables (DCTs) is continued. However, runtime support is planned to be removed in the next release.

Reassembling control tables

Reassemble *all* CICS control tables using the macro libraries shipped with CICS TS, even if there are no changes to the macro externals. This applies also to tables that you are only reassembling to migrate them to the CSD.

> **MNOTEs from DSNCRCT on RCT table assembly**
>
> A number of DSNCRCT parameters became either obsolete or were changed when CICS TS added RDO support for DB2 resource definitions. You can reassemble an RCT without changing the source statements, but you can expect MNOTE messages if you do this. For example, obsolete parameters in the RCT macros produce MNOTE 4 warning messages. An MNOTE 5 is a warning that an otherwise unchanged parameter has changed its meaning and should be investigated.

Chapter 5. The application programming interface (API)

This chapter summarizes the changes affecting the CICS application programming interface (API).

Program compatibility

Except for the specific cases described in this chapter, CICS TS provides upward compatibility, at source and object level, for all CICS application programs that are written to the CICS application programming interface, and which execute correctly under the previous release.

For information about CICS support for application programming languages, see "Compilers and assembler" on page 144.

If you are migrating from a release of CICS earlier than CICS TS Release 1, you are recommended to read the *CICS/ESA Release Guide* and the *CICS/ESA Migration Guide* (where applicable) for the intervening releases.

Changes affecting CICS API commands

Although CICS provides API compatibility from release to release, functional changes to some CICS components can affect some of the CICS API commands. The effects of these functional changes are discussed under the following topics:
- "Changes for coupling facility data tables"
- "Changes for long TS queue names" on page 28

Note: In addition to the changes affecting the API, there are extensions to some EXEC CICS commands, and these are described in the *CICS Transaction Server for OS/390 Release Guide.*

Changes for coupling facility data tables

Your application programs can update a coupling facility data table using one of two update models:
- The locking model
- The contention model.

The update model is an attribute of the file resource definition for the coupling facility data table. If you migrate an existing application that currently uses either a VSAM file directly, or a user-maintained data table (UMT), to a coupling facility data table, you need to understand the differences between these two update models, and the likely effect on your application programs.

Effects of the locking model
The locking model ensures that records are locked when they are read for update, so that they cannot be changed by any other units of work until the update request has been completed (by a REWRITE, DELETE, or UNLOCK command for non-recoverable tables, or at syncpoint for recoverable tables). This is the equivalent of file control locking that applies to VSAM files, and the coupling facility data tables can be recoverable or nonrecoverble.

In general, the API commands that operate on a coupling facility data table that is updated using the locking model (either non-recoverable or recoverable) are upwards compatible with the commands for a user-maintained data table; that is, any differences from the UMT API should not require existing applications to be rewritten.

However, there are some minor differences that you need to be aware of:

- The API restrictions on which commands you use while a UMT is being loaded are different from those for a coupling facility data table:
  - If loading is still in progress for a user-maintained data table, only non-update reads with precise keys are allowed. Also, in the case of a UMT, reads with precise keys succeed both for keys that are already loaded and those that are not.
  - If loading is still in progress for a coupling facility data table, you can issue any file control request that is supported, but your application program receives a LOADING condition if it requests a key that is outside the range of keys loaded. A REWRITE request for a record key outside the range of the records loaded so far receives an INVREQ (because such a request must have been preceded by a READ UPDATE, which must have failed with the LOADING condition before the REWRITE could be issued.
- If an application program issues an illogical sequence of file control requests, the exception condition returned by CICS for a UMT can be different from that returned for a coupling facility data table. For example, if an application program issues a READ for update request, followed by a WRITE request that specifies the same key:
  - For a UMT, CICS returns the DUPREC exception condition, because the record already exists.
  - For a CFDT, the coupling facility data table server detects that it is holding a lock against the record and that the update request is incomplete, and notifies CICS of a self-deadlock. This causes CICS to abend the task immediately with an AFCG abend. Note that an AFCG abend raised against a CFDT does not wait for timeout.

  Clearly, these differences in response for a CFDT do not affect the migration of application programs that execute correctly when used against a UMT. Differences in exception condition responces occur only when there are logic erorrs in the application program.

Effects of the contention model
The contention model means that records are *not* locked when they are read for update. CICS returns an error on a subsequent REWRITE or DELETE if the record is changed or deleted by another task after it is read for update. The CFDT must be non-recoverable (RECOVERY(NONE)) for the contention model, meaning that updates are not backed out if a unit of work fails.

In general, you are advised to write new application programs to use a coupling facility data table that uses the contention update model. However, to be fully compatible with other types of file, new application programs should not be written in such a way that deadlocks become possible when they access a coupling facility data table that uses the locking update model.

Changes to exception conditions
There are some changes affecting exception conditions for coupling facility data table support:

- A new CHANGED condition

- Additional meanings for some existing conditions.

CHANGED condition on the REWRITE and DELETE commands: To provide data integrity for the contention model, REWRITE and DELETE requests succeed only if the record remins unchanged since it was read for update. If the record has changed, CICS returns the CHANGED condition.

Additional meanings for some existing conditions: The additional meanings for some existing exception conditions are as follows:

SYSIDERR
There are two additional RESP2 values that can be returned with the SYSIDERR condition on coupling facility data tables:

131   For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132   The command is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails.

IOERR
For those file control commands that can return IOERR, the reason could be a bad response returned from a coupling facility access.

NOSPACE
For those file control commands that can return NOSPACE, the RESP2 value can be 102 for a coupling facility data table and there is a new RESP2 value that can be returned for operations on a coupling facility data table:

102   Can occur if the maximum number of records for a coupling facility data table is exceeded.

For a recoverable coupling facility data table, CICS can return this condition on a WRITE request when the CFDT apparently contains fewer than the maximum number of records specified, if there are uncommitted updates outstanding. The NOSPACE condition with a RESP2 of 102 can also be returned on a REWRITE command to a recoverable coupling facility data table, because this requires an extra record in the CFDT for recovery purposes, until the update has been committed.

108   There is insufficient storage in the coupling facility data table pool to perform the request. This can occur on a WRITE or a REWRITE command.

NOTFND
The NOTFND condition, when raised on a REWRITE or DELETE request to a CFDT using the contention model, means that the record has been deleted since it was read for update.

LOCKED
The LOCKED condition is possible for a READ UPDATE request to a recoverable CFDT if the record to be read is locked by a retained lock.

Changes for temporary storage operations

There are changes affecting the API commands that operate on temporary storage queues as a result of:

- Long TS queue names

- TSMODEL resource definitions.

Changes for long TS queue names

To maintain API compatibility, the existing QUEUE option remains as an 8-byte maximum field. To use 16-character queue names, you use the new option, QNAME.

If an application program issues a request to access a remote queue over an MRO link using a 16-character queue name, the 8-character queue name is set to binary zeros and the long queue name is shipped in a separate 16-character field. CICS returns an INVREQ if the remote region is an earlier release of CICS that cannot handle the 16-character name.

For non-MRO remote requests, CICS ships the request with a 16-character name. If the remote region cannot handle the full 16 characters, the first 8 characters only are used.

TSMODEL resource definitions

If CICS finds a matching TSMODEL resource definition when processing an EXEC CICS WRITEQ TS command, an AUXILIARY or MAIN option specified on the command is ignored. The API options are overridden by the LOCATION attribute defined in the TSMODEL resource definition.

Chapter 6. The system programming interface (SPI)

This chapter summarizes the changes affecting the CICS system programming interface (SPI).

> **Program compatibility**
>
> The system programming commands operate on CICS system resources, such as control blocks and tables of resource definitions (and not on user resources, such as data, on which the API operates).
>
> The SPI is also sensitive to the underlying environment in which it is implemented, and as a consequence upward compatibility cannot always be guaranteed.
>
> This chapter describes the effect on the SPI of the functional changes in CICS TS, explaining where incompatibilities exist, to enable you to make programming changes where necessary.
>
> Except for the instances given in this chapter, CICS continues to provide upward compatibility, at source and object level for application programs that use the unaffected SPI commands.
>
> If you are migrating from a release of CICS earlier than CICS TS Release 1, you are recommended to read the *CICS/ESA Release Guide* and the *CICS/ESA Migration Guide* (where applicable) for the intervening releases.

Changed commands and options

Table 11 shows the system programming interface commands and options that are changed.

Table 11. Changed system programming commands

Command	Option	Description of change
COLLECT STATISTICS	TCPIPSERVICE	Option added to retrieve statistics for TCPIPSERVICE resources.
CREATE FILE	CFDTPOOL TABLENAME UPDATEMODEL LOAD	These attributes added for CFDT support. In addition, there are some changes to existing attribute values and defaults. See "Chapter 3. Resource definition (online) changes" on page 13 for more details.
CREATE PROGRAM	CONCURRENCY	This attribute is added for open transaction environment suppport
ENABLE PROGRAM	QUASIRENT THREADSAFE OPENAPI	These attributes added for open transaction environment support. Note that OPENAPI, although included in the SPI interface, is disabled until some future release enables this keyword.
INQUIRE AUTOINSTALL	CONSOLES	Option added to return the status of console autoinstall. In addition, the CVDA meanings of the existing ENABLESTATUS option are enhanced to support console autoinstall.

Table 11. Changed system programming commands (continued)

Command	Option	Description of change
# # INQUIRE CONNECTION	CQP	Option added to return the status of the connection quiesce protocol.
# # # INQUIRE EXITPROGRAM	CONCURRENTST APIST	These attributes added for open transaction environment support, to indicate the concurrency status and whether the exit program supports open API.
INQUIRE FILE	LOADTYPE CFDTPOOL TABLENAME UPDATEMODEL	Options added to return information about a file that references a coupling facility data table. There are also changes to CVDA values for some existing options.
# # # # # # # # # # INQUIRE PROGRAM	CONCURRNCEY DYNAMSTATUS JVMCLASS JVMDEBUG RUNTIME Also LENGTH, LOADPOINT, RESCOUNT, and USECOUNT	Options added to return: • The concurrency attribute • Dynamic routing status for DPL requests • The class name, debug status, and runtime environment of a JVM program • A JVM program is an added reason for LOADPOINT, LENGTH, RESCOUNT, and USECOUNT returning either a null pointer (X'FF000000') or minus 1 (-1).
# # # # # # # # # # # # INQUIRE SYSTEM	ACTOPENTCBS DSRTPROGRAM FORCEQR MAXOPENTCBS	Options added to return: • The number of open TCBs curently allocated • The name of the active distributed dynamic routing program • A FORCEQR CVDA to indicate whether quasi-reentrancy is being forced for all user application programs defined as threadsafe • The maximum number of open TCBs allowed in the CICS region.
# # # # # # # # # # # # # # INQUIRE TASK	ACTIVITY ACTIVITYID PROCESS PROCESSTYPE RESNAME TCB BRIDGE	Options added to: (1) return information about the CICS BTS activity and process on behalf of which the task is executing; (2) return the 16–character TS queue resource name (as an alternative to the 8–byte SUSPENDVALUE); and (3) return information about the TCB under which the task is running. Also, there is a change in the description of the BRIDGE option. In CICS TS Release 2, the option returns name of the bridge transaction, whereas it now returns the name of the bridge *monitor* transaction.
# # INQUIRE TDQUEUE	MEMBER	Option added to return the 8-character member name if the queue is a member of a partitioned data set.
INQUIRE TERMINAL	CONSOLE	Option added to return the identifier, as a 12-byte string (*name_and_id*), of a console.
INQUIRE TRANSACTION	ROUTESTATUS	Option added to return the dynamic routing status for START requests.
INQUIRE TSQUEUE	POOLNAME RECOVSTATUS	Options added to return the TS data sharing pool name (as an altenative to the SYSID option), and the recoverability of the specified TS queue.
INQUIRE UOW	WAITCAUSE	A new CVDA, RRMS, is added to indicate that the UOW is waiting, or is shunted, because communication with RRMS has been lost.
INQUIRE UOWENQ	ENQSCOPE DURATION	Options added to return information about the scope and duration of enqueues held by UOWs.

Table 11. Changed system programming commands (continued)

Command	Option	Description of change
INQUIRE UOWLINK	PROTOCOL	A new CVDA, RRMS, is added to indiacte that the UOW is coordinated by RRMS.
PERFORM STATISTICS	TCPIPSERVICE	Option added to record statistics for TCPIPSERVICE resources.
SET AUTOINSTALL	CONSOLES	Option added to set the autoinstall status for consoles.
SET FILE	CFDTPOOL KEYLENGTH LOADTYPE RECORDSIZE TABLENAME UPDATEMODEL	Options added to set coupling facility data table attributes. Note that there are also several new RESP2 values for the INVREQ condition.
SET PROGRAM	JVMCLASS JVMDEBUG RUNTIME	Options added to set the class name, debug status, and runtime environment of a JVM program.
SET SYSTEM	DSRTPROGRAM FORCEQR MAXOPENTCBS	Options added to set the name of the active distributed dynamic routing program, and to specify: • Whether you want CICS to force all user application programs specified as CONCURRENCY(THREADSAFE) to run under the CICS QR TCB • The maximum number of open TCBs permitted in the CICS region.

New commands and options

Table 12 shows the new commands and options introduced in CICS Transaction Server for OS/390 Release 1.

Table 12. New commands and options

Commands	Explanation
CREATE DOCTEMPLATE	Command added to define and install DOCTEMPLATE resource definitions.
CREATE ENQMODEL	Command added to define and install ENQMODEL resource definitions.
CREATE PROCESSTYPE	Command added to define and install PROCESSTYPE resource definitions for CICS BTS applications.
CREATE REQUESTMODEL	Command added to define and install REQUESTMODEL resource definitions for IIOP inbound requests.
CREATE TCPIPSERVICE	Command added to define and install TCPIPSERVICE resource definitions.
CREATE TSMODEL	Command added to define and install TSMODEL resource definitions.
DISCARD DOCTEMPLATE	Command added to remove installed DOCTEMPLATE resource definitions from the CICS region
DISCARD ENQMODEL	Command added to remove installed ENQMODEL resource definitions from the CICS region
DISCARD PROCESSTYPE	Command added to remove installed PROCESSTYPE resource definitions from the CICS region
DISCARD REQUESTMODEL	Command added to remove installed REQUESTMODEL resource definitions from the CICS region

Table 12. New commands and options (continued)

Commands	Explanation
DISCARD TCPIPSERVICE	Command added to remove installed TCPIPSERVICE resource definitions from the CICS region.
DISCARD TSMODEL	Command added to remove installed TSMODEL resource definitions from the CICS region
INQUIRE CFDTPOOL	Command added to return information about CFDT pools.
INQUIRE DOCTEMPLATE	Command added to return information about DOCTEMPLATE resource definitions.
INQUIRE ENQ	Command added as synonym for INQUIRE UOWENQ.
INQUIRE ENQMODEL	Command added to return information about installed ENQMODEL resource definitions.
INQUIRE EXCI	Command added to return information about EXCI jobs, particularly those with an RRS unit of recovery ID.
INQUIRE PROCESSTYPE	Command added to return the attributes of a process type.
INQUIRE REQUESTMODEL	Command added to return the attributes of a REQUESTMODEL resource definition.
INQUIRE RRMS	Command added to return information about that state of the CICS region's registration with RRMS.
INQUIRE TCPIP	Command added to return information about the state of CICS TCPIP support.
INQUIRE TCPIPSERVICE	Command added to return information about TCPIP ports on on which CICS TCPIP support is listening.
INQUIRE TSMODEL	Command added to return information about installed TSMODEL definitions.
INQUIRE TSPOOL	Command added to return information about TS pools.
INQUIRE TSQNAME	Command added to return information about TS queues that have queue names between 8– and 16–bytes
INQUIRE WEB	Command added to return information about CICS Web support in the region.
SET ENQMODEL	Command added to change the status of an installed ENQMODEL resource definition.
SET PROCESSTYPE	Command added to set the attributes of an installed PROCESSTYPE resource definition.
SET TCPIP	Command added to specify the state of CICS TCPIP sockets, either open or closed. Note that, to vary this state, CICS TCPIP support must have been requested on the TCPIP system initialization parameter at startup. If this specifies TCPIP=NO, CICS initializes without TCPIP support, and you cannot therefore vary the TCPIP open or closed state.
SET TCPIPSERVICE	Command added to set attributes of installed TCPIPSERVICE definitions.
SET TSQUEUE	Command added to specify an action for a TSQUEUE. The only action supported currently is DELETE.
SET WEB	Command added to vary the state of CICS Web support.

See the *CICS System Programming Reference* for information on the changed and new commands and options.

Release levels on INQUIRE SYSTEM command

You are recommended to use the EXEC CICS INQUIRE SYSTEM CICSTSLEVEL(data_area) command to determine the Version and Release number, and hence the function level, of CICS. CICS returns 010300 for CICS TS Release 3 and 010200 for CICS TS Release 2. Similarly, use the OSLEVEL option to determine the level of OS390; CICS returns 020500 for OS/390 Release 5 and 020600 for OS/390 Release 6.

To ensure compatibility with previous releases, the CICS base element maintains its own level (identification) number. Each time new function is added to CICS and shipped with the CICS Transaction Server product, the CICS level number is incremented. The CICS level number no longer implies a specific version and release number: CICS is no longer a separate product.

The CICS level number in CICS TS 1.3 is 0530. This number is returned in the RELEASE parameter of the INQUIRE SYSTEM command. The 0530 number also appears in other forms such as 5.3.0 in output from offline utilities such as statistics and dump formatters to identify the level of utility being used, and as the suffix in module names such as DFHPD530.

Chapter 7. CICS-supplied utility programs

This chapter summarizes changes affecting CICS-supplied utility programs.

Changes to the CSD utility program, DFHCSDUP

The CSD utility program is enhanced to support the following new resource types, and changes to attributes on existing resource definitions:

- DOCTEMPLATE
- ENQMODEL
- PROCESSTYPE
- REQUESTMODEL
- TCPIPSERVICE
- TSMODEL.

See "Chapter 3. Resource definition (online) changes" on page 13 for details of all the changes to CSD resource definitions that are supported by DFHCSDUP.

> **Updating obsolete resource definitions**
>
> If you are sharing the CSD with earlier releases of CICS, and want to alter definitions that are used only on earlier releases, you must use the latest DFHCSDUP, even if some attributes are obsolete in the latest releases of CICS. To use the latest DFHCSDUP to update obsolete options on resource definitions, specify the COMPAT option in the PARM string to indicate that you want DFHCSDUP to operate in compatibility mode.

Change to the log stream formatting utility

The log stream formatting utility, previously named DFHLG*vvv* (where *vvv* represented the version of the program), is renamed DFHLGCNV.

Previous versions of this utility, DFHLG510 and DFHLG520, were intended to be used for log streams that contained records written only by the corresponding version of CICS TS. This was not practical for those cases where CICS regions from different releases of CICS TS were writing to the same log stream.

APAR PQ11032 identified the problem and resulted in the name change. As a result of the change, DFHLGCNV is able to handle log records written by all releases of CICS TS, and is no longer supplied in release-dependent form.

Changes to the statistics formatting utility program, DFHSTUP

The program is enhanced to format statistics for the new TCIPSERVICE resource type. This resource type can be coded on the SELECT TYPE and IGNORE TYPE parameters.

See the *CICS Performance Guide* for details of statistics data.

Changes to the trace formatting utility program, DFHTUxxx

The program is enhanced to format trace entries written by the new domains/functions. The new identifiers that you can specify to DFHTU*xxx* on the TYPETR parameter for these functional areas are the same as the CETR trace component codes.

See "Chapter 2. CICS-supplied transactions" on page 7 a list of the new codes.

Changes to the IPCS dump exit routine, DFHPDxxx

The dump exit routine for formatting CICS system dumps is enhanced to format the control blocks for the new domains. The new dump component kewords for use with the CICS IPCS dump exit routine are the same as the trace component codes. See "Chapter 2. CICS-supplied transactions" on page 7 a list of these.

Chapter 8. The global user-exit programming interface

This chapter summarizes changes to the global user-exit programming interface. See the *CICS Customization Guide* for information on the changed global user-exit points.

> **Reassembling global user-exit programs**
>
> The CICS global user-exit programming interface is product sensitive, and is dependent on the detailed implementation of CICS. All global user-exit programs must be reassembled against the CICS TS Release 3 libraries. You will have to modify some of them for changes to parameters, before they are reassembled.
>
> Note the changes summarized in this chapter and described in detail in the other CICS manuals, and modify your global user-exit programs accordingly.
>
> When you have completed your program changes, reassemble *all* global user-exit programs.

Changes to the standard parameter list

There are changes to the DFHUEPAR standard parameter list:
- The amount of storage addressed by UEPXSTOR is increased.
- Additional task indicators are provided.

UEPXSTOR now points to a 320-byte area of DFHUEH-owned storage that a global user exit program should use when invoking the XPI. This provides up to 256 bytes for the XPI services parameter list, plus an extra 64 bytes for your own purpose.

The DFHUEPAR standard parameter list is changed to include some additional task indicators. The global user exit task indicator field, addressed by UEPGIND, is extended from one byte to three bytes, the second and third bytes containing a value indicating the TCB mode of the global user exit program's caller. This is represented in DFHUEPAR as both a two-character code and a symbolic value, as follows:

Table 13. TCB indicators in DFHUEPAR. Description

Symbolic value	2-byte code	Description
UEPTQR	QR	The quasi-reentrant mode TCB
UEPTCO	CO	The concurrent mode TCB
UEPTFO	FO	The file-owning mode TCB
UEPTRO	RO	The resource-owning mode TCB
UEPTRP	RP	The ONC/RPC mode TCB
UEPTSZ	SZ	The FEPI mode TCB
UEPTJ8	J8	The JVM mode TCB

Table 13. TCB indicators in DFHUEPAR (continued). Description

Symbolic value	2-byte code	Description
UEPTL8	L8	An open mode TCB
UEPTSL	SL	The sockets listener mode TCB
UEPTSO	SO	The sockets mode TCB
UEPTS8	S8	The secure sockets layer mode TCB

The XPI is updated to provide serialisation function to make it easier for global user exits to be made threadsafe. See "Chapter 9. The exit programming interface" on page 41 for details the new DFHNQEDX function calls.

\# **Note:**

\#   If you have global user exit programs that are frequently invoked by user
\#   tasks that run under an open TCB, you are recommended for performance
\#   reasons to ensure that the global user exit programs are fully threadsafe.
\#   When you are sure that a global user exit program is fully threadsafe, define
\#   it as such by specifying CONCURRENCY(THREADSAFE) on the global user
\#   exit's program resource definition.

Global user exit recovery

Note that if a global user exit fails while holding an enqueue acquired through the enqueue/dequeue XPI, the enqueue is freed automatically when the acquiring task terminates.

XPCTA global user exit

An XPCTA global user exit program, invoked when a transaction abend occurs, is always invoked under the QR TCB. It allows you to attempt to resume the transaction at a given address, under a given execution key. If that execution key is key 8, CICS switches to base space before resumption.

If a threadsafe program is in control when the transaction abend occurs, and the exit requests that the task be resumed, the XPCTA exit is driven under the QR TCB, but the task is resumed under the TCB under which the failure occurred.

Changes to global user-exit points

Table 14 shows those global user-exit points that are changed in some way.

Table 14. Changed global user-exit points

Exit name	Description of changes

XDTAD XDTLC XDTRD	**Parameter list changes**:
	
	UEPDTFLG
	    This 1-byte flag is changed to indicate when the exit is invoked by coupling facility data table support. The new value is UEPDTCFT(X'10').
	
	    There is also a new indicator in UEPDTFLG to indicate a user-maintained table—UEPDTUMT X'08'. This is only meaningful if UEPDTSDT is on.
	
	The sample global user exit programs, DFH$DTRD, DFH$DTLC, and DFH$DTAD are updated to work with coupling facility data tables.

XNQEREQ	**Parameter list change**:
	
	UEPSCOPE
	    This new parameter gives the address of the 4-byte area that contains the name of the ENQ scope, which you can change in a global user exit program. For more information about the ENQSCOPE attribute, see the *CICS Resource Definition Guide* for details of the ENQMODEL resource definition.
	    Note: To enable an XNQEREQ global user exit program to control the selection of an ENQMODEL, it is invoked before CICS searches the installed ENQMODELs for a matching resource name.
	
	See "New sample global user exit program" on page 40 for more information.

XRSINDI	**Parameter list change**
	
	UEPIDTYP
	    The range of equated values in the 1-byte field addressed by UEPIDTYP is extended to cover the install and discard of the new resource types. The additions are:
	    • UEIDTSMD— A TS model
	    • UEIDPRTY—A CICS BTS process type
	    • UEIDNQRN—An ENQ model
	    • UEIDRQMD—A request model (IIOP)
	    • UEIDTCPS—A TCPIP service
	    • UEIDDOCT—A CICS Web document template

XTSEREQ XTSEREQC	The command-level parameter structure is modified to indicate whether the application program has specified QUEUE or QNAME on the TS request. If QNAME is used, TS_ADDR1 is the address of a 16-byte area containing the name from QNAME. This is indicated by the TS_EIDOPT5 field in the EID, which is set to X'80'. **Note:** XTSPTIN and XTSPTOUT: These TS storage domain exits remain unchanged, because the TSPT interface does not support long queue names.

Table 14. Changed global user-exit points (continued)

Exit name	Description of changes
XTSQRIN XTSQROUT	**Parameter list change**: **UEP_TS_QUEUE_NAME** The storage addressed by this parameter, which contains the name of the TS queue, is now a 16-byte area to allow for the increase in TS queue names.

New sample global user exit program

CICS provides a sample global user exit program designed to show you how to use the new UEPSCOPE parameter to change the scope of an ENQ/DEQ request, and to control selection of an ENQMODEL. The program, DFH$XNQE, is supplied in the CICS SDFHSAMP library, and the source program contains comments to help you understand the program's function.

To find out details of the resource names used in application programs that issue ENQ requests, you can use the CICS affinity utility. You can then use this information to create the necessary ENQMODEL resource definitions to define the scope of ENQ requests that match resource name entries.

Chapter 9. The exit programming interface

This chapter summarizes the changes that affect the exit programming interface (XPI).

> **Reassembling global user exit programs**
>
> The previous chapter explains that you must reassemble all global user exit programs for migration to CICS TS Release 3. Changes to the exit programming interface mean that you may also need to make changes to global user-exit programs that contain XPI calls. Check whether your global user exit programs are affected by the chnages to the XPI, and modify your programs accordingly.

Changes to XPI function calls

There are changes to the following macro function calls of the exit programming interface:
- Dispatcher functions ADD_SUSPEND, SUSPEND, and WAIT_MVS
- Program management function INQUIRE_CURRENT_PROGRAM
- Program management function INQUIRE_PROGRAM
- Transaction management function INQUIRE_CONTEXT
- Transaction management function INQUIRE_TRANDEF
- Transaction management function INQUIRE_TRANSACTION

There are also two new XPI macro function calls in the enqueue domain, ENQUEUE and DEQUEUE.

Dispatcher function calls

The RESOURCE_NAME parameter is changed, from 8 bytes to 16 bytes, on the ADD_SUSPEND, SUSPEND, and WAIT_MVS XPI calls.

Enqueue management function ENQUEUE

This request is made available on the new XPI DFHNQEDX macro function call, enabling a global user exit program to enqueue on a named resource. This is provided to enable an exit program to ensure that it is threadsafe.

Enqueue management function DEQUEUE

This request is made available on the new XPI DFHNQEDX macro function call, enabling a global user exit program to release an enqueue obtained by the ENQUEUE function.

Program management function INQUIRE_CURRENT_PROGRAM

A new DYNAMIC_STATUS option is added. This returns a value indicating the dynamic routing status of the currently running program.

Program management function INQUIRE_PROGRAM

A new DYNAMIC_STATUS option is added. This returns a value indicating the dynamic routing status of the specified program.

