CICS Transaction Server for z/OS
Version 4 Release 1

Upgrading from CICS TS Version 2.3

GC34-6996-03

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Note

Before using this information and the product it supports, read the information in "Notices" on page 405.

This edition applies to Version 4 Release 1 of CICS Transaction Server for z/OS (product number 5655-S97) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Preface

This information is about upgrading to CICS® Transaction Server for z/OS®, Version 4 Release 1. This information set provides the relevant information for users who are upgrading from CICS Transaction Server for z/OS, Version 2 Release 3.

If you are upgrading from an older release, select the information set for the release from which you are upgrading. The information sets for older releases include additional information about changes that took place in the intervening releases.

Note: The oldest release for which information about upgrading is provided with CICS Transaction Server for z/OS, Version 4 Release 1 is CICS Transaction Server for z/OS, Version 2 Release 3. If you are upgrading from a release of CICS earlier than this, you are recommended to read the information about upgrading and about changes to functions that was provided in the documentation for any additional intervening releases.

In releases before CICS Transaction Server for z/OS, Version 4 Release 1, the information about upgrading from previous releases to the current release of CICS Transaction Server was called the Migration Guide. Although the term "migrate" was used in the CICS documentation to refer to the process of replacing an older release of CICS with a newer release, the industry-standard term for this process is "upgrade", so the CICS documentation has been changed to use this term. "Migrate" is now used only to refer to the processes of moving data or applications to a different program or environment, or of moving from the use of one function or interface in CICS to the use of a different function or interface.

The information about upgrading is designed to tell you about:

- Any changes to the installation process for the product.
- New, changed and obsolete externals of the product, such as commands and messages.
- Tasks that you perform to upgrade from your previous release of the product, to the new release, so that the applications that ran under your previous release can continue to run under the new release at an equivalent level of function. Some tasks apply to all users, and some apply only if your applications use a particular function, such as support for Java.
- Tasks that you perform if you want to enable new functions that are available in this release, or change your existing system settings or applications to use the new functions.

This information 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 What's New*.

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 upgrading.

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

CICS externals, such as resource definitions and programming interfaces, have changed to support the changes in function for this CICS release. Read these topics to check which changes might affect your system.

Chapter 1. Changes to installation procedures

When you upgrade to CICS Transaction Server for z/OS, Version 4 Release 1, note these changes to the installation process and important new requirements.

You can install this release of CICS Transaction Server using the SMP/E RECEIVE, APPLY, and ACCEPT commands. Use the SMP/E dialogs to accomplish the SMP/E installation steps. The process meets IBM® Corporate Standards and might be familiar to you if you 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.

To fully support the extended z/Architecture MVS linkage improvements, the following APARs are required:

PK71900 is a Language Environment APAR for z/OS 1.9 and z/OS 1.10

PK85446 is a Communications Server APAR for z/OS 1.9 and z/OS 1.10

CICS region user ID access to VSAM catalogs

You must grant the CICS region user ID read access to each VSAM catalog for files for which CICS has file definitions installed and are to be either opened during CICS startup or at any time after.

Include the VSAM catalog for the DFHCSD file for the CICS system definition data set (CSD).

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.

Authorization routines

In z/OS, do not install SVCs or PC routines that return control to their caller in any authorized mode: that is, in supervisor state, system PSW key, or APF-authorized. Doing so is contrary to the z/OS Statement of Integrity (http://www.ibm.com/systems/z/os/zos/features/racf/zos_integrity_statement.html).

If you invoke such services from CICS, you might compromise your system integrity, and any resultant problems will not be resolved by IBM Service.

Integration of CICSPlex SM and 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 combination of parameters that apply only for CICSPlex SM, parameters that apply only for CICS, and parameters that are common to CICS and CICSPlex SM.

For CICSPlex SM, DFHISTAR generates these sample JCL procedures:

- 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)

With these procedures, you can create a 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 supports IPIC connections, but it is required whether or not you plan to use that type of connection. It also allows multiple XCF groups to contain CICS regions.

Requirement for MEMLIMIT value

To use storage above the 2 GB boundary (above the bar) when upgrading to CICS TS for z/OS, Version 4.1, set your MEMLIMIT value equal to or greater than 2 GB.

About this task

Set the MEMLIMIT value using any of these methods:

Procedure

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

Results

System usage and workload remain the same as they were before you altered the MEMLIMIT value. You cannot alter the MEMLIMIT value on a running system.

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

Release levels on INQUIRE SYSTEM command

You 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 4.1 is 0660. This number is returned in the RELEASE parameter of the INQUIRE SYSTEM command.

The level number also appears in the alternative decimal form 6.6 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 DFHPD660.

Installing IPIC support

IP interconnectivity (IPIC) enables you to make CICS TS-to-CICS TS distributed program link (DPL) calls over TCP/IP connections. To enable support for this function, you need to activate CICS TCP/IP services, and define and install some resource definitions.

System initialization parameters

To activate IPIC at CICS startup, specify `TCPIP=YES` and `ISC=YES` as system initialization parameters. The default value of the **TCPIP** and **ISC** parameters is NO.

Defining IPIC connections

Before you can use IPIC, you must:

- Define and install IPCONNs with attributes appropriate to your CICS environment.
- Define and install a TCPIPSERVICE definition with the PROTOCOL attribute set to IPIC.
- Review your MAXSOCKETS system initialization parameter settings. Ensure that you allocate enough sockets to support IPIC connections and other traffic that requires IP sockets.

Chapter 2. Changes to system initialization parameters

In CICS Transaction Server for z/OS, Version 4 Release 1, new system initialization parameters are available, and you might find that some system initialization parameters that you used previously are now obsolete. Also, the scope, default, or range of possible values for some existing system initialization parameters has changed. You might need to make changes to your system initialization table or your CICS startup JCL because of these changes.

To upgrade with the changes to CICS system initialization parameters described in this section, follow these instructions.

Use the default system initialization table
: The unsuffixed default system initialization table (DFHSIT) is supplied in the CICS SDFHAUTH library. You can use the default table to start a CICS region using the default values. CICS loads DFHSIT by default if your JCL does not contain a SIT parameter.

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 during testing by changing the data set member, 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 main exceptions are the FCT and CSD parameters.

Defining and installing the global catalog record key
: Global catalogue keys have increased in length by 24 bytes. Define a 52-byte global catalog record key in the CLUSTER definition in DD statement for the global catalog.

Obsolete system initialization parameters

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

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 specified, it is rejected and a message is issued.

System initialization parameters made obsolete in CICS Transaction Server for z/OS, Version 3 Release 1

MAXHPTCBS
: Run-time support for Java program objects and hot-pooling (HPJ) has been removed. The system initialization parameter MAXHPTCBS is not required, and is removed. The open TCB mode H8, which was used for hot-pooling Java program objects and was controlled by MAXHPTCBS, no longer exists.

SSLTCBS
: This parameter is now obsolete and is only kept for compatibility. If it is specified, it is rejected with a message and MAXSSLTCBS is assumed.

TCAM

This parameter is now obsolete and is only kept for compatibility. If it is specified, it is rejected with a message and TCAM=NO is assumed.

In CICS Transaction Server for z/OS, Version 3 Release 1, support for the TCAM/ACB interface was removed. The TCAM/DCB interface is supported only indirectly.

Changed system initialization parameters

For some system initialization parameters, the default has changed, or the values that you can specify have changed, or the scope of the system initialization parameter has changed. You might need to modify your system initialization table or CICS startup JCL because of these changes.

System initialization parameters changed in CICS Transaction Server for z/OS, Version 4 Release 1

INITPARM=(DFHMQPRM='SN=*queue manager name*,IQ=*initiation queue name*')

You can no longer use the INITPARM system initialization parameter with a DFHMQPRM operand to specify a default WebSphere® MQ queue manager name and initiation queue name for the CICS-MQ connection. Instead, set up an MQCONN resource definition for the CICS region to provide these defaults. CICS issues a warning message if the DFHMQPRM operand is present on INITPARM when you start the CICS-MQ connection, and the settings are ignored. The INITPARM system initialization parameter itself is still valid with other operands.

JVMPROFILEDIR={/usr/lpp/cicsts/cicsts41/JVMProfiles|*directory*}

The default value for the JVMPROFILEDIR system initialization parameter now consists of the value of the new CICS_HOME system initialization parameter, followed by the subdirectory JVMProfiles. The default value for the CICS_HOME system initialization parameter is /usr/lpp/cicsts/cicsts41, so if that default value is used, the default value of JVMPROFILEDIR is /usr/lpp/cicsts/cicsts41/JVMProfiles.

MQCONN={NO|YES}

Specifying MQCONN=YES makes CICS start a connection to WebSphere MQ automatically during initialization. CICS no longer uses the INITPARM system initialization parameter to provide information for this process.

When you specify **MQCONN=YES**, the information that CICS needs to start the connection to WebSphere MQ, such as the name of a WebSphere MQ queue manager or queue-sharing group, is taken from the MQCONN resource definition for the CICS region.

An MQCONN resource definition must be installed before CICS can start the connection to WebSphere MQ. When you start the connection automatically at CICS initialization, for an initial or cold start, the MQCONN resource definition must be present in one of the groups named in the list or lists named by the **GRPLIST** system initialization parameter. For a warm or emergency start of CICS, the MQCONN resource definition must have been installed by the end of the previous CICS run.

PSTYPE={SNPS|MNPS|NOPS}

NOPS is a new option for this system initialization parameter.

If you do not require persistent sessions support, specify NOPS. A CICS region that is used only for development or testing might not require this support.

Removing persistent sessions support where it is not required reduces resource consumption, and can enable you to increase the number of CICS regions in an LPAR. If you specify NOPS, a zero value is required for the **PSDINT** system initialization parameter.

USRDELAY={30|*number*}

If you specify a low value for the **USRDELAY** system initialization parameter to ensure that CICS quickly detects changes to RACF profiles, you might want to increase this value if your z/OS system is z/OS 1.11 or above, because from z/OS 1.11, CICS is notified immediately if RACF® profile changes occur. The primary impact of a high **USRDELAY** value is that the amount of storage used for RACF control blocks is increased.

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

APPLID={DBDCCICS|applid}

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={SHOW|HIDETC}

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. When you specify CONFDATA=HIDETC, IS data is handled as follows:

- **IPIC**: 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 0602, 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.

EDSALIM={34M|number}

The default EDSA limit is now 34 MB. If you created your SIT using previously supplied defaults, 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
MIXED 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.

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.

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

TRTABSZ={4096|number-of-kilobytes}
The default number of kilobytes for the internal trace table has increased to 4096.

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

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.

New system initialization parameters

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

New system initialization parameters added in CICS Transaction Server for z/OS, Version 4 Release 1

- The **USSHOME** system initialization parameter specifies the name and path of the root directory for CICS TS 4.1 files on z/OS UNIX.

  USSHOME={/usr/lpp/cicsts/cicsts41/ | *directory* | NONE}
  The value for the **USSHOME** system initialization parameter must match the directory that you specified for CICS TS 4.1 files on z/OS UNIX when you installed CICS using the DFHISTAR installation job. The default value for the **USSHOME** system initialization parameter is /usr/lpp/cicsts/cicsts41, which matches the default values for the DFHISTAR installation job.

  If you changed any of the **TINDEX**, **PATHPREFIX**, or **USSDIR** parameters in the DFHISTAR installation job, you must specify a value for the **USSHOME** system

initialization parameter to match the name and path that you specified for the root directory using those DFHISTAR parameters.

If you specify **USSHOME=NONE** instead of specifying a directory name, CICS does not use any default root directory in the UNIX System Services file system. In this case, some CICS functions that request data from this directory might produce unpredictable results.

- The **MNIDN** system initialization parameter specifies whether the monitoring identity class is to be made active during CICS initialization.

  MNIDN={OFF|ON}
  The monitoring identity class status is recorded in the CICS global catalog for use during warm and emergency restarts.
  OFF Set identity monitoring class to not active.
  ON Set identity monitoring class to active.

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

- The **FCQRONLY** system initialization parameter specifies whether you want CICS to force all CICS API 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.

  FCQRONLY={YES|NO}
  Valid values are as follows:

  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 minimize the amount of locking required at the expense of additional TCB switches if requests are run on open TCBs.

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

- The **NONRLSRECOV** system initialization parameter specifies whether CICS uses the recovery options of the VSAM catalog or the FILE resource for non-RLS files, including the CSD. This parameter was added by a PTF.

  NONRLSRECOV={VSAMCAT|FILEDEF}
  Recovery options do not apply to read-only files. Valid values are as follows:

  VSAMCAT
  By default, CICS uses the recovery options that are specified on the VSAM catalog for non-RLS files. These recovery options include the LOG, LOGSTREAMID, and BWO options. If no recovery options are set, CICS uses the attributes on the FILE resource.

  FILEDEF
  For non-RLS files, including the CSD, CICS ignores any recovery options on the catalog and uses the values specified in the FILE resource instead. The recovery attributes for the CSD are set by the appropriate system initialization parameters.

- The **XCFGROUP** system initialization parameter specifies the name of the cross-system coupling facility (XCF) group to be joined by this region.

XCFGROUP={DFHIR000|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”.

You can specify **XCFGROUP** on the SIT macro or as a SYSIN override. You cannot specify it as a console override.

Each CICS region can join only one XCF group, which happens when it signs on to CICS interregion communication (IRC). The default XCF group is DFHIR000.

XCF groups allow CICS regions in different MVS images within the same sysplex to communicate with each other across multi-region operation (MRO) connections.

Note: Regions in the same MVS image too, can communicate with each other using MRO, but this does not require a coupling facility. The only situation in which CICS regions in the same MVS image cannot communicate via MRO is when they are members of different XCF groups.

For introductory information about XCF/MRO, and instructions on how to set up XCF groups, see the *CICS Intercommunication Guide*.

- The **XHFS** system initialization parameter specifies whether CICS is to check the transaction user's ability to access files in the z/OS UNIX System Services file system.

  XHFS={YES|NO}

  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. 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.

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

  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.

- The **XRES** system initialization parameter specifies whether you want CICS to perform resource security checking for particular CICS resources and optionally specifies the general resource class name in which you have defined the resource security profiles.

  XRES={YES|name|NO}

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

specify YES, or a general resource class name, CICS calls the external security manager to verify that the user ID associated with a transaction is authorized to use the resource. This checking is performed every time a transaction tries to access a resource.

The actual profile name passed to the external security manager is the name of the resource to be checked, prefixed by its resource type; 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.

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 user ID 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 R*name* and the grouping class name is W*name*. The resource class name specified must be 1 through 7 characters.

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

New system initialization parameters added in CICS Transaction Server for z/OS, Version 3 Release 1

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.

