

CICS Transaction Server for z/OS



Migration from CICS TS Version 1.3

Version 3 Release 2

CICS Transaction Server for z/OS



Migration from CICS TS Version 1.3

Version 3 Release 2

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 255.

This edition applies to Version 3 Release 2 of CICS Transaction Server for z/OS, program number 5655-M15, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions.

© **Copyright International Business Machines Corporation 2001, 2007. All rights reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Preface	ix
-------------------	----

Part 1. Changes to CICS externals 1

Chapter 1. Changes to installation	3
CICSplex SM installation integrated with CICS installation	3
Requirement for unique CICS region applid	4
Requirement for MEMLIMIT value	4
Release levels on INQUIRE SYSTEM command	4
Installing IPIC support	4
Chapter 2. Changes to system initialization parameters	7
Obsolete system initialization parameters	7
Changed system initialization parameters	8
New system initialization parameters	11
Chapter 3. Changes to CICS-supplied transactions	17
Obsolete options on CEMT commands	17
Changed CEMT commands	18
New CEMT commands	26
Changes to CEBR	28
Changes to CEOT	28
Changes to CETR	29
Controlling tracing for JVMs	29
VTAM dynamic LU alias considerations for CETR	30
Changes to CWXN	30
New transaction CCRL	31
New transaction CEMN	32
New transaction CJGC	32
New transaction CJPI	32
New transactions CREA and CREC	32
New transaction CWXU	33
Additions to CICS RACF category 1 transactions	33
Chapter 4. Changes to resource definition	35
Obsolete resource definition attributes	35
Signon retention with XRF and VTAM persistent sessions	35
Obsolete CICS-supplied resource definitions	36
Changed resource definition attributes	36
DBCS languages: EPI and terminal emulator, change to server code pages	38
Changes to CICS-supplied resource definitions	39
Resource definitions moved to group DFHCOMP8	39
Resource definitions moved to group DFHCOMPA	39
Changes to the DFH\$I IOP samples group	39
New resource definition types and new attributes	40
New CICS-supplied resource definitions	42
DFHADET	42
DFHADST	42
DFHBR, DFHBRCF, DFHBRUT, DFHBRVR, DFHBRVSL DFHBRVSR, and DFH\$BRLK	43
DFHDP	43
DFHDPWB	44
DFHEJBU	44

DFHEJCF, DFHEJVR, and DFHEJVS	44
DFHIPECI	44
DFHOTS	44
DFHPSSGN	45
DFHRQS	45
DFHSO	45
DFH\$WEB	45
Changes to control tables (macro resource definition).	46
Support for temporary storage control tables (TSTs)	47
Chapter 5. Changes to the application programming interface (API)	51
Obsolete API commands and options	51
Changed API commands	52
New API commands	55
Member DFHEILID has moved	56
Changes to the BMS map generation macro (DFHMSD)	56
Change of rules for EXEC CICS SIGNON and SIGNOFF	57
Changes to EXEC CICS VERIFY PASSWORD	58
Changes to sample programs	58
Chapter 6. Changes to the system programming interface (SPI)	61
Obsolete options or values on SPI commands	61
Obsolete XRFSSIGNOFF(FORCE) option on CREATE TYPETERM command	62
Obsolete CVDA values	62
New options or values on SPI commands	63
New SPI commands	73
Changes to DOCTEMPLATE SPI commands	75
Chapter 7. Changes to CICS-supplied utility programs	77
New CICS JVM Application Isolation Utility.	78
New utility program DFHEISUP	78
New utility sample programs for connection factories	79
Chapter 8. Changes to global user exits, task-related user exits, and the exit programming interface	81
Obsolete global user exit points.	81
Changes to the DFHUEPAR standard parameter list	81
Changes to global user exits	82
Changes to global user exit points because of channels.	86
New global user exit points	86
New XFCFRIN and XFCFROUT global user exits	88
Changes to the exit programming interface	88
Changes to task-related user exits.	89
Chapter 9. Changes to the external CICS interface (EXCI)	91
Chapter 10. Changes to user-replaceable programs	93
Changes to the dynamic and distributed routing programs DFHDYP and DFHDSRP.	93
Changes to the IIOP security program, DFHXOPUS	94
Changes to the program autoinstall program DFHPGADX	94
Changes to the terminal autoinstall programs DFHZATDX and DFHZATDY.	95
Changes to the node error program DFHZNEP	95
Changes to DFHCNV	96
Changes to the DFHUCNV user-replaceable data conversion program	96
New user-replaceable programs	96

DFHEJDNX	96
DFHEJEP	97
DFHAPXPO	97
DFHISAIP	97

Chapter 11. Changes to CICS monitoring	99
New and changed monitoring data fields	99
Effects of monitoring clock changes on performance data	105
Changes to the format of CICS SMF 110 monitoring records	106
Changes to the monitoring sample program DFH\$MOLS	106
DFH\$MOLS support for data for earlier CICS releases	108
Calculating CICS and DB2 processor times for DB2 Version 6 or later	109

Chapter 12. Changes to CICS statistics	111
Collecting statistics for Java programs that run in a JVM	113

Chapter 13. Changes to problem determination for CICS-MQ, CICS-DBCTL and CICS-DB2	115
--	-----

Part 2. Migration tasks for CICS Transaction Server 117

Chapter 14. Migration procedures for CICS Transaction Server	119
Redefining and initializing the local and global catalogs	119
Enabling z/OS conversion services	119
Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions	120
Migrating user-modified CICS-supplied resource definitions	122
Migrating copies of CICS-supplied resource definitions	123
CSD compatibility between different CICS releases	123

Chapter 15. Migration for application programs	125
Migration to the integrated translator	127
Migration for sample applications DFH\$FORA, DFH\$FORC and DFH\$FORP	128

Chapter 16. Migration for Business Transaction Services (BTS)	129
--	-----

Chapter 17. Migration for BTAM and TCAM networks	131
Using dummy consoles instead of dummy TCAM terminals	131

Chapter 18. Migrating from COMMAREAs to channels.	133
Migrating LINK commands that pass COMMAREAs	133
Migrating XCTL commands that pass COMMAREAs	133
Migrating pseudoconversational COMMAREAs on RETURN commands	134
Migrating START data	134
Migrating dynamically-routed applications.	134
Coexistence of programs that use channels with back-level CICS releases	135

Chapter 19. Migration for the CICS DB2 interface	137
Migrating to the DB2 group attach facility	137
Enhancement to INQUIRE DB2TRAN	139

Chapter 20. Migration for users of Debug Tool for z/OS	141
---	-----

Chapter 21. Migrating to extended addressing for ESDS	143
--	-----

Chapter 22. Migration for intercommunication	145
---	-----

Giving each CICS region a unique applid	145
Migrating connections to IP interconnectivity	145
The migration utility for converting APPC and MRO connections to IPIC connections	149
Using TCP/IP management and control	153
Migration for multiregion operation (MRO)	153
Using multiple CICS XCF groups	154
CICS enables the READ TIMEOUT value for MRO sessions	155
Chapter 23. Migrating to the Enterprise Workload Manager	157
Chapter 24. Migration for Java applications	159
Key changes to CICS support for Java applications	160
Invoking multiple Java programs in the same CICS task	162
Execution key for Java programs that run in a JVM	162
Migration for CICS TS 1.3 JVMs	163
Migrating class paths in JVM profiles	163
Migrating class paths in JVM profiles: library path	164
Migrating class paths in JVM profiles: middleware classes	164
Migrating class paths in JVM profiles: standard class path	165
Migrating Java garbage collection settings	165
Migration for HPJ-compiled Java programs (Java program objects)	166
Migration for Java applications that use a CICS connector	166
Chapter 25. Migration for the Link3270 bridge	169
Chapter 26. Migration for Named Counter and Shared Temporary Storage servers	171
Chapter 27. Migration for threadsafe programming and the open transaction environment (OTE)	173
How can I make my applications threadsafe?	175
Important changes to accounting for processor time in the open transaction environment	178
Chapter 28. Migration for CICS Web support applications	181
Migrating to resource security for CICS document templates and z/OS UNIX files	185
Chapter 29. Migration for CICS Web services	187
Migration for the Web services assistants	187
Migration for MTOM/XOP support	187
Chapter 30. Migrating to the XPLINK option for C and C++ programs	189

Part 3. Changes to CICSplex SM externals 191

Chapter 31. Changes to CICSplex SM installation and definition	193
CICSplex SM installation integrated with CICS installation	193
Removal of the CAS	193
Dynamic creation of CICS resource definitions for CICSplex SM	194
New method for WUI and CICSplex definition	195
New CICSplex SM WUI server initialization parameters	195
New EYU9XDBT utility for CMAS and CICSplex definition	196
Change to Common Work Area size for a CMAS	196
Changes with RASGNDEF processing in CICSplex SM	196

Changes to CICSplex SM MAS system dump and transaction dump codes	197
Changes to CMAS journaling	197
Change to generic alert structures used by CICSplex SM.	198
Chapter 32. Changes to CICSplex SM views and resource tables	199
Removal of the CICSplex SM TSO end user interface (EUI).	199
New data type SCLOCK12	199
Changes to CICSplex SM Web User Interface security.	201
Obsolete CICSplex SM views, resource tables and attributes	202
CICSplex SM resource tables no longer supported in CICS Transaction Server for z/OS, Version 3 Release 2	203
Changed CICSplex SM views and resource tables	203
New CICSplex SM views and resource tables	206
New Business Application Services definition objects	209
Changed Business Application Services definition objects.	209
Chapter 33. National language support for CICSplex SM messages	211
Chapter 34. Programs that connect to a previous release of CICSplex SM	213
Member DFHEILID has moved	213

Part 4. Migration tasks for CICSplex SM 215

Chapter 35. Running CICSplex SM Version 3.2 and earlier releases concurrently	217
Chapter 36. Removal of support for Windows remote MAS	219
Chapter 37. Performing migration procedures for CICSplex SM	221
Converting a CMAS to Version 3.2	221
Converting a MAS to Version 3.2.	222
Migration for CICSplex SM workload management	223
Application programming interface	224
Converting a Web User Interface Server to Version 3.2	224
Migrating the MAS and updating the Web User Interface CSD group	225
Migrating the contents of the Web User Interface server repository (EYUWREP)	225
Deleting the previous release definitions from CSD files	226
Chapter 38. A phased migration scenario	229
The environment.	229
Objective 1: Add a WUI server at the earlier release.	231
Objective 2: Convert MP CMAS to the new version	232
Objective 3: Convert CMAS B to the new version.	234
Objective 4: Convert CMAS C to the new version.	236

Part 5. Appendixes 239

Bibliography	241
The CICS Transaction Server for z/OS library	241
The entitlement set	241
PDF-only books	241
Other CICS books	243
Determining if a publication is current	243

Accessibility	245
Index	247
Notices	255
Trademarks.	256
Trademarks and service marks	256

Preface

This book is about migration to CICS® Transaction Server for z/OS®, Version 3 Release 2.

This book provides the relevant information for users who plan to migrate from CICS Transaction Server for OS/390®, Version 1 Release 3. 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: The oldest release for which migration information is provided with CICS Transaction Server for z/OS, Version 3 Release 2 is CICS Transaction Server for OS/390, Version 1 Release 3. If you are migrating from a release of CICS earlier than this, you are recommended to read the *Release Guide* and the *Migration Guide* (where applicable) for any additional intervening releases.

This book describes external interfaces, such as system definitions, resource definitions, and programming interfaces, that have changed or are new, and which may require you to make changes to your existing CICS and CICSplex® SM setup.

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

You should also have read about the new function in this release of CICS Transaction Server as described in the *CICS Transaction Server for z/OS Release Guide*.

Notes on terminology

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

CICS TS, unless stated otherwise, refers to the release of CICS Transaction Server for z/OS to which you are migrating.

CICSplex SM refers to the CICSplex System Manager element of CICS Transaction Server for z/OS.

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

Part 1. Changes to CICS externals

Chapter 1. Changes to installation

When migrating to CICS Transaction Server for z/OS, Version 3 Release 2, note these changes to the installation process and important new requirements.

This release of CICS Transaction Server can be installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. The SMP/E dialogs can be used to accomplish the SMP/E installation steps. The process is in line with IBM® Corporate Standards, and might be familiar to those who have installed other z/OS products.

The DFHISTAR process for installing CICS Transaction Server is still available if you prefer it.

The *CICS Transaction Server for z/OS Installation Guide* has information about all the processes for installing CICS Transaction Server.

SCEERUN2 and SCEERUN libraries

There are changes to the way that the SCEERUN and SCEERUN2 libraries must be defined:

- The library SCEERUN2 must be defined in both the STEPLIB and DFHRPL concatenations, in addition to SCEERUN.
- Both the libraries, SCEERUN and SCEERUN2, must be APF-authorized.

CICSplex SM installation integrated with CICS installation

You can now edit the DFHISTAR job to modify both the CICS and CICSplex SM installation parameters for your environment. EYUISTAR is no longer available as a job to modify CICSplex SM installation parameters.

DFHISTAR produces customized JCL for CICS and CICSplex SM. It now includes a number of parameters that are significant only for CICSplex SM, a number of parameters that are significant only for CICS, and a number of parameters that are common to CICS and CICSplex SM.

For CICSplex SM, DFHISTAR generates sample JCL procedures to:

- Create CMAS data sets
- Start a CMAS
- Create Web User Interface (WUI) data sets
- Start a WUI
- Create MAS data sets
- Run a MAS
- Move MAS modules to the link pack area (LPA)

These procedures enable you to create a simple CICSplex SM configuration that consists of a CMAS, a WUI and a managed CICS system (MAS). The CICSplex SM Starter Set, which contained samples of JCL for this purpose, is no longer provided.

Requirement for unique CICS region applid

If your CICS regions are part of a z/OS sysplex, you must ensure that their applids (as specified on the APPLID system initialization parameter) are unique within the sysplex. If CICS is an XRF partner, its specific applid must be unique within the sysplex. In CICS TS for z/OS, Version 3.2, if an applid is not unique (that is, it duplicates the (specific or only) applid of any other CICS region currently active in the sysplex), on startup CICS issues a message and fails to initialize.

This requirement is to support IPIC connections, but it is required whether or not you plan to use that type of connection. It is also to allow multiple XCF groups to contain CICS regions.

Requirement for MEMLIMIT value

To use storage above the 2GB boundary (above the bar) when migrating to CICS TS for z/OS, Version 3.2, you need to set your MEMLIMIT value equal to or greater than 2GB.

The MEMLIMIT value can be set using any of these methods:

1. JCL. MEMLIMIT can either be set to a specific value in JCL or as NOLIMIT, if REGION=0M is specified.
2. SMFPRM PARMLIB member. A MEMLIMIT value can be set in SYS1.PARMLIB(SMFPRMxx).
3. IEFUSI z/OS global user exit.

System usage and workload remain the same as before you altered the MEMLIMIT value. The MEMLIMIT value cannot be altered on a running system.

If MEMLIMIT is set lower than 2GB, but higher than EDSALIM, a warning message is displayed. If MEMLIMIT is set lower than the EDSALIM value, an error message is displayed and CICS does not start up.

Release levels on INQUIRE SYSTEM command

You can use the EXEC CICS INQUIRE SYSTEM CICSTSLEVEL command to determine the version and release number of CICS. Use the EXEC CICS INQUIRE SYSTEM OSLEVEL command to determine the level of z/OS.

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 in CICS TS 3.2 is 030200. This number is returned in the RELEASE parameter of the INQUIRE SYSTEM command.

The level number also appears in the alternative decimal form 6.5 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 DFHPD650.

Installing IPIC support

This topic describes how to install support for IPIC.

System initialization parameters

To activate them at CICS startup, specify TCPIP=YES as a system initialization parameter. (The default value of the **TCPIP** parameter is NO.) For reference information about the **TCPIP** system initialization parameter, see the *CICS System Definition Guide*.

Defining IPIC connections

Before you can use IPIC, you must:

- define and install IPCONNs with attributes appropriate to your CICS environment. For guidance information about defining IPCONNs, see the *CICS Intercommunication Guide*. For reference information about IPCONN definitions, see the *CICS Resource Definition Guide*. IPIC connections can be autoinstalled, see the *CICS Customization Guide*.
- define and install a TCPIPSERVICE definition with the PROTOCOL attribute set to IPIC. See the *CICS Resource Definition Guide* for reference information about TCPIPSERVICE definitions.

Chapter 2. Changes to system initialization parameters

This section summarizes the changes to CICS system initialization parameters.

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

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 the default values. 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).

Obsolete system initialization parameters

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.

System initialization parameters made obsolete in CICS Transaction Server for z/OS, Version 3 Release 2

MNSUBSYS

This parameter, used in earlier releases to specify the subsystem identification in monitoring SYSEVENT class records, is obsolete. If it is specified, it is rejected with a message.

System initialization parameters made obsolete in earlier CICS releases

Table 1. System initialization parameters made obsolete in earlier CICS releases

Obsolete keywords	Explanation
DCT	The destination control table is no longer supported, and all transient data queues must be defined to CICS in the CSD using the TDQUEUE resource type. You can use the old DFHDCT macros for migration purposes only, to enable you to migrate your DCT entries to the CSD using the DFHCSDUP MIGRATE command.
KEYFILE	This is replaced by the KEYRING system initialization parameter (see Table 3 on page 13).
MNEVE	CICS event class monitoring is replaced by support for the MVS Workload Manager, making MNEVE obsolete.
XRFSSOFF	Replaced by RSTSIGNOFF.
XRFSTIME	Replaced by RSTSIGNTIME.

Changed system initialization parameters

For more information on the changed system initialization parameters, see The system initialization parameter descriptions in the *CICS System Definition Guide*.

System initialization parameters changed in CICS Transaction Server for z/OS, Version 3 Release 2

APPLID={DBDCCICS|applid}

CICS application identifiers (APPLIDs) are now required to be unique within the local sysplex: see “Requirement for unique CICS region applid” on page 4.

Also, APPLID can now be used as the application identifier of this CICS region on IPIC connections.

The following text has been added to the description of the APPLID parameter:

If CICS is running in a sysplex, its applid must be unique within the sysplex. Note that, if the CICS extended recovery facility (XRF) is used by any of the regions in the sysplex, the specified applid must not duplicate the *specific* applid of any XRF CICS region. If, on CICS startup, the specified applid is found to duplicate the (specific or only) applid of any other CICS region currently active in the sysplex, CICS issues message DFHPA1946 and fails to initialize.

This parameter can be used also as the application identifier of this CICS region on IPIC connections.

When you define this CICS region to another CICS region, in an MRO or ISC over SNA CONNECTION definition you specify the applid as the NETNAME; in an IPIC IPCONN definition you specify the applid as the APPLID.

CONFDATA={SHOWIHIDETC}

CONFDATA now applies to initial input data received on IPIC connections (IS data), as well as to initial input data received on VTAM RECEIVE ANY operations, MRO connections, and FEPI screens and RPLAREAs:

- **IS:** CICS does not trace the initial input received on an IPIC link.

Trace points SO 0201 and SO 0202 suppress buffer data with the message “Trace data suppressed because it may contain sensitive data”. Subsequent trace point SO 029D (buffer continuation) and buffer data from trace points WB 0700 and WB 0701 is suppressed.

If the transaction definition specifies CONFDATA(NO), IS trace entries are created with the user data, as normal.

If the transaction definition specifies CONFDATA(YES), user data from IS trace points IS 0702 and IS 0906 is replaced with “SUPPRESSED DUE TO CONFDATA=HIDETC IN SIT”. Data from IS trace points IS 0603 and IS 0703 is not shown.

EDASALIM

{34M|number}

The default is now 34MB. If you have created your SIT using previously supplied defaults, you should update the table to use the new CICS-supplied defaults.

ICVTSD={500|number}

ICVTSD, the terminal scan delay value that determines how quickly CICS deals with some terminal I/O requests made by applications, now applies also to IP interconnectivity input.

MSGCASE={MIXED|UPPER}

In previous releases, this parameter applied only to messages displayed by the CICS message domain. It now also applies to messages displayed by the CPSM message domain.

MIXED

This is the default in the SIT; all messages displayed by the CICS message domain or the CPSM message domain remain in mixed case.

UPPER

The message domain displays all mixed case messages in uppercase only.

Note: Mixed case output is not displayed correctly on Katakana display terminals and printers. Uppercase English characters appear correctly as uppercase English characters, but lowercase appears as Katakana symbols. If you have any Katakana terminals connected to your CICS region, specify MSGCASE=UPPER.

Note: If you wish to use uppercase English for your CICS-WebSphere MQ components, you must set MSGCASE=UPPER, and ensure that ASSIGN NATLANGINUSE returns E (US English).

UOWNETQL=user_defined_value

On VTAM=NO regions, UOWNETQL, or its default value, is now used as the default NETWORKID of this CICS region on the IPCONN definitions that define IPIC connections.

System initialization parameters changed in earlier CICS releases

Table 2. Changed system initialization parameters in earlier CICS releases

Keywords	Operands	Explanation
EDSALIM	{30M number}	The default value is now 30M.
ENCRYPTION	{ STRONG WEAK MEDIUM}	Specifies the cipher suites that CICS uses for secure TCP/IP connections. For compatibility with previous releases, ENCRYPTION=NORMAL is accepted as an equivalent to ENCRYPTION=MEDIUM.
LGDFINT	{5 number}	The default value is changed from 30 milliseconds to 5.
MAXJVMTCBS	{5 number}	specifies the maximum number of open TCBs that CICS can create in the pool of J8- and J9-mode TCBs for use by Java™ programs that run in a JVM (the JVM pool). Within this limit, there are no constraints on how many of the TCBs in the JVM pool are J9 TCBs, and how many are J8 TCBs.

Table 2. Changed system initialization parameters in earlier CICS releases (continued)

Keywords	Operands	Explanation
MAXOPENTCBS	{ <u>12</u> number}	In earlier releases, this parameter applies to <i>all</i> open mode TCBs controlled by the CICS dispatcher domain. The range is changed to 12 through 2000, and it now applies to L8 mode open TCBs only, which are reserved for use by task-related user exits that are enabled with the OPENAPI option.. This includes the CICS DB2 [®] adaptor when CICS connects to DB2 Version 6 or later. See also the new system initialization parameters, MAXHPTCBS and MAXJVMTCBS.
MNFREQ	{ <u>0</u> lhmmss}	The minimum value time value you can specify is reduced from 15 minutes to one minute, giving a range of 000100-240000 (instead of 001500-240000).
SPCTR _{xx}	(Unchanged)	New domain codes are available for the <i>xx</i> codes in the keyword. The operands are unchanged. The new codes are: EJ Enterprise Java domain IE ECI over TCP/IP domain II IIOp domain OT Object transaction services domain PT Partner management domain RZ Request streams domain SJ JVM domain
STNTR _{xx}	(Unchanged)	See the entry for SPCTR _{xx} for details of new domain codes, and see additional information in the entry for STNTR.

Table 2. Changed system initialization parameters in earlier CICS releases (continued)

Keywords	Operands	Explanation
STNTR, STNTRxx, SPCTR and SPCTRxx	{level numbers}	The SJ component (JVM domain) now has trace levels 29–32, that are reserved to indicate the JVM trace levels 0, 1, and 2, plus a user-definable JVM trace level. You are recommended to use only the SPCTRSJ system initialization parameter to activate JVM tracing, so that it is only activated for <i>special</i> transactions. Selecting tracing levels 29, 30, 31, 32 or ALL for <i>standard</i> tracing for the JVM domain (SJ) component (using the STNTR or STNTRSJ system initialization parameters) is not recommended, because JVM trace can produce a large amount of output.

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.

For information on the new system initialization parameters, see The system initialization parameter descriptions in the *CICS System Definition Guide*.

For information about the new function relating to these new system initialization parameters, see What's new.

New system initialization parameters added in CICS Transaction Server for z/OS, Version 3 Release 2

FCQRONLY={NO|YES}

Specifies whether you want CICS to force all CICSAPI user application programs that are specified as threadsafe to run file control requests under the CICS QR TCB, as if they were specified as quasi-reentrant programs.

NO CICS honors the CONCURRENCY(THREADSAFE) attribute on program resource definitions, and allows user application programs to run applicable file control request on an open TCB to avoid unnecessary TCB switching.

YES CICS forces all file control requests to run under the CICS QR TCB, as if they were specified as CONCURRENCY(QUASIRENT) programs. With all file requests on the QR TCB, CICS is able to minimise the amount of locking required at the expense of additional TCB switches if requests are run on open TCBs.

The **FCQRONLY=YES** can improve the performance of file-owning regions.

XHFS={YES|NO}

specifies whether CICS is to check the transaction user's ability to access files

in the z/OS UNIX[®] System Services file system. At present, this checking applies only to the user ID of the Web client when CICS Web support is returning z/OS UNIX file data as the static content identified by a URIMAP definition.

Note: The checking is performed only if you have specified YES for the SEC system initialization parameter. However, the RESSEC option on the transaction resource definition does **not** affect this security checking.

YES CICS is to check whether the user identified as the Web client is authorized to access the file identified by the URIMAP that matches the incoming URL. This check is in addition to the check performed by z/OS UNIX System Services against the CICS region user ID. If access to the file is denied for either of these user IDs, the HTTP request is rejected with a 403 (Forbidden) response.

NO CICS is not to check the client user's access to z/OS UNIX files. Note that the CICS region user ID's access to these files is still checked by z/OS UNIX System Services.

Restrictions You can specify the **XHFS** parameter in the SIT, PARM, or SYSIN only.

XRES={YES|name|NO}

specifies whether you want CICS to perform resource security checking for DOCTEMPLATE (CICS document template) resources, and optionally specifies the general resource class name in which you have defined the resource security profiles. If you specify YES, or a general resource class name, CICS calls the external security manager to verify that the userid associated with a transaction is authorized to use the resource. This checking is performed every time a transaction tries to access a CICS document template.

The actual profile name passed to the external security manager is the name of the DOCTEMPLATE resource definition for the CICS document template to be checked, prefixed by its resource type, DOCTEMPLATE. For example, for a document template whose resource definition is named "WELCOME", the profile name passed to the external security manager is DOCTEMPLATE.WELCOME. Even if a command references the document template using its 48-character template name, the shorter name (up to 8 characters) of the DOCTEMPLATE resource definition is always used for security checking.

Note: The checking is performed only if you have specified YES for the **SEC** system initialization parameter and specified the RESSEC(YES) option on the transaction resource definition.

YES CICS calls the external security manager, using the default CICS resource class name of RCICSRES, to check whether the userid associated with a transaction is authorized to use the resource it is trying to access. The resource class name is RCICSRES and the grouping class name is WCICSRES.

name CICS calls the external security manager, using the specified resource class name prefixed by the letter R, to check whether the userid associated with a transaction is authorized to use the resource it is trying to access. The resource class name is *Rname* and the grouping class name is *Wname*. The resource class name specified must be 1 through 7 characters.

NO CICS does not perform any security checks for DOCTEMPLATE resources, allowing any user to access any CICS document template.

Restrictions You can specify the **XRES** parameter in the SIT, PARM, or SYSIN only.

New system initialization parameters added in earlier CICS releases

Table 3. New system initialization parameters added in earlier releases

Keywords	Operands	Explanation
AIBRIDGE	{ AUTO YES}	Specifies whether the autoinstall user-replaceable program (URM) is called for bridge facilities (YES) or whether they are defined automatically by CICS (AUTO).
BRMAXKEEPIME	{ 86400 <i>timeout</i> }	Specifies the maximum time in seconds that bridge facilities are kept when unused, with a default value (and upper limit) of 24 hours.
CLINTCP	{ 437 codepage}	Specifies the default client code page to be used by the DFHCNV data conversion table but only if the CLINTCP parameter in the DFHCNV macro is set to SYSDEF.
CRLSERVER	<i>servername: portnumber</i>	Specifies the name of the LDAP server and the port number that contains the certification revocation lists (CRLs). Specifying this parameter means that CICS checks each client certificate during the SSL negotiation for a revoked status. If the certificate is revoked, CICS closes the connection immediately.
DEBUGTOOL	{ NO YES}	Specifies whether debugging profiles will be used to select programs that will run under the control of a debugging tool.
EJBROLEPRFX	<i>ejbrole-prefix</i>	Specifies a prefix to qualify the security role defined in an enterprise bean's deployment descriptor.
IIOPLISTENER	{ YES NO}	Specifies whether the CICS region is to function as an IIOP listener region.
INFOCENTER	{ <i>infocenter_url</i> }	Specifies the Universal Resource Locator (URL) of the root of the CICS Information Center directory structure.

Table 3. New system initialization parameters added in earlier releases (continued)

Keywords	Operands	Explanation
JVMCCPROFILE	{DFHJVMCC <i>profile</i> }	Specifies the JVM profile to be used for the master JVM that initializes the shared class cache.
JVMCCSIZE	{24M <i>number</i> }	Specifies the size of the shared class cache on an initial or cold start of CICS.
JVMCCSTART	{AUTO YES NO}	Determines whether or not the shared class cache is started during CICS initialization, and sets the status of autostart for the shared class cache.
JVMLEVEL0TRACE, JVMLEVEL1TRACE, JVMLEVEL2TRACE, JVMUSERTRACE	{ <i>option</i> }	Specify the default options for the JVM trace levels.
JVMPROFILEDIR	{/usr/lpp/cicsts/cicsts32 / JVMProfiles <i>directory</i> }	Specifies the name of an z/OS UNIX directory that contains the JVM profiles for CICS.
	(Take note that the operand above is entered without spaces, or line breaks.)	
KEYRING	<i>keyring_name</i>	Specifies the name of the key ring defined in the security manager's database (for example, as defined by the RACF® RACDCERT ADDRING command).
LOCALCCSID	{037 CCSID}	Specifies the default CCSID for the local region. The CCSID is a value of up to 8 characters. If CCSID value is not specified, the default LOCALCCSID is set to 037.
MAXJVMTCBS	{5 <i>number</i> }	Specifies the maximum number of J8 mode open TCBs that can exist concurrently in the CICS region. The pool of J8 mode open TCBs is reserved exclusively for Java programs defined with JVM(YES). <i>number</i> can be any value in the range 1 through 999.

Table 3. New system initialization parameters added in earlier releases (continued)

Keywords	Operands	Explanation
MAXSOCKETS	{ <u>65535</u> number}	Specifies the maximum number of IP sockets that can be managed by the CICS sockets domain. Note that the default value, and any explicit value, is conditional upon the authorization of the CICS region user ID. If the user ID is not defined to UNIX system services as a superuser, the default is restricted to the value specified on the MAXFILEPROC parameter in the BPXPRMxx of SYS1.PARMLIB.
MAXSSLTCBS	{ <u>8</u> number}	Specifies the maximum number of S8 TCBS that can run in the SSL pool. The default is 8, but you can specify up to 1024 TCBS.
MAXXPTCBS	{ <u>5</u> number}	Specifies the maximum number, in the range 1 through 999, of open X8 and X9 TCBS that can exist concurrently in the CICS region.
MNRES	{ <u>OFF</u> ON}	Specifies whether transaction resource monitoring is to be made active during CICS initialization.
RSTSIGNOFF	{ <u>NOFORCE</u> FORCE}	Specifies whether all users signed on to a CICS region are allowed to remain signed on following a persistent sessions restart or an XRF takeover (XRFSSOFF is obsolete).
RSTSIGNTIME	{ <u>500</u> hhmmss}	Specifies the time-out delay interval for signon retention during a persistent sessions restart or an XRF takeover (XRFSTIME is obsolete).
SRVERCP	{ <u>037</u> codepage}	Specifies the default server code page to be used by the DFHCNV data conversion table but only if the SRVERCP parameter in the DFHCNV macro is set to SYSDEF.
SSLCACHE	{ <u>CICS</u> SYSPLEX}	Specifies whether SSL is to use the local or sysplex caching of session ids.
STATEOD	{ <u>0</u> hhmmss}	Specifies the end-of-day time for interval statistics collection.
STATINT	{ <u>030000</u> hhmmss}	Specifies the interval for statistics collection.

Table 3. New system initialization parameters added in earlier releases (continued)

Keywords	Operands	Explanation
XEJB	{ <u>YES</u> NO}	Specifies whether support of security roles is to be enabled.

Chapter 3. Changes to CICS-supplied transactions

This section summarizes the changes to CICS-supplied transactions.

Obsolete options on CEMT commands

Obsolete options on CEMT commands in CICS Transaction Server for z/OS, Version 3 Release 2

INQUIRE CLASSCACHE: The value Reset is no longer displayed for the REUSEST option. If the shared class cache is not started, the value Unknown is displayed. In this situation, CICS cannot identify the reuse status, but when the shared class cache is started, the status always becomes Reuse.

INQUIRE JVM: The value Reset is no longer displayed for the REUSEST option.

INQUIRE MONITOR: The SUBSYSTEMID option is obsolete and has been removed.

SET JVMPOOL: The TERMINATE function on the SET JVMPOOL command is now deprecated. You should use the improved function on the PERFORM JVMPOOL command instead.

Obsolete options on CEMT commands in earlier CICS releases

Table 4. Obsolete options on CEMT commands in earlier CICS releases

CEMT command	Option	Comment
INQUIRE DISPATCHER	ACTHPTCBS MAXHPTCBS	ACTHPTCBS displayed the number of H8 mode open TCBs that were active, and MAXHPTCBS displayed the number that CICS was allowed to attach. H8 mode open TCBs no longer exist.
INQUIRE PROGRAM	HOTPOOLING HOTPOOL NOTHOTPOOL	The values Hotpool and Nothotpool were used to show whether or not the Java program object was to be run in a preinitialized Language Environment® enclave.
INQUIRE REQUESTMODEL	OMGINTERFACE OMGMODULE OMGOPERATION	These options, which returned 31-character, 58-character, and 31-character values respectively, are obsolete and replaced by INTERFACE, MODULE, and OPERATION, each of which returns 255-character values. See Table 8 on page 37 for details of all the changes to the REQUESTMODEL resource definition.
INQUIRE SYSTEM	ACTOPENTCBS MAXOPENTCBS	These options are now included in the new INQUIRE DISPATCHER command, together with the other open TCB options.
SET DISPATCHER	MAXHPTCBS	This option used to specify the maximum number of H8 mode open TCBs that CICS was allowed to attach. H8 mode open TCBs no longer exist.

Table 4. Obsolete options on CEMT commands in earlier CICS releases (continued)

CEMT command	Option	Comment
SET PROGRAM	HOTPOOL NOTHOTPOOL	The values Hotpool and Nothotpool were used to show whether or not the Java program object was to be run in a preinitialized Language Environment enclave.

Changed CEMT commands

Changed CEMT commands in CICS Transaction Server for z/OS, Version 3 Release 2

DISCARD: new IPCONN resource type

Ipconn(*value*)

specifies the name of the IPCONN to be removed. The name can be up to 8 characters long. You cannot discard an IPCONN unless it is in OUTSERVICE status.

DISCARD: new LIBRARY resource type

LIBRARY(*name*)

specifies the name of a LIBRARY resource that you want to remove. The name can be up to 8 characters long. The LIBRARY must be disabled. The DISCARD LIBRARY command removes an installed resource definition and its corresponding catalog entry from an active CICS system.

Note: Specifying a LIBRARY name of DFHRPL is invalid, and will result in the message 'NOT VALID FOR RPL' being displayed.

INQUIRE DOCTEMPLATE: new SIZE option

Size

returns the amount of storage, in bytes, used by the cached copy of the document template. A value of zero is returned if there is no cached copy of the template at the time of the enquiry.

INQUIRE DSAS: removal of SOSSTATUS option, new MEMLIMIT, SOSABOVEBAR, SOSABOVELINE and SOSBELOWLINE options

Memlimit(*value*)

displays the amount of storage available above the 2GB boundary (above the bar), for use by the CICS region. A value of NOLIMIT indicates that no limit has been imposed on the amount of storage that the region can attempt to use.

Sosabovebar(*value*)

displays whether CICS is short-on-storage in the dynamic storage areas above the 2GB boundary (above the bar).

Notsos

CICS is not short-on-storage in any of the dynamic storage areas above the 2GB boundary.

Sos

CICS is short-on-storage in at least one of the dynamic storage areas above the 2GB boundary.

Sosaboveline(*value*)

displays whether CICS is short-on-storage in the dynamic storage areas above the 16MB line, but below the 2GB boundary.

Notsos

CICS is not short-on-storage in any of the dynamic storage areas above the 16MB line (but below the 2GB boundary).

Sos

CICS is short-on-storage in at least one of the dynamic storage areas above the 16MB line (but below the 2GB boundary).

Sosbelowline(value)

displays whether CICS is short-on-storage in the dynamic storage areas below the 16MB line.

Notsos

CICS is not short-on-storage in any of the dynamic storage areas below the 16MB line.

Sos

CICS is short-on-storage in at least one of the dynamic storage areas below the 16MB line.

INQUIRE FILE: new RBATYPE option**Rbatype**

displays whether, for VSAM files, the data set uses extended addressing. The values are:

Extended

This VSAM data set uses extended relative byte addressing and therefore can hold more than 4 gigabytes of data.

Notapplic

One of the following is true:

- The data set is BDAM.
- The file is remote.
- The file is not open.

Notextended

This VSAM data set does not use extended relative byte addressing and therefore cannot hold more than 4 gigabytes of data.

You cannot modify the contents of this field.

INQUIRE IRC: new XCFGROUP option**Xcfgroup**

displays the name of the cross-system coupling facility (XCF) group of which this region is a member.

If this region is not a member of an XCF group (because it has not signed on to IRC), XCFGROUP displays the XCF group the region would be in if XCF were opened.

For introductory information about XCF/MRO, see Cross-system multiregion operation (XCF/MRO) in the *CICS Intercommunication Guide*.

INQUIRE MONITOR: new COMPRESSST option**COMpressst**

displays whether data compression is performed for monitoring records. The values are:

Compress

Data compression is performed.

Nocompress

Data compression is not performed.

Note: You can reset this value by overtyping it with a different value.

INQUIRE PROGRAM: The USECOUNT option now displays a use count for Java programs. In earlier CICS releases, this count was not available.

INQUIRE PIPELINE: new options

Ciddomain(*value*)

Displays the name of the domain that is used to generate MIME content-ID values that identify binary attachments.

Mode(*value*)

Displays the operating mode of the pipeline.

PROVIDER

CICS is using the pipeline as a service provider of Web services.

REQUESTER

CICS is using the pipeline as a service requester of Web services.

UNKNOWN

The operating mode of the pipeline cannot be determined.

Mtomnoxopst(*value*)

Displays the status of the pipeline for sending outbound messages in MIME format when binary attachments are not present.

MTOMNOXOP

Outbound messages are sent in MIME format, even when there are no binary attachments present.

NOMTOMNOXOP

Outbound messages are only sent in MIME format when there are binary attachments present.

Mtomst(*value*)

Displays the status of the MTOM handler in the pipeline.

MTOM

The MTOM handler is enabled in the pipeline.

NOMTOM

The MTOM handler is not enabled in the pipeline.

Respwait (*number*)

Displays the number of seconds that an application program waits for an optional message from a remote Web service. If no value is displayed, the default timeout value of the transport protocol is being used.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for WebSphere® MQ is 60 seconds.

Sendmtomst(*value*)

Displays the status of the pipeline for sending outbound messages in MIME format.

NOSENDMTOM

Outbound messages are never sent in MIME format.

SAMESENDMTOM

Outbound messages are only sent in MIME format when the inbound message is in MIME format.

SENDMTOM

Outbound messages are always sent in MIME format.

SOAPlevel(*value*)

Displays the level of SOAP that is supported in the pipeline. The SOAP level can be 1.1 or 1.2. If the pipeline is not being used for SOAP messages, a value of NOTSOAP is displayed.

Xopdirectst(*value*)

Displays the status of the pipeline for handling XOP documents and binary attachments in direct or compatibility mode.

XOPDIRECT

The pipeline is processing XOP documents and binary attachments in direct mode.

NOXOPDIRECT

The pipeline is processing XOP documents and binary attachments in compatibility mode.

Xopsupportst(*value*)

Displays the status of the application handler for processing XOP documents and binary attachments directly.

XOPSUPPORT

The application handler supports the direct handling of XOP documents and binary attachments.

NOXOPSUPPORT

The application handler does not support the direct handling of XOP documents and binary attachments.

INQUIRE SYSTEM: removal of SOSSTATUS option, new SOSABOVEBAR, SOSABOVELINE and SOSBELOWLINE options**Sosabovebar**(*value*)

displays whether CICS is short on storage in the dynamic storage areas above the 2GB boundary (above the bar).

Notsos

CICS is not short on storage in any of the dynamic storage areas above the 2GB boundary.

Sos CICS is short on storage in at least one of the dynamic storage areas above the 2GB boundary.

Sosaboveline(*value*)

displays whether CICS is short on storage in the dynamic storage areas above the 16MB line, but below the 2GB boundary.

Notsos

CICS is not short on storage in any of the dynamic storage areas above the 16MB line (but below the 2GB boundary).

Sos CICS is short on storage in at least one of the dynamic storage areas above the 16MB line (but below the 2GB boundary).

Sosbelowline(*value*)

displays whether CICS is short on storage in the dynamic storage areas below the 16MB line.

Notsos

CICS is not short on storage in any of the dynamic storage areas below the 16MB line.

Sos CICS is short on storage in at least one of the dynamic storage areas below the 16MB line.

INQUIRE TCPIP SERVICE: new options: A new value of Identify can be returned on the ATTACHSEC option:

Attachsec

indicates the level of attach-time security used by the connection. Values are:

Identify

Incoming attach requests must specify a user identifier. (IDENTIFY is used when the connecting system has a security manager; for example, if it is another CICS region.)

Local

CICS does not require a userid or password from clients.

Notapplic

This option has no meaning for Web interface or IIOPTCP/IP services.

Verify

Incoming attach requests must specify a user identifier and a user password.

Realm (value)

returns the 56-character realm that is used during the process of HTTP basic authentication.

There is also a new value for the PROTOCOL option:

IPic

IP interconnectivity.

INQUIRE WEBSERVICE: new options

CCSID(value)

Displays the CCSID that is used to encode data between the application program and the Web service binding file at run time. This value is set using the optional **CCSID** parameter in the Web services assistant when the Web service binding file was generated. If the *value* is 0, the default CCSID for the CICS region that is specified by the **LOCALCCSID** system initialization parameter is used.

Mappinglevel(value)

Displays the mapping level that is used to convert data between language structures and Web service description (WSDL) documents. The value of the mapping level is 1.0, 1.1, 1.2 or 2.0. The default is to use a mapping level of 1.0.

Minrunlevel(value)

Displays the minimum runtime level that is required to run the Web service in CICS. The value of the runtime level is 1.0, 1.1, 1.2 or 2.0.

Xopdirectst(value)

Indicates whether the Web service is capable of handling XOP documents and binary attachments in direct mode.

NOXOPDIRECT

The Web service cannot handle XOP documents and binary attachments in direct mode. This is either because validation is switched on for the Web

service, or because the Web service implementation does not support the handling of XOP documents and binary attachments. Compatibility mode is used instead.

XOPDIRECT

The Web service can handle XOP documents and binary attachments in direct mode.

Xopsupportst(*value*)

Indicates whether the Web service implementation is capable of handling XOP documents and binary attachments.

NOXOPSUPPORT

The Web service implementation is not capable of handling XOP documents and binary attachments.

XOPSUPPORT

The Web service implementation is capable of handling XOP documents and binary attachments. This is true for any CICS-generated web service created by a level of CICS that supports MTOM/XOP.

PERFORM STATISTICS: new LIBRARY option

LIBRARY

LIBRARY statistics are to be written immediately to the SMF data set.

SET MONITOR: new options

COMpress

Data compression is to be performed for monitoring records.

NOCOMpress

Data compression is not to be performed for monitoring records.

SET PIPELINE: new RESPWAIT option

Respwait(*value*)

Specifies the time in seconds that an application program should wait for a response message from a remote Web service. The value can range from 0 to 9999 seconds.

If you do not specify a value, the default timeout value of the transport protocol is used.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for MQ is 60 seconds.

PERFORM STATISTICS: Statistics can be written for the new resource types DOCTEMPLATE, IPCONN, and MQCONN.

DISCARD DOCTEMPLATE, INQUIRE DOCTEMPLATE, SET DOCTEMPLATE: If resource security for document templates is active in the CICS region, with the XRES system initialization parameter set on (which is the default), and assuming RESSEC(YES) is specified for CEMT, these commands are subject to resource security checking.

Changed CEMT commands in earlier CICS releases

Table 5. Changed CEMT commands in earlier CICS releases

CEMT command	Option	Explanation
INQUIRE AUTOINSTALL	AIBRIDGE	Returns a value indicating whether the autoinstall URM is called for bridge facilities.
INQUIRE CORBASERVER	AUTOPUBLISH CLIENTCERT DJARDIR SSLUNAUTH UNAUTH ENABLESTATUS	These options display: <ul style="list-style-type: none"> The status of autopublishing for enterprise beans The 255-character name of the deployed JAR file directory The names of the TCP/IP service definitions referenced by the CorbaServer (named by CLIENTCERT, SSLUNAUTH, and UNAUTH). ENABLESTATUS displays a value indicating the current state of the CorbaServer (DISABLED, DISABLING, DISCARDING, ENABLED, or ENABLING). ENABLESTATUS replaces the STATE option, which is now obsolete.
INQUIRE DB2CONN	DB2GROUPID RESYNCMEMBER	These options display: <ul style="list-style-type: none"> The DB2 group ID if CICS is using the DB2 group attach facility The resynchronization policy to be used for units of work awaiting resolution. The possible values are RESYNC or NORESYNC.
INQUIRE DISPATCHER	ACTSSLTCBS ACTXPTCBS MAXSSLTCBS MAXXPTCBS	ACTSSLTCBS displays the number of S8 mode open TCBS that are active, and MAXSSLTCBS displays the number that CICS is allowed to attach. ACTXPTCBS displays the number of X8 and X9 mode open TCBS that are active, and MAXXPTCBS displays the number that CICS is allowed to attach.
INQUIRE DOCTEMPLATE	HFSFILE	Returns the fully-qualified name of the z/OS UNIX System Services file where the template resides.
INQUIRE PROGRAM	JVMPROFILE LENV	The JVMPROFILE option displays the name of the JVM profile for a Java program. The LENV CVDA value for the RUNTIME option replaces the LE370 value. Its meaning is unchanged and the numeric value associated with this CVDA remains 377.
INQUIRE PROGRAM	APIST RUNTIME has a new value	APIST displays the API attribute of the installed program definition. The values are: CICSAPI OPENAPI The XPLINK value for the RUNTIME option means that the program is a C or C++ program which has been compiled using the XPLINK option.

Table 5. Changed CEMT commands in earlier CICS releases (continued)

CEMT command	Option	Explanation
INQUIRE REQUESTMODEL	BEANNAME CORBASERVER INTERFACE INTFACETYPE MODULE OPERATION TYPE	The REQUESTMODEL resource definition now supports both CORBA and EJB requests, and these new attributes are added to support this dual purpose definition. Note that INTERFACE, MODULE, and OPERATION replace the OMGINTERFACE, OMGMODULE, and OMGOPERATION equivalent options of CICS TS 1.3.
INQUIRE SYSTEM	DEBUGTOOL	Displays a value (DEBUG or NODEBUG) indicating whether debugging profiles will be used to select programs that will run under the control of a debugging tool.
INQUIRE SYSTEM	FORCEQR has a revised description	The description of FORCEQR, and its value FORCE are altered to limit its relevance to CICSAPI programs, because it does not apply to OPENAPI programs.
INQUIRE TASK	BRFACILITY	Returns an 8-byte field containing the facilitytoken for the bridge facility in use by the task.
INQUIRE TCPIP	ACTSOCKETS MAXSOCKETS	Returns (1) the number of active sockets and (2) the maximum number of TCP/IP sockets that can be managed by the CICS region.
INQUIRE TCPIP	CRLSERVER SSLCACHE	CRLSERVER displays the name and port number of the LDAP server that is used to store certificate revocation lists for SSL connections. SSLCACHE displays whether CICS is using local (CICS) or sysplex caching of session ids.
INQUIRE TCPIPSERVICE	ATTACHSEC AUTHENTICATE CERTIFICATE DNSGROUP DNSSTATUS GROUPCRITICAL	These options display security information, the 18-character DNS group name that the TCPIPSERVICE registers with WLM, the current WLM/DNS status, and whether the TCPIPSERVICE is a critical member of the DNS group.
INQUIRE TCPIPSERVICE	MAXDATALEN	Displays the maximum length of data that may be received by CICS as an HTTP server.
INQUIRE TERMINAL NETNAME	NQNAME	Displays the 17-character network qualified name of the terminal.
INQUIRE TRANSACTION	OTSTIMEOUT	Displays the time an OTS transaction in an EJB environment is allowed to run before the initiator takes a syncpoint (or rolls back the OTS transaction).
INQUIRE UOW	OTSTID(<i>value</i>)	Displays the transaction identifier (TID) of the OTS transaction of which the UOW is part.
INQUIRE UOWLINK	HOST(<i>name</i>) TYPE(IIOPI)	Displays the TCP/IP host name, used to refer to the participant an OTS transaction, when the TYPE option returns IIOPI. IIOPI is a new value on the TYPE option.
INQUIRE WORKREQUEST	SOAP	Specifies that any action you request is limited to Web service work requests.
PERFORM CORBASERVER	SCAN	Enables you to scan the CorbaServer's deployed JAR file directory (also known as the pickup directory) for new or updated deployed JAR files.

Table 5. Changed CEMT commands in earlier CICS releases (continued)

CEMT command	Option	Explanation
PERFORM STATISTICS	CORBASERVER JVMPOOL REQUESTMODEL TCPIP	Enable you to write statistics for the CORBASERVER, JVMPOOL, REQUESTMODEL, and TCPIP resource types to the SMF data set.
PERFORM STATISTICS	BEAN, JVMPROFILE, JVMPROGRAM	New resource types for which statistics can be recorded.
PERFORM STATISTICS	PIPELINE WEBSERVICE	New resource types for which statistics can be recorded.
SET AUTOINSTALL	AIBRIDGE	Defines whether the autoinstall URM is called for bridge facilities.
SET CORBASERVER	AUTOPUBLISH	Allows you to set the enterprise beans autopublish option in a CorbaServer.
SET CORBASERVER	DISABLED ENABLED	Specifies whether to enable or disable the CorbaServer.
SET DB2CONN	DB2GROUPID RESYNCMEMBER	Allow you to set DB2 group ID and resynchronization policy for CICS DB2 group attach support.
SET DISPATCHER	MAXSSLTCBS MAXXPTCBS	MAXSSLTCBS displays the maximum number of S8 mode open TCBs that CICS is allowed to attach. MAXXPTCBS specifies the maximum number of X8 and X9 mode open TCBs that CICS is allowed to attach.
SET PROGRAM	JVMPROFILE	For Java programs, this option specifies the 8-character name of a JVM profile that is to be used for the JVM in which the program runs. Any instances of this program that are currently running in a JVM with the old JVM profile are unaffected, and are allowed to finish running.
SET SYSTEM	DEBUG NODEBUG	Specifies whether debugging profiles will be used to select programs that will run under the control of a debugging tool.
SET SYSTEM	FORCEQR has a revised description	The description of FORCEQR, and its value FORCE are altered to limit its relevance to CICSAPI programs, because it does not apply to OPENAPI programs.
SET TCPIP	MAXSOCKETS	Enables you to alter the maximum number of TCP/IP sockets allowed in the CICS region.
SET TCPIPSERVICE	DNSSTATUS	Enables you to alter the CICS DNS registration status.
SET TCPIPSERVICE	MAXDATALEN	Specifies the maximum length of data that may be received by CICS as an HTTP server.
SET WORKREQUEST	SOAP	Specifies that any action you request is limited to Web service work requests.

New CEMT commands

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

New CEMT commands in CICS Transaction Server for z/OS, Version 3 Release 2

INQUIRE IPCONN

Retrieve information about IPCONNs.

INQUIRE LIBRARY

Retrieve information about LIBRARY resources.

PERFORM JVMPOOL

Start and terminate JVMs in the JVM pool.

SET IPCONN

Change the attributes of an IPCONN or cancel outstanding AIDs.

SET LIBRARY

Change the attributes of LIBRARY resource.

SET DOCTEMPLATE

Refresh the cached copy of a document template installed in your CICS region, or phase in a new copy of a CICS program or exit program that is defined as a document template.

New CEMT commands in earlier CICS releases

Table 6. New CEMT commands in earlier CICS releases

CEMT command	Function
DISCARD CORBASERVER	Discard installed CORBASERVER resource definitions.
DISCARD DJAR	Discard installed DJAR resource definitions, together with any associated beans.
DISCARD PIPELINE	Use the command to remove a PIPELINE from the CICS system and the CICS catalog.
DISCARD URIMAP	Remove a URIMAP from the CICS system and the CICS catalog.
DISCARD WEBSERVICE	Remove a WEBSERVICE from the CICS system and the CICS catalog.
INQUIRE BEAN	Display information about a specified bean.
INQUIRE BRFACILITY	Display information about installed bridge facilities.
INQUIRE CLASSCACHE	Obtain information about the active shared class cache in the CICS region, and report the presence of any old shared class caches that are awaiting deletion.
INQUIRE CORBASERVER	Display information about installed CORBASERVER resource definitions in the CICS region.
INQUIRE DISPATCHER	Display CICS system information used by the CICS dispatcher. Note that this new command includes the ACTOPENTCBS and MAXOPENTCBS options that have been removed from INQUIRE SYSTEM.
INQUIRE DJAR	Display information about installed DJAR resource definitions in the CICS region.
INQUIRE HOST	Retrieve information about virtual hosts in the local CICS region.
INQUIRE JVM	Identify JVMs in a CICS region and get information about their status.

Table 6. New CEMT commands in earlier CICS releases (continued)

CEMT command	Function
INQUIRE JVMPOOL	Display information about the pool of JVMs in the CICS region.
INQUIRE PIPELINE	Retrieve information about an installed PIPELINE.
INQUIRE URIMAP	Retrieve information about URIMAP resource definitions.
INQUIRE WEBSERVICE	Retrieve information about an installed WEBSERVICE.
INQUIRE WORKREQUEST	Track work requests in the local CICS region.
PERFORM CLASSCACHE	Start and reload the shared class cache, or phase out, purge or forcepurge the shared class cache and the worker JVMs associated with it.
PERFORM CORBASERVER	Perform a specified action, either PUBLISH or RETRACT, on the beans in a CORBASERVER resource definition.
PERFORM DJAR	Perform a specified action, either PUBLISH or RETRACT, on an installed DJAR resource definition.
PERFORM PIPELINE	Initiate a scan of the Web service binding directory that is specified in the WSBIND attribute of the PIPELINE definition.
SET BRFACILITY	Flag the bridge facility for deletion.
SET CLASSCACHE	Enable you to set the status of autostart for the shared class cache.
SET CORBASERVER	Alter the time-out value of the session beans (SESSBEANTIME) in an installed CORBASERVER resource definition in the CICS region.
SET DISPATCHER	Alter the system values used by CICS dispatcher
SET HOST	Enable or disable a virtual host.
SET JVMPOOL	Enable or disable the JVM pool, or terminate it altogether.
SET PIPELINE	Enable or disable a PIPELINE.
SET URIMAP	Enable or disable a URIMAP definition, and apply or remove redirection for a URIMAP definition.
SET WEBSERVICE	Set the validation status of a WEBSERVICE.
SET WORKREQUEST	Purge or forcepurge a specific work request task.

Changes to CEBR

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, the CEBR transaction is changed to permit the entry of lower case and mixed case queue names.

This applies equally to the queue name used on the CEBR command, and to overtyping a queue name on the displayed CEBR panel. To enter a queue name which includes lower case characters, first ensure that upper case translation is suppressed for the terminal you are using, and then enter the case-sensitive queue name.

Changes to CEOT

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there are new options added to the CEOT transaction that allow you to alter the uppercase translation status (UCTRAN) for your own terminal, for the current session only.