Transaction management function INQUIRE_CONTEXT

The BRIDGE_TRANSACTION_ID parameter now serves a different purpose. In CICS TS Release 2, BRIDGE_TRANSACTION_ID returns the name of the bridge transaction. However, the bridge transaction is no longer required to run a transaction in the CICS 3270 bridge environment. Therefore, the BRIDGE_TRANSACTION_ID option now returns the name of the bridge *monitor* transaction.

Transaction management function INQUIRE_TRANDEF

A new ROUTABLE_STATUS option is added. This returns a value indicating the dynamic routing status for START requests in the specified transaction definition. The value returned is either ROUTABLE or NOT_ROUTABLE.

Transaction management function INQUIRE_TRANSACTION

A new ROUTABLE_STATUS option is added. This returns a value indicating the dynamic routing status for START requests for the specified attached transaction (task). The value returned is either ROUTABLE or NOT_ROUTABLE.

Change to UEPXSTOR

The parameter UEPXSTOR in the DFHUEPAR standard parameter list now addresses a 320-byte area of storage, instead of 260 bytes as in previous releases.

Chapter 10. The task-related user-exit programming interface

This chapter contains General-use Programming Interface information. It deals with the effect of changes to the task-related user-exit interface.

Changes to the resource manager interface

The task indicator bits, addressed by UEPTIND, are extended. The UEPTIND parameter now addresses a three byte area instead of one:

- The first byte contains an additional bit setting, X'20' (equated value UEPTUTCB), to indicate an unexpected TCB. This is set after a failure to switch to the TCB expected by the task-related user exit on a syncpoint or end-of-task call only. In these two cases, the task-related user exit is called on the QR TCB with the UEPTUTCB bit set. For all other calls, CICS abends the transaction without invoking the task-related user exit.

- The new second and third bytes addressed by UEPTIND contain a value indicating the TCB mode of the task-related user exit program's caller. The symbolic values representing the modes are the same as those defined for the UEPGIND parameter (see "Changes to the standard parameter list" on page 37).

Chapter 11. The external CICS interface (EXCI)

The external CICS interface (EXCI) is enhanced to provide resource recovery controlled by the batch client program. This new external CICS interface facility uses MVS resource recovery services (RRS), and introduces a number of changes to the EXCI call interface. The changes affect the following parameters:

DPL-opts

The value specified can be either X'00' or X'80', to indicate the level of resource recovery required, as follows:

X'00'   Indicates that you want the client batch program to control resource recovery, using 2-phase commit protocols supported by MVS RRS. With this option, the CICS server region does not perform a syncpoint when the server program returns control to CICS. Furthermore, the CICS server application program must not take any explicit syncpoints, otherwise it is abended by CICS.

X'80'   As in earlier releases, this indicates SYNCONRETURN, which means that the server region is to take a syncpoint on successful completion of the server program. The server application program can also take explicit syncpoints during its execution.

transid

When *DPL_opts* specifies X'00', the *transid* specification must be the same for all EXCI calls in the same MVS unit of recovery. If you specify *transid* on the first call, you must specify the same value for *transid* on all calls in the same UR. If you omit *transid* from the first call, omit *transid* from all calls.

uowid

This parameter must be omitted when *DPL_opts* specifiesX'00'.

userid

The *userid* specification must be the same for all EXCI calls in the same MVS unit of recovery when *DPL_opts* specifies X'00'.

There are new reason codes for DPL_Request calls that specify X'00' on the *DPL_opts* parameter. These are described in the *CICS External Interfaces Guide.*

Chapter 12. User-replaceable modules

This chapter summarizes the changes that affect CICS user-replaceable modules.

Reassembling user-replaceable modules

There are some changes in this release to the user-replaceable module interface. You should check whether these changes affect your own customized modules, and make any necessary changes.

You must reassemble all user-replaceable modules, whether or not you make any changes to them. This includes modules such as your terminal autoinstall control program.

See the *CICS Customization Guide* for programming information about user-replaceable modules.

Changes to user-replaceable modules

There are changes affecting the following user-replaceable modules:
- DFHDYP, the dynamic transaction routing program
- DFHZADTX, the terminal autoinstall control program
- DFH0CBRE, the 3270 bridge exit

DFHDYP changed

The invocation of DFHDYP is extended to handle the dynamic routing of:
- Distributed program link (DPL) requests
- Terminal-related start requests (in earlier releases, DFHDYP is invoked for start requests for information purposes only)

To support these additions to dynamic routing, several new fields are added to the DFHDYP communication area, defined by the DFHDYPDS copybook. If you use DFHDYPDS in a dynamic routing program, reassemble the program to include the latest version.

See the *CICS Customization Guide* for information about the DFHDYP communication area.

DFHZATDX changed

There are changes to the IBM-supplied terminal autoinstall control program. These changes are to support autoinstall for consoles. The changes are made to handle the two new communication areas that CICS passes to the terminal autoinstall control program:
- When the console is to be autoinstalled
- When an autoinstalled console is to be deleted.

The IBM-supplied URMs, DFHZATDX (assembler), DFHZCTDX (COBOL), DFHZPTDX (P/LI), and DFHZDTDX (C) are all modified to support autoinstall for MVS consoles. If you use your own autoinstall program, modify it to include the updated communication area copybooks.

DFH0CBRE changed

The BRXA interface to the 3270 bridge exit user-replaceable module is changed to support the enhancements to the 3270 bridge. The bridge exit is no longer invoked to handle terminal API requests. Instead, these requests are passed to a new user-replaceable module known as the formatter, which is named on the BRXA_FORMATTER parameter in the BRXA interface.

See "DFH0CBRF" for more information.

New user-replaceable modules

The following user-replaceable modules are added:
- DFHDSRP, for distributed dynamic routing
- DFH0CBRF, for 3270 bridge formatting.

DFHDSRP

A new user-replaceable module, DFHDSRP, is added to support the dynamic routing of:
- Non-terminal-related start requests
- Transactions that implement CICS business transaction services (BTS) activities

This URM uses the same communication area as the dynamic transaction routing program, DFHDYP.

DFH0CBRF

The function and design of the 3270 bridge exit program, DFH0CBRE, introduced in CICS TS Release 2, is now divided between two programs—the bridge exit itself and the new (optional) formatter, DFH0CBRF. The name of the formatter is specified in the bridge exit communication area (BRXA) in field BRXA_FORMATTER. Splitting the function in this way simplifies the design and coding of the bridge exit, whilst still supporting the old form that performs all functions.

The sample bridge exit program DFH0CBRE is modified to specify DFH0CBRF for the formatting function.

See the *CICS External Interfaces Guide* for information about coding a bridge exit and formatter.

Chapter 13. Monitoring and statistics

This chapter deals with aspects of migration relating to the changes to monitoring and statistics. It covers the following topics:
- Changes to monitoring and statistics data in SMF 110 records
- Changes to statistics records

Changes to monitoring and statistics data in SMF 110 records

\#
\#
\#

There are changes to CICS monitoring and statistics data that could affect user- and vendor-written utilities that analyze and print CICS SMF monitoring and statistics records.

Check your utility programs that process CICS SMF records to ensure that they can process the SMF 110 records correctly. If you have utility programs provided by independent software vendors, you should ensure that these also are able to handle the SMF 110 records correctly.

You can identify SMF 110 records from different releases by using the record-version field in the SMF product section.

Increase in performance class data record length

A large number of performance data fields are added to performance class data records. The result of all these additions is that record length of performance class data records has increased significantly, with the maximum record length now up to 1288 bytes per record.

To avoid flooding your SMF data sets with unwanted data, and consequently filling them too quickly, you can reduce the amount of data written to SMF by using an MCT to selectively include or exclude specified fields. See the *CICS Resource Definition Guide* for information about coding an MCT to control data recording using the DFHMCT TYPE=RECORD macro.

Changes to statistics records

There are changes to CICS statistics records, generally because of the new domains, such as the CICS business application manager domain for BTS, the document handling domain, and the sockets domain. As a result, a number of statistics DSECTs have new or changed fields. The changed DSECTs are:

Copybook	For functional area
DFHA14DS	ISC/IRC system entry resource statistics.
DFHA17DS	File resource statistics.
DFHDSGDS	Dispatcher global statistics.
DFHMNTDS	Transaction performance monitoring resource statistics.
DFHNQGDS	Enqueue global statistics.
DFHTQRDS	Transient data resource statistics.

Existing application programs using the old versions of the changed DFHA14DS, DFHA17DS, and DFHTQRDS DSECTs are unaffected by the changes. This is because the new fields are added to the end and do not affect the offsets of the unchanged fields.

The changes to DFHMNTDS, DFHDSGDS, and DFHNQGDS are such that the old DSECT is not compatible with the new DSECT, and application programs using these DSECTs must be recompiled.

New and revised values in DFHSTIDS (statistics record identifiers

The revised list of the statistics record identifiers, as described in the common statistics record copybook, DFHSTIDS, is shown in Figure 1 on page 51.

```
STID      STID
Symbolic  Value  Copybook   Type of record
name

STISMDSA  2      DFHSMSDS   Storage manager DSA ID
STISMD    5      DFHSMDDS   Storage manager domain subpool ID
STISMT    6      DFHSMTDS   Storage manager task subpool ID
STIXMG    10     DFHXMGDS   Transaction manager (Globals) ID
STIXMR    11     DFHXMRDS   Transaction manager (Trans) ID
STIXMC    12     DFHXMCDS   Transaction manager (Tclass) ID
STIFEPIP  16     DFHA22DS   FEPI pool ID
STIFEPIC  17     DFHA23DS   FEPI connection ID
STIFEPIT  18     DFHA24DS   FEPI target ID
STIVT     21     DFHA03DS   VTAM® stats ID
STIPAUTO  23     DFHPGGDS   Program Autoinstall ID
STIAUTO   24     DFHA04DS   Terminal Autoinstall stats ID
STILDR    25     DFHLDRDS   Loader (Resid) ID
STIDBUSS  28     DFHDBUDS   DBCTL USS ID
STILDG    30     DFHLDGDS   Loader (Globals) ID
STITCR    34     DFHA06DS   Terminal control (Resid) ID
STILSRR   39     DFHA08DS   LSRPOOL pool stats (resid) ID
STILSRFR  40     DFHA09DS   LSRPOOL File stats (by file) ID
STITDQR   42     DFHTQRDS   TDQUEUE (Resid) ID
STITDQG   45     DFHTQGDS   TDQUEUE (Globals) ID
STITSQ    48     DFHTSGDS   TSQUEUE stats ID
STICONSR  52     DFHA14DS   ISC/IRC system entry (resid) ID
STICONSS  54     DFHA21DS   ISC connection - System Security
STIDS     55     DFHDSGDS   Dispatcher stats ID
STIUSG    61     DFHUSGDS   User Domain stats ID
STITM     63     DFHA16DS   Table manager stats ID
STIST     66     DFHSTGDS   Statistics stats ID
STIFCR    67     DFHA17DS   File Control (Resid) ID
STICONMR  76     DFHA20DS   ISC/IRC mode entry (resid) ID
STIM      81     DFHMNGDS   Monitoring stats (Global) ID
STIMNR    82     DFHMNTDS   Monitoring stats (Resid) ID
STITDR    85     DFHTDRDS   Transaction dump (Resid) ID
STITDG    87     DFHTDGDS   Transaction dump (Global) ID
STISDR    88     DFHSDRDS   System dump (Resid) ID
STISDG    90     DFHSDGDS   System dump (Global) ID
STILGR    93     DFHLGRDS   Logger stats (Resource) ID
STILGS    94     DFHLGSDS   Log stream stats (Resource) ID
STINQG    97     DFHNQGDS   ENQ Manager stats (Global) ID
STIRMG    99     DFHRMGDS   Recovery manager stats (Global) ID
STID2G    102    DFHD2GDS   DB2 connection stats (global) id
STID2R    103    DFHD2RDS   DB2 entry stats (resource) id
STISOR    108    DFHSORDS   TCPIP Services (Resource) id
```

Figure 1. Statistics data record copybooks related to STID name and value

For details of all the statistics, and all the supporting copybooks, see the *CICS Performance Guide.*

Part 2. Migration planning considerations

This part of the book deals with migration planning considerations for the functional areas where there are significant changes. These are:

Chapter 14. Migration planning for DL/I and DB2 databases

This chapter discusses CICS database management with IMS Database Control (DBCTL) and IBM DATABASE 2™:

- "Migrating to DBCTL"
- "DB2 migration"

Migrating to DBCTL

CICS/ESA 4.1 is the last release to support local DL/I and CICS shared database through the CICS batch region controller. CICS TS does not support either of these DL/I database access methods.

Online access to DL/I databases from CICS TS regions

If you plan to migrate applications that use obsolete methods, you have two options:

- Migrate to DBCTL
- Use CICS TS remote DL/I support to function ship DL/I requests to a CICS region running under an earlier CICS release that supports local DL/I, or which has already migrated to DBCTL.

These are the only two methods of DL/I database access supported by CICS TS.

Note that for this release of CICS TS you need IMS Database Manager Version 5 Release 1 or later.

Migrating DL/I batch programs

CICS shared database support is obsolete in CICS TS because the batch-region controller works through a CICS region with local DL/I support. Convert your CICS batch shared database application programs to IMS batch message programs (BMPs) to access DL/I databases directly through DBCTL.

The CICS-DB2 Language Interface module DSNCLI

\# The CICS-DB2 Language Interface module DSNCLI is no longer shipped by the
\# DB2 product starting with DB2 V6. From CICS Transaction Server 1.2 upwards,
\# DSNCLI is shipped in SDFHLOAD by applying APAR PQ26732 (Release 200 :
\# UQ31971 ; Release 300 : UQ31972). In addition, applying APAR PQ39055 makes
\# DSNCLI also available in SDFHAUTH.

DB2 migration

CICS supports the following releases of DB2:

- DB2 for MVS/ESA™, Version 4 Release 1
- DATABASE 2 Server for OS/390 (DB2 for OS/930) Version 5 Release 1
- DATABASE 2 Server for OS/390 (DB2 for OS/930) Version 6 Release 1.

CICS provides a CICS-DB2 attachment facility (the CICS-DB2 adaptor) that works with all supported releases of DB2. The CICS-DB2 attachment facility is shipped on the CICS Transaction Server for OS/390 product tape, and you must use this version of the adaptor to connect a CICS TS region to DB2.

The CICS-DB2 adaptor has been supplied by CICS since CICS/ESA 4.1. Always use the correct CICS-DB2 adaptor for the release of CICS under which a region is running—the CICS TS Release 3 adaptor for a CICS TS Release 3 region, the CICS 4.1 adaptor for a CICS 4.1 region, and so on.

The DB2 program product continues to supply the earlier version of the CICS attachment facility to support DB2 connections with releases of CICS earlier than CICS 4.1.

Withdrawal of runtime support for RCT

CICS TS introduced RDO support for DB2 resource definitions in CICS TS Release 2, while continuing to support the DB2 resource control table (RCT). CICS TS has now withdrawn runtime support for the RCT, supplying the RCT macro for migration purposes only. See "Chapter 3. Resource definition (online) changes" on page 13 for details of the MIGRATE support provided for the RCT.

Chapter 15. Migration planning for multiregion operation (MRO)

This chapter covers migration for MRO users. It covers the following topics:
- "DFHIRP coexistence"
- "Migrating to the latest DFHIRP"
- "End-of-memory clean-up routine" on page 59.

DFHIRP coexistence

To use CICS multiregion operation (MRO) support, you must install DFHIRP in the link pack area (LPA). This means that in an MVS image there can only be one version of the module named DFHIRP, which must be at the highest release level of the CICS regions that run in that MVS image.

Within a parallel sysplex, where MRO communication between MVS images is through XCF/MRO, the DFHIRP programs installed in the different MVS images can be at different release levels. However, the DFHIRP in an MVS image must be installed from the highest release of CICS running in that MVS image. For example, a CICS Version 4 DFHIRP can communicate with a CICS Transaction Server DFHIRP across XCF/MRO, but the CICS regions running in the MVS with the Version 4 DFHIRP cannot be later than CICS/ESA Version 4. See Figure 2 on page 58 for an illustration of valid configurations for MRO with different levels of DFHIRP installed in the sysplex.

Migrating to the latest DFHIRP

The CICS TS DFHIRP is downwards compatible, and designed to work with all releases of CICS.

The following steps are a guide to migrating to MRO with the latest DFHIRP and DFHCSVC modules installed in the MVS link pack area (LPA). For information about how to perform some of these steps, such as installing the SVC or IRP modules in the LPA, see the *CICS Transaction Server for OS/390 Installation Guide*. Note that these steps assume that RACF® is your external security manager (ESM).

1. **Install the CICS SVC**

   Install the CICS TS SVC routine, DFHCSVC, in the LPA, and specify a new CICS SVC number for this routine in the MVS SVCPARM table. If the new DFHCSVC has to coexist with an older version, rename one of them so that both versions can be installed in the LPA.

2. **Test the CICS SVC**

   Test the new SVC on CICS TS stand-alone regions, without using any MRO. You can do this running the CICS IVP, DFHIVPOL.

3. **Install the IRP**

   Install the CICS TS interregion communication program, DFHIRP, in a suitable LPA library, and IPL MVS (with the CLPA option).

4. **Test current production release**

   Test your production MRO CICS regions, under your existing release of CICS,

but using the new SVC number and the new DFHIRP. For this test, run
without any logon or bind-time security checking—that is, do not define any
RACF FACILITY class profiles.

5. Define RACF FACILITY resource class profiles
Define the required DFHAPPL.*applid* profiles in the RACF FACILITY general
resource class. When the profiles are ready for all the MRO regions, test the
production regions again with the new SVC and DFHIRP, this time using the
FACILITY class profiles for logon and bind-time security checking.

6. Cutover to production with the new IRP
If the production MRO regions successfully log on to the new IRP with the
new SVC, and bind-time security checking works successfully, use the new
DFHIRP and SVC for the production regions.

7. Test MRO with CICS TS regions
With the production regions running successfully under the CICS TS SVC and
IRP, you can initialize and test some CICS Transaction Server regions using
MRO. These test regions can coexist in the same MVS image as the production
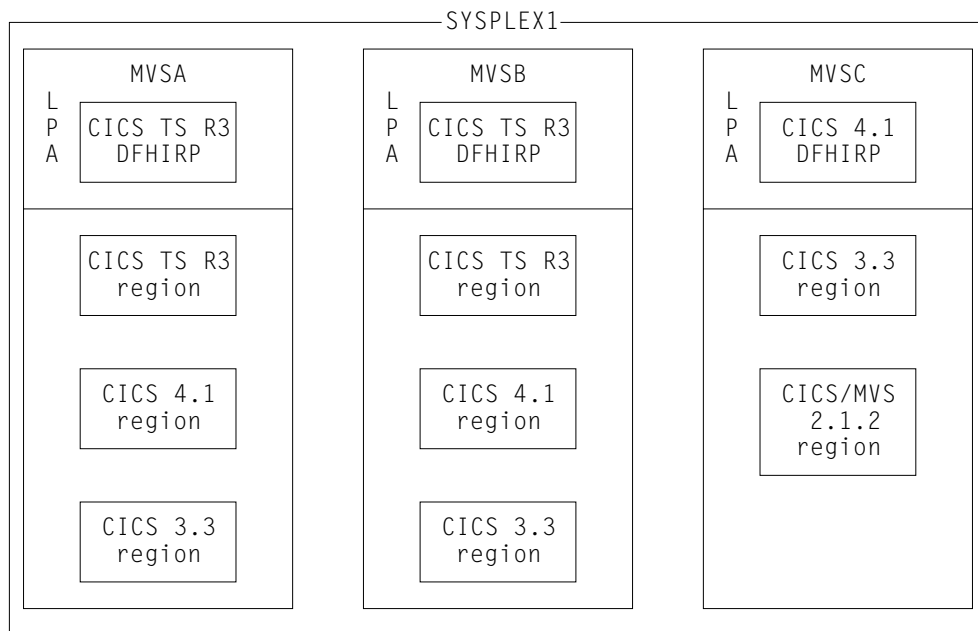regions, all using the same SVC and IRP.

```
┌─SYSPLEX1──────────────────────────────────────────────────────┐
│                                                                │
│ ┌──────────────────┐  ┌──────────────────┐  ┌──────────────────┐
│ │      MVSA        │  │      MVSB        │  │      MVSC        │
│ │ L ┌────────────┐ │  │ L ┌────────────┐ │  │ L ┌────────────┐ │
│ │ P │ CICS TS R3 │ │  │ P │ CICS TS R3 │ │  │ P │ CICS 4.1   │ │
│ │ A │   DFHIRP   │ │  │ A │   DFHIRP   │ │  │ A │   DFHIRP   │ │
│ │   └────────────┘ │  │   └────────────┘ │  │   └────────────┘ │
│ │                  │  │                  │  │                  │
│ │   ┌────────────┐ │  │   ┌────────────┐ │  │   ┌────────────┐ │
│ │   │ CICS TS R3 │ │  │   │ CICS TS R3 │ │  │   │ CICS 3.3   │ │
│ │   │   region   │ │  │   │   region   │ │  │   │   region   │ │
│ │   └────────────┘ │  │   └────────────┘ │  │   └────────────┘ │
│ │                  │  │                  │  │                  │
│ │   ┌────────────┐ │  │   ┌────────────┐ │  │   ┌────────────┐ │
│ │   │ CICS 4.1   │ │  │   │ CICS 4.1   │ │  │   │ CICS/MVS   │ │
│ │   │   region   │ │  │   │   region   │ │  │   │   2.1.2    │ │
│ │   └────────────┘ │  │   └────────────┘ │  │   │   region   │ │
│ │                  │  │                  │  │   └────────────┘ │
│ │   ┌────────────┐ │  │   ┌────────────┐ │  │                  │
│ │   │ CICS 3.3   │ │  │   │ CICS 3.3   │ │  │                  │
│ │   │   region   │ │  │   │   region   │ │  │                  │
│ │   └────────────┘ │  │   └────────────┘ │  │                  │
│ └──────────────────┘  └──────────────────┘  └──────────────────┘
│                                                                │
└────────────────────────────────────────────────────────────────┘
```

Figure 2. Illustration of valid configurations using DFHIRP in a sysplex

Note: All the CICS regions in SYSPLEX1 shown in Figure 2 can communicate
across MRO links, because the DFHIRP in each MVS supports XCF/MRO.
In MVSA and MVSB, DFHIRP must be at the CICS TS Release 3 level,
because there are CICS TS Release 3 regions in these MVS images. MVSC is
running with the CICS/ESA 4.1 DFHIRP installed, because CICS/ESA 4.1 is
the earliest release to support XCF/MRO.

End-of-memory clean-up routine

An MRO end-of-memory clean-up routine, which is also used by console message-handling support, is no longer needed in DFHIRP. Because of this change in MRO, DFHSSEN, which is an alias of DFHIRP in earlier releases, is supplied as a separate module. Installing DFHSSEN in the LPA continues to be required for console message-handling support.

See the *CICS Transaction Server for OS/390 Installation Guide* for more information about requirements for CICS console message-handling support.

Chapter 16. Migration planning for CICS Web support

This chapter covers migration for users of CICS Web support. The changes made to CICS Web support should not prevent CWI applications that work today from continuing to work without changes to the application. However, it may be necessary to recompile those programs that use programming interfaces that have changed, such as converter programs and analyzer exits.

The chapter covers the following topics:
- "Changes affecting the CICS Web analyzer"
- "Changes affecting the CICS Web converter" on page 62
- "Changes to HTML template support" on page 62
- "Changes affecting Web application programs" on page 63
- "Connection manager transaction CWBC obsolete" on page 63
- "The business logic interface renamed" on page 63
- "Effect of secure sockets layer support" on page 63

Changes affecting the CICS Web analyzer

The user-replaceable module interface to the CWI analyzer is changed in a number of ways. These are:
- A change to the invocation of the analyzer
- A change to the default action for escaped characters
- "Changes to the analyzer parameter list" on page 62
- "Change to operation of codepage conversion" on page 62

Change to the invocation of the analyzer

The analyzer user-replaceable module (URM) is invoked in a different context. In earlier releases, the analyzer can be a potential bottleneck because it is invoked by the long-running server controller transaction, which handles all incoming requests. Because of this, you were discouraged from carrying out performance-sensitive tasks at this point. This restriction is removed, because the analyzer is invoked by a new CICS task that is invoked to process the incoming request. This change means that the analyzer can now be invoked concurrently by multiple tasks. In earlier releases, only one task executes the analyzer URM. Check your analyzer code to ensure there are no reentrancy or concurrency issues arising from the new context in which the analyzer is invoked. It may be necessary to use enqueue/dequeue techniques to ensure integrity.

Change to default action for escaped characters

HTTP requests can contain escaped characters. These characters can be in the destination URL itself, or in data generated from HTML forms. Escaped characters conform to the HTTP architecture for the coding of HTTP requests, which are generally encoded using the **escaping scheme** described in the URL specification. The escaping scheme specifies that escaped characters are represented by a % (percent sign) followed by 2 hexadecimal digits (%*xx*, where *xx* is the hexadecimal representation of the ASCII encoding of an original data character).

The default CICS action for escaped HTTP data is now to pass the data to the application in its escaped form (in earlier releases, the default is to "unescape" the

data before passing it to the application program). If you want to ensure that escaped characters are unescaped before passing them to your application program, either:

- Link to the new CICS-supplied program DFHWBUN, passing it the data to be unescaped (the unescaping is performed by the CICS-supplied analyzer, DFHWBADX)

or

- Update the WBRA_UNESCAPE field in the analyzer parameter list to WBRA_UNESCAPE_REQUIRED. This tells CICS to unescape the data on behalf of the application.

Changes to the analyzer parameter list

The parameter list to the analyzer is changed. Modify your analyzer program accordingly and recompile them.

Also, the field WBRA_USERID in the parameter list of the user-replaceable analyzer program is changed from an output only field to an input/output field. When modifying your analyser program, make sure it cannot inadvertently overlay the userid deduced from the client certificate when CICS is running with SSL support. For more information about WBRA_USERID and the effect of SSL support, see the *CICS Internet Guide*.

Change to operation of codepage conversion

If your Web application program is specifying codepage conversion keywords on Web and document-related API commands, any DFHCNV conversion key returned by the analyzer in WBRA_DFHCNV_KEY is overridden by the codepage specified on the API command.

Changes affecting the CICS Web converter

The parameter list to the converter is changed. The function code is now a halfword instead of a fullword. Modify your converter programs for the new parameter list and recompile them. Note that the changed and recompiled converter programs are useable on earlier releases of CICS that provide Web support.

Changes to HTML template support

Use of the new document and Web API commands removes the need to invoke DFHWBTL to use HTML templates. DFHWBTL is still supported for compatibility with earlier releases.

In earlier releases, templates used by DFHWBTL are stored in the MVS partitioned dataset specified on the DFHHTML DD statement in the CICS startup JCL. You can now specify different repositories (CICS files, TS queues, TD queues, load module, or PDS members in other data sets) in which you want to store templates, using the DOCTEMPLATE resource definition, or the name of an exit program to be invoked to satisfy a request for a template. If there is no DOCTEMPLATE defined for a template being used through the CICS template manager, DFHWBTL, CICS dynamically creates a DOCTEMPLATE resource definition for the requested template, specifying that the template is in the DFHHTML dataset. DFHWBTL uses templates in the new repositories provided that:

- The template name is not greater than 8 characters
- The template resource definition is installed before you call DFHWBTL.

If you want to continue using DFHWBTL to manage existing templates, ensure there is a DD statement for DFHHTML in the CICS startup JCL.

If you want to use the new document API to access existing templates, create a DOCTEMPLATE definition for each template, specifying that they can be found in the DFHHTML dataset. Add these definitions to your startup group list.