CRLPROFILE=*profilename*
Specifies the name of the profile that authorizes CICS to access the LDAP server 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.

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.

MAXSSLTCBS={8|*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={5|*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.

SRVERCP={037|*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={CICS| SYSPLEX}
Specifies whether SSL is to use the local or sysplex caching of session IDs.

Chapter 3. Changes to the EXEC CICS application programming interface

CICS Transaction Server for z/OS, Version 4 Release 1 includes some new API commands to support new CICS functions, and some existing commands have changes to options and error conditions.

Program compatibility

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

Except for the specific cases described in these topics, 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 run correctly under the previous release.

For information about CICS support for application programming languages, see the *CICS Transaction Server for z/OS What's New*.

Client basic authentication on WEB SEND commands

EXEC CICS WEB SEND(CLIENT) commands that do not use the AUTHENTICATE option will send authentication information to an HTTP server if the following statements are both true:

- The AUTHENTICATE(BASIC) attribute has been set on the URIMAP resource.
- The XWBAUTH global user exit is enabled.

They will send authentication information because, if a Web Services client wants to communicate with an HTTP server that requires authentication, the Web Services client provides the basic authentication information required by the HTTP server, by means of the URIMAP resource and the XWBAUTH global user exit. If you specify an authentication value on an API command, for example, **WEB SEND**, this value is used instead of the AUTHENTICATE value specified in the URIMAP resource. If you also specify a user ID and password in the command, the XWBAUTH global user exit is not called.

IPIC override for default connections

When a START or CANCEL command is sent, an IPIC connection is used, if available. The following rules apply:

- The IPIC connection, which is defined in the IPCONN resource, overrides any default APPC or MRO connections with the same name, which are defined in the CONNECTION resource.
- If you have not configured an IPCONN resource or the IPCONN is not acquired but is in service, a CONNECTION resource with the same name is used.
- If an APPC or MRO connection is used and the CONNECTION resource is not configured, the command is not sent.

Obsolete API commands and options

Some API commands are now obsolete in CICS Transaction Server for z/OS, Version 4 Release 1, and some commands that are still current have individual options or RESP2 values that are obsolete.

Table 1. Obsolete API commands and options

Commands	Changes
• 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

Some API commands are extended with new options or RESP2 values. Also, the usage of certain options on existing API commands has changed; check the new descriptions to ensure that you are using these options in the best way.

ASKTIME ABSTIME

The `ABSTIME` value that is returned by the **`EXEC CICS ASKTIME`** command is no longer rounded to the nearest 1/100 second. For more information, see “Changes to rounding for ASKTIME, CONVERTTIME, and FORMATTIME commands” on page 27.

CONVERTTIME

A new time format RFC 3339 is available:

RFC 3339 format
The XML dateTime datatype, specified in RFC 3339, which is taken from the ISO 8601 standard. An example of a date and time stamp in this format is "2003-04-01T10:01:02.498Z". Date and time stamps in this format are in UTC (Coordinated Universal Time, which differs only slightly from GMT), with the time zone offset (-12:00 to +12:00) indicated at the end of the date and time stamp, or the letter Z for a zero offset (+00:00). The decimal fraction of a second that is shown in the example is optional.

The command now converts all the supported time formats (not just RFC 1123 format) to local time for the ABSTIME that is returned. Also, the `ABSTIME` is no longer rounded to the nearest 1/100 second.

For more information about the change to rounding, see "Changes to rounding for ASKTIME, CONVERTTIME, and FORMATTIME commands" on page 27.

EXTRACT TCPIP

New client options, CLNTADDR6NU and CLNTIPFAMILY, and server options, SRVRADDR6NU and SRVRIPFAMILY, return IPv6 address information. Existing options CADDRLENGTH, CLIENTADDR, SADDRLENGTH, and SERVERADDR are updated to return IPv6 information.

CADDRLENGTH*(data-area)*
Returns the length of the buffer supplied on the CLIENTADDR option, and is set to the length of the data returned to the application. If the CLIENTADDR is an IPv6 address, you must set the buffer length of CADDRLENGTH to at least 39 characters. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

CLIENTADDR*(data-area)*
Returns a buffer containing the IP address of the client. The IP address can be in IPv4 or IPv6 format. IPv4 addresses are returned as native IPv4 dotted decimal addresses; for example, `1.2.3.4` IPv6 addresses are returned as native IPv6 colon hexadecimal addresses; for example, `::a:b:c:d`

For information on IP addresses, see the *CICS Internet Guide*.

CLNTADDR6NU*(data-area)*
Returns a 16-byte field containing the IPv6 address of the client in binary form. This option is returned only if the option CLNTIPFAMILY has a value of `IPV6`. If the address is in IPv4 format, the address is returned in the CLNTADDRNU option and zeros are returned to CLNTADDR6NU.

CLNTIPFAMILY*(cvda)*
Returns the format of the IP address of the client. Here are the values:

IPV4 CLIENTADDR returns a dotted decimal IPv4 address and CLIENTADDRNU returns the IPv4 address in binary form.

IPV6 CLIENTADDR returns a colon hexadecimal IPv6 address and CLIENTADDR6NU returns the IPv6 address in binary form.

NOTAPPLIC
The source of the input has not been determined. `0.0.0.0` is returned.

SADDRLENGTH*(data-area)*
Returns the length of the buffer supplied on the SERVERADDR option, and is set to the length of the data returned to the application. If SERVERADDR is an IPv6 address, you must set the buffer length of SADDRLENGTH to at least 39 characters. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

SERVERADDR*(data-area)*
Returns a buffer containing the IP address of the server. The IP address can be in IPv4 or IPv6 format. IPv4 addresses are returned as native IPv4 dotted decimal addresses, for example; `1.2.3.4`. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses; for example, `::a:b:c:d`. If an error occurs, `0.0.0.0` is returned and the data is truncated.

SRVRADDR6NU*(data-area)*
Returns a 16-byte field containing the IPv6 address of the server in binary form. This option is returned only if the option SRVIPFAMILY has a value of `IPV6`. If the address is in IPv4 format, the address is returned in the SERVERADDRNU option and zeros are returned in SRVRADDR6NU.

SRVRIPFAMILY*(cvda)*
Returns the format of the IP address of the server. Here are the values:

IPV4 SERVERADDR returns a dotted decimal IPv4 address and SERVERADDRNU returns the IPv4 address in binary form.

IPV6 SERVERADDR returns a colon hexadecimal IPv6 address and SERVERADDR6NU returns the IPv6 address in binary form.

NOTAPPLIC
The source of the input has not been determined. `0.0.0.0` is returned.

FORMATTIME

A new time format RFC 3339 and a new MILLISECONDS option are available:

MILLISECONDS(*data-area***)**
Returns the number of milliseconds in the current second specified by ABSTIME, as a binary integer in the range 0 - 999.

STRINGFORMAT*(cvda)*
Specifies the format for the architected date and time stamp string returned in DATESTRING.

RFC3339
Specifies the RFC 3339 format, also known as the XML dateTime datatype. This format is an implementation of the ISO 8601 standard, and it is suitable for Atom feeds. An example of a date and time stamp in this format is "2003-04-01T10:01:02.498Z". Date and time stamps in this format are in UTC (Coordinated Universal Time, which differs only slightly from GMT). This date and time stamp string contains the date and the 24-hour clock time, including a decimal fraction of the second. The decimal fraction of a second is optional in the specification, but the EXEC CICS FORMATTIME command always includes it. The time zone offset (-12:00 to +12:00) is indicated at the end of the date and time stamp, with the letter Z used for a zero offset (+00:00). The EXEC CICS FORMATTIME command always returns the time with a zero offset from UTC.

A formatted time that is returned by the **EXEC CICS FORMATTIME** command is no longer rounded up if the number of milliseconds is greater than 500. The time is now truncated, and the milliseconds value is available separately. For more information, see “Changes to rounding for ASKTIME, CONVERTTIME, and FORMATTIME commands” on page 27.

INVOKE WEBSERVICE

This command is deprecated. For all new Web service requester applications, use the **INVOKE SERVICE** command. The **INVOKE WEBSERVICE** command continues to work for all existing requester applications.

WEB EXTRACT and EXTRACT WEB

The HOST option is extended to support IPv6 addresses. A new option, HOSTTYPE, returns the format of the HOST option.

HOST*(data-area)*

For CICS as an HTTP server, HOST specifies a buffer to contain the host component of the URL, as specified either in the Host header field for the request or in the request line (if an absolute URI was used for the request). The port number is presented separately using the PORTNUMBER option.

For CICS as an HTTP client, with the SESSTOKEN option, HOST specifies a buffer to contain the host name of the server in the connection identified by the SESSTOKEN option. The port number is presented separately using the PORTNUMBER option.

An IPv4 or IPv6 address can represent the host name. IPv4 addresses are returned as native IPv4 dotted decimal addresses; for example, `1.2.3.4`. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses; for example, `::a:b:c:d`

For information on IP addresses, see the *CICS Internet Guide*.

HOSTTYPE*(cvda)*

Returns the address format of the HOST option. Here are the values:

HOSTNAME
: The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4 The address is a dotted decimal IPv4 address.

IPV6 The address is a colon hexadecimal IPv6 address.

NOTAPPLIC
: An incorrect host address was returned (`HOST=0.0.0.0`).

WEB OPEN

The HOST option is extended to support IPv6 addresses.

HOST*(data-value)*

Specifies the host name on the server to which you want to connect. You can extract this information from a known URL using the WEB PARSE URL command, or from an existing URIMAP definition using the WEB EXTRACT URIMAP command. You can specify the URIMAP option to use this information directly from an existing URIMAP definition, in which case the HOST option is not required.

A character host name, IPv4 address, or IPv6 address can represent the host name. If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment.

For more information on IPv6, see the *CICS Internet Guide*.

You can specify IPv4 and IPv6 addresses in a number of formats. For information on IP addresses, see the *CICS Internet Guide*.

If you require a port number, you must not include the port number as part of the HOST option. Use the PORTNUMBER option instead.

WEB PARSE URL

The HOST option is extended to support IPv6 addresses. A new option, HOSTTYPE, returns the format of the HOST option.

HOST*(data-area)*
Returns the host component of the URL. This value can be either a character host name or a numeric IP address. If a port number is specified explicitly in the URL, the port number is returned separately as the PORTNUMBER option.

An IPv4 or IPv6 address can represent the host name. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses, for example, `::a:b:c:d`. If you specify an IPv6 address in a URL, for example, `http://[::a:b:c:d]:80`, HOST returns the address without brackets.

Use the characters X'BA' and X'BB' (code page 37) to represent square brackets when you specify IPv6 addresses.

For information on IP addresses, see the *CICS Internet Guide*.

HOSTTYPE*(cvda)*
Returns the address format of the HOST option. Here are the values:

HOSTNAME
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4 The address is a dotted decimal IPv4 address.

IPV6 The address is a colon hexadecimal IPv6 address.

WSACONTEXT BUILD and WSACONTEXT GET

The CICS translator now verifies that you have specified all of the required EPR options on the WSACONTEXT BUILD or WSACONTEXT GET command. If an application program specifies the EPRFROM, EPRSET, or EPRINTO option on a WSACONTEXT command but omits the EPRTYPE option, an empty WS-Addressing container is created. Alter, re-translate, and recompile any application programs that contain EXEC CICS WSACONTEXT commands with some, but not all, of the EPR options specified.

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

These API commands were extended or changed in CICS Transaction Server for z/OS, Version 3 Release 2.

DOCUMENT CREATE and DOCUMENT SET

A new error condition, NOTAUTH, might be received if resource security for document templates is active in the CICS region.

GET CONTAINER CHANNEL

A new INTOCODEPAGE option is added:

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. For more information, see the *CICS Application Programming Guide*..

The description of the INTOCCSID option on the GET CONTAINER CHANNEL command has changed, and a new error condition CODEPAGEERR contains new RESP2 values.

PUT CONTAINER CHANNEL

A new FROMCODEPAGE option is added:

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.

The FROMCCSID and FROMCODEPAGE options set the encoding of data in a container for a **PUT CONTAINER** command, but only where the container is in a channel owned by CICS. This is because, for CHAR containers, the container data is encoded in either the FROMCCSID option specified by the original **PUT CONTAINER** command that created the container or in the FROMCCSID option specified in the sending channel.

If the FROMCCSID option is specified, DATATYPE(DFHVALUE(CHAR)) is implied. If the FROMCCSID and FROMCODEPAGE options are not specified, but a DATATYPE of CHAR is specified, the value for conversion is the default CCSID of the region, or for CICS-created channels, the CCSID of the channel. The default CCSID of the region is specified in the **LOCALCCSID** system initialization parameter.

For an explanation of CCSIDs, see "Data conversion with channels" in the *CICS Application Programming Guide*.

The description of the FROMCCSID option on the PUT CONTAINER CHANNEL command has changed, and a new error condition CODEPAGEERR contains new RESP2 values.

QUERY SECURITY

You can now use the QUERY SECURITY command to determine whether the user has access to the resource definitions for CICS document templates (DOCTEMPLATE).

READ, READNEXT, READPREV, RESETBR, STARTBR, and WRITE

A new option XRBA is added for the READ, READNEXT, READPREV, RESETBR, STARTBR, and WRITE commands:

XRBA
specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. Use this option 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.

The READ and STARTBR commands have a new RESP2 value of 59 for the INVREQ response. The READ, READNEXT, READPREV, RESETBR, and STARTBR commands have a new RESP2 value of 81 for the NOTFND response.

WEB EXTRACT

New options REALM and REALMLEN are added:

REALM*(data-area)*
Specifies, for CICS as an HTTP client, the realm or security environment that contains the data that you are requesting. If you are issuing a command in response to an HTTP 401 message, REALM is the realm value in the most recently received WWW-Authenticate header.

REALMLEN*(data-area)*
Specifies, for CICS as an HTTP client, the buffer length supplied for the REALM option, as a fullword binary variable. If you are issuing a command in response to an 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 are available for specifying authentication credentials:

AUTHENTICATE*(cvda)*
Specifies user authentication details, to control access to restricted data. The CVDA values that apply for CICS as an HTTP client are as follows:

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.

If you specify an authentication value on an API command, for example, **WEB SEND**, this value is used instead of the AUTHENTICATE value specified in the URIMAP resource. If you also specify a user ID and password in the command, the XWBAUTH global user exit is not called.

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 required only if the USERNAME option is used.

If you specify USERNAME and PASSWORD in the **WEB SEND** command and you also specify AUTHENTICATE in the URIMAP resource, the WEB SEND values are used.

USERNAME*(data-value)*
Specifies the user ID or logon name that is allowed access to this data. If the USERNAME is specified, you must also use the PASSWORD option.

If you specify USERNAME and PASSWORD in the **WEB SEND** command and you also specify AUTHENTICATE in the URIMAP resource, the WEB SEND values are used.