The new keywords are NOUCTRAN, UCTRAN, or TRANIDONLY. These new options enable to switch between the uppercase translation options as required. For

example, you might need to switch off uppercase translation temporarily while you use CEDA to define some resource definitions that require mixed-case attribute values.

Changes to CETR

The CETR transaction is enhanced to enable you to set special tracing for the following new components:

BR	Bridge domain
DP	Debug Tool Interface domain
EJ	Enterprise Java domain
IE	ECI over TCP/IP domain
II	IIOp domain
IS	Intersystems communication and MRO
OT	Object transactions services domain
PI	Pipeline Manager domain
PT	Partner management domain
RA	Resource manager adapters
RZ	Request streams domain
SJ	CICS JVM domain.

Controlling tracing for JVMs

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, CETR has new option screens to display and update trace settings for JVMs.

Press PF6 on the main screen to access the JVM trace options screens. (Although the JVM trace options are part of the SJ component, they are controlled using the JVM trace options screens, rather than the component trace options screen.) You can use these screens to specify the JVM trace options, using the “free-form” 240-character field, and to specify trace settings for JVMs using the Standard and Special flags. You can then use the Transaction and Terminal Trace screen to switch on these flags for particular transactions. JVM trace can produce a large amount of output, so you should normally activate JVM tracing for special transactions, rather than turning it on globally for all transactions.

The default JVM trace options that are provided in CICS use the JVM trace point level specifications. The default settings for JVM Level 0 trace, JVM Level 1 trace, and JVM Level 2 trace specify LEVEL0, LEVEL1, and LEVEL2 respectively, so they map to the Level 0, Level 1 and Level 2 trace point levels for JVMs. A Level 0 trace point is very important, and this classification is reserved for extraordinary events and errors. Note that unlike CICS exception trace, which cannot be switched off, the JVM Level 0 trace is normally switched off unless JVM tracing is required. The Level 1 trace points and Level 2 trace points provide deeper levels of tracing. The JVM trace point levels go up to Level 9, which provide in-depth component detail. It is suggested that you keep the CICS-supplied level specifications, but if you find that another JVM trace point level is more useful for your purposes than one of the default levels, you could change the level specification to map to your preferred JVM trace point level (for example, you could specify LEVEL5 instead of LEVEL2 for the JVMLEVEL2TRACE option). The default values for JVM trace options can be overridden using the CICS system initialization parameters JVMLEVEL0TRACE, JVMLEVEL1TRACE, JVMLEVEL2TRACE and JVMUSERTRACE.

You can add further parameters to the basic level specifications for JVM Level 0 trace, JVM Level 1 trace, and JVM Level 2 trace, if you want to include or exclude

particular components or trace point types at the selected trace levels. If you want to create more complex specifications for JVM tracing which use multiple trace point levels, or if you do not want to use trace point levels at all in your specification, use the JVMUSERTRACE option to create a trace option string that includes the parameters of your choice. Defining and activating tracing for JVMs in the *CICS Problem Determination Guide* has information about the JVM trace options that you can set using the JVM Level 0 trace, JVM Level 1 trace, JVM Level 2 trace, and JVM User trace levels. There is further information about JVM trace and about problem determination for JVMs in the *IBM Developer Kit and Runtime Environment, Java 2 Technology Edition, Version 1.4.2 Diagnostics Guide*, which is available to download from www.ibm.com/developerworks/java/jdk/diagnosis/ .

VTAM dynamic LU alias considerations for CETR

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, be aware that if dynamic LU alias is in operation for the CICS region, and you want to use VTAM® exit tracing to trace the bind flows for an autoinstalled terminal, the NETNAME you specify on the CETR “Transaction and Terminal Trace” panel should be the real network name. If you use the real network name, and there is more than one network using that name with CICS, VTAM exit tracing is activated for each occurrence of the network name. However, if you want to trace terminal activity after the LU alias name is known, specify the LUALIAS name.

Changes to CWXN

If you are migrating from a CICS release earlier than CICS Transaction Server for z/OS, Version 3 Release 1, there are several changes to the processing carried out by the CICS-supplied transaction CWXN, the Web attach transaction.

The most significant of the changes are:

- If a matching URIMAP definition is found for an HTTP request, CWXN now invokes the analyzer program only if instructed to do so by the URIMAP definition.
- Where the HTTP version of the request is HTTP/1.1, CWXN carries out some of the responsibilities of an HTTP server by performing some basic acceptance checks on the request. In response to these checks, CWXN might take action to return a response to the request without involving a user-written application program.
- CWXN pre-processes chunked and pipelined messages received from a Web client, so that user-written applications do not have to perform this processing.
 - Chunked messages are single messages split up and sent as a series of smaller messages (chunks). CWXN receives and assembles the chunks of the message to create a single HTTP request. CWXN checks that the message is complete before passing it to the user application. The user application can then process the request like any other HTTP request.
 - Pipelined messages are multiple messages sent in sequence, where the sender does not wait for a response after each message sent. A server must respond to these messages in the order that they are received. To ensure this, CWXN holds pipelined requests and releases them one at a time to the user application. The user application must send a response to the first request before receiving the next request from CWXN.
- Persistent connections are now the default behavior. The connection is only closed if the Web client requests closure, or if the timeout period is reached, or if the Web client is an HTTP/1.0 client that does not send a Keep-Alive header.

- Before CICS Transaction Server for z/OS, Version 3 Release 1, if a Web client and CICS had a persistent connection, the CWXN transaction would remain in the system for the duration of the persistent connection. Now, the CWXN transaction terminates after each request from the Web client has been passed to the alias transaction (CWBA or another transaction), or after the static response has been delivered. The Sockets listener task monitors the socket and initiates a new instance of CWXN for each request on the persistent connection. This behavior, known as an asynchronous receive, avoids the possibility of a deadlock in a situation where the maximum task specification (MXT) has been reached, when a CWXN transaction remaining in the system would not be able to attach alias transactions to process further requests. It also means that the maximum number of concurrent connections between CICS and Web clients is no longer limited by the MXT value, but can in theory be up to 64000. In terms of system activity, if you used persistent connections before CICS Transaction Server for z/OS, Version 3 Release 1, you should now see an increased transaction rate, but a decrease in the number of concurrent tasks.

New transaction CCRL

CCRL, the certificate revocation lists transaction, was introduced in CICS Transaction Server for z/OS, Version 3 Release 1. Use CCRL to create and update the certificate revocation lists (CRLs) that are stored in an LDAP server. You only need to use CCRL if you are implementing SSL in your CICS regions and want each connection checked for a revoked certificate during the SSL handshake.

The CCRL transaction specifies the location of CRL repositories on the world wide web. CICS downloads the lists from the CRL repository at the specified URL and stores it in the LDAP server. You can specify more than one URL if you need to access multiple CRL repositories.

Before you run the CCRL transaction, you must have the following set up in CICS:

- An LDAP server that is set up and configured to store the certificate revocation lists.
- The CRLSERVER system initialization parameter is defined with the name of the LDAP server that stores the certificate revocation lists.

You can run the CCRL transaction from a terminal or from a START command. If you want to schedule regular updates, use the START command option.

To run the transaction from a terminal, enter the following command: `CCRL url-list` where *url-list* is a space-delimited list of URLs that contain the certificate revocation lists that you want to download.

To run the transaction from a START command, using the following syntax:

```
EXEC CICS START TRANSID(CCRL) FROM (url-list)
LENGTH (url-list-length) [INTERVAL(hhmmss)|TIME(hhmmss)]
```

where *url-list* is a space-delimited list of URLs that contain the certificate revocation lists that you want to download, *url-list-length* is the length of the URL list, and *hhmmss* is the interval or expiration time at which the CCRL transaction is scheduled to run.

If you enter an invalid URL, you will receive an error message.

New transaction CEMN

CEMN, the CICS monitoring facility transaction, was introduced in CICS Transaction Server for z/OS, Version 3 Release 2.

CEMN gives you an alternative to the INQUIRE MONITOR and SET MONITOR system programming commands and the equivalent CEMT commands. You can use the transaction to inquire on the settings for the CICS monitoring facility, and to change some of the settings without needing to restart CICS.

The topic in the *CICS Supplied Transactions* explains how to use CEMN and lists the settings that can be changed using it.

CEMN is a Category 2 transaction.

New transaction CJGC

CJGC, the CICS JVM garbage collection transaction, was introduced in CICS Transaction Server for z/OS, Version 3 Release 2.

When CICS initiates garbage collection in a JVM, this transaction is used for the process, so that the time spent in garbage collection is assigned to CJGC rather than to one of the user transactions that used the JVM.

If garbage collection is caused by an allocation failure in the JVM, rather than being scheduled by CICS, this takes place while the user application is running, and the CJGC transaction is not used.

The GC_HEAP_THRESHOLD option in the JVM profile specifies the heap utilization limit at which CICS initiates garbage collection. The default is 85%. If GC_HEAP_THRESHOLD is set to 100, CICS never initiates garbage collection, so the CJGC transaction is not used.

CJGC is a Category 1 transaction.

New transaction CJPI

CJPI was introduced in CICS Transaction Server for z/OS, Version 3 Release 2. It starts up new JVMs as a result of a PERFORM JVMPOOL command.

CJPI is a Category 1 transaction.

New transactions CREA and CREC

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, these two transactions which assist in the deployment of enterprise beans are new.

CREA enables you to generate, based on installed DJAR resource definitions, REQUESTMODEL definitions that can be created and installed dynamically in the CICS region, or written to the CSD, or both.

CREC provides a read-only view of the DJAR contents and any related tranids, without the ability to define REQUESTMODELS either to CICS or to the CSD.

For details of these new transactions, see in the *CICS Supplied Transactions* manual.

New transaction CWXU

CWXU, the CICS Web user-defined protocol attach transaction, was introduced in CICS Transaction Server for z/OS, Version 3 Release 1.

From CICS Transaction Server for z/OS, Version 3 Release 1, processing for HTTP requests and processing for non-HTTP requests are kept separate. This ensures that CICS can perform basic acceptance checks on HTTP requests and responses, and that non-HTTP requests are not subjected to these checks. Processing for non-HTTP requests must now be carried out under the user-defined (USER) protocol, which is specified on the TCPIP SERVICE definition for the port that receives the requests.

CWXU is the default when the protocol is defined as USER. CWXU executes the CICS program DFHWBXN. The DFHCURDI sample includes a sample definition for CWXU. An alternative transaction that executes DFHWBXN may be used, with the exception of the other default transactions that are defined for protocols on the TCPIP SERVICE resource definition.

CWXU is a RACF Category 1 transaction.

Additions to CICS RACF category 1 transactions

There are some new CICS internal system transactions added to the list of category 1 transactions. These are the transactions that need to be defined to RACF, and to which the CICS region user ID must be authorized, to enable CICS to initialize successfully when you are running CICS with security enabled (SEC=YES).

For a full list of all the CICS category 1 transactions, see in the *CICS RACF Security Guide*. Also see the DFH\$CAT1 CLIST, supplied in the SDFHSAMP library.

The new category 1 transactions are:

- CIRR
- CISC
- CISD
- CISE
- CISR
- CISS
- CIST
- CJGC
- CJMJ
- CJPI
- CJTR
- CKAM
- CKTI
- CPIR
- CRTP
- CWXU

Chapter 4. Changes to resource definition

This section summarizes the changes to CICS resource definitions.

For more information about all the new and changed resource definitions, see the *CICS Resource Definition Guide*.

Obsolete resource definition attributes

Table 7. Obsolete resource definition attributes

Resource type	Obsolete attributes	Explanation
CORBASERVER	SSL PORT SSLPORT	These attributes, which relate the CORBASERVER to the associated TCPIP SERVICE resources, were introduced in CICS TS 2.1. They have been superseded by CLIENTCERT, SSLUNAUTH and UNAUTH.
PROGRAM	HOTPOOL	Because of the removal of run-time support for Java program objects and hot-pooling (HPJ), this attribute is no longer relevant.
REQUESTMODEL	OMGINTERFACE OMGMODULE OMGOPERATION	These attributes, which were restricted to 31-characters, 58-characters, and 31-characters respectively, have been replaced by INTERFACE, MODULE, and OPERATION.
TYPETERM	XRFSIGNOFF	Replaced by RSTSIGNOFF. See "Signon retention with XRF and VTAM persistent sessions" for migration information.

Signon retention with XRF and VTAM persistent sessions

In releases of CICS before CICS Transaction Server for z/OS, Version 2 that support VTAM persistent sessions, CICS recovers only the terminal session, and not the user's signon status. With signon retention support, CICS catalogs the signon status of every user who signs on, enabling CICS to retain a terminal's signon in the event of either a CICS or VTAM failure. Thus CICS regions using VTAM persistent sessions have the same signon retention capability as CICS regions using XRF. However, XRF and VTAM persistent sessions are mutually exclusive, and rather than have two parameters to control signon and signoff status, RSTSIGNOFF operates for both functions.

When you upgrade your CSD from CICS Transaction Server for OS/390, Version 1 Release 3 to CICS Transaction Server for z/OS, Version 3 Release 2, the RSTSIGNOFF attribute becomes effective, and XRFSIGNOFF is retained for compatibility with earlier releases. If you have TYPETERM definitions specified with XRFSIGNOFF(FORCE) to operate in regions using XRF, these have no effect in a CICS Transaction Server for z/OS, Version 3 Release 2 region, which does not recognize the XRFSIGNOFF attribute. To ensure the same level of support, edit your TYPETERM definitions to specify RSTSIGNOFF(FORCE).

Obsolete CICS-supplied resource definitions

These obsolete resource definition groups have been removed from the CICS-supplied default startup group list, DFHLIST. If you use customized startup group lists, you must remove any obsolete definition groups from them.

DFH\$JAVA

CICS-supplied sample application program group DFH\$JAVA is removed. This group contained the resource definitions needed for the sample applications for Java support using VisualAge® for Java, Enterprise Edition for OS/390. The same sample applications are defined for use with a JVM by the DFH\$JVM group.

DFHAUGRP

CICS-supplied group DFHAUGRP is removed. This group contained the resource definitions for the CICS transaction affinities utility.

DFH\$AFFY

CICS-supplied sample group DFH\$AFFY is removed. This group contained sample resource definitions for the CICS transaction affinities utility that you could modify to suit your requirements.

Changed resource definition attributes

Resource definition attributes changed in CICS Transaction Server for z/OS, Version 3 Release 2

TCPIPSERVICE resource definition: new values

- On the ATTACHSEC option, a new value of IDENTIFY is added:

IDENTIFY

specifies that incoming attach requests must specify a user identifier.

- On the PROTOCOL option, a new value of ISC is added:

IPIC IPIC protocol is used. Specify IPIC for TCPIPSEVICES that are to be used for distributed program link (DPL) over IP interconnectivity connections (which are also known as *IPCONNs*).

- On the URM option, a new value of NO is added, and a new user-replaceable program can be specified:

NO Autoinstall is not permitted on this TCPIPSERVICE. This is only applicable for PROTOCOL(IPIC).

- For the IPIC protocol, specify the name of the autoinstall user program for IPCONNs, if required. For PROTOCOL(IPIC), if you do not specify this attribute CICS uses the CICS-supplied, default, IPCONNs autoinstall user program, DFHISAIP.

Resource definition attributes changed in earlier CICS releases

Table 8. Changed resource definition attributes in earlier CICS releases

Resource type	Affected attributes	Explanation
DB2CONN	DB2ID TCBLIMIT PRIORITY	PRIORITY is ignored, because L8 mode TCBs are now used for DB2 requests, and these have the same priority as the QR TCB. TCBLIMIT now specifies the number of L8 mode TCBs that can be used to process DB2 requests (up to the maximum set by the MAXOPENTCBS system initialization parameter). DB2ID is mutually exclusive with DB2GROUPLD.
DB2ENTRY	PRIORITY	PRIORITY is ignored, because L8 mode TCBs are now used for DB2 requests, and these have the same priority as the QR TCB.
PROFILE	RTIMOUT	<p>Now, in addition to specifying the terminal read time-out feature as in earlier releases, this also specifies the time-out value for IIOF request processor tasks that are waiting for method requests.</p> <p>Users migrating from CICS TS 1.3 may already be aware of the following change if they applied the PTF for APAR PQ58283.</p> <ol style="list-style-type: none"> 1. The value of RTIMOUT is given as minutes and seconds (mmss) in the range 1--7000. The rounding of this value that was performed by earlier releases of CICS (up to an exact multiple of 16.78 seconds) no longer happens. CICS acts upon the RTIMOUT value exactly as it appears in the PROFILE definition. 2. The READ TIMEOUT value on the transaction profile definition for MRO sessions is now observed by CICS. The field in the profile already exists. CICS honours it for ISC but used to ignore it for MRO.

Table 8. Changed resource definition attributes in earlier CICS releases (continued)

Resource type	Affected attributes	Explanation
PROGRAM	CONCURRENCY EXECKEY JVM JVMPROFILE	<ul style="list-style-type: none"> • There is a new significance to the CONCURRENCY(THREADSAFE) attribute if your transactions invoke task-related user exits that are enabled with the OPENAPI option, such as the CICS DB2 adaptor. • The EXECKEY attribute now applies to programs that run in a JVM. You can use the same JVM profile to invoke a JVM in either of the keys. • For JVM, the DEBUG option is removed, leaving YES or NO as the only options. • The JVM profiles that you specify using the JVMPROFILE attribute are now files in the z/OS UNIX directory that is specified by the system initialization parameter JVMPROFILEDIR, and you need to specify the name using the same combination of upper and lower case characters that is present in the HFS file name.
TCPIPSERVICE	PORTNUMBER TRANSACTION	<p>The description of the PORTNUMBER attribute has been extended, with information regarding the use of well-known IIOF port numbers and port sharing within an MVSimage.</p> <p>CIEP, for an ECI over TCP/IP TCPIPSERVICE definition, is added to the CICS transactions you can specify on the TRANSACTION attribute.</p>
TRANSACTION	SHUTDOWN	<p>The meaning of this parameter is changed. It now applies to ALL transactions whether the transaction is associated with a terminal or not. Therefore, SHUTDOWN(ENABLED) should be specified on all TRANSACTIONS that you want to run during shutdown. Alternatively, specify them on the XLT used at shutdown.</p>
TYPETERM	RSTSIGNOFF	<p>Specifies the sign-on characteristics of a group of terminals in the event of a persistent sessions restart or an XRF takeover. RSTSIGNOFF replaces XRFSIGNOFF, which is retained for compatibility purposes with earlier releases.</p>

DBCS languages: EPI and terminal emulator, change to server code pages

In CICS Transaction Server for z/OS, Version 2, for languages that use double-byte character sets (DBCS), changes were made to the server code pages supported for the EPI and the client terminal emulator function.

The server code page is determined from value 2 of the CGCSGID attribute of the TYPETERM definition used to install the virtual terminal definition. For DBCS languages, you need to specify a different server code page from that used in

releases before CICS Transaction Server for z/OS, Version 2, in order to provide the correct SBCS and DBCS translation. This change is required for EPI clients and client terminal emulators to work correctly.

The EPI and terminal emulator in *CICS Family: Communicating from CICS on zSeries* lists the new server code pages supported for the EPI and terminal emulator for DBCS languages.

Changes to CICS-supplied resource definitions

Some CICS-supplied resource definitions are changed or obsolete, and are moved to new compatibility groups. Following the upgrade of your CSD, the resource definitions listed here no longer exist in their old groups, which are removed from DFHLIST.

If you plan to share the upgraded CSD with earlier releases of CICS, you must remove the obsolete group names from the group lists you use on the earlier releases, and add the appropriate DFHCOMP compatibility groups in their place. See Chapter 5, “Changes to the application programming interface (API),” on page 51.

Resource definitions moved to group DFHCOMP8

In CICS Transaction Server for z/OS, Version 2, resource definitions from the samples group DFH\$SOT were removed and are now defined in DFHCOMP8.

The resource definitions removed from this group are:

- The TCP/IP service resource definitions, IOPNSSL and IOPSSL.
- The CICS CORBA IOP interface program resource definitions, DFHIIOP and DFHIIOPA.
- The CICS IOP transactions, CIOR and CIOD.

Resource definitions moved to group DFHCOMPA

Group DFHJIIRP became obsolete in CICS Transaction Server for z/OS, Version 3 Release 1. The definition that was in this group is now in the compatibility group DFHCOMPA.

When you upgrade the CSD using DFHCSDUP, DFHCOMPA is locked.

Changes to the DFH\$IOP samples group

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there are changes to resource definitions defined in the DFH\$IOP samples group, but the definitions that have been removed are *not* defined in DFHCOMP8.

The definitions that have been removed are:

- The definitions for programs DFJ\$IIBS and DFJ\$IIHE
- The definition for transaction CIOF
- The definition for request model DFJ\$GFAC.

The definitions that are still defined in DFH\$IOP, but have changed in some significant way, are:

- The transactions BNKS and IIHE now invoke a different program, DFJIIRP instead of DFHIIOPA.
- The DFJ\$IIRB and DFJ\$IIRH request model resource definitions.

New resource definition types and new attributes

New resource definition types and attributes added in CICS Transaction Server for z/OS, Version 3 Release 2

New IPCONN resource definition type

Support for IPIC introduces a new CICS resource, the IPIC connection (IPCONN). An IPIC connection is a Transport Control Protocol/Internet Protocol (TCP/IP) communication link to a remote system. An IPCONN definition specifies the *outbound* attributes of the TCP/IP connection. The *inbound* attributes of the connection are specified by the TCPIPSERVICE definition named on the TCPIPSERVICE option of the IPCONN definition. For more information about this new resource definition type, see IPCONN resource definitions, in the *CICS Resource Definition Guide*.

New LIBRARY resource definition type

Support for dynamic program library management introduces a new CICS resource, the LIBRARY. A LIBRARY represents a partitioned data set or sequence of concatenated partitioned data sets containing program entities that make up an application or group of applications (defined by the System Programmer). A LIBRARY definition specifies the name of the LIBRARY, the datasets belonging to that LIBRARY, its CRITICALity, and its RANKING in the overall LIBRARY search order. For more information about this new resource definition type, see LIBRARY resource definitions, in the *CICS Resource Definition Guide*.

PIPELINE resource definition: new attribute

RESPWAIT(*value*)

Specifies the number of seconds that an application program should wait for a response message from a remote Web service. The value can range from 0 to 9999 seconds.

If you want to use the default timeout value of the transport protocol, specify DEFT.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for WebSphere MQ is 60 seconds.

TCPIPSERVICE resource definition: new attributes

REALM(*string*)

specifies the realm that is used for HTTP basic authentication. You can only specify this attribute for the HTTP protocol.

The realm is provided by CICS in the WWW-Authenticate header, and is seen by the end user during the process of basic authentication. It identifies the set of resources to which the authentication information requested (that is, the user ID and password) will apply.

If you do not specify a realm, the default used by CICS is CICS application *aaaaaaaa*, where *aaaaaaaa* is the applid of the CICS region.

The realm can be up to 56 characters, and can include embedded blanks. It is specified in mixed case, and the case is preserved. Do not specify opening and closing double quotes, as CICS provides these when assembling the WWW-Authenticate header.

Acceptable characters:

A-Z a-z 0-9 \$ @ # . - _ % & ? ! : | ' = ~ + * , ; < > ()

Space characters are also permitted. If parentheses ("(" and ")") are used, you must use them as pairs of opening and closing parentheses.

New resource definition types and attributes added in earlier CICS releases

Table 9. New resource definition types and attributes added in earlier releases

Resource type	New keywords	Explanation
CONNECTION	NETNAME	<ul style="list-style-type: none"> The description of the NETNAME option is extended to provide extra information if you are running CICS regions with VTAM dynamic LU alias in operation. Review this new information when you implement LU alias support.
CORBASERVER	AUTOPUBLISH CERTIFICATE CLIENTCERT CORBASERVER DJARDIR HOST JNDIPREFIX SESSBEANTIME SHELF SSLUNAUTH STATUS UNAUTH	CORBASERVER is a new type of resource definition to enable you to define the execution environment (a CorbaServer) for enterprise beans and stateless CORBA objects.
DB2CONN	DB2GROUPID RESYNCMEMBER	The group ID and resync options are added to support the DB2 group attach facility.
DJAR	CORBASERVER HFSFILE	DJAR is a new type of resource definition to enable you to define a deployed JAR file.
PIPELINE		For information about this new resource definition type, see PIPELINE resource definitions the <i>CICS Resource Definition Guide</i> .
PROGRAM	JVMPROFILE	<ul style="list-style-type: none"> The JVMPROFILE option enables you to specify the name of the JVM profile needed to start a JVM for the program.
REQUESTMODEL	BEANNAME CORBASERVER INTERFACE INTFACETYPE MODULE OPERATION TYPE	The REQUESTMODEL resource definition now supports both CORBA and EJB requests, and the new attributes are added to enable definitions to be dual purpose. However, with INTERFACE, MODULE, and OPERATION replacing the old OMGxxxxxx equivalent keywords, and other changes, the new definition is incompatible with the REQUESTMODEL resource definition in CICS TS 1.3. See "CSD compatibility between different CICS releases" on page 123 for details.

Table 9. New resource definition types and attributes added in earlier releases (continued)

Resource type	New keywords	Explanation
TCPIPSERVICE	ATTACHSEC AUTHENTICATE CERTIFICATE DNSGROUP GRPCRITICAL PROTOCOL	These new attributes are added to enhance CICS support for TCP/IP. PROTOCOL allows you to specify HTTP, IIOP, IPICT, or ECI as the protocol supported by the TCPIPSERVICE. DNSGROUP and GRPCRITICAL are added to enable connection balancing. ATTACHSEC is introduced in support of the ECI protocol. AUTHENTICATE and CERTIFICATE are both introduced by the SSL-enabling APAR (PQ23421) in CICS TS 1.3 to specify the level of authentication required on the TCPIPSERVICE. The definition of CERTIFICATE is changed and now specifies the name of an X.509 certificate defined in a RACF key ring, and can be up to 32 bytes.
TERMINAL	NETNAME	The description of the NETNAME option is extended to provide extra information if you are running CICS regions with VTAM dynamic LU alias in operation. Review this new information when you implement LU alias support.
TRANSACTION	OTSTIMEOUT	The OTSTIMEOUT attribute specifies the default time that an Object Transaction Services (OTS) transaction is allowed to execute without the initiator taking a syncpoint.
URIMAP		For information about this new resource definition type, see URIMAP resource definitions in the <i>CICS Resource Definition Guide</i> .
WEBSERVICE		For information about this new resource definition type, see WEBSERVICE resource definitions in the <i>CICS Resource Definition Guide</i> .

New CICS-supplied resource definitions

New groups of resource definitions are added to your CSD when you run the UPGRADE command.

DFHADET

The CICS-supplied group DFHADET, introduced in CICS Transaction Server for z/OS, Version 2, contains the definitions you need to run the EJB application development tool.

The group contains a file definition (for the DFHADEM file) and 15 program definitions.

DFHADET is *not* included in list DFHLIST when you initialize or upgrade the CSD.

DFHADST

The CICS-supplied group DFHADST, introduced in CICS Transaction Server for z/OS, Version 2, contains the resource definitions needed for the new CREA and CREC transactions.

DFHADST contains the CREA and CREC mapset, two program and two transaction resource definitions, and the group is included in list DFHLIST when you initialize or upgrade the CSD.

DFHBR, DFHBRCF, DFHBRUT, DFHBRVR, DFHBRVSL DFHBRVSR, and DFH\$BRLK

These CICS-supplied groups, introduced in CICS Transaction Server for z/OS, Version 2, contain sets of resource definitions for the Link3270 bridge.

DFHBR

This contains the basic program resource definitions for the Link3270 bridge mechanism.

DFHBR is locked and included in DFHLIST when you upgrade the CSD.

DFHBRCF

This group defines the file resource definition required for the bridge number space defined as a coupling facility data table.

DFHBRCF is locked and included in DFHLIST when you upgrade the CSD.

DFHBRUT

This group defines the file resource definition required for the bridge number space defined as a user-maintained data table.

DFHBRUT is locked and included in DFHLIST when you upgrade the CSD.

DFHBRVR

This group defines the file resource definition required for the bridge number space defined as a VSAM RLS file.

DFHBRVR is locked and included in DFHLIST when you upgrade the CSD.

DFHBRVSL

This group defines the file resource definition required for the bridge number space defined as a VSAM local KSDS file.

DFHBRVSL is locked and included in DFHLIST when you upgrade the CSD.

DFHBRVSR

This group defines the file resource definition required for the bridge number space defined as a VSAM remote KSDS file.

DFHBRVSR is locked and included in DFHLIST when you upgrade the CSD.

DFH\$BRLK

This group defines the resource definitions needed for the Link3270 bridge sample application.

DFHDP

The CICS-supplied group DFHDP, introduced in CICS Transaction Server for z/OS, Version 3 Release 1, contains the resource definitions for the application debugging profile manager 3270 interface (the CADP transaction), and for the inactivate debugging profiles utility.

The group contains:

PROGRAM definitions

DFHDPLU, DFHDPIN and DFHDPCP

TRANSACTION definitions

CADP and CIDP

MAPSET definitions

DFHDPMS

DFHDPWB

The CICS-supplied group DFHDPWB, introduced in CICS Transaction Server for z/OS, Version 3 Release 1, contains the resource definitions for the application debugging profile manager web interface.

The group contains:

PROGRAM definitions

DFHDPWB, DFHDPWM0, DFHDPWM1, DFHDPWM2, DFHDPWM3, DFHDPWM4, DFHDPWM5, DFHDPWM6, DFHDPWT0, and DFHDPWF0

DFHEJBU

The CICS-supplied group DFHEJBU, introduced in CICS Transaction Server for z/OS, Version 2, contains the program resource definition needed for the CICS EJB user-replaceable program, DFHEJEP. This program intercepts EJB events for the EJB application development tool.

DFHEJBU is included in list DFHLIST when you initialize or upgrade the CSD.

DFHEJCF, DFHEJVR, and DFHEJVS

These CICS-supplied groups, introduced in CICS Transaction Server for z/OS, Version 2, contain three versions of the file resource definitions for the EJB request streams directory and the EJB object store for session beans.

The three versions are:

DFHEJCF

File definitions for coupling facility data tables (CFDTs), with TABLE(CF).

DFHEJVR

File definitions for LSR mode VSAM files, with LSRPOOLID(1).

DFHEJVS

File definitions for RLS mode VSAM files, with RLS(YES).

These groups of sample definitions are added to the CSD by the DFHCSDUP UPGRADE command, but are *not* included in DFHLIST. The groups are not locked, so that when you have decided which version you want to use, you can modify the data set name and any other attributes you want to change. Add the name of the modified group to your start-up group list if you are using CICS EJB support.

DFHIPECI

The CICS-supplied group DFHIPECI, introduced in CICS Transaction Server for z/OS, Version 2, contains the definitions for the CICS ECI over TCP/IP interface.

This group is locked and included in DFHLIST when you upgrade the CSD.

DFHOTS

The CICS-supplied group DFHOTS, introduced in CICS Transaction Server for z/OS, Version 2, contains the program (DFHOTR) and resynchronization transaction (CJTR) resource definitions for CICS Object Transaction Services (OTS) support.

This group is locked and included in DFHLIST when you upgrade the CSD.

DFHPSSGN

The CICS-supplied group DFHPSSGN, introduced in CICS Transaction Server for z/OS, Version 2, contains the program and transaction resource definitions for support of signon retention for CICS VSAM persistent sessions.

This group is locked and included in DFHLIST when you upgrade the CSD.

DFHRQS

The CICS-supplied group DFHRQS, introduced in CICS Transaction Server for z/OS, Version 2, contains the CICS request stream resource definitions.

This group is locked and included in DFHLIST when you upgrade the CSD.

DFHSO

The CICS-supplied group DFHSO, introduced in CICS Transaction Server for z/OS, Version 3 Release 1, contains the resource definitions for external sockets support.

The group contains:

PROGRAM definitions

DFHSOCI and DFHSOLI

DFH\$WEB

The CICS-supplied group DFH\$WEB, introduced in CICS Transaction Server for z/OS, Version 3 Release 2, contains most of the samples for CICS Web support. The exception is the Assembler sample program DFH\$WB1A, which is provided in the existing DFHWEB resource definition group.

DFH\$WEB contains:

- PROGRAM resource definitions for:
 - DFH\$WB1C, sample C program for verifying the operation of CICS Web support
 - DFH\$WBCA, sample Assembler program for sending client requests in chunks and receiving a chunked response
 - DFH\$WBCC, sample C program for sending client requests in chunks and receiving a chunked response
 - DFH0WBCO, sample COBOL program for sending client requests in chunks and receiving a chunked response
 - DFH\$WBHA, sample Assembler program for a server to receive chunked requests and send a chunked response
 - DFH\$WBHC, sample C program for a server to receive chunked requests and send a chunked response
 - DFH0WBHO, sample COBOL program for a server to receive chunked requests and send a chunked response
 - DFH\$WBPA, sample Assembler program for pipelining client requests
 - DFH\$WBPC, sample C program for pipelining client requests
 - DFH0WBPO, sample COBOL program for pipelining client requests
- Sample URIMAP definitions:
 - DFH\$URI1, for accessing DFH\$WB1C
 - DFH\$URI2, used by the sample programs for pipelining client requests
 - DFH\$URI3, used by the sample programs for chunking

- DFH\$URI4, used by the sample programs for chunking

Changes to control tables (macro resource definition)

There are a number of changes to control tables. When migrating to CICS Transaction Server for z/OS, Version 3 Release 2, reassemble all CICS control tables using the CICS TS 3.2 macro libraries, even if there are no changes to the macro externals. This applies also to tables that you are reassembling only to migrate them to the CSD. You also need to reassemble any DFHCNV data conversion tables that you use, because CICS initialization fails if you try to load DFHCNV tables assembled using macros from an earlier release.

DFHMCT monitoring control table

The new performance class data fields added for CICS Transaction Server for z/OS, Version 3 Release 2 have corresponding new values which can be defined on the INCLUDE and EXCLUDE operands of the DFHMCT TYPE=RECORD macro. These values allow you to include or exclude specific fields from performance class monitoring records. Control data recording-DFHMCT TYPE=RECORD in the *CICS Resource Definition Guide* lists all the fields that can now be included or excluded using the macro.

Because of the removal of run-time support for Java program objects and hot-pooling (HPJ), DFHTASK field 278, CICS MAXHPTCBS delay time, is no longer relevant, and is removed.

A new option COMPRESS is available on the DFHMCT TYPE=INITIAL macro. The option can be used to activate data compression for monitoring records. The default is NO, meaning that data compression is not performed. YES specifies that you do want monitoring record data compression to be performed.

Obsolete DFHDCT control table (DCT macro)

CICS no longer supports the DCT macro as a means of defining transient data queues. These must be defined in the CSD using TDQUEUE resource definitions.

If you haven't already done so, you must now migrate DCT entries to the CSD. First reassemble your DCT with the MIGRATE option specified on the TYPE=INITIAL macro, as follows:

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

Specifying TYPE=(INITIAL,MIGRATE) ensures that the table is assembled and link-edited with AMODE(24), which is required by the MIGRATE function of the DFHCSDUP utility program. If you fail to specify MIGRATE on the TYPE=INITIAL macro, the DFHDCT macro forces AMODE(31), which causes errors when you run DFHCSDUP with the MIGRATE command for the DCT.

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

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

The DFHCSDUP MIGRATE command in the *CICS Operations and Utilities Guide* has more information about this command.

The contents of a DCT are migrated as a single CSD group, or as a set of several groups if you reassemble the table with the group names you want to create. To do this, insert the following macro in front of each group of DCT source entries:

```
DFHDCT TYPE=GROUP, GROUP=groupname
```

The removal of support for the DCT means that the sample REXX for CICS control table definition job CICDCT is obsolete. This sample JCL created a DCT that contained transient data extrapartition destinations used by REXX for CICS IMPORT and EXPORT commands. The DFHDCT entries from job CICDCT are moved to the CICRDOD job as CSD DEFINE statements. The updated CICRDOD job, which runs the CSD utility program, DFHCSDUP, defines the sample transient data extra partition destinations as TDQUEUE resource definitions in the CSD.

Changes to DFHTCT control table

CICS no longer supports local TCAM terminals. The TYPE=SDSCI, TYPE=LINE and TYPE=TERMINAL resource definition macros can no longer be used to define local TCAM terminals.

It is still possible to define remote TCAM terminals. You can do this using either of the following methods:

1. A single DFHTCT TYPE=REMOTE macro.
2. A DFHTCT TYPE=REGION macro, followed by a DFHTCT TYPE=LINE and a DFHTCT TYPE=TERMINAL macro. CICS uses only the "remote" attributes of the DFHTCT TYPE=LINE and DFHTCT TYPE=TERMINAL macros.

CICS no longer supports BTAM terminals, even indirectly. You can no longer define BTAM terminals, even as remote resources.

VSAM support withdrawn from DFHFCT macros

All VSAM support, including the MIGRATE option, is withdrawn from the DFHFCT macros, which now support BDAM files only. This means that you cannot assemble an FCT for the purpose of migrating the VSAM table entries to the CSD using the DFHCSDUP MIGRATE command.

The DFHCSDUP MIGRATE command now supports the migration of DCTs, RCTs, TCTs, and TSTs only.

Support for temporary storage control tables (TSTs)

The replacement CSD resource definition type for TST entries is the TSMODEL, which provides equivalent function for most of the various DFHTST macro types. However, the TSMODEL resource definition does *not* provide support for the TSAGE parameter, or for application programs that rely on the mapping of SYSIDNTs to SHARED TST entries for queues held in a TS pool. If an application program explicitly specifies a SYSID on a TS queue request for a queue that resides in a TS data sharing pool, it requires the support of a TST. Until an alternative mapping of explicit SYSIDs is provided by a new CSD resource definition type, IBM will continue to support the use of the TST for TYPE=SHARED entries.

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.

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 TSOEELS *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 DFHCSDUP MIGRATE command in the *CICS Operations and Utilities Guide* for more information about migrating temporary storage tables as resource definitions in the CSD.

Chapter 5. Changes to the application programming interface (API)

CICS provides API compatibility from release to release, but functional changes to some CICS components can affect some of the CICS API commands.

Program compatibility

Except for the specific cases described in this section, CICS Transaction Server provides compatibility with future releases, 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 High level language support in the *CICS Transaction Server for z/OS Release Guide*.

Handling of RESP2 values for remote files

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there are changes to the way RESP2 values are handled by CICS file control for remote files. In earlier releases, RESP2 values were not returned to the application program issuing the request in the AOR. Changes to file control mean that RESP2 values are now always returned by CICS TS regions to application programs, for both local and remote files.

If the remote region is running under CICS Transaction Server for OS/390, Version 1 Release 3, only a subset of the RESP2 values are returned.

Obsolete API commands and options

Table 10. Obsolete API commands and options

Commands	Changes
<ul style="list-style-type: none">• CONVERSE (SYSTEM/3)• CONVERSE (SYSTEM/7)• CONVERSE (2741)• CONVERSE (2770)• CONVERSE (2780)• CONVERSE (3600 BTAM)• CONVERSE (3735)• CONVERSE (3740)• ISSUE COPY (3270 display)• RECEIVE (SYSTEM/3)• RECEIVE (SYSTEM/7)• RECEIVE (2741)• RECEIVE (3600 BTAM)• RECEIVE (3735)• RECEIVE (3740)• SEND (SYSTEM/3)• SEND (SYSTEM/7)• SEND (2741)• SEND (3600 BTAM)• SEND (3735)• SEND (3740)	All these BTAM-related EXEC CICS API commands are obsolete.

Changed API commands

Changes to API commands in CICS Transaction Server for z/OS, Version 3 Release 2

DOCUMENT CREATE and DOCUMENT SET: There is a new error condition NOTAUTH, which might be received if resource security for document templates is active in the CICS region.

GET CONTAINER CHANNEL: new INTOCODEPAGE option and other changes

INTOCODEPAGE(data-value)

specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the code page into which the character data in the container is to be converted, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID in the *CICS Family: Communicating from CICS on zSeries*.

The description of the INTOCCSID option has changed, and there is a new error condition CODEPAGEERR with a number of new RESP2 values.

PUT CONTAINER CHANNEL: new FROMCODEPAGE option and other changes

FROMCODEPAGE(data-value)

specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the current code page of the character data to be put into the container, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

FROMCCSID and FROMCODEPAGE are effective only on the PUT CONTAINER command that creates the container. This is because, for CHAR containers, the data is stored in the CCSID specified on the original PUT CONTAINER command that created the container. If you want to use a different CCSID, the application program should delete the existing container before issuing the new PUT CONTAINER command, thus recreating the container.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID in the *CICS Family: Communicating from CICS on zSeries*.

If FROMCODEPAGE is specified, DATATYPE(DFHVALUE(CHAR)) is implied.

If FROMCCSID and FROMCODEPAGE are not specified, but a DATATYPE of CHAR is specified, the value for conversion defaults to the CCSID of the region

(or, for CICS-created channels, the CCSID of the channel). The default CCSID of the region is specified on the LOCALCCSID system initialization parameter.

The description of the FROMCCSID option has changed, and there is a new error condition CODEPAGEERR with a number of new RESP2 values.

QUERY SECURITY: The QUERY SECURITY command can now be used to determine whether the user has access to the resource definitions for CICS document templates (DOCTEMPLATE).

READ, READNEXT, READPREV, RESETBR, STARTBR, and WRITE: new XRBA option

XRBA

specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. This option should be used when reading, browsing, or writing records in an extended ESDS.

If you specify XRBA on a STARTBR command, all other commands within the same browse must also specify XRBA.

On the READ and STARTBR commands, there is a new RESP2 value 59 for the INVREQ response. On the READ, READNEXT, READPREV, RESETBR, and STARTBR commands, there is a new RESP2 value 81 for the NOTFND response.

WEB EXTRACT: new options and other changes

REALM(*data-area*)

specifies the realm or security environment that contains the data you are requesting. If you are issuing a WEB EXTRACT command in response to a HTTP 401 message, REALM is the realm value in the most recently received WWW-Authenticate header.

REALMLEN(*data-area*)

specifies the buffer length supplied for the REALM option, as a fullword binary variable. If you are issuing a WEB EXTRACT command in response to a HTTP 401 message, REALMLEN is the length of the realm name in the most recently received WWW-Authenticate header.

The description of the HTTPVERSION option has changed.

WEB SEND (Client): new options for specifying authentication credentials

AUTHENTICATE(*cvda*)

This option allows you to specify user authentication details (credentials), to control access to restricted data. The CVDA values that apply for CICS as an HTTP client are:

NONE specifies that there are no restrictions on accessing this data, therefore no credentials are required. This is the default value for AUTHENTICATE.

BASICAUTH

specifies that HTTP Basic Authentication credentials are required for this session. These details can be supplied within the command or by using the XWBAUTH global user exit.

PASSWORDLEN(*data-value*)

specifies the buffer length supplied for the PASSWORD option as a fullword binary variable.

PASSWORD(*data-value*)

specifies the password associated with the USERNAME that is allowed access to this data. The PASSWORD option is only required if the USERNAME option is used.

USERNAME(*data-value*)

specifies the user ID or logon name that is allowed access to this data. If the USERNAME is specified, you also need to use the PASSWORD option.

USERAMELEN(*data-value*)

specifies the buffer length supplied for the USERNAME option as a fullword binary variable.

WEB SEND (Server and Client) and WEB CONVERSE: new DOCSTATUS option**DOCSTATUS**(*cvda*)

indicates whether the document should be deleted or not deleted during processing of the WEB SEND command. The CVDA values are:

DOCDELETE

CICS deletes the document after the document contents are saved for sending. Storage allocated for the document is released immediately. If you make subsequent requests for the document, these generate a TOKENERR response.

NODOCDELETE

CICS does not delete the document during processing of the WEB SEND command. This is the default value for DOCSTATUS.

WEB OPEN: The description of the HTTPRNUM and HTTPVNUM options has changed.

WEB RETRIEVE: If a WEB SEND command specifies the option DOCSTATUS(DOCDELETE), the WEB RETRIEVE command cannot retrieve the document, and a NOTFND response with a RESP2 value of 1 is returned.

Changes to API commands in earlier CICS releases

Table 11. Changed API commands in earlier CICS releases

Commands	Changes
<ul style="list-style-type: none"> • WEB WRITE HTTPHEADER • WEB READ HTTPHEADER • WEB STARTBROWSE HTTPHEADER • WEB READNEXT HTTPHEADER • WEB ENDBROWSE HTTPHEADER • WEB EXTRACT • FORMATTIME • EXTRACT TCPIP 	<p>A number of new options are available on these commands.</p>

Table 11. Changed API commands in earlier CICS releases (continued)

Commands	Changes
<ul style="list-style-type: none"> • VERIFY PASSWORD 	When the command EXEC CICS VERIFY PASSWORD is issued, CICS now enforces the revoked status of a user ID or a user's group connection. "Changes to EXEC CICS VERIFY PASSWORD" on page 58 explains the consequences for your application programs.
<ul style="list-style-type: none"> • ASSIGN (NETNAME option) 	If you are running CICS regions with the VTAM LU alias facility in operation, the NETNAME returned to your application program could be an LU alias.
<ul style="list-style-type: none"> • LOAD • RELEASE 	There is a new RESP2 value 42 for the PGMIDERR response.
<ul style="list-style-type: none"> • LINK 	There are new RESP2 values 44, 45, 46, 47, and 48, relating to Java programs, for the INVREQ response.
<ul style="list-style-type: none"> • LINK 	There is a new RESP2 value 49, relating to the availability of the shared class cache, for the INVREQ response.

New API commands

New API commands added in CICS Transaction Server for z/OS, Version 3 Release 2

EXEC CICS DOCUMENT DELETE

<p>DOCUMENT DELETE</p> <p>▶▶—DOCUMENT—DELETE—DOCTOKEN(<i>data-area</i>)—————▶▶</p> <p>Conditions: NOTFND</p> <p>This command is threadsafe.</p>

New API commands added in earlier CICS releases

Table 12. New API commands added in earlier CICS releases

Commands	Function
<ul style="list-style-type: none"> • EXEC CICS DELETE CONTAINER (CHANNEL) • EXEC CICS GET CONTAINER (CHANNEL) • EXEC CICS MOVE CONTAINER (CHANNEL) • EXEC CICS PUT CONTAINER (CHANNEL) • EXEC CICS START TRANSID CHANNEL 	Commands for channels and containers.
<ul style="list-style-type: none"> • EXEC CICS INVOKE WEBSERVICE • EXEC CICS SOAPFAULT ADD • EXEC CICS SOAPFAULT CREATE • EXEC CICS SOAPFAULT DELETE 	Commands for Web services.

Table 12. New API commands added in earlier CICS releases (continued)

Commands	Function
<ul style="list-style-type: none"> • EXEC CICS CONVERTTIME • EXEC CICS WEB OPEN • EXEC CICS WEB CONVERSE • EXEC CICS WEB CLOSE • EXEC CICS WEB PARSE URL • EXEC CICS WEB SEND (CLIENT) • EXEC CICS WEB RECEIVE (CLIENT) 	<p>Commands for CICS as an HTTP client. Some also apply to CICS as an HTTP server.</p>

Member DFHEILID has moved

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, member DFHEILID has moved from the SDFHC370 library to the SDFHSAMP library. The change affects the COPYLINK step of the sample jobs supplied by CICS and CICSplex SM to translate, compile, link-edit and install application programs.

The sample jobs supplied by CICS have names in the format DFHxxTxL (for example, DFHYITDL, DFHZITCL) and are supplied in the SDFHPROC library. The sample job supplied by CICSplex SM is supplied in member EYUEITDL of the SEYUPROC library.

If you are using an older version of these supplied sample jobs, or if you have created your own job based on the supplied samples, ensure that you apply the change for DFHEILID to the COPYLINK step in the job.

Changes to the BMS map generation macro (DFHMSD)

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, the DFHMSD macro is changed, together with a corresponding change in the DFHMAPS procedure.

CICS provides a sample map generation job, DFHMAPS, for assembling BMS maps defined using the DFHMSD macro. Although this procedure provides an RMODE variable (which defaults to RMODE=24 in earlier releases), RMODE is used only on the LINKMAP job step. This has meant that, in the absence of any AMODE and RMODE statements explicitly specified in the DFHMSD map source statements, the assembler uses RMODE(24) and AMODE(24) by default. If you invoke DFHMAPS with RMODE=ANY specified, the assembler default values result in the binder reporting a conflict between the AMODE and RMODE values in the LINKMAP step (IEW2646W with condition code 4). To avoid this binder warning message, the DFHMSD macro is changed, together with a corresponding change in the DFHMAPS procedure.

The DFHMSD macro is changed to test for the presence of a CSECT statement. If your DFHMSD map source statements do not already include a CSECT, the DFHMSD macro adds the following statements for you:

```

mpsname CSECT
mpsname AMODE 31
mpsname RMODE ANY
    
```

The addition of these statements means that, by default, all maps are generated for use above 16MB, unless you include AMODE and RMODE statements to specify otherwise.

If DFHMSD detects a CSECT statement, it operates as in earlier releases, and does not add the new AMODE(31) RMODE(ANY) statements. If your source maps define a CSECT but not AMODE and RMODE values, you might want to consider changing them to exploit the DFHMSD and DFHMAPS enhancements.

To support the changes to the DFHMSD macro, the following changes are made to the DFHMAPS procedure:

- The default setting for the RMODE variable is changed to RMODE=ANY
- A new AMODE variable is added, specified as AMODE=31
- The LINKMAP job step is changed to include both the &RMODE and &AMODE symbols, as follows:

```
//LINKMAP EXEC PGM=IEWL,PARM=('LIST,LET,XREF,RMODE(&RMODE)',  
//          'AMODE(&AMODE)')
```

Change of rules for EXEC CICS SIGNON and SIGNOFF

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, CICS now processes a SIGNON and SIGNOFF command in a way that does not affect the current transaction issuing the command.

The SIGNON command enables your application program to associate a new user ID with the current terminal, and SIGNOFF signs off a user ID from a terminal. In CICS TS 1.3, CICS recognizes the sign-on immediately, and establishes the specified user's security and operating attributes for the terminal. The transaction (and any associated task-related user exits, function shipping, or distributed transaction processing) may have invoked other resource managers (for example, IMS™, DB2, or VSAM). It is unpredictable whether these other RMs recognize the signon before the transaction terminates, and thus you can only be sure that the new user attributes apply for all resource managers invoked by subsequent transactions at the terminal. The unpredictability applies equally to SIGNOFF.

When you use the SIGNON and SIGNOFF command, the following rules now apply:

- The signon and signoff operations are terminal related only. Signon and signoff continue to have no meaning if the transaction does not have a terminal as its principal facility.
- When you issue an EXEC CICS SIGNON or SIGNOFF command, CICS modifies the state of the terminal that is the principal facility of the transaction that issues the command.
- Signon and signoff do not affect the user ID and security capabilities currently in effect for the transaction issuing the command. This is because:
 - A transaction's user ID and security capabilities are established at transaction-attach time. It is not possible to modify these subsequently during the life of the transaction.
 - All actions performed by a transaction (whether to a local or remote resource, or to a connected system) take place in the security context established at the time the transaction was attached.

Review the use of SIGNON and SIGNOFF in your application programs, and check to see if they might be affected by the change. If your application programs are using SIGNOFF and SIGNON in a transaction that performs no other significant work (for example, does not access or update recoverable resources, or does not communicate with partner systems) they are unaffected by the changed behavior.

If you have applications that cannot tolerate the change in the SIGNON and SIGNOFF process, CICS provides a new global user exit point (XSSEX) and sample global user exit program that will enable CICS to handle EXEC CICS SIGNON and SIGNOFF as in earlier releases. Note that XSSEX is a migration aid only, and you should consider removing all application dependency on the old behavior.

Changes to EXEC CICS VERIFY PASSWORD

When you issue the EXEC CICS VERIFY PASSWORD command, CICS now enforces the revoked status of a user ID or a user's group connection. The new method CICS uses to verify the password is more efficient, but you might notice changes to the output that is produced when verification takes place.

CICS now attempts to verify a password using a RACROUTE REQUEST=EXTRACT request to the external security manager. If the password cannot be verified using this method, CICS uses a RACROUTE REQUEST=VERIFYX call. Before CICS Transaction Server for z/OS, Version 3 Release 1, CICS always used the RACROUTE REQUEST=VERIFYX call, which is more expensive.

There are some differences in the output produced by the external security manager for the old and new methods of verifying a password. If your application programs relied on the output produced by the old method, you need to change them so that they do not depend on this output. The differences are:

- ESMRESP and ESMREASON codes are not supplied by the external security manager for the new method of verifying a password using a RACROUTE REQUEST=EXTRACT call. These are only produced if CICS needs to use the old method with a RACROUTE REQUEST=VERIFYX call. Your application programs should always check the EIBRESP and EIBRESP2 values returned by the EXEC CICS VERIFY PASSWORD command, and not rely on the ESMRESP and ESMREASON codes.
- Message ICH70002I is not produced by the external security manager for the new method of verifying a password. The message is only produced if CICS needs to use the old method with a RACROUTE REQUEST=VERIFYX call. (The SETR PASSWORD(WARN(nn)) option must also be active in the external security manager for the message to be produced.) You should therefore not rely on receiving this message.

Changes to sample programs

There are a number of changes to the samples provided with CICS Transaction Server for z/OS, Version 3 Release 2 to demonstrate the use of the EXEC CICS API commands. Unless otherwise stated, sample programs are supplied in the SDFHSAMP library.

Verification samples, DFH\$WB1A and DFH\$WB1C

The sample programs for verifying the operation of CICS Web support, DFH\$WB1A (Assembler) and DFH\$WB1C (C), are updated to use the EXEC CICS WEB commands. In addition, a sample URIMAP definition DFH\$URI1 is provided, which can be used to access DFH\$WB1C. The CICS-supplied sample analyzer DFH\$WBADX can be used to access both DFH\$WB1A and DFH\$WB1C.

The PROGRAM resource definition for DFH\$WB1C, and the URIMAP definition DFH\$URI1, are provided in the new DFH\$WEB resource definition group. DFH\$WB1A is provided in the DFHWEB resource definition group, which is installed as part of DFHLIST.

Pipelining samples, DFH\$WBPA (Assembler), DFH\$WBPC (C), and DFH0WBPO (COBOL)

New sample programs are provided to demonstrate how CICS can pipeline client requests to an HTTP server. The sample programs use the sample client URIMAP definition, DFH\$URI2, to pipeline requests to a CICS region which has been set up as an HTTP server, to be handled there by the verification sample program DFH\$WB1C.

The PROGRAM resource definitions for the pipelining sample programs, and the URIMAP definition DFH\$URI2, are provided in the new DFH\$WEB resource definition group.

Chunking samples: DFH\$WBHA and DFH\$WBCA (Assembler), DFH\$WBHC and DFH\$WBCC (C), DFH0WBHO and DFH0WBCO (COBOL)

New sample programs DFH\$WBCA (Assembler), DFH\$WBCC (C), and DFH0WBCO (COBOL) demonstrate how CICS, as an HTTP client, can send a request in sections or chunks to an HTTP server, and receive a chunked message in response. New sample programs DFH\$WBHA (Assembler), DFH\$WBHC (C), and DFH0WBHO (COBOL) demonstrate how CICS, as an HTTP server, can receive a request in chunks from an HTTP client and send a chunked response.

The sample programs send and receive requests between CICS regions, in which CICS Web support is running. The client chunking samples (DFH\$WBCA, DFH\$WBCC and DFH0WBCO) are handled by DFH\$WBHA, the Assembler server chunking sample (you can update the server URIMAP to point at a different server program if required). The PROGRAM resource definitions for the chunking sample programs, and the URIMAP definitions DFH\$URI3 and DFH\$URI4, are provided in the DFH\$WEB resource definition group.

Chapter 6. Changes to the system programming interface (SPI)

This section 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 compatibility with future releases of CICS cannot be guaranteed.

This section 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 section, CICS continues to provide compatibility with future releases, at source and object level, for application programs that use the unaffected SPI commands.