Changes affecting Web application programs

With the inroduction of a set of EXEC CICS WEB API commands, you can now write applications using one of two methods.

You are recommended *not* to create application programs that mix the two methods, where one part of the application relies on the old communications area (COMMAREA) technique for CWI programming, and the other uses the new API. Your application programs should use either one or the other.

Connection manager transaction CWBC obsolete

The CWBC transaction and its associated data set, DFHWBCD, are obsolete, and their function is replaced by a new resource type defined in the CSD. Migrate the existing definitions from the DFHWBCD data set to the CSD, using the DEFINE TCPIPSERVICE command. If you currently automate startup with a post-initialization program list table (PLTPI) that specifes the CWBC program, DFHWBC00, remove this from your table and add the relevant TCPIPSERVICE definitions to your startup group list.

See "Chapter 3. Resource definition (online) changes" on page 13 for details of the new resource definitions for CICS Web support.

The business logic interface renamed

The preferred name for the business logic interface is DFHWBBLI instead of DFHWBA1. The format of the parameter list for DFHWBBLI is different from that for DFHWBA1. CICS continues to support DFHWBA1, which is available with its original parameter list, but its only purpose is to link to DFHWBBLI. You are recommended to use DFHWBBLI instead of DFHWBA1.

Effect of secure sockets layer support

If the system initialization parameter KEYFILE is left to default to a null value, there are no migration impacts by caused by CICS secure sockets layer (SSL) support.

To exploit SSL, ensure that:
- A keyring file is correctly created and initialized with the *mkkf* utility.
- The CICS region userid is authorized to read the keyring file specified in KEYFILE.
- System initialization parameters KEYFILE, ENCRYPTION, and SSLDELAY are set to the required values.
- A TCP/IP port is activated for SSL use, either with or without client authentication.
- Application programs are inspected to discover whether they can exploit the EXEC CICS EXTRACT CERTIFICATE command.

Chapter 17. Migration planning for the 3270 bridge

This chapter covers migration for the 3270 bridge.

Bridge exits and transport mechanism monitors written to run on the previous release of CICS TS require modification as a result of the following changes made to the 3270 bridge interface:
- "Changes to the monitor"
- "Changes to the bridge exit"
- "Changes to the bridge transaction"

Changes to the monitor

The monitor (now called a bridge monitor) no longer starts a bridge transaction. Instead, it uses the new START BREXIT TRANSID command to start the user transaction directly. Also, the new START BREXIT command provides the BRDATA parameter for passing data to the bridge exit. Note that if you are using the 3270 bridge to run pseudoconversational transactions, the data that you pass in BRDATA must include the facility token.

For an example of the data that you can pass in BRDATA, see the copybook used by DFH0CBRE, the sample bridge exit. The copybook name is DFHBRSD*x*, where *x* represents the programming language (D is assembler, L is PL/I, H is C/370™, and O is COBOL).

Changes to the bridge exit

The following changes affect the bridge exit:
- The initialization call of the bridge exit is now divided into two parts: (1) non-recoverable (Init) and (2) recoverable (Bind) initialization.
- The retrieval of data in the bridge exit (using EXEC CICS RETRIEVE) is now replaced by data passed in the BRXA interface. The data passed is obtained from the BRDATA parameter specified on the EXEC CICS START BREXIT command.
- The bridge exit can now issue an EXEC CICS VERIFY command to check a user password. The BRXA-PASSWORD option is withdrawn.
- The bridge exit does not start the transaction. This is done by the the bridge monitor on the START BREXIT TRANSID command, therefore you don't need to specify the transid or the userid in the bridge exit.

See the IBM-supplied bridge exit, DFH0CBRE, for an example. Note that it is not necessary to use a formatter in the bridge exit.

Changes to the bridge transaction

Bridge transaction resource definitions are obsolete, and are removed from the DFH$BR resource definition group. To provide compatibility with the previous release and ensure that you can share the CSD between releases, the obsolete transaction definitions are moved to the new compatibility group, DFHCOMP7.

See "Chapter 3. Resource definition (online) changes" on page 13 for details of upgrading the CSD and the DFHCOMP7 group.

Part 3. CICSPlex SM

This part of the book contains information about migrating to CICS TS
CICSPlex SM from an earlier release:

Chapter 18. Operations views changes

This chapter summarizes the changes to CICSPlex SM operations views.

Changed operations views

Table 15 shows new operations view fields.

Table 15. New operations view fields

Operations view	New fields	Explanation
CICSRGND	RRMS status Dst Route Pgm	Added for EXCI enhancements Added for dynamic routing enhancements
CICSRGN2	Force QR Max open TCBs	Added to support the open transaction environment (OTE)
CMDTD	CFDT pool Table name Load type Table information Dataset information	Added for coupling facility data tables.
LOCTRAND	Routing status	Added for dynamic routing enhancements.
PROGRAMD	Concurrency Dynam status JVM class JVM debug Runtime	Added for the OTE enhancements Added for dynamic routing enhancements Added to support Java Virtual Machine (JVM)
UOWENQ	ENQSCOPE	This field is added for the CICS sysplex enqueue/dequeue function.
UOWLINKD	Protocol	This field is added for EXCI enhancements.

A number of operations views have changed in the way they present information. The fields are either presented in a different order, or some fields have moved onto new screens. The views that have changed in these ways are shown in Table 16.

Table 16. Changed operations views

Operations view	What has changed
CMDTD	The data presented has been reorganized and extended so that it is presented over the following screens: • CMDTD • CMDT2 • CMDT3 CMDT2 and CMDT3 are new views.

Table 16. Changed operations views (continued)

Operations view	What has changed
TASKD TASK2 TASK3	The detailed task information has been reorganized and extended so that it is presented over the following screens: • TASKD • TASK2 • TASK3 • TASK4 • TASK5 • TASK6 • TASK7 • TASK8 • TASK9 TASK4, TASK5, TASK6, TASK7, TASK8 and TASK9 are new views.

FEPI resources can no longer be installed from operations views and the install action has been removed from the FEPI operations views.

New operations views

Table 17 shows new operations views.

Table 17. New operations views

Operations view	What it shows
CFDTPOOL	General view of installed coupling facility data tables pools.
CFDTPOOS	Summary information relating to coupling facility data table pools.
CICSRGN4	Detailed information relating to the tasks in a CICS system.
CMDT2	Detailed information about a CICS- or user-maintained data table, or a coupling facility data table.
CMDT3	Statistical information relating to a data table file.
DOCTEMP	General view of installed document templates.
DOCTEMPD	Detailed information about a currently installed document template.
DOCTEMPS	Summary information about currently installed document templates.
ENQMDL	General view of installed enqueue models.
ENQMDLD	Detailed information about the enqueue model entries defined within the sysplex.
ENQMDLS	Summary information about the enqueue model entries defined within the sysplex.
PROCTYP	General view of installed process types and their attributes.
PROCTYPD	Detailed information relating to a process type.
PROGRAMJ	Information showing the JVM class value for the current program.
RQMODEL	General view of installed request models.

Table 17. New operations views (continued)

Operations view	What it shows
RQMODELD	Detailed information about a currently installed request model.
RQMODELS	Summary information about currently installed request models.
TASK4	Detailed information about request counts.
TASK5	Detailed information about storage usage.
TASK6	Detailed information about communications requests.
TASK7	Statistical information about the CICS business transaction services issued by a task.
TASK8	Statistical information about the usage of TCP/IP services and activities issued by a task.
TASK9	Statistical information about CPU usage of a task.
TCPIPS	General view of installed TCP/IP service definitions.
TCPIPSD	Detailed information relating to a TCP/IP service definition.
TCPIPSS	Summary information relating to installed TCP/IP service definitions.
TSMODEL	General view of installed temporary storage models.
TSMODELD	Detailed information relating to a temporary storage model.
TSMODELS	Summary information relating to installed temporary storage models.
TSPOOL	General view of installed temporary storage pools.
TSQNAME	General view of non-shared temporary storage queues.
TSQNAMED	Detailed view of a non-shared temporary storage queue.
TSQNAMES	Summary view of non-shared temporary storage queues.
TSQSHR	General view of shared temporary storage queues.
TSQSHRD	Detailed information relating to a shared temporary storage queue.
TSQSHRS	Summary information relating to shared temporary storage queues.

Chapter 19. Monitor views changes

This chapter summarizes the changes to CICSPlex SM monitor views.

Changed monitor views

A number of monitor views have changed in the way they present information. The fields are either presented in a different order, or some fields have moved onto new screens. The views that have changed in these ways are shown in Table 18.

Table 18. Changed monitor views

Monitor view	What has changed
MLOCTRAD MLOCTRA2 MLOCTRA3	The data presented has been reorganized and extended. It now extends to a new view, MLOCTRA4.

New monitor views

Table 19 shows the new monitor view.

Table 19. New monitor view

Monitor view	What it shows
MLOCTRA4	Detailed information about a local transaction, additional to the details shown in MLOCTRA2 and MLOCTRA3.

Chapter 20. Business Application Services changes

This chapter summarizes the changes to Business Application Services (BAS) definition objects.

New BAS definition objects

Table 20 shows the new BAS definiton objects introduced at this release.

Table 20. New BAS definition objects

BAS object	What is it?
DOCDEF	CICS definition that describes a document template.
ENQMDEF	CICS definition that describes an ENQ/DEQ model.
FENODDEF	CICS definition that describes a FEPI node.
FEPOODEF	CICS definition that describes a FEPI pool.
FEPRODEF	CICS definition that describes a FEPI property set.
FETRGDEF	CICS definition that describes a FEPI target.
PROCDEF	CICS definition that describes a process type.
RQMDEF	CICS definition that describes a request model.
TCPDEF	CICS definition that describes a TCP/IP service.
TSMDEF	CICS definition that describes a temporary storage model.

Changed BAS definition attributes

There are changes to existing attributes in a number of BAS definition objects. These are listed in Table 21.

Table 21. Changed BAS definition attributes

BAS object	Affected attribute	Explanation
FILEDEF	KEYLENGTH TABLE MAXNUMRECS	These attributes are changed to support coupling facility data table files: • **KEYLENGTH**: If the table is defined with TABLE(CF), the length of the logical key must be in the range 1 through 16 bytes. • **TABLE**: You can indicate whether a coupling facility data table is required for the file. • **MAXNUMRECS**: The range permitted is now 1 through 99 999 999, and you can also specify NOLIMIT. The FILEDEF creation screens have been amended and reorganized so that they now occupy 6 screens.

New BAS definition attributes

There are a number of new BAS attributes in existing BAS definition objects. These are listed in Table 22.

Table 22. New BAS definition attributes

BAS object	New attribute	Explanation
FILEDEF	CFDTPOOL TABLEMNAME UPDATEMODEL LOAD	These attributes are introduced to support coupling facility data table files: • **CFDTPOOL**: If the table is defined with TABLE(CF), you must specify the name of the coupling facility data table pool containing the coupling facility data table to which the file refers. • **TABLENAME**: You can specify the name of the coupling facility data table accessed through the file definition. • **UPDATEMODEL**: You can specify the type of locking model to be used for a coupling facility data table. • **LOAD**: You can specify whether the coupling facility data table is to be loaded from a source data set when first opened.
PROGDEF	CONCURRENCY	This attrubute is introduced to support the open transaction environment (OTE): • **CONCURRENCY**: You can specify whether a program has been written to threadsafe standards, or is only quasi-reentrant.
	DYNAMIC	This attribute is introduced to support the extensions to the dynamic routing program: • **DYNAMIC**: You can specify whether an EXEC CICS LINK to the program may invoke dynamic routing.
	JVM JVMClass	These attributes are introduced to support the Java Virtual Machine (JVM) enhancements: • **JVM**: You can specify whether a program is to operate under the control of a JVM and whether the JVM should operate in debugging mode. • **JVMClass**: You can specify the main class in the CICS Java program to be executed by a JVM.
TRANDEF	DYNAMIC ROUTABLE	These attributes are introduced to support the extensions to the dynamic rouitng program: • **DYNAMIC**: You can specify whether the transaction is eligible for routing. • **ROUTABLE**: You can specify whether the transaction, when invoked using an EXEC CICS START TERMID TRANSID command, is eligible for shipping to the TOR for dynamic routing.

Chapter 21. The CICSPlex SM API

This chapter summarizes changes to the CICSPlex SM API.

New resource tables

Table 23 shows new resource tables.

Table 23. New resource tables

Resource table	What is it?
CFDTPOOL	CICS resource describing a coupling facility data table pool in an active CICS system being managed by CICSPlex SM
CRESDOCT	CICSPlex SM topology manager object describing an instance of a document template within a CICS system.
CRESENQM	CICSPlex SM topology manager object describing an instance of an ENQ/DEQ model within a CICS system.
CRESPRTY	CICSPlex SM topology manager object describing an instance of a process type within a CICS system.
CRESRQMD	CICSPlex SM topology manager object describing an instance of a request within a CICS system.
CRESTCPS	CICSPlex SM topology manager object describing an instance of a TCP/IP Service within a CICS system.
CRESTSMD	CICSPlex SM topology manager object describing an instance of a temporary storage queue within a CICS system.
DOCDEF	CICS definition describing a document template.
DOCINGRP	CICSPlex SM BAS definition describing the membership of a document template definition in a resource group.
DOCTEMP	CICS resource describing a document template in an active CICS system being managed by CICSPlex SM.
ENQINGRP	CICSPlex SM BAS definition describing the membership of an ENQ/DEQ model definition in a resource group.
ENQMDEF	CICS definition describing an ENQ/DEQ model.
ENQMODEL	CICS resource describing an ENQ/DEQ model in an active CICS system being managed by CICSPlex SM.
ERMCDOCT	CICSPlex SM notification resource, emitted by a topology control object when a document template resource map is changed.
ERMCENQM	CICSPlex SM notification resource, emitted by a topology control object when an ENQ/DEQ resource map is changed.
ERMCPRTY	CICSPlex SM notification resource, emitted by a topology control object when a process type resource map is changed.
ERMCRQMD	CICSPlex SM notification resource, emitted by a topology control object when a request resource map is changed.
ERMCTCPS	CICSPlex SM notification resource, emitted by a topology control object when a TCP/IP Service resource map is changed.
ERMCTSMD	CICSPlex SM notification resource, emitted by a topology control object when a temporary storage queue resource map is changed.
FENODDEF	CICS definition describing a FEPI node.

Table 23. New resource tables (continued)

Resource table	What is it?
FEPOODEF	CICS definition describing a FEPI pool.
FEPRODEF	CICS definition describing a FEPI property set.
FETRGDEF	CICS definition describing a FEPI target.
FNOINGRP	CICSPlex SM BAS definition describing the membership of a FEPI node definition in a resource group.
FPOINGRP	CICSPlex SM BAS definition describing the membership of a FEPI pool definition in a resource group.
FPRINGRP	CICSPlex SM BAS definition describing the membership of a FEPI property set definition in a resource group.
FTRINGRP	CICSPlex SM BAS definition describing the membership of a FEPI target definition in a resource group.
PRCINGRP	CICSPlex SM BAS definition describing the membership of a process type definition in a resource group.
PROCDEF	CICS definition describing a process type.
PROCTYP	CICS resource describing a process type in an active CICS system being managed by CICSPlex SM.
RQMDEF	CICS definition describing a request model.
RQMINGRP	CICSPlex SM BAS definition describing the membership of a request model definition in a resource group.
RQMODEL	CICS resource describing a request type in an active CICS system being managed by CICSPlex SM.
TCPDEF	CICS definition describing a TCP/IP Service.
TCPINGRP	CICSPlex SM BAS definition describing the membership of a TCP/IP Service definition in a resource group.
TCPIPS	CICS resource describing a TCP/IP Service in an active CICS system being managed by CICSPlex SM.
TSMDEF	CICS definition describing a temporary storage model.
TSMINGRP	CICSPlex SM BAS definition describing the membership of a temporary storage model definition in a resource group.
TSMODEL	CICS resource describing a temporary storage model in an active CICS system being managed by CICSPlex SM.
TSPOOL	CICS resource describing a temporary storage pool in an active CICS system being managed by CICSPlex SM.
TSQNAME	CICS resource describing a temporary storage queue in an active CICS system being managed by CICSPlex SM.
TSQSHR	CICS resource describing a temporary storage queue in a pool in an active CICS system being managed by CICSPlex SM.

Changed resource tables

The following resource tables have been changed in CICSPlex SM for CICS TS for OS/390. Review these resource tables for possible impact on any real-time analysis (RTA) evaluation definitions (EVALDEF) or application programming interface (API) programs you may be using.

- CICSRGN
- CMDT
- CONNECT
- D2CINGRP
- D2EINGRP
- D2TINGRP
- EXITTRUE
- FEPIPOOL
- FEPIPROP
- FILEDEF
- MAS

- MCMDT
- MCONNECT
- MLOCTRAN
- MTASK
- PROGDEF
- PROGRAM
- RESDESC
- STREAMNM
- TASK
- TERMDEF
- TRANDEF

- TRANGROUP
- TSQUEUE
- UOWENQ
- WLMAWDEF
- WLMATAFF
- WLMATGRP
- WLMAWORK
- WLMDEF
- WLMSPEC

Chapter 22. Workload management changes

This chapter summarizes the changes to CICSPlex SM workload management .

Changed workload management views

Table 24 shows new workload management view fields.

Table 24. New workload management view fields

WLM object	New field	Explanation
WLMDEF	Process type	This field is added for CICS BTS support.
WLMAWDEF	Process type	This field is added for CICS BTS support.

A number of workload management view attributes have changed.Table 25 shows changed workload management attribute fields.

Table 25. Changed workload management view fields

WLM object	Affected attribute	Explanation
WLMDEF WLMSPEC WLMAWDEF	Target scope	Renamed from AOR Scope to reflect the new dynamic routing terminology.
WLMATAFF WLMAWAOR	Target	Renamed from AOR to reflect the new dynamic routing terminology.
TRANGRP WLMSPEC	Affinity retention Affinity lifetime	New values added to support CICS BTS.
WLMAWORD	Router count Target count Target scope	• **Router count**: Renamed from TOR Count to reflect the new dynamic routing terminology. • **Target count**: Renamed from AOR Count to reflect the new dynamic routing terminology. • **Target scope**: Renamed from AOR Scope to reflect the new dynamic routing terminology.
WLMAWORK	Rout cnt Targ cnt	• **Rout cnt**: Renamed from TOR to reflect the new dynamic routing terminology. • **Targ cnt**: Renamed from AOR to reflect the new dynamic routing terminology.

Table 25. Changed workload management view fields (continued)

WLM object	Affected attribute	Explanation
WLMAWTOR	Router	Renamed from TOR to reflect the new dynamic routing terminology.

New workload management objects

Table 26 shows new operations views.

Table 26. New workload management objects

Workload management object	What it shows
WLMATAFD	Detailed display of the properties of a single active CICS BTS affinity.
WLMAWAOS	Target regions in an active workload summary.
WLMAWTOS	Routing regions in an active workload summary.

Chapter 23. Migrating to CICS TS Release 3 CICSPlex SM

This chapter presents information about the compatibility of previous releases of CICSPlex SM and CICS TS Release 3 CICSPlex SM.

> **Release 4 - Notes on terminology**
>
> For the purposes of clarity, this chapter refers, in certain places, to the CICSPlex SM element of CICS Transaction Server for OS/390 Release 3 as **CICSPlex SM Release 4**. This is to ensure that there is no ambiguity or confusion when discussing migration issues between earlier releases of CICSPlex SM and this release of CICSPlex SM.
>
> Throughout this chapter, CICSPlex SM releases are referred to as follows:
> **Release 4**
> > Version 1 Release 4 (the CICSPlex SM element of CICS Transaction Server for OS/390 Release 3)
> **Release 3**
> > Version 1 Release 3
> **Release 2**
> > Version 1 Release 2
>
> The CICSPlex SM element of CICS Transaction Server for OS/390 Release 3 is **not** available as a separate product.

Sections in this chapter describe:
- "Running CICSPlex SM Release 4 and an earlier release concurrently"
- "Performing migration procedures" on page 85
- "A phased migration scenario" on page 90
- "Management of unsupported CICS regions" on page 100

MASs running the following CICS releases are directly-connectable to CICSPlex SM Release 4:
- CICS Transaction Server for OS/390 Release 3
- CICS Transaction Server for OS/390 Release 2
- CICS Transaction Server for OS/390 Release 1
- CICS for MVS/ESA Version 4.1
- CICS Transaction Server for VSE/ESA Release 1
- CICS OS/2™ Versions 3.0 and 3.1.

Earlier releases of CICSPlex SM cannot manage CICS Transaction Server for OS/390 Release 3 regions, or CICS Transaction Server for VSE/ESA Release 1 regions, therefore migration to CICSPlex SM Release 4 is recommended before migrating CICS regions.

Running CICSPlex SM Release 4 and an earlier release concurrently

You can run CICSPlex SM Release 4, Release 3, and Release 2 at the same time, with interconnected CMASs at different levels. The ability to do this allows gradual migration of the environment from Release 2 and Release 3 to Release 4.

If you continue to run CICSPlex SM at Release 3, all of the systems listed on page 83 (with the exception of CICS Transaction Server for OS/390 Release 3 or CICS Transaction Server for VSE/ESA Release 1) can connect to a Release 3 CMAS. If you continue to run CICSPlex SM at Release 2, all of the systems listed on page 83 (with the exception of CICS Transaction Server for OS/390 Release 3, CICS Transaction Server for OS/390 Release 2 and CICS Transaction Server for VSE/ESA Release 1) can connect to a Release 2 CMAS. Additionally, CICS regions at the following releases can be connected to the Release 3 or Release 2 CMAS:

- CICS for MVS/ESA 3.3
- CICS for MVS 2.1.2
- CICS for VSE/ESA™ 2.2
- CICS for VSE/ESA Version 2.3
- CICS OS/2 Version 2.0.1.

However, you should be aware that (except for CICS for VSE/ESA Version 2.3) IBM Service no longer supports these CICS release levels. It is strongly recommended, therefore, that you migrate to CICS TS Release 3 CICSPlex SM , and migrate any such unsupported CICS release to a supported level.

If you need to continue running these unsupported releases, and you still need to manage them using CICSPlex SM, "Management of unsupported CICS regions" on page 100 describes the extra migration steps needed in such an environment.

All users, though, need to understand about the conditions for running Release 4 with Release 3 or Release 2. Read the following section, "Conditions for running CICSPlex SM Release 4 and earlier releases concurrently", then read "Performing migration procedures" on page 85 to understand how to migrate your supported releases before attempting the extra migration steps. If you then need to perform the extra steps to continue the management of unsupported CICS regions, see"Management of unsupported CICS regions" on page 100.

Conditions for running CICSPlex SM Release 4 and earlier releases concurrently

The following conditions apply to environments in which CICSPlex SM Release 4 and earlier releases of CICSPlex SM are running concurrently:

- The APARs in the following lists must be applied to the earlier release, whether it be Release 3 or Release 2, or both:

  Apply to Release 2 only
  - PQ05976

  Apply to Release 3 only
  - PQ09511
  - PQ20539
  - PQ21143
  - PQ21798
  - PQ23062

  Apply to Releases 2 and 3
  - PQ11318
  - PQ13281
  - PQ14319

- PQ15180
- PQ16586
- PQ16588
- PQ17747
- PQ23016
- PQ23027

> **Latest information:**
> # The lists above were correct at the time of publication, but you should
> # expect changes to be made as APARs are answered. The Preventive Service
> # Planning section (3.2) of the *CICS Transaction Server for OS/390 Program*
> # *Directory* advises you to review the current PSP information for the most
> # up-to-date details, and tells you how to obtain this information.

- In order for a CAS, a CMAS, and a MAS to communicate, they must all be
  running the same release of CICSPlex SM. That is:
  - A CMAS must be connected to a CAS running at the same release as the
    CMAS. You can access a CMAS directly only through a CAS running at the
    same release level. This is true both when the context is a CMAS and when
    the context is a CICSplex that is connected to the CMAS.
  - A MAS must be connected to a CMAS running at the same release of
    CICSPlex SM as the MAS.
- A CAS running at Release 4 cannot be connected to a CAS running at Release 3
  or Release 2.
- A CMAS running at Release 4 can be connected to a CMAS running at Release 3
  or Release 2. However:
  - In a CICSplex that consists of CMASs at the Release 4 and either the Release
    3 or Release 2 level, the maintenance point CMAS must be at the Release 4
    level. That is, when a CICSplex contains CMASs at both levels, the first
    CMAS converted to Release 4 must be the maintenance point.
  - If you are using the API or EUI to manage MASs connected to a CMASat an
    earlier release, you must ensure that the MASs are managed indirectly from
    the Release 4 CMAS. You must ensure that:
    - All API programs run so that they are connected to the Release 4 CMAS.
    - All TSO EUI sessions connect to the Release 4 CAS.
  - When multiple CMASs at different CICSPlex SM release levels are running
    on the same MVS/ESA image, you must run a CAS for each release of the
    CMASs running on that MVS/ESA image. CASs running at different
    CICSPlex SM release levels cannot communicate directly.

Performing migration procedures

The migration from a previous release of CICSPlex SM to CICS TS Release 3
CICSPlex SM for a CMAS and all MASs that are connected to it, as well as for the
CAS to which the CMAS is connected, should be completed before CICSPlex SM is
restarted. When other CMASs at the previous release level are not migrated to this
release, a separate CAS running at the previous release level must be provided to
which the other CMASs can now connect.

Several skeleton post-installation members are distributed with CICSPlex SM. You
should generate these post-installation members for use during the migration. (For

information about generating the post-installation members, see the *CICS Transaction Server for OS/390 Installation Guide.*)

To enable you to revert to the previous release of CICSPlex SM if you encounter problems during the migration to CICS TS Release 3 CICSPlex SM, you should take back-up copies of the previous release components such as JCL, CLISTs, CICS tables, and CMAS data repositories before you start the migration process.

Note: You can use the procedures in this section to migrate from Release 3and Release 2 of CICSPlex SM to CICS TS Release 3 CICSPlex SM.

Converting a CAS to Release 4

In order to provide for concurrent previous release and Release 4 CASs you must create a separate Release 4 CAS environment.

To convert a CAS from Release 3 or Release 2 to Release 4, you will need to do the following:
*   Review the IEASYSxx member in the SYS1.PARMLIB library. The NSYSLX value may need to be increased. (For information about the NSYSLX value for CICSPlex SM, see the *CICS Transaction Server for OS/390 Installation Guide* manual.)
*   Authorize the new Release 4 libraries. (For information about how to do this, see the *CICS Transaction Server for OS/390 Installation Guide* manual.)
*   (Only when running both a previous release and Release 4.) Define the VTAM requirements for the Release 4 CAS. You must perform the following steps:
    –   Create a VTAM application definition
    –   Update the configuration list
    –   Activate the major nodes

    When the Release 4 CAS is going to communicate with another Release 4 CAS on a system that also is running multiple releases of CICSPlex SM, you must also define the cross-domain resources. (For information about performing these steps, see the *CICS Transaction Server for OS/390 Installation Guide* manual.)
*   Review the JCL in the EYUDEFDS member generated by the EYUISTAR job to ensure that the following steps were generated when the post-installation jobs were created:
        IPRMDEL
        IPRMALOC

    Then run the job to create a new BBIPARM parameter repository data set for the Release 4 CAS.