USERNAMELEN*(data-value)*
Specifies the buffer length supplied for the USERNAME option as a fullword binary variable.

WEB SEND (Server and Client) and WEB CONVERSE

A new option DOCSTATUS is added to these commands:

DOCSTATUS*(cvda)*
Indicates whether the document will be deleted or not deleted during processing of the WEB SEND command. The CVDA values are as follows:

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, the requests generate a TOKENERR response.

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

WEB OPEN

The descriptions of the HTTPRNUM and HTTPVNUM options have 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 CICS Transaction Server for z/OS, Version 3 Release 1

These API commands were extended or changed in CICS Transaction Server for z/OS, Version 3 Release 1.

HTTPHEADER commands

A number of new options are available on the WEB READ HTTPHEADER, WEB STARTBROWSE HTTPHEADER, WEB READNEXT HTTPHEADER, and WEB ENDBROWSE HTTPHEADER commands.

WEB EXTRACT and EXTRACT TCPIP

These commands have new options.

FORMATTIME

This command has new DATESTRING and STRINGFORMAT options to produce an architected date and time stamp string in RFC 1123 format, which is suitable for use on the Internet.

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 26 explains the consequences for your application programs.

New API commands

CICS Transaction Server for z/OS, Version 4 Release 1 includes some new API commands that you can use to create application programs that use new CICS functions.

New API commands added in CICS Transaction Server for z/OS, Version 4 Release 1

EXEC CICS BIF DIGEST
: Calculate the SHA-1 digest of a string of data.

EXEC CICS INVOKE SERVICE
: This command calls a service from a CICS application. The command specifies the name of a service or the CICS resource, such as a WEBSERVICE resource, that contains information about the service to be called.

EXEC CICS SIGNAL EVENT
: Identify a place in an application program where one or more events could be emitted.

EXEC CICS TRANSFORM DATATOXML
: Use the **TRANSFORM DATATOXML** command to convert application data to XML.

EXEC CICS TRANSFORM XMLTODATA
: Use the **TRANSFORM XMLTODATA** command to convert XML to application data.

EXEC CICS WEB READ QUERYPARM
Read name and value pairs from a query string in a URL.

EXEC CICS WEB STARTBROWSE QUERYPARM
Start browsing query string data in a URL.

EXEC CICS WEB READNEXT QUERYPARM
Retrieve next name and value pair in query string data in a URL.

EXEC CICS WEB ENDBROWSE QUERYPARM
Finish browsing query string data in a URL.

EXEC CICS WSACONTEXT BUILD
Use the **WSACONTEXT BUILD** command to insert or replace WS-Addressing message addressing properties (MAPs) in the addressing context.

EXEC CICS WSACONTEXT DELETE
Use the **WSACONTEXT DELETE** command to delete the addressing context.

EXEC CICS WSACONTEXT GET
Use the **WSACONTEXT GET** command in a service provider to get the message addressing properties (MAPs) sent by the service requester. Use the **WSACONTEXT GET** command in a service requester to get the MAPs of the reply message.

EXEC CICS WSAEPR CREATE
Use the **WSAEPR CREATE** command to create an endpoint reference (EPR) to represent a Web service or Web service resource.

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

EXEC CICS DOCUMENT DELETE
Delete a document.

New API commands added in CICS Transaction Server for z/OS, Version 3 Release 1

Table 2. New API commands added in CICS Transaction Server for z/OS, Version 3 Release 1

Commands	Function
• 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.
• EXEC CICS INVOKE WEBSERVICE • EXEC CICS SOAPFAULT ADD • EXEC CICS SOAPFAULT CREATE • EXEC CICS SOAPFAULT DELETE	Commands for Web services.
• 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)	Commands for CICS as an HTTP client. Some also apply to CICS as an HTTP server.

API commands that have been made threadsafe

These application programming interface commands were not threadsafe when they were first introduced in CICS, but they have now been made threadsafe.

API commands that were made threadsafe in CICS Transaction Server for z/OS, Version 4 Release 1

No existing API commands were made threadsafe in this release.

API commands that were made threadsafe in CICS Transaction Server for z/OS, Version 3 Release 2

WAIT JOURNALNAME
WAIT JOURNALNUM
WRITE JOURNALNAME
WRITE JOURNALNUM

The following API commands were made threadsafe in CICS TS for z/OS, Version 3.2 when the file to which they refer is defined as either local VSAM or RLS.

DELETE
ENDBR
READ
READNEXT
READPREV
RESETBR
REWRITE
STARTBR
UNLOCK
WRITE

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.

The output produced by the external security manager is different 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 codes are produced only if CICS needs to use the old method with a RACROUTE REQUEST=VERIFYX call. Your application programs must 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 produced only 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. Your application programs must therefore not rely on receiving this message.

Changes to rounding for ASKTIME, CONVERTTIME, and FORMATTIME commands

Before CICS TS for z/OS, Version 4.1, ABSTIME values and formatted times returned by EXEC CICS commands were rounded up or down to the nearest hundredth of a second, but now they are always truncated, and the time is available in milliseconds. If you require the rounding behavior, you can code your application to perform rounding.

EXEC CICS ASKTIME ABSTIME

The `ABSTIME` value that is returned by the **`EXEC CICS ASKTIME`** command is no longer rounded to the nearest 1/100 second. The absolute time returned is the system time-of-day clock, adjusted for leap seconds and the local timezone offset, truncated to the millisecond, and returned as a packed decimal of length 8 bytes. It therefore represents the number of milliseconds since 00:00 on 1 January 1900 in the local timezone and adjusted for daylight saving time.

EXEC CICS CONVERTTIME

As for the **`EXEC CICS ASKTIME`** command, the `ABSTIME` value that is returned by the **`EXEC CICS CONVERTTIME`** command is no longer rounded to the nearest 1/100 second, but instead is truncated to the millisecond.

EXEC CICS FORMATTIME

Before CICS TS 4.1, the **`EXEC CICS FORMATTIME`** command rounded up a returned time if the number of milliseconds was greater than 500, except in the case where the `ABSTIME` argument contained a value representing the half-second before midnight, when no rounding was performed, and the `TIME` option returned 23:59:59. This rounding is no longer carried out, and the returned time (for example, with the `TIME` option) is given with the number of completed seconds. You can use the new `MILLISECONDS` option to obtain the number of milliseconds, and you can perform your own rounding if you need to replicate the former behavior of the command.

Chapter 4. Changes to the JCICS application programming interface

The JCICS application programming interface has new methods and other new elements to provide Java support for some of the new functions available through the EXEC CICS application programming interface.

The methods in the JCICS API do not map exactly to the functions available through the EXEC CICS API. For example, the function of a single EXEC CICS command might be provided by multiple JCICS methods, or some functions of an EXEC CICS command might not be supported by any JCICS method. This topic lists the changes to the JCICS API with the EXEC CICS commands that provide the same functions, but the JCICS method and EXEC CICS command do not necessarily provide equivalent functions.

New JCICS methods in CICS Transaction Server for z/OS, Version 4 Release 1

To support functions that are provided by the EXEC CICS EXTRACT TCPIP command, new JCICS methods are available in the TcpipRequest class, as follows:

com.ibm.cics.server.TcpipRequest.getClientHostAddress6()

com.ibm.cics.server.TcpipRequest.getServerHostAddress6()

com.ibm.cics.server.TcpipRequest.getClientIpFamily()

com.ibm.cics.server.TcpipRequest.getServerIpFamily()

To support functions that are provided by the EXEC CICS SIGNAL EVENT command, a new JCICS method is available in the Event and EventErrorException classes, as follows:

com.ibm.cics.server.Event

EventErrorException

To support functions that are provided by the EXEC CICS WEB EXTRACT command, a new JCICS method is available in the HttpRequest and HttpSession classes, as follows:

com.ibm.cics.server.HttpRequest.getHostType()

com.ibm.cics.server.HttpSession.getHostType()

To support functions that are provided by the EXEC CICS WEB READ QUERYPARM command and the associated browsing commands, new JCICS methods are available in the HttpRequest class to read and browse query parameters, as follows:

com.ibm.cics.server.HttpRequest.getQueryParm()

com.ibm.cics.server.HttpRequest.startBrowseQueryParm()

com.ibm.cics.server.HttpRequest.getNextQueryParm()

com.ibm.cics.server.HttpRequest.endBrowseQueryParm()

New JCICS methods in CICS Transaction Server for z/OS, Version 3 Release 2

To support new functions relating to containers and channels that are provided by the Server and Client versions of the EXEC CICS WEB RECEIVE and EXEC CICS WEB SEND commands, new JCICS methods are available in the HttpRequest, HttpResponse, and HttpClientRequest classes as follows:

com.ibm.cics.server.HttpRequest.setContainer()

com.ibm.cics.server.HttpRequest.setChannel()

com.ibm.cics.server.HttpRequest.getContentAsContainer()

com.ibm.cics.server.HttpRequest.getBodyCharset()

com.ibm.cics.server.HttpResponse.setContainer()

com.ibm.cics.server.HttpResponse.setChannel()

com.ibm.cics.server.HttpResponse.getContentAsContainer()

com.ibm.cics.server.HttpResponse.getBodyCharset()

New version of com.ibm.cics.server.HttpResponse.sendDocument()

com.ibm.cics.server.HttpClientRequest.setContainer()

New exceptions for com.ibm.cics.server.HttpClientRequest.sendDocument()

To support the new client basic authentication function that is provided by the EXEC CICS WEB SEND (Client) command, new JCICS methods are available in the HttpClientRequest class as follows:

com.ibm.cics.server.HttpClientRequest.setAuthenticate()

com.ibm.cics.server.HttpClientRequest.setUserName()

com.ibm.cics.server.HttpClientRequest.setPassword()

To support the new document deletion function that is provided by the Server and Client versions of the EXEC CICS WEB SEND command, new JCICS methods are available in the Document class as follows:

com.ibm.cics.server.Document.delete()

New version of com.ibm.cics.server.Document.sendDocument()

New exceptions and datatypes in CICS Transaction Server for z/OS, Version 3 Release 2

Characterset option: All instances of `ClientCodepage` are changed to `Characterset`. This is a documentation change only, and does not affect existing code, or the externals of the class.

CHAR datatype: The datatype CHAR is now supported by the JCICS API for use in the Container class. This datatype can be used in addition to the existing BIT datatype. Use of the new CHAR datatype is available through the following constructor, constants and methods:

New `com.ibm.cics.server.Container ()` constructor

New `Container.DATATYPE_BIT` and `Container.DATATYPE_CHAR` constants

New `getDatatype()` getter method

New version of the `get()` method

New version of the `getLength()` method

New version of the `put (byte[])` method

NotAuthorised Exception: This JCICS application programming interface exception can now be thrown by any of the following methods:

```
com.ibm.cics.server.Document ()
com.ibm.cics.server.Document.create*()
com.ibm.cics.server.Document.append*()
com.ibm.cics.server.Document.insert*()
com.ibm.cics.server.Webservice.invoke()
```

Changes to the JCICS API in CICS Transaction Server for z/OS, Version 3 Release 1

The following new JCICS classes are provided:

com.ibm.cics.server.CCSIDErrorException
com.ibm.cics.server.Channel
com.ibm.cics.server.ChannelErrorException
com.ibm.cics.server.Container
com.ibm.cics.server.ContainerErrorException
com.ibm.cics.server.ContainerIterator
com.ibm.cics.server.WebService

The following JCICS classes are changed:

Program
StartRequest
Task
TerminalPrincipalFacility

Chapter 5. Changes to resource definitions

Changes to the resource definitions available in CICS relate to new, changed, or obsolete CICS functions. The changes might involve complete resource definitions or individual attributes. The resource definitions supplied by CICS have corresponding changes, which you can implement by running the UPGRADE function of the CSD utility program (DFHCSDUP).

IPIC override for default connections

If both an APPC or MRO connection (a CONNECTION resource definition) and an IPIC connection (an IPCONN resource definition) exist between two CICS regions, and both have the same name, the IPIC connection takes precedence. The following rules apply:

- The IPIC connection, which is defined in the IPCONN resource, overrides any default APPC or MRO connections with the same name, which are defined in the CONNECTION resource.
- If you have not configured an IPCONN resource or the IPCONN is not acquired but is in service, a CONNECTION resource with the same name is used.
- If an APPC or MRO connection is used and the CONNECTION resource is not configured, the command is not sent.

For more information about routing transactions between different levels of CICS using IPIC connections, see "Communicating over IPIC with different levels of CICS" on page 199.

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

Obsolete CICS-supplied resource definitions

Some CICS-supplied resource definition groups are now obsolete, and they 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

For some individual attributes of existing resource definitions, the values that you can specify have changed, or the scope of the attribute has changed. If you have resource definitions that use these attributes, check that the value you are using is still the best for your situation.

Resource definition attributes changed in CICS Transaction Server for z/OS, Version 4 Release 1

TERMINAL and TRANSACTION resource definitions: changed REMOTESYSTEM attribute The REMOTESYSTEM option of the TERMINAL and TRANSACTION resources now allows you to specify information about IP connections.

CORBASERVER resource definition: changed HOST attribute CORBASERVER has been extended to allow IPv6 addresses.

HOST(*hostname*)
Specifies the TCP/IP host name, or a string containing the dotted decimal IPv4 or colon hexadecimal IPv6 address, of this logical EJB/CORBA server.

Acceptable characters:
A-Z a-z 0-9 . -

The host name is included in Interoperable Object References (IORs) exported for objects in this logical server. Clients must use this host name to access the CICS listener regions.

If you are using connection optimization by means of Domain Name System (DNS) registration, to balance client connections across the listener regions of your logical IIOP or EJB server, specify the generic host name to be quoted by client connection requests. The generic host name is the DNSGROUP value defined in the TCPIPSERVICE resource definition, suffixed by the name of the domain or subdomain managed by the MVS system name server. This is established by your MVS TCP/IP system administrator. See *Java Applications in CICS* for more information about using DNS with IIOP and enterprise beans.

The HOST attribute must contain only alphanumeric characters, hyphens (-), colons (:), or periods (.), although you cannot use colons when specifying a character host name instead of an IP address. There are a number of acceptable formats when you specify IP addresses. See the *CICS Internet Guide* for more information on address formats.

If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information on IPv6, see the *CICS Internet Guide*.

CICS validates the *hostname* at define time.

IPCONN resource definition: changed HOST attribute IPCONN has been extended to allow IPv6 addresses.

HOST(*hostname*)

Specifies the host name of the remote system or its IPv4 or IPv6 address. The name can be up to 116 characters long. You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the *CICS Internet Guide* for more information about address formats.

If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information about IPv6, see the *CICS Internet Guide*.