Obsolete options or values on SPI commands

The system programming interface command options or values listed in this topic are obsolete. You should remove these options from your applications, because they represent functions that are no longer available, so the behavior of applications that use these options will change.

Obsolete options or values on SPI commands in CICS Transaction Server for z/OS, Version 3 Release 2

INQUIRE CLASSCACHE: The value RESET is no longer returned for the REUSEST option. If the shared class cache is not started, the value UNKNOWN is displayed. In this situation, CICS cannot identify the reuse status, but when the shared class cache is started, the status always becomes REUSE.

INQUIRE JVM: The value RESET is no longer returned for the REUSEST option.

INQUIRE JVMPROFILE: The value RESET is no longer returned for the REUSEST option.

INQUIRE MONITOR: The SUBSYSTEMID option is obsolete.

SET JVMPOOL: The TERMINATE function on the SET JVMPOOL command is now deprecated. You should use the improved function on the PERFORM JVMPOOL command instead.

Obsolete options on system programming commands

Table 13. Obsolete options on system programming commands

Command	Obsolete options	Explanation
CREATE PROGRAM	HOTPOOL	The CVDA values YES and NO were used with this option to specify whether or not the Java program object was to be run in a preinitialized Language Environment enclave.
CREATE TYPETERM	XRFSIGNOFF	This XRF-specific attribute is replaced by RSTSIGNOFF, which acts for either signon retention for VTAM persistent sessions or XRF.
INQUIRE CORBASERVER	STATE	The option STATE is replaced by ENABLESTATUS.
INQUIRE DISPATCHER	ACTHPTCBS MAXHPTCBS	ACTHPTCBS displayed the number of H8 mode open TCBS that were active, and MAXHPTCBS displayed the number that CICS was allowed to attach. H8 mode open TCBS no longer exist.
INQUIRE PROGRAM	JVMDEBUG	The JVMDEBUG option is obsolete and CICS always returns NODEBUG as the CVDA value if JVMDEBUG is specified.
INQUIRE PROGRAM	HOTPOOLING HOTPOOL NOTHOTPOOL	The values Hotpool and Nothotpool were used to show whether or not the Java program object was to be run in a preinitialized Language Environment enclave.
SET DISPATCHER	MAXHPTCBS	This option used to specify the maximum number of H8 mode open TCBS that CICS was allowed to attach. H8 mode open TCBS no longer exist.
SET PROGRAM	HOTPOOL NOTHOTPOOL	The values Hotpool and Nothotpool were used to show whether or not the Java program object was to be run in a preinitialized Language Environment enclave.

Obsolete XRFSIGNOFF(FORCE) option on CREATE TYPETERM command

CICS no longer recognizes the XRFSIGNOFF(FORCE) option on an EXEC CICS CREATE TYPETERM command. If you have application programs that specify this option, it is ignored. To ensure application programs have the same effect as before in CICS regions running with XRF support, modify the EXEC CICS CREATE command to specify RSTSIGNOFF(FORCE) instead of XRFSIGNOFF(FORCE).

In earlier releases of CICS that support VTAM persistent sessions, CICS recovers only the terminal session, and not the user's signon status. With signon retention support, CICS catalogs the signon status of every user who signs on, enabling CICS to retain a terminal's signon in the event of either a CICS or VTAM failure. Thus, CICS regions using VTAM persistent sessions have the same signon retention capability as CICS regions using XRF. However, XRF and VTAM persistent sessions are mutually exclusive, and rather than have two parameters to control signon and signoff status, RSTSIGNOFF operates for both functions.

Obsolete CVDA values

The CVDA values listed in this topic are obsolete. You should remove these CVDA values from your applications, because they represent functions that are no longer available, so the behavior of applications that use these CVDA values will change.

Table 14. Obsolete CVDA values

CVDA	value
HOTPOOL	1065
NOTHOTPOOL	1066

New options or values on SPI commands

The system programming interface commands listed in this topic have new options or new values for options.

New options or values on SPI commands in CICS Transaction Server for z/OS, Version 3 Release 2

CREATE PIPELINE: new RESPWAIT option

RESPWAIT(*value*)

Specifies the number of seconds that an application program should wait for a response message from a remote Web service. The value can range from 0 to 9999 seconds.

If you want to use the default timeout value of the transport protocol, specify DEFT.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for WebSphere MQ is 60 seconds.

CREATE TCPIP SERVICE: new options and values

REALM(*data-area*)

returns the 56-character realm that is used during the process of HTTP basic authentication. This value is returned only when PROTOCOL has a value of HTTP. If no realm is specified for this service, the default realm used by CICS is returned, which is CICS application *aaaaaaaa*, where *aaaaaaaa* is the applid of the CICS region.

- New value on the ATTACHSEC option:

IDENTIFY

specifies that incoming attach requests must specify a user identifier.

- New value on PROTOCOL option:

IPIC IPIC protocol is used. Specify IPIC for TCPIP SERVICES that are to be used for distributed program link (DPL) over IP interconnectivity connections (which are also known as *IPCONNs*).

ENABLE PROGRAM: The QUASIRENT and THREADSAFE options now apply to global user exit programs, as well as to task-related user exit programs. The meaning of value X'802000', which may be returned on the INVEXITREQ condition of the EXEC CICS ENABLE command, has changed.

EXTRACT STATISTICS: new values on the RESTYPE option

DOCTEMPLATE

Requests statistics for a document template; RESID identifies the particular DOCTEMPLATE resource definition.

IPCONN

Requests statistics for an IPCONN.

LIBRARY

Requests statistics for a LIBRARY resource

MQCONN

Requests statistics for a WebSphere MQ Connection.

INQUIRE DOCTEMPLATE: new CACHESIZE option**CACHESIZE**(*data-area*)

returns a fullword binary field giving the amount of storage, in bytes, used by the cached copy of the document template. A value of zero is returned if there is no cached copy of the template at the time of the inquiry.

INQUIRE FILE: new RBATYPE option**RBATYPE**(*cvda*)

returns a CVDA value identifying whether, for VSAM files, the data set uses extended addressing. CVDA values are:

EXTENDED

This VSAM data set uses extended relative byte addressing and therefore can hold more than 4 gigabytes of data.

NOTAPPLIC

One of the following is true:

- The data set is BDAM.
- The file is remote.
- The file is not open.

NOTEXTENDED

This VSAM data set does not use extended relative byte addressing and therefore cannot hold more than 4 gigabytes of data.

INQUIRE IRC: new XCFGROUP option**XCFGROUP**(*data-area*)

returns the 8-character name of the cross-system coupling facility (XCF) group of which this region is a member.

If this region is not a member of an XCF group (because it has not signed on to IRC), XCFGROUP contains the XCF group the region would be in if XCF were opened.

For introductory information about XCF/MRO, see Cross-system multiregion operation (XCF/MRO) in the *CICS Intercommunication Guide*.

INQUIRE MONITOR: new COMPRESSST option**COMPRESSST**(*cvda*)

returns a CVDA value indicating whether data compression is active for the CICS SMF 110 monitoring records output by the CICS monitoring facility. CVDA values are:

COMPRESS

Data compression is being performed for the monitoring records.

NOCOMPRESS

Data compression is not being performed for the monitoring records.

INQUIRE MVSTCB: new syntax

The INQUIRE MVSTCB command has a new syntax, which uses the new option SET and the existing option NUMELEMENTS to provide a list of descriptors for individual storage elements owned by the TCB which you are browsing. The descriptors contain the new information about the storage key and storage in use for each storage element, as well as the information which was formerly provided about addresses, lengths and MVS subpools for each element.

The options ELEMENTLIST, LENGTHLIST and SUBPOOLLIST are now obsolete, but are supported for compatibility with applications developed in releases before CICS Transaction Server for z/OS, Version 3 Release 2. These options do not provide the new information about the storage key and storage in use for each element. You cannot use these options in combination with the new SET option. All new applications should use the new syntax with the SET option.

INQUIRE PROGRAM: new and changed options

- The new LIBRARY option displays the 8-character name of the LIBRARY resource from which the program was loaded.
- The new LIBRARYDSN option displays the 44-character name of the data set from which the program was loaded.
- The USECOUNT option now displays a use count for Java programs. In earlier CICS releases, this count was not available, and a value of -1 was returned.
- The CONCURRENTST option now applies to global user exit programs, as well as to task-related user exit programs.

INQUIRE PIPELINE: new options

CIDDOMAIN(*data-area*)

Returns the domain name that is used to generate MIME content-ID values to identify binary attachments in containers. The name can be up to 255 characters long.

MODE(*cvda*)

Returns the operating mode of the pipeline. CVDA values are:

PROVIDER

CICS is using the pipeline as a service provider.

REQUESTER

CICS is using the pipeline as a service requester.

UNKNOWN

The operating mode of the pipeline cannot be determined.

MTOMNOXOPST(*cvda*)

Returns a value that indicates whether MTOM should be used for outbound SOAP messages when there are no binary attachments present. The values are:

MTOMNOXOP

Use MTOM, even when there are no binary attachments present.

NOMTOMNOXOP

Do not use MTOM unless there are binary attachments present.

MTOMST(*cvda*)

Returns a value that indicates whether support for MTOM has been enabled in the pipeline. The values are:

MTOM

MTOM support has been enabled in the pipeline.

NOMTOM

MTOM support has not been enabled in the pipeline.

RESPWAIT(*data-area*)

Returns the number of seconds that an application program waits for an optional response message from a remote Web service. If the returned value is -1, no value has been set for the pipeline and the default timeout value of the transport protocol is being used.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for WebSphere MQ is 60 seconds.

SENDMTOMST(*cvda*)

Returns a value that indicates when MTOM should be used for outbound SOAP messages. The values are:

NOSENDMTOM

Do not use MTOM for outbound SOAP messages.

SAMESENDMTOM

Use MTOM for outbound SOAP message responses when the inbound message is received in MTOM format.

SENDMTOM

Always use MTOM for outbound SOAP messages.

SOAPLEVEL(*data-area*)

Returns an eight byte character string of the SOAP level that is used in the PIPELINE. The value of the SOAP level is 1.1 or 1.2. If the pipeline is not being used for SOAP messages, a value of NOTSOAP is returned.

SOAPRNUM(*data-area*)

Returns a fullword binary value of the release number for the SOAP level that is used in the PIPELINE. The value of the release number is 1 or 2.

SOAPVNUM(*data-area*)

Returns a fullword binary value of the version number for the SOAP level that is used in the PIPELINE. The value of the version number is 1.

XOPDIRECTST(*cvda*)

Returns a value that indicates whether the pipeline can currently handle XOP documents in direct mode. The values are:

XOPDIRECT

The pipeline supports the direct processing of XOP documents and binary attachments.

NOXOPDIRECT

The pipeline does not support the direct processing of XOP documents and binary attachments. Compatibility mode is in operation.

XOPSUPPORTST(*cvda*)

Returns a value that indicates whether the application handler for the pipeline supports the processing of XOP documents and binary attachments. The values are:

XOPSUPPORT

The application handler supports XOP documents.

NOXOPSUPPORT

The application handler does not support XOP documents.

INQUIRE SYSTEM: new options

MEMLIMIT(*data-area*)

returns a doubleword binary field giving the maximum amount, in bytes, of storage available above the 2GB boundary (above the bar), for use by the CICS region. A value of -1 indicates that no limit has been imposed on the amount of storage that the region can attempt to use (also known as NOLIMIT). The MEMLIMIT value can be set as a PARMLIB member, by JCL or through the IEFUSI global user exit.

SOSABOVEBAR(*cvda*)

returns a CVDA value indicating whether CICS is short on storage in the dynamic storage areas above the 2GB boundary (above the bar).

NOTSOS

CICS is not short on storage in any of the dynamic storage areas above the 2GB boundary.

SOS CICS is short on storage in at least one of the dynamic storage areas above the 2GB boundary.

SOSABOVELINE(*cvda*)

returns a CVDA value indicating whether CICS is short on storage in the dynamic storage areas above the 16MB line, but below the 2GB boundary.

NOTSOS

CICS is not short on storage in any of the dynamic storage areas above the 16MB line (but below the 2GB boundary).

SOS CICS is short on storage in at least one of the dynamic storage areas above the 16MB line (but below the 2GB boundary).

SOSBELOWLINE(*cvda*)

returns a CVDA value indicating whether CICS is short on storage in the dynamic storage areas below the 16MB line.

NOTSOS

CICS is not short on storage in any of the dynamic storage areas below the 16MB line.

SOS CICS is short on storage in at least one of the dynamic storage areas below the 16MB line.

INQUIRE SUBPOOL: The new DSA name GCDSA (above the bar CICS dynamic storage area) is added to the values returned by the DSANAME option.

INQUIRE TASK: new options

IPFACILITIES(*ptr-ref*)

returns the address of a list of 4-byte binary tokens, each of which identifies an IPCONN session that the task is using to communicate with another system. If there are no such IP facilities for this task, the IPFACILITIES pointer contains a null value.

CICS obtains the storage for the list and frees it when the inquiring task issues another INQUIRE TASK command or ends; the task cannot free the storage itself.

IPFLISTSIZE(*data-area*)

returns a fullword binary field giving the number of IP facilities associated with this task. (That is, it returns the number of items in the list addressed by the IPFACILITIES option.)

If this task has no IP facilities, IPFLISTSIZE contains zero.

INQUIRE TCPIP SERVICE: new options and values

REALM(*data-area*)

returns the 56-character realm that is used during the process of HTTP basic authentication. This value is returned only when PROTOCOL has a value of HTTP. If no realm is specified for this service, the default realm used by CICS is returned, which is CICS application *aaaaaaaa*, where *aaaaaaaa* is the applid of the CICS region.

- New value on the ATTACHSEC option:

IDENTIFY

Incoming attach requests must specify a user identifier. (IDENTIFY is used when the connecting system has a security manager; for example, if it is another CICS region.)

- New value on PROTOCOL option:

IPIC IP interconnectivity (IPIC).

INQUIRE WEBSERVICE: new options

CCSID(*data-area*)

Returns the CCSID that is used to encode the character data in the application data structure at run time. This value is set using the optional **CCSID** parameter in the Web services assistant when the Web serving binding file was generated. If the *data-area* is 0, the default CCSID for the CICS region that is specified by the **LOCALCCSID** system initialization parameter is used.

MAPPINGLEVEL(*data-area*)

Returns an eight byte character string of the mapping level that is used to convert data between language structures and Web service description (WSDL) documents. The value of the mapping level is 1.0, 1.1, 1.2 or 2.0.

MAPPINGRNUM(*data-area*)

Returns a fullword binary value of the release number for the mapping level that is used to convert data between language structures and Web service description (WSDL) documents. The value of the release number is 0, 1, or 2.

MAPPINGVNUM(*data-area*)

Returns a fullword binary value of the version number for the mapping level that is used to convert data between language structures and Web service description (WSDL) documents. The value of the version number is 1 or 2.

MINRUNLEVEL(*data-area*)

Returns an eight byte character string of the minimum runtime level that is required to run the Web service in CICS. The value of the runtime level is 1.0, 1.1, 1.2 or 2.0.

MINRUNRNUM(*data-area*)

Returns a fullword binary value of the release number for the minimum runtime level that is required to run the Web service in CICS. The value of the release number is 0, 1, or 2.

MINRUNVNUM(*data-area*)

Returns a fullword binary value of the version number for the minimum runtime level that is required to run the Web service in CICS. The value of the version number is 1 or 2.

XOPDIRECTST(*cvda*)

Returns a value that indicates whether the web service is currently able to handle XOP documents in direct mode. The values are:

NOXOPDIRECT

The web service cannot currently handle XOP documents and binary attachments directly. This is true when the web service implementation does not support the direct handling of XOP documents and binary attachments, or Web service validation is switched on.

XOPDIRECT

The web service can currently handle XOP documents and binary attachments directly. This is true when the web service implementation supports the direct handling of XOP documents and Web service validation is not switched on.

XOPSUPPORTST(*cvda*)

Returns a value that indicates whether the web service implementation is capable of handling XOP documents and binary attachments in direct mode. The values are:

NOXOPSUPPORT

The web service implementation does not support the direct handling of XOP documents and binary attachments.

XOPSUPPORT

The web service implementation supports the direct handling of XOP documents and binary attachments. This is true for any web services that are generated and deployed using the Web services assistant.

PERFORM STATISTICS RECORD: new statistics types**DOCTEMPLATE**

records specific statistics for each document template installed in the CICS region.

IPCONN

records specific statistics for all IPIC connections installed in the CICS region.

LIBRARY

records specific statistics for all LIBRARY resources.

MQCONN

records global statistics for the WebSphere MQ connection.

SET MONITOR: new COMPRESST option**COMPRESST**(*cvda*)

specifies whether you want data compression to be performed for the CICS SMF 110 monitoring records output by the CICS monitoring facility. If you change the setting for the data compression option, the new setting applies to all monitoring records written from that point on, even if they are for a task being processed at the time the change is made. The new setting also applies to any records which are in the buffer waiting to be written to SMF at the time the change is made. The change only applies until a CICS restart.

COMPRESS

CICS is to perform data compression for the monitoring records. (In some situations, some of the records might not be compressed.)

NOCOMPRESS

CICS is not to perform data compression for the monitoring records.

SET PIPELINE: new RESPWAIT option

RESPWAIT(*data-area*)

Specifies the number of seconds that an application program should wait for an optional response message from a remote Web service. The value can range from 0 to 9999 seconds. If you do not specify a value, the default timeout value of the transport protocol is used.

- The default timeout value for HTTP is 10 seconds.
- The default timeout value for WebSphere MQ is 60 seconds.

New options or values on SPI commands in earlier CICS releases

See System commands in the *CICS System Programming Reference* for information on these new options.

Table 15. New options or values on SPI commands in earlier CICS releases

Command	Option	Explanation
COLLECT STATISTICS	BEAN CORBASERVER JVMPOOL JVMPROFILE JVMPROGRAM REQUESTMODEL STATS STREAMNAME TCPIP	Retrieve statistics for these new resource types.
CREATE DB2CONN	DB2GROUPLD RESYNCMEMBER	Specify the DB2 group ID and resynchronization policy for CICS DB2 group attach support.
CREATE PROGRAM	JVMPROFILE	Specifies the name of the JVM profile to be associated with the program.
CREATE REQUESTMODEL	BEANNAME CORBASERVER INTERFACE INTFACETYPE MODULE OPERATION TYPE	These attributes are added for EJB support. In addition, there are some changes to existing attribute values and defaults. See the REQUESTMODEL resource definition entry in Table 9 on page 41 for more details.
CREATE TCPIPSERVICE	ATTACHSEC	Specifies the level of attach-time security required for TCP/IP connections to CICS Clients.
CREATE TCPIPSERVICE	DSNGROUP GROUPCRITICAL	Provide DNS connection optimization support.
CREATE TCPIPSERVICE	PROTOCOL	Specifies the protocol used on this TCP/IP service.
CREATE TRANSACTION	OTSTIMEOUT	Specifies the default time that an OTS transaction is allowed to run without the initiator taking a syncpoint.
CREATE TYPETERM	RSTSIGNOFF	RSTSIGNOFF replaces XRFSIGNOFF, and acts for either signon retention for VTAM persistent sessions or XRF.

Table 15. New options or values on SPI commands in earlier CICS releases (continued)

Command	Option	Explanation
INQUIRE AUTOINSTALL	AIBRIDGE	Returns a value indicating whether the autoinstall URM is called for bridge facilities.
INQUIRE CONNECTION	NQNAME	Returns the 17-character network-qualified name for any connection that received an NQNAME from VTAM at bind time.
INQUIRE DB2CONN	DB2GROUPID RESYNCMEMBER	Return the DB2 group ID and resynchronization policy for the CICS DB2 connection.
INQUIRE JVMPOOL	JVMLEVEL0TRACE, JVMLEVEL1TRACE, JVMLEVEL2TRACE, JVMUSERTRACE	Return a 240-character data value giving the current options for JVM tracing, which are used when the associated level of tracing has been activated using the CICS-supplied transaction CETR, the SET TRACETYPE command, or the system initialization parameter SPCTRSJ.
INQUIRE NETNAME	see INQUIRE TERMINAL	see INQUIRE TERMINAL
INQUIRE PROGRAM	JVMPROFILE	Returns the name of the JVM profile associated with the specified program.
INQUIRE REQUESTMODEL	BEANNAME CORBASERVER INTERFACE INTFACETYPE MODULE OPERATION TYPE	Return new information about the named request model resource definition.
INQUIRE SYSTEM	DEBUGTOOL	Returns a CVDA value (DEBUG or NODEBUG) indicating whether debugging profiles will be used to select programs that will run under the control of a debugging tool.
INQUIRE TASK	BRFACILITY	Returns an 8-byte field containing the facilitytoken for the bridge facility in use by the task.
INQUIRE TCPIP	MAXSOCKET ACTSOCKET	Return the maximum number of IP sockets permitted in the CICS region, and the current number of active sockets.
INQUIRE TCPIPSERVICE	ATTACHSEC AUTHENTICATE CERTIFICATE DNSGROUP DNSSTATUS GRPCRITICAL PROTOCOL	Return new information about the named TCP/IP service.
INQUIRE TERMINAL	NQNAME	Returns the 17-character network-qualified name for any terminal that received an NQNAME from VTAM at logon time.

Table 15. New options or values on SPI commands in earlier CICS releases (continued)

Command	Option	Explanation
INQUIRE TRACETYPE	COMPID	New codes are added to the list of component ids that you can query: BR Bridge domain EJ Enterprise Java domain II IIO domain OT Object transaction services domain PT Partner domain RZ Request streams domain SJ JVM domain
INQUIRE TRANSACTION	OTSTIMEOUT	Returns the default time that an OTS transaction is allowed to run without the initiator taking a syncpoint.
INQUIRE UOW	OTSTID	Returns the first 128 bytes of the transaction identifier (TID) of the OTS transaction of which the UOW is part.
INQUIRE UOWLINK	HOST	Returns information about the partner in the OTS transaction associated with a distributed unit of work.
INQUIRE WORKREQUEST	WORKTYPE	A new value, SOAP, is added.
PERFORM STATISTICS RECORD	BEAN CORBASERVER JVMPOOL JVMPROFILE JVMPROGRAM PIPELINE REQUESTMODEL STATS TCPIP	Write statistics for these new resource types.
SET AUTOINSTALL	AIBRIDGE	Define whether the autoinstall URM is called for bridge facilities.
SET DB2CONN	DB2GROUPIX RESYNCMEMBER	Specify the DB2 group ID and the resynchronization policy for CICS DB2 connection.
SET PROGRAM	JVMPROFILE	Specifies the 8-character name of a JVM profile that is to be used for the JVM in which the program runs. Any instances of this program that are currently running in a JVM with the old JVM profile are unaffected, and are allowed to finish running.
SET PROGRAM	STATUS	STATUS(ENABLED DISABLED) is honored for programs that are invoked through an EXEC CICS LINK program request. The command has no effect on the same programs if they are invoked by Java programs through a method call.
SET SYSTEM	DEBUGTOOL	Specifies whether debugging profiles will be used to select programs that will run under the control of a debugging tool.

Table 15. New options or values on SPI commands in earlier CICS releases (continued)

Command	Option	Explanation
SET TCPIP	MAXSOCKETS NEWMAXSOCKET	Set a new maximum number of sockets for the CICS region. If the number is more than the user ID is permitted to specify, the maximum number enforced is returned in NEWMAXSOCKET. See Table 3 on page 13 for more information about MAXSOCKETS.
SET TRACETYPE	COMPID	New codes are added to the list of component ids for which you can set special trace on. See INQUIRE TRACETYPE above for details.
SET WORKREQUEST	WORKTYPE	A new value, SOAP, is added

New SPI commands

For information on the new commands, see System commands the *CICS System Programming Reference*.

For information about the new function relating to these new commands, see What's new in the *CICS Transaction Server for z/OS Release Guide*.

New system programming commands added in CICS Transaction Server for z/OS, Version 3 Release 2

CREATE IPCONN

Define and install an IPCONN in the local CICS region.

CREATE LIBRARY

Create a LIBRARY resource in the local CICS region.

DISCARD IPCONN

Remove an IPCONN definition.

DISCARD LIBRARY

Remove a specified LIBRARY from the running CICS system.

INQUIRE ASSOCIATION

Retrieve association information for a specified task from its associated data control block (ADCB).

INQUIRE ASSOCIATIONLIST

Retrieve a list of tasks, based on user correlation data contained in the tasks' association information.

INQUIRE IPCONN

Retrieve information about an IPCONN.

INQUIRE LIBRARY

Retrieve information about a LIBRARY.

SET IPCONN

Change the attributes of an IPCONN or cancel outstanding AIDs.

SET LIBRARY

Change the attributes of a LIBRARY resource.

PERFORM JVMPOOL

Start and terminate JVMs in the JVM pool.

SET DOCTEMPLATE

Refresh the cached copy of a document template installed in your CICS region, or phase in a new copy of a CICS program or exit program that is defined as a document template.

New system programming commands added in earlier CICS releases

Table 16. New system programming commands added in earlier CICS releases

Command	Description
CREATE CORBASERVER	Define and install a CORBASERVER resource definition.
CREATE DJAR	Define and install a DJAR resource definition.
CREATE PIPELINE	Define a PIPELINE in the local CICS region.
CREATE URIMAP	Define a URIMAP in the local CICS region.
CREATE WEBSERVICE	Define a WEBSERVICE in the local CICS region.
DISCARD CORBASERVER	Discard an installed CORBASERVER resource definition.
DISCARD DJAR	Discard an installed DJAR resource definition.
DISCARD PIPELINE	Remove a PIPELINE from the CICS system and the CICS catalog.
DISCARD URIMAP	Remove a URIMAP from the CICS system and the CICS catalog.
DISCARD WEBSERVICE	Remove a WEBSERVICE from the CICS system and the CICS catalog.
EXTRACT STATISTICS	The EXTRACT STATISTICS command is added to provide statistics about new resource types, because the design of COLLECT STATISTICS prevented its further expansion. The syntax of EXTRACT STATISTICS is not like COLLECT STATISTICS, but the results of using EXTRACT STATISTICS are equivalent to those produced by COLLECT STATISTICS.
INQUIRE BEAN	Return information about an enterprise bean.
INQUIRE BRFACILITY	Return information about installed bridge facilities.

Table 16. New system programming commands added in earlier CICS releases (continued)

Command	Description
INQUIRE CLASSCACHE	Return information about the active shared class cache in the CICS region, and report the presence of any old shared class caches that are awaiting deletion.
INQUIRE CORBASERVER	Return information about an installed CORBASERVER resource definition.
INQUIRE DISPATCHER	Return CICS dispatcher system information, which includes information about pools of open TCBs.
INQUIRE DJAR	Return information about an installed DJAR resource definition.
INQUIRE JVM	Identify JVMs in a CICS region and get information about their status.
INQUIRE JVMPOOL	Return information about the pool of JVMs in a CICS region.
INQUIRE JVMPROFILE	Retrieve the full path name of the z/OS UNIX file for a JVM profile, and find whether or not a JVM with this profile uses the shared class cache.
INQUIRE PIPELINE	Retrieve information about an installed PIPELINE.
INQUIRE URIMAP	Retrieve information about URIMAP resource definitions.
INQUIRE WEBSERVICE	Retrieve information about an installed WEBSERVICE.
INQUIRE WORKREQUEST	Retrieve information about work requests in the local CICS region.
PERFORM CORBASERVER	Perform a specified action (PUBLISH, RETRACT or SCAN) on the beans in a CORBASERVER.
PERFORM DJAR	Perform a specified action (PUBLISH or RETRACT) on a deployed JAR file.
PERFORM PIPELINE	Initiate a scan of the Web service binding directory that is specified in the WSBIND attribute of the PIPELINE definition.
SET BRFACILITY	Flag a bridge facility for deletion.
SET CORBASERVER	Set the timeout value for the session beans in a specified CORBASERVER.
SET DISPATCHER	Modify some CICS dispatcher system parameters.
SET HOST	Enable or disable a virtual host.
SET JVMPOOL	Change the status of the pool of JVMs in a CICS region or terminate the JVMs in the pool.
SET PIPELINE	Enable or disable a PIPELINE.
SET URIMAP	Enable or disable a URIMAP definition, and apply or remove redirection for a URIMAP definition.
SET WEBSERVICE	Set the validation status of a WEBSERVICE.

Changes to DOCTEMPLATE SPI commands

If resource security for document templates is active in the CICS region, with the XRES system initialization parameter set on (which is the default), the SPI commands for CICS document templates can be affected.

The following commands can be affected:

- EXEC CICS CREATE DOCTEMPLATE

- EXEC CICS DISCARD DOCTEMPLATE
- EXEC CICS INQUIRE DOCTEMPLATE
- EXEC CICS SET DOCTEMPLATE

Document templates specified by these commands are subject to resource security checking if RESSEC(YES) is specified in the transaction resource definition for the transaction that issues the command.

If resource security checking is in place, the user ID for the transaction must have an appropriate level of access to the DOCTEMPLATE resource definition involved:

Table 17. Access required for system programming commands involving document templates

Action	Access required
CREATE	ALTER
DISCARD	ALTER
INQUIRE	READ
SET	UPDATE

For all these commands, there is a new RESP2 value 101 for the condition NOTAUTH:

NOTAUTH

- 101** The user associated with the issuing task is not authorized to access this DOCTEMPLATE resource definition in the way required by this command.

The XHFS system initialization parameter, which specifies access control for z/OS UNIX files, does not affect any system programming commands. z/OS UNIX files are only referenced by EXEC CICS commands when they are defined as CICS document templates. In this situation, resource security for CICS document templates (specified by the XRES system initialization parameter) controls access to them for users.

Chapter 7. Changes to CICS-supplied utility programs

This section summarizes the changes to the utilities supplied by CICS.

CSD utility program, DFHCSDUP

The CSD utility program is enhanced to support all the new and changed resource types and attributes. See Chapter 4, “Changes to resource definition,” on page 35 for details of all the changes to CSD resource definitions that are supported by DFHCSDUP.

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.

Statistics formatting utility program, DFHSTUP

The statistics formatting utility program is enhanced to format additional statistics reports for the new resource types. See Chapter 12, “Changes to CICS statistics,” on page 111 for information about the new keywords available on the SELECT TYPE and IGNORE TYPE parameters.

Sample statistics utility program, DFH0STAT

DFH0STAT, the sample statistics utility program, is enhanced to produce additional statistics reports.

DFH0STAT now displays a 4 digit count for the hours in time fields instead of a 2 digit count, and also displays the time to 6 decimal places (down to one microsecond) instead of 5 decimal places. The new format for the time fields is hhhh:mm:ss.000000. The new format is used in the Dispatcher TCB Modes Report.

DFH0STAT now provides a new report for LIBRARYs, which will provide details about the data sets in the concatenation as well as the LIBRARY statistics. The DFHRPL Analysis currently provided by DFH0STAT has been revised to provide a DFHRPL and LIBRARY analysis showing the programs from the DFHRPL concatenation and those from LIBRARYs.

Trace formatting utility program, DFHTU650

The trace formatting utility program is renamed to DFHTU650. Always ensure you use the trace program with the correct level number for the release of CICS TS that created the trace data set you are formatting.

The program is enhanced to format trace entries written by the new domains and functions. The new identifiers that you can specify to DFHTU650 on the **TYPETR** parameter for these functional areas are the same as the CETR trace component codes.

IPCS dump exit routine, DFHPD650

The dump formatting utility program is renamed to DFHPD650. Always ensure you use the dump formatting program with the correct level number for the release of CICS TS that created the dump data set you are formatting.

The dump exit routine for formatting CICS system dumps is enhanced to format the control blocks for the new domains. To select or ignore dump data for any domains, specify the dump component keywords for those domains. The dump component keywords for use with the CICS IPCS dump exit routine are the same as the CETR trace component codes.

New CICS JVM Application Isolation Utility

The CICS JVM Application Isolation Utility is provided to help system administrators and application programmers discover static variables in Java applications which they use, or plan to use, in their CICS regions. The application developers should then review the findings of the utility and determine whether the application might exhibit unintended behavior when it runs in a continuous JVM. The utility can be used when migrating Java workloads from resettable to continuous JVMs.

The CICS JVM Application Isolation Utility is shipped with CICS Transaction Server for z/OS, Version 3 Release 2 as a JAR file named `dfhjaiu.jar`. It runs under z/OS UNIX System Services as a standalone utility. You do not need to have a CICS Transaction Server for z/OS, Version 3 Release 2 region or any other CICS region running when you use the utility.

The CICS JVM Application Isolation Utility is a code analyzer tool which inspects Java bytecodes in Java Archive (JAR) files and class files. It does not alter any Java bytecodes. It is provided as a means to help identify potential issues before they arise in a continuous JVM under CICS. The Java application does not need to be running in a CICS region when it is inspected.

New utility program DFHEISUP

DFHEISUP, the load module scanner utility, scans load libraries for the CICS commands in load modules, and identifies which modules contain specific API or SPI commands that you have named.

For example, if you know that a particular API or SPI command should be changed to take advantage of a new feature in CICS, you can use the load module scanner to identify all the load modules that contain the command. The load module scanner can look for specific commands, or options on commands, or combinations of options. It can also scan for commands where certain options are not specified.

The load module scanner locates all EXEC CICS commands in the load modules in the library you are scanning. It then applies a filter that you have specified, and reports only on the subset of commands that you have listed in the filter tables.

CICS provides two sample filter tables, DFHEIDBR and DFHEIDTH, in the SDFHSAMP library:

- DFHEIDBR contains the filter set for commands that are not supported by the 3270 bridge.
- DFHEIDTH contains the filter set for commands that give access to shared storage. The use of these commands could make a program not threadsafe,

unless it has the necessary synchronization logic in place to ensure serialization and prevent concurrent update. This table is particularly intended for use where you plan to ensure your CICS DB2 application programs are threadsafe in order to maximize the benefit of DB2 performance enhancements.

New utility sample programs for connection factories

CICS supplies three new utility programs to publish, retract and look up a connection factory in a JNDI namespace.

The programs illustrate how to:

1. Publish a connection factory to a JNDI namespace (the `CICSConnectionFactoryPublish` sample). You can use the sample to create a **ConnectionFactory** object suitable for use with the CCI Connector for CICS TS, and to publish it to the JNDI namespace used by the local CICS region. An enterprise bean or Java program, running on CICS, can then perform a JNDI lookup to obtain a reference to the connection factory.
2. Retract a previously-published connection factory from the JNDI namespace (the `CICSConnectionFactoryRetract` sample).
3. Look up a connection factory in the JNDI namespace (the CCI Connector sample). This sample also shows you how to use the CCI Connector for CICS TS, to call a CICS server program.

The `CICSConnectionFactoryPublish`, `CICSConnectionFactoryRetract`, and CCI Connector samples are described in *Java Applications in CICS*.

Chapter 8. Changes to global user exits, task-related user exits, and the exit programming interface

Reassembling global user exit programs

The CICS global user exit programming interface is product-sensitive, and is dependent on the implementation of CICS facilities. All global user exit programs must be reassembled against the CICS Transaction Server for z/OS, Version 3 Release 2 libraries. You will have to modify some of them for changes to parameters, before they are reassembled.

Note the changes summarized in this section 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.

Impact of changes to the exit programming interface (XPI)

Any changes to the exit programming interface (XPI) listed here mean that you might need to make changes to global user exit programs that contain XPI calls. Check whether your global user exit programs are affected by the changes to the XPI, and modify your programs accordingly.

Obsolete global user exit points

Table 18. Obsolete global user exit points

Exit name	Module or domain	Reason
XTCTIN	Terminal control program	This exit was invoked on TCAM input events. It is no longer called because CICS Transaction Server for z/OS, Version 3 Release 2 does not support the TCAM/ACB interface, and it only supports the TCAM/DCB interface indirectly.
XTCTOUT	Terminal control program	This exit was invoked on TCAM output events. It is no longer called because CICS Transaction Server for z/OS, Version 3 Release 2 does not support the TCAM/ACB interface, and it only supports the TCAM/DCB interface indirectly.

Changes to the DFHUEPAR standard parameter list

The DFHUEPAR standard parameter list of TCB two-character codes and symbolic values addressed by the global user exit task indicator field, UEPGIND, is extended. TCB modes are represented in DFHUEPAR as both a two-character code and a symbolic value.

Table 19. TCB indicators changed in DFHUEPAR. Description

Symbolic value	2-byte code	Change	Description
UEPTH8	H8	Deletion	A Java hotpooling mode TCB
UEPTL9	L9	Addition	An L9 open TCB, used for OPENAPI programs that are in user key
UEPTX8	X8	Addition	An X8 open TCB, used for C and C++ programs, compiled with the XPLINK option, that are in CICS key
UEPTX9	X9	Addition	An X9 open TCB, used for C and C++ programs, compiled with the XPLINK option, that are in user key

Changes to global user exits

Threadsafe PLT-enabled global user exit programs

Global user exit programs that are enabled from first-phase PLT programs can now be defined as threadsafe. In previous CICS releases, this technique was available to task-related user exit programs but not to global user exit programs. To define a first-phase PLT global user exit program as threadsafe, specify the THREADSAFE keyword on the EXEC CICS ENABLE command. This overrides the CONCURRENCY(QUASIRENT) setting on the system-autoinstalled program definition.

Changes to resource management install and discard exit XRSINDI

The range of values in the 1-byte field addressed by the UEPIDTYP parameter is extended to cover the install and discard of the following new resource types:

UEIDBEAN

An enterprise bean.

Note: XRSINDI is called once for each bean in a deployed JAR file. For install, these calls occur after the call for the install of the DJAR. For discard, they occur before the call for the discard of the DJAR.

UEIDCSRVR

A CorbaServer execution environment for enterprise beans and CORBA stateless objects (CORBASERVER)

UEIDDJAR

A deployed JAR file (DJAR)

UEIDLBRV

A LIBRARY resource

UEIDIPCO

An IPIC connection ("IPCONN")

UEIDPIPE

A pipeline (PIPELINE)

UEIDURIM

A URI map (URIMAP)

UEIDWEBS

A Web service (WEBSERVICE)

Changes to global user exits in CICS Transaction Server for z/OS, Version 3 Release 2

XEIIIN, XEIOOUT, XEISPIN, and XEISPOUT, EXEC interface program exits

A new parameter, UEP_EI_PBTOK, is added to the exit-specific parameter lists of these exits:

UEP_EI_PBTOK

Address of a 4-byte field containing the z/OS Workload Manager (WLM) Performance Block Token. An exit program can use this token to access information (such as the service class token, SERVCLS, or the current EWLM correlator, EWLM_CHCORR) in the WLM Performance Block. To do so, it must use the WLM EXTRACT macro, IWMMEXTR, passing the Performance Block Token as the MONTKN input parameter. The following example shows how to do this.

```
*      Mapping of the PB and eWLM constants
      IWMYCON

*      Area to return the Current Correlator
      ecurcorr DS      XL(L'PB_EWLM_CURRENTCORRELATOR)      Current correlator

*      Code to return the Current Correlator
      XC      ecurcorr,ecurcorr      Clear return area
      space 1
      L      R2,UEP_EI_PBTOK      Address the A(PB)
      space 1
      IWMMEXTR MONTKN=(R2),EWLM_CHCORR=ecurcorr
      space 1
      LTR      R15,R15      Extract worked ?
      BE      DOSPIMOK      Yes
      B      DOSPIMER      No
      space 1
```

Figure 1. Using the IWMMEXTR macro to extract the current EWLM correlator

An exit program must not attempt to modify the Performance Block: if it does so, the results are unpredictable.

XFCFRIN and XFCFROUT, file control domain exits

- A new value of UEP_FC_XRBA may be returned in the UEP_FC_RECORD_ID_TYPE exit-specific parameter.

UEP_FC_XRBA

VSAM extended ESDS access

- The following new return codes may be returned in UEP_FC_REASON:

UEP_FC_REASON_KSDS_AND_XRBA

Extended relative byte addressing (XRBA) was specified with a KSDS, CMT, or UMT data set.

UEP_FC_REASON_NOT_EXTENDED

Extended relative byte addressing was specified, with an XRBA number greater than 4 gigabytes, but the data set uses standard relative byte addressing (RBA).

XFCREQ and XFCREQC, file control EXEC interface API exits

A new value of X'08' (XRBA) may be returned in the FC_EIDOPT8 field of the EXEC interface descriptor (EID), which is pointed to by the first address in the command-level parameter structure:

FC_EIDOPT8

Indicates whether certain keywords that do not take values were specified on the request.

X'80' DEBKEY specified.

X'40' DEBREC specified.

X'20' TOKEN specified.

X'08' XRBA specified. If the XRBA bit is on, FC_RIDFLD (described in DSECT DFHFCEDS) points to an 8-byte extended relative byte address (XRBA).

XFCLDEL, XFCBFAIL, XFCBOVER, and XFCBOUT, file control exits

If you have exit programs that run at these exit points, you might need to recode them to cope with the format of the new log records that are issued for extended addressing ESDS data sets.

XMEOUT, message domain exit

New parameters are added for CICSPlex SM messages:

UEPCPID

Address of a 3-byte product ID. The possible values are:

DFH CICS messages.

EYU CICSPlex SM messages.

UEPCPDOM

Address of a 2-byte field containing the domain identifier of the message.

UEPCPNUM

Address of a 4-byte field containing the message number.

UEPCPSEV

Address of the message severity code.

XPCREQ, XPCREQC, and XPCERES program control program exits

A new parameter, UEP_PC_PBTOK, is added to the exit-specific parameter lists of these exits:

UEP_PC_PBTOK

Address of a 4-byte field containing the z/OS Workload Manager (WLM) Performance Block Token. An exit program can use this token to access information (such as the service class token, SERVCLS, or the current EWLM correlator, EWLM_CHCORR) in the WLM Performance Block. To do so, it must use the WLM EXTRACT macro, IWMMEXTR, passing the Performance Block Token as the MONTKN input parameter.

An exit program must not attempt to modify the Performance Block: if it does so, the results are unpredictable.

XRMIIN and XRMIOU, resource manager interface program exits

A new parameter, UEP_RM_PBTOK, is added to the exit-specific parameter lists of these exits:

UEP_RM_PBTOK

Address of a 4-byte field containing the z/OS Workload Manager (WLM) Performance Block Token. An exit program can use this token to access information (such as the service class token, SERVCLS, or the current EWLM correlator, EWLM_CHCORR) in the WLM Performance Block. To do so, it must use the WLM EXTRACT macro, IWMMEXTR, passing the Performance Block Token as the MONTKN input parameter.

An exit program must not attempt to modify the Performance Block: if it does so, the results are unpredictable.

Changes to global user exits in earlier CICS releases

Table 20. Changed global user exits in earlier CICS releases

Exit name	Description of changes
XFAINTU	<p>Parameter list change</p> <p>UEPFATK Address of the 8-byte facilitytoken</p> <p>UEPFAMCH Address of a 1-byte value that indicates the mechanism used to start the user transaction using this bridge facility. Possible values are:</p> <p>UEPFASTA Started using START BREXIT.</p> <p>UEPFALNK Started using a link to DFHL3270.</p> <p>UEPFAREG Address of a 1-byte value that indicates whether the region owns the bridge facility or whether it is remote. A bridge facility is owned by the AOR, to which it is local. A bridge facility is remote to a router region. Possible values are:</p> <p>UEPFAROU This region is the router for this bridge facility.</p> <p>UEPFAAOR This region is the AOR for this bridge facility.</p>
XICEREQ XICEREQC	<p>Two new exit-specific parameters are added to these interval control exit points :</p> <p>UEPDATE Address of a fullword copy of the EIB date value (EIBDATE).</p> <p>UEPTIME Address of a fullword copy of the EIB time value (EIBTIME).</p>
XPCFTCH	<p>When the exit XPCFTCH is invoked from a C or C++ programs that was compiled with the XPLINK option, a flag is set indicating that any modified entry point address, if specified by the exit, will be ignored.</p>
XPCTA	<p>When the exit XPCTA is invoked from a C or C++ programs that was compiled with the XPLINK option, a flag is set indicating that a resume address, if specified by the exit, will be ignored.</p>

Changes to global user exit points because of channels

Global user exit programs cannot access containers created by application programs. They can, however, create their own channels and pass them to programs which they call.

Minor changes to the following exits are described in in the *CICS Customization Guide*:

- XFCAREQ
- XFCAREQC
- XFCREQ
- XFCREQC
- XICEREQ
- XICEREQC
- XNQEREQ
- XNQEREQC
- XPCREQ
- XPCREQC
- XTDEREQ
- XTDEREQC
- XTSEREQ
- XTSEREQC

New global user exit points

New global user exit points added in CICS Transaction Server for z/OS, Version 3 Release 2

Application Associated Data exit XAPADMGR

The XAPADMGR exit is for use with distributed transactions. It allows you to add user information to a task's Associated Data Origin Descriptor, at the point of origin of the distributed transaction. This information could later be used as, for example, search keys for processing carried out through CICSplex SM.

CICS provides a sample global user exit program, DFH\$APAD, for use at the XAPADMGR exit point. The exit program is invoked, if enabled, when non-system tasks for which no input Origin Descriptor Record is provided are attached.

HTTP client send exit XWBAUTH

XWBAUTH enables you to specify basic authentication credentials (username and password) for a target server. XWBAUTH passes these to CICS on request, to create an Authorization header. XWBAUTH is called during processing of an EXEC CICS WEB SEND (Client) or EXEC CICS WEB CONVERSE command. The host name and path information are passed to the user exit, with an optional qualifying realm.

The XISQUE exit, for managing intersystem queues on IPIC connections

You can use the XISQUE exit to control the number of queued distributed program link (DPL) requests for sessions on IP interconnectivity (IPIC) connections.

The XISQUE exit enables you to detect queuing problems (bottlenecks) early. It is invoked only for DPL requests across IPCONNs.

XISQUE enables allocate requests to be queued or rejected, depending on the length of the queue. It also allows an IPCONN on which there is a bottleneck to be terminated and then re-established.

New global user exit points added in earlier CICS releases

Table 21. New global user exit points added in earlier CICS releases

Module or domain	Exit name	When invoked
HTTP client open exit	XWBOPEN	XWBOPEN is invoked during processing of an EXEC CICS WEB OPEN command. It enables systems administrators to specify proxy servers that should be used for HTTP requests by CICS as an HTTP client, and to apply a security policy to the host name specified for those requests.
HTTP client send exit	XWBSNDO	XWBSNDO is invoked during processing of an EXEC CICS WEB SEND or EXEC CICS WEB CONVERSE command for an HTTP request by CICS as an HTTP client. It enables systems administrators to specify a security policy for HTTP requests by CICS as an HTTP client.
EXEC interface program	XPCERES	XPCERES is invoked by the EXEC interface program, on the target region, before CICS processes either of the following kinds of dynamically-routed link request: <ul style="list-style-type: none"> • A distributed program link (DPL) call • A Link3270 bridge request
File control domain	XFCFRIN	XFCFRIN allows you to: <ul style="list-style-type: none"> • Monitor file control requests and allow them to continue, to be processed by CICS file control • Intercept file control requests and bypass CICS file control processing altogether • Redirect the request to a remote region.
	XFCFROUT	On completion of requests in the remote region, you can use XFCFROUT, which allows you to monitor the results of completed file control requests.
Interval control program	XICERES	XICERES is invoked by the interval control program, before CICS processes a non-terminal-related EXEC CICS START request that has been dynamically routed to this region.

Table 21. New global user exit points added in earlier CICS releases (continued)

Module or domain	Exit name	When invoked
Security manager domain	XSSEX	<p>Introduced to enable you to restore the same behavior for EXEC CICS SIGNON and SIGNOFF commands as in releases of CICS before CICS TS 2.1.</p> <p>The intention behind XSSEX and its supporting sample programs is to provide a short term migration aid, to give you time to modify affected application programs to work with the new behavior described in “Change of rules for EXEC CICS SIGNON and SIGNOFF” on page 57.</p>

New XFCFRIN and XFCFROUT global user exits

There are changes to file control to permit a CICS system file to be defined as a remote file. For example, the EJB directory data set and the EJB object store data set must both be shared by all the AORs in a logical EJB server. The changes to CICS file control enable this sharing to be managed by a CICS file-owning region (FOR). However, the restructuring of file control to enable this enhancement to CICS remote file support can affect the invocation of the file control EXEC interface API global user exits, XFCREQ and XFCREQC.

- If a file control API request is for a *local* file, there is no change to the invocation of global user exit programs enabled at the XFCREQ and XFCREQC exit points. In the case of local files, your exits are invoked as in earlier releases of CICS.
- If a file control API request is for a *remote* file, global user exit programs enabled at the XFCREQ and XFCREQC exit points are *not* invoked in the FOR.

If you are affected by this change, and still need to intercept the file control request in the file-owning region, you can use the new file control exit, XFCFRIN, which allows you to:

- Monitor file control requests and allow them to continue, to be processed by CICS file control
- Intercept file control requests and bypass CICS file control processing altogether
- Redirect the request to a remote region.

On completion of requests in the remote region, you can use XFCFROUT, which allows you to monitor the results of completed file control requests.

For details of these global user exit points see File control domain exits, XFCFRIN and XFCFROUT in the *CICS Customization Guide*.

Changes to the exit programming interface

The INQUIRE_SHORT_ON_STORAGE call

A new output parameter, SOS_ABOVE_THE_BAR, has been added to the INQUIRE_SHORT_ON_STORAGE storage control call.

SOS_ABOVE_THE_BAR(NOIYES),

returns YES if CICS is currently short-on-storage above the 2GB boundary, and NO if not.

Changes to task-related user exits

Invocation by CICS context management

Task-related user exit programs can now be invoked at an additional invocation point. Currently, a task-related user exit program can be invoked by:

- An application program
- CICS SPI manager
- CICS syncpoint manager
- CICS task manager
- CICS termination manager
- The Execution Diagnostic Facility (EDF)

To this list is added CICS context management.

A CICS application that interacts with another (non-CICS) product that supports the Application Response Measurement (ARM) workload balancing and reporting standard can use a task-related user exit program, invoked by CICS context management, to support cross-product workload monitoring. Sometimes, such a task-related user exit program is supplied by the non-CICS, ARM-enabled, product.

A task-related user exit program signals that it wants to be invoked by CICS context management by setting a bit in the schedule flag word: see *The schedule flag word*, in the *CICS Customization Guide*. It can set this bit when it is invoked by an application program or by the CICS task manager at start-of-task.

Note that the only way to cause the exit program to be invoked by CICS context management is for the exit program itself, on a preliminary invocation, to set the bit in the schedule flag word. Calls by the CICS termination manager, for instance, can be scheduled by specifying the SHUTDOWN option on the EXEC CICS ENABLE command that enables the exit program. There is no equivalent option on the EXEC CICS ENABLE command to cause the exit program to be invoked by CICS context management. (How to use options of the EXEC CICS ENABLE command to cause a task-related user exit program to be invoked for specific types of call is described in *Enabling for specific invocation-types*, in the *CICS Customization Guide*.)

If the context management bit in the schedule word is set for the current transaction, CICS context management invokes the exit program whenever the transaction issues a non-terminal-related EXEC CICS START command. (The exit program is not invoked for terminal-related EXEC CICS START commands.)

If the transaction to be started is remote, the correlator is passed to the remote transaction only if the remote region is connected by an MRO link.

On invocation, the exit program is passed a context-related parameter list: see *CICS context management parameters*, in the *CICS Customization Guide*.

Typically, the job of the exit program is to extract the ARM correlator (which relates to the transaction to be started), if one is included in the work request, and to make it available to CICS.

How the correlator is passed in the work request depends on the type and format of the request. It might be passed in the request header, for instance. The location of the correlator, in the work request, must be understood by the exit program.

Typically, on invocation the exit program first checks whether it has been called for a transaction in which it is “interested”, or for an unrelated transaction. If it’s for the former, what happens next may depend on whether there is a workload manager correlator included in the request.

If there is a correlator included in the request *and* the 512-byte data area addressed by the UECON_CORRELATOR_PTR field of its parameter list does not already contain a correlator, the exit program should:

1. Use the IWMMEXTR macro to extract the correlator from the work request.
2. If the correlator is in character format, convert it to binary format. (Character format might have been used to pass the work request over external protocols, for example.) ARM correlators must be between 4 and 512 bytes long and in binary format. The first two bytes must contain the length of the correlator (including the length field itself). If the correlator is less than 512 bytes long, it must be padded on the right with binary zeros.
3. Make the correlator available to CICS, by placing it in the data area addressed by the UECON_CORRELATOR_PTR field of its parameter list.

Important: If, on entry to the exit program, the data area addressed by the UECON_CORRELATOR_PTR field already contains a correlator, the exit program should not change it. (If the content of the data area starts with X'0000' you can assume that the data area does not contain a correlator.)

If there is no correlator included in the work request, the exit program may or may not provide one. If it does not pass a correlator it should leave the data area addressed by the UECON_CORRELATOR_PTR field set to binary zeros (its value on invocation of the exit program).

When the user exit program returns, if there is a correlator in the UECON_CORRELATOR_PTR field CICS checks that it is of the correct length. If the correlator fails this check, CICS ignores it.

At the attach of the transaction started by the EXEC CICS START command, if there is a valid correlator the monitoring domain passes it to the z/OS Workload Manager (WLM). The WLM does one of the following:

- Accepts the correlator as valid. In this case, the WLM returns a new correlator that is known as a **child correlator**.
- Rejects the correlator as invalid or unrecognized. In this case, the WLM treats this as an edge transaction, and generates a new **edge correlator**.

The new correlator is in EWLM format. CICS uses it to identify the piece of work in any further WLM calls.

Chapter 9. Changes to the external CICS interface (EXCI)

The external CICS interface (EXCI) is an application programming interface that enables a non-CICS program (a client program) running in MVS to call a program (a server program) running in a CICS region and to pass and receive data by means of a communications area.

Changes to the EXCI options table

The EXCI options table, generated by the DFHXCOPT macro, enables you to specify a number of parameters that are required by the external CICS interface. A new option, XCFGROUP, is added to the EXCI options table.

XCFGROUP={DFHIR000|name}

Specifies the name of the cross-system coupling facility (XCF) group to be joined by this client program.

Note: XCF groups allow CICS regions in different MVS images within the same sysplex to communicate with each other across multi-region operation (MRO) connections. For introductory information about XCF/MRO, and instructions on how to set up XCF groups, see Cross-system multiregion operation (XCF/MRO) in the *CICS Intercommunication Guide*.

Each client program can join a maximum of one XCF group.

DFHIR000

The default XCF group name.

name

The group name must be eight characters long, padded on the right with blanks if necessary. The valid characters are A-Z 0-9 and the national characters \$ # and @. To avoid using the names IBM uses for its XCF groups, do not begin group names with the letters A through C, E through I, or the character string "SYS". Also, do not use the name "UNDESIG", which is reserved for use by the system programmer in your installation.

It is recommended that you use a group name beginning with the letters "DFHIR".

Chapter 10. Changes to user-replaceable programs

This section summarizes the changes that affect CICS user-replaceable programs. You must reassemble all user-replaceable programs, whether or not you make any changes to them.

You should check whether the changes listed for this release to the user-replaceable program interface affect your own customized programs, and make any necessary changes. For example, there might be changes to the parameters passed to the programs, or there might be new actions that the programs need to take. To help you to identify any code changes that are required, compare your customized programs with the sample code in the user-replaceable sample programs provided with this CICS release.

See General notes about user-replaceable programs in the *CICS Customization Guide* for programming information about user-replaceable programs.

Changes to the dynamic and distributed routing programs DFHDYP and DFHDSRP

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, there are some changes to the dynamic and distributed routing programs.

- The communications area passed to the dynamic routing program (default name DFHDYP) and the distributed routing program (DFHDSRP) has been changed for scheduler services and request streams, with new codes SH and RZ added to the DYRCOMP field.
- The DFHDYP input parameter DYRTYPE has a new value of 8 for Link3270 messages. A new input parameter, DYRBRTK, is set to the value of the bridge facility token when DYRTYPE= 8, and DYRTRAN contains the name of the target 3270 transaction as it is known in the routing region.