    If you are running both a previous release and Release 4and your previous release CASs currently share a single BBIPARM data set, your Release 4 CASs can share the new BBIPARM data set. However, a previous release CAS and a Release 4 CAS cannot share the same BBIPARM data set. You must create a new, separate BBIPARM data set for Release 4. (For information about using EYUDEFDS, see the *CICS Transaction Server for OS/390 Installation Guide.*)
*   Update your TSO signon procedure to use the Release 4 data sets. Use generated member EYUTSODS to temporarily allocate the Release 4 libraries. (For information about updating your TSO signon procedure, see the *CICS Transaction Server for OS/390 Installation Guide.*)
*   Review the changes made to the CICSPlex SM global security parameters for Release 4. Make sure the BBACTDEF DD statement in the CAS startup

procedure references a data set containing the BBMTSS member distributed with Release 4. (For information about this member, see the *CICS Transaction Server for OS/390 Installation Guide*

- Use the JCL procedure in the EYUCAS member to start the CAS, verifying the SSID and the DD statements for the Release 4 data sets. If you are running both a previous release of CICSPlex SM and Release 4, the SSIDs for the two CASs must be different. (For information about the JCL in EYUCAS, see the *CICS Transaction Server for OS/390 Installation Guide*.)

The Release 4 CAS is now ready for use.

Converting a CMAS to Release 4

You need to do the following:

- Review the IEASYSxx member in the SYS1.PARMLIB library.

  Note: Some of the parameters in the IEAASYSxx member may need to be modified when you are running both a previous release and Release 4 of CICSPlex SM, because an Environment Services System Services (ESSS)space will be started for each release. (For information about NSYSLX and the ESSS, see the *CICS Transaction Server for OS/390 Installation Guide*.)

- Authorize the Release 4 libraries. (For information about how to do this, see the *CICS Transaction Server for OS/390 Installation Guide*.)

- Update the MVS∕ESA linklist with the Release 4 library. (For information about this step, see the *CICS Transaction Server for OS/390 Installation Guide*.)

- Update the CSD file with the Release 4 group of resource definitions and CICS startup group list. (For information about how to do this, see the *CICS Transaction Server for OS/390 Installation Guide*.)

- Update the CICS SIT GRPLIST parameter to reference the CICSPlex SM Release 4 group list EYU140L0. (For information about the CICS SIT parameters, see the *CICS Transaction Server for OS/390 Installation Guide*.)

- Reassemble the CICS resource definition table load modules. Reference the library containing the Release 4 resource entry copy books to update the resource tables with the newest entries. (For information about assembling the resource definition table load modules, see the *CICS Transaction Server for OS/390 Installation Guide* manual.)

- Convert the data repository to Release 4. (For information about how to convert the data repository, see the *CICS Transaction Server for OS/390 Installation Guide*.)

  Note: The conversion utility migrates the contents of the existing data repository to a newly allocated data repository. The existing data repository is not modified.

- Edit the JCL you use to start the CMAS, changing the CICSPlex SM library
names and the DD statements to the Release 4 names. If you are running an
earlier version of EYUCMAS, you should add the following DD statement:

```
//BBIPARM   DD DISP=SHR,DSN=CICSTS13.CPSM.EYUIPRM
```

# (For information about the CMAS startup JCL, see the *CICS Transaction Server for
# OS/390 Installation Guide*.)

- Verify the CICSPlex SM system parameters referenced by the EYUPARM DD statement. Ensure that the SSID value is the same as the value used to start the CAS to which this CMAS connects. (For information about these parameters, see the *CICS Transaction Server for OS/390 Installation Guide*.)

The CMAS is ready to be cold started.

When you have successfully migrated all your systems to CICSPlex SM Release 4 you can delete the previous release groups and group lists from each CMAS's CSD. (For information about how to do this, see "Deleting the previous release definitions from CSD files" on page 89.)

## Converting a MAS to Release 4

To convert a MAS to Release 4, you need to do the following:
- Authorize the Release 4 libraries. (For information about doing this, see the *CICS Transaction Server for OS/390 Installation Guide*.)
- Reassemble the CICS resource definition table load modules. Reference the library containing the Release 4 resource entry copy books to update the resource tables with the newest entries. (For information about updating the resource definition table load modules for a MAS, see the *CICS Transaction Server for OS/390 Installation Guide*.)
- Update the CSD file with the Release 4 group of resource definitions. At Release 4, this group is EYU140G1. (For information about updating the CSD file for a MAS, see the *CICS Transaction Server for OS/390 Installation Guide*.)
- If all MASs that use the same CSD and group list are being migrated at the same time, update the CSD to add the Release 4 group to, and remove the previous release group from the group list. However, if the same CSD and group list are being used by MASs that will run multiple releases of CICSPlex SM concurrently, create a new group list in the CSD by performing the following steps:
  - APPEND the old group list to a new group list name.
  - Update the CSD to add the Release 4 MAS group.
  - Add the Release 4 MAS group to the new group list.
  - Remove the previous release MAS group from the new group list.

For more information about adding a (new release) group to the group list in the CSD, see the *CICS Transaction Server for OS/390 Installation Guide*.

To create a new group list in the CSD, use a statement of the following form as input to DFHCSDUP:

```
APPEND LIST(old_list) TO(new_list)
```

To remove a previous release group from a group list, use a statement of the following form as input to DFHCSDUP:

```
REMOVE LIST(new_list) GROUP(old_group)
```

where `new_list` is the group list used by the MAS and `old_group` is the previous release group to be removed. The `old_group` name depends on the type of MAS and whether CICSPlex SM code is used from the LPA. Table 27 lists the release group names for each environment.

Table 27. MAS CSD groups for previous releases of CICSPlex SM

Environment	Release 2 Group	Release 3 Group
Local MAS – USELPACOPY(NO)	EYU120G1	EYU130G1
Remote MAS – USELPACOPY(NO)	EYU120G2	EYU130G2
Local MAS – USELPACOPY(YES)	EYU120GB	EYU130GB
Remote MAS – USELPACOPY(YES)	EYU120GC	EYU130GC

If a new group list is created, the GRPLIST CICS system initialization parameter for the MAS, in the SIT or in startup overrides, should be changed to specify the name of the new group list.

- When previous release modules are in the link pack area (LPA), you must ensure the Release 4 modules are used in place of the previous release modules. (For information about how to do this, see the *CICS Transaction Server for OS/390 Installation Guide.*)
- Edit the JCL used to start the MAS changing the previous release of CICSPlex SMlibrary names to the Release 4 names. (For information about the MAS startup JCL, see the *CICS Transaction Server for OS/390 Installation Guide.*)

The MAS is ready to be cold started.

When you have successfully migrated all your systems to CICSPlex SM Release 4 you can delete the previous release groups from each MAS's CSD. (For information about how to do this, see Deleting the previous release definitions from CSD files.)

Workload management
If you use the workload management functions of CICSPlex SM and you use your own version of the CICSPlex SM user-replaceable Workload Routing Action Module, EYU9WRAM, you must recompile and link-edit your version of EYU9WRAM using the Release 4 libraries. For information on how to do this, see the description of customizing the dynamic transaction routing program in *CICSPlex SM Managing Workloads.*

Application Programming Interface
CICSPlex SM API programs written to run in a previous release MAS can be run in a Release 4 MAS. You can either continue to access the data provided by the previous release or access the new data available from Release 4. For a discussion of the compatibility between releases of the API, see the *CICSPlex SM Application Programming Guide* book.

Deleting the previous release definitions from CSD files
When you have successfully migrated all your systems to CICSPlex SM Release 4, you can delete the previous release definitions from each CMAS's and MAS's CSD. This can be done by upgrading each CSD using module EYU9R120 (for Release 2), or EYU9R130 (for Release 3), which are supplied in CICSTS13.CPSM.SEYULOAD.

```
//CSDUP    EXEC PGM=DFHCSDUP
//STEPLIB  DD  DSN=cics.index.SDFHLOAD,DISP=SHR
//         DD  DSN=cpsm.index.SEYULOAD,DISP=SHR
//DFHCSD   DD  DSN=cics.dfhcsd,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
 UPGRADE USING(EYU9Rnnn)
/*
```

Figure 3. JCL to delete previous release groups and group lists from the CSD

When this JCL is run, EYU9R120 attempts to delete all Release 2 groups and group lists from the CSD; EYU9R130 attempts to delete all Release 3 groups and group lists from the CSD. However, because not all of the items the job attempts to delete are actually defined in the CSD, DFHCSDUP gives a return code of 04. The DFHCSDUP SYSPRINT output lists those items that were deleted and those that were not found. For further information about updating the CSD, see the *CICS Transaction Server for OS/390 Installation Guide.*

A phased migration scenario

Figure 4, Figure 5 on page 92, Figure 6 on page 95, and Figure 7 on page 98 and the discussions that accompany them show a CICSPlex SM environment at an earlier release and the steps you would take to convert that environment to Release 4. Note that this scenario presents one way you might perform the migration; you might find another set of procedures to be more appropriate to your own environment.

The environment

MVS/ESA

System A | System B | System C | System D

CAS A — Release 3
CAS B — Release 3
CAS C — Release 3

CMAS A (MP) — Release 3
CMAS B — Release 3
CMAS C — Release 3

MAS A1 — Release 3
MAS A2 — Release 3
MAS B1 — Release 3
MAS B2 — Release 3
MAS C1 — Release 3
MAS C2 — Release 3
MAS D — Release 3

Figure 4. An environment at an earlier release

Figure 4 shows a CICSPlex SM environment that is made up of the following components:
- 4 MVS/ESA systems
- 3 CASs
    All interconnected
- 3 CMASs
    All interconnected

CMAS A connects to CAS A
   (This is the maintenance point CMAS.)
CMAS B connects to CAS B
CMAS C connects to CAS C

- 1 CICSplex
    CMAS A is the maintenance point
- 7 CICS regions
    6 local MASs
        MAS A1 and MAS A2 connect to CMAS A
        MAS B1 and MAS B2 connect to CMAS B
        MAS C1 and MAS C2 connect to CMAS C
    1 remote MAS
        MAS D connects to CMAS C

Objective 1: Convert MP CMAS to Release 4

MVS/ESA
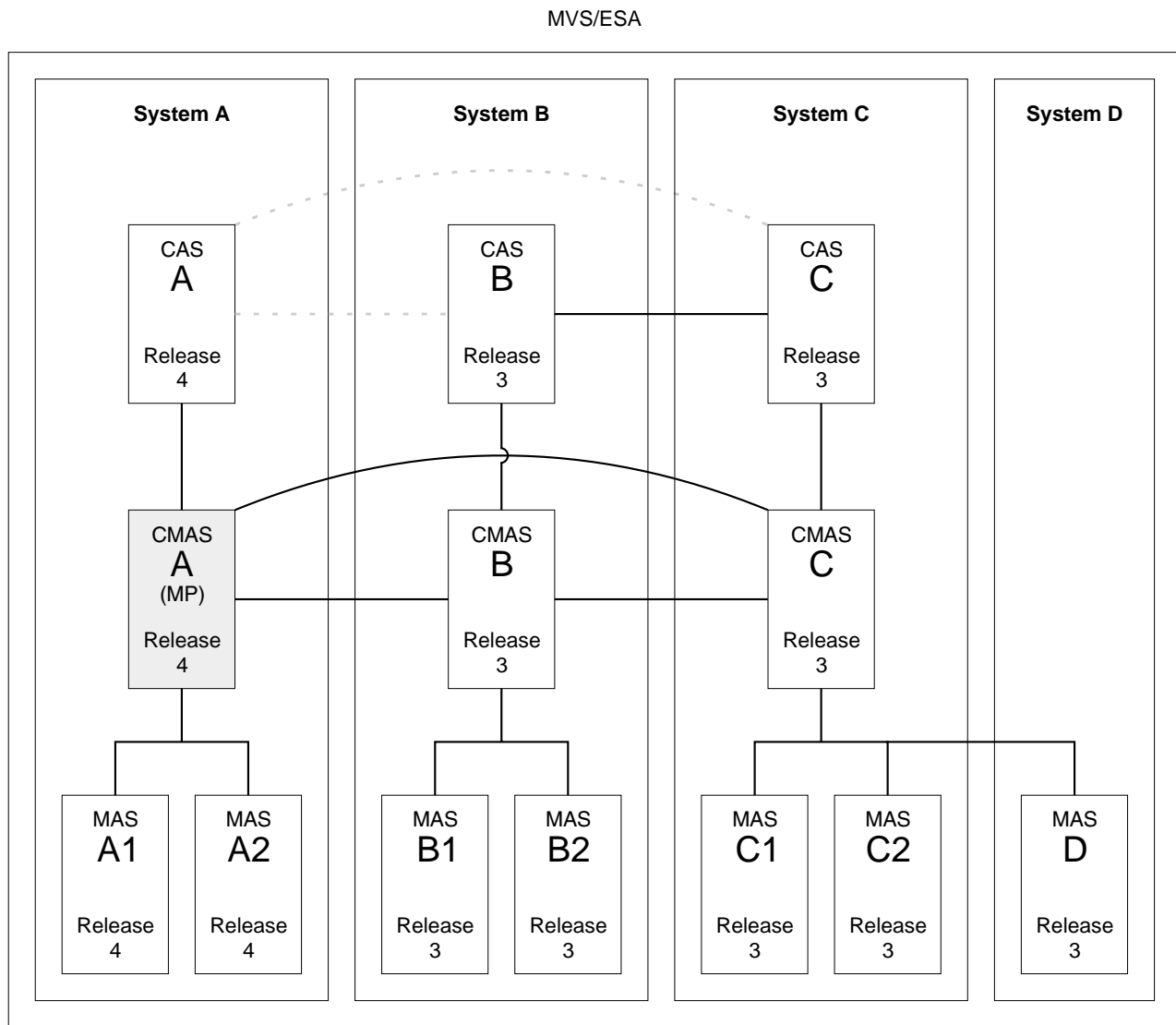
Figure 5. Converting the maintenance point CMAS to Release 4

As shown in Figure 5, when you complete Objective 1 the connections from CAS A to CAS B and from CAS A to CAS C will be removed.

The conversion of the maintenance point CMAS A to Release 4 requires conversion to Release 4 for the following:
- MVS/ESA System A CICSPlex SM TSO users

- CAS A
- CMAS A
- MAS A1
- MAS A2

Step 1: Terminate executing regions that are to be converted
- If the following systems are in execution, terminate them:
  - CAS A
  - CMAS A
  - MAS A1
  - MAS A2

Step 2: Convert MVS/ESA System A CICSPlex SM TSO users to Release 4
- Create the appropriate data set allocations to point to Release 4 data sets. This must not affect the allocations for TSO users on MVS/ESA Systems B and C, which are still at the previous level.

Step 3: Convert CAS A to Release 4
- Ensure that CAS B and CAS C are started.
- Remove the CAS A links to CAS B and to CAS C. Depending upon whether the CASs share the BBIPARM data set, you must do one of the following:
  - If CAS B and CAS C share the BBIPARM data set:
    - From the CAS B CASDEF view:
      - Issue the EDIT action command to provide editing access to the BBIPARM data set.
      - Issue the DELete action command to delete the entry for CAS A.
      - Issue the SAVE command to save the changes in the BBIPARM data set.
  - If CAS B and CAS C do not share the BBIPARM data set:
    - From the CAS B CASDEF view, DELete the entry for CAS A, as described above.
    - From the CAS C CASDEF view, DELete the entry for CAS A, as described for the CAS B view.
- Change the appropriate IEAAPFxx member of the SYS1.PARMLIB library to authorize the CICSTS13.CPSM.SEYUAUTH library.
- Update the JCL used to start CAS A to point to the Release 4 data sets.

  Note: The BBIPARM data set *must not* contain a BBMTYB00 member. Member BBMTYB00 will be created dynamically when CAS A is first started. The new member will be reused when CAS A is subsequently restarted.
- Start CAS A.
- From the CAS A CASDEF view:
  - Issue the CHANGE action command to modify the VTAM ApplName for the current CAS (as indicated by a value of YES in the Cur Sys field).
  - Issue the INStall action command to install the change.
  - Issue the SAVE action command to save the changes in the BBIPARM data set.

Step 4: Convert CMAS A to Release 4
- Ensure that modules EYU9A140 and EYU9X140 in the CICSTS13.CPSM.SEYULINK data set are in the MVS linklist concatenation.
- Update the CMAS A CSD file, using the resource definitions supplied in the CICSTS13.CPSM.SEYULOAD data set.

- Update the CICS group list for CMAS A.
- Run EYU9XDUT to convert the EYUDREP data set for CMAS A to Release 4.
- Update the JCL used to start CMAS A to point to the Release 4 data sets and to connect to the correct CASNAME.

\#
- Add the following statement to the CMAS startup JCL:

\#
\#
```
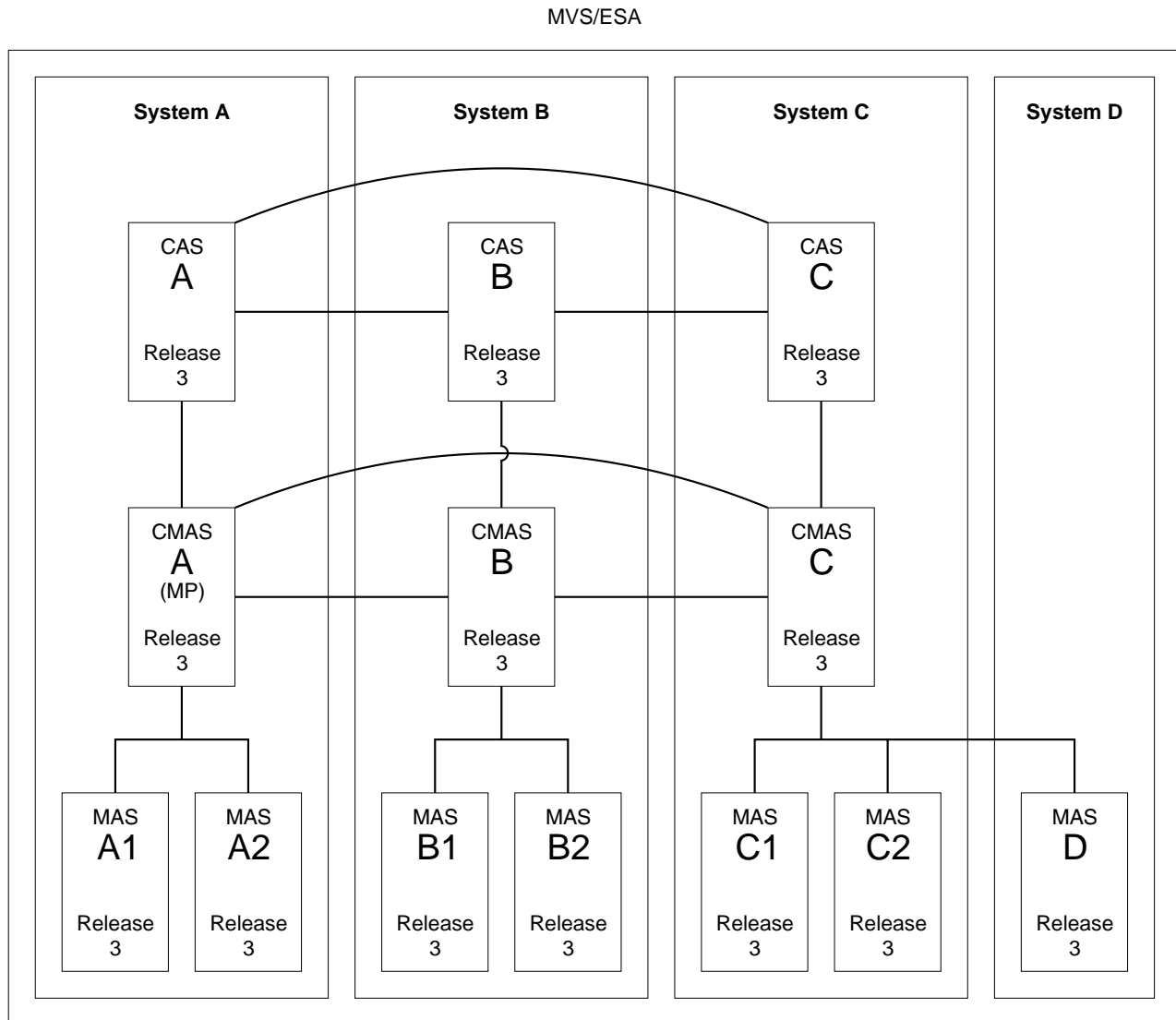//* CPSM View Customization Datasets
//BBIPARM   DD  DISP=SHR,DSN=&IPRMDSN
```

\#
- Start CMAS A.

Step 5: Convert MAS A1 and MAS A2 to Release 4
- Update the MAS A1 and MAS A2 CSD files, using the resource definitions supplied in the CICSTS13.CPSM.SEYULOAD data set.
- Update the CICS group lists for MAS A1 and MAS A2.
- Update the JCL used to start MAS A1 and for MAS A2 to point to the Release 4 data sets.
- Start MAS A1 and MAS A2.

Objective 2: Convert CMAS B to Release 4

MVS/ESA
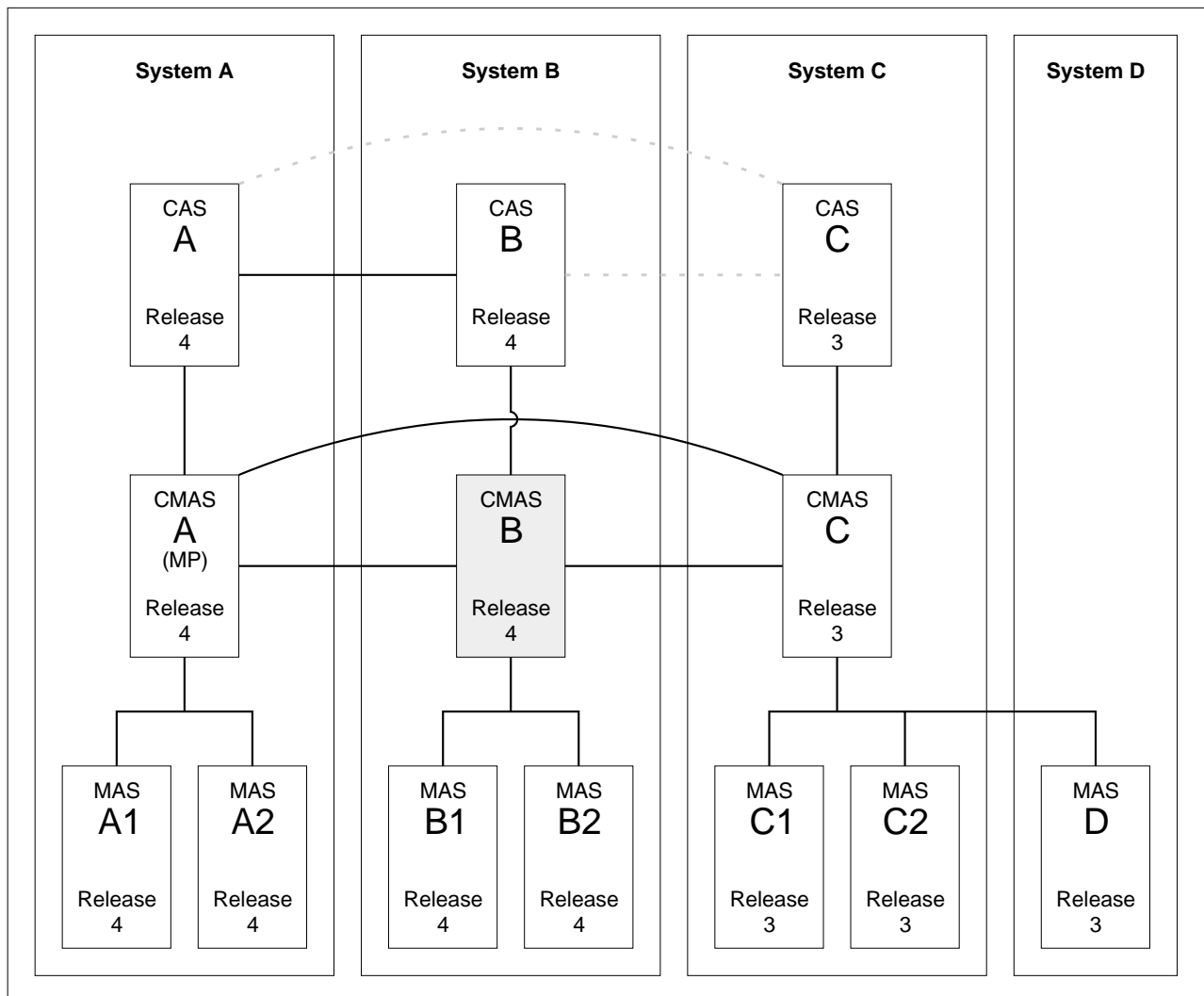
Figure 6. Converting CMAS B to Release 4

As shown in Figure 6, when you complete Objective 2 the connection from CAS A to CAS B will be reestablished and the connection from CAS B to CAS C will be removed. The conversion of CMAS B to Release 4 requires conversion to Release 4 for the following:

- MVS/ESA System B CICSPlex SM TSO users
- CAS B
- CMAS B
- MAS B1
- MAS B2

Step 1: Terminate executing regions that are to be converted

- IF THE FOLLOWING SYSTEMS ARE IN EXECUTION, TERMINATE THEM:
    - CAS B
    - CMAS B
    - MAS B1

– MAS B2

Step 2: Convert MVS/ESA System B CICSPlex SM TSO users to Release 4

- Create the appropriate data set allocations to point to Release 4 data sets. This must not affect the allocations for TSO users on MVS/ESA System C, which is still at the previous level.

Step 3: Convert CAS B to Release 4

- Ensure that CAS A and CAS C are started.
- Remove the link from CAS B to CAS C.
  - Bring up CAS C.
  - From the CAS C SYSTEMS view, DELete the entry for CAS B.
- Change the appropriate IEAAPFxx member of the SYS1.PARMLIB library to authorize the CICSTS13.CPSM.SEYUAUTH library.
- Update the JCL used to start CAS B to point to the Release 4 data sets.

  Note: If CAS A and CAS B are not going to share the BBIPARM data set, then the BBIPARM data set for CAS B *must not* contain a BBMTYB00 member. Member BBMTYB00 will be created dynamically when CAS B is first started. The new member will be reused when CAS B is subsequently restarted.

- Start CAS B.
- From the CAS B CASDEF view:
  - Issue the CHANGE action command to modify the VTAM ApplName for the current CAS (as indicated by a value of YES in the Cur Sys field).
  - Issue the INStall action command to install the change.
  - Issue the SAVE action command to save the changes in the BBIPARM data set.
- Link CAS B to CAS A. The procedure for doing this depends upon whether the CASs share the BBIPARM data set.

  If CAS A and CAS B share the BBIPARM data set:
  - From the CAS A CASDEF view, issue the INStall action to install the definition for B.

  If CAS A and CAS B do not share the BBIPARM data set:
  - From the CAS A CASDEF view:
    - Issue the ADD action command to add a definition for CAS B.
    - Issue the INStall action command to install the new definition.
    - Issue the SAVE action command to save the changes in the BBIPARM data set.
  - From the CAS B CASDEF view:
    - Issue the ADD action command to add a definition for CAS A.
    - Issue the INStall action command to install the new definition.
    - Issue the SAVE action command to save the changes in the BBIPARM data set.

Step 4: Convert CMAS B to Release 4

- Ensure that modules EYU9A140 and EYU9X140 in the CICSTS13.CPSM.SEYULINK data set is in the MVS linklist concatenation.
- Update the CMAS B CSD file, using the resource definitions supplied in the CICSTS13.CPSM.SEYULOAD data set.
- Update the CICS group list for CMAS B.
- Run EYU9XDUT to convert the EYUDREP data set for CMAS B to Release 4.
- Update the JCL used to start CMAS B to point to the Release 4 data sets.
- Start CMAS B.

Step 5: Convert MAS B1 and MAS B2 to Release 4

- Update the MAS B1 and MAS B2 CSD files, using the resource definitions supplied in the CICSTS13.CPSM.SEYULOAD data set.
- Update the CICS group lists for MAS B1 and MAS B2.
- Update the JCL used to start MAS B1 and for MAS B2 to point to the Release 4 data sets and to connect to the correct CASNAME.
- Start MAS B1 and MAS B2.