The HOST attribute must contain only alphanumeric characters, hyphens (-), colons (:), or periods (.), although you cannot use colons when specifying a character host name instead of an IP address. CICS validates the host name at define time. The host name can be entered in upper, lower, or mixed case characters, but if a character host name is specified instead of an IP address, the host name is converted to lowercase in the IPCONN definition.

HOST is optional when the SENDCOUNT attribute is zero. HOST is a required attribute when SENDCOUNT is greater than zero.

URIMAP resource definition: changed HOST and PATH attributes URIMAP has been extended to allow IPv6 addresses to be specified on the HOST attribute. The HOST and PATH attributes of URIMAP definitions also now support IRIs (Internationalized Resource Identifiers), which permits the use of characters and formats that are suitable for national languages other than English.

- To accommodate the requirements of domain name servers, Web clients convert the host name in an IRI into a format called Punycode. If you want to use an IRI as the link for a Web resource or Atom feed that is served by CICS, in the URIMAP resource that defines the Web client's request to CICS, you must specify the host name in Punycode. CICS does not provide a tool to carry out this conversion, but free applications are available on the Internet to support the conversion of Unicode to Punycode. If you use an asterisk (*) instead of a specific host name, to make the URIMAP resource match any host name, you do not need to use Punycode.
- Web clients do not convert the path component of an IRI into Punycode, but they do escape, or percent-encode, Unicode characters in the path. If you are using an IRI for a Web resource that is served by CICS, in the URIMAP resource definition, you must percent-encode any Unicode characters in the path that you specify. If you do not have an application that can convert Unicode characters to percent-encoded representations, free applications are available on the Internet to perform this task.

HOST(*hostname*|*)

This attribute is for all USAGE options. Specifies the host name of the URI to which the URIMAP definition applies or its IPv4 or IPv6 address. The name can be up to 116 characters long. The components of a URL explains each of the components and how they are delimited.

The HOST attribute must be present. The HOST attribute must contain only alphanumeric characters, hyphens (-), colons (:), or periods (.), although you cannot use colons when specifying a character host name instead of an IP address. CICS validates the host name at define time. A host name can be

entered in any case, but if a character host name is specified instead of an IP address, the host name is converted to lowercase in the URIMAP definition.

When you specify USAGE(SERVER), USAGE(PIPELINE), or USAGE(ATOM), a single asterisk can be used as the HOST attribute, making the URIMAP definition match any host name. An asterisk cannot be used as a wildcard in the HOST attribute along with any other characters.

URIMAP resources support Internationalized Resource Identifiers (IRIs), which can contain Unicode characters. If you specify a host name that contains Unicode characters, you must convert the host name to Punycode format, which is described by RFC 3492. CICS does not provide a tool to carry out this conversion, but free applications are available on the Internet to support the conversion of Unicode to Punycode. If you use an asterisk as the host name, you do not need to use Punycode. For more information about IRIs, see the *CICS Internet Guide*.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the *CICS Internet Guide* for more information about address formats.

If you are using a URIMAP definition relating to CICS as an HTTP client, USAGE(CLIENT), and you need to specify a port number in the request to the server, follow these guidelines:

- Use the PORT attribute to specify the port number. PORT replaces the use of the HOST attribute for specifying a port number.
- For compatibility purposes in existing programs using native IPv4 addresses and host names, you can use the HOST attribute when you specify the port number. Native IPv4 addresses and host names are the only formats in which you can specify the port number, together with a preceding colon; for example, `1.2.3.4:80` or `hostname.com:443`.
- If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information on IPv6, see the *CICS Internet Guide*.
- For native IPv6 addresses, you must use the PORT attribute to specify the port number. IPv6 addresses require square brackets to separate the address from the port number, and, because square brackets are not fixed values in all EBCDIC character sets, square brackets are not supported in the HOST attribute.
- Specify the port number only if it is different from the default for the scheme; 80 for HTTP without SSL or 443 for HTTPS and HTTP with SSL.
- If you specify a port number in the HOST attribute and a different port number in the PORT attribute, an error is returned. If you do not specify a port number in either the HOST or the PORT attribute, the default port number for the scheme is used.

CICS validates the *hostname* at define time.

URIMAP resource definition: additional use for USAGE(CLIENT) Delivery of the HTTP EP adapter for event processing in CICS is supported by an additional use for the URIMAP resource definition. When using the HTTP EP adapter, you must specify a URIMAP with USAGE(CLIENT) in your URIMAP definition.

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

TCPIPSERVICE resource definition: new values

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

  IPIC IPIC protocol is used. Specify IPIC for TCPIPSERVICEs 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 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).

  program_name
  For those protocols for which URM is a required attribute, the default program name depends on the value of the PROTOCOL attribute:
  – 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.

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, 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.

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.

New resource definitions and new attributes

Some new resource definitions are available in CICS Transaction Server for z/OS, Version 4 Release 1, and some new individual attributes are added to existing resource definitions. You can use these new resource definitions and attributes to define support for new CICS functions.

New resource definitions and attributes added in CICS Transaction Server for z/OS, Version 4 Release 1

New ATOMSERVICE resource definition

The new ATOMSERVICE resource defines an Atom service, feed, collection, or category document, and identifies the Atom configuration file, CICS resource or application program, and XML binding that are used to supply the data for the feed. For more information, see the *CICS Resource Definition Guide*.

New BUNDLE resource definition

The new BUNDLE resource defines the resources and artifacts associated with a bundle, which is a unit of deployment for an application. For more information, see the *CICS Resource Definition Guide*

IPCONN resource definition: new IDPROP attribute

A new attribute, IDPROP, specifies whether the distributed identity is transmitted to the connected system by the sender. For more information, see the *CICS Resource Definition Guide*.

New JVMSERVER resource definition

The new JVMSERVER resource defines the runtime environment for a JVM server. For more information, see the *CICS Resource Definition Guide*.

New MQCONN resource definition

The new MQCONN resource definition defines the attributes of the connection between CICS and WebSphere MQ. Only one MQCONN resource definition can be installed at a time in a CICS region. You must install an MQCONN resource definition before you start the connection between CICS and WebSphere MQ. When you install an MQCONN resource definition that includes a setting for the INITQNAME attribute, CICS also installs an implicit MQINI resource definition. For more information, see the *CICS Resource Definition Guide*.

URIMAP resource definition: new ATOMSERVICE, AUTHENTICATE, and USAGE attributes

ATOMSERVICE(*name*)
This attribute is for USAGE(ATOM). When a client makes a request to CICS for an Atom feed using the URI specified by this URIMAP definition, ATOMSERVICE specifies the 1- to 8-character name of the ATOMSERVICE resource definition for the Atom feed. The ATOMSERVICE resource definition defines an Atom service, feed, collection, or category document, and identifies the Atom configuration file, CICS resource or application program, and XML binding that are used to supply the data for the feed.

Acceptable characters:
A-Z 0-9 $ @ #

Unless you are using the CREATE command, any lowercase characters that you enter are converted to uppercase.

AUTHENTICATE({**NO**|**BASIC**})
This attribute is for USAGE(CLIENT). Specifies whether to send HTTP basic authentication information from a Web Services requester to a Web Services provider using the global user exit, XWBAUTH. AUTHENTICATE(BASIC) is the only option that you can use to request that the XWBAUTH global user exit is run. If you specify an authentication value on an API command, for example, **WEB SEND**, this value is used instead of the AUTHENTICATE value specified in the URIMAP resource. If you also specify a user ID and password in the command, the XWBAUTH global user exit is not called.

USAGE({**SERVER**|**CLIENT**|**PIPELINE**|**ATOM**})
Specifies whether this URIMAP definition is for CICS as an HTTP server

(SERVER), CICS as an HTTP client (CLIENT), a Web service (PIPELINE), or an Atom feed (ATOM). The USAGE attribute governs which other attributes in the URIMAP definition can be used.

When you specify ATOM, you create a URIMAP definition for an Atom feed. This type of URIMAP definition is used for an incoming request for data that CICS makes available as an Atom feed. The URIMAP definition maps the request URI to an ATOMSERVICE resource definition, which defines an Atom document.

The attributes in the URIMAP resource definition that can be used for USAGE(ATOM) are ATOMSERVICE, GROUP, DESCRIPTION, STATUS, HOST (which can be specified as an asterisk), PATH, SCHEME, TCPIPSERVICE, TRANSACTION, USERID, REDIRECTTYPE, and LOCATION. For the TRANSACTION attribute, the default alias transaction for USAGE(ATOM) is CW2A, which runs the Web 2.0 alias program DFHW2A.

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

New IPCONN resource definition

An IPIC connection is a 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, see the *CICS Resource Definition Guide*.

New LIBRARY resource definition

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 data sets belonging to that LIBRARY, whether or not it is critical to the running of CICS, and its ranking in the overall LIBRARY search order. For more information, see the *CICS Resource Definition Guide*.

PIPELINE resource definition: new RESPWAIT 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 attribute

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 definitions and attributes added in CICS Transaction Server for z/OS, Version 3 Release 1

New PIPELINE resource definition

A PIPELINE resource definition is used when a CICS application is in the role of a Web service provider or requester. It provides information about the message handler programs that act on a service request and on the response. Typically, a single PIPELINE definition defines an infrastructure that can be used by many applications.

New URIMAP resource definition

URIMAP definitions are resource definitions that match the URIs of HTTP or Web service requests, and provide information on how to process the requests.

New WEBSERVICE resource definition

A WEBSERVICE resource defines aspects of the run time environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using the CICS Web services assistant. Although CICS provides the usual resource definition mechanisms for WEBSERVICE resources, they are typically installed dynamically, using the output produced by the assistant.

New CICS-supplied resource definitions

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

DFHEP

The CICS-supplied group DFHEP, introduced in APAR PK94205 for CICS Transaction Server for z/OS, Version 4 Release 1, contains PROFILE definitions for event processing.

The group contains the following definitions:

PROGRAM definitions
DFHECEAH
TRANSACTION definition
CEPH

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

DFHISCIP

The CICS-supplied group DFHISCIP, introduced in CICS Transaction Server for z/OS, Version 3 Release 2, contains the default autoinstall user program for IPIC connections, DFHISAIP.

DFHISCIP is included in the default CICS startup grouplist DFHLIST. If you use a different CICS startup grouplist, ensure that you append the DFHISCIP group to it.

DFHMQ

The CICS-supplied group DFHMQ, introduced in CICS Transaction Server for z/OS, Version 3 Release 2, contains CSD definitions for the CICS-MQ adapter.

When the CICS-MQ adapter was shipped with the WebSphere MQ product, WebSphere MQ supplied the CSQCAT1 and CSQKB CSD groups. The CSQCAT1 and CSQCKB groups should not be installed on CICS TS 3.2 systems or higher and you should ensure that they are removed from GROUPLISTS.

DFHRL

The CICS-supplied group DFHRL, introduced in CICS Transaction Server for z/OS, Version 4 Release 1, contains the resource definitions for application bundles support.

The group contains the following definitions:

PROGRAM definitions
DFHRLMF, DFHRLR, DFHRLSC, and DFHRLVC.
TRANSACTION definition
CRLR

DFHRS

The CICS-supplied group DFHRS, introduced in CICS Transaction Server for z/OS, Version 4 Release 1, contains the resource definitions for region status.

The group contains the following definition:
PROGRAM definition
DFHRSFDL

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

DFH$WEB contains these definitions:

- PROGRAM resource definitions for:
  - DFH$WB1C, sample C program for verifying the operation of CICS Web support
  - DFH$WBCA, sample assembler language 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 language 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 language 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

DFHWEB2

The CICS-supplied group DFHWEB2, introduced in CICS Transaction Server for z/OS, Version 4 Release 1, contains the resource definitions for Atom feed support.

The group contains:
PROGRAM definitions
DFHW2A

DFHW2ER

DFHW2FI

DFHW2FR

DFHW2TS
TRANSACTION definition
CW2A

DFHWU

The CICS-supplied group DFHWU, introduced in CICS Transaction Server for z/OS, Version 4 Release 1, contains the resource definitions for CMCI.

The group contains the following definitions:
PROGRAM definitions
DFHWUIPG, DFHWUIPI, DFHWUIP1, DFHWUIP2, DFHWUIP3, DFHWUIP4, DFHWUIP5, and DFHWUIP6
TRANSACTION definition
CWWU
DOCTEMPLATE definitions
DFHWUIPI, DFHWUIP1, DFHWUIP2, DFHWUIP3, DFHWUIP4, DFHWUIP5 and DFHWUIP6

Changes to control tables (macro resource definition)

When upgrading to CICS Transaction Server for z/OS, Version 4 Release 1, reassemble all CICS control tables using the CICS TS 4.1 macro libraries, even if the macro externals have no changes. You must also 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 performance class data fields added for CICS Transaction Server for z/OS, Version 4 Release 1, have corresponding new values, which can be defined on the INCLUDE and EXCLUDE operands of the DFHMCT TYPE=RECORD macro. You can use these values 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 runtime 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 COMPRESS option is available on the DFHMCT TYPE=INITIAL macro. Use this option 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.

The default for the COMPRESS option has changed from NO to YES. If monitoring is active the monitor records are compressed automatically.

A new distributed program link option, DPLLIMIT, is available on the DFHMCT TYPE=INITIAL macro. This option specifies the maximum number of DPL requests for which CICS performs transaction resource monitoring.

DFHDCT, DFHRCT, DFHTCT, and DFHTST control tables

Support for the DFHCSDUP MIGRATE command is withdrawn in CICS TS for z/OS, Version 4.1.

In previous versions of CICS, the DFHCSDUP MIGRATE command migrated the eligible DFHDCT, DFHRCT, DFHTCT, and DFHTST macro resource definitions to the CICS system definition data set (CSD).

If you still have eligible but unmigrated definitions, you must migrate them to the CSD before you upgrade to CICS TS for z/OS, Version 4.1. To do so, you can use the DFHCSDUP MIGRATE command on any supported release up to CICS TS for z/OS, Version 3.2.

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.

You can still define remote TCAM terminals 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.

Chapter 6. Changes to the system programming interface

CICS Transaction Server for z/OS, Version 4 Release 1 has some new SPI commands to control new system resources, and some existing commands have new options or new values for existing options. Some system programming commands, options or values are now obsolete because they relate to obsolete CICS functions.

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, 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

These system programming interface command options or values are obsolete. 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. Use the improved function on the PERFORM JVMPOOL command instead.

Obsolete options or values on SPI commands in CICS Transaction Server for z/OS, Version 3 Release 1

CREATE PROGRAM: The HOTPOOL option is obsolete. 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.

INQUIRE DISPATCHER: The ACTHPTCBS and MAXHPTCBS options are obsolete. 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: The HOTPOOLING option is obsolete. Its values HOTPOOL and NOTHOTPOOL were used to show whether or not a Java program object was to be run in a preinitialized Language Environment enclave. All Java programs in CICS now run in JVMs.