To support these additions to dynamic routing, several new fields are added to the DFHDYP communication area, defined by the DFHDYPDS copybook. Ensure your customized versions of the routing programs are recompiled using the latest DFHDYPDS DSECT supplied in library CICSTS32.SDFHMAC.

See Writing a dynamic routing program in the *CICS Customization Guide* for information about the DFHDYP communication area.

New abend code AIID

A new abend code, AIID, may be returned in the DYRABCDE field of the communications area passed to the distributed routing program, DFHDSRP, if the routing program is invoked for transaction abend. (Note that this invocation occurs on the *target* region, and then only if the routing program has specified, on a previous call on the routing region, that it should be re-invoked, on the target region, for transaction initiation, termination, and abend.)

AIID indicates to the distributed routing program that a routed method request for an enterprise bean or CORBA stateless object has failed, on the target region, because the target CorbaServer on the target region is disabled.

After a routing error, the routing program has better information on which to base a decision whether or not to remove an AOR from its routing set. For example:

- If a routing error occurs because the target AOR, or the connection to it, is unavailable, the routing program may decide to remove the AOR, temporarily, from its routing set, until sufficient time has elapsed for the AOR or connection to be repaired. In the meantime, it directs all requests to other AORs.
- If a routing error occurs because the target CorbaServer on the target AOR is disabled (and the AOR supports multiple CorbaServers), the routing program may decide *not* to remove the AOR from its routing set. It redirects the failed request to a different AOR, but recognizes that the first AOR remains a valid target for requests for objects supported by its other CorbaServers.

For detailed information about how to code a distributed routing program to deal with a disabled CorbaServer, see *Dealing with a disabled CorbaServer* in the *CICS Customization Guide*.

Changes to the IOP security program, DFHXOPUS

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, there are changes to the sample IOP security program, DFHXOPUS.

DFHXOPUS has been changed to handle GIOP 1.2 request headers. The actions taken by the sample program have not changed. However, versions of GIOP from 1.2 onwards do not support the IOP Principal field in request headers. In some circumstances (where SSL(YES) or SSL(NO) is specified on the TCPIP SERVICE definition and there is no RACF user ID associated with the SSL client certificate), DFHXOPUS uses the first eight characters of the IOP Principal, if there is one, to derive the user ID that it returns. For GIOP 1.2 requests, the IOP Principal is not present and so DFHXOPUS will never return it as the user ID.

The communications area passed to the IOP security program (DFHXOPUS) is extended. You can now use the security program in connection with incoming requests for EJB objects as well as IOP objects. The enhanced communications area is defined by a new DSECT named DFHIIURH, which defines the following control blocks:

- sXOPUS, the security communications area (COMMAREA) header
- The general Inter-ORB Protocol (GIOP) request header

DFHIIURH is supplied in the CICS SDFHC370 library.

For information about how to write an IOP security program, and for details of the DFHXOPUS sample program, see *Writing a security exit program for IOP* in the *CICS Customization Guide*.

Changes to the program autoinstall program DFHPGADX

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there is an addition to the parameter list used by the program autoinstall program (default name DFHPGADX) to support the JVM profile option on the program resource definition. PGAC_JVM_PROFID is an 8-byte field that specifies the name of the JVM profile to be used to provide the options for a JVM.

For information about writing a program autoinstall user-replaceable program, see *Writing a program to control autoinstall of programs* in the *CICS Customization Guide*.

Changes to the terminal autoinstall programs DFHZATDX and DFHZATDY

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there are changes that affect the terminal autoinstall programs as a result of CICS support for the VTAM LU alias facility, and the Link3270 bridge.

If your CICS regions are defined, in their VTAM APPL statements, to use the dynamic LU alias facility, review your terminal autoinstall programs to ensure that your program logic is able to handle a dynamic LU alias.

To help you with your review, there is some new sample code in the DFHZATDX and DFHZATDY sample programs. This code extracts the network qualified name from the CINIT or BIND and uses the *last* character of the NETID and the *last three* characters of the real network name to provide an alternative terminal ID (termid). Note that this new sample code is included within comments, and is supplied only to illustrate how to extract the required information from the CINIT and BIND '0E' control vectors.

If you specify the new CICS system initialization parameter, AIBRIDGE=YES, the terminal autoinstall user-replaceable program is also called when bridge facilities are created.

For more information, see in the *CICS Customization Guide*.

Changes to the node error program DFHZNEP

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there is a new action, print NQN, added to the action flags that are set by DFHZNAC. Print NQN causes the network qualified name to be printed after any message that contains this flag.

The action flag is TWAOPT1, flag 7, set to X'02'. This can be set and unset in the same way as print TCTTE. Print NQN is added as the default action flag for all the following DFHZC messages:

```
0125 0131 0144 0145 0146 0147 0148 0149 0150 0155 0156 0157
2117
2400 2401 2403 2404 2407 2408 2409 2410 2411 2416 2417 2418
2419 2420 2421 2423 2424 2425 2435 2443 2444 2446 2448 2449
2452 2456 2457 2460 2462 2467 2468 2470 2471 2490
3405 3407 3409 3417 3418 3419 3420
3421 3422 3424 3429 3433 3434 3435 3444 3445 3446 3447 3453 3454 3455
3461 3462 3464 3465 3466 3468 3469 3470 3471 3474 3475 3476 3477 3479
3480 3481 3485 3486 3487 3488 3489 3490 3491 3495 4902 4903 4904 4905
4906 4907 4909 4910 4911 4912 4913 4914 4915 4916 4917 4918 4919
4920 4922 4929 4924 4925 4926 4927 4928 4930 4931 4932 4934 4935
4936 4937 4938 4939 4940 4941 4942 4943 4944 4945 4946 4947 4949
6591 6594 6595 6596
```

For details of all the action flags and their meanings, see Action flag settings and meanings in the *CICS Customization Guide*.

Changes to DFHCNV

When migrating to CICS Transaction Server for z/OS, Version 3 Release 2, you need to reassemble any DFHCNV data conversion tables that you use, because CICS initialization fails if you try to load DFHCNV tables assembled using macros from an earlier release. There is a new DFHCNV macro parameter operand SYSDEF.

The new operand SYSDEF has been added to the TYPE=INITIAL and TYPE=ENTRY macro parameters CLINTCP and SRVERCP. These macros define the user-replaceable data conversion table DFHCNV. The DFHCNV TYPE=INITIAL macro defines the beginning of the conversion table. It gives a list of valid code pages. The DFHCNV TYPE=ENTRY macro specifies a name and type to uniquely identify a data resource. There must be one for each resource for which conversion is required.

For information about the format of the changed parameters, see Defining the conversion table in *CICS Family: Communicating from CICS on zSeries*.

Changes to the DFHUCNV user-replaceable data conversion program

Since CICS TS 1.3, there are changes to the offset and length parameters passed to the DFHUCNV user-replaceable program. Offsets in the DSECT have changed and pointers to halfword length fields are now pointers to fullword length fields. This means that you cannot share the same program between CICS TS Version 2 or Version 3 regions and CICS TS 1.3 regions.

To modify a CICS TS 1.3 version of DFHUCNV, first copy and rename the source to distinguish it from the earlier DFHUCNV. Make the changes to your renamed program for the new parameters, which are described by the DSECT in DFHCNV. See The user-replaceable conversion program in *CICS Family: Communicating from CICS on zSeries* for details of all the DFHUCNV parameters.

To enable you to maintain and use different versions of DFHUCNV, specify the name of your modified program on the USREXIT parameter in the DFHCNV TYPE=ENTRY macro, to distinguish it from the DFHUCNV program of earlier releases.

- A program name option is added to the USREXIT parameter, making the syntax: USREXIT=YESINO|*program_name*. This allows you to specify a program name different from DFHUCNV, and to keep DFHUCNV as the name of the data conversion URM for CICS TS 1.3. If you specify USREXIT=YES, CICS loads DFHUCNV.
- To use your existing version of DFHUCNV with earlier releases of CICS, also continue to use the earlier version of DFHCNV. The CICS TS for z/OS, Version 3.2 DFHCNV data conversion table macro is *not* compatible with CICS TS 1.3.
- To use a CICS TS for z/OS, Version 3.2 version of DFHUCNV, specify USREXIT=*new_ucnv_name*.

New user-replaceable programs

DFHEJDNX

DFHEJEP was introduced in CICS Transaction Server for z/OS, Version 2. It is a CICS command-level API program that you can use to obtain a string

representation of the distinguished name of an EJB client, when the client has not presented an X.509 certificate containing a name.

You can customize this user-replaceable program, and write it in any of the CICS-supported languages (except Java), but its name must be DFHEJDNX.

For information about user-replaceable program DFHEJDNX, see Writing a distinguished name program for clients of enterprise beans in the *CICS Customization Guide*.

DFHEJEP

DFHEJEP was introduced in CICS Transaction Server for z/OS, Version 2. It enables you to monitor certain EJB-related events in a CICS region. The program is invoked for CORBASERVER, DJAR, and bean events.

There are three types of EJB events: error, information, and warning. All the events are identified by an event code and an event type. For example, event code 001 is an information event type and is described as:

- DJAR resource installed (but not yet resolved).

The default implementation of DFHEJEP is provided to support the EJB application development tool. It is intended for use in CICS application development regions, and you are recommended to install the default program in your development regions. Although the supplied version of DFHEJEP is written in C only, you can write this user-replaceable program in any of the CICS-supported languages; there are COMMAREA copybooks for each of the languages.

For more information about user-replaceable program DFHEJEP, and details of all the event codes, see Writing an EJB event program *CICS Customization Guide*.

DFHAPXPO

DFHAPXPO was introduced in CICS Transaction Server for z/OS, Version 3 Release 1. It is loaded during the PIPI preinitialization phase of each Language Environment enclave where C or C++ programs compiled with the XPLINK option are to be run. It allows you to alter the default Language Environment run-time options.

See the *z/OS Language Environment Programming Guide*, SA22-7561, for details of the Language Environment options that can be reset. The program must be written in Assembler language.

The source for DFHAPXPO is supplied in the CICSTS32.CICS.SDFHSAMP library.

For information on how you can tailor this user-replaceable program to your own requirements, see DFHAPXPO in the *CICS Customization Guide*.

DFHISAIP

DFHISAIP was introduced in CICS Transaction Server for z/OS, Version 3 Release 2. Its purpose is to manage the autoinstall of IP interconnectivity (IPIC) connections.

The IPCONN autoinstall user program is similar to the APPC autoinstall user program. Like the APPC autoinstall user program, the IPIC autoinstall user program can choose an installed connection to use as a template for the new connection.

The main differences are that the template is an IPCONN rather than a CONNECTION definition, and that the use of the template is optional.

If IPCONN autoinstall is active, CICS installs the new IPCONN connection using:

- The information in the connect flow
- The IPCONN template, optionally selected by the IPCONN autoinstall user program
- Values returned by the user program in its communications area
- CICS-supplied values

DFHISAIP, the Assembler language version, is the default user program for autoinstall of IPIC connections. Sample COBOL, PL/I, and C versions are also supplied. The source for all the versions of the sample program is supplied in the CICSTS32.CICS.SDFHSAMP library.

For more information about this program, see *Writing a program to control autoinstall of IPIC connections*, in the *CICS Customization Guide*.

Chapter 11. Changes to CICS monitoring

There are changes to CICS monitoring data that could affect user-written and vendor-written utilities that analyze and print CICS SMF 110 monitoring records.

The length of a standard performance class monitoring record, as output to SMF, has increased to 2352 bytes. This does not take into account any user data that you add, or any system-defined data fields that you exclude by using a monitoring control table (MCT). CICS Transaction Server for z/OS, Version 3 Release 2 introduces a data compression facility for SMF 110 monitoring records, which can provide a significant reduction in the volume of data written to SMF.

The offsets have changed for a number of the default CICS dictionary entries in the dictionary data sections of CICS monitoring SMF 110 records.

The length of a monitoring clock for performance class data has increased from 8 bytes to 12 bytes. This affects all performance class data fields defined as "TYPE-S", and also affects any user-defined event-monitoring points (EMPs) which involve clocks. User clocks are defined in the monitoring control table (MCT) using DFHMCT TYPE=EMP macros. Note that the monitoring clocks for transaction resource class data are **not** changed, and they remain at 8 bytes.

Check your utility programs that process CICS SMF records to ensure that they can still process 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. This is particularly important if you want to activate data compression for monitoring records. You need to make sure that the product is able to identify compressed CICS SMF 110 monitoring records, and expand the data section using the z/OS Data Compression and Expansion Services, so that the monitoring records can be processed correctly. If the reporting tool is not able to do this, you could use the CICS-supplied monitoring sample program DFH\$MOLS with the EXPAND control statement to produce an output data set containing the SMF 110 monitoring records in their expanded format, for the tool to work with.

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

New and changed monitoring data fields

A number of new performance data fields are added to performance class data records. Some existing performance class and exception class data fields are changed.

New performance data fields added in CICS Transaction Server for z/OS, Version 3 Release 2

Group DFHCICS

360 (TYPE-C, 'OAPPLID', 8 BYTES)

The applid of the CICS region in which this work request (transaction) originated; (for example, the region in which the CWXN task ran).

361 (TYPE-T, 'OSTART', 8 BYTES)

The time at which the originating task (for example, the CWXN task) was started.

362 (TYPE-P, 'OTRANNUM', 4 BYTES)

The number of the originating task (for example, the CWXN task).

363 (TYPE-C, 'OTRAN', 4 BYTES)

The transaction ID (TRANSID) of the originating task (for example, the CWXN task).

364 (TYPE-C, 'OUSERID', 8 BYTES)

The originating Userid-2 or Userid-1 (for example, from CWBA), depending on the originating task.

365 (TYPE-C, 'OUSERCOR', 64 BYTES)

The originating user correlator.

366 (TYPE-C, 'OTCPSVCE', 8 BYTES)

The name of the originating TCPIP SERVICE.

367 (TYPE-A, 'OPORTNUM', 4 BYTES)

The port number used by the originating TCPIP SERVICE.

368 (TYPE-C, 'OCLIPADR', 16 BYTES)

The IP address of the originating client (or Telnet client).

369 (TYPE-A, 'OCLIPORT', 4 BYTES)

The TCP/IP port number of the originating client (or Telnet client).

370 (TYPE-A, 'OTRANFLG', 8 BYTES)

Originating transaction flags, a string of 64 bits used for signaling transaction definition and status information:

Byte 0

The facility-type of the originating transaction:

- Bit 0** None (X'80')
- Bit 1** Terminal (X'40')
- Bit 2** Surrogate (X'20')
- Bit 3** Destination (X'10')
- Bit 4** 3270 bridge (X'08')
- Bit 5** Reserved
- Bit 6** Reserved
- Bit 7** Reserved

Byte 1

Transaction identification information:

- Bit 0** System transaction (x'80')
- Bit 1** Mirror transaction (x'40')
- Bit 2** DPL mirror transaction (x'20')
- Bit 3** ONC/RPC Alias transaction (x'10')
- Bit 4** WEB Alias transaction (x'08')
- Bit 5** 3270 Bridge transaction (x'04')
- Bit 6** Reserved (x'02')
- Bit 7** CICS BTS Run transaction

Byte 2

Reserved.

Byte 3

Transaction definition information:

Bit 0 Taskdataloc = below (x'80')

Bit 1 Taskdatakey = cics (x'40')

Bit 2 Isolate = no (x'20')

Bit 3 Dynamic = yes (x'10')

Bits 4–7

Reserved

Byte 4

The type of the originating transaction:

X'01' None

X'02' Terminal

X'03' Transient data

X'04' START

X'05' Terminal-related START

X'06' CICS business transaction services (BTS) scheduler

X'07' Transaction manager domain (XM)-run transaction

X'08' 3270 bridge

X'09' Socket domain

X'0A' CICS Web support (CWS)

X'0B' Internet Inter-ORB Protocol (IIOP)

X'0C' Resource Recovery Services (RRS)

X'0D' LU 6.1 session

X'0E' LU 6.2 (APPC) session

X'0F' MRO session

X'10' External Call Interface (ECI) session

X'11' IIOP domain request receiver

X'12' Request stream (RZ) instore transport

X'13' IP interconnectivity session

Byte 5

Reserved.

Byte 6

Reserved.

Byte 7

Recovery manager information:

Bit 0 Indoubt wait = no

Bit 1 Indoubt action = commit

Bit 2 Recovery manager - UOW resolved with indoubt action

Bit 3 Recovery manager - Shunt

Bit 4 Recovery manager - Unshunt

Bit 5 Recovery manager - Indoubt failure

Bit 6 Recovery manager - Resource owner failure

Bit 7 Reserved

371 (TYPE-C, 'OFCTYNME', 4 BYTES)

The facility name of the originating transaction. If the originating transaction is not associated with a facility, this field is null. The transaction facility type, if any, can be identified using byte 0 of the transaction flags, OTRANFLG (370), field.

Group DFHDOCH

223 (TYPE-A, 'DHDELCT', 4 BYTES)

The number of document handler DELETE requests issued by the user task.

Group DFH SOCK

288 (TYPE-A, 'ISALLOCT, 4 BYTES)

The number of allocate session requests issued by the user task for sessions using IPIC

300 (TYPE--S, 'ISIWTT', 8 BYTES)

The elapsed time for which a user task waited for control at this end of an (IPIC) connection.

305 (TYPE--C, 'ISIPICNM', 8 BYTES)

The name of the IPIC connection whose TCP/IP service attached the user task.

330 (TYPE--A, 'CLIPPORT', 4 BYTES)

The port number of the client or Telnet client.

Performance data fields changed in CICS Transaction Server for z/OS, Version 3 Release 2

Group DFH SOCK

244 (TYPE-C, 'CLIPADDR', 16 BYTES)

The client IP address (in the form *nnn.nnn.nnn.nnn*) or Telnet client IP address.

Group DFHTASK

164 (TYPE-A, 'TRANFLAG', 8 BYTES)

Transaction flags, a string of 64 bits used for signaling transaction definition and status information:

Byte 0

Transaction facility identification

Bit 0 Transaction facility name = none (x'80')

Bit 1 Transaction facility name = terminal (x'40')

If this Bit is set, FCTYNAME and TERM contain the same terminal id.

Bit 2 Transaction facility name = surrogate (x'20')

Bit 3 Transaction facility name = destination (x'10')

Bit 4 Transaction facility name = 3270 bridge (x'08')

Bits 5–7

Reserved

Byte 1

Transaction identification information

Bit 0 System transaction (x'80')

Bit 1 Mirror transaction (x'40')

- Bit 2** DPL mirror transaction (x'20')
- Bit 3** ONC/RPC Alias transaction (x'10')
- Bit 4** WEB Alias transaction (x'08')
- Bit 5** 3270 Bridge transaction (x'04')
- Bit 6** Reserved (x'02')
- Bit 7** CICS BTS Run transaction

Byte 2

z/OS workload manager request (transaction) completion information

- Bit 0** Report the total response time (begin-to-end phase) for completed work request (transaction)
- Bit 1** Notify that the entire execution phase of the work request is complete
- Bit 2** Notify that a subset of the execution phase of the work request is complete
- Bit 3** This transaction has been reported to the z/OS workload manager as completing abnormally because it has tried to access DB2 and a "connection unavailable" response has been returned. This occurs when all the following are true:
 1. Bit 0 is set.
 2. CICS is not connected to DB2.
 3. The CICS-DB2 adapter is in standby mode (STANDBYMODE(RECONNECT) or STANDBYMODE(CONNECT)).
 4. CONNECTERROR(SQLCODE) is specified, causing the application to receive a -923 SQL code.

Bits 4-7

Reserved

Byte 3

Transaction definition information

- Bit 0** Taskdataloc = below (x'80')
- Bit 1** Taskdatakey = cics (x'40')
- Bit 2** Isolate = no (x'20')
- Bit 3** Dynamic = yes (x'10')

Bits 4-7

Reserved

Byte 4

Transaction origin type:

- X'01'** None
- X'02'** Terminal
- X'03'** Transient data
- X'04'** START
- X'05'** Terminal-related START
- X'06'** CICS business transaction services (BTS) scheduler

- X'07' Transaction manager domain (XM)-run transaction
- X'08' 3270 bridge
- X'09' Sockets domain
- X'0A' CICS Web support (CWS)
- X'0B' Internet Inter-ORB Protocol (IIOP)
- X'0C' Resource Recovery Services (RRS)
- X'0D' LU 6.1 session
- X'0E' LU 6.2 (APPC) session
- X'0F' MRO session
- X'10' External Call Interface (ECI) session
- X'11' IIOP domain request receiver
- X'12' Request stream (RZ) instore transport
- X'13' IPIC session

Byte 5

Transaction status information

Bits 0–5

Reserved

Bit 6 Task purged on an open TCB

Bit 7 Task abnormally terminated

Note: If bit 6 is set, the task has been purged while running on an open TCB, and its transaction timing clocks have been left in an unreliable state. Because of this, the clocks will be set to zero when the record is written by the CICS Monitoring Facility (CMF).

Byte 6

Reserved

Byte 7

Recovery manager information

Bit 0 Indoubt wait = no

Bit 1 Indoubt action = commit

Bit 2 Recovery manager - UOW resolved with indoubt action

Bit 3 Recovery manager - Shunt

Bit 4 Recovery manager - Unshunt

Bit 5 Recovery manager - Indoubt failure

Bit 6 Recovery manager - Resource owner failure

Bit 7 Reserved

Note: Bits 2 through 6 will be reset on a SYNCPOINT request when the MNSYNC=YES option is specified.

275 (TYPE-S, 'JVMRTIME', 12 BYTES)

Before CICS Transaction Server for z/OS, Version 3 Release 2, the JVMRTIME field (group name: DFHTASK, field id: 275) recorded the time spent resetting the JVM environment to its initial state between uses of the JVM. This time was only measurable for resettable JVMs, and usually registered as zero for continuous JVMs. The resettable mode is now withdrawn, but the precision of the CICS monitoring clocks has been increased, so the JVMRTIME field is now able to measure the time spent in JVM cleanup between uses of a continuous JVM. This time includes deleting local references for each task and handling any exception raised. It also includes the time taken to destroy the JVM when CICS ceases to require it.

Before CICS Transaction Server for z/OS, Version 3 Release 2, the JVMRTIME field also recorded the time spent on garbage collections scheduled by CICS. This type of garbage collection was included in the activity measurements for the transaction immediately before the garbage collection took place. Garbage collections scheduled by CICS now take place under a separate transaction, CJGC, and are not recorded in the JVMRTIME field for user transactions.

Exception records changed in CICS Transaction Server for z/OS, Version 3 Release 2

EXCMNTRF (TYPE-C, 8 BYTES)

Transaction flags—a string of 64 bits used for signaling transaction definition and status information. For details, see field 164 (TRANFLAG) in performance data group DFHTASK.

Effects of monitoring clock changes on performance data

The monitoring clocks for performance class data now record dispatch time and CPU time much more precisely, and can do this over a longer period. When you migrate to CICS Transaction Server for z/OS, Version 3 Release 2, you might see differences in the times reported in your performance class data.

The changes to the monitoring clock format should **not** themselves have any measurable impact on the performance of your transactions. However, because of the increased precision and capacity of the clocks, you might see some times for individual transactions being reported differently in your CICS performance class data.

Because the monitoring clocks are more precise, you might see a higher dispatch time or CPU time being reported for any transactions that suffered from under-reporting in previous CICS releases. This is because when the monitoring clocks used units of 16 microseconds, the time recorded was rounded **down** to a multiple of 16 microseconds; that is, only completed 16-microsecond units were recorded. If a transaction was dispatched on a CICS TCB for 24 microseconds, 16 microseconds would be added to the time on the clock, but the other 8 microseconds would go unreported. However, in CICS Transaction Server for z/OS, Version 3 Release 2, with the monitoring clocks recording every microsecond, the 24-microsecond dispatch for the same transaction is reported in full. You are most likely to notice an increase in the amount of dispatch time or CPU time reported where you have a transaction with a high level of TCB switching, such as a nonthreadsafe transaction which makes a number of DB2 requests.

Because the monitoring clocks have a greater capacity, you should see more useful reporting of times for long-running transactions. In previous CICS releases,

transactions that ran for longer than the clock capacity of around 19 hours could not be reported correctly in the performance class data, because the timer component and period count would wrap around after that time. In CICS Transaction Server for z/OS, Version 3 Release 2, the clock components are still not protected against wraparound, but because of the increased clock capacity it is unlikely ever to occur. This means that the time used by long-running transactions can be presented accurately.

Changes to the format of CICS SMF 110 monitoring records

CICS SMF 110 monitoring records are divided into three parts: an SMF header, an SMF product section, and a CICS data section. If data compression is active, the CICS data section is compressed before the record is written to SMF, and must be expanded before use. There is a new field in the SMF product section to identify a compressed monitoring record and give its length after compression.

Effect of data compression

When data compression is active, CICS uses the standard z/OS Data Compression and Expansion Services (CSRCESTRV) to compress the CICS data section of each monitoring record before writing it to SMF. The SMF header and SMF product section of records are not compressed.

When CICS SMF 110 monitoring records have been compressed, they need to be identified, and the data section needs to be expanded using the z/OS Data Compression and Expansion Services, before the records can be processed by SMF 110 reporting tools.

Data compression only applies to SMF 110 records written by CICS monitoring, with subtype X'0001' in the record subtype field in the SMF header. It does not apply to the other types of SMF 110 records created by CICS, that is, records written by CICS journaling, CICS statistics, the TS data sharing server, the coupling facility data table (CFDT) server, and the named counter sequence number server.

New product header field SMFMNCRL

The new field SMFMNCRL in the SMF product section of monitoring records identifies where data compression has been used for a monitoring record, and gives the compressed length of the CICS data section.

SMFMNCRL DS XL2 COMPRESSED RECORD LENGTH

A zero value in this field indicates that the CICS data section in the record does not contain compressed data. A nonzero value in this field indicates that the CICS data section in the record does contain compressed data, and that the z/OS Data Compression and Expansion Services must be used to expand the data section before processing.

The value of the field shows the length of the CICS data section after compression. The maximum expanded length of the data section will be 32598 bytes.

Changes to the monitoring sample program DFH\$MOLS

DFH\$MOLS is a sample program which you can modify or adapt to your own purposes. It is intended to show you how you can code your own monitoring utility program to produce reports from the data collected by the CICS monitoring domain (MN), and written to SMF data sets. From CICS Transaction Server for z/OS,

Version 3 Release 2, DFH\$MOLS is able to identify any SMF 110 monitoring records that have been compressed, and expand them using the z/OS Data Compression and Expansion Services (CSRCEserv), before printing reports.

New monitoring clock field format

DFH\$MOLS now reports clock fields in the format ddd hh:mm:ss.000000, showing a count for days, hours, minutes and seconds, followed by 6 decimal places (down to one microsecond).

New EXPAND control statement

Use this option if some or all of the input monitoring records were compressed, and you want to create an output data set with these records in their expanded format, along with the records that were never compressed.

EXPAND

specifies that the monitoring data is to be written to an output data set, including any compressed SMF 110 monitoring records in their expanded format, along with the records that were never compressed. The output data set of SMF 110 monitoring records can be used by reporting tools which are not able to use the z/OS Data Compression and Expansion Services (CSRCEserv) to expand compressed records.

A monitoring record with a compressed data section is identified by the compressed record length in the SMFMNCRL field in the SMF product section, which is only present for a compressed record.

If you just want to print reports, or to unload the records into a fixed length format, you do not need to specify the EXPAND option. DFH\$MOLS identifies and expands any compressed monitoring records automatically before working with them. You only need to specify the EXPAND option if you want to create an output data set of SMF 110 monitoring records.

DDNAME=name

specifies the ddname for the output data set to hold the SMF 110 monitoring records. If you do not code this keyword, the default ddname SYSUT2 is used, and your job stream must include a SYSUT2 DD statement. If you code this keyword to specify a different ddname, your job stream must include the corresponding DD statement.

NEWDCB

To ignore the DCB information from the original data set, specify NEWDCB. Supply the new DCB information on the JCL for the output data set.

Note:

1. When the EXPAND control statement is specified, the only parameter for IGNORE and SELECT statements that operates during creation of the output data set is the APPLID option. The PRCSTYPE, TASKNO, TERMID, TRANID, and USERID parameters are ignored while the output data set is being produced. You can also select records for the output data set by date, using the DATE parameter, or by time, using the TIME parameter.
2. Monitoring data is not automatically printed when the EXPAND control statement is specified. If this statement is specified, and you also want to print monitoring data, you need to specify the PRINT control statement explicitly. When you specify the PRINT statement

to print monitoring records, all of the selection parameters on your IGNORE and SELECT statements now operate for the selection of the monitoring records for printing.

New messages

The following new messages are produced by DFH\$MOLS if problems are encountered in expanding compressed monitoring data records.

118: UNABLE TO EXPAND A COMPRESSED RECORD, RC='nn'; REPORT IS TERMINATED

The DFH\$MOLS program was unable to expand the compressed data section for an SMF 110 monitoring record. This abend is issued when the z/OS Data Compression and Expansion service CSRCESTRV FUNCTION=EXPAND was unable to expand the data section in the SMF record. For more information on the return codes issued by the CSRCESTRV service, see the *z/OS MVS Assembler Services Reference ABE-HSP*.

This message is followed by an MVS abend U118 with a dump.

119: UNABLE TO OPEN DDNAME 'xxxxxxx'; REPORT IS TERMINATED

The DFH\$MOLS program was unable to open the data set specified on the DD statement used for the EXPAND control statement. 'xxxxxxx' is either SYSUT2, which is the default, or the ddname specified by the DDNAME= parameter on the EXPAND control statement. Ensure that the JCL for the job was correct.

This message is followed by an MVS abend U119 without a dump.

120: UNEXPECTED CSRCESTRV QUERY ERROR, RC='nn'; REPORT IS TERMINATED

The DFH\$MOLS program received an unexpected (non-zero) return code from the z/OS Data Compression and Expansion service CSRCESTRV FUNCTION=QUERY. For more information on the return codes issued by the CSRCESTRV service, see the *z/OS MVS Assembler Services Reference ABE-HSP*.

This message is followed by an MVS abend U118 with a dump.

DFH\$MOLS support for data for earlier CICS releases

The CICS Transaction Server for z/OS, Version 3 Release 2 release of DFH\$MOLS no longer processes monitoring data for CICS/ESA® Version 4 or CICS/ESA Version 3, or for the oldest CICS Transaction Server releases. The UNLOAD control statement has additional restrictions.

In CICS Transaction Server for z/OS, Version 3 Release 2, DFH\$MOLS can process SMF 110 monitoring data records for the following releases:

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

However, the UNLOAD control statement (which unloads performance class monitoring data into a fixed length record format) can only be used with monitoring data for CICS Transaction Server for z/OS, Version 3 Release 2, and not with

| monitoring data for any earlier CICS releases. Any version or release of
| DFH\$MOLS cannot process monitoring data for a version or release *later* than
| itself, so you should always use the DFH\$MOLS from the highest version or release
| available to you.

Calculating CICS and DB2 processor times for DB2 Version 6 or later

When CICS is connected to DB2 Version 6 or later, and is exploiting the open transaction environment, the CICS DB2 attachment facility uses CICS-managed open TCBs rather than CICS DB2 subtask TCBs. This means the CICS monitoring facility can measure activity that was previously only reported in the DB2 accounting record (the SMF type 101 record). For example, CICS can now measure the processor time consumed on the DB2 thread and the processor time consumed in DB2 (the CLASS 1 and CLASS 2 CPU time). When CICS is using L8 open TCBs, the CPU time reported for these TCBs by the CICS monitoring facility includes the DB2 CLASS 1 processor time.

When CICS is connected to DB2 Version 6 or later, **do not** add together the processor time from the CICS records (SMF type 110 records) and the DB2 accounting records (SMF type 101 records) when calculating the total processor time for a single transaction, because the DB2 processor time would then be included twice. The total processor time for a single transaction is recorded in the USRCPUT field in the CICS records (performance class data field 008 from group DFHTASK). This field includes all processor time used by the transaction when it was executing on any TCB managed by the CICS dispatcher. “Important changes to accounting for processor time in the open transaction environment” on page 178 has more detailed information about this.

Chapter 12. Changes to CICS statistics

There are changes to CICS statistics records. These are because of new domains, or as a result of enhancements to CICS. There are some new statistics DSECTs, and a number of statistics DSECTs have new or changed fields. Application programs using the changed DSECTs might need to be recompiled.

New statistics DSECTs

Copybook

For functional area

DFHDHDDS

Document template statistics

DFHEJRDS

Enterprise Java CorbaServer resource statistics

DFHISRDS

IPCONN resource statistics

DFHLDBDS

LIBRARY resource statistics

DFHMQGDS

WebSphere MQ Connection statistics

DFHPGRDS

JVM programs

DFHPIPDS

Pipeline resource statistics

DFHPIWDS

Webservice resource statistics

DFHSJGDS

The JVM pool

DFHSJRDS

JVM profiles

DFHWBRDS

URIMAP resource statistics

DFHWBSDS

URIMAP global statistics

Changed statistics DSECTs

Copybook

For functional area

DFHA17DS

File resource statistics

DFHD2GDS

CICS DB2 connection global statistics

DFHD2RDS

CICS DB2 entry resource statistics

DFHDSGDS

Dispatcher global statistics

- DFHDSRDS**
MVS TCB resource statistics
- DFHDSTDS**
MVS TCB global statistics
- DFHEJBDS**
Enterprise beans
- DFHEJRDS**
Enterprise Java CorbaServer resource statistics
- DFHLDGDS**
Loader statistics
- DFHLDRDS**
Loader statistics for programs
- DFHLGSDS**
Log stream resource statistics
- DFHMNGDS**
Monitoring domain statistics
- DFHMNTDS**
Transaction performance monitoring resource statistics. (Data is not written to SMF by DFHMNTDS. It is only relevant when used through the COLLECT STATISTICS interface.)
- DFHSJGDS**
The JVM pool
- DFHSJRDS**
JVM profiles
- DFHMSDS**
Storage above 16MB
- DFHSORDS**
TCP/IP service resource statistics
- DFHSTGDS**
Statistics domain global statistics

Existing application programs are unaffected by the changes if they use the old versions of the following changed DSECTS:

- DFHD2GDS
- DFHD2RDS
- DFHDSTDS
- DFHDSRDS
- DFHEJRDS
- DFHLGSDS
- DFHMNGDS
- DFHSORDS
- DFHSTGDS

This is because the new fields are added to the end and do not affect the offsets of the unchanged fields. (Not all of these DSECTS existed at all earlier releases of CICS, but if you were using one or more of them, your application will simply not see the new fields.)

The changes to the other changed DSECTs listed are such that the old DSECTs are not compatible with the new DSECT, and application programs using these DSECTs must be recompiled.

New values in DFHSTIDS (statistics record identifiers)

The new DSECTs added for CICS Transaction Server for z/OS, Version 3 Release 2 have corresponding values in the common statistics record copybook, DFHSTIDS. The revised list of the statistics record identifiers is shown in CICS statistics data section in the *CICS Customization Guide*.

The values in that list which are new for CICS Transaction Server for z/OS, Version 3 Release 2 are:

STILDB	31	DFHLDBDS	LIBRARY (resource) id
STIMQG	74	DFHMQGDS	MQ connection stats (global) id
STIISR	109	DFHISRDS	IPCONN (resource) id
STIDHD	112	DFHDHDDS	DOCTEMPLATE (resource) id

The statistics formatting utility program, DFHSTUP

The statistics formatting utility program is enhanced to format additional statistics reports for the new statistics. New resource types can be coded on the SELECT TYPE and IGNORE TYPE parameters using these keywords:

- BEAN
- CORBASERVER
- DOCTEMPLATE
- IPCONN
- JVMPOOL
- JVMPROFILE
- JVMPROGRAM
- LIBRARY
- MQCONN
- PIPELINE
- REQUESTMODEL
- TCP/IP
- TCPIPSERVICE.
- URIMAP
- WEBSERVICE

Collecting statistics for Java programs that run in a JVM

Statistics for Java programs that run in a JVM are collected separately from statistics for other programs, because the JVM programs are not loaded by CICS. CICS does not collect statistics for JVM programs when a COLLECT or PERFORM STATISTICS PROGRAM command is issued; to see them, you need to use the COLLECT or PERFORM STATISTICS JVMPROGRAM command instead.

However, when you browse program names using the INQUIRE PROGRAM command, JVM programs *are* found. If you have an application that collects statistics for programs by browsing with the INQUIRE PROGRAM command, and then issuing the COLLECT STATISTICS PROGRAM command for the program names that it finds, the application will now receive a “not found” response when it attempts to collect statistics for any JVM programs. (Previously, zeros would have been returned as statistics values for these programs.)

To avoid receiving this response, make the application check the RUNTIME value for each program name that it finds. If the RUNTIME value is JVM, the application should not issue the COLLECT STATISTICS PROGRAM command for that program name. If you want to see the statistics for programs with a RUNTIME value of JVM, you can make the application issue the COLLECT STATISTICS JVMPROGRAM command for those programs. Note that the statistics information that is collected for JVM programs is not the same as that collected for other programs.

Chapter 13. Changes to problem determination for CICS-MQ, CICS-DBCTL and CICS-DB2

CICS-MQ components are now shipped with CICS. As a result, tracing has changed for CICS-MQ, CICS-DBCTL and CICS-DB2 as follows:

- All trace entries produced by the CICS-MQ components will use the CICS trace domain. If you have user tracing enabled for the sole purpose of WebSphere MQ tracing, user tracing can be turned off, saving the overhead of application trace.
- The CICS-DBCTL Attach and CICS-DB2 Attach will change to use RA (Resource Manager Adapter) Level 1 and Level 2 tracing, instead of FC (File Control) Level 1 and Level 2 tracing.

CICS-MQ messages are changed from CSCQxxx to DFHMQ0xxx. Ensure your message retrieval applications are aware of this change.

Part 2. Migration tasks for CICS Transaction Server

Chapter 14. Migration procedures for CICS Transaction Server

Complete these tasks when you migrate any CICS Transaction Server region to CICS Transaction Server for z/OS, Version 3 Release 2.

Redefining and initializing the local and global catalogs

When you migrate to a new CICS release, you need to delete, redefine and initialize the CICS local catalog (LCD) and global catalog (GCD).

1. Delete your existing local catalog and global catalog.
2. Define and initialize new local and global catalogs, following the instructions in Setting up the catalog data sets in the *CICS System Definition Guide*. When you initialize the catalogs, make sure that you use the CICS Transaction Server for z/OS, Version 3 Release 2 versions of the DFHRMUTL and DFHCCUTL utility programs and the sample jobs.
3. When you start the CICS region for the first time after migration, make sure that this is an initial start (with the START=INITIAL parameter).

Enabling z/OS conversion services

To get the benefits of z/OS conversion services for data conversion, perhaps because your system requires support for the conversion of UTF-8 or UTF-16 data to EBCDIC, you need to enable the z/OS conversion services and install a conversion image which specifies the conversions that you want CICS to perform.

Refer to the instructions in the *z/OS Support for Unicode: Using Conversion Services* manual SA22-7649 to find out the steps needed to set up and configure conversions supported through the operating system services.

If z/OS conversion services are not enabled, a message is issued by CICS to indicate this. That message can be suppressed if you do not need these services. If the message is encountered when starting a CICS region that is expected to make use of these services, an IPL is necessary to enable the z/OS conversion services.

To discover the status of z/OS conversion services after an IPL, use one of these commands from an MVS console:

/D UNI

To show whether z/OS conversion services were enabled.

/D UNI,ALL

To show whether z/OS conversion services were enabled, and which conversions are supported by the system.

For details of this, see the *z/OS Support for Unicode: Using Conversion Services* manual SA22-7649

Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions

Upgrade the CICS-supplied resource definitions using the UPGRADE function of the CSD utility program (DFHCSDUP). (If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, you also need to change the CSD average and maximum record size.) If you have resource definitions in your CSD that support other IBM products (such as z/OS), you might need to upgrade these also.

If you need to share your upgraded CSD with different CICS releases, see “CSD compatibility between different CICS releases” on page 123.

1. If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, redefine the CSD to VSAM with an increased average and maximum record size, RECORDSIZE(200 2000). Use any of these methods to do this:
 - a. Take a backup, then delete the data set, define a new one with the correct record size, and REPRO the backup into the new data set.
 - b. Rename the old data set as a backup, then create a new data set and REPRO the renamed data set into the new one. “Sample jobs for additional CSD modifications” implements this method.
 - c. Define a new data set with the correct record size and other attributes, and then REPRO the old data set into the new one.
2. Run the DFHCSDUP utility program, specifying the UPGRADE command, to upgrade the CICS-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 DFHCSDUP UPGRADE command in the *CICS Operations and Utilities Guide*.
3. If you have resource definitions in your CSD that support other IBM products, upgrade these as required. For example, if your Language Environment resource definitions are not at the correct z/OS level, you should delete and replace the CSD group containing these. The Language Environment resource definitions are in the SCEESAMP library in member CEECCSD. “Sample jobs for additional CSD modifications” has an example job to delete and replace the CSD group containing these.

Sample jobs for additional CSD modifications

If you need to upgrade the Language Environment resource definitions in your CSD, you can use a job like this.

```

//CSDUPGRD JOB 1,WALSH,MSGCLASS=A,MSGLEVEL=(1,1),
//      CLASS=A,NOTIFY=BELL
/*JOBPARM SYSAFF=MV26
/* Remove Old Language Environment group
//CSDUP1 EXEC PGM=DFHCSDUP,REGION=2M,PARM='CSD(READWRITE) '
//STEPLIB DD DSN=CICSTS32.CICS.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS32.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
DELETE GROUP(CEE)
/*
//*
//CSDUP2 EXEC PGM=DFHCSDUP,REGION=2M,PARM='CSD(READWRITE) '
//STEPLIB DD DSN=CICSTS32.CICS.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS32.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD DSN=SYS1.ZOS170.SCEESAMP(CEECCSD),DISP=SHR
/*
//

```

Figure 2. Upgrading Language Environment resource definitions

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, you can use a job like this to increase the record size for the CSD.

```

//BAKUPCSD JOB (1,BELL),CLASS=A
//ALTERDEF EXEC PGM=IDCAMS,REGION=0M
//SYSPRINT DD SYSOUT=A
//AMSDUMP DD SYSOUT=A
//SYSIN DD *
  ALTER CICS32.CICSH.DFHCS*. * -
    NEWNAME(CICS32.CICSH.DFHCS*.BACKUP)
  ALTER CICS32.CICSH.DFHCS* -
    NEWNAME(CICS32.CICSH.DFHCS*.BACKUP)
  IF LASTCC = 0 THEN -
    DEFINE CLUSTER (
      NAME( CICS32.CICSH.DFHCS* ) -
      REC(10000) -
      VOLUME(SYSDA) -
      KEYS( 22 0 ) -
      INDEXED -
      RECORDSIZE( 200 2000 ) -
      FREESPACE( 5 5 ) -
      SHAREOPTIONS( 2 )
    )
  INDEX (
    NAME( CICS32.CICSH.DFHCS*.INDEX ) -
  )
  DATA (
    NAME( CICS32.CICSH.DFHCS*.DATA ) -
  )
/*
//REPROCSD EXEC PGM=IDCAMS,REGION=0M,COND=(5,LT,ALTERDEF)
//SYSPRINT DD SYSOUT=A
//AMSDUMP DD SYSOUT=A
//SYSIN DD *
  REPRO INDATASET(CICS32.CICSH.DFHCS*.BACKUP) -
    OUTDATASET(CICS32.CICSH.DFHCS*)
/*
//

```

Figure 3. Sample job to rename and redefine the CSD

Migrating user-modified CICS-supplied resource definitions

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

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

The SCAN function searches for the CICS-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 CICS-supplied definition and a user-modified version. If you have copied and changed the name of an CICS-supplied definition, the SCAN command enables you to specify the changed name as an alias.

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

Migrating copies of CICS-supplied resource definitions

If you have made copies of CICS-supplied resource definitions, you might need to change your copies to match the changes which have been made to the supplied definitions for this release. To help you, member DFH\$CSDU in library SDFHSAMP contains ALTER commands that you can apply using the CSD utility program (DFHCSDUP).

1. Review your resource definitions to determine if you have copied any CICS-supplied definitions.
2. Review DFH\$CSDU to determine if the changes which it contains should apply to your resource definitions.
3. Make any necessary changes to DFH\$CSDU. It is advisable to make a copy of DFH\$CSDU, and apply any changes to the copy.
4. Run DFHCSDUP using your modified version of DFH\$CSDU as input.

Note: As supplied, the ALTER commands in DFH\$CSDU specify GROUP(*), which means that DFHCSDUP will attempt to change resources in the CICS-supplied groups. This is not permitted, and results in message DFH5151. You can ignore this message.

Example

JVMPROFILE(DFHJVMCD) is added to the definition of program DFHADJR. Therefore, DFH\$CSDU contains the following command:

```
ALTER PROGRAM(DFHADJR) GROUP(*) JVMPROFILE(DFHJVMCD)
```

When you run DFHCSDUP, the attribute is added to the definitions of program DFHADJR in all groups. Other attributes are unchanged.

CSD compatibility between different CICS releases

Most releases of CICS make changes to the CICS-supplied groups of resource definitions that are included in the DFHLIST group list. 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.

When you have upgraded a CSD, if you plan to share the CSD with earlier releases of CICS, include the appropriate DFHCOMPx compatibility groups in your start-up group list to provide the required support for earlier releases. Table 22 on page 124 shows you which DFHCOMPx 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 the table. For example, to run a CICS TS 1.3 region, with the CSD upgraded to CICS TS 3.2, append the compatibility group DFHCOMP9 followed by DFHCOMP8 at the end of your group list.

Table 22. Required compatibility groups for earlier releases of CICS

	CICS TS 3.2 CSD	CICS TS 3.1 CSD	CICS TS 2.3 CSD	CICS TS 2.2 CSD	CICS TS 1.3 CSD
Shared with CICS TS 3.1	DFHCOMPC	None	Do not share	Do not share	Do not share
Shared with CICS TS 2.3	DFHCOMPB	DFHCOMPB	None	Do not share	Do not share
Shared with CICS TS 2.2	DFHCOMPA	DFHCOMPA	DFHCOMPA	None	Do not share
Shared with CICS TS 1.3	DFHCOMP9 DFHCOMP8	DFHCOMP9 DFHCOMP8	DFHCOMP9 DFHCOMP8	DFHCOMP9 DFHCOMP8	None

Incompatibility of CICS TS 1.3 REQUESTMODEL resource definitions

The REQUESTMODEL resource definition was introduced in CICS TS 1.3 to support inbound IIOF requests only. The REQUESTMODEL definition now supports both IIOF and EJB requests, and as a result is extended significantly, with many new attributes. At the same time, some of the old attributes are replaced, so that the keywords are meaningful for both EJB and IIOF, and to enable you to specify larger values.

The effect of the changes is to make CICS TS 1.3 and CICS TS Version 2 or Version 3 REQUESTMODEL resource definitions incompatible when installing them in a CICS region. In other words, you cannot install a CICS TS 1.3 REQUESTMODEL definition in a CICS TS Version 2 or Version 3 region, and you cannot install a CICS TS Version 2 or Version 3 REQUESTMODEL definition in a CICS TS 1.3 region.

If you plan to share an upgraded CSD with a CICS TS 1.3 region, you are recommended to define the CICS TS 1.3 and CICS TS Version 2 or Version 3 REQUESTMODEL resource definitions in separate groups in your CSD, and add the groups to the appropriate GRPLIST.

Chapter 15. Migration for application programs

CICS translator support for pre-Language Environment compilers is withdrawn. Runtime support is usually provided for your existing application programs that were developed using these old compilers, with the exception of OS/VS COBOL and OO COBOL programs, which do not have runtime support.

Withdrawal of support for pre-Language Environment compilers

The compilers for which translator support is withdrawn are:

- OS/VS COBOL (5740-CB1, 5740-LM1, and 5734-CB4)
- VS COBOL II (5668-958 and 5688-023)
- OS PL/I Version 1 (5734-PL1)
- OS PL/I Version 2 (5668-910 and 5668-909)
- SAA[®] AD/Cycle[®] C/370[™] (5688-216)

For details of the compilers that are supported by CICS, see High-level language support in the *CICS Transaction Server for z/OS Release Guide*.

The following JCL procedures that were supplied in earlier releases for translating, compiling, and link-editing using the unsupported compilers are also withdrawn:

COBOL

The DFHEITVL, DFHEXTVL, DFHEBTVL, DFHEITCL, and DFHEXTCL procedures.

PL/I The DFHEITPL, DFHEXTPL, and DFHEBTPL procedures.

C The DFHEITDL and DFHEXTDL procedures.

CICS now supplies the following procedures only, for use with Language Environment-conforming compilers:

Language	CICS-online	EXCI	Integrated translator
C	DFHYITDL	DFHYXTDL	—
C++	DFHYITEL	DFHYXTEL	—
COBOL	DFHYITVL	DFHYXTVL	DFHZITCL
PL/I	DFHYITPL	DFHYXTPL	DFHZITPL

The following CICS translator options, which all relate to the unsupported compilers, are obsolete:

- ANSI85
- LANGLVL
- FE

The CICS translators ignore these and issue a return code 4 warning message.

Runtime support for programs developed using pre-Language Environment compilers

Although application program development support for old, obsolete compilers is withdrawn, CICS usually continues to provide runtime support for your existing application programs that were developed using these old compilers. However, to

apply maintenance to these application programs, you should use one of the supported Language Environment-conforming compilers.

Applications compiled and linked with pre-Language Environment compilers usually execute successfully using the runtime support provided by Language Environment. They do not usually have to be recompiled or re-link-edited. In some circumstances, you might need to adjust Language Environment runtime options to enable these applications to execute correctly. Refer to the *z/OS Language Environment Run-Time Application Migration Guide*, and the *Compiler and Run-Time Migration Guide* for the language in use, for further information. Because pre-Language Environment compilers are not Language Environment-conforming, programs compiled by these compilers cannot take advantage of all Language Environment facilities in a CICS region.

The runtime libraries provided by Language Environment replace the native runtime libraries that were provided with older compilers such as VS COBOL II, OS PL/I and C/370. The native runtime libraries provided with pre-Language Environment compilers are not supported. Language libraries, other than the Language Environment libraries, should not be present in your CICS startup JCL. If, perhaps for commonality with other CICS systems, the JCL for your CICS startup job includes other language libraries, the Language Environment libraries must be above all the other language libraries in the JCL concatenations of the CICS startup job for both STEPLIB and DFHRPL. This ensures that the programs are processed by Language Environment.

Withdrawal of runtime support for OS/VS COBOL

Runtime support for OS/VS COBOL programs is withdrawn. If you attempt to use an OS/VS COBOL program, the abend code ALIK is issued, and CICS abnormally terminates the task and disables the program.

OS/VS COBOL programs must be upgraded to Language Environment-conforming COBOL, and recompiled against a level of COBOL compiler supported by CICS. Enterprise COBOL for z/OS Version 3 is the recommended compiler.

See the *CICS Application Programming Guide* for notes on converting OS/VS COBOL programs to Enterprise COBOL. The *Enterprise COBOL for z/OS: Compiler and Run-Time Migration Guide* has more detailed information about language differences, and describes facilities to help with conversion.

Withdrawal of runtime support for OO COBOL

In this CICS release, COBOL class definitions and methods (object-oriented COBOL) cannot be used. This restriction includes both Java classes and COBOL classes.

Modules compiled in earlier CICS releases with the OOCOBOL translator option cannot execute in this CICS release. The OOCOBOL translator option was used for the older SOM-based (System Object Manager-based) OO COBOL, and runtime support for this form of OO COBOL was withdrawn in z/OS V1.2. The newer Java-based OO COBOL, which is used in Enterprise COBOL, is not supported by the CICS translator.

If you have existing SOM-based OO COBOL programs, you should rewrite your OO COBOL into procedural (non-OO) COBOL in order to use the Enterprise COBOL compiler. Note that the newer Java-based OO COBOL is not compatible with

SOM-based OO COBOL programs, and is not intended as a migration path for SOM-based OO COBOL programs.

Migration to the integrated translator

Newer COBOL and PL/I Language Environment-conforming compilers include the CICS language translator as an integral part. If you use any other compiler, including Assembler, you will need to translate your program in the traditional way.

The releases of the COBOL and PL/I compilers which support the CICS integrated translator are listed in *CICS Transaction Server for z/OS Release Guide*.

To install application programs into CICS libraries, you can use one of the new CICS-supplied procedures for use with the integrated translator. Note that these procedures, DFHZITCL (for COBOL) and DFHZITPL (for PL/I), include the CICS load library SDFHLOAD in STEPLIB, which is necessary for the compilers to load the translation tables. Also, if you are using the PL/I procedure, the SYSLMOD DD statement in the binder step must refer to a PDSE (not a PDS as for the older PL/I compilers).

To use the new procedures DFHZITCL or DFHZITPL to invoke the integrated translator, add the required language options to indicate that you want the compiler to invoke the translator:

- To invoke the PL/I compiler and the integrated translator, specify the PL/I compiler preprocessing option (PP); for example,

```
PP(CICS('opt1 opt2 optn ...'))
```
- To invoke the COBOL compiler and the integrated translator, specify CICS as a COBOL compiler option; for example, in the PARM string, as follows:

```
PARM='NODYNAM,LIB,OBJECT,RENT,MAP,XREF,CICS(''COBOL3,SP'')
```

Note:

1. If you specify CICS translator options for the integrated translator in the PARM string, you need double apostrophes as shown in this example. If, however, you specify the options in your source program, you need single apostrophes (for example, you might have CBL

```
CICS('COBOL3,SP') APOST
```

 as the CBL statement in your source program.
2. The COBOL compiler recognizes only the keyword CICS for defining translator options, not the alternative options XOPT or XOPTS as in the case of the stand-alone translator supplied with CICS TS.
3. If the CICS TS 1.3 translator is set up to run with a CICS TS 3.2 LPALIB, Error Return Code 16 will be produced.
CICS TS 3.2 uses AMODE(31) settings, while CICS TS 1.3 uses AMODE(24). If you intend to run a CICS TS 1.3 translator, you must add to your STEPLIB, an SDFHLOAD that contains the modules DFHEITAB and DFHEITBS from CICS TS 1.3. This addition must be placed prior to the CICS TS 3.2 SDFHLOAD. This will allow the CICS TS 1.3 translator to operate in a CICS TS 3.2 region.

Nested COBOL programs

If you are compiling a COBOL application program that contains nested programs, the rules regarding the use of DFHEIBLK and DFHCOMMAREA, described in in the *CICS Application Programming Guide*, apply only when you are using the CICS stand-alone translator.

When you use the integrated translator to compile nested programs, observe the following rules:

- You no longer need to code explicitly DFHEIBLK and DFHCOMMAREA on the USING phrase when calling a nested program, or on the PROCEDURE DIVISION USING phrase in the nested program, and they must be omitted.
- Because DFHCOMMAREA is not generated in a nested program, it cannot be REDEFINED as with the stand-alone translator. DFHCOMMAREA can be redefined with the global attribute in the outer-most (containing) program, and accessed from nested (contained) programs.

If you are unable to apply these rules for existing programs that you are modifying (including using COPY members to redefine DFHCOMMAREA in nested programs), continue using the stand-alone translator.

Migration for sample applications DFH\$FORA, DFH0FORC and DFH\$FORP

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 and use these sample applications, you need to alter their JCL.

Because of changes to the record length of the CSD, alter the JCL for the samples DFH\$FORA, DFH0FORC and DFH\$FORP as follows:

- Change the LRECL parameter on the FOROUT DD statement to 1536.
- Make a corresponding change to the BLKSIZE parameter on the FOROUT DD statement.

Chapter 16. Migration for Business Transaction Services (BTS)

When migrating your BTS environment to CICS Transaction Server for z/OS, Version 3 Release 2, you might need to migrate the DFHLRQ data set. Be aware that even if you are not explicitly making use of BTS services in your applications, it is possible that they are being exploited by vendor code or IBM-supplied products executing within your CICS environment.

Migrating the DFHLRQ data set

The local request queue data set is used to store pending BTS requests, such as timer requests, or requests to run activities. It is recoverable, and is used to ensure that, if CICS fails, no pending requests are lost.