Objective 3: Convert CMAS C to Release 4

MVS/ESA
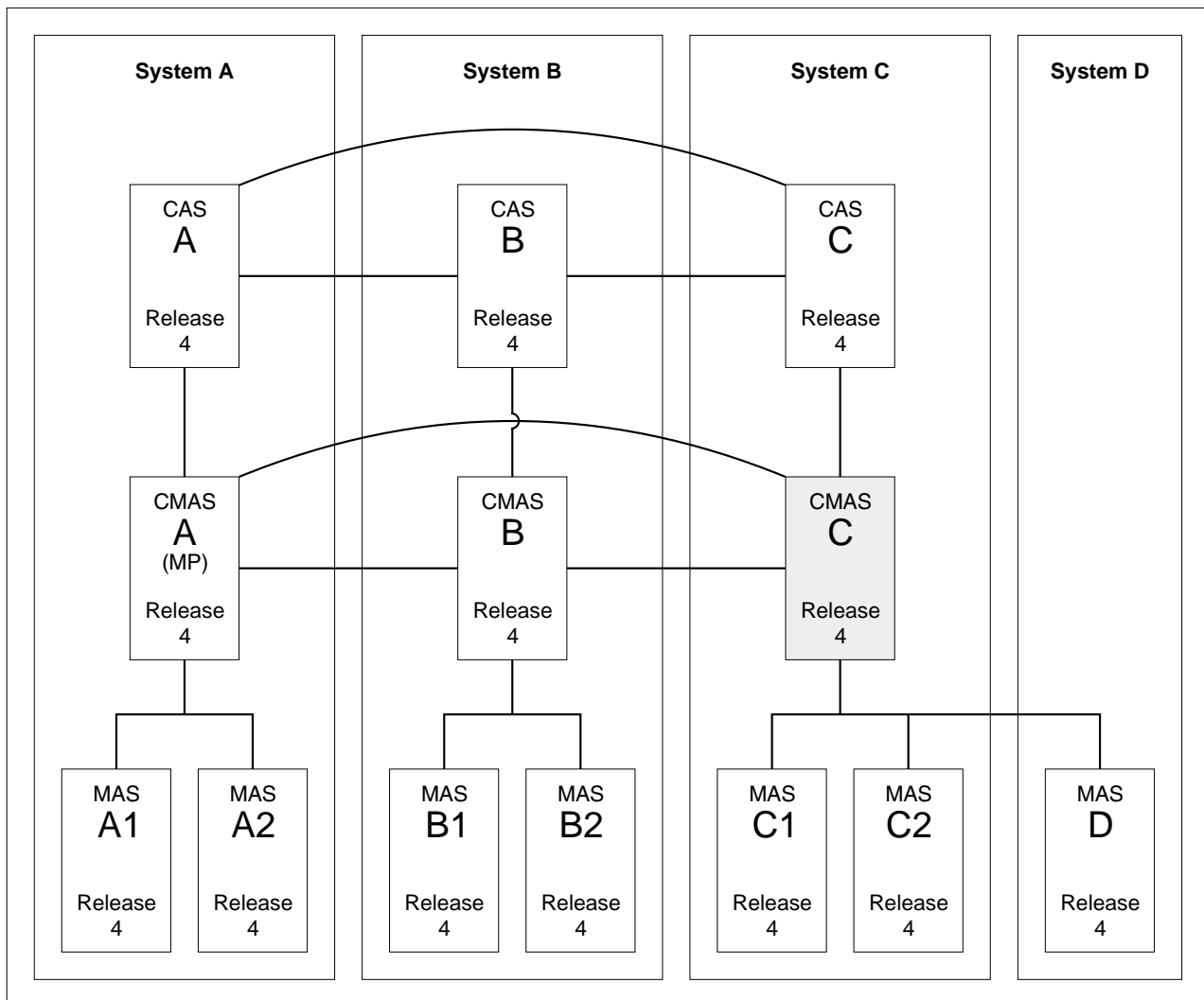
Figure 7. Converting CMAS C to Release 4

As shown in Figure 7, when you complete Objective 3 the connections from CAS C to CAS B and from CAS C to CAS A will be reestablished.

The conversion of CMAS C to Release 4 requires conversion to Release 4 for the following:
- MVS/ESA System C CICSPlex SM TSO user
- CAS C
- CMAS C
- MAS C1
- MAS C2
- MAS D

Step 1: Terminate executing regions that are to be converted

- If the following systems are in execution, terminate them:
  - CAS C
  - CMAS C
  - MAS C1
  - MAS C2
  - MAS D

Step 2: Convert MVS/ESA System C CICSPlex SM TSO users to Release 4

- Create the appropriate data set allocations to point to Release 4 data sets.

Step 3: Convert CAS C to Release 4

- Ensure that CAS A and CAS B are started.
- Change the appropriate IEAAPFxx member of the SYS1.PARMLIB library to authorize the CICSTS13.CPSM.SEYUAUTH library.
- Update the JCL used to start CAS C to point to the Release 4 data sets.

  Note: If CAS C is not going to share the BBIPARM data set with CAS A and CAS B, then the BBIPARM data set for CAS C *must not* contain a BBMTYB00 member. Member BBMTYB00 will be created dynamically when CAS C is first started. The new member will be reused when CAS C is subsequently restarted.

- Start CAS C.
- From the CAS C CASDEF view:
  - Issue the CHANGE action command to modify the VTAM ApplName for the current CAS (as indicated by a value of YES in the Cur Sys field).
  - Issue the INStall action command to install the change.
  - Issue the sAVE action command to save the changes in the BBIPARM data set.
- Link CAS C to CAS A and to CAS B. The procedure for doing this depends upon whether the CASs share the BBIPARM data set.

  If the CASs share the BBIPARM data set:
  - From the CAS A CASDEF view, issue the INStall action to install the definition for CAS C.
  - From the CAS B CASDEF view, issue the INStall action to install the definition for CAS C.

  If the CASs do not share the BBIPARM data set:
  - From the CAS A CASDEF view:
    - Issue the ADD action command to add a definition for CAS C.
    - Issue the INStall action command to install the new definition.
    - Issue the SAVE action command to save the changes in the BBIPARM data set.
  - From the CAS B CASDEF view:
    - Issue the ADD action command to add a definition for CAS C.
    - Issue the INStall action command to install the new definition.
    - Issue the SAVE action command to save the changes in the BBIPARM data set.

- From the CAS C CASDEF view:
    - Issue the ADD action command to add a definition for CASs A and B.
    - Issue the INStall action command to install the new definitions.
    - Issue the SAVE action command to save the changes in the BBIPARM data set.

Step 4: Convert CMAS C to Release 4
- Ensure that modules EYU9A140 and EYU9X140 in the CICSTS13.CPSM.SEYULINK data set are in the MVS linklist concatenation.
- Update the CMAS C CSD file, using the resource definitions supplied in the CICSTS13.CPSM.SEYULOAD data set.
- Update the CICS group list for CMAS C.
- Run EYU9XDUT to convert the EYUDREP data set for CMAS C to Release 4.
- Update the JCL used to start CMAS C to point to the Release 4 data sets and to connect to the correct CASNAME.
- Start CMAS C.

Step 5: Convert MAS C1, MAS C2, and MAS D to Release 4
- Update the MAS C1, MAS C2, and MAS D CSD files, using the resource definitions supplied in the CPSM130.SEYULOAD data set.
- Update the CICS group lists for MAS C1, MAS C2, and MAS D.
- Update the JCL used to start MAS C1, for MAS C2, and for MAS D to point to the Release 4 data sets.
- Start MASs C1, C2, and D.

Management of unsupported CICS regions

Where it is not currently possible to migrate a CICS region to a level that is supported by IBM Service (for example, your CICSplex may contain many MASs running unsupported releases of CICS and the resources required to migrate them all to a supported release may not yet be available to you), you may still manage it indirectly but you **must** use the end user interface (EUI), the application programming interface (API), business application services (BAS), and the real-time analysis (RTA) services provided in CICS TS Release 3 CICSPlex SM to do so.

Failure to use the interfaces provided at this release to manage indirectly those MASs running unsupported releases of CICS may give rise to such unpredictable and disastrous results as the inability to install resources, incorrect data being supplied to monitor and operations views, and existing data being unavailable.

Your enterprise may also have specific business—related reasons to postpone the migration of all systems to this release until a later point. For example, your CICSplex, situated on one continent but managed by you from another continent, may comprise many Release 3 CMASs managing many MASs running supported and unsupported releases of CICS. The resources required to migrate all Release 3 CMASs to this release may not yet be available to you at this site. You must, however, manage this CICSplex using the interfaces available at this release — you must, therefore, migrate the maintenance point CMAS and the CAS to which it connects to Release 4.

Migration steps for the management of unsupported CICS releases

Figure 8 is an example of such an environment where unsupported releases are being managed in the CICSplex. The example illustrated shows a Release 3 CMASbut this could equally be a Release 2 CMAS and the connected MAS might be running CICS Transaction Server for OS/390 Release 1.

MVS/ESA

```
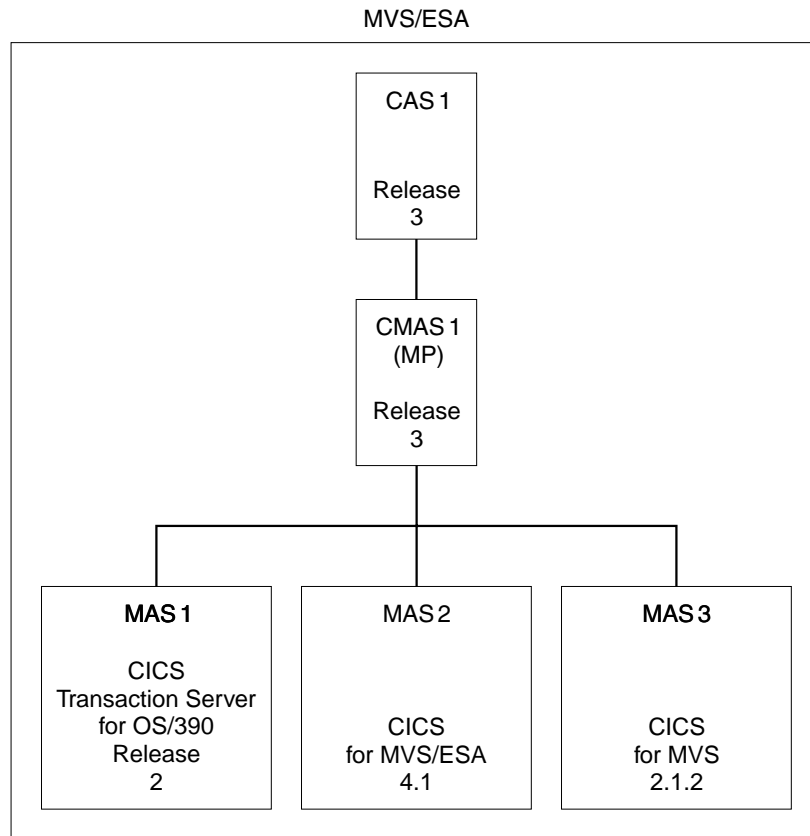              ┌─────────────┐
              │   CAS 1     │
              │             │
              │  Release    │
              │     3       │
              └──────┬──────┘
                     │
              ┌──────┴──────┐
              │   CMAS 1    │
              │    (MP)     │
              │             │
              │  Release    │
              │     3       │
              └──────┬──────┘
         ┌───────────┼───────────┐
   ┌─────┴─────┐ ┌───┴─────┐ ┌───┴─────┐
   │   MAS 1   │ │  MAS 2  │ │  MAS 3  │
   │           │ │         │ │         │
   │   CICS    │ │         │ │         │
   │Transaction│ │  CICS   │ │  CICS   │
   │Server     │ │for      │ │for MVS  │
   │for OS/390 │ │MVS/ESA  │ │ 2.1.2   │
   │ Release   │ │  4.1    │ │         │
   │    2      │ │         │ │         │
   └───────────┘ └─────────┘ └─────────┘
```

Figure 8. Management of unsupported MASs, prior to migration

In this situation, you must perform the following steps to convert your Release 3or Release 2 CMAS to a CMAS that permits the indirect management of its connected unsupported (by IBM Service) MASs (MAS 3 in this example) by a Release 4 CMAS:

1. Recreate every CMAS at Release 3 or Release 2 which has unsupported CICS regions connected to it.
   - Create a new CMAS at the Release 3 or Release 2 level. See Figure 9 on page 102; in this example, the new CMAS created at the earlier release is CMAS 2.
   - See the chapter "Setting up a CICPlex SM Address Space (CMAS)" in the Setup manual in the library appropriate to the release of the CMAS.
2. Connect the CMAS to the CICSplex. See the chapter "Configuring a CMAS" in the Setup manual in the library appropriate to the release of the CMAS for information on how to do this.

MVS/ESA

```
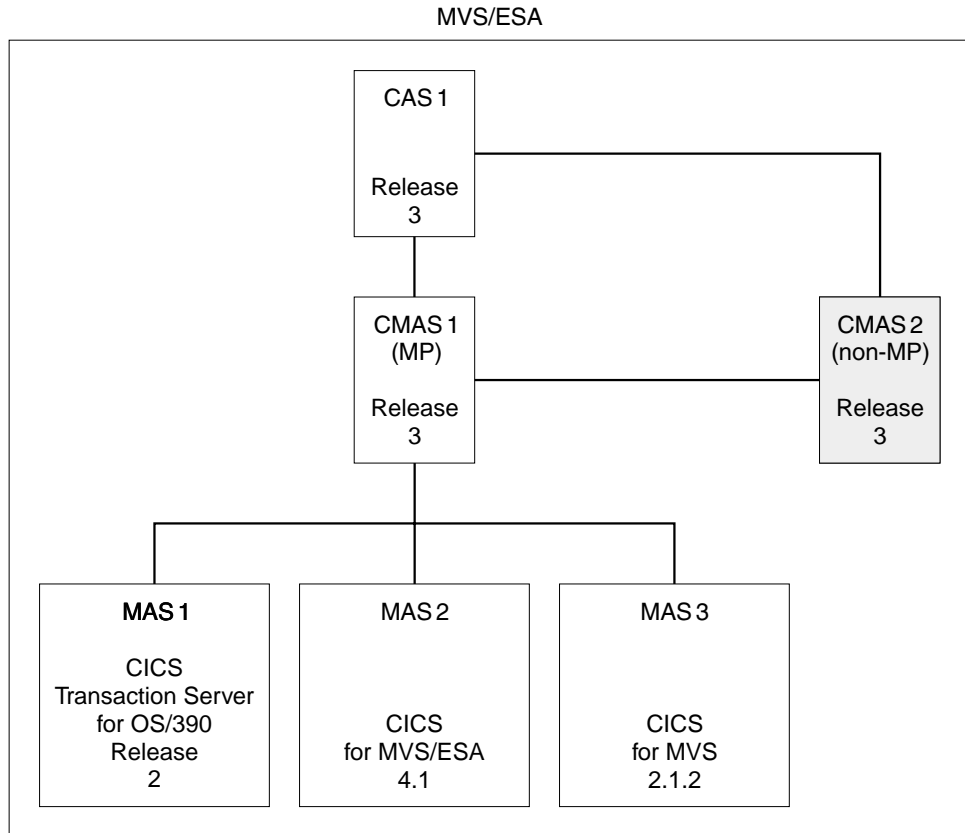┌──────────────────────────────────────────────────────────────────────┐
│                                                                        │
│                         ┌──────────────┐                               │
│                         │    CAS 1     │                               │
│                         │              ├──────────────────┐            │
│                         │  Release     │                  │            │
│                         │    3         │                  │            │
│                         └──────┬───────┘                  │            │
│                                │                          │            │
│                         ┌──────┴───────┐          ┌───────┴──────┐     │
│                         │   CMAS 1     │          │   CMAS 2     │     │
│                         │    (MP)      │          │   (non-MP)   │     │
│                         │              ├──────────┤              │     │
│                         │  Release     │          │  Release     │     │
│                         │    3         │          │    3         │     │
│                         └──────┬───────┘          └──────────────┘     │
│                                │                                       │
│           ┌────────────────────┼────────────────────┐                 │
│     ┌─────┴──────┐       ┌──────┴─────┐        ┌─────┴──────┐          │
│     │   MAS 1    │       │   MAS 2    │        │   MAS 3    │          │
│     │            │       │            │        │            │          │
│     │   CICS     │       │            │        │            │          │
│     │Transaction │       │   CICS     │        │   CICS     │          │
│     │Server      │       │ for MVS/ESA│        │ for MVS    │          │
│     │ for OS/390 │       │    4.1     │        │   2.1.2    │          │
│     │ Release 2  │       │            │        │            │          │
│     └────────────┘       └────────────┘        └────────────┘          │
│                                                                        │
└────────────────────────────────────────────────────────────────────────┘
```

Figure 9. Recreate the CMAS at the previous release and connect it to the CICSplex

3. Shut down and restart the MASs running those unsupported releases of CICS
   (MAS 3 in this example) that you need to manage from Release 4. Ensure that
   they connect to this new CMAS (CMAS 2 in this example) by specifying its
   SYSID in the CMASSYSID(name) CICSPlex SM system parameter in the
   EYUPARM definitions for each connecting MAS. See Figure 10 on page 103.

MVS/ESA

```
                    ┌──────────────┐
                    │    CAS 1     │
                    │              │
                    │   Release    │
                    │      3       │
                    └──────────────┘
            ┌──────────────┐        ┌──────────────┐
            │   CMAS 1     │        │   CMAS 2     │
            │    (MP)      │────────│   (non-MP)   │
            │   Release    │        │   Release    │
            │      3       │        │      3       │
            └──────────────┘        └──────────────┘
    ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
    │    MAS 1     │  │    MAS 2     │  │    MAS 3     │
    │    CICS      │  │              │  │              │
    │ Transaction  │  │              │  │              │
    │ Server for   │  │    CICS      │  │    CICS      │
    │   OS/390     │  │ for MVS/ESA  │  │  for MVS     │
    │   Release    │  │     4.1      │  │    2.1.2     │
    │      2       │  │              │  │              │
    └──────────────┘  └──────────────┘  └──────────────┘
```
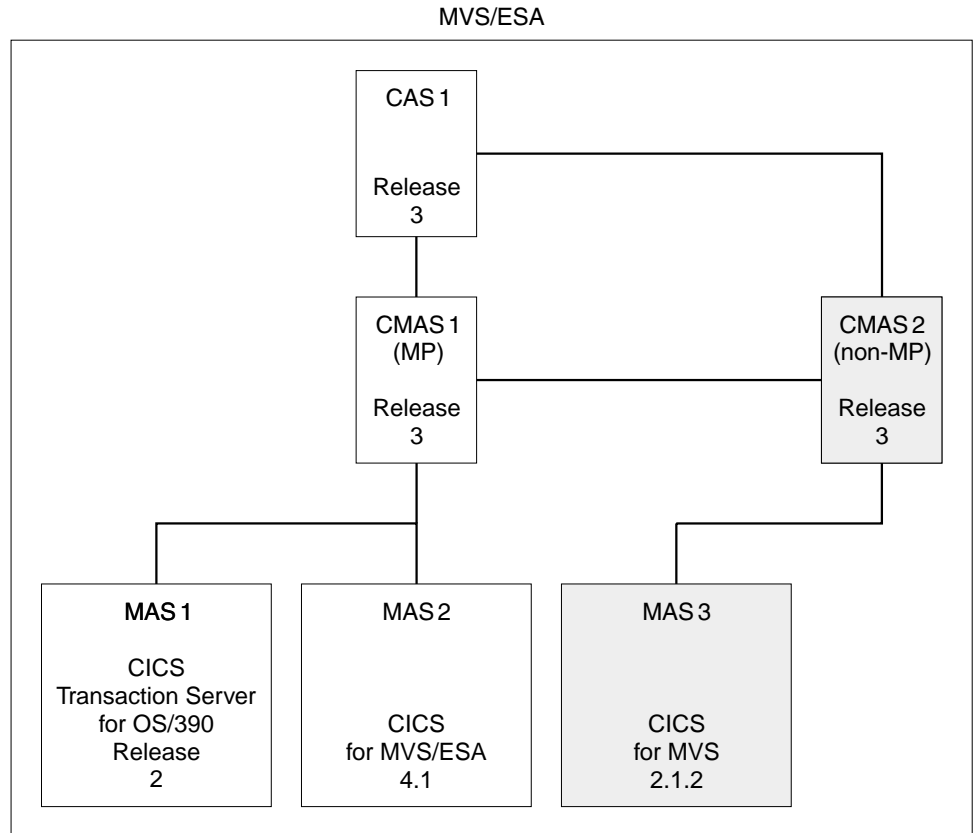
Figure 10. Connect the unsupported MASs to this new CMAS

4. If you need to maintain the new CMAS's communications links (either
   CMAS–to–CMAS links, or CMAS–to–RMAS links), you must also recreate the
   earlier release CAS and connect this new CMAS to it. Create this CAS before
   you perform the phased migration. Ensure that this CAS(in this example, it is
   CAS 2) has its own BBIPARM data set. See Figure 11 on page 104.

MVS/ESA

```
                    ┌─────────────┐                 ┌─────────────┐
                    │   CAS 1     │                 │   CAS 2     │
                    │             │                 │             │
                    │  Release    │                 │  Release    │
                    │    3        │                 │    3        │
                    └──────┬──────┘                 └──────┬──────┘
                           │                               │
                    ┌──────┴──────┐                 ┌──────┴──────┐
                    │  CMAS 1     │                 │  CMAS 2     │
                    │  (MP)       ├─────────────────┤  (non-MP)   │
                    │  Release    │                 │  Release    │
                    │    3        │                 │    3        │
                    └──────┬──────┘                 └──────┬──────┘
                           │                               │
            ┌──────────────┴──────────────┐                │
     ┌──────┴──────┐      ┌──────────────┐  ┌──────────────┐
     │   MAS 1     │      │   MAS 2      │  │   MAS 3      │
     │             │      │              │  │              │
     │   CICS      │      │              │  │              │
     │ Transaction │      │   CICS       │  │   CICS       │
     │ Server      │      │ for MVS/ESA  │  │ for MVS      │
     │ for OS/390  │      │    4.1       │  │   2.1.2      │
     │  Release 2  │      │              │  │              │
     └─────────────┘      └──────────────┘  └──────────────┘
```
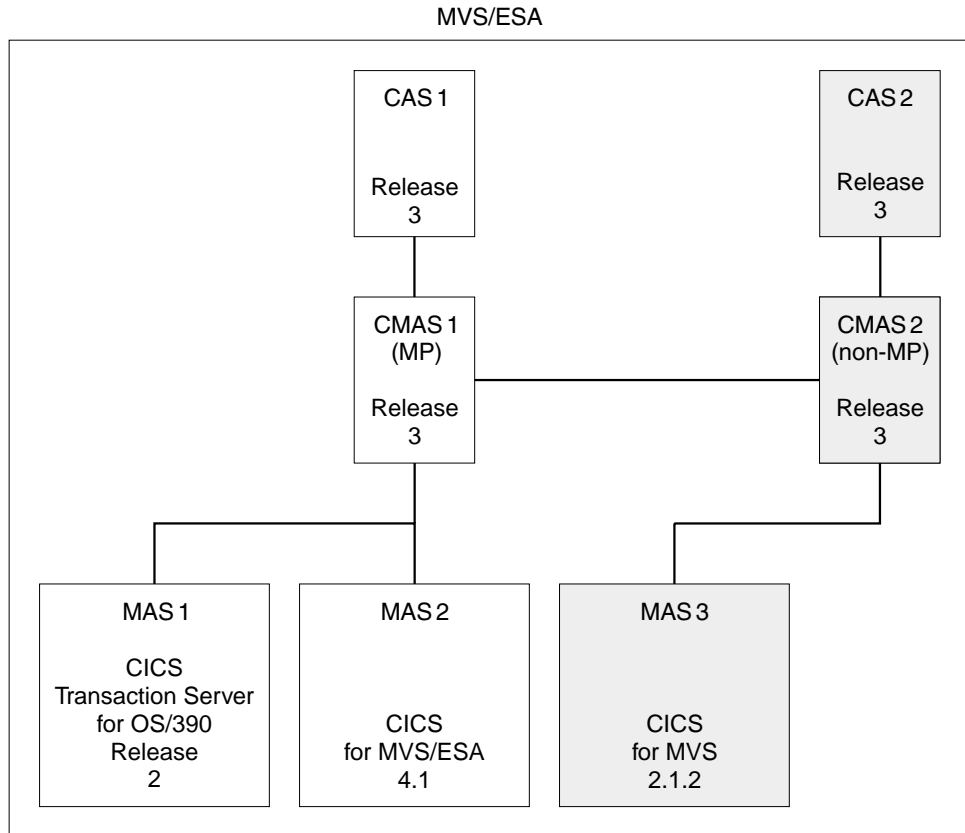
Figure 11. Recreate the CAS at the previous release

All management of MASs **must** be performed via the Release 4 CAS. The new CAS (CAS 2 in the example) must **only** be used to perform maintenance operations on the new CMAS (CMAS 2 in the example). Do **not** use this CAS to manage any MASs, including the unsupported MASs.

5. Perform a phased migration of the rest of the CICSplex. See "A phased migration scenario" on page 90 for a description of this process. In this example, the systems to be migrated in the phased migration process are CAS 1, CMAS 1, MAS 1, and MAS 2.

   Do **not** migrate the new CMAS (CMAS 2 in the example) and CAS (CAS 2 in the example) as part of this process.

Having completed these steps, you **must** use the Release 4 EUI, API, RTA and BAS services to manage the unsupported CICS regions connected to this CMAS. Figure 12 on page 105 shows the scenario after these migration steps have been successfully implemented.

MVS/ESA

CAS 1

Release
4

CAS 2

Release
3

CMAS 1
(MP)

Release
4

CMAS 2
(non-MP)

Release
3

MAS 1

CICS
Transaction Server
for OS/390
Release
3

MAS 2

CICS
for MVS/ESA
4.1

MAS 3

CICS
for MVS
2.1.2
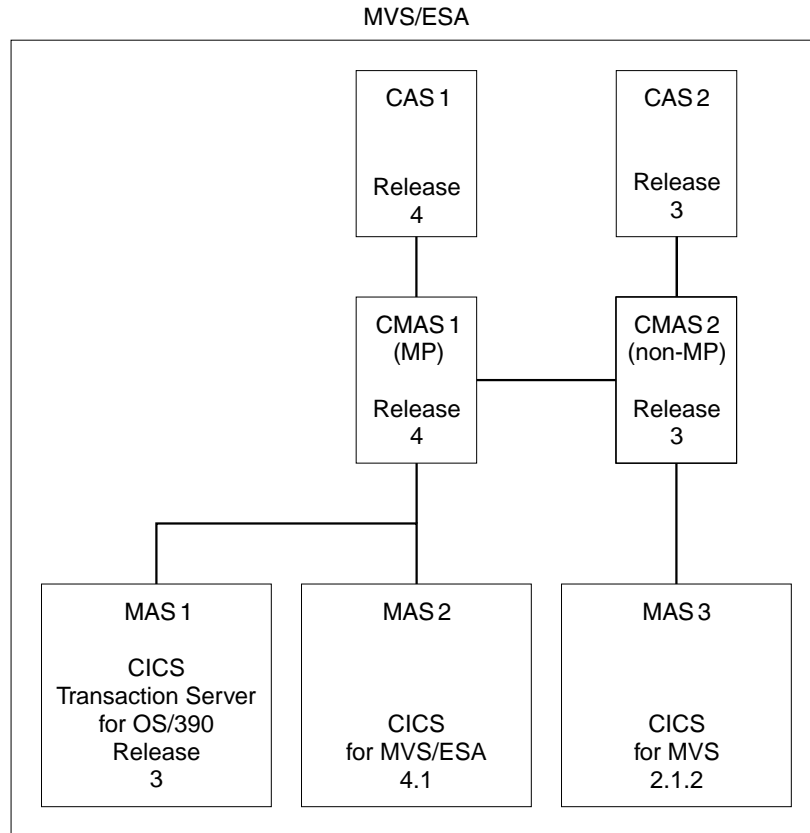
Figure 12. Indirect management of unsupported releases

Migrating application programs in this environment

You can continue to run your application programs without amendment in this environment where you are indirectly managing from Release 4 CICSPlex SM those MASs that are directly connected to a Release 3 or Release 2 CMAS. However, should you wish to exploit the new features and function available at this release, you should consider reviewing the code in your application programs.