SET DISPATCHER: The MAXHPTCBS option is obsolete. It specified the maximum number of H8 mode open TCBs that CICS was allowed to attach. H8 mode open TCBs no longer exist.

SET PROGRAM: HOTPOOL and NOTHOTPOOL are obsolete.

Obsolete CVDA values

These CVDA values are obsolete. Remove them 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 3. Obsolete CVDA values

CVDA	value
HOTPOOL	1065
NOTHOTPOOL	1066

New options or values on SPI commands

These system programming interface commands have new options or new values for options.

CREATE TCPIPSERVICE

A new option, HOST, replaces IPADDRESS for new programs:

HOST({**ANY**|**DEFAULT**|*hostname*})

Specifies the 116-character IPv4 or IPv6 address or host name on which this TCPIPSERVICE will listen for incoming connections. Use HOST instead of IPADDRESS when you define new resources. Do not specify both HOST and IPADDRESS, because HOST always takes precedence over IPADDRESS. IPADDRESS is supported for existing programs that specify IPv4 function.

Possible values are as follows:

ANY The ANY option has the same function as the ANY and INADDR_ANY options of IPADDRESS. The ANY option specifies that the TCPIPSERVICE listens on any of the addresses known to TCP/IP for the host system. You can have multiple IP addresses defined for a

host. By specifying ANY, you also allow for the TCPIPSERVICE definition to be shared among CICS servers. If you specify ANY, CICS attempts to bind to the port on every stack where it is defined. If, in addition, you want more than one CICS region to bind to the port, you must specify the SHAREPORT option in every stack where the port is defined. If you do not do so, only one CICS region can bind to the port number in those stacks that do not have the SHAREPORT option. Subsequent attempts by other regions to bind to every stack fail, and CICS issues a message indicating that the port is in use.

If you specify the ANY option in a dual-mode (IPv4 and IPv6) environment, CICS attempts to reuse the most recent IPv4 or IPv6 address. If this is the first connection, and CICS cannot retrieve an address, `0.0.0.0` is returned and no affinity is assigned.

DEFAULT

The DEFAULT option assigns affinity to the TCP/IP stack that has been defined as the default in a multistack CINET environment.

If the DEFAULT option is used in a dual-mode (IPv4 and IPv6) environment, affinity is assigned to the IPv4 environment, because the DEFAULT option is applied to the IPv4 environment.

If DEFAULT is used in a non-CINET environment or no default TCP/IP stack exists, an exception trace is written, `0.0.0.0` is returned, and no affinity is assigned.

If you are operating in a dual-mode (IPv4 and IPv6) environment, specifying HOST(DEFAULT) forces all traffic to pass across the IPv4 network connection.

hostname

hostname can be a character host name, an IPv4 address, or an IPv6 address.

You can specify an address as a character name that can be looked up on the domain name server. The host name can be entered in uppercase, lowercase, or mixed case, but if a host name is specified instead of an IP address, the host name is converted to lowercase in the TCPIPSERVICE definition.

Do not use a character host name if you have a list of addresses at the domain name server, because *hostname* resolves against the first IP address only in the list (that is, the server does not listen on any of the IP addresses in the list for this host name). If you require a particular IP address in a list at the domain name server, define the IP address explicitly in *hostname*.

If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment. For more information on IPv6, see the *CICS Internet Guide*.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the *CICS Internet Guide* for more information about address formats.

INQUIRE ASSOCIATION

A new option, CLIENTLOC, returns information about z/OS Communication Server socket options. A new option, SRVRIPFAMILY, replaces the IPFAMILY option for new programs. A new option, CLNTIPFAMILY, is also available. The ODIPFAMILY option now includes IPv6 values. The CLIENTIPADDR, ODCLNTIPADDR, and SERVERIPADDR options now return IPv6 addresses. New options, DNAME and REALM, display the distinguished name and realm name returned for the specified task.

CLIENTIPADDR(*data-area*)
Returns, into a 39-character area, the IP address of the TCP/IP client that requested this task to start. When the CLNTIPFAMILY option returns `IPV4`, the returned address is a 15-character dotted decimal IPv4 address, padded with blanks. When CLNTIPFAMILY returns `IPV6`, the address returned is a 3- to 39-character colon hexadecimal IPv6 address, padded with blanks. If this task was not started from a TCP/IP client, CLIENTIPADDR returns `0.0.0.0` and CLNTIPFAMILY returns `NOTAPPLIC`. If the source of this task has not yet been determined, CLIENTIPADDR returns `0.0.0.0` and CLNTIPFAMILY returns `UNKNOWN`.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the*CICS Internet Guide* for more information on address formats.

CLIENTLOC(*data-area*)
Returns a 32-character area that represents the SO_CLUSTERCONNTYPE socket option returned by z/OS Communications Server for the facility in the FACILNAME option. The binary format of SO_CLUSTERCONNTYPE is converted to characters in CLIENTLOC and displayed as either zeros or ones. The CLIENTLOC option represents the current socket, unless the value in the FACILTYPE option is IPIC, in which case CLIENTLOC is taken from the CLIENTLOC value for the IPCONN. For details, see INQUIRE IPCONN. See the z/OS 1.9 Communications Server IP Sockets Application Programming Interface Guide, http://publib.boulder.ibm.com/infocenter/zos/v1r9/index.jsp?searchWord=SO_CLUSTERCONNTYPE&tab=search, in the z/OS 1.9 information center for a description of SO_CLUSTERCONNTYPE and an explanation of the bit settings.

CLNTIPFAMILY(*cvda*)
Returns a value indicating the form of TCP/IP addressing used by this task. Here are the values:

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

NOTAPPLIC
`0.0.0.0` is specified in the CLIENTIPADDR option and the task was not started from a TCP/IP client.

UNKNOWN
`0.0.0.0` is specified in the CLIENTIPADDR option and the source of this task has not yet been determined.

DNAME(*data-area*)
Returns the 1- to 246-character distinguished name. Distinguished names are represented in UTF-8 encoding. If a distinguished name is not available for the task, DNAME returns ASCII blanks. If you require additional information from the z/OS security context, also known as the Accessor Environment Element

(ACEE), you can use the CICS API command, **ADDRESS ACEE**. For more information, see ADDRESS and the ACEE topics in *z/OS Security Server RACF Data Areas*.

ODCLNTIPADDR(*data-area*)
Returns, into a 39-character area, the IP address of the TCP/IP client that requested the originating task to start. When ODIPFAMILY returns `IPV6`, the address returned is a 3- to 39-character colon hexadecimal IPv6 address, padded with blanks. If the originating task was not started from a TCP/IP client, ODCLNTIPADDR returns `0.0.0.0` and ODIPFAMILY returns `NOTAPPLIC`. If this task was not started from a TCP/IP client, ODCLNTIPADDR returns `0.0.0.0`. If the source of this task has not yet been determined, ODCLNTIPADDR returns `0.0.0.0` and ODIPFAMILY returns `UNKNOWN`.

ODIPFAMILY(*cvda*)
Returns a value indicating the form of TCP/IP addressing used by the originating task. Here are the values:

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

NOTAPPLIC
`0.0.0.0` is specified in the ODCLNTIPADDR option and the task was not started from a TCP/IP client.

UNKNOWN
`0.0.0.0` is specified in the ODCLNTIPADDR option and the source of the task has not been determined.

REALM(*data-area*)
Returns the 1- to 252-character realm name in UTF-8 encoding, padded with ASCII blanks. The realm is a component of a distributed identity and defines the region where a security ID applies. If you require additional information from the z/OS security context, also known as the Accessor Environment Element (ACEE), you can use the CICS API command, **ADDRESS ACEE**. For more information, see ADDRESS and the ACEE topics in *z/OS Security Server RACF Data Areas*.

SERVERIPADDR(*data-area*)
Returns, into a 39-character area, the IP address of the TCP/IP server that scheduled this task. When the IPFAMILY option returns `IPV4`, the returned address is a 15-character dotted decimal IPv4 address, padded with blanks. When SRVRIPFAMILY returns `IPV6`, it is a 3- to 39-character colon hexadecimal IPv6 address, padded with blanks. If this task was not started from a TCP/IP server, SERVERIPADDR returns `0.0.0.0` and SRVRIPFAMILY returns `NOTAPPLIC`. If the source of this task has not yet been determined, SERVERIPADDR returns `0.0.0.0` and SRVRIPFAMILY returns `UNKNOWN`.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the*CICS Internet Guide* for more information on address formats.

SRVRIPFAMILY(*cvda*)
Replaces the IPFAMILY option. SRVRIPFAMILY returns a value indicating the form of IP addressing used by this task. Here are the values:

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

NOTAPPLIC
`0.0.0.0` is specified in the SERVERIPADDR option and the task was not started from a TCP/IP client.

UNKNOWN
`0.0.0.0` is specified in the SERVERIPADDR option and the source of the task has not been determined.

INQUIRE ASSOCIATION LIST

New options, DNAME and REALM, display the distinguished name search filter and realm name returned for the specified list of tasks. New filtering options apply to the DNAME and REALM options. New options, DNAMELEN and REALMLEN, display the length of the distinguished name search filter and realm name fields.

DNAME(*data-value*)
Specifies a UTF-8 character field, up to a maximum of 246 characters, including 2 characters for opening and closing parentheses. You must specify parentheses in the DNAME option. DNAME is a filter to return a list of distinguished names for the realm specified in the REALM option. Distinguished names are represented in UTF-8 encoding; therefore, null values are represented with ASCII blanks. An empty list is returned if you specify this option and you do not have the correct z/OS release.

The following search forms are accepted:

```
(attr=value)
(attr=value*)
```

where:

- `attr` is the first attribute in the distinguished name for the realm, specified in the REALM option. This attribute is case-sensitive.
- `value` is the first value in the distinguished name, which can be a generic name if `value*` is specified. `*` represents zero or more characters. This attribute is case-sensitive.

For example, if a distinguished name is in the following format:

```
CN=John Smith
```

the search argument can be in this format:

```
(CN=John Smith)
```

or a generic form can be in this format:

```
(CN=John S*)
```

If a generic filter, for example, `(CN=*)`, is specified, only the tasks that have distinguished names with the first attribute specified are included.

If you are filtering on a name that is greater than 244 characters in length, you must use a generic filter.If `value` is not specified, or DNAME is not set, all distinguished names for the specified realm are included.

DNAMELEN(*data-value*)
Specifies the length of the DNAME option. DNAMELEN is a numeric value, up to a maximum of 246.

REALM(*data-value*)
Specifies the realm name in UTF-8 encoding; therefore, null values are represented with ASCII blanks. The realm is a component of a distributed identity and defines the region where a security ID applies. If you are using

WebSphere Application Server, the realm name can be the service that provides access to the registry where the user is defined. The LDAP server configuration listen statement provides the realm name in URL format.

An empty list is returned if you specify this option and you do not have the correct z/OS release.

If a value is not specified, or REALM is not set, all realms are included.

REALMLEN(*data-value*)
Specifies the length of the REALM option. REALMLEN is a numeric value, up to a maximum of 255.

INQUIRE CORBASERVER

The HOST option now allows IPv6 addresses and a new option, HOSTTYPE, returns the format of the contents of the HOST option. A new option, IPRESOLVED, returns the IP address of the host and a new option, IPFAMILY, returns the format of the IPRESOLVED option.

HOST(*data-area*)
Returns a 255-character area, containing the IP host name or a string containing the dotted decimal or colon hexadecimal IP address, which is included in Interoperable Object References (IORs) exported from the CorbaServer. HOST displays all IPv4 addresses as native IPv4 dotted decimal addresses; for example, `1.2.3.4`, regardless of the type of address format used. You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the*CICS Internet Guide* for more information on address formats.

HOST displays the defined host name, IPv4, or IPv6 address.

HOST is specified in the resource definition.

HOSTTYPE(*cvda*)
Returns the address format of the HOST option. HOSTTYPE is set by the domain when the CorbaServer is installed. Here are the values:

HOSTNAME
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

NOTAPPLIC
An incorrect host address was returned (`HOST=0.0.0.0`).

IPFAMILY(*cvda*)
Returns the address format of the IPRESOLVED option. Here are the values:

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

UNKNOWN
IPRESOLVED is not yet in use or the address cannot be resolved. UNKNOWN is the default when IPRESOLVED is `0.0.0.0`

IPRESOLVED(*data-area*)
Returns a 39-character field that specifies the IPv4 or IPv6 address of the HOST option. If the CorbaServer is installed but not enabled, or the address cannot be resolved, a default value of `0.0.0.0` is returned. After the CorbaServer is enabled, IPRESOLVED displays the last resolved IP address that was used by

the CorbaServer resource. IPRESOLVED is reset to `0.0.0.0` when the resource is disabled. The content of IPRESOLVED is not recoverable after a warm or emergency restart.

INQUIRE DISPATCHER

Two new options are added:

ACTTHRDTCBS(*data-area*)
Returns a fullword binary field giving the total number of T8 mode open TCBs that are currently allocated to the enabled JVM servers to process work.

The T8 mode TCBs are allocated from a pool of open TCBs. One pool is used by one JVM server. CICS dispatcher maintains the pools of T8 mode TCBs for use in the JVM server runtime environment.

MAXTHRDTCBS(*data-area*)
Returns a fullword binary field giving the maximum number of T8 mode open TCBs that CICS can attach and maintain for all enabled JVM servers. CICS calculates the maximum number by adding one TCB for each JVM server to the value of the THREADLIMIT attribute from all the enabled JVMSERVER resources. The value of MAXTHRDTCBS cannot exceed 1024.

The difference between MAXTHRDTCBS and ACTTHRDTCBS represents the number of TCBs that are free. Note that if you initialize another JVM server, one TCB is reserved for the JVM server.

INQUIRE IPCONN

The HOST option is updated and new options, HOSTTYPE, IPRESOLVED, IPFAMILY, return IPv6 information. A new option, CLIENTLOC, returns information about z/OS Communications Server socket options, and a new option, PARTNER, returns information about the product token of a partner system. A new option, IDPROP, displays whether the sender includes the distributed identity in attach requests over the IPIC connection.

CLIENTLOC(*data-area*)
Returns a 32-character area that represents an evaluation of the SO_CLUSTERCONNTYPE options returned by z/OS Communications Server, for all the sockets used by the IPIC connection. See the z/OS 1.9 Communications Server IP Sockets Application Programming Interface Guide, http://publib.boulder.ibm.com/infocenter/zos/v1r9/index.jsp?searchWord=SO_CLUSTERCONNTYPE&tab=search, in the z/OS 1.9 information center for a description of SO_CLUSTERCONNTYPE and an explanation of the bit settings. Multiple sockets might provide the IPIC connection with a number of different paths to the partner system. Each character in CLIENTLOC is displayed as either zero or one. CLIENTLOC represents the most diverse route between the CICS region and its partner system.