Requests that CICS can execute immediately, such as requests to run activities, are stored on the data set only briefly. Requests that CICS cannot execute immediately, such as timer or unserviceable requests, might be stored for longer periods. When CICS has processed a request, the request is deleted from the data set.

If you have outstanding BTS activities for BTS processes within CICS, you should migrate the contents of your DFHLRQ data set as part of the migration. A utility such as IDCAMS COPY could be used to update the CICS TS for z/OS, Version 3.2 DFHLRQ data set with the contents of the DFHLRQ data set from your previous CICS release.

Be aware that even if you are not explicitly making use of BTS services in your applications, it is possible that they are being exploited by vendor code or IBM-supplied products executing within your CICS environment.

PTFs for earlier CICS releases modified the dynamic routing DSECT used for dynamic DPL and dynamic start requests. This caused the structure of DFHLRQ records to change. The PTF numbers are:

CICS TS 1.3

PTF UQ82768 (APAR PQ75814)

CICS TS 2.2

PTF UQ82632 (APAR PQ75834)

CICS TS 2.3

PTF UQ85555 (APAR PQ81378)

If you have one of these PTFs applied to your existing CICS system, or if your existing CICS system is a later release than those listed here, the DFHLRQ records match the format of DFHLRQ records used in CICS TS for z/OS, Version 3.2, and so can be migrated using a utility such as IDCAMS COPY. However, if your existing CICS system is listed here and you do not have one of these PTFs applied, the DFHLRQ record format is **not** compatible with that used in CICS TS for z/OS, Version 3.2. In this case, you should complete your BTS workload prior to migration to CICS TS for z/OS, Version 3.2, and start with an empty DFHLRQ at that release.

Repository data sets

When a process is not executing under the control of the CICS business transaction services domain, its state and the states of its constituent activities are preserved by being written to a VSAM data set known as a repository.

To use BTS, you must define at least one BTS repository data set to MVS. You may decide to define more than one, assigning a different set of process-types to each. One reason for doing this might be storage efficiency, for example, if some of your process-types tend to produce longer records than others.

If you operate BTS in a sysplex, several CICS regions may share access to one or more repository data sets. This enables requests for the processes and activities stored on the data sets to be routed across the participating regions. As you migrate your CICS releases, you may therefore still share older versions of repository data sets. The expectation is that you would define and use different repository data sets as and when you wanted to assign different sets of process-types, rather than just because a CICS migration has occurred.

Chapter 17. Migration for BTAM and TCAM networks

Transactions cannot be routed to a CICS Transaction Server for z/OS, Version 3 Release 2 application-owning region (AOR) from a network of BTAM terminals, or from a network of terminals connected by the ACB interface of TCAM. You are recommended to migrate your connections to use ACF/VTAM.

BTAM networks

If you have a network of BTAM terminals connected to a back-level CICS terminal-owning region (TOR), you will not be able (as you were in older CICS releases) to route transactions from them to a CICS Transaction Server for z/OS, Version 3 Release 2 application-owning region (AOR). You must either upgrade your terminals or route to an AOR at CICS Transaction Server for z/OS, Version 2 Release 3 or an earlier release.

TCAM networks

If you have a network of terminals connected by the ACB interface of TCAM to a back-level CICS TOR, you will not be able (as you were in older CICS releases) to route transactions from them to a CICS Transaction Server for z/OS, Version 3 Release 2 AOR. You must migrate your connections to use TCAM/DCB or (preferably) ACF/VTAM, or route to an AOR at CICS Transaction Server for z/OS, Version 2 Release 3 or an earlier release. (All terminals that support TCAM/ACB also support ACF/VTAM.)

If you have a network of terminals connected by the DCB interface of TCAM to, for example, a CICS TS 2.3 TOR, you will not be able to migrate the TOR to CICS Transaction Server for z/OS, Version 3 Release 2. To do so, you must migrate your connections to use ACF/VTAM.

If you have a network of terminals connected by the DCB interface of TCAM to a back-level CICS TOR, you will (as in previous CICS releases) be able to route transactions from them to a CICS Transaction Server for z/OS, Version 3 Release 2. However, you are recommended to migrate your connections to use ACF/VTAM.

Using dummy consoles instead of dummy TCAM terminals

The EXEC CICS SIGNON command does not work in transactions that have no principal facility: that is, non-terminal transactions. One unofficial technique to solve this problem was suggested in early Marketing Question and Answer forums. This technique involved creating dummy TCAM terminals in the terminal control table (TCT) defined by the DFHTCT macros, and specifying these as the principal facility for tasks that needed to use the SIGNON command. Now that local TCAM support is removed from CICS, it is no longer possible to use TCAM terminals for this purpose.

If you have been using this technique in the past, it may be possible for you to use dummy consoles instead of dummy TCAM terminals. You can create a dummy console using the EXEC CICS CREATE command:

```
EXEC CICS CREATE TERMINAL(tttt) ATTRLEN(47) ATTRIBUTES(attribs)
```

where *attribs* is a character data area that contains the string
'CONSNAME(*nnnnnnnn*) TYPETERM(DFHCONS) NATLANG(E)'

ttt and *nnnnnnn* are a unique terminal ID and console name that you have chosen for this purpose. The terminal ID must be unique in the CICS region. The console name does not need to correspond to a real console, assuming that the transaction does not attempt any terminal I/O. DFHCONS is the CICS-supplied TYPETERM definition for console devices, provided in the CICS-supplied CSD group DFHTYPE.

This dummy console with a TERMINAL resource definition could now be used where you previously used a dummy TCAM terminal. You need to set the terminal ID as available for automatic transaction initiation (ATI) before START commands can be issued against it. You can set a terminal to ATI using the command EXEC CICS SET TERMINAL(*ttt*) ATI. The CICS-supplied TYPETERM definition DFHCONS does not specify the ATI attribute, so the default setting ATI(NO) applies until you issue the SET TERMINAL command. When the terminal ID is available for ATI, you can schedule transactions against it. These transactions have the dummy console as their principal facility, and so can use the EXEC CICS SIGNOFF and EXEC CICS SIGNON commands. Each transaction requires one dummy console.

It must be emphasized that the use of dummy TCAM terminals or dummy consoles to enable a non-terminal transaction to issue the EXEC CICS SIGNON command is **not recommended**, and has never previously been suggested in the CICS product manuals. These techniques are described here only for migration purposes, and you should redesign affected applications as soon as possible to eliminate the use of dummy consoles.

When programs exploited the technique of using dummy TCAM terminals, their intention was usually to use the EXEC CICS SIGNON command to change the user ID of the running transaction. However, note that the behavior of the EXEC CICS SIGNON command was changed in CICS Transaction Server for z/OS, Version 2 Release 1, so that it does not normally affect the user ID currently in effect for the transaction issuing the command. The EXEC CICS SIGNON command can only change the user ID of the running transaction if you have enabled the XSSEX global user exit, and if that exit sets a return code of 4. Note that the XSSEX global user exit was provided only for migration purposes when the behavior of the EXEC CICS SIGNON command was changed, and the use of XSSEX to change the user ID of a running transaction is not recommended.

The correct way to associate a user ID with a non-terminal transaction is to start the transaction with the specified user ID using the following command:

```
EXEC CICS START TRANSID(ttt) USERID(uuuuuuuu)
```

If you need to authenticate the user ID before doing this, use the following command to validate the user's password:

```
EXEC CICS VERIFY PASSWORD(pppppppp) USERID(uuuuuuuu)
```

Neither of these commands require the transaction to have an associated principal facility. If you have any applications which use the migration aids described in this topic (dummy TCAM terminals, dummy consoles, or the XSSEX user exit), you should redesign them as soon as possible to use this correct method.

Chapter 18. Migrating from COMMAREAs to channels

CICS application programs that use traditional communications areas (COMMAREAs) to exchange data continue to work as before. If you want to take advantage of the new function, you can migrate existing applications to use channels and containers rather than COMMAREAs.

It's possible to replace a COMMAREA by a channel with a single container. While this may seem the simplest way to move from COMMAREAs to channels and containers, it's not good practice to do this. Because you're taking the time to change your application programs to exploit this new function, you should implement the "best practices" for channels and containers. Channels have several advantages over COMMAREAs and it pays to design your channels to make the most of these improvements. This section explains how to do this for several types of existing application.

User-written dynamic or distributed routing programs require migration work whether or not you plan to implement channels and containers in your own applications. If you employ a user-written dynamic or distributed routing program for workload management, rather than CICSplex SM, you must modify your program to handle the new values that it may be passed in the DYRLEVEL, DYRTYPE, and DYRVER fields of the DFHDYPDS communications area.

Migrating LINK commands that pass COMMAREAs

To migrate two programs which use a COMMAREA on a LINK command to exchange a structure, change the instructions shown in this table.

Table 23. Migrating LINK commands that pass COMMAREAs

Program	Before	After
PROG1	EXEC CICS LINK PROGRAM(PROG2) COMMAREA(structure)	EXEC CICS PUT CONTAINER(structure-name) CHANNEL(channel-name) FROM(structure) EXEC CICS LINK PROGRAM(PROG2) CHANNEL(channel-name) ... EXEC CICS GET CONTAINER(structure-name) CHANNEL(channel-name) INTO(structure)
PROG2	EXEC CICS ADDRESS COMMAREA(structure-ptr) ... RETURN	EXEC CICS GET CONTAINER(structure-name) INTO(structure) ... EXEC CICS PUT CONTAINER(structure-name) FROM(structure) RETURN

Migrating XCTL commands that pass COMMAREAs

To migrate two programs which use a COMMAREA on an XCTL command to pass a structure, change the instructions shown in this table.

Table 24. Migrating XCTL commands that pass COMMAREAs

Program	Before	After
PROG1	EXEC CICS XCTL PROGRAM(PROG2) COMMAREA(structure)	EXEC CICS PUT CONTAINER(structure-name) CHANNEL(channel-name) FROM(structure) EXEC CICS XCTL PROGRAM(PROG2) CHANNEL(channel-name) ...
PROG2	EXEC CICS ADDRESS COMMAREA(structure-ptr) ...	EXEC CICS GET CONTAINER(structure-name) INTO(structure) ...

Migrating pseudoconversational COMMAREAs on RETURN commands

To migrate two programs which use COMMAREAs to exchange a structure as part of a pseudoconversation, change the instructions shown in this table.

Table 25. Migrating pseudoconversational COMMAREAs on RETURN commands

Program	Before	After
PROG1	EXEC CICS RETURN TRANSID(PROG2) COMMAREA(structure)	EXEC CICS PUT CONTAINER(structure-name) CHANNEL(channel-name) FROM(structure) EXEC CICS RETURN TRANSID(TRAN2) CHANNEL(channel-name)
PROG2	EXEC CICS ADDRESS COMMAREA(structure-ptr)	EXEC CICS GET CONTAINER(structure-name) INTO(structure)

Migrating START data

To migrate two programs which use START data to exchange a structure, change the instructions shown in this table.

Table 26. Migrating START data

Program	Before	After
PROG1	EXEC CICS START TRANSID(TRAN2) FROM(structure)	EXEC CICS PUT CONTAINER(structure-name) CHANNEL(channel-name) FROM(structure) EXEC CICS START TRANSID(TRAN2) CHANNEL(channel-name)
PROG2	EXEC CICS RETRIEVE INTO(structure)	EXEC CICS GET CONTAINER(structure-name) INTO(structure)

Note that the new version of PROG2 is the same as that in the pseudoconversational example.

Migrating dynamically-routed applications

EXEC CICS LINK and EXEC CICS START commands, which can pass either COMMAREAs or channels, can be dynamically routed. You can migrate these commands to use a channel in place of a COMMAREA.

When a LINK or START command passes a COMMAREA rather than a channel, the routing program can, depending on the type of request, inspect or change the COMMAREA's contents. For LINK requests and transactions started by terminal-related START requests (which are handled by the *dynamic* routing program), but not for non-terminal-related START requests (which are handled by the *distributed* routing program), the routing program is given, in the DYRACMAA field of its communication area, the *address* of the application's COMMAREA, and can inspect and change its contents.

Note: The routing program's communication area is mapped by the DFHDYPDS DSECT.

If you migrate a dynamically-routed EXEC CICS LINK or START command to use a channel rather than a COMMAREA, the routing program is passed, in the DYRCHANL field of DFHDYPDS, the name of the channel. Note that the routing program is given the *name* of the channel, not its address, and so is unable to use the DYRCHANL field to inspect or change the contents of the channel's containers.

To give the routing program the same kind of functionality with channels, an application that uses a channel can create, within the channel, a special container named DFHROUTE. If the application issues a LINK or terminal-related START request (but not a non-terminal-related START request) that is to be dynamically routed, the dynamic routing program is given, in the DYRACMAA field of DFHDYPDS, the address of the DFHROUTE container, and can inspect and change its contents.

If you are migrating a program to pass a channel rather than a COMMAREA, you could use its existing COMMAREA structure to map DFHROUTE.

For introductory information about dynamic and distributed routing, see Introduction to CICS dynamic routing in the *CICS Intercommunication Guide*. For information about writing a dynamic or distributed routing program, see Writing a dynamic routing program in the *CICS Customization Guide*.

Coexistence of programs that use channels with back-level CICS releases

A CICS Transaction Server for z/OS, Version 3 Release 2 program can invoke a program on a remote CICS region and pass it a channel. For this to work successfully, the remote region must be at CICS Transaction Server for z/OS, Version 3 Release 1 or a later level. Although CICS regions before CICS Transaction Server for z/OS, Version 3 Release 1 do not support channels, you can get them to tolerate channels by applying an APAR. By "tolerate" we mean that, if the back-level CICS region is passed a channel, it returns a meaningful abend code.

If a CICS TS Version 3 application tries to send a channel to a back-level region to which the appropriate APAR has been applied, the transaction abends with a meaningful abend code. If a CICS TS Version 3 application tries to send a channel to a back-level region to which the appropriate APAR has *not* been applied, the results are unpredictable.

The CICS releases prior to CICS Transaction Server for z/OS, Version 3 Release 1 which can tolerate channels are shown in this list, with the APAR that must be applied in each case:

CICS Transaction Server for z/OS, Version 2 Release 3
APAR PQ92437

CICS Transaction Server for z/OS, Version 2 Release 2
APAR PQ92437

CICS Transaction Server for OS/390, Version 1 Release 3
APAR PQ93048

CICS Transaction Server for VSE/ESA™ Release 1.1
APAR PQ83049

Chapter 19. Migration for the CICS DB2 interface

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3, there are some important changes to the CICS DB2 interface, including the exploitation of the open transaction environment, which can improve performance for threadsafe programs which make DB2 requests, and support for the DB2 group attach facility.

CICS supports the following releases of DB2:

- DB2 Universal Database™ Server for OS/390 and z/OS Version 7
- DB2 Universal Database Server for OS/390 and z/OS Version 8

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 product tape, and you must use this version of the attachment facility to connect a CICS Transaction Server region to DB2.

The CICS DB2 attachment facility 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 CICSDB2 adapter now exploits the open transaction environment (OTE) to improve performance. Instead of the CICSDB2 adapter having to manage its own private pool of TCBs, CICS provides an L8 mode open TCB for DB2 request processing. Application programs can continue to run on the L8 mode TCB after the DB2 request has been completed, avoiding TCB switching. To obtain the performance benefits for CICSDB2 applications, the user application programs must be **threadsafe**. If the user application programs are not threadsafe, TCB switching occurs, as in earlier releases, for every DB2 request. Chapter 27, “Migration for threadsafe programming and the open transaction environment (OTE),” on page 173 explains what you need to do to achieve this performance improvement.

Change of DSNCLI ownership

DSNCLI is the CICS-DB2 Language Interface module.

DSNCLI is no longer shipped by the DB2 product. DSNCLI is supplied as part of CICS and is installed in the SDFHLOAD library when you install CICS TS. Note that DSNCLI is an alias of DFHD2LI.

DSNCLI is also installed in the SDFHAUTH APF-authorized library. In this library, DSNCLI is an alias of DFHD2LIX.

Migrating to the DB2 group attach facility

You can now use the group attach facility of DB2 with CICS. Instead of a specific DB2 subsystem, you can specify a DB2 group ID on the DB2CONN resource definition. With a DB2GROUPID specified, the group attach facility chooses any member of the group that is active on the local MVS image for the connection to CICS (members that are active on other MVS images are not eligible for selection).

You cannot specify both DB2ID and DB2GROUPID in the same DB2CONN resource definition.

- If you attempt to set both on the same CEDA panel, the DB2ID takes precedence and the DB2GROUPID is ignored.
- If you attempt to set both attributes on a CEDA, or DFHCSDUP, DEFINE command line, an error message is issued and the last-named attribute is accepted.
- If you attempt to set both on an EXEC CICS CREATE or SET command, the command fails with an INVREQ response.

If an installed DB2CONN definition specifies a DB2ID, and you want to override this and switch to the group attach facility:

- Specify a DB2GROUPID using the CEMT, or EXEC CICS, SET DB2CONN command
- Specify a DB2GROUPID using the CEDA command to alter the CSD resource definition, and reinstall the DB2CONN.

If an installed DB2CONN definition specifies a DB2GROUPID, and you want to override this and switch off the group attach facility, you can:

- Specify a DB2ID on the DSNB STRT command.
- Specify a DB2ID (or blank-out the DB2GROUPID) using the CEMT, or EXEC CICS, SET DB2CONN command
- Specify a DB2ID (or blank-out the DB2GROUPID) using the CEDA command to alter the CSD resource definition, and reinstall the DB2CONN

The INITPARM system initialization parameter method of specifying a DB2ID (INITPARM=(DFHD2INI=*db2id*)) continues to be supported, but is effective only if both the DB2GROUPID and DB2ID attributes are blank in the DB2CONN resource definition. If a DB2CONN specifies a DB2ID or a DB2GROUPID, INITPARM is ignored.

Note that if you issue an INQUIRE DB2CONN command, or look at the statistics output, you might sometimes see both a DB2GROUPID and a DB2ID. This happens under the following circumstances:

- You are using group attach, and CICS is connected to the DB2 shown in the DB2ID field at the time of the inquiry, or at the time the statistics were taken.
- You are using group attach and CICS is waiting to reconnect to a specific DB2 subsystem, because RESYNCMEMBER(YES) is specified and the DB2 subsystem for which CICS is holding outstanding units of work is unavailable. In this case, the DB2ID of the DB2 for which CICS is waiting is shown, with the status CONNECTING.

Indoubt resolution of units of work (UOWs)

You need to consider the resolution of indoubt units of work when you are using the group attach facility.

CICS maintains a history of the last DB2 data sharing group member to which it connected, which is cataloged and maintained across warm, emergency and cold starts (but not initial starts). During connection to DB2, the CICS DB2 attachment facility checks this history to see if any outstanding UOW information is being held for the last DB2 data sharing group member to which it connected. If no outstanding UOW information is being held, the group attach facility operates normally and can choose any active member of the data sharing group for the connection. However, if

there are outstanding units-of-work involving a specific DB2 member, the connection process depends on the value specified for the RESYNCMEMBER attribute of the DB2CONN resource definition.

The RESYNCMEMBER attribute on the DB2CONN resource definition gives you some control over a connection when there are outstanding UOWs, and operates as follows:

- If RESYNCMEMBER(YES), CICS ignores the group attach facility and waits until it can reconnect to the DB2 data sharing group member it needs to resolve the indoubt units of work.
- If RESYNCMEMBER(NO), CICS makes one attempt to reconnect to the last recorded DB2 data sharing group member. If this attempt is successful, the indoubt units of work can be resolved. If it is unsuccessful, CICS uses group attach to connect to any active member of the DB2 data sharing group, and issues the warning message DFHDB2064 stating that there may be unresolved indoubt units of work with the last recorded member. If you specify RESYNCMEMBER(NO) when you are using group attach, CICS could connect to a DB2 data sharing group member that is not the one for which it had outstanding units of work. In this case, any outstanding UOWs remain unresolved until CICS can connect to the original DB2 subsystem to which the UOWs relate.

Enhancement to INQUIRE DB2TRAN

In releases of CICS before CICS Transaction Server for OS/390, Version 1 Release 3, you had to make two separate inquiries to find out which plan is used by a specified transaction or set of transactions. This is because the transaction ID is part of the DB2TRAN definition, but the plan name or plan exit name is part of the DB2ENTRY definition. Enhancements to the INQUIRE DB2TRAN command mean you can now use a single INQUIRE DB2TRAN command to find out which plan is used by a specified transaction or set of transactions, or which transactions use a specified plan.

See “Changed CEMT commands” on page 18 and Chapter 6, “Changes to the system programming interface (SPI),” on page 61 for details of the changes to the commands.

Note that there is still a restriction on finding information for individual transaction IDs if a DB2TRAN is defined with a wildcard character in the TRANSID. See in the *CICS Resource Definition Guide* for information about the use of wildcard characters.

Chapter 20. Migration for users of Debug Tool for z/OS

Debug Tool Version 5 Release 1, with PTF UQ88297 for APAR PQ94401, supports CICS TS for z/OS, Version 3.2. Earlier versions of the tool do not support this CICS release.

Debug Tool communicates with a remote debugger by using TCP/IP Sockets. With CICS TS for z/OS, Version 2.3 and later CICS releases, Debug Tool uses the CICS Sockets domain. With earlier CICS releases, Debug Tool used the TCP/IP Socket Interface for CICS feature of TCP/IP for MVS. If you use Debug Tool in remote debug mode:

- Ensure that TCP/IP support is enabled for the CICS region.
- Now that the TCP/IP Socket Interface feature is not required by Debug Tool, determine whether you use it for any other purpose. If you do not, then you can remove the TCP/IP Socket Interface feature from your system.

Chapter 21. Migrating to extended addressing for ESDS

To use an extended ESDS data set, you need to migrate the data set, and convert existing CICS application programs that use 32-bit relative byte addressing (RBA) to 64-bit extended relative byte addressing (XRBA).

Converting a standard ESDS to an extended addressing ESDS

Note: Before migrating a standard ESDS data set to use extended addressing, if your dataset is defined to use forward recovery it is essential to upgrade your forward recovery product to one that can read the new log records written for extended addressing ESDS data sets. If you use CICS VR, the release required is CICS VSAM Recovery for z/OS V4.2.

To convert an existing standard ESDS to an extended addressing ESDS, you must recreate the data set as follows:

1. If you want to continue to use the contents of the existing data set, take a copy of its contents. You can use the AMS REPRO function to do this.
2. Delete the existing data set.
3. Create a new data set. You can base the AMS definition of the new data set on that of the old data set. The only mandatory change is that the DATACLAS parameter of the definition of the new data set must name an SMS data class that specifies both extended format and extended addressing.

How to define SMS data classes is described in the *DFSMS Storage Administration Reference* manual.

4. If necessary, restore the contents of the data set from the copy taken previously.

Converting a program from 32-bit RBA to 64-bit XRBA

To convert an existing program from using 32-bit RBA to 64-bit extended relative byte addressing (XRBA) you must:

1. Replace the RBA keyword with the XRBA keyword, on all the following commands:
 - EXEC CICS READ
 - EXEC CICS READNEXT
 - EXEC CICS READPREV
 - EXEC CICS RESETBR
 - EXEC CICS STARTBR
 - EXEC CICS WRITE
2. Replace all 4-byte areas used for keys with 8-byte areas. This step is very important.

If you change "RBA" to "XRBA" but don't change the length of the key areas:

- a. On STARTBR and READ commands, CICS will treat your 4-byte RBAs as being the top half of 8-byte XRBAs. In most cases this produces a huge XRBA number. You should be able to track down this error quite quickly because the program immediately receives a "no record at RBA" response.
- b. WRITE commands may produce more subtle, and therefore probably more serious, errors. The command will feed back an 8-byte XRBA, which will overwrite the 4 bytes immediately following the key area.

Using RBA-insensitive programs to access extended ESDS data sets

It is possible to reuse existing 32-bit RBA programs, that do not actually make use of the RBAs, to access 64-bit extended ESDS data sets.

For example, there is a common type of application in which records are first written sequentially and later browsed sequentially from the beginning. Although RBAs are passed between CICS and the program, the program actually makes no use of them. The program is interested only in reading or writing the next record. We refer to such programs as being “RBA-insensitive”. Other programs, such as those that directly read or update records at named RBAs, we refer to as “RBA-sensitive”.

Existing 32-bit RBA-insensitive programs can access 64-bit extended ESDS data sets without change. Both RLS and non-RLS modes are supported.

Thirty-two-bit RBA-sensitive programs cannot access 64-bit extended ESDS data sets, even if the data set contains less than 4 gigabytes of data.

Connecting a back-level AOR to a CICS TS for z/OS, Version 3.2 FOR

In this scenario, old-style 32-bit RBA programs try to access files on a CICS TS for z/OS, Version 3.2 file-owning region (FOR). This works in either of the following cases:

- The target file in the FOR has not been converted from conventional ESDS to extended addressing ESDS.
- The target file has been converted to extended addressing ESDS but the program is RBA-insensitive.

If the target file has been converted to extended addressing ESDS, a 32-bit RBA-sensitive program running in the AOR cannot access it. The program receives an ILLOGIC response.

Connecting a CICS TS for z/OS, Version 3.2 AOR to a back-level FOR

In this scenario, new-style 64-bit XRBA programs try to access files on a back-level file-owning region.

Because the target region supports only 32-bit RSAs, it does not understand a 64-bit XRBA. The program receives an ILLOGIC response.

Chapter 22. Migration for intercommunication

In CICS TS for z/OS, Version 3.2 there are the following intercommunication-related migration tasks:

- Ensuring that each of your CICS regions has a unique APPLID: see “Giving each CICS region a unique applid.” This is a mandatory requirement.
- Migrating APPC or MRO connections to IP interconnectivity (IPIC): see “Migrating connections to IP interconnectivity.”
- Separating your CICS regions into multiple XCF groups: see “Using multiple CICS XCF groups” on page 154.

Giving each CICS region a unique applid

If your CICS regions are part of a z/OS sysplex, you must ensure that their *applids* (as specified on the APPLID system initialization parameter) are unique within the sysplex. If CICS is an XRF partner, its *specific* applid must be unique within the sysplex. In CICS TS for z/OS, Version 3.2, if, on CICS startup, a specified applid is found to duplicate the (specific or only) applid of any other CICS region currently active in the sysplex, CICS issues a message and fails to initialize.

Migrating connections to IP interconnectivity

Note: If you do not want to use IPIC connections, no migration work is required. Existing MRO, APPC, and LUTYPE6.1 connections will continue to operate as before.

To migrate APPC or MRO connections to IPIC you must:

1. Install support for IPIC. How to do this is described in “IP interconnectivity (IPIC)”, in the *CICS Transaction Server for z/OS Installation Guide*.
2. Migrate your existing connections to TCP/IP. CICS supplies a migration utility to help you do this: see “The migration utility for converting APPC and MRO connections to IPIC connections” on page 149.

For reference purposes, and in case you want to migrate your APPC and MRO connections manually, rather than by running the migration utility, the following four tables show the attributes of APPC CONNECTION, APPC SESSIONS, MRO CONNECTION, and MRO SESSIONS definitions, respectively, and the equivalent attributes on IPCONN definitions.

APPC

Table 27. Migrating APPC connections to IPIC. CONNECTION options and their IPCONN equivalents.

CONNECTION options	APPC possible values	IPCONN equivalent value
ACCESSMETHOD	VTAM	Not applicable.
ATTACHSEC	LOCAL IDENTIFY VERIFY PERSISTENT MIXIDPE	USERAUTH LOCAL IDENTIFY VERIFY NO CERTIFICATE
AUTOCONNECT	NO YES ALL	NO YES
BINDSECURITY	NO YES	SSL NO YES
DATASTREAM	USER	Not applicable
INDSYS	Not applicable (indirect connections only).	Not applicable (indirect connections only).

Table 27. Migrating APPC connections to IPIC. CONNECTION options and their IPCONN equivalents. (continued)

CONNECTION options	APPC possible values	IPCONN equivalent value
INSERVICE	YES NO	As is.
MAXQTIME	NO 0 - 9999	As is.
NETNAME	The VTAM APPLID of the remote region. (For XRF, the generic applid. For connections to a VTAM generic resource, either the applid or generic resource name.)	combination of APPLID and NETWORKID
PROTOCOL	APPC.	Not applicable.
PSRECOVERY	SYSDEFAULT NONE	Not applicable.
QUEUELIMIT	NO 0 - 9999	As is.
RECORDFORMAT	U	Not applicable
REMOTENAME	Name (sysid) by which the remote system is known to itself.	Not applicable
REMOTESYSNET	Applid of the remote system that owns the remote resource, if the link to the remote system is indirect.	Not applicable
REMOTESYSTEM	Name (sysid) of the remote system, or sysid of the next system in the path, if the link to the remote system is indirect.	Not applicable
SECURITYNAME	RACF ID of the remote system.	As is.
SINGLESESS	NO YES	Not applicable.
USEDFLTUSER	NO YES	Not applicable
XLNACTION	KEEP FORCE	As is.

Table 28. Migrating APPC connections to IPIC. SESSIONS options and their IPCONN equivalents.

SESSIONS options	APPC possible values	IPCONN equivalent value
AUTOCONNECT	NO YES ALL	Not applicable.
BUILDCHAIN	YES	Not applicable.
CONNECTION	Name of CONNECTION that this SESSIONS definition applies to.	Not applicable.
DISCREQ	Not applicable.	Not applicable.
IOAREALEN	Not applicable.	Not applicable
MAXIMUM	1 - 999, 0 - 999	SENDCOUNT & RECEIVECOUNT
MODENAME	Name of a VTAM LOGMODE.	Not applicable.
NEPCLASS	Transaction class for the node error program.	Not applicable.
NETNAMEQ	Not applicable.	Not applicable
PROTOCOL	APPC.	Not applicable.
RECEIVECOUNT	Not applicable.	Derived from MAXIMUM.
RECEIVEPFX	Not applicable.	Not applicable
RECEIVESIZE	RU size to receive: 1 - 30720	Not applicable

Table 28. Migrating APPC connections to IPIC. SESSIONS options and their IPCONN equivalents. (continued)

SESSIONS options	APPC possible values	IPCONN equivalent value
RECOVPTION	SYSDEFAULT CLEARCONV RELEASESESS UNCONDREL NONE	Not applicable.
RELREQ	NO YES	Not applicable.
SENDCOUNT	Not applicable.	Derived from MAXIMUM.
SENDPFX	Not applicable.	Not applicable
SENDSIZE	RU size to send: 1 - 30720	Not applicable
SESSNAME	Not applicable.	Not applicable
SESSPRIORITY	0 - 255	Not applicable
USERAREALEN	Length of TCTTE user area: 0 - 255	Not applicable
USERID	ID for sign on.	Not applicable

MRO

We don't envisage that you will want to migrate many of your existing MRO connections to use IPIC. By definition, these are all CICS-to-CICS connections between regions in the same sysplex. For this type of connection, MRO currently holds more advantages than IPIC. For example, there is no performance improvement to be gained by using IPIC; and MRO supports all the base CICS intercommunication functions, whereas IPIC supports only DPL.

Table 29. Migrating MRO connections to IPIC. CONNECTION options and their IPCONN equivalents.

CONNECTION options	MRO possible values	IPCONN equivalent value
ACCESSMETHOD	IRC XM	Not applicable.
ATTACHSEC	LOCAL IDENTIFY	USERAUTH LOCAL IDENTIFY VERIFY NO CERTIFICATE
AUTOCONNECT	Not applicable.	NO YES
BINDSECURITY	Not applicable.	SSL NO YES
DATASTREAM	USER	Not applicable
INDSYS	Not applicable (indirect connections only).	Not applicable (indirect connections only).
INSERVICE	YES NO	As is.
MAXQTIME	NO 0 - 9999	As is.
NETNAME	The APPLID specified in remote region's SIT.	host.domain.country[:port]
PROTOCOL	Blank.	Not applicable.
PSRECOVERY	Not applicable.	Not applicable.
QUEUELIMIT	NO 0 - 9999	As is.
RECORDFORMAT	U	Not applicable
REMOTENAME	Not applicable.	Not applicable
REMOTESYSNET	Not applicable.	Not applicable
REMOTESYSTEM	Not applicable.	Not applicable
SECURITYNAME	Not applicable.	As is.
SINGLESESS	Not applicable.	Not applicable.
USEDFTUSER	NO YES	Not applicable

Table 29. Migrating MRO connections to IPIC. CONNECTION options and their IPCONN equivalents. (continued)

CONNECTION options	MRO possible values	IPCONN equivalent value
XLNACTION	KEEP FORCE	As is.

Table 30. Migrating MRO connections to IPIC. SESSIONS options and their IPCONN equivalents.

SESSIONS options	MRO possible values	IPCONN equivalent value
AUTOCONNECT	Not applicable.	Not applicable.
BUILDCHAIN	Not applicable	Not applicable.
CONNECTION	Name of CONNECTION that this SESSIONS definition applies to.	Not applicable.
DISCREQ	Not applicable.	Not applicable.
IOAREALEN	Default TIOA size: 0 - 32767 , 0 - 32767	Not applicable
MAXIMUM	Not applicable.	Not applicable
MODENAME	Not applicable.	Not applicable.
NEPCLASS	Transaction class for the node error program.	Not applicable.
NETNAMEQ	Not applicable.	Not applicable
PROTOCOL	LU61.	Not applicable.
RECEIVECOUNT	Number of receive sessions: 1 - 999	As is.
RECEIVEPFX	Termid prefix.	Not applicable
RECEIVESIZE	Not applicable.	Not applicable
RECOVPTION	Not applicable.	Not applicable.
RELREQ	Not applicable.	Not applicable.
SENDCOUNT	Number of send sessions: 1 - 999	As is.
SENDPFX	Termid prefix.	Not applicable
SENDSIZE	Not applicable.	Not applicable
SESSNAME	Not applicable.	Not applicable
SESSPRIORITY	0 - 255	Not applicable
USERAREALEN	Length of TCTTE user area: 0 - 255	Not applicable
USERID	ID for sign on.	Not applicable

Using the CICS Transaction Gateway ECI Resource Adapter over an IPIC connection

If you use one of the CICS Transaction Gateway ECI Resource Adapters to enable a Java client to call a CICS server program, you may want to rewrite and redeploy your client program in order to take advantage of some of the new features introduced in CICS TS for z/OS, Version 3.2. These new features include support for:

- Containers. For information about using containers instead of COMMAREAs with your CICS server programs, see the *CICS Application Programming Guide*.
- The Enterprise Workload Manager (EWLM). For information about using the EWLM, see [../../../../com.ibm.cics.ts.java.doc/topics/../../../../com.ibm.cics.ts.performance.doc/topics/dfht3_ewlm_intro.dita#dfht3_ewlm_intro](#) the *CICS Performance Guide*.

- IPIC connections (also known as *IPCONN*s) to CICS. For information about the attributes of IPIC connections, see the *CICS Resource Definition Guide*.
You cannot install static IPCONN connections to non-CICS Java clients: these connections are always autoinstalled. See the *CICS Customization Guide*.
- Secure Sockets Layer (SSL) authentication. SSL is supported on IPIC connections between the CICS TG and CICS, and as on client-to-CICS TG connections. For information about using SSL authentication, see the *CICS RACF Security Guide*.

For guidance about how to program the CICS resource adapters, see the *CICS Transaction Gateway Programming Guide*. For definitive reference information about the resource adapter classes, see the *CICS Transaction Gateway Programming Reference*.

The migration utility for converting APPC and MRO connections to IPIC connections

This topic describes how to use the DFH0IPCC utility program to convert existing APPC and MRO connections to IPIC connections (IPCONN)s. DFH0IPCC is a sample program for use with the DFHCSDUP system definition utility program.

Note: This utility generates a set of statements, which form a skeleton that you should review and update as required before using it as input to DFHCSDUP.

For information about creating IPCONN and TCPIP SERVICE , see CREATE IPCONN and CREATE TCPIP SERVICE in the *CICS System Programming Reference*.

IPCONN attribute mapping

The following table summarizes how the DFH0IPCC utility program maps the CONNECTION attributes to the new IPCONN definition.

Table 31.

IPCONN attribute	Migrated From / Created By	Comments
APPLID	CONNECTION (NETNAME)	Direct migration.
AUTOCONNECT	CONNECTION (AUTOCONNECT)	Direct migration, but if ALL, set the new value to YES.
CERTIFICATE	N/A	Blank.
CIPHERS	N/A	Blank.
DESCRIPTION	N/A Optional.	Blank. You can modify this in the DFH0IPCC output.
GROUP	CONNECTION (GROUP) SESSIONS (GROUP)	Not changed.
HOST	APPLID Table	Must be specified in APPLID table.
INSERVICE	CONNECTION (INSERVICE)	Direct migration.
IPCONN	CONNECTION (CONNECTION)	Direct migration.
MAXQTIME	CONNECTION (MAXQTIME)	Direct migration.

Table 31. (continued)

IPCONN attribute	Migrated From / Created By	Comments
NETWORKID	APPLID Table	No equivalent, leave blank if not specified in APPLID table or in default.
PORT	APPLID Table	Must be specified in APPLID table.
QUEUELIMIT	CONNECTION (QUEUELIMIT)	Direct migration.
RECEIVECOUNT	Sum of SESSIONS (MAXIMUM)	Direct migration from MRO SESSIONS equivalent setting, or derived from APPC SESSIONS MAXIMUM setting.
SENDCOUNT	Sum of SESSIONS (MAXIMUM)	Direct migration from MRO SESSIONS equivalent setting, or derived from APPC SESSIONS MAXIMUM setting.
SSL	N/A	Left blank. You can modify this in the DFH0IPCC output.
TCPIPSERVICE	APPLID Table	Always "DFHIPIIC" or as in APPLID Table.
XLNACTION	CONNECTION (XLNACTION)	Direct migration.

Input to the DFH0IPCC utility program

The DFH0IPCC utility program takes input supplied in an editable table, known as an *APPLID table*. This table is used to store the APPLIDs of all the regions in the relevant setup, along with the corresponding HOST name of the region and the listen PORT of the TCPIP SERVICE used to deal with inbound TCP/IP connections. This table is supplied as a blank template named DFHIPAPP.DATA. This table is FB80 format with 192 records per block. The following table shows the format of the table.

Table 32. Format of DFHIPAPP.DATA

DFHIPAPP.DATA column	Length	Description
APPLID	char 8	Unique identifier, or .DEFAULT Use .DEFAULT to specify default values for NETID or TCPIP SERVICE. The leading dot (.) prevents the word DEFAULT being used as a valid APPLID. Only one .DEFAULT row is allowed in the table.
Separator	char 1	Any alphanumeric character
NETID	char 8	Network identifier. When left blank, the default NETID specified by the .DEFAULT row is used.
Separator	char 1	Any alphanumeric character
PORT	char 5	Listening port number
Separator	char 1	Any alphanumeric character
HOST	char 55	TCP/IP host name. If blank, the default TCPIP SERVICE=DFHIPIIC, or the name specified in .DEFAULT is used.

Table 32. Format of DFHIPAPP.DATA (continued)

DFHIPAPP.DATA column	Length	Description
Continuation column	char 1	Normally blank. Any non-blank character in this field indicates that the host name is longer than 55 characters and continues in the HOST column in the following row.

The following shows an example of an APPLID table.

```

APPLID. |NETID. |PORT. |HOST.
-----+-----+-----+-----+
.DEFAULT|NETW0  |      |TCPIPSERVICE=DFHIPIC
APPLID1 |      |9001 |
APPLID2 |NETW2  |9002 |myhost2.com
APPLID2 |NETW3  |9003 |myhost.service.with.hostname.longer.than.fifty.five.chax
        |      |      |racters.com
    
```

You can use any method to fill the table, manually, for example, or by some utility, such as a spreadsheet or script, so long as the fixed-length format is preserved. You can remove, or omit, any of the provided comments or header lines.

TCPIP SERVICE names

Because an IPCONN cannot deduce the TCPIP SERVICE name of a partner region, the utility cannot produce TCPIP SERVICE definitions, rather they must be manually defined. The way the utility works means that all TCPIP SERVICE names in regions for which the utility produces IPCONN definitions must be the same.

All IPCONNs created by the DFH0IPCC utility program have the default TCPIP SERVICE (DFHIPIC), unless you supply a different name via the .DEFAULT row in the APPLID file. If you specify another name, you should use this for all TCPIP SERVICES you define.

IPCONN names

The IPCONN names are generated to avoid duplicates. The DFH0IPCC utility program uses the name of the CONNECTION definition because there is a one-to-one relationship between a CONNECTION definition and the IPCONN definition created from it. If a CONNECTION and IPCONN with the same name exist in the same group, CICS chooses the IPCONN in preference to the CONNECTION.

Using the DFH0IPCC utility program

In the description that follows we use the phrase *interconnected regions* to mean the set of CICS regions that are to be connected by IPIC connections.

1. Create TCPIP SERVICE definitions for each of the interconnected regions, specifying:
 - PROTOCOL(IPIC)
 - TCPIP SERVICE(DFHIPIC) or TCPIP SERVICE(*servicename*)

Specify other options, such as PORTNUMBER, according to the requirements of the region where the TCPIP SERVICE is to be installed. The number of definitions you require depends on (for example) the number of unique port numbers you need to specify.

2. Put each TCPIP SERVICE in a resource definition group of its own. Add one or more resource groups to each CICS system definition file (CSD) used by the

interconnected regions, the number depending on the number of CICS regions the CSD serves and the number of unique TCPIP SERVICES they require. Then install exactly one such TCPIP SERVICE, named DFHIPIC, or user-defined service name, in each of the interconnected regions.

3. Complete an APPLID table. (CICS provides an empty, template, table called DFHIPAPP.DATA.) The table must contain the application identifiers (APPLIDs), network IDs, where applicable, TCP/IP port numbers, and host names of all the interconnected CICS regions. If the previously defined TCPIP SERVICE definitions were named anything other than DFHIPIC, the table must contain a .DEFAULT record with TCPIP SERVICE= servicename in the HOST column.
4. Copy this table to every system that contains a CSD used by the interconnected regions.
5. Create a JCL that can be used to invoke DFH0IPCC through DFHCSDUP.

The following example shows a typical invocation JCL.

```
//IPCJOB JOB user,CLASS=A,USER=user,PASSWORD=pass
/*ROUTE PRINT user
//CSDUPJOB EXEC PGM=DFHCSDUP,REGION=0M
//STEPLIB DD DSN=loadlibrary,DISP=SHR
// DD DSN=loadlibrary,DISP=SHR
//DFHCSD DD DSN=csdfilename,DISP=SHR
//SYSPRINT DD SYSOUT=A
//CSDCOPY DD UNIT=VIO
//APPLTABL DD DSN=applidtablename,
// DISP=SHR,UNIT=SYSDA,SPACE=(CYL,(2,1)),
// DCB=(RECFM=FB,BLKSIZE=15360,LRECL=80)
//LOGFILE DD DSN=logfilename,
// DISP=(MOD,CATLG,CATLG),UNIT=SYSDA,SPACE=(CYL,(2,1)),
// DCB=(RECFM=FB,BLKSIZE=15360,LRECL=80)
//OUTFILE DD DSN=outputfilename,
// DISP=(MOD,CATLG,DELETE),UNIT=SYSDA,SPACE=(CYL,(2,1)),
// DCB=(RECFM=FB,BLKSIZE=15360,LRECL=80)
//SYSUDUMP DD SYSOUT=A
//SYSABEND DD SYSOUT=A
//SYSIN DD *
EXTRACT GR(group1) USERPROGRAM(DFH0IPCC) OBJECTS
EXTRACT GR(group2) USERPROGRAM(DFH0IPCC) OBJECTS
EXTRACT GR(list1) USERPROGRAM(DFH0IPCC) OBJECTS
EXTRACT GR(list2) USERPROGRAM(DFH0IPCC) OBJECTS
/*
//
```

6. On one of the CSD-owning systems, use your customized JCL file to invoke the DFH0IPCC utility program.

The JCL issues a DFHCSDUP EXTRACT command, passing the utility program as the *USERPROGRAM*. The DFH0IPCC program examines the specified lists and resource groups in the CSD, collecting information about the CONNECTION and SESSIONS definitions it finds. For each APPC or MRO pair of CONNECTION and SESSIONS definitions, it creates an IPCONN definition. Where appropriate, the attributes of the IPCONN definition are taken from the CONNECTION and SESSIONS definitions, with the values of the remaining attributes taken from the APPLID table or allowed to take their default values. When it has completed an IPCONN definition, the utility program writes a series of DEFINE statements, which form the SYSIN for your resulting DFHCSDUP invocation JCL.

7. Review the output produced by the utility program and check that the IPCONN definitions are correct for your installation, you might, as an example, need to change the SSL attributes. You will probably need to change user names and load libraries before you run to define the new IPCONN definitions in the CSD file.

- Repeat steps 6 through 7 for each CSD file used by the interconnected CICS regions.

Using TCP/IP management and control

Migration of existing functions

You can continue to use CICS, including CICSplex SM, without exploiting this new function. If you do not want to use TCP/IP management and control, no migration work is required.

Migration to the new function

You can make use of the new function with minimal changes to your monitoring and CICSplex SM WUI configurations.

Migration for multiregion operation (MRO)

For CICS multiregion operation (MRO) support, the interregion communication program DFHIRP is installed in the link pack area (LPA). The CICS TS for z/OS, Version 3.2 DFHIRP module is compatible with earlier releases, and is designed to work with all releases of CICS. However, note that the CICS TS for z/OS, Version 3.2 version of DFHIRP (required for multiple XCF group support) can be used only on z/OS Version 1.7 or later.

DFHIRP can only be used from the 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 still be installed from the **highest** release of CICS running in that MVS image. For example, a CICS TS 2.3 DFHIRP can communicate with a CICS TS for z/OS, Version 3.2 across XCF/MRO, but the CICS regions running in the MVS with the CICS TS 2.3 DFHIRP cannot be later than CICS TS 2.3.

The following steps are a guide to the migration process for MRO, to install the latest DFHIRP and DFHCSVC modules 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 *Installing CICS modules in the MVS link pack area in the CICS Transaction Server for z/OS Installation Guide*. Note that these steps assume that RACF is your external security manager (ESM).

- Install the CICS SVC routine, DFHCSVC, in the LPA, and specify a new CICS SVC number for this routine in the MVS SVC Parm 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. However, this is not recommended or necessary: DFHCSVC is compatible with earlier releases and the latest CICS TS version supports all the earlier releases of CICS.
- Test the new SVC on stand-alone CICS regions, without using any MRO. You can do this running the CICS IVP, DFHIVPOL.
- Install the CICS interregion communication program, DFHIRP, in a suitable LPA library, and IPL MVS (with the CLPA option). Do not use the dynamic LPA

function to replace DFHIRP for migration between releases, as this can cause incompatibility between control blocks, resulting in abend situations.

4. 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. Now 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. 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. With the production regions running successfully under the CICS 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.

Using multiple CICS XCF groups

XCF group limit relief allows multiple XCF groups to contain CICS regions. Although a CICS region can still join only one XCF group, that group need not be DFHIR000. Thus, although each group is still limited to 2047 members, there is no longer an absolute limit on the number of CICS regions that a sysplex can support. The effective limit of 2047 CICS regions that a single sysplex can support has been lifted.

Migration without exploiting the new function

If you are not constrained by the limit of 2047 members of an XCF group, you do not need to take any action. You can continue to use the default DFHIR000 XCF group; you don't need to specify DFHIR000 explicitly on the XCFGROUP parameter of the system initialization table and DFHXCOPT EXCI table.

Migrating to multiple CICS XCF groups

If you are constrained by the limit of 2047 XCF group members, you must determine how to split your CICS regions into related groups. Typically, you will not want to create a large number of XCF groups. A simple method of partitioning many regions is to put the production regions in a different group from the development and test regions.

Even if you are not constrained by the 2047 limit, you can still use the XCF group feature to isolate your development and test regions from your production regions.

If you decide to have multiple XCF groups, it is recommended that:

- You put your production regions in a different XCF group from your development and test regions
- You do not create more XCF groups than you need: two, separated as described, may be sufficient
- You try not to move regions between XCF groups
- You try not to add or remove regions from existing XCF groups

Releases of CICS prior to CICS TS for z/OS, Version 3.2 are able to join only the DFHIR000 group, so you should first migrate to CICS TS for z/OS, Version 3.2 those systems that need to use a different XCF group (for example, the production systems).

For details of how to set up and configure XCF/MRO, see Generating XCF/MRO support.

CICS enables the READ TIMEOUT value for MRO sessions

Before CICS Transaction Server for z/OS, Version 2 Release 2, read time-out was ignored for MRO sessions, and tasks waiting on an MRO connection could hang indefinitely. CICS now checks the READ TIMEOUT value on the transaction profile definition for MRO sessions.

The field in the profile already existed, and CICS honours it for ISC but used to ignore it for MRO. An abend code is issued if the RTIMOUT value is exceeded for MRO sessions.

This change means that a former cause of intersystem queuing (sometimes referred to as "sympathy sickness") is eliminated. Before the change, if transactions in an AOR stalled or deadlocked for any reason, the corresponding relay transactions in an MRO-connected TOR were left hanging. Eventually a problem in an AOR could cause the TOR to stall completely. The situations which might now benefit from the change include some which, because they resulted from stalls or deadlocks elsewhere, were unlikely to resolve themselves unaided.

Chapter 23. Migrating to the Enterprise Workload Manager

This topic describes how to run the Enterprise Workload Manager (EWLM) with the z/OS workload manager (WLM).

Migration of existing functions

For an introduction to the EWLM, see Introduction to the Enterprise Workload Manager.

If you do not want to use the Enterprise Workload Manager no migration work is required.

Migration to the new function

This topic describes how to run the Enterprise Workload Manager (EWLM) with the z/OS Workload Manager (WLM).

1. If the EWLM managed server, domain manager, and Control Center are not already installed, install them now. For information on how to install and configure the EWLM, see the IBM Enterprise Workload Manager for z/OS documentation.
2. Optionally, write a task-related user exit program to be invoked by CICS context management. For guidance, see in the *CICS Customization Guide*.
Writing a task-related user exit program is necessary only if you are developing a CICS application that interacts with another (non-CICS) EWLM-enabled product and you want to support cross-product workload monitoring. In these circumstances only, you need a task-related user exit program that is invoked by CICS context management. Even in these circumstances, however, such a task-related user exit program is typically supplied by the non-CICS, EWLM-enabled, product..
3. If necessary, install and enable the task-related user exit program. For information on how to do this, see in the *CICS Customization Guide*.

Chapter 24. Migration for Java applications

When migrating to a new CICS release, you are likely to require changes to your JVM profiles and to other aspects of your Java environment. You might also require changes to your Java applications and enterprise beans.

CICS Transaction Server for z/OS, Version 3 Release 2 supports the JVM provided by the IBM Software Developer Kit for z/OS, Java 2 Technology Edition, Version 1.4.2.

Note: There are two versions of the IBM Software Developer Kit for z/OS, Java 2 Technology Edition Version 1.4, a 31-bit and a 64-bit version. CICS TS 3.2 supports only the 31-bit version, which must be at the 1.4.2 level.

The JVM provided by the IBM Software Developer Kit for z/OS, Java 2 Technology Edition, Version 1.4.2 was also used by CICS Transaction Server for z/OS, Version 3 Release 1 and CICS Transaction Server for z/OS, Version 2 Release 3.

CICS Transaction Server for z/OS, Version 2 Release 2 used the JVM provided by the IBM Developer Kit for OS/390 Java 2 Technology Edition Version 1.3.1s. Java programs that ran under CICS Transaction Server for z/OS, Version 2 Release 2 can also run under CICS Transaction Server for z/OS, Version 3 Release 2.

Application migration issues for Java applications are discussed at:

<http://java.sun.com/j2se/1.4.2/compatibility.html>

<http://java.sun.com/j2se/1.4/compatibility.html>

<http://java.sun.com/products/jdk/1.3/compatibility.html#incompatibilities1.3>

and

<http://java.sun.com/products/jdk/1.2/compatibility.html>

To avoid potential problems with deprecated APIs, you should develop all new Java programs for CICS Transaction Server for z/OS, Version 3 Release 2 using an application development environment that supports Java 2 at the same version of Java as used by CICS. You may run code compiled with an older version of Java in a new runtime, provided that it does not use APIs that have been removed in the newer version of Java.

If you already have JVM profiles and JVM properties files which you set up in a previous CICS release, you might want to migrate these for use with the new CICS release. The settings that are suitable for use in JVM profiles can change from one CICS release to another, so you should check the CICS documentation for any significant changes, and compare your existing JVM profiles to the latest CICS-supplied samples. Changes to the JVM profile options in this CICS release are documented in the *CICS Transaction Server for z/OS Release Guide*. A list of suitable options for the present release is in *Java Applications in CICS*. For JVM profiles created more than one or two releases ago, you are recommended to use the new samples supplied with CICS Transaction Server for z/OS, Version 3 Release 2 to help you create new files, rather than migrating your existing files.

Make a copy of your JVM profiles in a new location on z/OS UNIX to use with the new CICS release, and make the changes that are required to migrate them (for example, changing the path for the home directory for CICS files on z/OS UNIX). Do not try to use JVM profiles with more than one CICS release at the same time, because the settings will not be compatible.

Ensure that the JVM profiles you want to use are in the z/OS UNIX directory that is specified by the **JVMPROFILEDIR** system initialization parameter. *Java Applications in CICS* explains how to set the location for the JVM profiles.

The JVM profiles DFHJVMPR and DFHJMCD, and their associated JVM properties files, must always be available to CICS and configured so that they can be used in your CICS region. *Java Applications in CICS* tells you how to do this.

Enterprise beans

Enterprise beans that support the EJB 1.0 specification need to be migrated to the EJB 1.1 specification level using the Assembly Toolkit (ATK) or the Application Assembly Tool (AAT), which are supplied with IBM WebSphere Application Server. Enterprise beans developed using any version of the EJB specification after EJB 1.1 must restrict themselves to the EJB 1.1 APIs.

Key changes to CICS support for Java applications

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2, read this summary of the changes that have a migration impact for your Java environment.

- In CICS Transaction Server for z/OS, Version 3 Release 2, resettable JVMs, which were reset between each use, are no longer supported. Any Java programs that ran in resettable JVMs must be migrated to run in continuous JVMs. Resettable JVMs had the option REUSE=RESET in their JVM profiles (or the older option Xresettable=YES). All the CICS-supplied sample JVM profiles for reusable JVMs now specify the option REUSE=YES, rather than REUSE=RESET. This includes the default JVM profile DFHJVMPR, and the JVM profile DFHJMCD for CICS-supplied system programs.
- The Language Environment run-time library SCEERUN2 is now required to support the IBM JVM, in addition to the Language Environment run-time library SCEERUN. In your CICS startup job, the library SCEERUN2 must be defined in both the STEPLIB and DFHRPL concatenations. Both the libraries, SCEERUN and SCEERUN2, must be APF-authorized. For more information, see *Installing CICS support for Language Environment in the CICS Transaction Server for z/OS Installation Guide*.
- The library SDFJAUTH is now required for Java support. SDFJAUTH is the partitioned data set extended (PDSE) version of SDFHAUTH, and it contains some of the components of the SJ domain. A separate library is needed because these components are now built using XPLink (Extra Performance Linkage). As for the SDFHAUTH library, the SDFJAUTH library must be APF-authorized by adding it to the list of APF-authorized libraries in an appropriate member in SYS1.PARMLIB, and a STEPLIB DD statement must be provided for it in your startup job stream. Authorizing the CICS and CICSplex[®] SM libraries in the *CICS Transaction Server for z/OS Installation Guide* describes this procedure for the SDFHAUTH library, and you can follow the same procedure for the SDFJAUTH library.
- JVM profiles, which contain the JVM initialization options, are now kept as z/OS UNIX files, rather than as members of a partitioned data set (PDS). The DFHJVM DD card in the CICS startup JCL, which referred to the PDS for the JVM profiles, is no longer required and should be removed. You can use several different JVM profiles in the same CICS region, and each is stored as a separate z/OS UNIX file. The name of each JVM profile (that is, the name of the z/OS UNIX file) must still be eight characters or less, so that it can be used in program definition. Use the JVMPROFILE attribute of a PROGRAM resource definition to

name the JVM profile which is used to construct the JVM that runs the program. If you have modified the supplied sample JVM profiles DFHJVMPR and DFHJMPS, and you want to re-use them, you can migrate these from PDS members to z/OS UNIX files, which you can do using the OCOPY TSO command. However, there are a number of changes to the options that you can specify in JVM profiles and JVM properties files, so you are recommended to use the new samples supplied with CICS Transaction Server for z/OS, Version 3 Release 2 to help you create new files, rather than migrating your existing files.