To access the most up-to-date resource tables, you should recompile your programs with CONNECT VERSION(0140) coded. To avoid, however, the unpredictable problems that may occur in this environment, you should ensure that the application environment used by your programs is at the highest available level, Release 4.

Providing a Release 4 application environment: To ensure that your existing application programs can exploit the new function available at this release, continue to run successfully, and avoid the unpredictable problems that may occur in this environment, take the following steps:

• Batch application programs
  – Use the runtime module, EYU9AB00, supplied in CICSTS13.CPSM.SEYUAUTH
  – Recompile and relinkedit, using the stub routine module, EYU9ABSI supplied in CICSTS13.CPSM.SEYUAUTH.
• CICS application programs
  – Connect the MAS on which this application runs to a Release 4 CMAS so that it can use its runtime module.

– Recompile and relinkedit the program using the stub module, EYU9AMSI, supplied in CICSTS13.CPSM.SEYULOAD

Part 4. CICS messages and codes

This part of the book contains information about changes to CICS messages and abend codes:

- "Chapter 24. Messages and codes" on page 109

Chapter 24. Messages and codes

This chapter lists CICS messages and abend codes that are added, changed, or deleted. See the *CICS Messages and Codes* book for a full description description of CICS messages.

New messages

In the following new messages, *condmsg* indicates that, where possible, a conditional message from the linked system is appended to this message.

DFHAC2031 *date time applid* **Automatic signon of operator of console** *consname* **has failed.**

DFHAC2032 *date time applid* **CICS autoinstall for console** *consname* **has failed.**

DFHAC2045 *date time applid* **CICS autoinstall for console** *consname* **was rejected by the autoinstall control program.**

DFHAM4874 E
   applid **Install of** *{TSMODEL │ ENQMODEL} rsrce-name1* **failed because** *{PREFIX │ ENQNAME} attribute-name* **already exists in** *{TSMODEL │ ENQMODEL} rsrce-name2.*

DFHAM4894 E
   applid **Install of** *{ENQMODEL} rsrcename1* **failed because installed** *{ENQMODEL} rsrcename2* **is not disabled.**

DFHAM4895 E
   applid **Install of TSMODEL** *resourcename* **in group** *groupname* **failed because TS was started using an assembled TST without the MIGRATE option.**

DFHAM4901 E
   applid **Install of REQUESTMODEL** *resourcename1* **failed because a duplicate pattern already exists in** *resourcename2.* **Current patterns are: OMGMODULE:** *Omgmodule* **OMGINTERFACE:** *Omginterface* **OMGOPERATION:** *Omgoperation* **TRANID:** *Tranid.*

DFHAM4903 E
   applid **Install for TCPIPSERVICE** *tcpipservice* **has failed because the service is open.**

DFHAM4904 W
   applid **Opening TCPIPSERVICE** *tcpipservice* **has failed because port** *portno* **is already in use.**

DFHAM4905 E
   applid **Install failed for** *resource.* **Option** *opt* **is not available on this system.**

DFHAM4906 W
   applid **Opening TCPIPSERVICE** *tcpipservice* **has failed because port** *portno* **is not authorized.**

DFHAM4907 W
   applid **Opening TCPIPSERVICE** *tcpipservice* **has failed because the IP address is not known.**

DFHAM4908 E
   applid **Install of DOCTEMPLATE** *doctemplate1* **failed because TEMPLATENAME(***template***) already exists in DOCTEMPLATE** *doctemplate2.*

DFHAM4909 E
   applid **Install of DOCTEMPLATE** *doctemplate* **failed. DDNAME(***ddname***) not found.**

DFHAM4910 E
   applid **Install of DOCTEMPLATE** *doctemplate* **failed. MEMBER(***membername***) not found in** *datasetname.*

DFHAP1214 *applid* **Language Environment/370 global ENVAR option defined with invalid CICS program options.**

DFHAP1215 *applid* **Invalid CICS program options found in ENVAR string in program** *pgmname.*

DFHAP1216 *date time applid* **Attempt to change the HFS working directory to** *pathname* **has failed. Runtime error message is** *errmsg*

DFHAP1217 *date time applid* **Attempt to fetch user replaceable module DFHJVMAT has failed.**

DFHAP1218 *date time applid* **JVM failed to find the CICS Wrapper class** *classname*

DFHAP1400 *applid* **The IIOP transaction cannot be started this way.**

DFHAP1401 *date time applid* **Unable to determine the transaction id. The tranid 'CIOD' will be used.**

DFHAP1402 *date time applid* **The IIOP transaction has abended, the abend was** *abend,* **the program was** *program.*

DFHAP1403 *date time applid* **The IIOP header data is invalid; the message size was** *size.*

DFHAP1404 *date time applid* **Cannot attach the IIOP transaction.**

DFHAP1405 *date time applid* **Cannot link to program DFJIIOP, response=***response,* **reason=***reason.*

DFHAP1406 *date time applid* **The call to the Socket domain failed, refer to earlier messages from TCP/IP and the Socket domain.**

DFHAP1407 *date time applid* **The GETMAIN call to aquire storage has failed, response=***response,* **reason=***reason.*

DFHAP1408 *date time applid* **No Socket domain session token was supplied to the CIOP transaction when it was started.**

DFHAP1409 *date time applid* **The Link to the URM DFHXOPUS failed; the default userid will be used, response=***response,* **reason=***reason.*

DFHBA0001 *applid* **An abend (code** *code***) has occurred at offset** *X'offset'* **in module** *module.*

DFHBA0002 *applid* **A severe error (code** *X'code'***) has occurred in module** *module.*

DFHBA0101 *date time applid* **An error has occurred while writing an auditlog record to log** *logname.* **Logging has been suspended.**

DFHBA0102 *date time applid* **Auditlog writing to log** *logname* **has been successfully resumed.**

DFHBA0103 *date time applid terminal userid tranid* **processtype definition entry** *processtype* **has been deleted.**

DFHBA0104 *date time applid* **The root activity of process** *processname* **of processtype** *processtype* **has completed status ABENDED, code** *abendcode.* **TRANSID(***transid***) USERID(***userid***).**

DFHBA0201 **Module** *module* **load of DFHMEBM failed, reason code** *X'rcode'* **system code** *X'scode'.*

DFHBA0202 **Module** *module* **load of** *modname* **failed, reason code** *X'rcode'* **system code** *X'scode'.*

DFHBA0203 **Error opening SYSPRINT in module** *module.*

DFHBA0204 **Module** *module* **exec parameter error, missing open bracket at position** *position***(+).**

DFHBA0205 **Module** *module* **exec parameter error, missing close bracket at position** *position***(+).**

DFHBA0206 **Module** *module* **exec parameter error, invalid keyword at position** *position.*

DFHBA0207 **Module** *module* **exec parameter error, invalid translate field at position** *position.*

DFHBA0208 Module *module* exec parameter error, duplicate translate keyword at position *position.*

DFHBA0209 Module *module* exec parameter error, invalid pagesize field at position *position.*

DFHBA0210 Module *module* exec parameter error, duplicate pagesize keyword at position *position.*

DFHBA0211 Module *module* exec parameter error, invalid NATLANG field at position *position.*

DFHBA0212 Module *module* exec parameter error, duplicate NATLANG keyword at position *position.*

DFHBA0213 Open of SYSIN failed in module *module.*

DFHBA0214 Module *module* invalid keyword at position *position.*

DFHBA0215 Module *module* invalid keyword field length at position *position.*

DFHBA0216 Module *module* invalid keyword field at position *position.*

DFHBA0217 Module *module* unexpected keyword at position *position.*

DFHBA0218 Module *module* duplicate auditlog keyword at position *position.*

DFHBA0219 Module *module* continuation not allowed.

DFHBA0220 Module *module* unexpected end of file.

DFHBA0221 Error opening *file* in module *module.*

DFHBA0222 Module *module* terminated because of errors, check SYSPRINT for details.

DFHBA0223 Module *module* terminated because of errors, check previous console messages for details.

DFHBA0224 Gencb failed in module *module.* R15 = *X'r15val'* R0 = *X'r0val'.*

DFHBA0225 Modcb failed in module *module.* R15 = *X'r15val'* R0 = *X'r0val'.*

DFHBA0226 Showcb failed in module *module.* R15 = *X'r15val'* R0 = *X'r0val'.*

DFHBA0227 Error opening *file* in module *module.* R15 = *X'r15val'* reason code = *X'reasval'.*

DFHBA0228 Error closing *file* in module *module.* R15 = *X'r15val'* reason code = *X'reasval'.*

DFHBA0229 Get for *file* failed in module *module.* R15 = *X'r15val'* reason code = *X'reasval'.*

DFHBA0230 Point for *file* failed in module *module.* R15 = *X'r15val'* reason code = *X'reasval'.*

DFHBA0231 The set of records associated with the activity or process being read are not complete.

DFHBA0232 No records selected by module *module.*

DFHBA0233 Module *module* has completed processing.

DFHBA0234 Module *module* has a duplicate repository keyword at position *position.*

DFHCA5542 E
    date time applid netname tranid **Command not executed.** *xxxxxxx* **and** *yyyyyyy* **must be the same length.**

DFHCA5543 E
    date time applid netname tranid **Command not executed. Generic characters must be in the same position in** *xxxxxxx* **and** *yyyyyyy.*

DFHCC0104 AN ABEND HAS OCCURRED DURING INITIALIZATION OF CATALOG DOMAIN IN MODULE DFHCCDM.

DFHCE3587	**You cannot signon at this terminal at this time.**
DFHCF0101I	**CF data table server initialization is in progress.**
DFHCF0102I	**CF data table server for pool** *poolname* **is now active.**
DFHCF0103	**CF data table server initialization failed because the POOLNAME parameter was not specified.**
DFHCF0104	**CF data table server initialization failed because program DFHCFMN is not APF authorized.**
DFHCF0111I	**CF data table server for pool** *poolname* **is terminating.**
DFHCF0112I	**CF data table server has terminated, return code** *retcode*, **reason code** *rsncode*.
DFHCF0113	**CF data table server completion code is** *cmpcode*, **reason code** *rsncode*.
DFHCF0201I	**Processing** *type parameters*
DFHCF0202	**Unknown parameter keyword:** *keyword*
DFHCF0203	**Value** *value* **for parameter** *keyword* **is incorrect. It must be a name of up to 8 characters.**
DFHCF0204	**Value** *value* **for parameter** *keyword* **is incorrect. It must be a decimal number.**
DFHCF0205	**Value** *value* **for parameter** *keyword* **is greater than the maximum allowed value** *maximum*.
DFHCF0206	**Value** *value* **for parameter** *keyword* **is less than the minimum allowed value** *minimum*.
DFHCF0207	**Value** *value* **for parameter** *keyword* **is incorrect. It should be a time hh:mm:ss or hh:mm or a number of seconds.**

DFHCF0208	**Parameter keyword** *keyword* **is not supported for** *command*.
DFHCF0209	**Parameter text contains invalid character:** *text*
DFHCF0210	**Parameter keyword** *keyword* **should not have a value for** *command*.
DFHCF0211I	**Parameter value:** *keyword=value*
DFHCF0212	**Value** *value* **for parameter** *keyword* **is incorrect. It must be one of** *validlist*.
DFHCF0213	**Value for parameter** *keyword* **is missing. The correct form is keyword=value.**
DFHCF0214	**Value** *value* **for parameter** *keyword* **is incorrect. Pattern matching is not supported in this context.**
DFHCF0215	**Value** *value* **for applid.uowid parameter** *keyword* **is incorrect. The APPLID part should be a name of up to 8 characters.**
DFHCF0216	**Value** *value* **for applid.uowid parameter** *keyword* **is incorrect. The UOWID part should be 16 hexadecimal digits or '*'.**
DFHCF0217	**Parameter keyword** *keyword* **requires a table name. It should be preceded by TABLE=name in the same command line.**
DFHCF0218	**TABLE=**table** was specified without any table-related parameter.**
DFHCF0301I	**Console operator** *consname* **issued command:** *command*
DFHCF0302I	*command* **command ignored because no valid parameters were given.**
DFHCF0303I	*command* **command has been processed.**
DFHCF0304I	**STOP command is waiting for connections to be closed. Number of active connections =** *connections*.

DFHCF0305I STOP command has been processed.

DFHCF0306 CF data table server does not support this command: *command*

DFHCF0307I CANCEL command has been processed. Number of active connections = *connections.*

DFHCF0308 CF data table server does not support CICS commands. To close it down, you can use the STOP command.

DFHCF0321 Pool state error, reason code *reason,* **processing** *request* **request for table** *table,* **key** *key,* **task** *task,* **region** *region.*

DFHCF0331I Table *table* **maximum records limit now set to** *maxrec* **(was** *oldmax***). Current number of records is** *records.*

DFHCF0332I Table *table* **was not found.**

DFHCF0333 Pool state error, reason code *reason,* **processing SET command for table** *table.*

DFHCF0334 Table *table* **status could not be modified, CF access error.**

DFHCF0335I Table *table* **is now marked as available.**

DFHCF0336I Table *table* **is now marked as unavailable.**

DFHCF0337I Table *table* **was already marked as available.**

DFHCF0338I Table *table* **was already marked as unavailable.**

DFHCF0341I Server request statistics for table *table*:

DFHCF0342I Server request statistics for all tables:

DFHCF0343I The number of recently accessed tables matching *table* **is** *number.*

DFHCF0351I Connection: Job *jobname* **Applid** *applid* **Idle** *idletime*

DFHCF0352I Total connections to this server: *connections.*

DFHCF0361I Table names: *table1 table2 table3 table4 table5*

DFHCF0362I The total number of tables in the pool is *tables.*

DFHCF0363I Details for table *table*:

DFHCF0364 No table was found matching *table.*

DFHCF0365I The number of tables in the pool matching *table* **is** *tables.*

DFHCF0366I Table *table* **users:** *region1 region2 region3 region4*

DFHCF0367I Table *table* **is being loaded by region** *region.*

DFHCF0368I The number of regions using table *table* **is** *users.*

DFHCF0371I Table *table* **has now been deleted.**

DFHCF0372I Table *table* **was not found.**

DFHCF0373I Table *table* **cannot be deleted because it is in use.**

DFHCF0374 Table *table* **could not be deleted, CF access error.**

DFHCF0381I APPLID *applid* **is connected on** *system.*

DFHCF0382I APPLID *applid* **is not currently connected.**

DFHCF0383I APPLID *applid* **total connections:** *applids.*

DFHCF0384I APPLID *applid* **UOW status:** *indoubts* **in doubt,** *commits* **in commit,** *backouts* **in backout, active on** *system*

DFHCF0385I APPLID *applid* UOW status: *indoubts* in doubt, *commits* in commit, *backouts* in backout, not active

DFHCF0386I UOWID *applid.uowid* is in doubt.

DFHCF0387I UOWID *applid.uowid* is being committed.

DFHCF0388I UOWID *applid.uowid* is being backed out.

DFHCF0389 UOWID *applid.uowid* was not found.

DFHCF0390I UOWID *applid.uowid* total matching entries: *uowids*

DFHCF0391 APPLID *applid* does not have any unresolved units of work.

DFHCF0392 APPLID *applid* recovery status cannot be modified while it is connected.

DFHCF0393 APPLID *applid* recovery status cannot be modified because connection restart failed with reason code *reason*.

DFHCF0394 UOWID *applid.uowid* is not in doubt.

DFHCF0395I APPLID *applid* now has no unresolved units of work.

DFHCF0396I APPLID *applid* units of work remaining in doubt: *indoubts*.

DFHCF0397I APPLID *applid* units of work now committed: *commits*.

DFHCF0398I APPLID *applid* units of work now backed out: *backouts*.

DFHCF0399 UOWID *applid.uowid* syncpoint failed, reason code *reason*.

DFHCF0401I Connected to CF structure *strname*.

DFHCF0402I CF structure *strname* was allocated by this connection.

DFHCF0403 Connection to CF structure *strname* failed, IXLCONN return code *retcode*, reason code *rsncode*.

DFHCF0404 CF structure *strname* cannot be used because it has been allocated with attribute *attribute*.

DFHCF0405 CF structure *strname* element size *elemsize* is incorrect. It should be a power of 2 in the range 256 to 4096.

DFHCF0406 Initialization failed for CF structure *strname* with response *response*.

DFHCF0407 CF structure *strname* is not available for shared use.

DFHCF0408 CF structure *strname* is not available for exclusive use.

DFHCF0409 CF structure *strname* could not be allocated in facility *cfname*, reason code *rsncode*.

DFHCF0410 CF structure *strname* cannot be used, coupling facility maintenance level is too low.

DFHCF0411I CF structure *strname* now has *percentage%* of entries in use.

DFHCF0412I CF structure *strname* now has *percentage%* of elements in use.

DFHCF0413I Issuing alter request to adjust CF structure *strname* entry/element ratio to *entries/elements*.

DFHCF0414I Alter request successfully started for CF structure *strname*.

DFHCF0415I Alter request rejected for CF structure *strname*, another alter request for this structure is already active.

DFHCF0416 Alter request failed for CF structure *strname*, IXLALTER return code *retcode*, reason code *rsncode*.

DFHCF0417I Alter request completed normally for CF structure *strname*.

DFHCF0418I Alter request ended abnormally for CF structure *strname* with status *status*.

DFHCF0419I Alter request ended normally for CF structure *strname* but target was not attained.

DFHCF0424 Connectivity has been lost to CF structure *strname*. The CF data table server cannot continue.

DFHCF0425 CF structure *strname* has failed. The CF data table server cannot continue.

DFHCF0431I Access statistics for CF structure *strname*:

DFHCF0432I Table pool statistics for CF structure *strname*:

DFHCF0441 CF structure *strname* request failed, IXLLIST return code *retcode*, reason code *rsncode*.

DFHCF0442 CF structure *strname* request failed, structure is full.

DFHCF0443 CF structure *strname* request failed, all lists are in use.

DFHCF0444I CF request has been suspended to await structure alter completion.

DFHCF0445I CF request is being retried after structure alter completion.

DFHCF0446 CF structure *strname* free space is below reserve level. New records will be rejected.

DFHCF0447 CF structure *strname* free space is no longer below reserve level.

DFHCF0451 Purge for CF structure *strname* failed, IXLPURGE return code *retcode*, reason code *rsncode*.

DFHCF0461I Disconnected from CF structure *strname*.

DFHCF0462 Disconnect from CF structure *strname* failed, IXLDISC return code *retcode*, reason code *rsncode*.

DFHCF0471 CF structure *strname* already has the maximum of *maxconn* servers active.

DFHCF0501 External security manager was not found, table security cannot be supported.

DFHCF0502 External security manager is inactive, table security cannot be supported.

DFHCF0503 External security manager does not support global in-storage profiles, table security cannot be supported.

DFHCF0504 External security manager does not support cross-memory mode, table security cannot be supported.

DFHCF0505 RACROUTE REQUEST=EXTRACT gave R15=*rc*, SAFPRRET=*retcode*, SAFPRREA=*rsncode*.

DFHCF0506 Security EXTRACT function failed, table security cannot be supported.

DFHCF0507 RACROUTE REQUEST=LIST, ENVIR=CREATE, CLASS='*class*', GLOBAL=YES gave R15=*rc*, SAFPRRET=*retcode*, SAFPRREA=*rsncode*.

DFHCF0508 Security LIST function failed, table security cannot be supported.

DFHCF0511 Attempt to open table *table* was rejected because the external security manager is not available.

DFHCF0512 RACROUTE REQUEST=FASTAUTH for resource *resource* gave R15=*rc*, SAFPRRET=*retcode*, SAFPRREA=*rsncode*.

DFHCF0513 Attempt to open table *table* was rejected by the external security manager.

DFHCF0521	**RACROUTE REQUEST=LIST, ENVIR=DELETE, CLASS='*class*' gave R15=*rc*, SAFPRRET=*retcode*, SAFPRREA=*rsncode*.**
DFHCF0601I	**Starting statistics collection for interval since** *lasttime*.
DFHCF0602I	**Statistics collection completed, reset performed.**
DFHCF0603I	**Statistics collection completed.**
DFHCF0604	**Timer SET failed, return code** *retcode*, **reason code** *rsncode*.
DFHCF0605	**Timer CANCEL failed, return code** *retcode*, **reason code** *rsncode*.
DFHCF0606	**Statistics collection function is no longer available.**
DFHCF0610I	**Statistics written to SMF, return code was** *retcode*.
DFHCF0651	**Restart processing cannot open table** *table*, **reason code** *reason*.
DFHCF0652	**Pool state error, reason code** *reason*, **processing** *function* **request for UOWID** *uowid*, **task** *task*, **region** *region*.
DFHCF0701I	**CF data table pool** *poolname* **is to be unloaded.**
DFHCF0702I	**CF data table pool** *poolname* **has been successfully unloaded.**
DFHCF0703I	**Number of unloaded tables:** *tables*. **Blocks written:** *blocks*.
DFHCF0704	**DFHCFUL data set for unload could not be opened.**
DFHCF0705	**Unload access to CF structure** *strname* **failed with response** *response*.
DFHCF0706	**Unload for CF data table pool** *poolname* **was unsuccessful.**

DFHCF0721	**CF data table** *table* **has been successfully unloaded,** *records* **records.**
DFHCF0731	*uowids* **units of work were unloaded for recoverable connection** *applid*.
DFHCF0801I	**CF data table pool** *poolname* **is to be reloaded.**
DFHCF0802I	**CF data table pool** *poolname* **has been successfully reloaded.**
DFHCF0803I	**Tables reloaded:** *tables*. **Tables bypassed:** *duplicates*. **Blocks read:** *blocks*.
DFHCF0804	**DFHCFRL data set for reload could not be opened.**
DFHCF0805	**Reload access to CF structure** *strname* **failed with response** *response*.
DFHCF0806	**Unexpected end of file encountered on reload data set.**
DFHCF0807	**Reload data set contains incorrect data near block** *block*, **offset** *offset*.
DFHCF0808	**Reload for CF data table pool** *poolname* **was unsuccessful.**
DFHCF0809	**Reload for CF structure** *strname* **failed, structure is full.**
DFHCF0810	**Reload for CF structure** *strname* **failed, all lists are in use.**
DFHCF0821	**CF data table** *table* **has been successfully reloaded,** *records* **records.**
DFHCF0822	**CF data table** *table* **is already defined, reloading has been bypassed.**
DFHCF0831	*uowids* **units of work were reloaded for recoverable connection** *applid*.
DFHCF0832	*uowids* **duplicate units of work were skipped for recoverable connection** *applid*.

DFHCF0911I R12=*prv* **RQ Entry** *function* **Table**=*table* **Task**=*tasknum region*

DFHCF0912I R12=*prv* **RQ Exit** *response* **Table**=*table* **Task**=*tasknum region*

DFHCF0913I R12=*prv* **RQ Lock** *status* **Table**=*table* **Task**=*tasknum region*

DFHCF0921I R12=*prv* **IQ Entry** *function* **Table**=*table* **Task**=*tasknum region*

DFHCF0922I R12=*prv* **IQ Exit** *response* **Table**=*table* **Task**=*tasknum region*

DFHCF0931I R12=*prv* **OC Entry** *function* **Table**=*table* **Task**=*tasknum region*

DFHCF0932I R12=*prv* **OC Exit** *response* **Table**=*table* **Task**=*tasknum region*

DFHCF0933I R12=*prv* **OC Closing table** *table* **for** *region* **on** *system.*

DFHCF0941I R12=*prv* **CF Entry** *request options modifiers* **R1**=*parmlst table*

DFHCF0942I R12=*prv* **CF IXLLIST Req**=*request* **Adj**=*adjarea* **Buf**=*buffer* **List**=*listnum* **Rsn**=*rsncode*

DFHCF0943I R12=*prv* **CF IXLLIST** *keyword=value*

DFHCF0944I R12=*prv* **CF Exit** *response table*

DFHCF0951I R12=*prv* **SP Entry** *function* **UOWID**=*uowid* **Task**=*tasknum region*

DFHCF0952I R12=*prv* **SP Exit** *response* **UOWID**=*uowid* **Task**=*tasknum region*

DFHCF0953I R12=*prv* **SP Lock** *action* **UOWID**=*uowid* **Task**=*tasknum region*

DFHCF0954I R12=*prv* **SP UOW** *status* **UOWID**=*uowid* **Task**=*tasknum region*

DFHCF0955I R12=*prv* **SP Table** *table* **UOWID**=*uowid* **Task**=*tasknum region*

DFHCF0956I R12=*prv* **SP Record state** *action* **UOWID**=*uowid* **Task**=*tasknum region*

DFHCF0999I **Trace** *text*

DFHCZ0105 *date time applid userid termid tranid program name* **CICS event summary:** *class::method* **condition**=*X'resp'* (*resptext*) **minor**=*X'resp2'*

DFHCZ0106 *date time applid userid termid tranid program name* **CICS exception summary:** *exceptno class::method* **type**=*type.*

DFHCZ0108 *date time applid userid termid tranid program name class::method* **This method failed because an internal call to CICS returned the condition** *condition.*

DFHCZ0109 *date time applid userid termid tranid program name class::method* **This method failed because of a severe internal error. Diagnostic information:** *diaginfo1,* *diaginfo2.*

DFHCZ0110 *date time applid userid termid tranid program name class::method* **This constructor/operator failed because it is not supported on the current platform of** *env.*

DFHCZ0111 *date time applid userid termid tranid program name class::method* **This constructor/operator failed because the system is configured with CICS family subset enforcement.**

DFHCZ0112 *date time applid userid termid tranid program name class::method* **This method failed because it is not supported on the current platform of** *env.*

DFHCZ0113 *date time applid userid termid tranid program name class::method* **This method failed because the system is configured with CICS family subset enforcement.**

DFHCZ0114 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed was incomplete.**

DFHCZ0115 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed had a reference to an input message while the program was invoked via the remote program link.**

DFHCZ0116 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed was not one of the supported classes.**

DFHCZ0117 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed was of type** *object_type*.

DFHCZ0118 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed did not have a reference for the resource** *resource*.

DFHCZ0120 *date time applid userid termid tranid program name class*::*method* **This method failed because the current number of nested program calls made using this method is already at the maximum of** *max*.

DFHCZ0121 *date time applid userid termid tranid program name class*::*method* **This method failed because the call is invalid for the object being accessed. The resource type of the object is** *resourcetype*.

DFHCZ0122 *date time applid userid termid tranid program name class*::*method* **This method failed because the optional parameter named** *pname* **was set, which is invalid for the current environment of** *env*.

DFHCZ0123 *date time applid userid termid tranid program name class*::*method* **This method failed because the optional parameter named** *pname* **was set, which is invalid because the system is configured with CICS family subset enforcement.**

DFHCZ0125 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed had a buffer containing function management headers(FMHs), which is invalid for the current environment of** *env*.