HOST(*data-area*)
Returns the 116-character host name of the remote system or its IPv4 or IPv6 address. The HOST option can be a character host name, an IPv4 address, or an IPv6 address. HOST is specified in the resource definition. HOST displays all IPv4 addresses as native IPv4 dotted decimal addresses, for example, `1.2.3.4`, irrespective of which type of address format is used. You can specify

IPv4 and IPv6 addresses in a number of acceptable formats. See the*CICS Internet Guide* for more information on address formats.

HOSTTYPE(*cvda*)
Returns the address format of the HOST option. HOSTTYPE is set by the domain when the IPIC connection is installed. Here are the values:

HOSTNAME
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4 The address is an IPv4 address.

IPV6 The address is an IPv6 address.

NOTAPPLIC
An incorrect host address was returned (`HOST=0.0.0.0`).

IDPROP(*cvda*)
Indicates whether the sender includes the distributed identity in requests over the IPIC connection. The IDPROP option is meaningful only if a connection extends outside a sysplex and is used primarily to prevent distributed identities being transmitted between enterprises. If the connection is between systems in the same sysplex, the value returned by this option is ignored, and the connection operates as if IDPROP(OPTIONAL) is specified.

Here are the values:

NOTALLOWED
A user ID associated with the sending transaction is sent for requests using this connection. NOTALLOWED is the default value.

OPTIONAL
A distributed identity is sent, if available. The user ID associated with the sending transaction is also sent.

REQUIRED
A distributed identity is required for requests using this connection. If REQUIRED is specified, the receiving system must support distributed identities. The user ID associated with the sending transaction is not sent.

IPFAMILY(*cvda*)
Returns the address format of the IPRESOLVED option. IPFAMILY is set only when the IPIC connection is acquired. Here are the values:

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

UNKNOWN
The IPRESOLVED option is not yet in use or the address cannot be resolved. UNKNOWN is the default when IPRESOLVED is `0.0.0.0`

IPRESOLVED(*data-area*)
Returns a 39-character field that specifies the IPv4 or IPv6 address of the HOST option. If the IPCONN resource has not yet been acquired or has been released, or the address cannot be resolved, a default value of `0.0.0.0` is returned. After the IPIC connection is acquired, IPRESOLVED displays the last resolved IP address that was used by the IPCONN resource. IPRESOLVED is reset to `0.0.0.0` when the resource is out of service and released. The content of IPRESOLVED is not recoverable after a warm or emergency restart.

PARTNER(*data-area*)
Returns a 64-character field indicating the product token of the partner system. The field is blank when the connection is not acquired or if the partner system does not indicate a product type when the connection is established. For example, the partner system is `IBM_CICS_Transaction_Server/4.1.0(zOS)` for a CICS TS 4.1 partner.

INQUIRE JVMPOOL

A new PROFILEDIR option is added:

PROFILEDIR(*data-area*)
Returns a 240-character data value of the directory on z/OS UNIX that contains the JVM profiles for CICS. This value is taken from the **JVMPROFILEDIR** system initialization parameter.

INQUIRE MONITOR

The default setting for the COMPRESSST option has changed. Data compression is now the default option. A new option, DPLLIMIT, returns the maximum number of DPL requests allowed for transaction resource monitoring. A new option, IDNTYCLASS, specifies whether identity class monitoring is enabled.

COMPRESSST(*cvda*)
Returns a CVDA value indicating whether data compression is active for the CICS SMF 110 monitoring records produced by the CICS monitoring facility. CVDA values are as follows:

COMPRESS
Data compression is being performed for the monitoring records. Data compression is the default.

NOCOMPRESS
Data compression is not being performed for the monitoring records.

DPLLIMIT(*data-area*)
Returns the maximum number of distributed program link requests for which CICS is to perform transaction resource monitoring.

IDNTYCLASS(*cvda*)
Returns a CVDA value indicating whether the identity class of monitoring data is recorded when monitoring is active. CVDA values are as follows:

IDNTY
Identity data is recorded.

NOIDNTY
Identity data is not recorded.

INQUIRE SYSTEM

A new MQCONN option is added:

MQCONN(*data-area*)
Returns the 1- to 8-character name of the MQCONN resource definition that is currently installed for the CICS region or blanks if no MQCONN definition is currently installed. Only one MQCONN definition can be installed at a time. The MQCONN resource definition specifies the attributes of the connection between CICS and WebSphere MQ.

INQUIRE TCPIPSERVICE

A new option, HOST, returns the host name, IPv4, or IPv6 address of the remote system, which replaces the IPADDRESS option for new programs. A new option, HOSTTYPE, returns the format of the contents of the HOST option or of the IPADDRESS option, if HOST is not specified. A new option, IPRESOLVED, returns the IP address of the host and a new option, IPFAMILY, returns the format of the IPRESOLVED option.

HOST(*data-area*)
Returns the 116-character host name of the remote system or its IP address.

HOST displays character host name, an IPv4 address, an IPv6 address, ANY, or DEFAULT. The HOST option provides the same function as IPADDRESS for defined hostnames and defined IPv4 addresses, but also supports defined IPv6 format addresses. However, it differs from IPADDRESS in that DEFAULT and ANY are returned instead of an IP address, because this information is available in IPRESOLVED. If you are using IPv6 connections, use the HOST option for your queries, instead of IPADDRESS. HOST displays all IPv4 addresses as native IPv4 dotted decimal addresses; for example, `1.2.3.4`, regardless of the type of address format used.

You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the*CICS Internet Guide* for more information on address formats.

HOST is specified in the resource definition.

HOSTTYPE(*cvda*)
Returns the address format of HOST or if HOST is not specified, the IPADDRESS option. HOSTTYPE is set by the domain when the TCPIPSERVICE is installed. Here are the values:

ANY The ANY option is specified for the HOST option.

DEFAULT
The DEFAULT option is specified for the HOST option.

HOSTNAME
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4 The HOST option contains a dotted decimal IPv4 address.

IPV6 The HOST option contains a colon hexadecimal IPv6 address.

NOTAPPLIC
`0.0.0.0` is specified in the HOST option.

IPFAMILY(*cvda*)
Returns the address format of the IPRESOLVED option. Here are the values:

IPV4 The IPRESOLVED option contains a dotted decimal IPv4 address.

IPV6 The IPRESOLVED option contains a colon hexadecimal IPv6 address.

UNKNOWN
IPRESOLVED is not yet used or the address cannot be resolved. UNKNOWN is the default when IPRESOLVED is `0.0.0.0`.

IPRESOLVED(*data-area*)
Returns, in a 39-character area, the IPv4 or IPv6 address of the HOST option. If the OPENSTATUS option is not set to OPEN, or the address cannot be resolved, a value of `0.0.0.0` is returned. If the HOST option is set to ANY,

IPRESOLVED always returns the IPv4 address for the system on which CICS is running, even if other IPv4 or IPv6 addresses are available.

The content of IPRESOLVED is not recoverable after a warm or emergency restart.

INQUIRE TERMINAL

The REMOTESYSTEM option now provides information about IP connections.

REMOTESYSTEM(*data-area*)
Returns the first four characters of a connection, if the subject of the inquiry is a remote terminal. The named connection can be either a connection entry that links towards the TOR or an indirect connection that provides the netname of the TOR.

Otherwise this field is blank.

INQUIRE TRACETYPE

A new option FLAGSET is added:

FLAGSET(*cvda*)
Indicates whether the standard or special flags for the specified component are to be returned. CVDA values are as follows:

SPECIAL
Indicates that CICS returns the trace levels for special tracing.

STANDARD
Indicates that CICS returns the trace levels for standard tracing.

INQUIRE TRANSACTION

The REMOTESYSTEM option now provides information about IP connections.

REMOTESYSTEM(*data-area*)
Returns the first four characters of the remote system on which this transaction is defined, if it is defined as a remote transaction.

If the remote transaction is defined as DYNAMIC=YES, and the REMOTESYSTEM option is omitted, CICS returns the name of the local region.

Blanks are returned if the transaction is not remote.

INQUIRE URIMAP

A new option, AUTHENTICATE, provides information about whether the host specified in the USAGE(CLIENT) URIMAP resource requires authentication.

AUTHENTICATE*(cvda)*
Returns a CVDA value indicating whether to provide authentication information to a Web Services provider. Here are the CVDA values:

BASICAUTH
The Web Services provider requires HTTP basic authentication. You can supply credentials to the Web Services requester (a user ID and password) to the global user exit, XWBAUTH, which, if enabled, sends the credentials to the Web Services provider.

NOAUTHENTIC
The Web Services provider does not require authentication.

If you specify an authentication value on an API command, for example, **WEB SEND**, this value is used instead of the AUTHENTICATE value specified in the URIMAP resource. If you also specify a user ID and password in the command, the XWBAUTH global user exit is not called.

A new option, ATOMSERVICE, returns the resource definition name for an Atom feed. The USAGE option has a new value, ATOM.

ATOMSERVICE*(data-area)*
Returns the 1- to 8-character name of an ATOMSERVICE resource definition for an Atom feed. The ATOMSERVICE resource definition defines an Atom service, feed, collection, or category document, and identifies the Atom configuration file, CICS resource or application program, and XML binding that are used to supply the data for the feed. This attribute is for USAGE(ATOM).

USAGE*(cvda)*
Returns a CVDA value indicating the purpose of this URIMAP definition.

ATOM
A URIMAP definition for an Atom feed. This type of URIMAP definition is used for an incoming request for data that CICS makes available as an Atom feed. The URIMAP definition maps the request URI to an ATOMSERVICE resource definition, which defines an Atom document.

The HOST option now allows IPv6 addresses and a new option, HOSTTYPE, returns the format of the contents of the HOST option. A new option, IPRESOLVED, returns the IP address of the host and a new option, IPFAMILY, returns the format of the IPRESOLVED option. A new option, PORT, returns the port number used for the connection.

HOST*(data-area)*
Returns the 116-character host name or its IPv4 or IPv6 address. The HOST option can be a character host name, an IPv4 address, or an IPv6 address. HOST is specified in the resource definition. HOST displays all IPv4 addresses as native IPv4 dotted decimal addresses, for example, `1.2.3.4`, regardless of the type of address format used. You can specify IPv4 and IPv6 addresses in a number of acceptable formats. See the*CICS Internet Guide* for more information about address formats.

The port number is also displayed in the HOST option if HOST contains a native IPv4 address or a host name; however, if you specify a hostname that is greater than 110 characters in length, port information is not displayed in the HOST option. This rule also applies if you specify an IPv4 address in IPv6 format. Use the PORT option to view the port number.

HOSTTYPE(*cvda***)**
Returns the address format of the HOST option. HOSTTYPE is set by CICS when the URIMAP is installed. Here are the values:

HOSTNAME
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

NOTAPPLIC
An incorrect host address was returned (`HOST=0.0.0.0` or `HOST=*`), or

the HOSTTYPE option is used with URIMAP(ATOM), URIMAP(PIPELINE), or URIMAP(SERVER).

IPFAMILY(*cvda*)
Returns the address format of the IPRESOLVED option. Here are the values:

IPV4 The address is specified in IPv4 dotted decimal address format.

IPV6 The address is specified in IPv6 colon hexadecimal address format.

UNKNOWN
IPRESOLVED is not yet in use or the address cannot be resolved. UNKNOWN is the default when IPRESOLVED is `0.0.0.0`, or if the IPFAMILY option is used with URIMAP(ATOM), URIMAP(PIPELINE), or URIMAP(SERVER).

IPRESOLVED(*data-area*)
Returns a 39-character field that specifies the IPv4 or IPv6 address of the HOST option. If the URIMAP is installed but has not yet been used to establish a connection, or the address cannot be resolved, a default value of `0.0.0.0` is returned. When the URIMAP establishes a connection, IPRESOLVED displays the resolved IP address that was used by the resource to connect. IPRESOLVED is reset to `0.0.0.0` when the resource is disabled. The content of IPRESOLVED is not recoverable after a warm or emergency restart.

PORT(*value*)
Displays the numeric port number value used by USAGE(CLIENT) for the connection to the server, in the range 1 - 65535. The port number is also displayed in the HOST option if HOST contains a native IPv4 address or a host name. For USAGE(CLIENT), the PORT attribute always contains the port number that is being used for the communication, even if PORT(NO) is specified on the URIMAP at define time. For USAGE(ATOM), USAGE(SERVER), or USAGE(PIPELINE), the PORT option displays `()`.

INQUIRE VTAM

A new option PSTYPE is added:

PSTYPE(*cvda*)
Returns a CVDA value indicating the type of VTAM persistent sessions support for the CICS region. CVDA values are as follows:

SNPS Single-node persistent sessions. VTAM sessions can be recovered after a CICS failure and restart.

MNPS
Multinode persistent sessions. VTAM sessions can also be recovered after a VTAM or z/OS failure in a sysplex.

NOPS VTAM persistent sessions support is not used for this CICS region.

INQUIRE WORKREQUEST

A new option, CLNTIP6ADDR, replaces the CLIENTIPADDR option for new programs. A new option, CLNTIPFAMILY, indicates the address type returned in CLNTIP6ADDR and CLIENTIPADDR. A new option, TARGETSYS, returns the applid of the target CICS system, replacing the TSYSTEM option. A new option, TSYSTYPE, returns the format of the IP address returned in TSYSTEM or TARGETSYS.

CLNTIPFAMILY(*cvda*)
Returns a value indicating the form of TCP/IP addressing used by this task. Here are the values:

IPV4 The CLIENTIPADDR and CLIENTIP6ADDR options contain a dotted decimal IPv4 address.

IPV6 The CLNTIP6ADDR option contains a colon hexadecimal IPv6 address.

NOTAPPLIC
No entry is specified in the CLIENTIPADDR or CLNTIP6ADDR option.

CLNTIP6ADDR(*data-area*)
Returns, into a 39-character area, the colon hexadecimal IPv6 address of the TCP/IP client that originated the request. If the client address is in IPv4 format, it is also returned to CLIENTIPADDR.

TARGETSYS(*data-area*)
Returns the applid of the target CICS system as a 50-byte field. This field can contain one of the following values:

- The colon hexadecimal TCP/IP address and port number of the target system, in the format `[::a:b:c:d]:port` where `[]` are X'BA' & X'BB' (code page 37).
- The dotted decimal TCP/IP address and port number of the target system.
- The VTAM applid of the target system. The applid can be up to 8 characters followed by blanks.
- A string of blank characters indicating that the target system is not CICS over MRO or that the target system is not CICS over TCP/IP, or that an error has occurred.
- A different value, which CICS captures but does not translate.