- Because JVM profiles are now z/OS UNIX files, case is important. When you specify the name of a JVM profile (for example, in a PROGRAM resource definition), you must enter it using the same combination of upper and lower case characters that is present in the z/OS UNIX file name. The CEDA panels accept mixed case input for the JVMPROFILE field irrespective of your terminal's UCTRAN setting. However, this does not apply when values for this field are supplied on the CEDA command line, or when you are using another CICS transaction such as CEMT or CECI. If you need to enter the name of a JVM profile in mixed case when you use CEDA from the command line or when you use another CICS transaction, ensure that the terminal you use is correctly configured, with upper case translation suppressed.
- CICS-defined programs now have their own JVM profile, DFHJMCD, to make them independent of any changes you make to the default JVM profile DFHJVMPR. DFHJMCD is used by the default request processor program DFJIIRP, which is used by the CICS-supplied CIRP request processor transaction, and by DFJIIRQ, the CICS-key equivalent of DFJIIRP. DFHJMCD has an associated JVM properties file, dfjvmcd.props. You need to make changes to DFHJMCD and dfjvmcd.props to ensure that the settings in them are suitable for your installation (including the configuration for your JNDI nameserver). Customizing or creating JVM profiles and JVM properties files in *Java Applications in CICS* tells you how to do this. You also need to add classes to the shareable application class path for the applications that will use the request processor program. For enterprise beans, you need to add any classes, such as classes for utilities, that are required by your enterprise beans but are *not* included in the deployed JAR files for the enterprise beans. For CORBA stateless objects, you need to add the JAR files for the applications and any additional classes that are required. Enabling applications to use a JVM in *Java Applications in CICS* tells you how to do this.
- The user-replaceable program DFHSJJ80, which was used in CICS Transaction Server for z/OS, Version 2 Release 1 and CICS Transaction Server for z/OS, Version 2 Release 2 to construct the Language Environment enclave for the JVM, has been replaced by the user-replaceable program DFHJMRO, which performs the same functions. If you had modified the settings specified in DFHSJJ80 to match more closely with the storage usage of your JVMs, you should repeat this process with DFHJMRO, bearing in mind that the storage usage of your JVMs might have changed. Tuning Language Environment enclave storage for JVMs in the *CICS Performance Guide* tells you how to carry out this tuning process, and Using DFHJMRO to modify the Language Environment enclave for a JVM in the *CICS Customization Guide* tells you how to modify the settings in DFHJMRO.
- CICS now uses the z/OS shared library region, which enables address spaces to share dynamic link library (DLL) files. This feature enables your CICS regions to share the DLLs that are needed to create JVMs, rather than each region having to load them individually. The storage that is reserved for the shared library region is allocated in each CICS region when the first JVM is started in the region. The amount of storage that is allocated is controlled by the SHRLIBRGNSIZE parameter in z/OS. The minimum is 16M, and the z/OS default

is 64M. You should check the setting for this parameter and, if necessary, tune it. *CICS Performance Guide* tells you how to carry out this tuning process.

- You can set up a shared class cache in each of your CICS regions, to enable the JVMs in each CICS region to share commonly-used class files and compiled classes. This means that the JVMs can start up faster, and you can reduce the cost of class loading. Most JVMs can use the shared class cache, but if you do not want certain JVMs to use it, you can set them to run independently (to be standalone JVMs). The shared class cache in *Java Applications in CICS* has more information about this topic.

Invoking multiple Java programs in the same CICS task

The one-JVM-per-stack restriction has been removed. Multiple JVMs can now be allocated to a CICS task.

Previously, a stack of programs formed by a succession of EXEC CICS LINK commands, or JCICS program invocations, within the same CICS task, could not contain more than one JVM. (Distributed program link (DPL) requests were not restricted in this way.) As a CICS task could only use one JVM, applications designed in this way could only contain one Java component.

Now, you can create an application that links together multiple Java programs in the same CICS region. You can also convert your existing complex applications piece by piece, by replacing programs written in other languages with programs written in Java.

Enterprise beans can now link to another Java program within the same CICS task. However, a single CICS task still cannot contain more than one enterprise bean, because CICS treats an execution of an enterprise bean as the start of a new task. You can create an application that includes more than one enterprise bean, but the application will not operate as a single task.

Execution key for Java programs that run in a JVM

In CICS Transaction Server for OS/390, Version 1 Release 3 and CICS Transaction Server for z/OS, Version 2 Release 2, CICS made all Java programs execute in CICS key, but they now execute as specified by the EXECKEY parameter on the PROGRAM resource definition.

The default for this parameter is EXECKEY(USER), which means that the program runs in a JVM that executes in user key. (The J9 TCB, an open TCB, is used for these JVMs.) As running applications in user key extends CICS storage protection, it could be beneficial to let most of your Java programs run in a JVM in user key.

You might find that in most cases, the PROGRAM resource definitions for your Java programs are still set to the default of EXECKEY(USER). If you changed the EXECKEY parameter on the PROGRAM resource definitions for any of your Java programs to specify EXECKEY(CICS), you will need to change them back to EXECKEY(USER) if you want them to run in user key. No changes are needed to your JVM profiles, because you can use the same JVM profile to create JVMs in both storage keys.

However, you might need to execute a JVM in CICS key if the Java program that uses the JVM is part of a transaction that specifies TASKDATAKEY(CICS). If this is the case, you need to ensure that the PROGRAM resource definition for the Java program specifies EXECKEY(CICS). Before CICS Transaction Server for z/OS,

Version 2 Release 3, this setting would not have mattered, because CICS would have forced the program to execute in CICS key.

For enterprise beans, CIRP (the default transaction for REQUESTMODEL definitions) specifies TASKDATAKEY(USER), and the PROGRAM resource definition for DFJIIRP (the default request processor program) specifies EXECKEY(USER), so by default enterprise beans run in user key.

A JVM can be reused by programs that specify the same execution key on their PROGRAM resource definition. You can use the INQUIRE JVM command to find out the execution key in which a JVM has been invoked. A single CICS task can include Java programs running in CICS key, and Java programs running in user key.

Migration for CICS TS 1.3 JVMs

The earlier type of JVM supported by CICS in CICS Transaction Server for OS/390, Version 1 Release 3, which was provided by the IBM Developer Kit for the Java Platform 1.1.8, is no longer supported. Any Java programs that ran under CICS TS 1.3, and were not previously migrated for CICS Transaction Server for z/OS, Version 2, must be migrated to the same version of Java as used by CICS.

If you need a short-term solution while migrating applications, you can modify a JVM to run as a single-use JVM by specifying REUSE=NO in the JVM profile. A single-use JVM is initialized, is used to run a single Java program, and then is automatically destroyed. The single-use JVM is like the earlier JVM that was supported by CICS in CICS TS 1.3. This model typically has high startup overheads. To improve performance, you should redesign these Java programs as soon as you can, so that the programs can run in a continuous JVM. New Java applications should not be developed in such a way that they can only run in a single-use JVM.

With a single-use JVM, it is still possible to invoke the user-replaceable program DFHJVMAT to change JVM options. DFHJVMAT cannot be used with any type of JVM other than the single-use JVM. It is now only invoked if you specify INVOKE_DFHJVMAT=YES as an option on the JVM profile that you want to override. The *CICS Customization Guide* tells you how to use DFHJVMAT. Wherever possible, you should replace any function in existing DFHJVMAT modules using options that you can specify in the JVM profile and JVM properties file. You should only use DFHJVMAT if you need to make unusual modifications.

You should not specify your own parameters to be passed as environment variables to your Java application, as you were able to do in CICS Transaction Server for OS/390, Version 1 Release 3. CICS issues warning messages if it finds unknown initialization options in a JVM profile. Instead, you should use the JVM properties file, which is a HFS file referenced by the JVMPROPS option in the JVM profile, to pass information to your Java application. If you have a user.properties file for your JVMs, you should also migrate the contents to the JVM properties file as appropriate, because CICS does not now look for a user.properties file for JVMs.

Migrating class paths in JVM profiles

There are a number of changes to the way class paths are specified in CICS Transaction Server for z/OS, Version 3 Release 2. You need to identify an appropriate class path for each of the items that you specified on class paths in your existing JVM profiles and JVM properties files.

Migrating class paths in JVM profiles: library path

In CICS Transaction Server for z/OS, Version 3 Release 2, the base library path is not visible in the JVM profile. You only need to specify any additional dynamic link library (DLL) files that you added to the library path. The option to use for this is LIBPATH_SUFFIX.

The base library path for the JVM is built automatically using the directories specified by the CICS_HOME and JAVA_HOME options in the JVM profile. It includes all the DLL files required to run the JVM, and the native libraries used by CICS. In previous CICS releases, the base library path had to be specified explicitly in the JVM profile, but now that is not required.

The LIBPATH option in the JVM profile is no longer used. For migration purposes, it is still accepted, but CICS issues a warning message when it is found (DFHSJ0538). If you leave any classes specified on this option, they are placed on the library path after the base library path.

You can extend the library path using the LIBPATH_SUFFIX option. When CICS builds the library path, these items are placed on the library path after the base library path directories. When you are creating, changing, or migrating JVM profiles, any items which you added to the library path in previous CICS releases (such as the DLL files required to use the DB2-supplied JDBC drivers) should now be specified using LIBPATH_SUFFIX. The CICS-supplied /lib and /ctg directories, and the IBM JVM-supplied /bin and /bin/classic directories, which were specified on the library path in the CICS-supplied sample JVM profiles in earlier CICS releases, do not now need to be specified explicitly in the JVM profile. These directories are now part of the base library path.

The option LIBPATH_PREFIX is available if items need to be placed before the base library path, but this option should only be used under the guidance of IBM support.

Migrating class paths in JVM profiles: middleware classes

In a continuous JVM in CICS Transaction Server for z/OS, Version 3 Release 2, the classes formerly treated as middleware classes must now be placed on the same class path as user application classes. These classes were specified on the trusted middleware class path options TMPREFIX and TMSUFFIX in the JVM profile.

For migration purposes, the trusted middleware class path options TMPREFIX and TMSUFFIX are still accepted, but CICS issues a warning message when they are used.

When you are creating, changing, or migrating JVM profiles, the classes formerly treated as middleware classes should now be placed on one of the following class paths:

- The shareable application class path, which is defined by the `-Dibm.jvm.shareable.application.class.path` system property in the JVM properties file. If you have a shared class cache in your CICS region, choose this option, and place the classes on the shareable application class path in the JVM properties file for the master JVM that initializes the shared class cache.
- The standard class path, which is defined by the CLASSPATH_SUFFIX option in the JVM profile. If you do not have a shared class cache, choose this option, and place the classes on the standard class path in the JVM profile for the JVM where the application will run.

When you have placed the classes on the correct class paths, remove the TMPREFIX and TMSUFFIX options from your JVM profiles.

Migrating class paths in JVM profiles: standard class path

In CICS Transaction Server for z/OS, Version 3 Release 2, the standard class path is constructed in a new way. You need to use the CLASSPATH_SUFFIX option to specify any nonshareable application classes.

CICS builds a base standard class path for the JVM using the /lib subdirectories of the directories specified by the CICS_HOME and JAVA_HOME options in the JVM profile. This standard class path contains the JAR files supplied by CICS and by the JVM. It is not visible in the JVM profile.

The CLASSPATH option in the JVM profile is no longer used. For migration purposes, it is still accepted, but CICS issues a warning message when it is found (DFHSJ0523).

Use the CLASSPATH_SUFFIX option to place classes on the standard class path. When you are creating, changing, or migrating JVM profiles, any items which you added to the standard class path in previous CICS releases should now be specified using CLASSPATH_SUFFIX.

If you are migrating JVM profiles from resettable (REUSE=RESET) to continuous (REUSE=YES), and there is no shared class cache in your CICS region, you should place application classes on the standard class path, rather than the shareable application class path. The shareable application class path was the recommended choice for a resettable JVM, because it enabled the classes to be cached in the JVM and reinitialized when the JVM was reset, whereas classes on the standard class path were discarded and reloaded. However, in a continuous JVM, classes on the standard class path are cached within the JVM and kept across reuses. The standard class path is now the recommended choice where there is no shared class cache, because it has greater compatibility with future releases of Java.

Migrating Java garbage collection settings

CICS now initiates garbage collection when heap utilization in the active part of the nonsystem heap reaches a specified limit. In earlier releases, CICS performed garbage collection in a JVM synchronously after a specified number of Java programs had been run. You might need to adjust the new garbage collection option GC_HEAP_THRESHOLD if you want to keep the same frequency of garbage collection as you had in previous releases.

- If you have specified the MAX_RESETS_TO_GC option in your JVM profiles, you should remove it. CICS now ignores this option, and issues a warning message at JVM startup if it is found.
- If you need to tune the frequency of garbage collections initiated by CICS in your JVMs, use the GC_HEAP_THRESHOLD option. This option specifies a percentage limit for heap utilization in the active part of the nonsystem heap, above which CICS initiates garbage collection. The default setting is 85%.
- If you had previously tuned your JVMs so that your applications used almost all of the storage in the active part of the nonsystem heap before garbage collection took place, you might find that the default setting for GC_HEAP_THRESHOLD causes more frequent garbage collections in your JVMs. If this is the case, you should adjust the GC_HEAP_THRESHOLD setting to a higher level to return to the same frequency of garbage collection.

Migration for HPJ-compiled Java programs (Java program objects)

Runtime support for Java program objects and for hot-pooling (HPJ) was withdrawn in CICS Transaction Server for z/OS, Version 3 Release 1. Any Java programs that you had processed using the VisualAge for Java, Enterprise Edition for OS/390 bytecode binder (HPJ) to run as Java program objects in CICS, must be migrated to run in a Java Virtual Machine (JVM).

1. Set up the JVM environment, as described in Setting up Java support in *Java Applications in CICS*.
2. Place the class files (with the extension .class) for the Java programs in directories in z/OS UNIX where they can be loaded by the JVM. Ensure that CICS has read and execute access to these directories, as described in Giving CICS regions permission to access z/OS UNIX directories and files in *Java Applications in CICS*. If you want to, you can build the class files into packages or JAR files (with the extension .jar) before placing them in the z/OS UNIX directory. In order to create Java program objects, you had to use the javac compiler (or an equivalent Java compiler, such as VisualAge for Java or WebSphere Studio Application Developer) to compile the Java source files into class files, and then use the VisualAge for Java, Enterprise Edition for OS/390 bytecode binder to compile the class files into Java program objects.
 - a. If you saved the class files during this process, you can use these to run in the JVM.
 - b. If you did not keep the class files, re-run the Java compiler against your Java source files to produce new class files.
3. Modify the PROGRAM resource definitions to add the JVM, JVMCLASS, and JVMPROFILE options, and add the classes that the applications use to the class paths for their JVMs, as described in Enabling applications to use a JVM in *Java Applications in CICS*.
4. If the Java programs access DB2, follow the instructions in Requirements to support Java programs in the CICS DB2 environment in the *CICS DB2 Guide* to add the necessary DB2 directories and files to the class paths in the JVM profiles, and ensure that you have applied any DB2 APARs that are needed for your version of DB2.
5. Test that the Java programs work correctly in the JVMs that you have defined for them.

Migration for Java applications that use a CICS connector

Runtime support for the CICS Connector for CICS TS, introduced in CICS TS for z/OS, Version 2.1, was withdrawn in CICS TS for z/OS, Version 3.1. You need to migrate any existing applications that use the CICS Connector for CICS TS to use the CCI Connector for CICS TS instead. All new connector applications must use the CCI Connector for CICS TS.

A CICS connector is a software component that allows a Java client application to invoke a CICS application. CICS TS for z/OS, Version 2.3 introduced a new CICS connector, the CCI Connector for CICS TS, which performs a similar role to the CICS Connector for CICS TS. It enables a Java program or enterprise bean running on CICS Transaction Server for z/OS to link to a CICS server program. The old CICS Connector for CICS TS implemented the IBM-proprietary CCF interface, but the new CCI Connector for CICS TS implements the industry-standard Common Client Interface (CCI) defined by the J2EE Connector Architecture Specification, Version 1.0.

For information on using the CCI Connector for CICS TS in new connector applications, and on migrating existing applications that use the CICS Connector for CICS TS to use the CCI Connector for CICS TS instead, see *Java Applications in CICS*.

Chapter 25. Migration for the Link3270 bridge

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2, there are changes to the 3270 bridge mechanism. The older 3270 bridge mechanism using the START BREXIT interface is still supported, and applications continue to run unchanged, but you are recommended to migrate to the Link3270 mechanism. If you are already using the Link3270 bridge, and you want to add support for the ACCUM option, you need to recompile your programs to gain this support.

There are two versions of the Link3270 bridge in CICS Transaction Server for z/OS, Version 3 Release 2:

- Link3270 bridge with basic support, which provides the same support as that provided by the CICS TS for z/OS, Version 2.2 Link3270 bridge. If you only need basic support, no action is necessary. Use the basic copybooks as before. There is no need to recompile any existing Link3270 bridge programs.
- Link3270 bridge with extended support, which provides support for the ACCUM option on the SEND TEXT, SEND MAP, and SEND CONTROL commands. To provide this support, two new vectors are introduced: SEND PAGE and PURGE MESSAGE. New copybooks are also provided. If you want to take advantage of the extended support, recompile your Link3270 bridge programs (or compile new programs) using the extended copybooks, and the extended support will be provided.

More information about the use of the Link3270 bridge can be found in Bridging to 3270 transactions in the *CICS External Interfaces Guide*.

The Link3270 mechanism is the recommended way to use the 3270 bridge. If you are not yet using the Link3270 mechanism, you are recommended to migrate to it. Use of the START BREXIT interface is no longer described in the CICS documentation, and you should refer to the publications for CICS Transaction Server for OS/390, Version 1 Release 3 if you need to implement new applications using this interface.

The bridge mechanism using the START BREXIT interface required the client (end-user) application to send messages to a monitor program, which established the bridge environment by issuing a START BREXIT command. User-supplied (or sample) bridge exit and formatter user-replaceable programs translated 3270 commands to messages that were sent to the client.

A sample program, DFH0CBRM, is provided to assist migration to the Link3270 mechanism. To use it, change your monitor program to issue an EXEC CICS LINK to DFH0CBRM, instead of issuing a START BREXIT command. DFH0CBRM converts existing messages to Link3270 format messages and drives the new Link3270 mechanism. Note that there are some changes to error processing, such as abend codes. Any restrictions in the use of the migration aid, which uses the WebSphere MQ CICS interface header (MQCIH), are described in comments in the source of DFH0CBRM, which is supplied in SDFHSAMP library. The generated version is supplied in SDFHLOAD, ready to use.

There is a one-to-one mapping between the old style message vectors and the Link3270 message vectors, but there are new fields in the Link3270 message header that should be reviewed if you want to exploit new function.

Chapter 26. Migration for Named Counter and Shared Temporary Storage servers

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 and use Named Counter servers or Shared Temporary Storage servers, read these migration notes.

Named Counter servers and Shared Temporary Storage servers can be at different levels in different MVS images. They still function correctly in these circumstances. You have only one level of the server in each MVS image.

Upgraded Named Counter servers and Shared Temporary Storage servers include new support for automatic restart (using ARM) and system-managed processes (rebuild and duplexing). The existing data in the coupling facility is not affected by switching to the new level of server code, and can even be shared between old and new servers running on different MVS images. Existing CICS TS 1.3 regions can work with the new level of server, with the very minor exception that the CICS TS 1.3 EXEC-level named counter interface will report an exception if the CICS Transaction Server for z/OS, Version 3 Release 2 named counter server indicates that system-managed rebuild is in progress, whereas the CICS Transaction Server for z/OS, Version 3 Release 2 EXEC interface simply waits and retries in that situation.

A CICS Transaction Server for z/OS, Version 3 Release 2 region can use a CICS TS 1.3 server, although the normal rule is that servers should be at the higher level.

All of the CF-related servers including the named counter server can be closed down immediately using the server CANCEL command.

There is no difference between the temporary storage server and the named counter server relating to recovery, in that both servers store all of their data in the coupling facility structure, so it will be lost if the structure fails or the coupling facility is re-IPLed. There may be a distinction from the application point of view, in that the scratch pad information stored in the temporary storage structure may be less important to continuous operation than sequence numbers stored in named counters.

The *CICS Application Programming Guide* contains a section on Named Counter Recovery considerations. In a production environment, it is important to have some separate means of recreating the named counters if the coupling facility structure is lost, for example by determining the latest used counters from data bases.

Chapter 27. Migration for threadsafe programming and the open transaction environment (OTE)

The open transaction environment (OTE) function was introduced in CICS Transaction Server for OS/390, Version 1 Release 3 for Java applications, and extended in CICS Transaction Server for z/OS, Version 2 Release 2 and later releases to other types of application. The open transaction environment is an environment where CICS application code can use non-CICS services (facilities outside the scope of the CICS API) within the CICS address space, without interference with other transactions.

Before CICS Transaction Server for OS/390, Version 1 Release 3, user applications and exits operated in a restricted, or closed, environment. Although the applications could use the functionally-rich CICS application program interface (API), direct invocation of other services was not supported. This is because CICS ran all user transactions under a single z/OS TCB, known as the CICS quasi-reentrant (QR) TCB. Direct invocation of other services outside the scope of the CICS permitted interfaces could interfere with the use by CICS of the QR TCB. In particular, requests resulting in the suspension ("blocking") of the QR TCB, which happens when an MVS wait is issued, would cause all CICS tasks to wait.

Applications that exploit the open transaction environment run on their own open TCB, rather than on the QR TCB. Unlike the QR TCB, CICS does not perform sub-dispatching on an open TCB. If the application running on an open TCB invokes a non-CICS service which blocks the TCB, the TCB blocking does not affect other CICS tasks. For example, some services provided by DB2, MVS, UNIX System Services, or TCP/IP, might result in TCB blocking.

The open TCBs that are used in the open transaction environment are managed in separate pools, with each pool containing a different type, or operational mode, of open TCB. Each mode has a specific purpose, and is handled by CICS in a different way. The types, or modes, of open TCB are:

J8 mode TCBs and J9 mode TCBs

are used to run Java programs under a Java Virtual Machine (JVM). The JVM is created on the TCB.

J8 TCBs are used for JVMs when the Java programs are defined as executing in CICS key, and J9 mode TCBs are used for JVMs when the Java programs are defined as executing in user key and storage protection is active. *Java Applications in CICS* has more information about how CICS manages JVMs and their TCBs.

The MAXJVMTCBS system initialization parameter controls the number of J8 and J9 TCBs in the JVM pool.

L8 mode TCBs and L9 mode TCBs

are both used to run OPENAPI programs, that is, those defined as OPENAPI by their PROGRAM resource definition.

- L8 mode TCBs are used for CICS key OPENAPI application programs.
- L9 mode TCBs are used for user key OPENAPI application programs.

L8 mode TCBs are also used when programs need access to a resource manager through a task-related user exit (TRUE) enabled using the OPENAPI option on the ENABLE PROGRAM command. An open API TRUE is given control under an L8 mode TCB, and can use non-CICS APIs without having to create subtask TCBs. The CICS DB2 task-related user

exit operates in OPENAPI mode (it is an open API TRUE), so the CICS DB2 attachment facility uses L8 TCBs for DB2 request processing.

L8 mode TCBs are also used by CICS itself, because CICS uses CICS key OPENAPI programs which run on L8 TCBs when processing Web services requests, parsing XML, and accessing z/OS UNIX files for CICS Web support.

The MAXOPENTCBS system initialization parameter controls the number of L8 and L9 TCBs in the pool of L8- and L9-mode open TCBs.

SP mode TCB and S8 mode TCBs

are used by CICS to manage SSL connections. The S8 TCBs run within a single enclave, which is owned by the SP TCB and also contains the SSL cache.

The MAXSSLTCBS system initialization parameter controls the number of S8 TCBs in the SSL pool.

X8 mode TCBs and X9 mode TCBs

are both used to run C and C++ programs compiled with the XPLINK option. X8 TCBs are used for programs in CICS key, and X9 mode TCBs are used for programs in user key. Each instance of an XPLink program uses one X8 or X9 TCB. The *CICS Application Programming Guide* has more information about using XPLink.

The MAXXPTCBS system initialization parameter controls the number of X8 and X9 TCBs in the pool of X8- and X9-mode open TCBs.

Existing or new CICS DB2 applications written in any language that access DB2 are automatically involved with the open transaction environment through the CICS DB2 task-related user exit. You have the opportunity to gain performance benefits for these applications. These performance benefits can be gained because open TCBs may be used for both non-CICS API requests (including requests to DB2) and application code. Because application code can be executed on the open TCB, the application should not need to switch between different TCBs several times during the execution of a CICS DB2 application, as was the case before the open transaction environment was available, when subtask thread TCBs were used for requests to DB2. This situation also decreases usage of the QR TCB.

The most important condition to be met to achieve this is that the user application program, the EXEC CICS commands used in the application, and any user exit programs involved with the application program, must be **threadsafe**. The CICS DB2 application must have threadsafe application logic (that is, the native language code in between the EXEC CICS commands must be threadsafe), use only threadsafe EXEC CICS commands, and be defined to CICS as threadsafe. It must use only threadsafe dynamic plan exits, task-related user exits and global user exits. Only code that has been identified as threadsafe is permitted to execute on open TCBs. The next topic explains in detail what it means for an application to be threadsafe.

An application like this will move to an L8 TCB when it makes its first SQL request, and then continue to run on the L8 TCB through any amount of DB2 requests and application code, requiring no TCB switching. This situation produces a significant performance improvement where an application program issues multiple SQL calls. The gains are also significant when using an enterprise bean, because when enterprise beans make DB2 requests, they require additional TCB switches to and from the enterprise bean's own TCB. If the application program does not issue many SQL calls, the performance benefits might not be as significant.

For applications that do not make DB2 requests, you can opt to use the open transaction environment by defining user application programs, PLT programs, user replaceable modules or task related user exits as OPENAPI programs. (Global user exits cannot be defined as OPENAPI programs.) Defining a program as an OPENAPI program means that it always runs on an open TCB (L8 or L9), from the start of the program. This allows application workloads to be moved off the QR TCB onto multiple open TCBs, giving the possibility of achieving better throughput, particularly with CPU-intensive programs. It also allows you to use other (non CICS) APIs, but you should note that the use of other (non CICS) APIs within CICS is entirely at the discretion and risk of the user. No testing of other (non CICS) APIs within CICS has been undertaken and the use of such APIs is not supported by IBM Service.

OPENAPI programs must be defined to CICS as threadsafe and have threadsafe application logic. As for CICS DB2 applications, the use of nonthreadsafe EXEC CICS commands, nonthreadsafe task-related user exits, or nonthreadsafe global user exits causes a switch to the QR TCB, and should be avoided. OPENAPI programs have some additional obligations: for example, they must ensure that all non-CICS resources acquired specifically on behalf of the terminating task are freed, and they must not use certain MVS system services.

The use of OPENAPI programs can cause more TCB switching than ordinary threadsafe programs. After any switch to the QR TCB, there is an extra switch, because CICS switches back to the open TCB to continue running the application logic. Additional TCB switching may be involved because of the requirement for the key of the TCB to be correct for OPENAPI programs. OPENAPI TRUEs always run in CICS key on an L8 TCB, so, for example, if a user key OPENAPI program runs on an L9 TCB but makes a DB2 call, CICS switches to an L8 TCB to call DB2, then returns to the L9 TCB to continue running the program. Because of this, CICS DB2 applications should normally be defined as ordinary (CICSAPI) threadsafe programs, rather than as OPENAPI programs. CICS key CICS DB2 applications may be defined as OPENAPI programs if wanted.

How can I make my applications threadsafe?

Applications that involve a task-related user exit (TRUE) enabled using the OPENAPI option, such as applications which access DB2 resources, are already involved with the open transaction environment, and they can gain performance benefits from being threadsafe. For other applications, you can opt to use the open transaction environment by defining them as OPENAPI programs, in which case they must be threadsafe.

Applications can be defined to CICS as either quasi-reentrant or threadsafe. When an application is defined to CICS as quasi-reentrant, it executes on the QR TCB. When running under this TCB, a program can be sure that no other quasi-reentrant program can run until it relinquishes control during a CICS request. Quasi-reentrancy therefore allows programs to access globally shared resources, for example, the CICS common work area (CWA), without the need to protect those resources from concurrent access by other programs. Such resources are effectively locked exclusively to the running program, until it issues its next CICS request.

When applications are defined to CICS as threadsafe, they can run concurrently on open TCBs. Because of this, they cannot rely on quasi-reentrancy to protect shared resources from concurrent access by another program. Furthermore, quasi-reentrant programs might also be placed at risk if they access shared

resources that can also be accessed by a user task running concurrently under an open TCB. The techniques used by user programs to access shared resources must therefore take into account the possibility of simultaneous access by other programs. To gain the performance benefits of the open transaction environment while maintaining the integrity of shared resources, serialization techniques must be used to prohibit concurrent access to shared resources. Programs that use appropriate serialization techniques when accessing shared resources are described as threadsafe.

The goal of making programs threadsafe is to enable them to remain on an open TCB, rather than switching back and forth between the open TCB and the QR TCB. TCB switching from an open TCB to the QR TCB occurs in the following circumstances:

- When a program that is defined as threadsafe and is executing on an open TCB invokes any EXEC CICS commands which are not threadsafe, CICS switches back from the open TCB to the QR TCB to execute the non-threadsafes code. If the program is defined as OPENAPI, CICS then switches back to the open TCB to continue running the application logic. If the program is not defined as OPENAPI, it continues to execute on the QR TCB. For a CICS DB2 application, if the program is not defined as OPENAPI and does not make any further DB2 requests, then the switch back to the QR TCB is only a disadvantage because it increases the usage of your QR TCB for the time taken to run any remaining application code. However, if the program makes any further DB2 requests, CICS must switch back again to the open TCB.
- When a program that is defined as threadsafe and is executing on an open TCB invokes a threadsafe CICS command, it is possible for a global user exit to be invoked as part of executing the command. If a global user exit program is used which is not defined as threadsafe, CICS switches back to the QR TCB and gives control to the global user exit program. When the user exit program completes processing, CICS switches back to the open TCB to continue processing the threadsafe CICS command.
- When a program that is defined as threadsafe and is executing on an open TCB invokes a task-related user exit program which is not defined as threadsafe, CICS switches back to the QR TCB and gives control to the task-related user exit program. When the task-related user exit program completes processing, the situation is the same as after a non-threadsafe EXEC CICS command: an OPENAPI program switches back to the open TCB, and a program not defined as OPENAPI continues to execute on the QR TCB.
- When a user exit program that is not defined as threadsafe is used in the course of a DB2 request, CICS switches from the open TCB (where the DB2 request is executing) to the QR TCB. The user exit program is executed on the QR TCB, and then the task is switched back to the open TCB to complete the DB2 request. For example, the XRMIIN and XRMIOU global user exits might be invoked in the course of the DB2 request. If the exit programs are not defined as threadsafe, this TCB switching occurs. If the exit programs are defined as threadsafe, processing will continue throughout on the open TCB.
- When a program that is defined as threadsafe and is executing on an open TCB completes, CICS switches back to the QR TCB for task termination. This switch is always necessary.

If you want to make an application program remain on an open TCB:

1. **Ensure that the system initialization parameter FORCEQR is not set to YES.** FORCEQR forces programs defined as threadsafe to run on the QR TCB,

and it might be set to YES as a temporary measure while problems connected with threadsafe-defined programs are investigated and resolved.

2. **Ensure that the program is defined to CICS as threadsafe.** Use the CONCURRENCY attribute of the program resource definition to do this. OPENAPI programs are required to be defined as threadsafe. By defining a program to CICS as threadsafe, you are only specifying that the application logic is threadsafe, not that all the EXEC CICS commands included in the program are threadsafe. CICS can ensure that EXEC CICS commands are processed safely by using TCB switching. In order to permit your program to run on an open TCB, CICS needs you to guarantee that your application logic is threadsafe.
3. **Ensure that the program's logic is threadsafe.** That is, the native language code between the EXEC CICS commands must be threadsafe. If you define a program to CICS as threadsafe but include application logic that is not threadsafe, the results are unpredictable, and CICS is not able to protect you from the possible consequences. "Threadsafe programs" in the *CICS Application Programming Guide* tells you how to produce threadsafe application logic.
4. **Ensure that the program uses only threadsafe EXEC CICS commands.** The commands that are threadsafe are indicated in the command syntax diagrams in the *CICS Application Programming Reference* and the *CICS System Programming Reference* with the statement "This command is threadsafe", and are listed in the threadsafe command list in the *CICS Application Programming Reference* and the threadsafe command list in the *CICS System Programming Reference*. If you include a non-threadsafe EXEC CICS command in a program which is running on an open TCB, CICS switches back from the open TCB to the QR TCB to ensure that the command is processed safely. The TCB switching could be detrimental to the application's performance.

As well as checking EXEC CICS commands that you code explicitly, be aware of any high-level language constructs or Language Environment callable services used by your program that result in using CICS services. Some CICS services used in this way could involve non-threadsafe CICS commands, and cause a switch back to the QR TCB. For example, the COBOL statement DISPLAY UPON SYSOUT, and the Language Environment callable services CEEMOUT and CEE3DMP, write data to transient data queues. This involves an EXEC CICS WRITE TD command, which is not threadsafe. Check the programming documentation for your high-level language or Language Environment callable services to identify any CICS functions which they use, and ensure that the EXEC CICS commands relating to those functions are listed as threadsafe in the CICS documentation.

5. **Ensure that any user exit programs in the execution path used by the program are coded to threadsafe standards and defined to CICS as threadsafe.** This might include dynamic plan exits, global user exits, or task-related user exits. (Note that for task-related user exits, enabling the exit program using the OPENAPI option on the ENABLE PROGRAM command means that CICS overrides the CONCURRENCY setting on the exit's program definition with OPENAPI.)

The CICS DB2 task-related user exit DFHD2EX1 is threadsafe. SQL, threadsafe and other programming considerations for CICS DB2 applications "SQL, threadsafe and other programming considerations for CICS DB2 applications" in the *CICS DB2 Guide* has more information on other exits that are particularly important for CICS DB2 requests. These exits include the default dynamic plan exit DSNUEXT (which is not defined as threadsafe), the alternative dynamic plan exit DFHD2PXT (which is defined as threadsafe), and the global user exits XRMIIN and XRMIOU. Also be aware of the global user exits XEIN and

XEIOUT, which are invoked before and after EXEC CICS commands, and XPCFTCH, which is invoked before a PPT-defined program receives control. Be sure that user exit programs supplied by any vendor software are coded to threadsafe standards and defined to CICS as threadsafe.

6. **If you are coding a user exit program** (a global user exit or a task-related user exit), you can define it as threadsafe so that it can be used on the same L8 TCB as a threadsafe application which calls it.

Global user exit programs cannot be defined as OPENAPI, but they can be defined as threadsafe, and treated in the same way as an ordinary application program, by using threadsafe application logic and threadsafe EXEC CICS commands. Writing global user exit programs“Writing global user exit programs” in the *CICS Customization Guide* has general information about writing this type of program.

A task-related user exit can be defined as threadsafe in the same way as an ordinary application program, or it can be enabled using the OPENAPI option on the ENABLE PROGRAM command, so that it will be given control under an L8 TCB, use non-CICS APIs without having to create and manage subtask TCBs, and exploit the open transaction environment for itself. (Enabling the exit program using the OPENAPI option on the ENABLE PROGRAM command means that CICS overrides the CONCURRENCY setting on the exit’s program definition with OPENAPI.) For task-related user exit programs, see Writing a task-related user exit program in the *CICS Customization Guide* for more detailed information about how this type of program can exploit the open transaction environment safely. Note when you enable an exit program using the OPENAPI option, this indicates to CICS that the program’s logic is threadsafe.

Important changes to accounting for processor time in the open transaction environment

The CICS DB2 attachment facility uses CICS-managed open TCBs rather than CICS DB2 subtask TCBs. This means the CICS monitoring facility can measure activity that was previously (with DB2 Version 5 or earlier) only reported in the DB2 accounting record (the SMF type 101 record).

For example, CICS can now measure the processor time consumed on the DB2 thread and the processor time consumed in DB2 (the CLASS 1 and CLASS 2 CPU time). When CICS is using L8 open TCBs, the CPU time reported for these TCBs by the CICS monitoring facility includes the DB2 CLASS 1 processor time.

When CICS is connected to DB2 Version 6 or later, **do not** add together the processor time from the CICS records (SMF type 110 records) and the DB2 accounting records (SMF type 101 records) when calculating the total processor time for a single transaction, because the DB2 processor time would then be included twice. The total processor time for a single transaction is recorded in the USRCPUT field in the CICS records (performance class data field 008 from group DFHTASK). This field includes all processor time used by the transaction when it was executing on any TCB managed by the CICS dispatcher. CICS-managed TCBs include the QR, RO, CO, J8, J9, L8, L9, X8 and X9 mode TCBs.

In the open transaction environment, the CICS L8 task processor time can also include the cost of creating a DB2 thread. If a transaction causes a DB2 thread to be created, you can expect the total task processor time accounted for to be higher than that accounted for by a CICS system running with earlier DB2 releases. Correspondingly, if at the end of a transaction, the thread is terminated (because it

is unprotected and no other task is waiting to use it), then the cost of thread termination is included in the CICS L8 task processor time. Again, this cost was not accounted for by a CICS system connected to DB2 Version 5 or earlier.

From a DB2 perspective, when the CLASS 1 recording becomes active for a thread, it is now recording time spent on the L8 open TCB. Because the L8 TCB is used for both CICS activity and DB2 activity, this includes processor time spent in the CICS-DB2 attachment facility, including trace calls, and also includes processor time spent running application code (if the application is threadsafe) and threadsafe CICS commands on the open TCB. If a thread is reused, the thread housekeeping processor time is also included in the CLASS 1 processor time. As in previous releases, there is a proportion of thread creation and thread termination processing that is not captured by CLASS 1 time. The CLASS 1 processor time does not include any time spent running application code on the QR TCB. (When an application issues a non-threadsafe CICS command, it is forced back to the QR TCB.) When CICS is connected to DB2 Version 5 or earlier, CLASS 1 processor time does not include any processor time spent in application code, because all application code is executed under the QR TCB. The CLASS 2 processor time recorded by DB2, which is a subset of the CLASS 1 processor time showing the time spent in DB2 itself, is not affected by the open transaction environment.

For more information about calculating processor times for CICS and DB2 and a full explanation of how processor times are recorded, see Accounting for processor usage in a CICS DB2 environment in the *CICS DB2 Guide*.

Chapter 28. Migration for CICS Web support applications

CICS Transaction Server for z/OS, Version 3 Release 2 is designed to support your existing CICS Web support architecture for both Web-aware and non-Web-aware application programs. The EXEC CICS WEB API command changes are designed to allow existing Web-aware application programs that send and receive HTTP messages to work unchanged, until you choose to migrate them to take advantage of the enhancements that are now available. If you have existing CICS Web support applications from earlier releases, note these migration points.

- **If you are using CICS Web support to process non-HTTP requests, specify the new USER protocol on the TCPIP SERVICE definition that defines the port for these requests.** This also applies to HTTP requests with nonstandard request methods, which are now rejected if they are received on the HTTP protocol (previously, they were accepted and processed as non-HTTP). Processing for all non-HTTP requests must now be carried out under the USER protocol, so that they are protected from the basic acceptance checks which CICS carries out for requests using the HTTP protocol. The requests are flagged as non-HTTP and passed unchanged to the analyzer program for the TCPIP SERVICE. CICS Web support facilities are used for handling the request, but no acceptance checks are carried out for messages sent and received using this protocol.

Note: Because only one active TCPIP SERVICE definition can exist for each port, non-HTTP requests can no longer use the same port as HTTP requests. The well-known port numbers 80 (for HTTP) and 443 (for HTTPS) must have the HTTP protocol and therefore cannot accept non-HTTP requests. Web clients must specify any changed port in the URL for their requests.

- **Check the settings for your TCPIP SERVICE resource definitions with the HTTP protocol.**
 1. The SOCKETCLOSE attribute must no longer have a zero setting (SOCKETCLOSE(0)).
 - A zero setting for SOCKETCLOSE means that CICS closes the connection immediately after receiving data from the Web client, unless further data is waiting. This means that persistent connections cannot be maintained.
 - A non-zero setting for SOCKETCLOSE enables persistent connections with both HTTP/1.1 clients, and HTTP/1.0 clients (where the client supports this).
 2. The new MAXDATALEN option should be specified to limit the maximum length of data that may be received by CICS as an HTTP server. This setting helps to guard against denial of service attacks involving the transmission of large amounts of data.
- **Choose what to do with the new XRES system initialization parameter, which sets resource security for document templates.** For XRES, YES is the default setting, and in this case CICS uses the default class names RCICSRES and WCICSRES. If security checking is active for the CICS region (SEC=YES system initialization parameter), your choices are:
 - Specify XRES=NO explicitly if you want to remove resource security for document templates, and allow any user ID to access them. If you specify XRES=NO you do not need to make any security changes.
 - Specify XRES=YES (the default).

- Specify `XRES=name` and define your own resource classes in either the RACF static class descriptor table or the RACF dynamic class descriptor table.
- If you decide to specify `XRES=YES` or `XRES=name`, follow the instructions in “Migrating to resource security for CICS document templates and z/OS UNIX files” on page 185.

When CICS is being initialized, it requests RACF to bring resource profiles into main storage to match all the resource classes that you specify on system initialization parameters. If CICS requests RACF to load a resource class that does not exist or is not correctly defined, CICS issues a message indicating that external security initialization has failed, and terminates CICS initialization.

- **Choose what to do with the new XHFS system initialization parameter, which specifies access control for z/OS UNIX files.** For XHFS, YES is the default setting, which means that access control for z/OS UNIX files is active. If security checking is active for the CICS region (`SEC=YES` system initialization parameter), your choices are:
 - Specify `XHFS=NO` explicitly if you want to remove access control for z/OS UNIX files, and allow any user ID to access them. If you specify `XHFS=NO` you do not need to make any security changes.
 - Specify `XHFS=YES` (the default). Access permissions for z/OS UNIX files are specified in z/OS UNIX System Services, so you do not need to define RACF profiles for individual files. However, if you are using access control lists (ACLs) to control access to z/OS UNIX files, you need to activate the FSSEC class in RACF. If you decide to specify `XHFS=YES`, follow the instructions in “Migrating to resource security for CICS document templates and z/OS UNIX files” on page 185.
- **The analyzer program now allows you to supply codepage conversion parameters to CICS Web Support instead of supplying the name of a DFHCNV table entry.** If you want to continue to use an analyzer program that you coded in an earlier CICS release to reference DFHCNV, you must either continue to supply the entries in the code page conversion table, or change the analyzer program. Changing the analyzer program involves coding two new output parameters to specify the client and server code pages, in place of the output parameter that specified the name of a DFHCNV entry.
- **If you use a code page other than 037 (the EBCDIC Latin character set) in your CICS Web support applications, use the LOCALCCSID system initialization parameter to specify this code page.** The LOCALCCSID system initialization parameter supplies the code page into which CICS converts inbound HTTP headers and query strings, including form data transmitted in a query string. Before CICS Transaction Server for z/OS, Version 3, the code page for this conversion was specified by the DFHWBHH template in the DFHCNV code page conversion table. You can set the LOCALCCSID system initialization parameter to any EBCDIC code page into which the ASCII Latin-1 character set ISO-8859-1 (code page 819) can be converted. If LOCALCCSID is set to an unsuitable code page, CICS uses the default 037 for inbound HTTP headers and query strings.
- **CHARACTERSET and HOSTCODEPAGE options for the GET and POST methods are now the same, and in certain circumstances, you will now receive data in your local CCSID.** The CHARACTERSET (previously CLNTCODEPAGE) and HOSTCODEPAGE options will now take effect for forms submitted with the GET method as well as the POST method, and the defaults will be the same in both cases. This means that if the form uses the POST method and you do not specify the HOSTCODEPAGE option, and your

LOCALCCSID initialization parameter is not 037, you will receive your data in your local CCSID, instead of CCSID 037 (the default EBCDIC code page). To specify 037 as the host code page, you must either change your LOCALCCSID parameter to 037, or modify your application to explicitly use "037".

- **There are certain considerations for code page conversion to take place when using buffers (with either the INTO or SET option specified).** If you are receiving data into a buffer, and CHARACTERSET and CLICONVERT are not specified, the media type for the message must specify text as the data content type (according to the IANA definitions) for code page conversion to take place. For messages where no media type is given, but CLICONVERT is specified, code page conversion also takes place. If a non-text media type is present, CICS does not convert the message body.
- **If you have modified the user-replaceable Web error program DFHWBEP to customize the HTTP responses provided in error situations, be aware that CICS now uses additional status codes, and uses some existing status codes in a wider range of situations.**
 1. Check that your program is using an appropriate range of input parameters to identify the situation to which the customized response applies, rather than relying on the status code alone. The error code, abend code, message number, response and reason codes, or program name can be used to identify the situation that has given rise to the HTTP response. If these checks are not made, you might find that where CICS is using the status code for a new purpose, an inappropriately customized response is returned.
 2. Check that your program includes logic to pass through unchanged any HTTP responses with status codes that are not known to the program.
- **If you are using the SSL or TLS security protocols, check your SSL-related system initialization parameters and TCPIP SERVICE resource definitions.**
 1. The default setting for the ENCRYPTION system initialization parameter has changed to STRONG. If you have no high encryption ciphers installed (security level 3) on z/OS, then you need to downgrade the default setting for the ENCRYPTION system initialization parameter. The NORMAL setting that was used as the default in earlier releases, has changed to MEDIUM. For migration purposes, NORMAL is accepted as an alternative to MEDIUM.
 2. The SSLTCBS system initialization parameter is now obsolete and has been replaced by MAXSSLTCBS. MAXSSLTCBS controls the maximum number of S8 TCBs that are allowed to run concurrently in the open transaction environment (OTE) TCB pool for SSL.
 3. You can use the new CRLSERVER and SSLCACHE system initialization parameters to verify certificates in the SSL handshake and improve the performance of the handshake through sharing the SSL cache across CICS regions.
 4. You can use the new CIPHERS option on TCPIP SERVICE resource definitions to specify a list of cipher suite codes for use with SSL or TLS. The PRIVACY attribute of the TCPIP SERVICE resource definition changes to reflect the CIPHERS attribute value.

Suggestions for migrating to the new enhancements

CICS Web support has many enhancements to provide automatic and administrator control of functions that were previously handled by user-replaceable programs. In particular, you are recommended to investigate migration possibilities for the following elements of your CICS Web support architecture:

- You should usually be able to replace the request processing functions of your analyzer program with URIMAP resource definitions, which can be changed and

controlled using CICS system programming commands. URIMAP definitions can be used to match the URLs of requests and map them to application programs, and specify a converter program, alias transaction and user ID. If your analyzer program provides additional functions, you can continue to use it instead of a URIMAP definition, or you can combine it with a URIMAP definition. While migrating to the use of URIMAPs:

1. You can introduce URIMAP resource definitions progressively for a small number of requests at a time. Depending on the type of processing carried out by your analyzer program, and the type of application that handles the request, you can choose whether or not to continue using the analyzer program in the processing path for each request.
 2. You might prefer to select and publish new URLs for requests handled by URIMAP resource definitions, rather than retaining your existing URLs. When you are ready to discontinue the use of the old processing path for a request, you can set up a URIMAP definition to permanently redirect requests from the old URL to the new URL.
 3. Ensure that your analyzer program still contains basic handling procedures for unrecognized requests, even if it is no longer involved in the processing path for any requests. The analyzer program is still required on the TCPIP SERVICE definition, and receives requests in situations such as the end user mis-typing a URL.
- For application programs that do not use the EXEC CICS WEB API commands but produce an HTTP response in a block of storage, CICS Web support is not able to assist with assembling the message structure correctly, or to carry out its full range of checks on the response. To take advantage of all the available CICS Web support facilities, it is recommended that you plan to convert these applications to use the WEB API commands. You can now use the WEB API commands in converter programs and in the user-replaceable Web error program DFHWBEP, which enables you to migrate with minimal disruption to your existing CICS Web support architecture. If you use DFHWBEP, you must specify ACTION(IMMEDIATE) in your command, as the default of ACTION(EVENTUAL) is not permitted.
 - URIMAP resource definitions can be used to deliver the contents of a CICS document or z/OS UNIX file as a static response, or to deliver a redirection response, without involving a user-written application program. You could consider using this mechanism, instead of an application program, for simple responses that do not involve dynamic processing.
 - Check that code page conversion is operating in the most efficient way. With minor changes to your application, you can take advantage of new CICS Web support facilities to:
 - Avoid setting up and using a code page conversion table (DFHCNV) for CICS Web support.
 - Allow CICS to identify and use the Web client's character set for code page conversion, rather than specifying this yourself.
 - Use the local system default (LOCALCCSID system initialization parameter) to identify the application program's code page, rather than specifying this yourself.
 - Convert to and from the UTF-8 and UTF-16 character sets.

In some cases, making these changes could enable you to discontinue the use of an analyzer program.

Migrating to resource security for CICS document templates and z/OS UNIX files

If you decide to specify the system initialization parameters XRES=YES, XRES=*name*, or XHFS=YES, follow these instructions. XRES=YES and XHFS=YES are the defaults.

- If you decide to specify XRES=YES or XRES=*name* to activate resource security for CICS document templates, check the RESSEC attribute in the TRANSACTION resource definitions of any transactions in your CICS region which access document templates. This could include:
 - CEMT, and any other transactions that include EXEC CICS CREATE, DISCARD or INQUIRE DOCTEMPLATE commands.
 - CWXN, if you are using URIMAP definitions to provide static responses from CICS Web support.
 - Alias transactions for CICS Web support application programs. (CWBA is the default alias transaction.)
 - Transactions for other application programs that use EXEC CICS CREATE or INSERT DOCUMENT commands with the TEMPLATE option.

If RESSEC=YES is specified for any of these transactions, you need to give the user IDs for the transaction permission to use the appropriate document templates. ALTER permission is required to create or discard document templates, and READ permission is required for all other uses (including the API commands DOCUMENT CREATE and DOCUMENT INSERT).

Note: You cannot change the RESSEC attribute for CICS-supplied transactions in the CICS-supplied RDO groups. If you want to change this attribute, you need to copy the definitions to your own group, where you can change the attribute. CEMT is in group DFHOPER, and CWBA and CWXN are in group DFHWEB.

- In the resource classes that are specified by your XRES system initialization parameter, supply RACF profiles for all the CICS document templates used by transactions with RESSEC=YES in your CICS region.
 1. Make sure you use the correct profile name for the CICS document templates. You need to use the name of the DOCTEMPLATE resource definition (and not the 48-character TEMPLATENAME attribute which is used by EXEC CICS commands), prefixed by the resource type DOCTEMPLATE.
 2. Make sure you give permission to the correct user IDs. For CICS Web support, the user ID associated with the transaction can vary depending on your CICS Web support architecture. User IDs for access to document templates and z/OS UNIX files used by CICS Web support has more information.
- If you decide to specify XHFS=YES to activate access control for z/OS UNIX files, follow the instructions in Implementing security for z/OS UNIX files to allow Web clients to access these files.

You do not need to check the RESSEC attribute in the TRANSACTION resource definition of the transactions that access the files. If XHFS=YES is specified as a system initialization parameter for the CICS region, all z/OS UNIX files used by CICS Web support as static responses are normally subject to security checking, regardless of the RESSEC attribute for the transaction that is accessing them.

As an exception, where z/OS UNIX files are defined as CICS document templates and used in that way (for example, by applications), resource security for CICS document templates (specified by the XRES system initialization

parameter) controls access to them for users. In this situation, you do not need to set up resource security in z/OS UNIX System Services for the files. (However, the CICS region user ID always needs to have **read** permissions to z/OS UNIX files, even if they are defined as document templates.)

Chapter 29. Migration for CICS Web services

If you have used CICS Web services in earlier releases, note these migration points.

Migration for the Web services assistants

The Web services assistant batch jobs DFHWS2LS and DFHLS2WS both require a certain amount of memory to create Web service binding files.

The amount of memory required has increased to enable the Web services assistants to process large and complex Web service descriptions. As a result, the region size must now be at least 200 MB. You can either increase the size accordingly or set the region size to 0M.

If you redeploy your existing Web services in a CICS TS 3.2 region, the regenerated Web service binding files are slightly larger in size.

Migration for MTOM/XOP support

MTOM/XOP support is provided as an optional set of elements in the pipeline configuration file.

If you want to enable your pipeline to take advantage of the MTOM/XOP support, you should be aware that:

- If you use your own application handler rather than the default that is provided by CICS Web services support, the pipeline processes MTOM messages in compatibility mode. You must specify DFHPITP as the application handler in your pipeline configuration file if you want the pipeline to process MTOM messages in direct mode.
- If you use the default CICS Web services application handler, the pipeline processes MTOM messages in direct mode. You should ensure that your message handlers can still run successfully when processing containers that hold XOP documents and binary attachments.
- You should only configure the attribute `send_mtom="yes"` in a provider pipeline configuration file when you are sure that all of your Web service requesters are capable of receiving MTOM messages. The default value is `send_mtom="same"`, where MTOM messages are only sent when an MTOM message is received.

If you enable MTOM/XOP support in your pipeline, you can retrieve the options that you have specified by using the INQUIRE PIPELINE command.

Chapter 30. Migrating to the XPLINK option for C and C++ programs

To continue running your C and C++ programs without exploiting the XPLINK option of the compiler, no action is needed. To exploit the XPLINK option with C and C++ programs, you might have to make changes to your existing applications or configuration.

1. Ensure that your C or C++ program is reentrant, and threadsafe, or modify it so that it conforms to these standards. Chapter 27, “Migration for threadsafe programming and the open transaction environment (OTE),” on page 173 has more information about this.
2. If your program uses the XPCFTCH or XPCTA exits, take note of the advice in “Global User exits and XPLink” in the *CICS Application Programming Guide*:
 - CICS disregards any attempt by XPCFTCH to modify the entry point.
 - CICS disregards any attempt by XPCTA to define a resume address.

This is because the batch Language Environment runtime used for XPLink programs does not give control to CICS when a program abends, but goes through its own abend handling. When control reaches CICS, the Language Environment enclave has terminated, so CICS is unable to honor an entry point address or a resume address. You must find other ways to manage such requirements, or conclude that this program is not a suitable candidate for XPLINK optimization. One possible solution is to write a Language Environment abnormal termination exit, as described in “Customizing user exits” in the *z/OS Language Environment Customization* manual.

3. Recompile the program using the XPLINK compiler option.
4. Update the concurrency attribute of the PROGRAM resource definition for this program, setting the value to threadsafe.

Part 3. Changes to CICSplex SM externals

Chapter 31. Changes to CICSplex SM installation and definition

This section summarizes the changes to CICSplex SM installation, initialization parameters, resource definition, and setup.

CICSplex SM installation integrated with CICS installation

You can now edit the DFHISTAR job to modify both the CICS and CICSplex SM installation parameters for your environment. EYUISTAR is no longer available as a job to modify CICSplex SM installation parameters.

DFHISTAR produces customized JCL for CICS and CICSplex SM. It now includes a number of parameters that are significant only for CICSplex SM, a number of parameters that are significant only for CICS, and a number of parameters that are common to CICS and CICSplex SM.