DFHCZ0126 *date time applid userid termid tranid program name class*::*method* **This method failed because the object being accessed had a buffer containing function management headers(FMHs), which is invalid because the system is configured with CICS family subset enforcement.**

DFHCZ0127 *date time applid userid termid tranid program name class*::*method* **This method failed because the value of the parameter named** *pname*, **specified as** *length*, **was not within the range 1 to** *max*.

DFHCZ0128 *date time applid userid termid tranid program name class*::*method* **This method failed because the length of the parameter named** *pname*, **specified as** *length*, **was not within the range 1 to** *max*.

DFHCZ0129 *date time applid userid termid tranid program name class*::*method* **This method detected an exception which resulted in data being truncated.**

DFHCZ0130 *date time applid userid termid tranid program name class*::*method* **This method/operator failed because the parameter** *pname* **contained a string of length** *length*, **while the maximum allowed is** *max*.

DFHCZ0131 *date time applid userid termid tranid program name class*::*method* **This constructor failed to create an object because a parameter of type string contained a value that was too long. It was set to '***stringvalue...***' while the maximum length allowed is** *maxstringlength*.

DFHCZ0132 *date time applid userid termid tranid program name class::method* **This constructor failed to create an object because the parameter named** *pname* **contained an invalid string of length** *plength* **while the maximum length allowed is** *pmaxlength.*

DFHCZ0134 *date time applid userid termid tranid program name class::method* **This method failed because the parameter named** *pname* **contained an invalid value.**

DFHCZ0136 *date time applid userid termid tranid program name class::method* **This method failed because the parameter named** *param_name* **contained conflicting flags specified as** *flag1* **and** *flag2.*

DFHCZ0137 *date time applid userid termid tranid program name class::method* **This constructor failed to create an object because the parameter named** *pname* **contained an invalid value of** *pvalue.*

DFHCZ0138 *date time applid userid termid tranid program name class::method* **This method failed because the parameter named** *pname* **contained an invalid value of** *pvalue.*

DFHCZ0140 *date time applid userid termid tranid program name class::method* **This constructor failed to create an object because it is a singleton class which already exists.**

DFHCZ0141 *date time applid userid termid tranid program name class::method* **This method failed to create the object** *object* **because the CICS task did not have a terminal as its principal facility.**

DFHCZ0142 *date time applid userid termid tranid program name class::method* **This method failed to create an object of type** *object* **because the CICS task did not have a session as its principal facility.**

DFHCZ0143 *date time applid userid termid tranid program name class::method* **This virtual method has not been implemented by the derived class.**

DFHCZ0200 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0201 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, profile)' in** *module* **failed.**

DFHCZ0202 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, process)' in** *module* **failed.**

DFHCZ0203 *date time applid userid termid tranid program name* **The process name passed to the CONNECT_PROCESS method in** *module* **was invalid.**

DFHCZ0204 *date time applid userid termid tranid program name* **JNI call 'GetFieldID() for DataHolder.value' in** *module* **failed.**

DFHCZ0205 *date time applid userid termid tranid program name* **An unexpected value for the control parameter was passed to the ISSUE_CONTROL() method in** *module.*

DFHCZ0206 *date time applid userid termid tranid program name* **An attempt to issue an ASSIGN ABCODE command in** *module* **has failed.**

DFHCZ0207 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0208 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0209 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0210 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, fileName, NULL)' in** *module* **failed.**

DFHCZ0211 *date time applid userid termid tranid program name* **A NULL filename has been passed to a native method in** *module.*

DFHCZ0212 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0213 *date time applid userid termid tranid program name* **A NULL filename has been passed to a native method in** *module.*

DFHCZ0214 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0215 *date time applid userid termid tranid program name* **An attempt in** *module* **to delete records from a KSDS has failed.**

DFHCZ0216 *date time applid userid termid tranid program name* **A relative record number greater than 32767 has been specified on a DELETE command in** *module.*

DFHCZ0217 *date time applid userid termid tranid program name* **An attempt in** *module* **to delete records from an RRDS has failed.**

DFHCZ0218 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0220 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0221 *date time applid userid termid tranid program name* **A NULL filename has been passed to a native method in** *module.*

DFHCZ0222 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0223 *date time applid userid termid tranid program name* **A NULL filename has been passed to a native method in** *module.*

DFHCZ0224 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0225 *date time applid userid termid tranid program name* **A NULL key has been passed to a native method in** *module.*

DFHCZ0226 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0227 *date time applid userid termid tranid program name* **A NULL filename has been passed to a native method in** *module.*

DFHCZ0228 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0229 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0230 *date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0231 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0232 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0233 *date time applid userid termid tranid program name* **A NULL filename has been passed to a native method in** *module.*

DFHCZ0234 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0235 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0236 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, TransId)' in** *module* **failed.**

DFHCZ0237 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' for 'DataLength.Length' in** *module* **failed.**

DFHCZ0238 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0239 *date time applid userid termid tranid program name* **JNI call 'ThrowNew()' in** *module* **failed.**

DFHCZ0240 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0241 *date time applid userid termid tranid program name* **JNI call 'ThrowNew()' in** *module* **failed.**

DFHCZ0242 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0243 *date time applid userid termid tranid program name* **JNI call 'ThrowNew()' in** *module* **failed.**

DFHCZ0244 *date time applid userid termid tranid program name* **An attempt to issue an ASSIGN APPLID SYSID command in** *module* **has failed.**

DFHCZ0245 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0246 *date time applid userid termid tranid program name* **JNI call 'ThrowNew()' in** *module* **failed.**

DFHCZ0247 *date time applid userid termid tranid program name* **A 'malloc' in** *module* **failed.**

DFHCZ0248 *date time applid userid termid tranid program name* **A 'malloc' in** *module* **failed.**

DFHCZ0249 *date time applid userid termid tranid program name* **JNI call 'FindClass(envp,** *classname***)' in** *module* **failed.**

DFHCZ0250 *date time applid userid termid tranid program name* **JNI call 'ThrowNew()' in** *module* **failed.**

DFHCZ0253 *date time applid userid termid tranid program name* **JNI call 'NewByteArray()' in** *module* **failed.**

DFHCZ0254 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0255 *date time applid userid termid tranid program name* **JNI call 'ThrowNew()' in** *module* **failed.**

DFHCZ0256 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' failed in** *module.*

DFHCZ0257 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0258 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0259 *date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0260 *date time applid userid termid tranid program name* **JNI call 'NewObject()' in** *module* **failed.**

DFHCZ0261 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0262 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0263 *date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0264	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0265	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0266	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0267	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0268	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0269	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0270	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0271	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0272	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0273	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0274	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0275	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0276	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0277	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0278	*date time applid userid termid tranid program name* **JNI call 'CallVoidMethod()' in** *module* **failed.**
DFHCZ0279	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0280	*date time applid userid termid tranid program name* **JNI call 'NewObject()' in** *module* **failed.**
DFHCZ0281	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0282	*date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**
DFHCZ0283	*date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**
DFHCZ0284	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0285	*date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**
DFHCZ0286	*date time applid userid termid tranid program name* **JNI call 'NewObject()' in** *module* **failed.**
DFHCZ0287	*date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**
DFHCZ0288	*date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**
DFHCZ0289	*date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0290 *date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0291 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0292 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0293 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0294 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0295 *date time applid userid termid tranid program name* **JNI call 'GetObjectClass()' in** *module* **failed.**

DFHCZ0296 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0297 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0298 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0299 *date time applid userid termid tranid program name* **JNI call 'NewObject()' in** *module* **failed.**

DFHCZ0300 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0301 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0302 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0303 *date time applid userid termid tranid program name* **JNI call 'GetObjectClass()' in** *module* **failed.**

DFHCZ0305 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, abcode)' in** *module* **failed.**

DFHCZ0311 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0312 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, queueName, NULL)' in** *module* **failed.**

DFHCZ0313 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0314 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, queueName, NULL)' in** *module* **failed.**

DFHCZ0315 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0316 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, queueName, NULL)' in** *module* **failed.**

DFHCZ0317 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0324 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0325 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0326 *date time applid userid termid tranid program name* **A text array passed to the SEND_TEXT() method in** *module* **was greater than 32767 bytes. The data has been truncated.**

DFHCZ0327 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0328 *date time applid userid termid tranid program name* **JNI call 'GetMethodID()' in** *module* **failed.**

DFHCZ0329 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0330 *date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0331 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0332 *date time applid userid termid tranid program name* **JNI call 'FindClass()' in** *module* **failed.**

DFHCZ0333 *date time applid userid termid tranid program name* **An attempt to allocate storage in** *module* **failed.**

DFHCZ0334 *date time applid userid termid tranid program name* **JNI call 'GetFieldID()' in** *module* **failed.**

DFHCZ0335 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0336 *date time applid userid termid tranid program name* **An invalid value for item number was passed to the READITEM() method in** *module.* **The value passed was** *item_no* **.**

DFHCZ0337 *date time applid userid termid tranid program name* **TSQ name** *tsqname* **has been truncated to 16 characters in the SETNAME() method in** *module.*

DFHCZ0338 *date time applid userid termid tranid program name* **An invalid value for item number was passed to the REWRITE() method in** *module.* **The value passed was** *item_no.*

DFHCZ0340 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0341 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0342 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0345 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0347 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0348 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, terminal)' in** *module* **failed.**

DFHCZ0349 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, SysId)' in** *module* **failed.**

DFHCZ0350 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars()' in** *module* **failed.**

DFHCZ0351 *date time applid userid termid tranid program name* **JNI call 'GetStringUTFChars(envp, rTerminal)' in** *module* **failed.**

DFHCZ0352 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0353 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0354 *date time applid userid termid tranid program name* **JNI call 'GetByteArrayElements()' in** *module* **failed.**

DFHCZ0355 *date time applid userid termid tranid program name* **JNI call 'NewByteArray(envp, Length)' in** *module* **failed.**

DFHCZ0356 *date time applid userid termid tranid program name* **non-CICS security manager of class** *className* **installed.**

DFHCZ0357 *date time applid userid termid tranid program name* **Uncaught exception from application.**

DFHCZ0358 *date time applid userid termid tranid program name* **Exception** *exception* **occurred invoking main method in class** *className.*

DFHCZ0359 *date time applid userid termid tranid program name* **Exception** *exception* **occurred creating object reference for class** *className.*

DFHCZ0399 *termid tranid date time* **COM.IBM.CICS.SERVER.WRAPPER - UNSATISFIEDLINKERROR LOADING** *library.*

DFHDB2210 *date time applid* **DB2 subsystem id** *db2-id* **contains invalid characters. The CICS-DB2 Attachment facility is not started.**

DFHDB8244 **The requested command cannot be found in the command file.**

DFHDB8245 **The command file, DFHDBFK, cannot be opened.**

DFHDB8246 **An error has occurred reading the command file, DFHDBFK.**

DFHDB8247 **Record not found.**

DFHDB8248 **End of file reached during browse. Press enter to wrap.**

DFHDB8249 **A record already exists for this command in this group.**

DFHDB8250 **A record must be read before updating.**

DFHDB8251 **A record must be read before deletion.**

DFHDB8252 **Group and command must not be altered. Record not updated.**

DFHDB8253 **Group and command must not be altered. Record not deleted.**

DFHDB8254 **Cannot update during browse. Read record to update.**

DFHDB8255 **Cannot delete during browse. Read record to delete.**

DFHDB8256 **Both group and command must be specifed.**

DFHDB8257 **Function invalid. Must be A, B, D, R or U.**

DFHDB8258 **File** *{write │ rewrite │ delete │ read │ browse}* **failure. EIBRESP=***eibresp,* **EIBRESP2=***eibresp2.*

DFHDB8259 **Group command,** *group command, {added │ updated │ deleted │ read │browsed}.*

DFHDB8260 **Record length exceeds screen size.**

DFHDH0001 *applid* **An abend (code** *aaa/bbbb***) has occurred at offset** *X'offset'* **in module** *modname.*

DFHDH0002 *applid* **A severe error (code** *X'code'***) has occurred in module** *modname*.

DFHDH0004 *applid* **A possible loop has been detected at offset** *X'offset'* **in module** *modname*.

DFHDH0100I

   applid **Document domain initialization has started.**

DFHDH0101I

   applid **Document domain initialization has ended.**

DFHDH0105 *date time applid* **Document template definition** *doctemplate* **has been added as** *{PDS-MEMBER │FILE │ PROGRAM │ TSQUEUE │ TDQUEUE │ EXITPGM}*(*resourcename*) **with template name** *templatename*.

DFHDH0106 *date time applid* **Document template definition** *doctemplate* **has been deleted.**

DFHEM0001 *applid* **An abend (code** *aaa/bbbb*) **has occurred at offset** *X'offset'* **in module** *modname*.

DFHEM0002 *applid* **A severe error (code** *X'code'*) **has occurred in module** *modname*.

DFHEM0100I

   applid **Event Manager initialization has started.**

DFHEM0101I

   applid **Event Manager initialization has ended.**

DFHFC0949 *date time applid* **CICS shared data table table load has terminated abnormally. A call to DFHXMIQ to retrieve the parameters for the load transaction has failed with response code** = *n*.

DFHFC7000 *applid* **The maximum records parameter(***rrrr***) specified on OPEN of coupling facility data table** *dddd*, **poolname** *pppp*, **for file** *filename*, **differs from the current maximum records parameter(***ssss***) for the table.**

DFHFC7002 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because access is not allowed.**

DFHFC7003 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table is not currently available for access.**

DFHFC7004 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table is not yet loaded.**

DFHFC7005 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because of a shared access conflict.**

DFHFC7006 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because of an exclusive access conflict.**

DFHFC7007 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because one or more attributes on the file definition are incompatible with those that were set for the table when it was created.**

DFHFC7010 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because recovery is not enabled.**

DFHFC7012 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because there is no space in the pool.**

DFHFC7013 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the maximum number of tables has been reached.**

DFHFC7014 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because there are too many users.**

DFHFC7015 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table has been destroyed.**

DFHFC7018 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table requires loading.**

DFHFC7019 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table requires loading but the supplied data set is not KSDS.**

DFHFC7032 *applid* **CLOSE of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table has been destroyed.**

DFHFC7051 *applid* **A request to inquire on which attributes of coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **are incompatible has failed because the table could not be found.**

DFHFC7071 *applid* **The request to set shared access for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **at the end of a successful table load, has failed because access is not allowed.**

DFHFC7072 *applid* **The request to set shared access for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **at the end of a successful table load, has failed because the table cannot be found.**

DFHFC7073 *applid* **The request to set shared access for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **at the end of a successful table load, has failed because of a shared access conflict.**

DFHFC7079 *applid* **The request to set shared access for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **at the end of a successful table load, has failed because the table has been destroyed.**

DFHFC7081 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the key length or record length parameter on the file definition is inconsistent with the equivalent for the source data set.**

DFHFC7082 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the key length or record length parameter for the source data set is inconsistent with the value already set for the table.**

DFHFC7083 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the key length or record length parameter specified on the file definition is inconsistent with that already set for the table.**

DFHFC7084 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the table cannot be found.**

DFHFC7085 *applid* **On a request to process** *{OPEN │CLOSE │ EXTRACT STATISTICS}* **for coupling facility data table** *dddd* **for file** *filename*, **it has been found that the server for coupling facility data table pool** *poolname*, **is down. The server should be restarted.**

DFHFC7086 *applid* **OPEN of coupling facility data table** *dddd* **for file** *filename*, **pool** *poolname*, **has failed because the** *{keylength │ recordsize}* **of the source data set is greater than the supported maximum.**

DFHFC7090 *date time applid* **CICS coupling facility data table load has started for data table** *dddd*, **file** *filename*, **pool** *poolname*.

DFHFC7091 *date time applid* **CICS coupling facility data table load has successfully processed all records in the source data set for table** *dddd*, **file** *filename*, **pool** *pool*.

DFHFC7092 *date time applid* **CICS data table load has terminated abnormally for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **because the table has been closed.**

DFHFC7093 *date time applid* **CICS data table load has terminated abnormally for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **reason code = ** *X'xx'*.

DFHFC7094 *date time applid* **CICS data table load has terminated abnormally for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **reason code = ** *X'xx'*.

DFHFC7095 *date time applid* **CICS coupling facility data table load has completed successfully for data table** *dddd*, **file** *filename*, **pool** *pool*.

DFHFC7100 *date time applid* **CICS data table load has terminated abnormally for coupling facility data table** *name*, **file** *filename*, **pool** *poolname*, **a call to FCFR to BROWSE the source data set has failed for reason code = ** *n*.

DFHFC7101 *date time applid* **CICS data table load has failed to close coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **a call to FCFS has failed for reason code = ** *n*.

DFHFC7103 *date time applid* **CICS data table load has terminated abnormally for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*.

DFHFC7104 *date time applid* **CICS data table load has terminated abnormally for coupling facility data table** *dddd*, **file** *filename*, **pool** *poolname*, **a call to FCFR to WRITE a record has failed for reason code = ** *n*.

DFHFC7110 *applid* **An attempt to connect to coupling facility data table pool** *poolname*, **issued by module** *modulename*, **has failed.**

DFHFC7111 *applid* **An attempt to disconnect from the coupling facility data table server for pool** *poolname* **for connection token** *X'connecttoken'*, **issued by module** *modulename,* **has failed.**

DFHFC7112 *applid* **Resynchronization of coupling facility data table pool** *poolname* **issued from module** *modulename* **has failed.**

DFHFC7113 *applid* **An attempt to retry resynchronization of coupling facility data table pool** *poolname* **issued from module** *modulename* **has failed.**

DFHFC7114 *applid* **Force purge of transaction** *trannum* **which made recoverable updates to coupling facility data table pool** *poolname* **has failed.**

DFHFC7115 *applid* **The coupling facility data table server for pool** *poolname* **has failed and restarted. One or more in-flight transactions which had made recoverable updates to coupling facility data tables residing in the pool will be abended.**

DFHFC7120 *applid* **The coupling facility data table pool** *poolname* **has an unresolved unit of work** *X'UOWid'* **for this CICS region of which CICS has no knowledge.**

DFHFC7121 *applid* **CICS coupling facility data table load has terminated abnormally. A call to DFHXMIQ to retrieve the parameters for the load transaction has failed with response code = ** *n*.

DFHFC7130 *date time applid tranid trannum termid userid*. **Unit of work** *X'uowid'* **running in region** *owner-applid* **in MVS system** *MVSid* **holds a lock on key** *X'keyid'* **in coupling facility data table** *tablename* **in pool** *CFDTpool*, **which caused this request to wait.**

DFHKE0412I *applid* **CICS WAITPRED call to automatic restart manager has completed.**

DFHKE0413 *applid* **CICS REGISTER CALL FAILURE IN MODULE DFHKESVC (RETURN CODE** *X'resp'*).

DFHLG0745I
　　　　　　applid **System log full scan has started.**

DFHLG0746 *date time applid* **System log scan trim record found. Primary logstream block id** *X'pblock'*, **secondary logstream block id** *X'sblock'*.

DFHLG0747I

    applid **System log scan continuing,** *count* **records processed.**

DFHLG0748I

    applid **System log selective scan has started.**

DFHLG0749I

    applid **System log scan has completed.**

DFHNC0101I

    Named counter server initialization is in progress.

DFHNC0102I

    Named counter server for pool *poolname* **is now active.**

DFHNC0103 **Named counter server initialization failed because the POOLNAME parameter was not specified.**

DFHNC0104 **Named counter server initialization failed because program DFHNCMN is not APF authorized.**

DFHNC0111I

    Named counter server for pool *poolname* **is terminating.**

DFHNC0112I

    Named counter server has terminated, return code *retcode*, **reason code** *rsncode*.

DFHNC0113 **Named counter server completion code is** *cmpcode*, **reason code** *rsncode*.

DFHNC0201I

    Processing *type parameters*

DFHNC0202 **Unknown parameter keyword:** *keyword*

DFHNC0203 **Value** *value* **for parameter** *keyword* **is incorrect. It must be a name of up to 8 characters.**

DFHNC0204 **Value** *value* **for parameter** *keyword* **is incorrect. It must be a decimal number.**

DFHNC0205 **Value** *value* **for parameter** *keyword* **is greater than the maximum allowed value** *maximum*.

DFHNC0206 **Value** *value* **for parameter** *keyword* **is less than the minimum allowed value** *minimum*.

DFHNC0207 **Value** *value* **for parameter** *keyword* **is incorrect. It should be a time hh:mm:ss or hh:mm or a number of seconds.**

DFHNC0208 **Parameter keyword** *keyword* **is not supported for** *command*.

DFHNC0209 **Parameter text contains invalid character:** *text*

DFHNC0210 **Parameter keyword** *keyword* **should not have a value for** *command*.

DFHNC0211I

    Parameter value: *keyword=value*

DFHNC0212 **Value** *value* **for parameter** *keyword* **is incorrect. It must be one of** *validlist*.

DFHNC0213 **Value for parameter** *keyword* **is missing. The correct form is keyword=value.**

DFHNC0301I

    Console operator *consname* **issued command:** *command*

DFHNC0302I

    command **command ignored because no valid parameters were given.**

DFHNC0303I

    command **command has been processed.**

DFHNC0304I

    STOP command is waiting for connections to be closed. Number of active connections = *connections*.

DFHNC0305I

    STOP command has been processed.

DFHNC0306 Named counter server does not support this command: *command*

DFHNC0307I

CANCEL command has been processed. Number of active connections = *connections*.

DFHNC0308 Named counter server does not support CICS commands. To close it down, you can use the STOP command.

DFHNC0351I

Connection: Job *jobname* Applid *applid* Idle *idletime*

DFHNC0352I

Total connections to this server: *connections*.

DFHNC0361I

Counter names: *counter1 counter2*

DFHNC0362I

The total number of named counters in the pool is *counters*.

DFHNC0363I

Details for named counter *counter*:

DFHNC0364 No named counter was found matching *counter*.

DFHNC0365I

The number of named counters in the pool matching *counter* is *counters*.

DFHNC0401I

Connected to CF structure *strname*.

DFHNC0402I

CF structure *strname* was allocated by this connection.

DFHNC0403 Connection to CF structure *strname* failed, IXLCONN return code *retcode*, reason code *rsncode*.

DFHNC0404 CF structure *strname* cannot be used because it has been allocated with attribute *attribute*.

DFHNC0406 Initialization failed for CF structure *strname* with response *response*.

DFHNC0407 CF structure *strname* is not available for shared use.

DFHNC0408 CF structure *strname* is not available for exclusive use.

DFHNC0409 CF structure *strname* could not be allocated in facility *cfname*, reason code *rsncode*.

DFHNC0411I

CF structure *strname* now has *percentage*% of entries in use.

DFHNC0417I

Alter request completed normally for CF structure *strname*.

DFHNC0418I

Alter request ended abnormally for CF structure *strname* with status *status*.

DFHNC0419I

Alter request ended normally for CF structure *strname* but target was not attained.

DFHNC0424 Connectivity has been lost to CF structure *strname*. The named counter server cannot continue.

DFHNC0425 CF structure *strname* has failed. The named counter server cannot continue.

DFHNC0431I

Access statistics for CF structure *strname*:

DFHNC0432I

Pool statistics for CF structure *strname*:

DFHNC0441 CF structure *strname* request failed, IXLLIST return code *retcode*, reason code *rsncode*.

DFHNC0442 CF structure *strname* request failed, structure is full.

DFHNC0451 Purge for CF structure *strname* failed, IXLPURGE return code *retcode*, reason code *rsncode*.

DFHNC0461I
Disconnected from CF structure *strname*.

DFHNC0462 Disconnect from CF structure *strname* failed, IXLDISC return code *retcode*, reason code *rsncode*.

DFHNC0601I
Starting statistics collection for interval since *lasttime*.

DFHNC0602I
Statistics collection completed, reset performed.

DFHNC0603I
Statistics collection completed.

DFHNC0604 Timer SET failed, return code *retcode*, reason code *rsncode*.

DFHNC0605 Timer CANCEL failed, return code *retcode*, reason code *rsncode*.

DFHNC0606 Statistics collection function is no longer available.

DFHNC0610I
Statistics written to SMF, return code was *retcode*.

DFHNC0701I
Named counter pool *poolname* is to be unloaded.

DFHNC0702I
Named counter pool *poolname* has been successfully unloaded.

DFHNC0703I
Number of unloaded counters: *counters*. Blocks written: *blocks*.

DFHNC0704 DFHNCUL data set for unload could not be opened.

DFHNC0705 Unload access to CF structure *strname* failed with response *response*.

DFHNC0706 Unload for named counter pool *poolname* was unsuccessful.

DFHNC0801I
Named counter pool *poolname* is to be reloaded.

DFHNC0802I
Named counter pool *poolname* has been successfully reloaded.

DFHNC0803I
Counters reloaded: *counters*. Counters bypassed: *duplicates*. Blocks read: *blocks*.

DFHNC0804 DFHNCRL data set for reload could not be opened.

DFHNC0805 Reload access to CF structure *strname* failed with response *response*.

DFHNC0806 Unexpected end of file encountered on reload data set.

DFHNC0807 Reload data set contains incorrect data near block *block*, offset *offset*.

DFHNC0808 Reload for named counter pool *poolname* was unsuccessful.

DFHNC0809 Reload for CF structure *strname* failed, structure is full.