The TARGETSYS option returns the same information as TSYSTEM, but can also return an IPv6 format address. If TARGETSYS returns an IPv4 address, this address is also returned in TSYSTEM; otherwise, TSYSTEM returns `0.0.0.0:0`.

If you are using IPv6 connections, you must use the TARGETSYS option for your queries, instead of TSYSTEM.

TSYSTYPE(*cvda*)
Returns a value indicating the form of TCP/IP addressing used by this task. Here are the values:

IPV4 The TSYSTEM and TARGETSYS options contain a dotted decimal IPv4 address and a port.

IPV6 The TARGETSYS option contains a colon hexadecimal IPv6 address and a port. This value is returned only if an IPv6 address is returned in the TARGETSYS option.

APPLID
The TSYSTEM and TARGETSYS options contain an applid.

NOTAPPLIC
No entry is specified in the TSYSTEM or TARGETSYS option. Blanks or a different value are returned.

SET MONITOR

New options DPLLIMIT, FILELIMIT, IDNTYCLASS and TSQUEUELIMIT are added.

DPLLIMIT(*data-value*)
Specifies the maximum number of distributed program link requests for which CICS is to perform transaction resource monitoring, as a halfword binary value. The value specified must be in the range 0 - 64.

FILELIMIT(*data-value*)
Specifies the maximum number of files for which CICS is to perform transaction resource monitoring, as a halfword binary value. The value specified must be in the range 0 - 64.

IDNTYCLASS(*cvda*)
Specifies whether the identity class of monitoring data is to be recorded when monitoring is active. CVDA values are as follows:

IDNTY
Identity data is to be recorded.

NOIDNTY
Identity data is not to be recorded.

TSQUEUELIMIT(*data-value*)
Specifies the maximum number of temporary storage queues for which CICS is to perform transaction resource monitoring, as a halfword binary value. The value specified must be in the range 0 - 64.

SET TRACETYPE

A new option FLAGSET is added:

FLAGSET(*cvda*)
Indicates whether the standard or special flags, for the specified component, are to be set. CVDA values are as follows:

SPECIAL
Specifies that you want to set levels for special tracing, for the components listed.

STANDARD
Specifies that you want to set levels for standard tracing, for the components listed.

SET VTAM

This command does not allow you to change PSDINTERVAL, PSDINTHRS, PSDINTMINS, or PSDINTSECS to a nonzero value when the system initialization parameter PSTYPE=NOPS is in effect.

Resource signature options added to INQUIRE SPI command

The **INQUIRE** command has new options to support the resource signature.

Changed command, INQUIRE

The definition and installation signature options are added to the **INQUIRE** command for the following resource types:

ATOMSERVICE

BUNDLE
CONNECTION
CORBASERVER
DB2CONN
DB2ENTRY
DB2TRAN
DJAR
DOCTEMPLATE
ENQMODEL
EVENTBINDING
FILE
IPCONN
JOURNALMODEL
JVMSERVER
LIBRARY
MQCONN
MQINI
PIPELINE
PROFILE
PROCESSTYPE
PROGRAM
REQUESTMODEL
TCPIPSERVICE
TDQUEUE
TRANCLASS
TRANSACTION
TSMODEL
URIMAP
WEBSERVICE
XMLTRANSFORM

The list of possible values for each resource type **CHANGEAGENT** and **INSTALLAGENT** can vary and depends on how the resource was defined and installed. For details of a specific INQUIRE command, see the *CICS System Programming Reference*.

CHANGEAGENT(*cvda*)
Returns a CVDA value identifying the agent that made the last change to the resource definition. The possible values are as follows:

AUTOINSTALL
The resource was autoinstalled.

AUTOINSTALL
The resource was autoinstalled as a result of specifying an initiation queue name on a CKQC START command, and the previously installed MQCONN definition did not specify a value for INITQNAME.

CREATESPI
The resource definition was last changed by an **EXEC CICS CREATE** command.

CSDAPI
The resource definition was last changed by a CEDA transaction or the programmable interface to DFHEDAP.

CSDBATCH
The resource definition was last changed by a DFHCSDUP job.

DREPAPI
The resource definition was last changed by a CICSPlex SM BAS API command.

DYNAMIC
The resource definition was last changed by a PIPELINE scan.

DYNAMIC
The resource was defined as a result of the installation of a DB2ENTRY with TRANSID specified.

DYNAMIC
The resource was defined by the CICS scanning mechanism.

DYNAMIC
The resource was defined by the CICS system for a template being used through the CICS template manager, DFHWBTL.

DYNAMIC
The resource was defined by an ATOMSERVICE resource.

DYNAMIC
The resource was defined as a result of a MQCONN resource definition with INITQNAME specified.

SYSTEM
The resource definition was last changed by the CICS or CICSPlex system.

TABLE
The resource definition was last changed by a table definition.

CHANGEAGREL(*data-area*)
Returns a 4-digit number of the CICS release that was running when the resource definition was last changed.

CHANGETIME(*data-area*)
Returns an ABSTIME value that represents the time stamp when the resource definition was last changed.

CHANGEUSRID(*data-area*)
Returns the 8-character user ID that ran the change agent.

DEFINETIME(*data-area*)
Returns an ABSTIME value that represents the time stamp when the resource definition was created.

DEFINESOURCE(*data-area*)
Returns the source of the resource definition. The DEFINESOURCE value depends on the CHANGEAGENT. For details, see the *CICS Resource Definition Guide*.

INSTALLAGENT(*cvda*)
Returns a CVDA value identifying the agent that installed the resource. The possible values are as follows:

AUTOINSTALL
The resource was autoinstalled.

AUTOINSTALL
The resource was autoinstalled as a result of specifying an initiation queue name on a CKQC START command, and the previously installed MQCONN definition did not specify a value for INITQNAME.

BUNDLE
The resource was installed by a bundle deployment.

CREATESPI
The resource was installed by an **EXEC CICS CREATE** command.

CSDAPI
The resource was installed by a CEDA transaction or the programmable interface to DFHEDAP.

DYNAMIC
The resource was installed using a PIPELINE scan.

DYNAMIC
The resource was installed as a result of the installation of a DB2ENTRY with TRANSID specified.

DYNAMIC
The resource was installed by the CICS scanning mechanism.

DYNAMIC
The resource was installed by the CICS system for a template being used through the CICS template manager, DFHWBTL.

DYNAMIC
The resource was installed as a result of the installation of a MQCONN with INITQNAME specified.

DYNAMIC
The resource was installed by an ATOMSERVICE resource.

GRPLIST
The resource was installed by **GRPLIST INSTALL**.

SYSTEM
The resource was installed by the CICS or CICSPlex SM system.

TABLE
The resource was installed using a table definition.

INSTALLTIME(*data-area*)
Returns an ABSTIME value that represents the time stamp when the resource was installed.

INSTALLUSRID(*data-area*)
Returns the 8-character user ID that installed the resource.

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

These system programming interface commands were changed in CICS Transaction Server for z/OS, Version 3 Release 2.

CREATE PIPELINE

A new option RESPWAIT is added:

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 TCPIPSERVICE

A new option REALM is added:

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.

There is a new value on the PROTOCOL option:

IPIC IPIC protocol is used. Specify IPIC for TCPIPSERVICEs 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 can be returned on the INVEXITREQ condition of the EXEC CICS ENABLE command, has changed.

EXTRACT STATISTICS

The RESTYPE option has some new values:

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

IPCONN
Request statistics for an IPCONN resource; RESID identifies the particular IPCONN resource definition.

LIBRARY
Request statistics for a LIBRARY resource; RESID identifies the particular LIBRARY resource definition.

MQCONN
Request statistics for a WebSphere MQ connection.

INQUIRE DOCTEMPLATE

The new CACHESIZE option is added:

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

The new RBATYPE option is added:

RBATYPE(*cvda*)
Returns a CVDA value identifying whether, for VSAM files, the data set uses extended addressing. CVDA values are as follows:

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

INQUIRE IRC

The new XCFGROUP option is added:

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 for the the region if XCF was opened.

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

INQUIRE MONITOR

The new COMPRESSST option is added:

COMPRESSST(*cvda*)
Returns a CVDA value indicating whether data compression is active for the CICS SMF 110 monitoring records produced by the CICS monitoring facility. CVDA values are as follows:

COMPRESS
Data compression is being performed for the monitoring records. Data compression is the default.

NOCOMPRESS
Data compression is not being performed for the monitoring records.

INQUIRE MVSTCB

The INQUIRE MVSTCB command has a new syntax, which uses a new SET option and the existing NUMELEMENTS option to provide a list of descriptors for individual storage elements owned by the TCB that 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 that 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. For all new applications, use the new syntax with the SET option.

INQUIRE NETNAME

A new option AIDCOUNT is added:

AIDCOUNT(*data-area*)
Returns a fullword binary field giving the number of automatic initiate descriptors (AIDs) queued for the specified terminal. If there are no AIDs, then an AIDCOUNT value of 0 is returned.

INQUIRE PIPELINE

This command has a number of 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 as follows:

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 will be used for outbound SOAP messages when no binary attachments are present.

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

NOMTOMNOXOP
Do not use MTOM unless binary attachments are present.

MTOMST(*cvda*)
Returns a value that indicates whether support for MTOM has been enabled in the pipeline.

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 will be used for outbound SOAP messages.

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 8-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.

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.

XOPSUPPORT
The application handler supports XOP documents.

NOXOPSUPPORT
The application handler does not support XOP documents.

INQUIRE PROGRAM

New options LIBRARY and LIBRARYDSN are added:

LIBRARY(*data-area*)
Returns the 8-character name of the library resource from which this program was loaded. This data area is blank if the program has not been loaded, or if the LPASTATUS is LPA, indicating that the program has been loaded from the LPA.

Note:

- If the program was loaded from an installed library, the LIBRARY and LIBRARYDSN names are returned.
- If the program was loaded from a library that has been disabled, the LIBRARY name is returned but the LIBRARYDSN will be blank.
- If the program was loaded from a library that has been discarded, both LIBRARY and LIBRARYDSN names are blank.

LIBRARYDSN(*data-area*)
Returns the 44-character name of the data set from which the program was loaded. This data-area is blank if the program has not been loaded or if the LPASTATUS is LPA (indicating that the program has been loaded from the LPA).

The USECOUNT and CONCURRENTST options have a new scope:

- 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 SYSTEM

This command has a number of new options:

MEMLIMIT(*data-area*)
Returns a doubleword binary field giving the maximum amount, in bytes, of storage available above the 2 GB 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 2 GB boundary.

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

SOSABOVELINE(*cvda*)
Returns a CVDA value indicating whether CICS is short on storage in the dynamic storage areas above the 16 MB line, but below the 2 GB boundary.

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

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

SOSBELOWLINE(*cvda*)
Returns a CVDA value indicating whether CICS is short on storage in the dynamic storage areas below the 16 MB line.

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

SOS CICS is short on storage in at least one of the dynamic storage areas below the 16 MB 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 and IPFLISTSIZE are added:

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 TCPIPSERVICE

The new REALM option is added:

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.

There is a new value on the PROTOCOL option:

IPIC IP interconnectivity (IPIC).

INQUIRE TERMINAL

A new option AIDCOUNT is added:

AIDCOUNT(*data-area*)
Returns a fullword binary field giving the number of automatic initiate descriptors (AIDs) queued for the specified terminal. If there are no AIDs, then an AIDCOUNT value of 0 is returned.

INQUIRE WEBSERVICE

This command has a number of 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 8-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, 2.0 or 2.1.

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 8-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, 2.0 or 2.1.

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. CDVA values are as follows:

NOXOPDIRECT
The Web service cannot currently handle XOP documents and binary attachments directly. This value 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 value 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 can handle 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 value is true for any Web services that are generated and deployed using the Web services assistant.

PERFORM STATISTICS RECORD

This command supports some 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

A new option COMPRESSST is added:

COMPRESSST(*cvda*)
Specifies whether you want data compression to be performed for the CICS SMF 110 monitoring records produced 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 that are in the buffer waiting to be written to SMF at the time the change is made. The change applies only 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. Data compression is the default.

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

SET PIPELINE

A new option RESPWAIT is added:

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

These system programming interface commands were changed in CICS Transaction Server for z/OS, Version 3 Release 1.

INQUIRE WORKREQUEST

A new value, SOAP, is added for the WORKTYPE option.

PERFORM STATISTICS RECORD

You can write statistics for the new resource type PIPELINE.

SET WORKREQUEST

A new value, SOAP, is added for the WORKTYPE option.

New SPI commands

CICS Transaction Server for z/OS, Version 4 Release 1 includes some new SPI commands that you can use to control new system resources or to work in new ways with existing resources.

New system programming commands added in CICS Transaction Server for z/OS, Version 4 Release 1

CREATE ATOMSERVICE

Define an ATOMSERVICE resource definition in the local CICS region.

CREATE BUNDLE

Define a BUNDLE resource definition in the local CICS region.

CREATE JVMSERVER

Define a JVMSERVER resource definition in the local CICS region.

CREATE MQCONN

Define an MQCONN resource in the local CICS region.

CSD ADD

Add a group to a list on the CSD.

CSD ALTER

Change the attributes of an existing resource definition on the CSD.

CSD APPEND

Append the groups in one list on the CSD to the end of another list.

CSD COPY

Copy a resource definition in a group to a different group, or copy an entire group.

CSD DEFINE

Create a new resource definition on the CSD.

CSD DELETE

Delete a list, a group, or a single resource definition in a group from the CSD.

CSD DISCONNECT

Disconnect the current task from the CSD.

CSD ENDBRGROUP

End the current browse of the groups in the CSD or of the groups in a list.

CSD ENDBRLIST

End the current browse of the lists in the CSD.

CSD ENDBRRSRCE

End the current browse of the resources in a specified group.

CSD GETNEXTGROUP

Get the next group in a group browse.

CSD GETNEXTLIST

Get the next list in a list browse.

CSD GETNEXTRSRCE

Get the details of next resource in a resource browse.

CSD INQUIREGROUP

Inquire on a group in the CSD, or on a group in a specified list in the CSD.

CSD INQUIRELIST

Inquire on a list in the CSD.

CSD INQUIRERSRCE

Inquire on the attributes of a resource in a specified group in the CSD.

CSD INSTALL

Install in the CSD a list, a group, or a single resource definition in a group.

CSD LOCK

Restrict update and delete access for a group or list to a single operator identifier.

CSD REMOVE

Remove a group from a list on the CSD.

CSD RENAME

Rename a resource definition on the CSD.

CSD STARTBRGROUP

Start a browse of the groups in the CSD or of the groups in a list.

CSD STARTBRLIST

Start a browse of the lists in the CSD.