For CICSplex SM, DFHISTAR generates sample JCL procedures to:

- Create CMAS data sets
- Start a CMAS
- Create Web User Interface (WUI) data sets
- Start a WUI
- Create MAS data sets
- Run a MAS
- Move MAS modules to the link pack area (LPA)

These procedures enable you to create a simple CICSplex SM configuration that consists of a CMAS, a WUI and a managed CICS system (MAS). The CICSplex SM Starter Set, which contained samples of JCL for this purpose, is no longer provided.

Removal of the CAS

Because of the removal of the CICSplex SM TSO end user interface (EUI), you no longer need to set up and use a CAS (coordinating address space) to support a CICS Transaction Server for z/OS, Version 3 Release 2 CMAS (CICSplex SM address space).

Any attempt to run EYUCAS JCL to start a CAS results in an abend. The removal of the CAS means that there are no CAS-related data sets to install and no CAS to CAS links to configure. This allows the installation of CICSplex SM to be simplified and streamlined.

Any attempt to run CMAS startup JCL from previous releases will fail because of the references to obsolete components. All data sets beginning with the characters BB are now obsolete, and the CAS initialization program BBM9ZA00 is no longer included in the EYUAUTH library.

The CICSplex SM system parameter CASNAME identified the CAS subsystem with which a CMAS was associated. This parameter was specified by means of the extrapartition transient data queue COPR assigned to the extrapartition transient data queue EYUPARM. With the removal of the CAS, this parameter is no longer

valid. Any attempt to specify CASNAME now results in the invalid parameter message EYUXL0206E. The CASNAME parameter is still valid for CICSplex SM configurations prior to CICS Transaction Server for z/OS, Version 3 Release 2.

Datasets *.SEYUADEF, *.SEYUVDEF, and *.SEYUJCL, which were supplied in previous releases to support the EUI, are not shipped as part of CICS Transaction Server for z/OS, Version 3 Release 2.

All EUI and CAS-related messages and abend codes have been removed. This includes messages that begin with the prefix BB, unnumbered ISPF messages, and all Uxxxx abend codes. CAS IPCS dialogs and IPCS CICS VERBEXIT keyword are now obsolete.

The XLEC transaction, which was used to connect a CMAS to a CAS, is obsolete.

Message EYUXL0008I has been removed. The message EYUXL0008I applid CICSplex registration complete was the final message issued for a successful CMAS startup.

The final message for a successful CMAS startup is now: EYUXL0010I applid CMAS registration complete.

Dynamic creation of CICS resource definitions for CICSplex SM

The additional CICS resource definitions specifically required to run CICSplex SM CMAS, WUI and MAS are now created dynamically during initialization and when a CICSplex SM system is started by a transaction. You no longer need to manipulate the CICS CSD to obtain the default resource definitions. The CICSplex SM Starter Set, which contained samples of CICSplex SM definitions, is no longer provided.

This removes complexity from the CICSplex SM installation process. There is no longer the need to run CSD UPGRADE jobs for your CMASes, WUIs, and MASes, and then use the lists and groups produced by the upgrade in the startup of these systems. The CSD UPGRADE process can be particularly complex where a CSD is shared across CICS releases.

Note: You must run CSD UPGRADE jobs for CICS. For details about upgrading the CICS resource definitions, see “Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions” on page 120. For information about sharing CSDs across CICS releases, see “CSD compatibility between different CICS releases” on page 123.

You continue to have the facility to alter certain CICSplex SM definition properties:

- EYUPARMs COIRTASKPRI, COHTTASKPRI, MASALTLRTPRI, and TASKPRIORITY are available to set priorities for certain CICSplex SM transactions.
- You can use the CICS system initialization parameters LPA and PRVMOD to control whether to search the LPA for CICSplex SM modules.

If you want to change any other properties, you can include modified definitions on the CSD.

CICS autoinstalls the initial CICSplex SM programs for a CMAS, MAS, and WUI.

New method for WUI and CICSplex definition

The EYU9XDUT CICSplex definition utility can provide the CICSplex SM definitions to start a WUI and CICSplex as part of data repository initialization. You would previously have had to use the end user interface or a batch utility to create these definitions.

The utility optionally creates the following CICSplex SM definitions:

- CPLEXDEF, CICSplex definition
- CPLXCMAS, CMAS in CICSplex
- PLEXCMAS, plex descriptor for the maintenance point CMAS
- CMASCPLX, CMAS in CICSplex
- CSYSDEF, CICS system definition for the WUI

The CMAS SYSID is the basis for the WUI plex name and the WUI name but you can override these using the WUIPLEX and WUINAME parameters in DFHISTAR. The WUI parameter in DFHISTAR specifies whether a WUI is to be created (the default is to create a WUI).

New CICSplex SM WUI server initialization parameters

CICSplex SM Web User Interface server initialization parameters can be specified in the start-up job or in a fixed block 80 data set.

New initialization parameters in CICS Transaction Server for z/OS, Version 3 Release 2

AUTOIMPORTDSN(*dsn_name*)

Specifies the name of the data set containing IBM-supplied view and menu definitions. Currently the supplied set of WUI view and menu definitions are in the SEYUVIEW data set. If you specify a TDQ name, you must specify the name of a data set member using the AUTOIMPORTMEM parameter.

AUTOIMPORTMEM(*member_name*)

Specifies the name of the data set member or members containing the specific IBM-supplied view and menu definitions you want to import. You can use an asterisk at the end of the input string to specify a group of data set members; for example EYUEA* would import all English language menus and view sets.

DEFAULTMAPBAS(*name* | EYUSTARTMAPBAS)

Specifies the name of the map object used to generate maps of business application services definitions.

DEFAULTMAPCOLL(*value* | 0)

Specifies the number of rows in a generated map below which a map opens in the expanded state. If the number of rows to be displayed is above this number, the map opens in a fully collapsed state. The default value of 0 means that in every generated map all of the rows are visible when opened.

DEFAULTMAPMON(*name* | EYUSTARTMAPMON)

Specifies the name of the map object used to generate maps of monitoring definitions.

DEFAULTMAPRTA(*name* | EYUSTARTMAPRTA)

Specifies the name of the map object used to generate maps of real-time-analysis definitions.

DEFAULTMAPWLM(name | EYU9XDBT)

Specifies the name of the map object used to generate maps of workload management definitions.

New EYU9XDBT utility for CMAS and CICSplex definition

You can use the new EYU9XDBT utility to perform all CMAS and CICSplex definition activities once the basic CMAS environment has been established. You specify the required CICSplex names in some simple parameter, and the utility sets up the definitions for you.

You can use the utility for:

- Defining and removing CICSplexes to and from a CMAS.
- Defining and removing CICS regions to and from a CICSplex.
- Defining and removing CICS groups to and from a CICSplex.
- Adding and removing CICS regions to and from CICS groups.
- Importing, printing or exporting CICSplex SM objects defined to CMAS or CICSplex contexts.

Change to Common Work Area size for a CMAS

The size of the Common Work Area has increased to 2048 bytes. The Common Work Area size is specified by the CICS system initialization parameter WRKAREA.

For a complete list of CICS system initialization parameters for a CMAS, see in the *CICS Transaction Server for z/OS Installation Guide*.

Changes with RASGNDEF processing in CICSplex SM

The change described in this topic was implemented through APARs for previous releases of CICSplex SM. If the version of CICSplex SM from which you are migrating does **not** have the PTF for the APAR applied, then changes could occur in the way PROGDEFs and TRANDEFs are installed through RASGNDEFs (resource assignment definitions).

The relevant APARs for previous releases of CICSplex SM are:

- CICSplex SM Release 4: APAR PK15477
- CICSplex SM Version 2.2: APAR PK17773
- CICSplex SM Version 2.3: APAR PK17773
- CICSplex SM Version 3.1: APAR PK17787

If a PROGDEF or TRANDEF is automatically installed through a RASGNDEF that specifies a USAGE of REMOTE and a MODE of STAT, then the REMOTESYSTEM used when the PROGDEF or TRANDEF is installed in the target system will be the CICS system ID (SYSIDNT) of the related system. In versions of CICSplex SM that did not have the equivalent PTF applied, if the PROGDEF or TRANDEF specified a REMOTESYSTEM, or the RASGNDEF override specified a REMOTESYSTEM, this would be used.

You need to ensure that all BAS definitions are updated to tolerate this change before migrating to CICSplex SM Version 3.2.

Table 33 illustrates the differences in processing from versions of CICSplex SM where the PTF for the APAR is not applied. CICA is the actual SYSIDNT of the target system. CICB is the actual SYSIDNT of the related system.

Table 33.

PROGDEF or TRANDEF REMOTE-SYSTEM	RASGNDEF USAGE	RASGNDEF MODE	RASGNDEF REMOTE-SYSTEM OVERRIDE	Target REMOTE-SYSTEM <i>without</i> PTF applied	Target REMOTE-SYSTEM <i>with</i> PTF applied
none	REMOTE	STAT	none	CICB	CICB
none	REMOTE	STAT	CICX	CICX	CICB (1)
CICZ	REMOTE	STAT	none	CICZ	CICB (1)
CICZ	REMOTE	STAT	CICX	CICX	CICB (1)
none	REMOTE	DYNAM	none	CICA	CICA (2)
none	REMOTE	DYNAM	CICX	CICX	CICX
CICZ	REMOTE	DYNAM	none	CICZ	CICZ
CICZ	REMOTE	DYNAM	CICX	CICX	CICX

Note:

- Note the difference from versions of CICSplex SM where the PTF for the APAR is not applied.
- CICSplex SM BAS does not provide a value for this during install. CICS defaults to the target system's SYSIDNT.

Changes to CICSplex SM MAS system dump and transaction dump codes

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, this change applies. When the CICSplex SM MAS agent starts, it automatically adds one CICS TRANDUMPCODE (TRANDUMP) entry for transaction dump code 'EYUN' and two SYSDUMPCODE (SYSDUMP) entries for system dump codes 'EYU0XZPT' and EYU0XZSD'. These codes enable you to use the ADD action from the EYU0XZPT and EYU0XZSD Web User Interface view sets to add your own TRANDUMP or SYSDUMP entries.

Changes to CMAS journaling

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, three new fields have been added to the EYUBCPJR DSECT.

- Two new fields have been added to CPJR_DEF_DATA:
 - CPJR_DEF_MAJORVR**
Major version
 - CPJR_DEF_MINORVR**
Minor version
- A new field has been added to CPJR_OPS_DATA:
 - CPJR_ACTION**
Name of action

CPJR_ACTION replaces CPJR_OPSTYPE which has been removed.

The EYUBCPJR DSECT is described in in the *CICS Transaction Server for z/OS Installation Guide*.

Change to generic alert structures used by CICSplex SM

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2, there is a change to SNA generic alerts and resolutions as they are used by CICSplex SM. “Product Set ID” (X’10’) MS common subvector is a “Product ID” (X’11’) common subvector that identifies the product as IBM Software (X’04’). It contains a “Product Number” (X’08’) Product ID subfield that identifies the product number. This has changed from 5695081 to 5655M15.

Chapter 32. Changes to CICSplex SM views and resource tables

This section summarizes the changes affecting CICSplex SM views, resource tables, and Business Application Services definition objects.

Removal of the CICSplex SM TSO end user interface (EUI)

With the new enhancements to the CICSplex SM Web User Interface (WUI) functionality and provision of the EYU9XDBT batch facility, the CICSplex SM WUI now provides the ability to perform the CICS management tasks supported by the CICSplex SM TSO end user interface (EUI). As previously announced, the EUI has therefore been removed from CICS Transaction Server for z/OS, Version 3 Release 2.

All of the functionality of the MVS/TSO ISPF end user interface has been removed. This includes all associated views, panels, menus and action commands, together with the supporting CAS and all PlexManager functions. Equivalent functionality is available solely via the CICSplex SM Web User Interface. Note there is no WUI equivalent function for the temporary maintenance point CMAS function of the EUI.

With the removal of all EUI-related components, the entire CICSplex SM installation process has been redesigned to make it an integral part of the installation of CICS Transaction server. See “CICSplex SM installation integrated with CICS installation” on page 193.

New data type SCLOCK12

The new data type SCLOCK12 is introduced in CICS Transaction Server for z/OS, Version 3 Release 2.

SCLOCK12

CICS monitoring facility (CMF) 12 byte interval store clock. Maintained internally as a binary value.

The first 8 bytes contain the time accumulated by the clock, and they are displayed externally as a formatted value, with the default format HHHH:MM:SS.thmiju (where *t* is tenths of seconds, *h* is hundredths of seconds, *m* is milliseconds, *i* is ten-thousandths of seconds, *j* is hundred-thousandths of seconds, and *u* is microseconds).

The last 4 bytes contain a count of the measurement periods during which the time was accumulated. The count can be displayed externally by selecting the count formatting option for the attribute.

EXEC CPSM API programs have access to the entire internal SCLOCK12 data value, but REXX applications only have access to the first 8 bytes containing the time.

When specified in an RTA EVALDEF, the last 4 bytes containing the count are not available. The other data must be entered in one of the following formats, with leading zeros, if necessary:

1. HH:MM:SS
2. HH:MM:SS.thmi
3. HHHH:MM:SS.thmi
4. HHHH:MM:SS

5. HHHH:MM:SS.thmiju

Only the first **three** of these formats are compatible with earlier releases of CICSplex SM. If you need to use an EVALDEF involving SCLOCK12 data with an earlier release of CICSplex SM, do not use format 4 or 5. This applies to EVALDEFs installed directly on a back-level CICSplex SM system, and also to EVALDEFs installed as part of a batched repository update job (BATCHREP) or using the EYU9XDBT utility. For more information about clocks see the *CICS Performance Guide*.

The numeric value representing the internal data type for SCLOCK12 is 152.

Like the existing data type SCLOCK (the 8 byte interval store clock), the new data type SCLOCK12 can be used as a filter on the DATA/GET command, and it can be used when specifying summary expressions.

In views, SCLOCK12 is treated in the same way as SCLOCK. The time can be displayed in a number of different formats, and the count of measurement periods can also be displayed.

Resource table attributes converted to SCLOCK12 data type

Some resource table attributes that had the data type SCLOCK have been converted to the new data type SCLOCK12. The resource tables in which attributes have been converted are:

- TASK
- HTASK
- TASKRMI

Where a count of measurement periods was available for the SCLOCK data type before conversion, it is also available for the SCLOCK12 data type after conversion.

Application programs must be recompiled if they extract data from these resource tables using EXEC CPSM GET commands, Web User Interface server DATA/GET commands, or REXX TPARSE and TBUILD commands.

New time formatting options for clock data in CICSplex SM views

Attributes with the data type SCLOCK12, which use the 12 byte CMF interval store clock, can be displayed in any of the time formats. For attributes with the data type SCLOCK (the 8 byte store clock), you can only use certain time formats.

In the time formats that include fractions of a second, t is tenths of seconds, h is hundredths of seconds, m is milliseconds, i is ten-thousandths of seconds, j is hundred-thousandths of seconds, and u is microseconds.

The time formats are:

- HHHH:MM:SS.thmiju, which shows a 4 digit count for hours, and displays the time to 6 decimal places (down to one microsecond). This is the default format for the data type SCLOCK12. It is not available for SCLOCK. This format is the same as the format used in the CICS statistics reports.
- DDD.HH:MM:SS.thmiju, which shows a count for days, and displays the time to 6 decimal places (down to one microsecond). This format is available for the data type SCLOCK12. It is not available for SCLOCK.

- HH:MM:SS.thmi, which shows a 2 digit count for hours, and displays the time to 4 decimal places (down to one ten-thousandth of a second). This is the default format for the data type SCLOCK, and it is also available for SCLOCK12.
- HH:MM:SS, which shows a 2 digit count for hours, and no decimal places. This format is available for both the data types SCLOCK and SCLOCK12.

The longer time formats hhhh:mm:ss.thmiju and ddd.hh:mm:ss.thmiju are new.

Choose one of the longer time formats for larger time values, such as those for long-running tasks, or for time values where you need maximum precision.

For attributes with the data types SCLOCK12 and SCLOCK, you can also display a count. The count is taken from the last 4 bytes of the clock data. It gives the number of measurement periods during which the time recorded by the timer component of the clock was accumulated.

You can use the CICSplex SM Web User Interface view editor to customize your views to use the new time formats. You can edit view components from the **Tabular View Components** screen (select the **Table contents** option on that screen) or the **Detailed Form Components** screen (select **Form contents**). On the **Table contents** or **Form contents** screen, click **Append** or **Insert** to see the list of available view items. If the new time formats are available for an attribute in the view, the list displays the attribute with the new time formats, as well as with the old formats. Select the attribute with an appropriate time format to add it to your view. Then delete the attribute with the old time format from your view.

Changes to CICSplex SM Web User Interface security

In CICS TS for z/OS, Version 3.2 you can use your external security manager to control user access to views, menus, help information and the View Editor. In order to do this you need to create an appropriate profile in the FACILITY class.

The following ESM FACILITY profiles are available:

EYUWUI.wui_server_applid.VIEW.viewsetname
Used to protect view sets.

EYUWUI.wui_server_applid.MENU.menuname
Used to protect menus.

EYUWUI.wui_server_applid.HELP.helpmembername
Used to protect help pages.

EYUWUI.wui_server_applid.EDITOR.
Used to protect the View Editor..

wui_server_applid is the CICS APPLID of the server.

Users can be given read or update access to views and menus:

- Read access allows users to use the views or menus in the main interface. This enables you to prepare and protect views for specific user groups.
- Update access allows users to create, update or remove items in the view editor or import using COVC. This enables you to open the view editor to more users, while restricting the view sets and menus that individuals can modify.

If the ESM that you are using neither grants nor refuses access to a profile (for example, if no RACF profile is defined), all users who are successfully signed on to

the Web User Interface have access to the resources. You can make not authorized the default by setting up a generic profile.

Note: This security is designed to protect the views and menus themselves and not the objects they manage, which is covered by normal CICSplex SM security.

Obsolete CICSplex SM views, resource tables and attributes

These CICSplex SM views and resource tables have had certain functions removed, or have been removed completely, because of changes to CICS resource types and functions.

In the operations view **Enterprise Java component operations views > Java virtual machine (JVM) pool**, the field "Number of JVM requests with JVM reset" is displayed as "Not applicable" for CICS Transaction Server for z/OS, Version 3 Release 2 regions. The corresponding SJGREQSRESET attribute in the JVMPOOL resource table returns "Not applicable" for CICS Transaction Server for z/OS, Version 3 Release 2 regions.

In the operations view **Enterprise Java component operations views > Java virtual machine (JVM) profile**, the fields "Number of CICS key JVMs not resettable" and "Number of USER key JVMs not resettable" are displayed as "Not applicable" for CICS Transaction Server for z/OS, Version 3 Release 2 regions. The corresponding CJVMSUNRESET and UJVMSUNRESET attributes in the JVMPROFILE resource table return "Not applicable" for CICS Transaction Server for z/OS, Version 3 Release 2 regions.

In the Business Application Services (BAS) view **Administration views > Basic CICS resource administration views > CICS resource definitions > Program definitions**, and the operations view **Program operations views > Programs**, the HOTPOOLING attribute is not valid from CICS Transaction Server for z/OS, Version 3 Release 1

In the Business Application Services (BAS) view **Administration views > Basic CICS resource administration views > CICS resource definitions > Terminal definitions**, the CONSOLE attribute is not valid from CICS Transaction Server for z/OS, Version 3 Release 1.

The monitor view EYUSTARTMJOURNAL was removed in CICS Transaction Server for z/OS, Version 2 Release 3. You should review your applications and remove references to this obsolete resource.

The FEPI resources FEPOOL, FENODE, and FETRGT can no longer be installed from operations views, and the install action has been removed from the FEPI operations views. These resources can only be installed from the Business Application Services (BAS) FEPI resource definitions.

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, these resource tables have been removed because they are obsolete:

- DSKJRNL
- JOURNAL
- JRNLDEF
- JRNINGRP
- SMFJRNL

- TAPEJRNL
- VOLUME
- XTASK

CICSplex SM resource tables no longer supported in CICS Transaction Server for z/OS, Version 3 Release 2

As previously announced, a number of CICSplex SM resource tables are no longer supported in CICS Transaction Server for z/OS, Version 3 Release 2. The information in them has migrated to other tables.

The unsupported resource tables are XDSPGBL, XDSPPOOL, XJVMPOOL, XLSRPBUF, XMONITOR, XPROGRAM, XSTREAM, XTASK, and X2TASK.

The information they contained is available in other resource tables as follows:

XDSPGBL	DSPGBL
XDSPPOOL	DSPPOOL
XJVMPOOL	JVMPOOL
XLSRPBUF	LSRPBUF
XMONITOR	MONITOR
XPROGRAM	PROGRAM
XSTREAM	STREAMNM
XTASK	TASK
X2TASK	TASK

Edit and recompile your CICSplex SM API programs to use the equivalent supported resource table. Before you migrate to CICS TS 3.2, recreate your WUI views and update your RTA definitions (EVALDEFs) to use the equivalent resource table on your earlier release.

Changed CICSplex SM views and resource tables

These existing CICSplex SM views and resource tables have been changed to support new or changed CICS resource types and functions.

Map function for resource definitions

All IBM-supplied tabular and detail views that display resource definitions now include a map button. The map function is invoked by clicking this button. It generates a visual representation of the associations between CICS resource definitions defined to CICSplex SM for the selected resource. The map function is equivalent to the CICSplex SM end user interface MAP command in releases of CICS TS where the EUI was provided.

Changed CICSplex SM views

Table 34. Changed CICSplex SM views

Changed CICS resource type or function	Corresponding CICSplex SM views which have changed
CICS region information	CICS operations views > CICS region operations views > CICS regions
CorbaServer functions	CICS operations views > Enterprise Java component operations views > CorbaServers

Table 34. Changed CICSplex SM views (continued)

Changed CICS resource type or function	Corresponding CICSplex SM views which have changed
Debugging profiles	CICS operations views > CICS region operations views > CICS regions
Delay times for change mode and SSL TCBs	CICS operations views > Task operations views > Active tasks
Document template statistics and refresh (newcopy) function	CICS operations views > Document template operations views > Document template
Document deletion	CICS operations views > Task operations views > Active tasks History views > Completed tasks > task item > Request counts
Document templates in HFS files	CICS operations views > Document template operations views > Document template Administration views > Basic CICS resource administration views > Resource definitions > Document template definitions
Enterprise bean functions	CICS operations views > Enterprise Java component operations views > Enterprise beans in CorbaServers CICS operations views > Enterprise Java component operations views > Enterprise beans in CICS-deployed JAR files
ISC and MRO statistics	CICS operations views > Connections operations views > ISC and MRO connections
Java programs: use count and JVM profile	CICS operations views > Program operations views > Programs
JVMs: manual start up, and changes to termination	CICS operations views > Enterprise Java component operations views > Java virtual machine (JVM) pool
JVMs: tracing and shared class cache	CICS operations views > Enterprise Java component operations views > Java virtual machine (JVM) pool
JVMs: withdrawal of resettable mode	CICS operations views > Enterprise Java component operations views > Java virtual machine (JVM) pool CICS operations views > Enterprise Java component operations views > Java virtual machine (JVM) profile CICS operations views > Enterprise Java component operations views > Java virtual machine (JVM) status CICS operations views > Enterprise Java component operations views > JVM Class Cache status
LIBRARY resources	CICS operations views > Program operations views > Program
Local files	Local files > File ID
MVS workload manager statistics	CICS operations views > CICS region operations views > MVS workload management
Program resources	CICS operations views > Program operations views > Programs
Storage information for MVS TCBs	CICS operations views > CICS region operations views > MVS TCBs CICS operations views > CICS region operations views > Global MVS TCB information CICS operations views > CICS region operations views > MVS storage areas
TCP/IP service	CICS operations views > TCP/IP service operations views > TCP/IP service

Table 34. Changed CICSplex SM views (continued)

Changed CICS resource type or function	Corresponding CICSplex SM views which have changed
TCPIP SERVICE resource definition attributes	Administration views > Basic CICS resource administration views > Resource definitions > TCP/IP service definitions
Terminal acquired status	Monitoring views > Terminal monitoring views > Monitor data for terminals
XCF group ID	CICS regions > region name
Internet security	CICS operations views > Enterprise Java component operations views > CorbaServers CICS operations views > TCP/IP service operations views > TCP/IP service CICS operations views > TCP/IP service operations views > TCP/IP global status Administration views > Basic CICS resource administration views > Resource definitions > Enterprise Java CORBASERVER definitions Administration views > Basic CICS resource administration views > Resource definitions > TCP/IP service definitions

Changed CICSplex SM resource tables

Review these resource tables for possible impact on any RTA evaluation definitions (EVALDEF) or CICSplex SM API programs that you are using.

- ATTR
- CLCACHE
- CMAS
- CICS RGN
- CONNECT
- CPLEXDEF
- CPLXCMAS
- DB2CDEF
- DB2CONN
- DB2TRAN
- DOCDEF
- DOCTEMP
- DSPGBL
- EJCOBEAN
- EJCODEF
- EJCOSE
- EJDJBEAN
- FILEDEF (For the FILEDEF resource table the attributes RKP and SRCHM are no longer valid. You should review any CICSplex SM API applications that use these attributes and make any corrections needed.)
- HTASK
- JVM
- JVMPOOL

- JVMPROF
- LIBDEF
- LIBDSN
- LIBINGRP
- LIBRARY
- LOCFILE
- MONITOR
- MTERMNL
- MVSESTG
- MVSTCB
- MVSTCBGL
- MVSWLM
- NTERMNL
- OBJACT (OBJECT base tables for GET, CREATE, SET, UPDATE and REMOVE are now returned when EXEC CPSM GETDEF is issued. Previously only actions applicable to EXEC CPSM PERFORM were returned as OBJECT base tables.)
- OBJECT
- PROGDEF
- PROGRAM
- RESDESC
- RESGROUP
- REQID (The datatype of the REQID base table attribute NAME has changed its data type from HEX to CHAR.)
- RQMDEF
- RQMODEL
- TASK
- TASKRMI
- TCPDEF
- TCPIPGBL
- TCPIPS
- TERMDEF
- TERMNL
- TRANDEF
- TRANSVAL
- TSMODEL (The TSMODEL base table attribute called DESCRIPTION in earlier releases, has been renamed to RSVRD1.)
- TYPTMDEF
- UOW
- UOWLINK
- WORKREQ

New CICSplex SM views and resource tables

These new views and resource tables have been added to CICSplex SM to support CICS resource types and functions.

Table 35. New CICSplex SM views and resource tables

Resource type or function	CICSplex SM views	CICSplex SM resource tables
Association data for TCP/IP-related tasks	CICS operations views > Association data operations views > Association data	TASKASSC
Batched repository update job	Administration views > General views > Batched repository update job	BATCHREP
Link3270 bridge	CICS operations views > Task operations views > 3270 bridge facilities	BRFACIL
Shared class cache	CICS operations views > Enterprise Java component operations views > JVM ClassCache status	CLCACHE
CMASs and CICSplexes (this view previously supported only by the EUI)	Administration views > CMAS configuration administration views > CMAS in CICSplex definitions	CPLXCMAS (existing resource table)
Transient data queues (this view previously supported only by the EUI)	CICS operations views > Transient data queue (TDQ) operations views > Topology data for transient data queue	CRESTDQ (existing resource table)
Enterprise beans in CorbaServers	CICS operations views > Enterprise Java component operations views > CorbaServers	EJCBEAN
CorbaServers	CICS operations views > Enterprise Java component operations views > Administration views > Basic CICS resource definitions > CorbaServer definitions	Enterprise Java component operations views > Enterprise Java component operations views > CICS resource administration views > CorbaServer definitions
CICS-deployed JAR files	CICS operations views > Enterprise Java component operations views > Administration views > Basic CICS resource definitions > CICS-deployed JAR file definitions	Enterprise Java component operations views > Enterprise Java component operations views > CICS resource administration views > CICS-deployed JAR file definitions
Enterprise beans in CICS-deployed JARs	CICS operations views > Enterprise Java component operations views > Enterprise beans in CICS-deployed JAR files	EJDJBEAN
HOST resource definition (virtual hosts)	CICS operations views > TCP/IP service operations views > URI host	HOST
Historical data for tasks	EYUSTARTHTASK EYUSTARTMASHIST EYUSTARTTASKRMI	HTASK (existing resource table) MASHIST TASKRMI
IPIC connection	CICS operations views > Connection operations views > IPIC connections	IPCONN
JVMs and JVM profiles	CICS operations views > Enterprise Java component operations views > CICS operations views > Enterprise Java component operations views >	JVM/JMPROF
JVM pool	CICS operations views > Enterprise Java component operations views > Java Virtual Machine (JVM) pool	JVMPOOL

Table 35. New CICSplex SM views and resource tables (continued)

Resource type or function	CICSplex SM views	CICSplex SM resource tables
LIBRARY	CICS operations views > Program Administration views > Program > LIBRARY	LIBRARY
LIBRARY data set names	CICS operations views > Program Administration views > Program > LIBRARY	LIBRARY
LIBRARY resource definitions	Administration views > Basic CICS resource administration views > Resource definitions > LIBRARY definitions	LIBRARY
LIBRARY definitions in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	LIBRARY
CVDASs, CVDATs, and EYUDAs	none	METANAME
Parameters for actions	none	METAPARM
WebSphere MQ connections	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ connections	MQCONN
Allowable values for parameters	none	PARMAVA
PIPELINE resource definition	CICS operations views > TCP/IP service operations views > Pipeline Administration views > Basic CICS resource definitions > Pipeline definitions	PIPELINE, PIPEDEF
Resource definitions in a resource group	Administration views > Basic CICS resource definitions in a resource group	PIPELINE
Channels	CICS operations views > Active tasks > Channel usage	TASK (existing resource table)
Task element storage	EYUSTARTTASKESTG	TASKESTG
Task file usage	EYUSTARTTASKFILE	TASKFILE
Task temporary storage queue usage	EYUSTARTTASKTSQ	TASKTSQ
TCP/IP sockets support	CICS operations views > TCP/IP service operations views > TCP/IP global status	TCPIPGBL
URIMAP resource definition	TCP/IP service operations views > URIMAP global statistics Administration views > Basic CICS resource definitions > URI mapping definitions	URIMAP, URIMAPDEF
URIMAP global statistics	CICS operations views > TCP/IP service operations views > URIMAP global statistics	URIMPGBL
Web services	CICS operations views > TCP/IP service operations views > Web service Administration views > Basic CICS resource definitions > Web service definitions	WEBSERV, WEBSDEF
Work requests and associated transactions	CICS operations views > Task operations views > Work request	WORKREQ

New Business Application Services definition objects

Table 36. New BAS definition objects

BAS object	What is it?
IPCINGRP	BAS definition that describes the membership of an IPIC connection definition (IPCONDEF) in a resource group.
IPCONDEF	CICS definition that describes an IPIC connection.
EJCINGRP	BAS definition that describes the membership of a CorbaServer definition (EJCODEF) in a resource group.
EJCODEF	CICS definition that describes a CorbaServer.
EJDINGRP	BAS definition that describes the membership of a CICS-deployed JAR file definition (EJDJDEF) in a resource group.
EJDJDEF	CICS definition that describes a CICS-deployed JAR file.
LIBINGRP	BAS definition that describes the membership of a LIBRARY definition (LIBDEF) in a resource group.
LIBDEF	CICS definition that describes an LIBRARY resource.

Changed Business Application Services definition objects

Table 37. Changed BAS definition objects

BAS object	Change
EJCODEF	New attribute added: STATUS
PIPEDEF	New attribute added: RESPWAIT
RASGNDEF	New REDEFTYPE values: IPCONDEF LIBDEF
RESDESC	New attributes added: IPCDEFRG IPCDEFTS IPCDEFRS LIBDEFRG LIBDEFTS LIBDEFRS
TCPDEF	<ul style="list-style-type: none"> • Attribute changed: AUTHENTICATE • New attribute added: PRIVACY • New attribute added: REALM • New value allowed for PROTOCOL attribute: IPIC

Chapter 33. National language support for CICSplex SM messages

The capability of issuing CICSplex SM messages, that have a destination of EYULOG, in national languages other than English, using the CICS message domain, has been added in CICS Transaction Server for z/OS, Version 3 Release 2. Also, the CICS XMEOUT global user exit has been enhanced to allow suppression and rerouting of CICSplex SM messages that use the message domain. These messages may be suppressed or rerouted from the joblog or console but not from the EYULOG.

“Changes to global user exits” on page 82 lists the new fields added to XMEOUT to support this function.

Note: CICSplex SM messages are not available through the CMAC transaction.

The following EYUPARMS have been removed:

- xxxCONMSG
- xxxTDQMSG

The following messages have been added to support the NLS-enablement of CICSplex SM messages:

- EYUBM0329I
- EYUBM0330I
- EYUBM0331I
- EYUBM0332I
- EYUBM0333I
- EYUBM0334I
- EYUBM0335I
- EYUBM0336I
- EYUBM0337I
- EYUBM0338I
- EYUBM0339I
- EYUBM0340I
- EYUBM0341I
- EYUBM0342I
- EYUBM0343I
- EYUBM0344I
- EYUBM0345I
- EYUBM0346I
- EYUBM0347I
- EYUBM0348I
- EYUBN0013W
- EYUBN0014W
- EYUBN0015W
- EYUBN0016W
- EYUBN0017W

- EYUXL0030I
- EYUXL0031I
- EYUXL0032I

The following messages have been removed:

- EYUBM0322I
- EYUBM0323I
- EYUBM0324I
- EYUBM0325I
- EYUBM0326I
- EYUBM0327I
- EYUBN0012W
- EYUXL0020I

Chapter 34. Programs that connect to a previous release of CICSplex SM

CICSplex SM API programs that use the CONNECT verb specifying a VERSION keyword for a previous release of CICSplex SM can experience significant increases in both CPU consumption by the CMAS address space, and data space storage utilization by the Environment Services System Services (ESSS) address space.

API programs that specify a CRITERIA string to limit the size of a result set on a GET or PERFORM OBJECT request, or use the SPECIFY FILTER verb, can experience the increase in CMAS CPU and ESSS storage. Batch job runtimes might also increase.

You are not required to recompile your CICSplex SM API programs when you migrate releases. However, if you do not recompile affected programs, the CMAS has to convert the records from the current release format, to the level specified on the VERSION keyword on the CONNECT verb. This transformation process is highly intensive for CPU and storage when the result set is very large, for example, 300K to 500K records. The increases are observed in most cases when a criteria string is used to filter the result set; for example, specifying a criteria for the PROGRAM object using the NAME key for a specific or generic program. In this scenario, CICSplex SM has to retrieve all program objects and return them to the CMAS where the API is connected, transform the records to the version of the API, and then apply the filtering.

If you recompile your programs to specify the VERSION keyword to match the current release of CICSplex SM, this conversion does not take place, and there is no significant increase in storage or CPU consumption.

Member DFHEILID has moved

If you are migrating from CICS Transaction Server for OS/390, Version 1 Release 3 or CICS Transaction Server for z/OS, Version 2 Release 2, member DFHEILID has moved from the SDFHC370 library to the SDFHSAMP library. The change affects the COPYLINK step of the sample jobs supplied by CICS and CICSplex SM to translate, compile, link-edit and install application programs.

The sample jobs supplied by CICS have names in the format DFHxxTxL (for example, DFHYITDL, DFHZITCL) and are supplied in the SDFHPROC library. The sample job supplied by CICSplex SM is supplied in member EYUEITDL of the SEYUPROC library.

If you are using an older version of these supplied sample jobs, or if you have created your own job based on the supplied samples, ensure that you apply the change for DFHEILID to the COPYLINK step in the job.

Part 4. Migration tasks for CICSplex SM

Chapter 35. Running CICSplex SM Version 3.2 and earlier releases concurrently

You can run CICSplex SM Version 3.2 and earlier releases concurrently, but note the conditions listed in this topic.

CICSplex SM release names

Throughout this section, CICSplex SM releases are referred to as follows:

Version 3.2

Version 3 Release 2 (the CICSplex SM element of CICS Transaction Server for z/OS, Version 3 Release 2)

Version 3.1

Version 3 Release 1 (the CICSplex SM element of CICS Transaction Server for z/OS, Version 3 Release 1)

Version 2.3

Version 2 Release 3 (the CICSplex SM element of CICS Transaction Server for z/OS, Version 2 Release 3)

Version 2.2

Version 2 Release 2 (the CICSplex SM element of CICS Transaction Server for z/OS, Version 2 Release 2)

The CICSplex SM elements of CICS TS for z/OS, Version 3.2, CICS TS for z/OS, Version 3.1, CICS TS for z/OS, Version 2.3 and CICS TS for z/OS, Version 2.2 are **not** available as separate products.

You can run CICSplex SM Version 3.2, Version 3.1, Version 2.3, and Version 2.2, at the same time, with interconnected CMASs at different levels. The ability to do this allows gradual migration of the environment to Version 3.2. However, in CICS TS for z/OS, Version 3.2, a CICSplex SM CMAS will run only in a CICS system at the same release level.

MASs running the following CICS releases are directly connectable to CICSplex SM Version 3.2:

- CICS TS for z/OS, Version 3.1
- CICS TS for z/OS, Version 2.3
- CICS TS for z/OS, Version 2.2
- CICS for Windows® component of IBM TXSeries® 4.3.0 (with PTF 4)
- CICS for Windows component of IBM TXSeries 5.0

Conditions for running CICSplex SM Version 3.2 and earlier releases concurrently

The following conditions apply to environments in which CICSplex SM Version 3.2 and earlier releases of CICSplex SM are running concurrently:

- If you intend to use CICS TS 2.2 with CICS TS 3.2, you must install APAR PQ65168, PTF UQ71534 to that release:
- In order for a CMAS and a MAS (including those MASs that act as Web User Interface servers) to communicate, they must all be running the same release of CICSplex SM. That is:

- A MAS (including those MASs that act as Web User Interface servers) must be connected to a CMAS running at the same release of CICSplex SM as the MAS.
- A CMAS running at Version 3.2 can be connected to a CMAS running at Version 3.1, Version 2.3, or Version 2.2. However:
 - In a CICSplex that consists of CMASs at the Version 3.2 level and the Version 3.1, Version 2.3, or Version 2.2 level, the maintenance point CMAS must be at the Version 3.2 level. That is, when a CICSplex contains CMASs at more than one level, the first CMAS converted to Version 3.2 must be the maintenance point.
 - If you are using the API or Web User Interface to manage MASs connected to a CMAS at an earlier release, you must ensure that the MASs are managed indirectly from the Version 3.2 CMAS. You must ensure that:
 - All API programs run so that they are connected to the Version 3.2 CMAS.

Note: This is only required if the API program needs to access new fields or later level CICS systems. If the API program connects to a lower level CMAS, any resource tables which contain new or updated fields for the new release would not be returned to the API program connected to the lower release level CMAS.

 - All Web User Interface servers connect to the Version 3.2 CMAS.
 - You cannot view resources of a CICS Version 3.2 region using a CMAS running at an earlier release.
- The following definitions, if required, must be created using a WUI server or EUI running at the same CICSplex SM release level as the maintenance point CMAS:
 - CPLEXDEF
 - CMTCMDEF
 - CSYSGRP
 - PERIODEF
 - MONSPEC
 - MONGROUP
 - MONDEF
 - RTAGROUP
 - RTADEF
 - WLMSPEC
 - WLMGROUP
 - WLMDEF
 - TRANGRP

CICSplex SM and the maintenance point CMAS release level must, again, be at the same release level if you use the API or BATCHREP to create these definitions.

Chapter 36. Removal of support for Windows remote MAS

Previous releases of CICSplex SM have supported the CICS for Windows component of TXSeries, Version 4.3.0.4 and TXSeries, Version 5.0 (also known as NT 4.3 and NT 5.0) in the management of a remote managed application system (RMAS). This support is no longer necessary and the CICSplex SM TXSeries agent has been removed for CICS Transaction Server for z/OS, Version 3. Therefore, it is no longer possible to set up a CICSplex SM remote MAS agent for Windows.

You can continue to use the CICS Transaction Servers 2.3 or 2.2 for TXSeries support in CICSplex SM.

Chapter 37. Performing migration procedures for CICSplex SM

The migration from a previous release of CICSplex SM to CICS TS Version 3.2 CICSplex SM for a CMAS and all MASs (including those MASs that act as Web User Interface servers) 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.

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 .)

To enable you to revert to the previous release of CICSplex SM if you encounter problems during the migration to CICS TS Version 3.2 CICSplex SM, you should take back-up copies of the previous release components such as JCL, CLISTS, CICS tables, CMAS data repositories, and WUI repositories before you start the migration process.

Note: You can use the procedures in this section to migrate from Version 3.1, Version 2.3, Version 2.2 or Release 4 of CICSplex SM to CICS TS Version 3.2 CICSplex SM.

Converting a CMAS to Version 3.2

You must migrate your CICSplex SM CMAS to CICS TS Version 3.2 at the same time as you migrate the CICS system on which it runs. This is because a CICSplex SM CMAS will run only in a CICS system at the same release level. During startup the CMAS checks the CICS release level and terminates with message EYUXL0142 if the release does not match.

Before you convert a CMAS to Version 3.2 ensure that you have updated the CSD file with the Version 3.2 group of resource definitions and CICS startup group list as part of your CICS migration procedures. For information about how to do this, see . You do not need to carry out an additional upgrade using a release-dependant set of definitions for CICSplex SM

Now you need to do the following:

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

Note: Some of the parameters in the IEASYSxx member may need to be modified when you are running both a previous release and Version 3.2 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 z/OS Installation Guide*.)

- Authorize the Version 3.2 libraries. (For information about how to do this, see the *CICS Transaction Server for z/OS Installation Guide*.)
- Update the MVS link list with the Version 3.2 library. (For information about this step, see the *CICS Transaction Server for z/OS Installation Guide*.)
- Update the CSD file with the Version 3.2 group of resource definitions and CICS startup group list. (For information about how to do this, see “Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions” on page 120 and the the *CICS Transaction Server for z/OS Installation Guide*.)

- Make sure that the system initialization parameters XRES and XHFS are set to NO. The default for both is YES.
- Reassemble the CICS resource definition table load modules. Reference the library containing the Version 3.2 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 z/OS Installation Guide*.)
- Convert the data repository to Version 3.2. (For information about how to convert the data repository, see the *CICS Transaction Server for z/OS 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.

- 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 z/OS Installation Guide*.)

The CMAS is ready to be cold started.

When you have successfully migrated all your systems to CICSplex SM Version 3.2 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 226.)

Converting a MAS to Version 3.2

Before you convert a MAS to Version 3.2 ensure that you have updated the CSD file with the Version 3.2 group of resource definitions and CICS startup group list as part of your CICS migration procedures. For information about how to do this, see . You do not need to carry out an additional upgrade using a release-dependant set of definitions for CICSplex SM

Now you need to do the following:

- Authorize the Version 3.2 libraries. (For information about doing this, see the *CICS Transaction Server for z/OS Installation Guide*.)
- Reassemble the CICS resource definition table load modules. Reference the library containing the Version 3.2 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 z/OS Installation Guide*.)
- When previous release modules are in the link pack area (LPA), you must ensure the Version 3.2 modules are used in place of the previous release modules. (For information about how to do this, see the *CICS Transaction Server for z/OS Installation Guide*.)
- Edit the JCL used to start the MAS changing the previous release of CICSplex System Manager library names to the Version 3.2 names. (For information about the MAS startup JCL, see the *CICS Transaction Server for z/OS Installation Guide*.)
- In the sequential data set or partitioned data set member identified by the CICS SYSIN statement, verify that the CICS system initialization table (SIT) parameter **EDSALIM** is included, and set it to a value of at least 50MB. 50MB is the minimum EDSALIM required to start the MAS agent for CICSplex SM Version 2.3 and later versions.

- Ensure that you have deleted, redefined and initialized the CICS local catalog (LCD) and global catalog (GCD) using the DFHCCUTL and the DFHRMUTL utility programs.
- If you intend to use MAS history recording, it is recommended that you define new history data sets using the EYUJHIST sample job. If, however, you need to migrate your existing history data sets, you may still use the EYUJHIST sample job, following the migration instructions, supplied as comments, within the sample. The EYUJHIST sample is supplied uncustomized in the TDFHINST library and customized by DFHISTAR in the XDFHINST library. Remember to edit the MAS start up JCL to include the history data sets.

The MAS is ready to be cold started.

When you have successfully migrated all your systems to CICSplex SM Version 3.2 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" on page 226.)

Migration for CICSplex SM 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 Version 3.2 libraries. For information on how to do this, see the description of customizing the dynamic transaction routing program in the *CICSplex System Manager Managing Workloads* manual.

If your application programs have been modified to make a call to EYU9XLOP using the EYUAWTRA commarea, they must also be recompiled and link-edited with the Version 3.2 libraries.

IPIC connections with workload management

CICSplex SM workload management has been updated to support MASs connected with CICS IPIC connections (IPCONN). There are no new external changes to workload management to exploit CICS IP connections but you may notice different behavior when CICS IPIC connections are introduced into a workload. For CICS TS Version 3.2, CICS IP connections can only be used by Distributed Program Link (DPL). If a routing request other than DPL is being executed, all normal workload management routing algorithms will apply. This means that MASs that are connected only by CICS IPIC connections can only support DPL requests.

Consider a simple workload installed on a routing region that needs to balance DPL requests to a pair of target regions. One target region is connected to the routing region via MRO, and the other target region is connected to the routing region via a CICS IPIC connection. In situations where the target regions are running at the same health and load levels, their connection link weights will be the deciding factor when determining a DPL target. In this situation, CICSplex SM would always select the MRO-connected target region as the DPL target, because its link weight is less than that for IPIC connections. Now assume that the MRO-connected regions also have a CICS IPIC connection installed. If there are identical health and load levels for the target regions, routing requests may vary between the two target regions because CICS will always choose to use an IPIC connection for DPL requests over any other connection type. Therefore, when the MRO-connected target region had a CICS IPIC connection installed, this equalized the link weight of the DPL targets, as

they both now have a CICS IPIC connection. It is recommended that workloads are not actively spread across earlier CICS TS releases and a CICS TS Version 3.2 CICSplex. New workloads should be established for CTS Version 3.2 managed regions, and regions managed by earlier CICS TS releases should be isolated from them.

Application programming interface

CICSplex SM API programs written to run in a previous release MAS can be run in a Version 3.2 MAS. You can either continue to access the data provided by the previous release or access the new data available from Version 3.2. For a discussion of the compatibility between releases of the API, see the *CICSplex System Manager Application Programming Guide*.

Converting a Web User Interface Server to Version 3.2

Both the Web User Interface server and the CMAS that it connects to must be at the highest level of CICSplex SM and CICS within the CICSplex. This means that both must be at the same level as the maintenance point CMAS.

Before you migrate a Web User Interface server, you must migrate the CMAS that it connects to. You must migrate the Web User Interface server before you migrate any other MASs. If the CMAS that the Web User Interface server connects to is not the maintenance point CMAS, you must migrate the maintenance point CMAS at the same time.

It is advisable to increase the size of the DFHTEMP data set. This is used in the COVC import process. The standard CICS sample just has a primary allocation but you should include a secondary allocation for RECORDS as follows:

```
//DEFTS    JOB accounting info,name
//AUXTEMP  EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *
           DEFINE CLUSTER(NAME(CICSTS32.CICS.CNTL.CICSqualifier.DFHTEMP)-
                           RECORDSIZE(4089,4089)           -
                           RECORDS(200 200)                 -
                           NONINDEXED                       -
                           CONTROLINTERVALSIZE(4096)        -
                           SHAREOPTIONS(2 3)                 -
                           VOLUMES(vol1id)                  -
                           DATA(NAME(CICSTS32.CICS.CNTL.CICSqualifier.DFHTEMP.DATA) -
                                   UNIQUE)
/*
```

As the CICS system that acts as your Web User Interface server is a local MAS, all the considerations that apply to a local MAS also apply to a Web User Interface server.

To convert a Web User Interface server to Version 3.2 you should:

- Upgrade the CSD for CICS, see “Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions” on page 120.
- Migrate the MAS that acts as your Web User Interface server.
- Migrate the contents of the Web User Interface server repository (EYUWREP).

If you have Web User Interface servers connected to CMASs other than the maintenance point CMAS, which have many other MASs connected to them, you

might not want to migrate the other MASs at the same time as the CMAS. In that case you might consider using the following phased migration path:

1. Define a new Version 3.2 CMAS on the same MVS image as the Web User Interface server.
2. Connect the Version 3.2 CMAS to the CICSplex that the Web User Interface server CMAS is connected to. (It will not become available for use until the maintenance point CMAS has been migrated. If you see message EYUCP0022E at this time, there is no need to take any action.)
3. Migrate the maintenance point CMAS to Version 3.2 and take down the Web User Interface server at the same time. Migrate the Web User Interface server to Version 3.2 and, when you restart it, connect it to the Version 3.2 CMAS. The Version 3.2 CMAS should now connect successfully to the Version 3.2 maintenance point CMAS.
4. Migrate the remaining MASs when required, and connect them to the Version 3.2 CMAS as you restart them.
5. When you have moved all the MASs to the Version 3.2 CMAS, you can remove the original CMAS.

Assuming you are running the latest CICSplex SM 3.1 and 3.2 maintenance levels, you can convert one LPAR at a time from 3.1 to 3.2.

- A CICSplex SM 3.2 WUI can only connect to a 3.2 CMAS.
- A CICSplex SM 3.1 WUI can only connect to a 3.1 CMAS.
- A CICSplex SM 2.3 WUI can only connect to a 2.3 CMAS.
- A CICSplex SM 2.3 WUI connected to a 2.3 CMAS can retrieve data from a MAS connected to a 3.2 CMAS (assuming it is not a resource type which is unique to CICS TS 3.2) if the CMAS participates in the management of the CICSplex.
- A CICSplex SM 2.2 WUI can only connect to a 2.2 CMAS.
- A CICSplex SM 2.2 WUI connected to a 2.2 CMAS can retrieve data from a MAS connected to a 3.2 CMAS (assuming it is not a resource type which is unique to CICS TS 3.2) if the CMAS participates in the management of the CICSplex.
- A CICSplex SM 3.2 WUI connected to a 3.2 CMAS can retrieve data from any MAS connected to any CMAS if the CMAS participates in the management of the CICSplex.

Migrating the MAS and updating the Web User Interface CSD group

To migrate the MAS and update the Web User Interface CSD group you should follow the instructions for converting a MAS as described in “Converting a MAS to Version 3.2” on page 222. You must also update the CICS SIT GRPLIST parameter to reference the CICS-supplied default startup group list, DFHLIST.

Migrating the contents of the Web User Interface server repository (EYUWREP)

In CICS TS for z/OS, Version 3.2 some internal Web User Interface repository record versions have been incremented to facilitate the new features in view definitions. For this reason, if your existing Web User Interface repository contains customized view sets or menus, it is essential that you migrate your view set and menu definitions.

You can import a view set and menu definitions from a previous release into a CICS TS for z/OS, Version 3.2 Web User Interface server repository.

To migrate the Web User Interface server repository to the current version:

1. Export your view set and menu definitions with your Web User Interface server still running at your current release. It is not necessary for the Web User Interface server to be connected to a CMAS to do this.

For information about exporting definitions see the *CICSplex System Manager Web User Interface Guide*.

2. Create a new Web User Interface server repository using the JCL described in the *CICS Transaction Server for z/OS Installation Guide*.
3. Start the Web User Interface server at the new release using the new Web User Interface server repository.
4. Import the new starter set definitions (the supplied set of view set and menu definitions with names beginning EYUSTART).
5. Import your previous release view set definitions by specifying the data set that you had exporting them to on the AUTOIMPORTTDQ parameter making sure that the TDQ you specify references the data set that you exported to. This will need to be done for each type of resource (VIEW, MENU, USER, USERGRP, and so on) that you had previously customized. Now use COVC to import the new starter set definitions specifying the OVERWRITE option on the **Import option** field of the COVC panel to ensure that none of the new starter set views have been accidentally overwritten by views from a previous release.

For information about using COVC, see the *CICSplex System Manager Web User Interface Guide*.

You do not need to make any changes to existing customized views and menus, but you can consider modifying or creating view sets to take into account the new attributes and resources.

You can also export view set and menu definitions from a CICS TS for z/OS, Version 3.2 Web User Interface server and import them into a server repository of a previous release. However, any new attributes or resources that are new in this release are not accessible in previous releases. You can remove these attributes and view sets using the View Editor. For information about the View Editor see the *CICSplex System Manager Web User Interface Guide*.