DFHNC0911I
R12=*prv* RQ Entry *function* Name=*counter* Job=*region* Task=*task*

DFHNC0912I
R12=*prv* RQ Exit *response* Name=*counter* Job=*region* Task=*task*

DFHNC0913I
R12=*prv* RQ *parameter* Hex=*hex* Dec=*decimal*

DFHNC0914I
R12=*prv* RQ Options *options*

DFHNC0941I
> R12=*prv* **CF Entry** *request* **Name**=*counter*
> **R1**=*parmlst*

DFHNC0942I
> R12=*prv* **CF IXLLIST REQUEST**=*request*
> **REASON**=*rsncode*

DFHNC0943I
> R12=*prv* **CF IXLLIST** *keyword*=*value*

DFHNC0944I
> R12=*prv* **CF Exit** *response* **Name**=*counter*

DFHNC0999I
> **Trace** *text*

DFHNQ0101 *date time applid* **ENQMODEL** *model* **has been installed.**

DFHNQ0102 *date time applid* **ENQMODEL** *model* **has been discarded.**

DFHNQ0103 *date time applid* **The limit for the number of concurrent sysplex resource ENQ requests has been reached. Transaction** *tran* **detected return code** *X'code'* **from MVS ENQ.**

DFHNQ0104 *applid* **MVS returned code** *X'code'* **when transaction** *tran* **attempted to enqueue on a sysplex-wide resource. This in dicates that an unexpected environmental error has been detected.**

DFHNQ0105 *date time applid* **ENQMODEL** *model* **was either disabled or in the waiting state when transaction** *tran* **attempted to enqueue on a matching resource name.**

DFHNQ0106 *date time applid* **ENQMODEL** *model* **has been replaced.**

DFHNQ0107 *date time applid* **ENQMODEL** *model1* **must be disabled before enabling ENQMODEL** *model2.*

DFHRD0115 *date time applid terminal userid tranid* **INSTALL PROCESSTYPE(***processtype-name***)**

DFHRD0116 *date time applid terminal userid tranid* **INSTALL TSMODEL(***tsmodel-name***)**

DFHRD0117 *date time applid terminal userid tranid* **INSTALL ENQMODEL(***enqmodel-name***)**

DFHRD0118 I
> *date time applid terminal userid tranid* **INSTALL REQUESTMODEL(***rqmodel-name***)**

DFHRD0119 I
> *date time applid terminal userid tranid* **INSTALL DOCTEMPLATE(***doctemplate-name***)**

DFHRD0120 I
> *date time applid terminal userid tranid* **INSTALL TCPIPSERVICE(***tcpipservice-name***)**

DFHRM0129 *date time applid* **Intersystem communication failure. Resource updates may be out of sync. Failure date** *mm/dd/yy* **failure time** *hh:mm:ss* **remote system** *name* **transaction** *tranid* **task number** *trannum* **terminal** *termid* **user** *userid* **network UOW** *netuowid* **local UOW** *X'localuowid'.*

DFHRM0154 *applid* **Uncommitted local resource updates found on the System Log. COLD start is NOT preserving data integrity.**

DFHRM0156 *applid* **This COLD start will NOT cause any damage to local resources.**

DFHRT4423 *date time applid* **An error has occurred while attempting to invoke the distributed routing program.**

DFHRX0001 *applid* **An abend (code** *aaa/bbbb***) has occurred at offset** *X'offset'* **in module** *modname.*

DFHRX0002 *applid* **A severe error (code** *X'code'***) has occurred in module** *modname.*

DFHRX0100I *applid* **RX domain initialization has started.**

DFHRX0101I *applid* **RX domain initialization has ended.**

DFHRX0102 *applid* **Errors were encountered during initialization of the RX domain. Domain initialization has ended.**

DFHRX0103 *applid* **An unexpected return code** *X'rc'* **was received from RRMS service** *xxxxxxxx.*

DFHRX0104I *applid* **The Resource Recovery Services (RRS) exit manager** *aaaaaaaaaaaaaaaa* **is now available.**

DFHRX0105I *applid* **The Resource Recovery Services (RRS) exit manager** *aaaaaaaaaaaaaaaa* **is now unavailable.**

DFHRX0106I *applid* **Restart processing with Resource Recovery Services (RRS) is beginning.**

DFHRX0107I *applid* **Restart processing with Resource Recovery Services (RRS) has ended.**

DFHRX0108 *date time applid* **Log name mismatch with Resource Recovery Services. Expected Log name** *logname.* **Received Log name** *logname.*

DFHRX0109 *date time applid* **Invalid pass token received on connection** *sysid* **session** *termid.*

DFHRX0110 *applid* **Restart processing with Resource Recovery Services (RRS) was attempted on the wrong system.**

DFHSH0001 *applid* **An abend (code** *code***) has occurred at offset** *X'offset'* **in module** *module.*

DFHSH0002 *applid* **A severe error (code** *X'code'***) has occurred in module** *module.*

DFHSH0101 *date time applid* **The call to invoke the Distributed Routing Program,** *program,* **has failed. Refer to message DFHSH0105.**

DFHSH0102 *date time applid* **The Distributed Routing Program,** *program,* **has returned a bad response. See following message DFHSH0105.**

DFHSH0103 *date time applid* **The call to invoke the Distributed Routing Program,** *program,* **has failed. The Distributed Routing Program has abnormally terminated with abend Code** *abcode.*

DFHSH0104 *date time applid* **The call to invoke the Distributed Routing Program,** *program,* **has failed due to an invalid AMODE.**

DFHSH0105 *date time applid* **Request (Id:** *requestid,* **Processtype:** *processtype,* **Processname:** *processname,* **Activityname:** *activityname,* **Transaction:** *tranid***) cannot be serviced. It will be retried every minute and will be purged after 24 hours if not serviced then.**

DFHSH0106 *date time applid* **Request (Id:** *requestid,* **Processtype:** *processtype,* **Processname:** *processname,* **Activityname:** *activityname,* **Transaction:** *tranid***) still cannot be serviced. It will be retried every minute and will be purged after** *hours* **hours if not serviced successfully.**

DFHSH0107 *date time applid* **Request (Id:** *requestid,* **Processtype:** *processtype,* **Processname:** *processname,* **Activityname:** *activityname,* **Transaction:** *tranid***) has remained unserviceable for 24 hours and has now been purged.**

DFHSH0108 *date time applid* **Previously unserviceable request (Id:** *requestid,* **Processtype:** *processtype,* **Processname:** *processname,* **Activityname:** *activityname,* **Transaction:** *tranid***) has now been successfully serviced.**

DFHSH0109 *date time applid* **An error has occurred when attempting to access the Local Request Queue data set (DFHLRQ).** *{The file could not be found. | The file was closed. | The file was disabled. | There was insufficient space. | An I/O error occurred. | The data set is being copied.}* **The Local Request Queue is now unavailable.**

DFHSH0110 *date time applid* **The Local Request Queue data set (DFHLRQ) is now available.**

DFHSH0111 *date time applid tranid trannum userid* **An error has occured in Scheduler Services during the prepare phase of syncpoint.**

DFHSM0300 **DFHSMUTL ERROR REPORT**

DFHSN1133 *date time applid* **Signon at** *{netname │console │ terminal }portname* **by user** *userid* **has failed because of an error during SNSCOPE checking.**

DFHSO0001 *applid* **An abend (code** *aaa/bbbb*) **has occurred at offset** *X'offset'* **in module** *modname.*

DFHSO0002 *applid* **A severe error (code** *X'code'*) **has occurred in module** *modname.*

DFHSO0004 *applid* **A possible loop has been detected at offset** *X'offset'* **in module** *modname.*

DFHSO0100I
applid **Sockets domain initialization has started.**

DFHSO0101I
applid **Sockets domain initialization has ended.**

\# **DFHSO0103** *applid* **ENCRYPTION=** *level* **IS NOT**
\# **AVAILABLE ON THIS SYSTEM.**

DFHSO0104 *applid* **Secure sockets program** *pgmname* **could not be loaded. Secure Sockets Layer is not available.**

\# **DFHSO0105** *applid* **ENCRYPTION=** *level* **is not**
\# **available on this system.**
\# **ENCRYPTION=WEAK is used instead.**

DFHSO0106 *date time applid* **An OpenEdition Assembler Callable Service error (code** *X'code'*) **has occurred in module** *modname.*

DFHSO0107 *date time applid* **TCPIPSERVICE** *tcpipservice* **has been opened on port** *portnumber* **at IP address** *ipaddress.*

DFHSO0108 *date time applid* **TCPIPSERVICE** *tcpipservice* **on port** *portnumber* **at IP address** *ipaddress* **has been closed.**

DFHSO0109 *date time applid* **The TCPIPSERVICE** *tcpipservice* **could not be opened because the port** *portnumber* **is already in use on the IP address** *ipaddress* .

DFHSO0110 *date time applid* **The TCPIPSERVICE** *tcpipservice* **cannot be opened on the IP address** *ipaddress* **because the address is unknown to TCP/IP.**

DFHSO0111 *date time applid* **Opening the TCPIPSERVICE** *tcpipservice* **has failed because the region userid is not authorized to bind to port** *portnumber.*

DFHSO0112 *date time applid* **TCPIPSERVICE** *tcpipservice* **cannot be opened because TCPIP status is not OPEN.**

DFHSO0113 *applid* **The IP address** *ip_address* **cannot be resolved to a host name by the gethostbyaddr function.**

DFHSO0114 *date time applid* **The socket listener cannot attach the transaction** *transaction,* **the TCPIPSERVICE** *tcpipservice* **will be closed.**

DFHSO0115 *date time applid* **CICS has registered the group name** *groupname* **with Work Load Manager. The TCP/IP host name** *genericname* **will become available for DNS connection optimization.**

DFHSO0116 *date time applid* **CICS has deregistered the group name** *groupname* **with Work Load Manager.**

DFHSO0117 *applid* **Unable to determine the TCP/IP host name. OpenEdition return code** *X'retcode',* **reason code** *X'rc'.* **TCP/IP services are unavailable.**

DFHSO0119 *applid* **Unable to register service** *servicename* **for WLM DDNS on host** *hostname.*

# DFHSO0120	*applid numtcbs* **TCBs are initialized for SSL processing.**

# DFHSO0121	*applid* **No TCBs have been initialized for SSL processing. Secure Sockets Layer has been deactivated.**

# DFHSO0122	*date time applid* **SSL request from** *ipaddr* **on TCPIPSERVICE(***service***) rejected because of insufficient TCBs.**

# DFHSO0123	*date time applid* **Return code** *rc* **received from function** *fn* **of System SSL. Reason:** *interpretation*.

DFHTD0245	*applid* **NOSPACE condition on a PUT to the intrapartition data set (DD name** *ddname***). The RBA of the next CI would have exceeded 2 gigabytes.**

DFHTS0103	*applid* **Invalid attempt to switch between a TST and RDO for Temporary Storage. The attempt is ignored.**

DFHUS0120	*applid* **An error occurred when performing SNSCOPE checking for a signon request.**

DFHWB0109I
    applid **Web domain initialization has started.**

DFHWB0110I
    applid **Web domain initialization has ended.**

DFHWB0111	*applid* **WB Domain initialization failed. Reason Code:** *X'rc'*.

DFHWB0117	*date time applid tranid* **The CICS Web Interface program DFHWBBLI has received a corrupt parameter list from the converter program** *program_name* **during** *{Decode │ Encode}* **processing.***{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0118	*date time applid tranid* **The CICS Web Interface program DFHWBBLI has detected an error.***{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0119	*date time applid tranid* **The CICS Web Interface program DFHWBBLI has been started incorrectly.***{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0151	*date time applid tranid* **The CICS Web Interface 3270 emulation code was unable to process the data it was passed.***{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0723	*date time applid tranid* **The CICS Web analyzer program returned an error response. Program name:** *progname*. **RESPONSE:** *response*. **REASON:** *reason*. **Host IP address:** *hostaddr*. **Client IP address:** *clientaddr*.*{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0724	*date time applid tranid* **CICS Web attach processing detected an error linking to the codepage conversion module DFHCCNV. Host IP address:** *hostaddr*. **Client IP address:** *clientaddr*.*{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0725	*date time applid tranid* **CICS Web attach processing detected an error linking to the analyzer user replaceable module** *progname*. **Host IP address:** *hostaddr*. **Client IP address:** *clientaddr*.*{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0726	*date time applid tranid* **CICS Web attach processing cannot link to the analyzer user replaceable program. No analyzer specified. Host IP address:** *hostaddr*. **Client IP address:** *clientaddr*.*{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0727	*date time applid tranid* **CICS Web Interface attach processing could not attach the requested alias transaction** *tranid*. **Userid:** *userid*. **Host IP address:** *hostaddr*. **Client IP address:** *clientaddr*.*{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0728	*date time applid tranid* **CICS Web attach processing detected a storage error within the Web receive module DFHWBSR. Host IP address:** *hostaddr*. **Client IP address:** *clientaddr*.*{ │ TCPIPSERVICE: }tcpipservice*

DFHWB0730 *date time applid tranid* **CICS Web attach processing encountered an internal error while processing a client request. Client IP address:** *clientaddr* **Host IP address:** *hostaddr.{ | TCPIPSERVICE: }tcpipservice*

DFHWB0731 *date time applid tranid* **CICS Web attach processing detected an HTTP header longer than 32767 bytes. Host IP address:** *hostaddr.* **Client IP address:** *clientaddr.{ | TCPIPSERVICE: }tcpipservice*

DFHWB0732 *date time applid tranid* **CICS Web attach processing encountered a sockets I/O error while receiving a client request. Client IP address:** *clientaddr.* **Host IP address:** *hostaddr.{ | TCPIPSERVICE: }tcpipservice*

DFHWB1200 *date time applid tranid* **The CICS Web Interface analyzer program set parameter WBRA_USER_DATA_LENGTH to more than the maximum. Program name:** *progname.* **RESPONSE:** *response.* **REASON:** *reason.* **Host IP address:** *hostaddr.* **Client IP address:** *clientaddr.* **Data offset:** *X'dataoffset'.* **Data length:** *X'datalength'.* **Buffer length:** *X'bufferlength'.{ | TCPIPSERVICE: }tcpipservice*

DFHWB1551 *date time applid* **The CWBC Transaction is no longer used to manage CICS Web resources.**

DFHXM0311 *applid* **A severe error (code** *X'code'***) has occurred while initializing task number** *tasknum* **with transaction identifier** *tranid.* **Scheduler resources associated with the task have not been released. The task is suspended indefinitely.**

DFHZC0187 *date time applid* **Reset of connection** *sysid* **failed following the ending of an affinity between this a pplication and a remote LU with generic resource name** *grname* **member name** *applid.* **The connection was locked by task** *taskid,* **transaction** *tranid.*

DFHZC2118 *applid* **Receive Any stall for netname** *netname.*

DFHZC4949 E

    date time applid termid tranid netname **Receive Any stall -** *{data lost. | response lost. |command lost. }***CLSDST return code** *X'rc' sense* **((***instance***) Module name: {DFHZRAC})**

DFHZC4950 E

    date time applid **An error has occurred when attempting to attach the outbound Connection Quiesce Protocol transaction CQPO on session** *termid.* **Release of connection** *sysid* **is continuing. ((***instance***) Module name: {DFHZCLS})**

DFHZC4951 E

    date time applid **An error has been detected when processing an***{ unknown | inbound | outbound}* **Connection Quiesce Protocol request. Transaction** *tranid* **is***{ continuing. | terminating. | terminating abnormally.}* **Error code:** *X'xxxxx'* **Connection:** *yyyy*

DFH5545 W PROGRAM SHOULD BE SPECIFIED WITH BREXIT.

Changed messages

The following is a list of the changed messages:

DFHAC2022	DFHRM0139	DFHWB0131
DFHAM4834E	DFHRM0148	DFHWB0132
DFHAM4889E	DFHRM0208	DFHWB0133
DFHAM4897W	DFHRM0209	DFHWB0134
DFHAM4898E	DFHRM0212	DFHWB0135
DFHAU5012	DFHRM0213	DFHWB0136
DFHCA5217E	DFHRM0214	DFHWB0137
DFHDB2001	DFHRM0215	DFHWB0150
DFHDB2016	DFHRM0216	DFHWB1020
DFHDB2031	DFHRM0218	DFHWB1021
DFHFC0535	DFHRM0219	DFHWB7006
DFHFC0970	DFHRM0220	DFHWB7007
DFHME0110	DFHRM0221	DFHXQ0207
DFHPA1901	DFHRM0222	DFHZC4906E
DFHPA1924I	DFHRM0223	DFHZC6361E
DFHPD0129	DFHRM0225	DFHZC6362E
DFHRM0104	DFHRM0226	DFHZC6363E
DFHRM0105	DFHRM0227	DFHZC6364E
DFHRM0106	DFHRM0235	DFHZC6365E
DFHRM0107	DFHRT4416	DFHZC6366E
DFHRM0108	DFHRT4417	DFHZC6367E
DFHRM0109	DFHRT4418	DFHZC6368E
DFHRM0110	DFHRT4419	DFHZC6369E
DFHRM0111	DFHRT4420	DFHZC6370E
DFHRM0112	DFHTC2538	DFHZC6371E
DFHRM0113	DFHWB0100	DFHZC6902E
DFHRM0114	DFHWB0101	DFHZC6903W
DFHRM0115	DFHWB0102	DFHZC6904W
DFHRM0116	DFHWB0103	DFHZC6905W
DFHRM0117	DFHWB0106	DFHZC6914E
DFHRM0118	DFHWB0108	DFHZC6935I
DFHRM0119	DFHWB0120	DFHZC6936I
DFHRM0120	DFHWB0121	DFHZC6943W
DFHRM0121	DFHWB0122	DFHZC6944W
DFHRM0122	DFHWB0123	DFHZC6945W
DFHRM0123	DFHWB0124	DFHZC6946W
DFHRM0124	DFHWB0125	DFHZC6958W
DFHRM0125	DFHWB0126	DFHZC6966I
DFHRM0126	DFHWB0127	DFHZC6987W
DFHRM0127	DFHWB0128	DFH5217E
DFHRM0135	DFHWB0130	DH5541E

Deleted messages

The following is a list of the deleted messages:

DFHCA5541E	DFHWB0532	DFHWB1523
DFHDB2002	DFHWB0533	DFHWB1524
DFHDB2046	DFHWB0534	DFHWB1526
DFHDB2200	DFHWB0535	DFHWB1528
DFHDB2201	DFHWB0536	DFHWB1529
DFHDB2202	DFHWB0537	DFHWB1531
DFHDB2203	DFHWB0538	DFHWB1532
DFHDB2204	DFHWB0539	DFHWB1533
DFHDB2205	DFHWB0540	DFHWB1540
DFHDB2206	DFHWB0541	DFHWB1541
DFHDB2209	DFHWB0550	DFHWB1548
DFHFC0948E	DFHWB1000	DFHWB1554
DFHSI9000I	DFHWB1001	DFHWB1555
DFHWB0104	DFHWB1002	DFHWB1556
DFHWB0105	DFHWB1003	DFHWB1564
DFHWB0107	DFHWB1005	DFHWB1565
DFHWB0501	DFHWB1006	DFHWB1566
DFHWB0502	DFHWB1500	DFHWB1567
DFHWB0503I	DFHWB1502	DFHWB1568
DFHWB0504	DFHWB1505	DFHWB1575
DFHWB0510	DFHWB1506	DFHWB1576
DFHWB0511	DFHWB1507	DFHWB1577
DFHWB0512	DFHWB1508	DFHWB1580
DFHWB0513	DFHWB1509	DFHWB1581
DFHWB0520	DFHWB1510	DFHWB1582
DFHWB0521	DFHWB1511	DFHWB1596
DFHWB0522	DFHWB1512	DFHWB1607
DFHWB0523	DFHWB1514	DFHWB1608
DFHWB0524	DFHWB1515	DFHWB1609
DFHWB0525	DFHWB1516	DFHWB1610
DFHWB0526	DFHWB1518	DFHWB1650
DFHWB0527	DFHWB1519	DFHWB1651
DFHWB0528	DFHWB1520	DFHWB1900
DFHWB0529	DFHWB1521	DFHWB1901
DFHWB0530	DFHWB1522	DFHWB1902
DFHWB0531		

New abend codes

The following is a list of the new abend codes added to CICS:

AALP	ACFE	AFCL	AJ01
AALQ	ACLA	AFCO	AJ02
AALR	ACLB	AICQ	AJ03
AALS	ACLC	AICS	AJ04
AALT	ACLD	AICT	AJ05
AALU	ACLE	AIOA	AJ07
ABAC	ACLF	AIOB	AJ09
ABAD	ACLG	AIOC	AJ99
ABAE	ACLH	AIOD	AKEH
ABAF	ACL0	AIOE	AKEI
ABRN	ACL1	AIOF	ANQC
ABXA	ACL2	AIOG	ANQD
ABXC	ACL3	AIOH	ANQE
ABXD	ACL4	AIOI	APXA
ABXE	ACL5	AIOJ	ARUA
ABXF	ACL6	AIOK	ARUB
ABXG	ACL7	AIOV	ARUC
ABXH	ACL8	AIO0	ARXA
ABXI	ACL9	AIO1	ARXB
ABXJ	ACQA	AIO2	ARXC
ABXK	ACQB	AIO3	ASHA
ABXM	ACQC	AIO4	ASHB
ABXN	ACRP	AISR	ASHR
ABXO	ADMD	AISZ	ASHU
ABXP	AD3U	AITD	ASH2
ABXQ	AD3Z	AITE	ASH3
ABXS	AEDG	AITF	ASH4
ABX1	AEZE	AITG	ASND
ABX2	AEZF	AJA0	ASOA
ABX3	AEZG	AJMA	ASP9
ABX5	AEZH	AJM1	ATC3
ABX6	AEZI	AJM2	ATSA
ABX7	AEZJ	AJM3	ATSB
ABX8	AEZK	AJM4	AUEL
ABX9	AEZL	AJM5	AWBA
ACAM	AEZM	AJM6	AWBB
ACFA	AEZN	AJM7	AWBE
ACFB	AEZO	AJM8	AWC6
ACFC	AEZP	AJM9	AZCO
ACFD	AEZQ		
AWC7			
AWC8			

Deleted abend codes

The following is a list of the abend codes deleted from CICS:

ABRA	AD3C
ABRB	AD3Y
ABRL	AWBD
ABRM	AWBG
ABRT	AWBW
ABR2	AWB1

Part 5. Prerequisite program products

This part of the book contains information about prerequisite software needed to run CICS TS Release 3.

- "Chapter 25. Prerequisite program products" on page 143

Chapter 25. Prerequisite program products

This chapter lists the program products that you need with CICS TS.

Minimum prerequisite software

Table 28. Minimum releases of software needed to support CICS TS Release 2

Product	Minimum Version and Release level.
OS/390	Version 2 Release 5 OS/390 includes, as base elements, many of the products required by CICS TS, such as MVS, DFSMS™, VTAM, TCP/IP, and Language Environment®. Note that the Language Environment library SCEERUN must be available to CICS during CICS initialization, either by inclusion in the STEPLIB concatenation or the LNKLIST. Language Environment services are used by a number of CICS functions. **Note:** If you migrate your CICS TS 1.3 regions to OS/390 Release 10 and use Language Environment run-time libraries for your CICS applications, you need PTF UQ40921 for APAR PQ35306 to enable CICS to initialize Language Environment.
ACF/TCAM (DCB)	Version 2 Release 4 TCAM is required only if your terminal network includes TCAM devices.
RACF	RACF Security Server, available with OS/390 Release 5, provides for CICS TS security needs. However, there is a restriction with regard to security profiles for temporary storage queues that use long TS queue names. The CICS RACF standard default resource classes for TS (SCICSTST and UCICSTST) provide support for 16 character queue names only if you are not using prefixing. If you have application programs that use resource security for TS queues with 16-character queue names *and* prefixing, you can: • Define your own resource class names by adding new class descriptors to the RACF class descriptor table, as described in the *CICS RACF Security Guide*. • Use OS/390 Release 6 RACF, with a PTF that adds support for 25-character profile names
IMS/ESA® DM	Version 5 Release 1 DBCTL if you have CICS-DL/I applications.
IBM DATABASE 2	Version 3 Release 1 if you have CICS-DB2 applications.
CICSVR	Version 2 Release 3 if you use IBM CICS VSAM Recovery (CICSVR) as your VSAM forward recovery utility.

Compilers and assembler

CICS supports the following assembler, COBOL, PL/I, and C/370 compilers:

- High Level Assembler/MVS & VM & VSE Version 1.1 (5696-234)
- IBM PL/I for MVS & VM (5688-235)
- OS PL/I Optimizing Compiler Version 2 Release 1 (5668-910)
- OS PL/I Optimizing Compiler Version 1 Release 5.1 (5734-PL1), or later
- IBM COBOL for MVS & VM (5688-197)
- VS COBOL II (5668-958 and 5688-023) Requires PTF for APAR PN43097—see "PTFs for APAR PN43097" below for details
- IBM C/C++ for MVS/ESA (5655-121)
- C/370 (5688-040 and 5688-187).

CICS also supports IBM Language Environment for MVS and VM run-time environment (5688-198), with the following SAA AD/Cycle® COBOL, C/370, and PL/I SAA AD/Cycle compilers:

- SAA AD/Cycle COBOL/370®™ (5688-197)
- SAA AD/Cycle C/370 (5688-216)
- SAA AD/Cycle PL/I (5688-235)

If you specify COBOL2 as the translator option with the IBM COBOL for MVS & VM or SAA AD/Cycle COBOL/370 compilers, the CICS translator generates a COBOL RES option which causes a warning message with return code 4 from the compiler, as follows:

```
IGYOS4046-I   The "RESIDENT" option specification is no longer required
              The resident runtime library support is always used.
```

To avoid this warning, specify the translator option COBOL3 for the IBM COBOL for MVS & VM and SAA AD/Cycle COBOL/370 compilers. COBOL3 also ensures that CICS translator-generated output is in mixed case.

PTFs for APAR PN43097

To prevent 0C4 abends caused by IGZECIC returning to CICS with an incorrect mode, you must apply the requisite PTFs for APAR PN43097. These are as follows:

```
PTF  UN48282    for  FMID  JCL1331
PTF  UN48283    for  FMID  JCL1341
PTF  UN48284    for  FMID  JCL1403
```

Limited support for old compilers and assembler

\# Compilers and assembler mentioned earlier in this chapter are fully supported.
\# Some of them are out-of-service.

\# This section deals with other old COBOL compilers and the H assembler. They are
\# all out-of-service, but CICS continues to provide a level of support for them. The
\# varying degrees of support, and the compilers and assembler to which that
\# support applies, are described below.

Execution-time support for H assembler
CICS retains translation and execution-time support for application programs assembled by the MVS Assembler H Version 2 (5668-962).

Continued support for old COBOL compilers

CICS continues to provide full execution-time support for application programs compiled by the following out-of-service COBOL compilers:
- Full American National Standard COBOL Version 4 (5734-CB2)
- OS/VS COBOL (5740-CB1)

The CICS translator also continues to provide the same support for OS/VS COBOL as earlier versions of CICS/ESA and CICS/MVS, and there are no plans at present to remove this support. Nevertheless, you are recommended to migrate your old COBOL application programs to a current release of a COBOL compiler. If you are unable to migrate all your old COBOL application programs to a current-release compiler, consider the following:

- The OS/VS COBOL Product Support (Limited Offering) Extension extends support for OS/VS COBOL, 5740-CB1, for a fee until December 31 1999. However, there are several alternatives, which all extend support for OS/VS COBOL without a fee. Support is provided free for:
  - OS/VS COBOL application programs link-edited with VS COBOL II and running under VS COBOL II Version 1 Release 4
  - OS/VS COBOL applications link-edited with VS COBOL II and running under Language Environment for MVS & VM or Language Environment OS/390
  - OS/VS COBOL applications link-edited with Language Environment for MVS & VM and running under Language Environment for MVS & VM
  - OS/VS COBOL applications link-edited with Language Environment OS/390 and running under Language Environment of OS/390.

  These solutions are referred to as **run-time migration**.
- Note that OS/VS COBOL is not 'year-2000 ready', and is only supported running with other IBM program products, program offerings, and operating systems released before June 30, 1996.
- There are no known problems with older IBM COBOL products relating to the Year 2000. There are two issues to consider with regard to COBOL application programs and the year 2000:
  1. Date-related logic
  2. Service support from IBM

You can obtain service support for OS/VS COBOL and VS COBOL II programs indefinitely by using the Language Environment run-time library to support run-time migration as described above. Thus, an application without **date-related logic** could run in a supported environment beyond the turn of the century, provided there are no source changes or recompiles necessary.

Date-related logic

Any application program that uses date-related logic must be checked for year-2000 problems. Correcting such programs means recompiling, link-editing, and testing. At this point you can combine source upgrade (compiler-migration) with Year 2000 conversion. IBM does not provide any way for OS/VS COBOL programs to obtain a 4-digit year date, so you must compile with at least VS COBOL II to use IBM-provided services for obtaining a 4-digit year date.

To use the COBOL language to get 4-digit year dates, use one of the current COBOL compilers: COBOL for MVS & VM or COBOL for OS/390 & VM. VS COBOL II programs can access the LE date/time routines through dynamic CALL statements when running under LE.

For more information on both run-time migration and source conversion, see the *COBOL Migration Guide*, GC26-4764, and the *LE Migration Guide*, SC28-1944.

Accessing VSAM data sets in RLS mode

RLS access is determined by the file resource definition, and implemented by CICS file control when it issues the file open request. This means that all user application programs supported by CICS can access VSAM files in RLS mode *without change*. Application programs supported by CICS are:

- All programs assembled or compiled by a supported assembler or compiler (see above)
- All programs compiled by an unsupported assembler or compiler and for which CICS maintains execution time support (see above).

Storage protection—OS/VS COBOL programs

If you migrate OS/VS application programs from a pre-CICS/ESA 3.3 environment, be aware of possible storage protection exceptions.

Restricted OS/VS COBOL language statements that result in a call to MVS GETMAIN services, but which worked on earlier releases, might not work when CICS storage protection is active. For example, if a CICS application program written in OS/VS COBOL is defined with EXECKEY(USER), and it issues a restricted COBOL verb that results in an MVS GETMAIN, it abends with an 0C4 abend. In these cases it is not the application program itself that appears to cause the 0C4, but the OS/VS COBOL routines that execute statements such as INSPECT.

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Numerics

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Spine information:

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