Deleting the previous release definitions from CSD files

When you have successfully migrated all your systems to CICSplex System Manager Version 3.2, you can delete the Version 3.1, Version 2.3 or Version 2.2 definitions from each CMAS's and MAS's CSD. This can be done by upgrading each CSD using module EYU9Rxxx, where xxx is the release number for the previous release, for example EYU9R230 for Version 2.3. This module is supplied in CICSTS32.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(EYU9Rxxx)
/*
```

Figure 4. JCL to delete previous release groups and group lists from the CSD

When this JCL is run, EYU9Rxxx attempts to delete all the groups and group lists for that CICSplex System Manager version 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 z/OS Installation Guide*.

Chapter 38. A phased migration scenario

The figures “The environment,” “Objective 1: Add a WUI server at the earlier release” on page 231, “Objective 2: Convert MP CMAS to the new version” on page 232, “Objective 3: Convert CMAS B to the new version” on page 234, and “Objective 4: Convert CMAS C to the new version” on page 236 and the discussions that accompany them show a CICSplex System Manager environment at an earlier release and the steps you would take to convert that environment to Version 3.2. 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

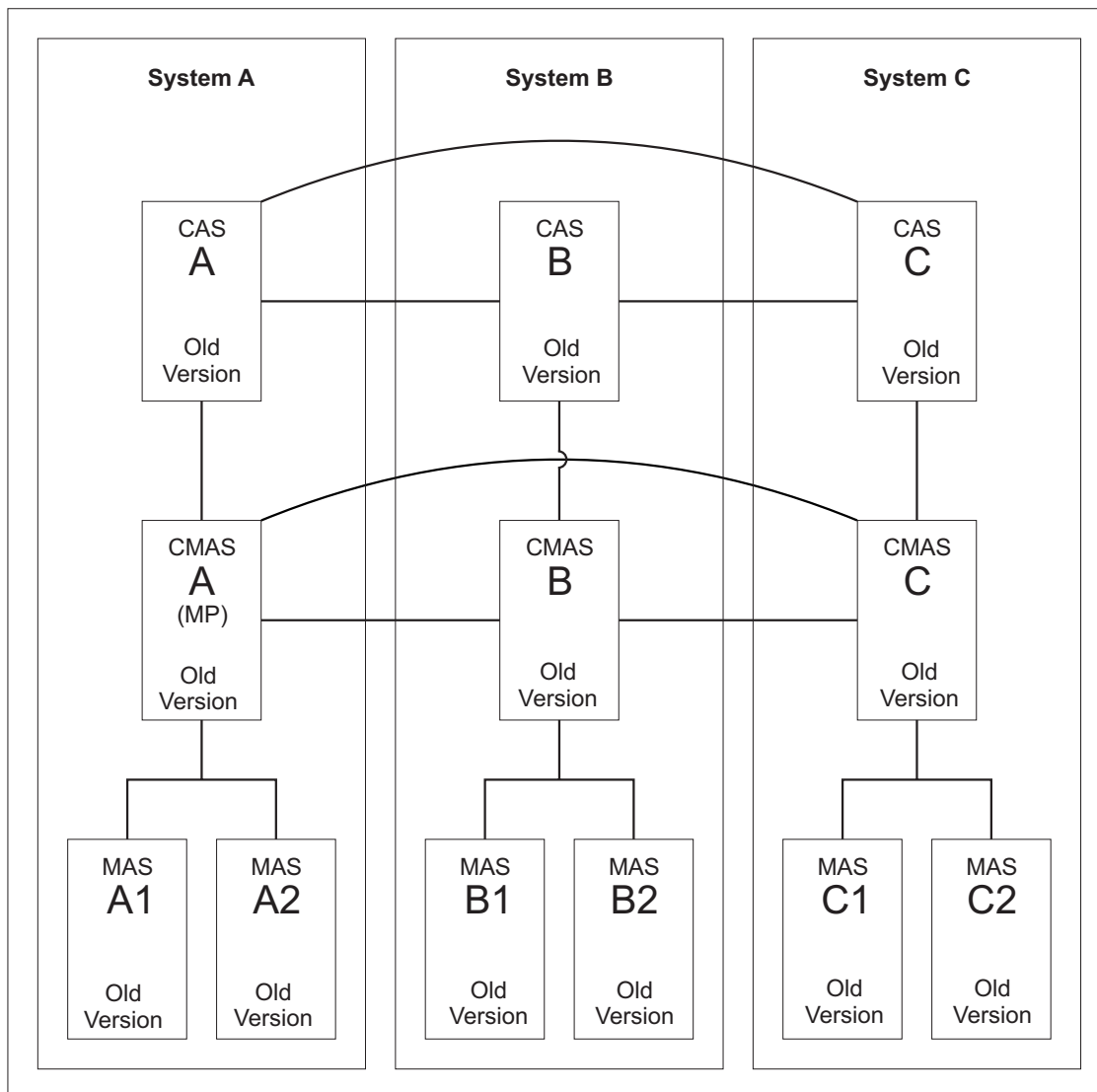


Figure 5. An environment at an earlier release

Figure 5 on page 229 shows a CICSplex System Manager environment that is made up of the following components:

- 3 MVS systems (System A, System B, System C)
- 3 CASs
 - All interconnected
- 3 CMASs
 - All interconnected
 - CMAS A connects to CAS A (both are in System A)
 - (This is the maintenance point CMAS.)
 - CMAS B connects to CAS B (both are in System B)
 - CMAS C connects to CAS C (both are in System C)
- 1 CICSplex
 - CMAS A is the maintenance point
- 6 CICS regions
 - 6 local MASs
 - MAS A1 and MAS A2 connect to CMAS A (all are in System A)
 - MAS B1 and MAS B2 connect to CMAS B (all are in System B)
 - MAS C1 and MAS C2 connect to CMAS C (all are in System C)
 - Systems A, B and C are at the old CICS TS release.

Objective 1: Add a WUI server at the earlier release

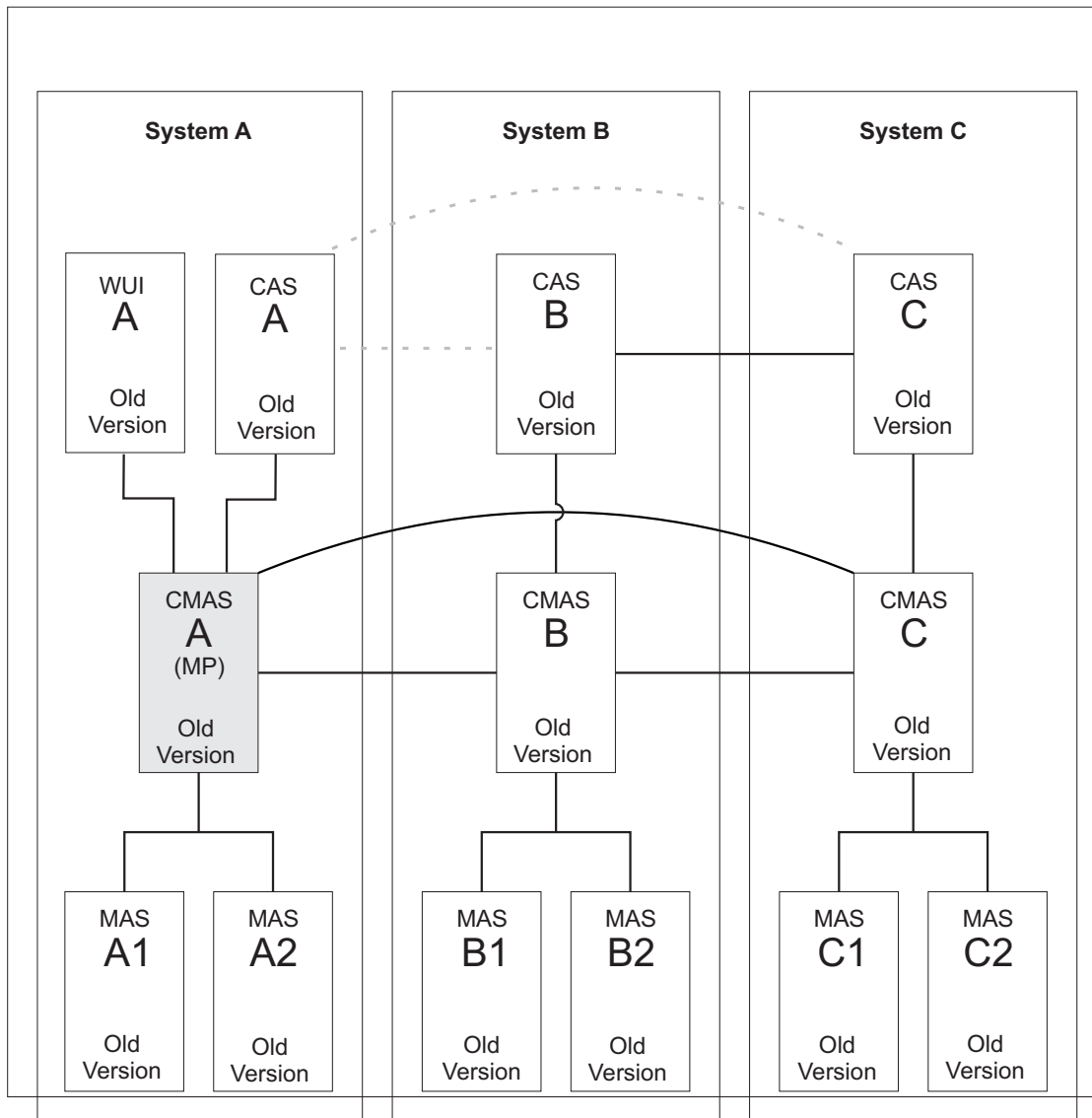


Figure 6. Adding a WUI server at the earlier release

When you complete Objective 1, a WUI at the earlier release level will have been connected to CMAS A.

The addition of a WUI to System A requires the following:

- Connect a WUI server to the maintenance point CMAS A at the old CICS Transaction Server release level.
- Create a separate CICSplex for the WUI server, defining CMAS A as the maintenance point.

Objective 2: Convert MP CMAS to the new version

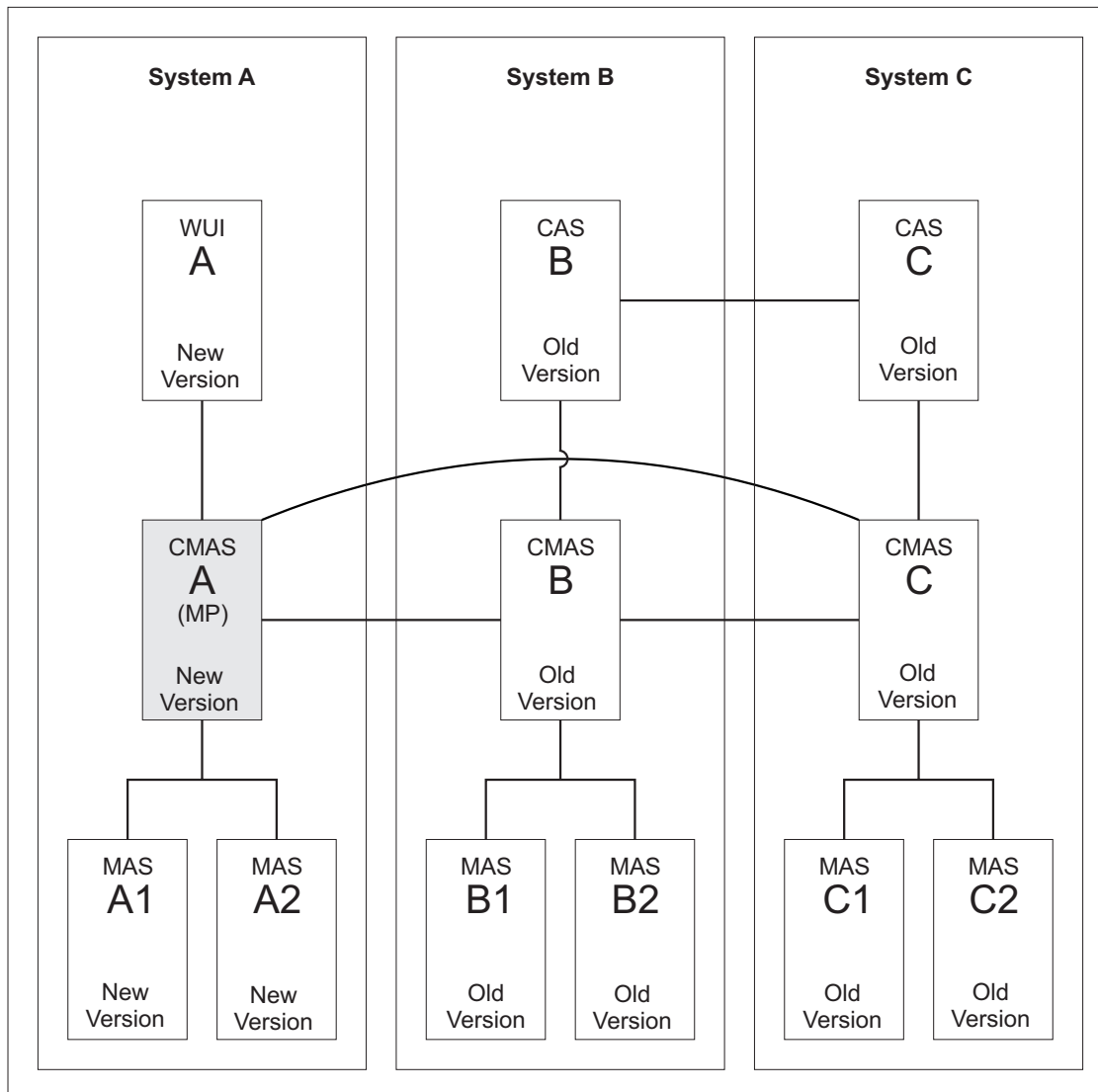


Figure 7. Converting the maintenance point CMAS to the new version

When you complete Objective 2, all CICS systems in System A are at the new version. The CMAS systems (A, B, and C) remain interconnected despite the different release levels they are at. CAS A and its connections are removed but CAS B and CAS C remain connected to one another.

The conversion of the maintenance point CMAS A to the new version requires conversion for the following:

- CMAS A
- WUI A
- MAS A1
- MAS A2

Step 1: Terminate executing regions that are to be converted

- If the following systems are running, terminate them:

- CMAS A
- WUI A
- MAS A1
- MAS A2

Step 2: Convert CMAS A to the new version

- Upgrade the CSD for CICS, see “Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions” on page 120.
- Change the appropriate IEAAPFxx member of the SYS1.PARMLIB library to authorize the CICSTS32.CPSM.SEYUAUTH library.
- Ensure that modules EYU9A320 and EYU9X320 in the CICSTS32.CPSM.SEYULINK data set are in the MVS link-list concatenation.
- Update the CICS group list for CMAS A to use DFHLIST.
- Run EYU9XDUT to convert the EYUDREP data set for CMAS A to the new Version.

Note: After converting the EYUDREP data set for CMAS A, the next time CMAS A is started it must point to the converted EYUDREP data set. If it does not, data repository updates may be lost. This can lead to invalid results, which can include other CMAS’s isolating themselves when they connect to this CMAS.

- Update the JCL used to start CMAS A to point to the new data sets.
- Delete CASNAME from the EYUPARM parameters.
- Delete the BBACTDEF, BBVDEF, BBIPARM DD statements from the CMAS startup JCL.
- Start CMAS A.

Step 3: Convert WUI A to the new version

- Update the CICS group lists to use DFHLIST.
- Update the JCL used to start WUI A to point to the new data sets.
- Start WUI A.

Step 4: Convert MAS A1 and MAS A2 to the new version

- Update the CICS group lists for MAS A1 and MAS A2 to use DFHLIST and the lists of definitions for your own applications.
- Update the JCL used to start MAS A1 and for MAS A2 to point to the new data sets.
- Start MAS A1 and MAS A2.

Objective 3: Convert CMAS B to the new version

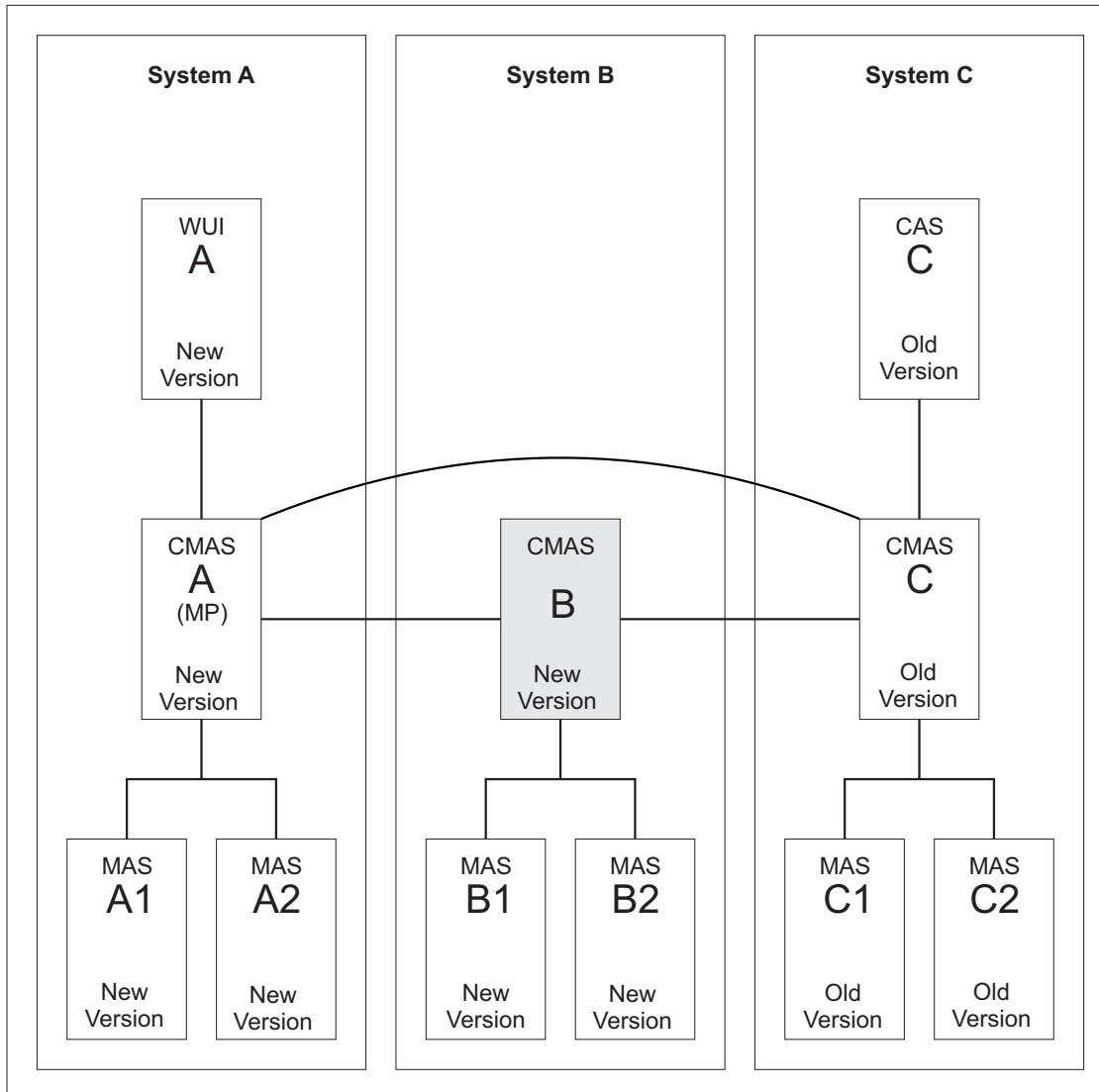


Figure 8. Converting CMAS B to the new version

When you complete Objective 3, all CICS systems in System B are at the new version. The CMAS systems (A, B, and C) remain interconnected despite being at different release levels. CAS B and its connection to CAS C are removed.

The conversion of CMAS B to the new version requires conversion for the following:

- CMAS B
- MAS B1
- MAS B2

Step 1: Terminate executing regions that are to be converted

- If the following systems are running, terminate them:
 - CMAS B
 - MAS B1

- MAS B2

Step 2: Convert CMAS B to the new version

- Change the appropriate IEAAPFxx member of the SYS1.PARMLIB library to authorize the CICSTS32.CPSM.SEYUAUTH library.
- Ensure that modules EYU9A320 and EYU9X320 in the CICSTS32.CPSM.SEYULINK data set is in the MVS link-list concatenation.
- Update the CICS group list for CMAS B to use DFHLIST.
- Run EYU9XDUT to convert the EYUDREP data set for CMAS B to the new version.

Note: After converting EYUDREP data set for CMAS B, the next time CMAS B is started, it must point to the converted EYUDREP data set. If it does not, data repository updates may be lost. This can lead to invalid results, which include other CMAS's isolating themselves when they connect to this CMAS.

- Update the JCL used to start CMAS B to point to the new data sets.
- Delete CASNAME from the EYUPARM parameters.
- Delete the BBACTDEF, BBVDEF and BBTPARM DD statements from the CMAS startup JCL.
- Start CMAS B.

Step 3: Convert MAS B1 and MAS B2 to the new version

- Update the CICS group lists for MAS B1 and MAS B2 to use DFHLIST and the lists of definitions for your own applications.
- Update the JCL used to start MAS B1 and for MAS B2 to point to the new data sets.
- Start MAS B1 and MAS B2.

Objective 4: Convert CMAS C to the new version

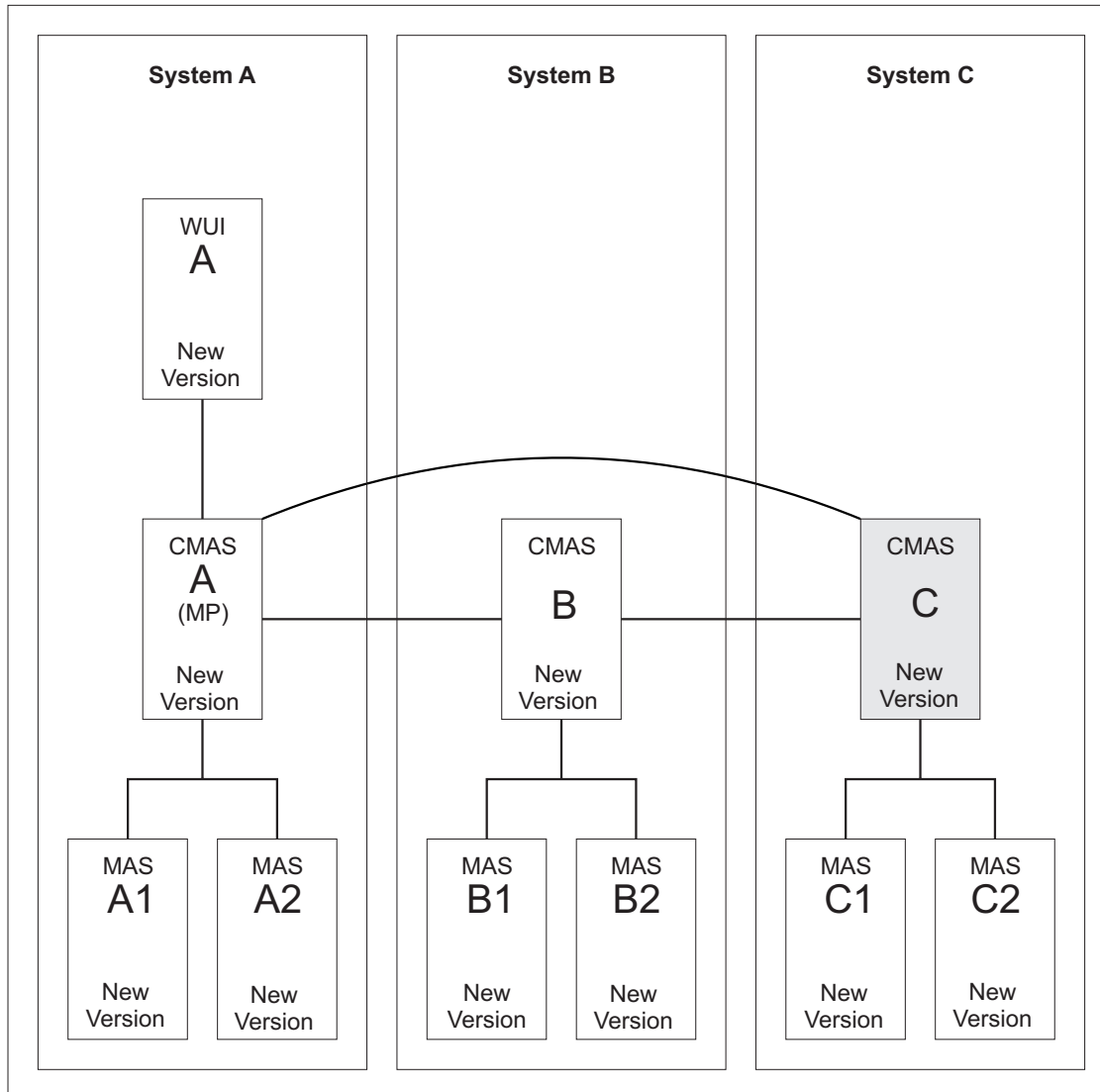


Figure 9. Converting CMAS C to the new version

When you complete Objective 4, all CICS systems are at the new version. All CASs will have been removed.

The conversion of CMAS C to the new version requires conversion for the following:

- CMAS C
- MAS C1
- MAS C2

Step 1: Terminate executing regions that are to be converted

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

Step 2: Convert CMAS C to the new version

- Change the appropriate IEAAPFxx member of the SYS1.PARMLIB library to authorize the CICSTS32.CPSM.SEYUAUTH library.
- Ensure that modules EYU9A320 and EYU9X320 in the CICSTS32.CPSM.SEYULINK data set are in the MVS link-list concatenation.
- Update the CICS group list for CMAS C to use DFHLIST.
- Run EYU9XDUT to convert the EYUDREP data set for CMAS C to the new version.

Note: After converting EYUDREP data set for CMAS C, the next time CMAS C is started, it must point to the converted EYUDREP data set. If it does not, data repository updates may be lost. This can lead to invalid results, can which include other CMAS's isolating themselves when they connect to this CMAS.

- Update the JCL used to start CMAS C to point to the new data sets.
- Delete CASNAME from the EYUPARM parameters.
- Delete the BBACTDEF, BBVDEF, BBIPARM DD statements from the CMAS startup JCL.
- Start CMAS C.

Step 3: Convert MAS C1 and MAS C2 to the new version

- Update the CICS group lists for MAS C1 and MAS C2 to use DFHLIST and the lists of definitions for your own applications.
- Update the JCL used to start MAS C1 for MAS C2 to point to the new data sets.
- Start MASs C1 and C2.

Part 5. Appendixes

Bibliography

The CICS Transaction Server for z/OS library

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

The CICS Transaction Server for z/OS Information Center

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

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

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

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

Entitlement hardcopy books

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

The entitlement set

The entitlement set comprises the following hardcopy books, which are provided automatically when you order CICS Transaction Server for z/OS, Version 3 Release 2:

Memo to Licensees, GI10-2559
CICS Transaction Server for z/OS Program Directory, GI13-0515
CICS Transaction Server for z/OS Release Guide, GC34-6811
CICS Transaction Server for z/OS Installation Guide, GC34-6812
CICS Transaction Server for z/OS Licensed Program Specification, GC34-6608

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

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

PDF-only books

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

CICS books for CICS Transaction Server for z/OS

General

CICS Transaction Server for z/OS Program Directory, GI13-0515
CICS Transaction Server for z/OS Release Guide, GC34-6811
CICS Transaction Server for z/OS Migration from CICS TS Version 3.1, GC34-6858

CICS Transaction Server for z/OS Migration from CICS TS Version 1.3,
GC34-6855

CICS Transaction Server for z/OS Migration from CICS TS Version 2.2,
GC34-6856

CICS Transaction Server for z/OS Installation Guide, GC34-6812

Administration

CICS System Definition Guide, SC34-6813

CICS Customization Guide, SC34-6814

CICS Resource Definition Guide, SC34-6815

CICS Operations and Utilities Guide, SC34-6816

CICS Supplied Transactions, SC34-6817

Programming

CICS Application Programming Guide, SC34-6818

CICS Application Programming Reference, SC34-6819

CICS System Programming Reference, SC34-6820

CICS Front End Programming Interface User's Guide, SC34-6821

CICS C++ OO Class Libraries, SC34-6822

CICS Distributed Transaction Programming Guide, SC34-6823

CICS Business Transaction Services, SC34-6824

Java Applications in CICS, SC34-6825

JCICS Class Reference, SC34-6001

Diagnosis

CICS Problem Determination Guide, SC34-6826

CICS Messages and Codes, GC34-6827

CICS Diagnosis Reference, GC34-6862

CICS Data Areas, GC34-6863-00

CICS Trace Entries, SC34-6828

CICS Supplementary Data Areas, GC34-6864-00

Communication

CICS Intercommunication Guide, SC34-6829

CICS External Interfaces Guide, SC34-6830

CICS Internet Guide, SC34-6831

Special topics

CICS Recovery and Restart Guide, SC34-6832

CICS Performance Guide, SC34-6833

CICS IMS Database Control Guide, SC34-6834

CICS RACF Security Guide, SC34-6835

CICS Shared Data Tables Guide, SC34-6836

CICS DB2 Guide, SC34-6837

CICS Debugging Tools Interfaces Reference, GC34-6865

CICSplex SM books for CICS Transaction Server for z/OS

General

CICSplex SM Concepts and Planning, SC34-6839

CICSplex SM User Interface Guide, SC34-6840

CICSplex SM Web User Interface Guide, SC34-6841

Administration and Management

CICSplex SM Administration, SC34-6842

CICSplex SM Operations Views Reference, SC34-6843

CICSplex SM Monitor Views Reference, SC34-6844

CICSplex SM Managing Workloads, SC34-6845

CICSplex SM Managing Resource Usage, SC34-6846

CICSplex SM Managing Business Applications, SC34-6847

Programming

CICSplex SM Application Programming Guide, SC34-6848

CICSplex SM Application Programming Reference, SC34-6849

Diagnosis

CICSplex SM Resource Tables Reference, SC34-6850
CICSplex SM Messages and Codes, GC34-6851
CICSplex SM Problem Determination, GC34-6852

CICS family books

Communication

CICS Family: Interproduct Communication, SC34-6853
CICS Family: Communicating from CICS on zSeries, SC34-6854

Licensed publications

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

CICS Diagnosis Reference, GC34-6862
CICS Data Areas, GC34-6863-00
CICS Supplementary Data Areas, GC34-6864-00
CICS Debugging Tools Interfaces Reference, GC34-6865

Other CICS books

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 3 Release 2.

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

Determining if a publication is current

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

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

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

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

Accessibility

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

You can perform most tasks required to set up, run, and maintain your CICS system in one of these ways:

- using a 3270 emulator logged on to CICS
- using a 3270 emulator logged on to TSO
- using a 3270 emulator as an MVS system console

IBM Personal Communications provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICS system.

Index

Numerics

3270 bridge
migration 169

A

ACB interface 131
ACF/VTAM 131
AIBRIDGE system initialization parameter 11
Application Associated Data exit, new 86
application programming interface
 changed commands 52
 new commands 55
 obsolete commands and options 51
application programs
 compiler support 125
ATTACHSEC 22
AUTHENTICATE option
 WEB SEND command (Client) 53
AUTOIMPORTDSN 195
AUTOIMPORTMEM 195

B

BBM9ZA00 program 199
BRMAXKEEPTIME system initialization parameter 11
BTAM networks 131
Business Transaction Services (BTS)
 migration 129

C

CACHESIZE option
 INQUIRE DOCTEMPLATE command 64
CASNAME 199
CCI Connector for CICS TS 166
CCRL transaction 31
CCSID
 CEMT INQUIRE WEBSERVICE 22
CCSID option
 INQUIRE WEBSERVICE command 68
CEBR, changes 28
CEMN transaction 32
CEMT commands, changed
 INQUIRE AUTOINSTALL
 AUTOINSTALL, changed 24
 INQUIRE CLASSCACHE
 CLASSCACHE, new 27
 INQUIRE JVM
 JVM, new 27
 INQUIRE PROGRAM 24
 INQUIRE REQUESTMODEL 25
 INQUIRE TASK 25
 INQUIRE TCPIP 25
 INQUIRE TCPIPSERVICE 25
 INQUIRE TERMINAL 25
 INQUIRE TRANSACTION 25

CEMT commands, changed (*continued*)
 INQUIRE UOW 25
 INQUIRE UOWLINK 25
 INQUIRE WORKREQUEST
 WORKREQUEST, new 28
 PERFORM CLASSCACHE
 CLASSCACHE, new 28
 PERFORM CORBASERVER 25
 PERFORM STATISTICS 26
 SET AUTOINSTALL 26
 SET CLASSCACHE
 CLASSCACHE, new 28
 SET CORBASERVER 26
 SET DB2CONN 26
 SET TCPIP 26
 SET TCPIPSERVICE 26
CEMT commands, new
 DISCARD CORBASERVER 27
 DISCARD DJAR 27
 INQUIRE BEAN 27
 INQUIRE BRFACILITY 27
 INQUIRE CORBASERVER 27
 INQUIRE DJAR 27
 INQUIRE JVMPOOL 28
 PERFORM CORBASERVER 28
 PERFORM DJAR 28
 SET CORBASERVER 28
 SETBRFACILITY 28
CEMT, changes 17
CEOT, changes 28
certificate revocation list transaction (CCRL) 31
CETR, changes 29
changed CEMT commands 18
changed global user exit programs
 XRSINDI 82
changed system initialization parameters 8
changed system programming interface commands
 INQUIRE AUTOINSTALL options 71
 INQUIRE CONNECTION options 71
 INQUIRE TERMINAL options 71
changes
 affecting the SPI 61
channels
 migration 133
 back-level CICS releases 135
 dynamically-routed applications 135
 LINK command 133
 RETURN command 134
 START command 134
 XCTL command 134
CICS Connector for CICS TS 166
CICS integrated translator 127
CICS key for Java programs
 migration 162
CICS Web support
 migration 181, 185
CICS-supplied transactions
 changed CEMT commands 18

CICS-supplied transactions *(continued)*

- changes to CEBR 28
- changes to CEMT 17
- changes to CEOT 28
- changes to CETR 29
- changes to CWXN 30
- CICS-supplied transactions
 - DFH\$CAT1 CLIST 33
- CIRR 33
- CISC 33
- CISD 33
- CISE 33
- CISR 33
- CISS 33
- CIST 33
- CJGC 33
- CJMJ 33
- CJPI 33
- CJTR 33
- CKAM 33
- CKTI 33
- CPIR 33
- CREA 32
- CREC 32
- CRTP 33
- CWXU 33
- migration 17
- new CEMT commands 26
- new RACF category 1 transactions 33
- obsolete CEMT command options 17
- obsolete options
 - OMGINTERFACE 17
 - OMGMODULE 17
 - OMGOPERATION 17

CICSplex SM

- connecting to previous releases 213
- new BAS definition objects 209

CIDDOMAIN

- CEMT INQUIRE PIPELINE 20

CLINTCP system initialization parameter 11

COMMAREA

- migration to channels and containers 133
 - back-level CICS releases 135
 - dynamically-routed applications 135
 - LINK command 133
 - RETURN command 134
 - START command 134
 - XCTL command 134

compiler support 125

COMPRESS

- CEMT INQUIRE MONITOR 19
- CEMT SET MONITOR 23

COMPRESSST

- CEMT INQUIRE MONITOR 19

COMPRESSST option

- INQUIRE MONITOR command 64
- SET MONITOR command 69

CONNECTION resource definition, new keywords 41

connector applications 166

containers

- migration 133

containers *(continued)*

- back-level CICS releases 135
- dynamically-routed applications 135
- LINK command 133
- RETURN command 134
- START command 134
- XCTL command 134

control tables

- migration 46

CREA 32

CREC 32

CRLSERVER system initialization parameter 11

CSD

- sharing between releases 123

CSD, upgrading 120

- SCAN function 122

CVDA values

- BASICAUTH
 - WEB SEND command (Client) 53
- DOCDELETE
 - WEB SEND command (Client) 54
- NODOCDELETE
 - WEB SEND command (Client) 54
- NONE
 - WEB SEND command (Client) 53

CWXN, changes 30

D

data conversion

- migration 119

DB2

- attachment facility 137
- migration 137
- supported releases 137

DB2 group attach facility

- migration 137

DB2GROUPID 137

DB2ID 137

DCB interface 131

DCT system initialization parameter 7

Debug Tool for z/OS 141

DEBUGTOOL system initialization parameter 13

DEFAULTMAPBAS 195

DEFAULTMAPCOLL 195

DEFAULTMAPMON 195

DEFAULTMAPRTA 195

DEFAULTMAPWLM 196

defining IPIC connections 5

DFH\$AFFY (obsolete CSD group) 36

DFH\$JAVA (obsolete CSD group) 36

DFH\$MOLS sample print program

- control statements
 - EXPAND 107

DFH\$WEB, CSD group 45

DFH0CBRM 169

DFHADET, CSD group 42

DFHADST, CSD group 42

DFHAPXPO 97

DFHAUGRP (obsolete CSD group) 36

DFHCNV 181

DFHCNV (*continued*)
 migration 46, 96
 DFHCSDUP
 migration 77
 DFHCSVCmigration 153
 DFHDCT, obsolete 46
 DFHDP, CSD group 43
 DFHDPWB, CSD group 44
 DFHDSRP 93
 DFHDYP 93
 DFHDYPDS 93, 133
 DFHEILID 56, 213
 DFHEISUP 78
 DFHEJBU, CSD group 44
 DFHEJCF, CSD group 44
 DFHEJDNX 97
 DFHEJVR, CSD group 44
 DFHEJVS, CSD group 44
 DFHIRPmigration 153
 DFHISAIP 97
 DFHISTAR
 CICSplex SM installation parameters 3, 193
 DFHJIIRP 39
 DFHJVM DD card 160
 DFHJVMAT 163
 DFHJVMCD 160
 DFHJVMRO 160
 DFHLRQ data set 129
 migration 129
 DFHMAPS 56
 DFHMCT monitoring control table
 migration 46
 DFHMSD 56
 DFHOTS, CSD group 44
 DFHPDxxx
 migration 77
 DFHPGADX 94
 DFHRQS, CSD group 45
 DFHSIT, default system initialization table 7
 DFHSJJ80 160
 DFHSO, CSD group 45
 DFHSTUP
 migration 77
 DFHTUxxx
 migration 77
 DFHUEPAR
 migration 82
 DFHWBCLI 181
 DFHWBEP
 migration 181
 DFHXOPUS 94
 DFHZATDX 95
 DFHZATDY 95
 DFHZNEP
 migration 95
 dfjvmcd.props 160
 DOCSTATUS option
 WEB SEND command (Client) 54
 DOCTEMPLATE CVDA value
 EXTRACT STATISTICS command 63

DOCTEMPLATE option
 PERFORM STATISTICS command 69
 DSKJRNL 202
 DSNCLI 137
 dynamically-routed applications
 migration to channels and containers 135

E

EDSALIM system initialization parameter 9
 EJBROLEPRFX system initialization parameter 13
 EJCINGRP, new BAS object 209
 EJCODEF, new BAS object 209
 EJDINGRP, new BAS object 209
 EJDJDEF, new BAS object 209
 enterprise beans
 execution key
 migration 162
 migration 159
 CICS Connector for CICS TS 166
 Enterprise Workload Manager (EWLM)
 migration 157
 ESDS
 migration to extended addressing 143
 EWLM (Enterprise Workload Manager)
 migration 157
 EXEC CICS commands
 API commands and options, obsolete 51
 API commands, changed 52
 API commands, new 55
 CVDA values, obsolete 63
 SPI command options, obsolete 61
 SPI commands, changed 63
 SPI commands, new 73
 EXEC CICS WEB API
 migration 181
 EXEC interface user exit, new 87
 EXECKEY
 migration 162
 execution key for JVMs
 migration 162
 exit programming interface (XPI)
 migration 88
 EXTENDED
 CEMT INQUIRE FILE 19
 extended relative byte addressing (XRBA)
 migration 143
 external CICS interface changes 91
 EYU9XDUT utility 195
 EYUISTAR 3, 193
 EYUXL0206E message 199

F

file control user exit, new 87
 FILE resource definition changes
 MAXNUMRECS 37
 FROMCODEPAGE option
 GET CONTAINER (CHANNEL) command 52

G

- global user exits
 - changed programs 82
 - migration 82
 - new programs 86
 - obsolete global user exit points 81

H

- hot-pooling 166
- HPJ 166
- HTTP client open exit, new 87
- HTTP client send exit, new 86, 87

I

- IIO security program, DFHXOPUS 94
- IIOPLISTENER system initialization parameter 13
- INFOCENTER system initialization parameter 13
- INQUIRE CEMT commands
 - PROGRAM, changed 24
 - REQUESTMODEL, changed 25
 - TASK, changed 25
 - TCPIP, changed 25
 - TCPIPSERVICE, changed 25
 - TERMINAL, changed 25
 - TRANSACTION, changed 25
 - UOW, changed 25
 - UOWLINK, changed 25
- INQUIRE SPI commands
 - AUTOINSTALL options, changed 71
 - CONNECTION options, changed 71
 - INQUIRE CLASSCACHE options, new 75
 - INQUIRE JVM options, new 75
 - INQUIRE JVMPROFILE options, new 75
 - INQUIRE WORKREQUEST options, new 75
 - NETNAME options, changed 71
 - TERMINAL options, changed 71
- INQUIRE TCPIP SERVICE 22
- installation
 - changes as a result of CICSplex SM EUI removal 199
 - EUI removal
 - installation changes 199
- integrated translator 127
- Internet security
 - migration 181, 185
- interregion communication program (DFHIRP)migration 153
- intersystem communication over TCP/IP (IPIC)
 - defining connections 5
- interval control user exit, new 87
- INTOCODEPAGE option
 - GET CONTAINER (CHANNEL) command 52
- IPCINGRP, new BAS object 209
- IPCONDEF, new BAS object 209
- IPCONN
 - CEMT DISCARD 18
- IPCONN CVDA value
 - EXTRACT STATISTICS command 64

- IPCONN option
 - PERFORM STATISTICS command 69
- IPFACILITIES option
 - INQUIRE TASK command 67
- IPFLISTSIZ option
 - INQUIRE TASK command 67
- IPIC value
 - INQUIRE TCPIP SERVICE command 68

J

- Java
 - migration 160
- Java applications
 - migration 159
- Java program objects 166
- JOURNAL 202
- JRNINGRP 202
- JRNLEDF 202
- JVM
 - DFHJVMAT 163
 - execution key
 - migration 162
 - migration 160, 163
 - resettable (no longer used) 160
 - support for older types 163
- JVM profiles
 - migration 159
- JVMCCPROFILE system initialization parameter 14
- JVMCCSIZE system initialization parameter 14
- JVMCCSTART system initialization parameter 14
- JVMPROFILEDIR system initialization parameter 14
- JVMxxxxTRACE system initialization parameter 14

K

- KEYFILE system initialization parameter 7
- KEYRING system initialization parameter 14

L

- LIBDEF, new BAS object 209
- LIBINGRP, new BAS object 209
- LIBRARY
 - CEMT DISCARD 18
 - CEMT PERFORM STATISTICS 23
- LIBRARY CVDA value
 - EXTRACT STATISTICS command 64
- LIBRARY option
 - PERFORM STATISTICS command 69
- LINK
 - migration to channels and containers 133
- Link3270 bridge
 - ACCUM option 169
 - migration 169
- LOCALCCSID system initialization parameter 14
- log manager
 - user exit 88

M

macro resource definition
migration 46
Mappinglevel
CEMT INQUIRE WEBSERVICE 22
MAPPINGLEVEL option
INQUIRE WEBSERVICE 68
MAPPINGRNUM option
INQUIRE WEBSERVICE 68
MAPPINGVNUM option
INQUIRE WEBSERVICE 68
MAXJVMTCBS system initialization parameter 9, 14
MAXSOCKETS system initialization parameter 15
MAXSSLTCBS system initialization parameter 15
MAXXPTCBS system initialization parameter 15
MEMLIMIT
CEMT INQUIRE DSAS 18
MEMLIMIT option
INQUIRE SYSTEM command 67
migration
Open Transaction Environment (OTE) 173, 175
threadsafe programming 173, 175
XPLINK option 189
migration of CICSplex SM
migrating a CMAS 221
migrating a MAS 222
Minrunlevel
CEMT INQUIRE WEBSERVICE 22
MINRUNLEVEL option
INQUIRE WEBSERVICE 68
MINRUNRNUM option
INQUIRE WEBSERVICE 68
MINRUNVNUM option
INQUIRE WEBSERVICE 68
MNEVE system initialization parameter 7
MNRES system initialization parameter 15
MODE
CEMT INQUIRE PIPELINE 20
monitoring control table, DFHMCT
migration 46
monitoring facility transaction CEMN 32
MQCONN CVDA value
EXTRACT STATISTICS command 64
MQCONN option
PERFORM STATISTICS command 69
MRO (multiregion operation)migration 153
MTOMNOXOPST
CEMT INQUIRE PIPELINE 20
MTOMST
CEMT INQUIRE PIPELINE 20
multiregion operation (MRO)migration 153

N

Named Counter servers
migration 171
new BAS definition objects
EJCINGRP 209
EJCODEF 209
EJDINGRP 209

new BAS definition objects (*continued*)
EJDJDEF 209
IPCINGRP 209
IPCONDEF 209
LIBDEF 209
LIBINGRP 209
new CEMT commands 26
new CICS-supplied transactions
CREA 32
CREC 32
new CSD groups
DFH\$WEB 45
DFHADET, EJB application development tool 42
DFHADST, for CREA and CREC transactions 42
DFHDP 43
DFHDPWB 44
DFHEJBU 44
DFHEJCF, EJB file definitions 44
DFHEJVR, EJB file definitions 44
DFHEJVS, EJB file definitions 44
DFHOTS, Object Transaction Services 44
DFHRQS, request stream services 45
DFHSO 45
new RDO attributes 40
new system initialization parameters 11
new system programming interface commands
INQUIRE CLASSCACHE 75
INQUIRE JVM 75
INQUIRE JVMPROFILE 75
INQUIRE WORKREQUEST 75
new user-exit programs 86
NOCOMPRESS
CEMT INQUIRE MONITOR 19
CEMT SET MONITOR 23
NOTAPPLIC
CEMT INQUIRE FILE 19
NOTEXTENDED
CEMT INQUIRE FILE 19
NOTSOS
CEMT INQUIRE DSAS 18, 19, 21
CEMT INQUIRE SYSTEM 21

O

obsolete CSD groups
DFH\$AFFY 36
DFH\$JAVA 36
DFHAUGRP 36
obsolete system initialization parameters 7
obsolete transactions
XLEC 194
OO COBOL 125
open TCBS
accounting 178
open transaction environment (OTE)
processor times for transactions 178
Open Transaction Environment (OTE)
migration 173, 175
OS/VS COBOL 125

P

- PASSWORD option
 - WEB SEND command (Client) 54
- PASSWORDLEN option
 - WEB SEND command (Client) 54
- PERFORM CEMT commands
 - CORBASERVER, changed 25
 - STATISTICS, changed 26
- PIPELINE definition
 - RESPWAIT attribute 40, 63
- processor times for CICS and DB2 178
- PROFILE resource definition change
 - RTIMOUT 37
- program compatibility, SPI 61
- PROGRAM resource definition change
 - DEBUG option 38
- PROGRAM resource definition, new keyword 41

R

- RBATYPE
 - CEMT INQUIRE FILE 19
- RBATYPE option
 - INQUIRE FILE command 64
- RDO
 - CONNECTION
 - NETNAME 41
 - new attributes 40
 - new type
 - CORBASERVER 41
 - DJAR 41
 - obsolete attributes 35
 - REQUESTMODEL
 - new attributes 41
 - TCPIP SERVICE
 - new attributes 42
 - TERMINAL
 - new attributes 42
- READ TIMEOUT
 - MRO sessions 155
- REALM attribute
 - TCPIP SERVICE definition 40
- REALM option
 - INQUIRE TCPIP SERVICE command 63, 68
 - WEB EXTRACT command 53
- REALMLEN option
 - WEB EXTRACT command 53
- relative byte addressing (RBA)
 - migration 143
- remote MAS
 - removal of support 219
- repository data set 129
 - migration 129
- resettable JVM
 - withdrawal 160
- resource definition
 - changes 35
- resource definition (online)
 - new attributes 40

- resource definition (online) (*continued*)
 - obsolete attributes
 - OMGINTERFACE 35
 - OMGMODULE 35
 - OMGOPERATION 35
 - obsolete RDO attributes 35
 - upgrading the CSD
 - SCAN function 122
- RESPWAIT
 - CEMT INQUIRE PIPELINE 20
 - CEMT SET PIPELINE 23
- RESPWAIT attribute
 - PIPELINE definition 40, 63
- RESYNCMEMBER 137
- RETURN
 - migration to channels and containers 134
- RSTSIGNOFF system initialization parameter 15
- RSTSIGNTIME system initialization parameter 15

S

- sample applications
 - migration 128
- SCEERUN 160
- SCEERUN2 160
- SDFJAUTH 160
- SENDMTOMST
 - CEMT INQUIRE PIPELINE 20
- SET CEMT commands
 - AUTOINSTALL, changed 26
 - CORBASERVER, changed 26
 - DB2CONN, changed 26
 - TCPIP, changed 26
 - TCPIP SERVICE, changed 26
- Shared Temporary Storage servers
 - migration 171
- SIT (system initialization table) parameters 7
- SIZE
 - CEMT INQUIRE DOCTEMPLATE 18
- SMF 110 records
 - migration 99
- SMFJRNL 202
- SOAPlevel
 - CEMT INQUIRE PIPELINE 21
- SOCKETCLOSE
 - migration 181
- SOS
 - CEMT INQUIRE DSAS 18, 19, 21
 - CEMT INQUIRE SYSTEM 21, 22
- SOSABOVEBAR
 - CEMT INQUIRE DSAS 18, 21
- SOSABOVEBAR option
 - INQUIRE SYSTEM command 67
- SOSABOVELINE
 - CEMT INQUIRE DSAS 18
 - CEMT INQUIRE SYSTEM 21
- SOSABOVELINE option
 - INQUIRE SYSTEM command 67
- SOSBELOWLINE
 - CEMT INQUIRE DSAS 19
 - CEMT INQUIRE SYSTEM 21

- SOSBELOWLINE option
 - INQUIRE SYSTEM command 67
- SPCTRx system initialization parameter 10
- SRVERCP system initialization parameter 15
- SSL
 - migration 181, 185
- SSLCACHE system initialization parameter 15
- START
 - migration to channels and containers 134
- START BREXIT 169
- STATEOD system initialization parameter 15
- STATINT system initialization parameter 15
- statistics records 111
- STNTR, STNTRxx, SPCTR and SPCTRx system initialization parameter 11
- STNTRxx system initialization parameter 10
- sympathy sickness 155
- system initialization parameters 7
 - AIBRIDGE 11
 - BRMAXKEEPTIME 11
 - changed 8
 - CLINTCP 11
 - CRLSERVER 11
 - DCT (obsolete) 7
 - DEBUGTOOL 13
 - EDSALIM 9
 - EJBROLEPRFX 13
 - IIOPLISTENER 13
 - INFOCENTER 13
 - JVMCCPROFILE 14
 - JVMCCSIZE 14
 - JVMCCSTART 14
 - JVMPROFILEDIR 14
 - JVMxxxTRACE 14
 - KEYFILE (obsolete) 7
 - KEYRING 14
 - LOCALCCSID 14
 - MAXJVMTCBS 9, 14
 - MAXSOCKETS 15
 - MAXSSLTCBS 15
 - MAXXPTCBS 15
 - MNEVE (obsolete) 7
 - MNRES 15
 - new 11
 - obsolete 7
 - RSTSIGNOFF 15
 - RSTSIGNTIME 15
 - SPCTR 10
 - SRVERCP 15
 - SSLCACHE 15
 - STATEOD 15
 - STATINT 15
 - STNTR 10
 - STNTR, STNTRxx, SPCTR and SPCTRx 11
 - XEJB 16
 - XRFSSOFF (obsolete) 7
 - XRFSTIME (obsolete) 7
- system initialization table
 - default 7
- system programming interface
 - changed SPI commands 63

- system programming interface (*continued*)
 - new commands 73
 - CREATE CORBASERVER 74
 - CREATE DJAR 74
 - DISCARD CORBASERVER 74
 - DISCARD DJAR 74
 - INQUIRE BEAN 74
 - INQUIRE BRFACILITY 74
 - INQUIRE CORBASERVER 75
 - INQUIRE DISPATCHER 75
 - INQUIRE DJAR 75
 - INQUIRE JVMPOOL 75
 - PERFORM CORBASERVER 75
 - PERFORM DJAR 75
 - SET BRFACILITY 75
 - SET CORBASERVER 75
 - SET DISPATCHER 75
 - SET JVMPOOL 75
 - new options
 - COLLECT STATISTICS 70
 - CREATE DB2CONN 70
 - CREATE PROGRAM 70
 - CREATE REQUESTMODEL 70
 - CREATE TCPIPSERVICE 70
 - CREATE TRANSACTION 70
 - CREATE TYPETERM 70
 - INQUIRE CONNECTION 71
 - INQUIRE DB2CONN 71
 - INQUIRE NETNAME 71
 - INQUIRE PROGRAM 71
 - INQUIRE REQUESTMODEL 71
 - INQUIRE SYSTEM 71
 - INQUIRE TASK 71
 - INQUIRE TCPIP 71
 - INQUIRE TCPIPSERVICE 71
 - INQUIRE TERMINAL 71
 - INQUIRE TRACETYPE 72
 - INQUIRE TRANSACTION 72
 - INQUIRE UOW 72
 - INQUIRE UOWLINK 72
 - PERFORM STATISTICS RECORD 72
 - SET AUTOINSTALL 72
 - SET DB2CONN 72
 - SET PROGRAM 72
 - SET SYSTEM 72
 - SET TCPIP 73
 - SET TRACETYPE 73
 - obsolete commands and options 63
 - obsolete options
 - CREATE PROGRAM 62
 - CREATE TYPETERM 62
 - INQUIRE CORBASERVER 62
 - INQUIRE DISPATCHER 62
 - INQUIRE PROGRAM 62
 - SET DISPATCHER 62
 - SET PROGRAM 62
 - obsolete SPI command options 61
 - system programming interface (SPI) 61

T

- TAPEJRNL 202
- task-related user exits
 - migration 89
- TCAM networks 131
- TCAM user exit, obsolete 81
- TCAM/ACB 131
- TCAM/DCB 131
- TCP/IP Socket Interface for CICS 141
- TCPIPSERVICE definition
 - REALM attribute 40
- TCPIPSERVICE resource definition
 - migration 181
- TCPIPSERVICE resource definition change
 - PORTNUMBER 38
- TCPIPSERVICE resource definition, new keywords 42
- threadsafe programming
 - migration 173, 175
- TRANSACTION resource definition, new keyword 42
- transactions
 - CCRL 31
 - CEMN 32

U

- upgrading the CSD 120
 - SCAN function 122
- user key for Java programs
 - migration 162
- user-replaceable programs 93
 - DFHAPXPO 97
 - DFHCNV 96
 - DFHDSRP 93
 - DFHDYP 93
 - DFHEJDNX 97
 - DFHISAIP 97
 - DFHPGADX 94
 - DFHXOPUS 94
 - DFHZATDX 95
 - DFHZATDY 95
 - DFHZNEP 95
 - IIOF security program, DFHXOPUS 94
- USERNAME option
 - WEB SEND command (Client) 54
- USERNAMELEN option
 - WEB SEND command (Client) 54

V

- VOLUME 202

W

- Windows remote MAS
 - removal of support 219
- workload manager
 - EWLM
 - migration 157
- WUI plex definition 195

X

- X2TASK 203
- XAPADMGR, new user exit 86
- XCFGROUP
 - CEMT INQUIRE IRC 19
- XCFGROUP option
 - INQUIRE IRC command 64
- XCFGROUP, parameter of DFHXCOPT 91
- XCTL
 - migration to channels and containers 134
- XDSPGBL 203
- XDSPPOOL 203
- XEJB system initialization parameter 16
- XFCFRIN, new user exit 87
- XFCFROUT, new user exit 87
- XHFS system initialization parameter
 - migration 181, 185
- XICERES, new user exit 87
- XJVMPOOL 203
- XLEC transaction 194
- XLSRPBUF 203
- XMONITOR 203
- XOPDIRECTST
 - CEMT INQUIRE PIPELINE 21
 - CEMT INQUIRE WEBSERVICE 22
- XOPDIRECTST option
 - INQUIRE WEBSERVICE command 68
- XOPSUPPORTST
 - CEMT INQUIRE PIPELINE 21
 - CEMT INQUIRE WEBSERVICE 23
- XOPSUPPORTST option
 - INQUIRE WEBSERVICE command 69
- XPCERES, new user exit 87
- XPCFTCH 189
- XPCTA 189
- XPLINK option
 - migration 189
- XPROGRAM 203
- XRES system initialization parameter
 - migration 181, 185
- XRFSSOFF system initialization parameter 7
- XRFSTIME system initialization parameter 7
- XSNEF, new user exit 88
- XSTREAM 203
- XTASK 202, 203
- XTCTIN, obsolete user exit 81
- XTCTOUT, obsolete user exit 81
- XWBAUTH, new user exit 86
- XWBOPEN, new user exit 87
- XWBSNDO, new user exit 87

Z

- z/OS conversion services 119

Notices

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

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

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

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

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

The following paragraph does not apply in the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore this statement may not apply to you.

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

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

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

Trademarks

The following terms are trademarks, or registered trademarks, of International Business Machines Corporation in the United States, or other countries, or both:

Trademarks and service marks

The following terms, used in this publication, are trademarks or service marks of IBM Corporation in the United States or other countries:

CICS	CICSplex	CICS/ESA	CICS/MVS
C/370	DB2	IBM	
Language Environment		MVS	OS/390
Parallel Sysplex	RACF	SupportPac	TXSeries
VisualAge	VSE/ESA	VTAM	WebSphere
z/OS			

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft[®], Windows, Windows NT[®], and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a trademark of The Open Group in the United States, or other countries, or both.

Other company, product, and service names may be trademarks or service marks of others.

Readers' Comments — We'd Like to Hear from You

**CICS Transaction Server for z/OS
Migration from CICS TS Version 1.3
Version 3 Release 2**

Publication No. GC34-6855-00

We appreciate your comments about this publication. Please comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this book. The comments you send should pertain to only the information in this manual or product and the way in which the information is presented.

For technical questions and information about products and prices, please contact your IBM branch office, your IBM business partner, or your authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you state on this form.

Comments:

Thank you for your support.

Submit your comments using one of these channels:

- Send your comments to the address on the reverse side of this form.
- Send a fax to the following number: +44-1962-816151
- Send your comments via e-mail to: idrcf@hursley.ibm.com

If you would like a response from IBM, please fill in the following information:

Name

Address

Company or Organization

Phone No.

E-mail address



Fold and Tape

Please do not staple

Fold and Tape

PLACE
POSTAGE
STAMP
HERE

IBM United Kingdom Limited
User Technologies Department (MP095)
Hursley Park
Winchester
Hampshire
SO21 2JN
United Kingdom

Fold and Tape

Please do not staple

Fold and Tape



Program Number: 5655-M15

GC34-6855-00



Spine information:



CICS Transaction Server for z/OS Migration from CICS TS Version 1.3

Version 3
Release 2