CSD STARTBRRSRCE

Start a browse of the resources in a specified group.

CSD UNLOCK

Remove the lock from a group or list of definitions.

CSD USERDEFINE

Create a new resource definition with user-specified default values on the CSD .

DISCARD ATOMSERVICE

Remove an ATOMSERVICE resource definition from the system.

DISCARD BUNDLE

Remove a BUNDLE resource definition from the system.

DISCARD EVENTBINDING

Remove an EVENTBINDING resource definition from the system.

DISCARD JVMSERVER

Remove a JVMSERVER resource definition from the system.

DISCARD MQCONN

Remove and MQCONN resource definition. Any implicit MQINI resource definition is also discarded.

INQUIRE ATOMSERVICE

Retrieve information about ATOMSERVICE resources.

INQUIRE BUNDLE

Retrieve information about installed BUNDLE resources.

INQUIRE BUNDLEPART

Retrieve information about the resources that are contained in an installed BUNDLE resource.

INQUIRE CAPTURESPEC

Retrieve information about a capture specification.

INQUIRE EVENTBINDING

Retrieve information about an EVENTBINDING resource.

INQUIRE EVENTPROCESS

Retrieve the status of event processing in the CICS region.

INQUIRE JVMSERVER

Retrieve information about a JVM server in the CICS region.

INQUIRE MQCONN

Retrieve information about the connection between CICS and WebSphere MQ.

INQUIRE MQINI

Retrieve information about the default initiation queue that is used for the connection between CICS and WebSphere MQ.

INQUIRE XMLTRANSFORM

Retrieve information about an installed XMLTRANSFORM resource.

SET ATOMSERVICE

Enables or disables an ATOMSERVICE resource.

SET BUNDLE

Enables or disables a BUNDLE resource.

SET EVENTBINDING

Enables or disables an EVENTBINDING resource.

SET EVENTPROCESS

Enables or disables event processing in the CICS region.

SET JVMSERVER

Enables or disables a JVMSERVER resource.

SET MQCONN

Change the attributes of the connection between CICS and WebSphere MQ. You can also start or stop the connection.

SET XMLTRANSFORM

Enables or disables an XMLTRANSFORM resource.

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

CREATE IPCONN

Define and install an IPCONN resource in the local CICS region.

CREATE LIBRARY

Create a LIBRARY resource in the local CICS region.

DISCARD IPCONN

Remove an IPCONN resource.

DISCARD LIBRARY

Remove a LIBRARY resource.

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 resource.

INQUIRE LIBRARY

Retrieve information about a LIBRARY resource.

SET IPCONN

Change the attributes of an IPCONN resource or cancel outstandings 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 CICS Transaction Server for z/OS, Version 3 Release 1

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 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 PIPELINE

Retrieve information about an installed PIPELINE.

INQUIRE URIMAP

Retrieve information about URIMAP resource definitions.

INQUIRE WEBSERVICE

Retrieve information about an installed WEBSERVICE.

PERFORM PIPELINE

Initiate a scan of the Web service binding directory that is specified in the WSBIND attribute of the PIPELINE definition.

SET HOST

Enable or disable a virtual host.

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.

SPI commands that have been made threadsafe

These system programming interface commands were not threadsafe when they were first introduced in CICS, but they have now been made threadsafe.

SPI commands that were made threadsafe in CICS Transaction Server for z/OS, Version 4 Release 1

No existing SPI commands were made threadsafe in this release.

SPI commands that were made threadsafe in CICS Transaction Server for z/OS, Version 3 Release 2

INQUIRE FILE
INQUIRE WEB
SET WEB

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 system programming 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 4. 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 of 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 referenced by EXEC CICS commands only 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 CEMT

The commands available in the CEMT transaction have been modified to reflect changes to resource definitions and new functions.

Obsolete options on CEMT commands

Obsolete options on CEMT commands in CICS Transaction Server for z/OS, Version 4 Release 1

INQUIRE CLASSCACHE The PROFILE option is obsolete and is no longer displayed. PROFILE used to specify the JVM profile for the master JVM, which is no longer required.

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. Use the improved function on the PERFORM JVMPOOL command instead.

Obsolete options on CEMT commands in CICS Transaction Server for z/OS, Version 3 Release 1

INQUIRE DISPATCHER: The ACTHPTCBS and MAXHPTCBS options are obsolete. 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: The HOTPOOLING option is obsolete. Its values HOTPOOL and NOTHOTPOOL were used to show whether or not a Java program object was to be run in a preinitialized Language Environment enclave. All Java programs in CICS now run in JVMs.

SET DISPATCHER: The MAXHPTCBS option is obsolete. It specified the maximum number of H8 mode open TCBs that CICS was allowed to attach. H8 mode open TCBs no longer exist.

SET PROGRAM: HOTPOOL and NOTHOTPOOL are obsolete.

Changed CEMT commands

These CEMT commands have new options or new values for options.

INQUIRE CORBASERVER

The HOST option now displays IPv6 addresses. The values HOSTNAME, IPV4HOST, IPV6HOST, and NOTAPPLIC filter the contents of the new HOST option. A new option, IPRESOLVED, displays the IPv4 or IPv6 address of the host. The values IPV4FAMILY, IPV6FAMILY, and UNKNOWN filter the contents of the new IPRESOLVED option.

HOST(*value*)
Displays the host name, IPv4, or IPv6 address of the logical EJB/CORBA server. All IPv4 addresses are displayed as native IPv4 dotted decimal addresses, for example, `1.2.3.4`, regardless of the type of address format used. For information on accepted IPv4 formats, see the *CICS Internet Guide*.

HOSTTYPE
Displays the address format of the HOST option. The HOSTTYPE option is available using an expanded query only. The possible values are as follows:

HOSTNAME
The HOST option contains a character host name.

IPV4HOST
The address is an IPv4 address.

IPV6HOST
The address is an IPv6 address.

IPFAMILY
Displays the address format of the IPRESOLVED option. The IPFAMILY option is available using an expanded query only. Filtering interacts with the IPFAMILY option when you filter using wildcard characters. For example, if the value in IPFAMILY is IPV6FAMILY, you must use the colon character to retrieve an IP address. The possible values are as follows:

IPV4FAMILY
The address is an IPv4 address.

IPV6FAMILY
The address is an IPv6 address.

UNKNOWN
The IPRESOLVED option is not yet in use, or the address cannot be resolved.

IPRESOLVED(*value*)
Displays the IPv4 or IPv6 address of the host. The IPRESOLVED option is available using an expanded query only.

INQUIRE DISPATCHER

Two new options are added:

ACTTHRDTCBS(*value*)
Displays the number of T8 mode open TCBs that are currently active; that is, allocated to a user task.

MAXTHRDTCBS(*value*)
Displays the maximum number of T8 mode open TCBs that CICS can attach and maintain for all enabled JVM servers. CICS calculates the maximum number by adding one TCB for each JVM server to the value of the THREADLIMIT attribute from all the enabled JVMSERVER resources. The value can be in the range 1 - 1024.

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

INQUIRE IPCONN

The HOST option now displays IPv6 addresses. The values HOSTNAME, IPV4HOST, IPV6HOST, and NOTAPPLIC filter the contents of the new HOST option. A new option, IPRESOLVED, displays the IPv4 or IPv6 address of the host. The values IPV4FAMILY, IPV6FAMILY, and UNKNOWN filter the contents of the new IPRESOLVED option. A new option, PARTNER, displays the product token of a partner system. A new option, IDPROP, displays whether the sender will include the distributed identity in attach requests over the IPIC connection.

HOST(*value*)
Displays the host name, IPv4, or IPv6 address of the remote system. All IPv4 addresses are displayed as native IPv4 dotted decimal addresses, for example, `1.2.3.4`, regardless of which type of address format is used. For information about accepted IPv4 formats, see the *CICS Internet Guide*.

HOSTTYPE
Displays the address format of the Host option. The Hosttype option is available using an expanded query only. The possible values are as follows:

HOSTNAME
The Host option contains a character host name.

IPV4HOST
The address is an IPv4 address.

IPV6HOST
The address is an IPv6 address.

IDPROP
Displays whether the sender includes the distributed identity in requests over the IPIC connection. The IDPROP option is meaningful only if a connection extends outside a sysplex and is used primarily to prevent distributed identities being transmitted between enterprises. If the connection is between systems in the same sysplex, the value returned by this option is ignored, and the connection operates as if IDPROP(OPTIONAL) is specified.

Here are the values:

NOTALLOWED
A user ID associated with the sending transaction is sent for requests using this connection. NOTALLOWED is the default value.

OPTIONAL
A distributed identity is sent, if available. The user ID associated with the sending transaction is also sent.

REQUIRED
A distributed identity is required for requests using this connection. If REQUIRED is specified, the receiving system must support distributed identities. The user ID associated with the sending transaction is not sent.

IPFAMILY
Displays the address format of the Ipresolved option. The Ipfamily option is available using an expanded query only. Filtering interacts with the Ipfamily option when you filter using wildcard characters. For example, if the value in

Ipfamily is IPv6family, you must use the colon character to retrieve an IP address. The possible values are as follows:

IPV4FAMILY
The address is an IPv4 address.

IPV6FAMILY
The address is an IPv6 address.

UNKNOWN
Ipresolved is not yet in use, or the address cannot be resolved.

IPRESOLVED(*value*)
Displays the IPv4 or IPv6 address of the host. The Ipresolved option is available using an expanded query only.

PARTNER(*value*)
Displays a 64-character string indicating the product token of the partner system. The field is blank when the connection is not acquired or if the partner system does not indicate a product type when the connection is established. For example, the partner system is `IBM_CICS_Transaction_Server/4.1.0(zOS)` for a CICS TS 4.1 partner.

INQUIRE JVMPOOL

A new option PROFILEDIR is added:

PROFILEDIR(*directory*)
Displays the directory in z/OS UNIX that contains the JVM profiles for CICS. This value is taken from the **JVMPROFILEDIR** system initialization parameter.

INQUIRE MONITOR

The default setting for the COMPRESSST option has changed. Data compression is now the default option. A new option, DPLLIMIT, returns the maximum number of DPL requests allowed for transaction resource monitoring. A new option, IDNTYCLASS, specifies whether identity class monitoring is enabled.

COMPRESSST
Displays whether data compression is performed for monitoring records. The values are as follows:

COMPRESS
Data compression is performed. The default is for monitoring records to be compressed.

NOCOMPRESS
Data compression is not performed.

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

DPLLIMIT (*value*)
Displays the maximum number of distributed program link requests for which transaction resource class monitoring data is being collected.

IDNTYCLASS
Displays whether the identity class of monitoring data is being collected. The values are as follows:

IDNTY
Identity class monitoring data is being collected.

NOIDNTY
Identity class monitoring data is not being collected.

INQUIRE SYSTEM

A new option MQCONN is added:

MQCONN(*value*)
Displays the name of the MQCONN resource definition that is currently installed for the CICS region. If no MQCONN resource definition is currently installed, the field is blank. Only one MQCONN resource definition can be installed at a time in a CICS region. The MQCONN resource definition specifies the attributes of the connection between CICS and WebSphere MQ.

INQUIRE TCPIPSERVICE

A new option, HOST, displays the host name, IPv4, or IPv6 address of the remote system. This option is an alternative to IPADDRESS. The values HOSTNAME, ANY, DEFAULT, IPV4HOST, IPV6HOST, and NOTAPPLIC filter the contents of the IPADDRESS option and the new HOST option. A new option, IPRESOLVED, displays the IPv4 or IPv6 address of the host. The values IPV4FAMILY, IPV6FAMILY, and UNKNOWN filter the contents of the new IPRESOLVED option.

HOST(*value*)
Displays the host name, IPv4, or IPv6 address of the remote system. All IPv4 addresses are displayed as native IPv4 dotted decimal addresses, for example, `1.2.3.4`, regardless of the type of address format used. For information on accepted IPv4 formats, see the *CICS Internet Guide*.

HOSTTYPE
Displays the address format of the HOST option. The HOSTTYPE option is available using an expanded query only. The possible values are as follows:

HOSTNAME
The HOST option contains a character host name.

ANY The ANY option is specified for the HOST option.

DEFAULT
The DEFAULT option is specified for the HOST option.

IPV4HOST
The address is an IPv4 address.

IPV6HOST
The address is an IPv6 address.

IPFAMILY
Displays the address format of the IPRESOLVED option. The IPFAMILY option is available using an expanded query only. Filtering interacts with the IPFAMILY option when you filter using wildcard characters. For example, if the value in IPFAMILY is IPV6FAMILY, you must use the colon character to retrieve an IP address. The possible values are as follows:

IPV4FAMILY
The address is an IPv4 address.

IPV6FAMILY
The address is an IPv6 address.

UNKNOWN
The IPRESOLVED option is not yet in use, or the address cannot be resolved.

IPRESOLVED(*value*)
Displays the IPv4 or IPv6 address of the host. The IPRESOLVED option is available using an expanded query only.

INQUIRE TERMINAL

The REMOTESYSTEM option now provides information about IP connections.

INQUIRE TRANSACTION

The REMOTESYSTEM option now provides information about IP connections.

INQUIRE URIMAP

A new option, AUTHENTICATE, displays information about whether the host specified in the USAGE(CLIENT) URIMAP resource requires authentication.

AUTHENTICATE
Displays whether to provide authentication information to a Web Services provider. The possible values are as follows:

BASICAUTH
The Web Services provider requires HTTP basic authentication. You can supply credentials to the Web Services requester (a user ID and password) to the global user exit, XWBAUTH, which, if enabled, sends the credentials to the Web Services provider.

NOAUTHENTIC
The Web Services provider does not require authentication.

If you specify an authentication value on an API command, for example, **WEB SEND**, this value is used instead of the AUTHENTICATE value specified in the URIMAP resource. If you also specify a user ID and password in the command, the XWBAUTH global user exit is not called.

A new option, ATOMSERVICE, displays the name of the ATOMSERVICE resource definition and the USAGE option has a new value, ATOM. The HOST option has been extended to display IPv6 addresses. The values HOSTNAME, IPV4HOST, IPV6HOST, and NOTAPPLIC filter the contents of the new HOST option. A new option, IPRESOLVED, displays the IPv4 or IPv6 address of the host. The values IPV4FAMILY, IPV6FAMILY, and UNKNOWN filter the contents of the new IPRESOLVED option. A new option, PORT, displays the numeric port number of the connection.

ATOMSERVICE(*value*)
Displays the 1- to 8-character name of an ATOMSERVICE resource definition for an Atom feed. The ATOMSERVICE resource definition defines an Atom service, feed, collection, or category document, and identifies the Atom configuration file, CICS resource or application program, and XML binding that are used to supply the data for the feed.

HOST(*value*)
Displays the host name, IPv4, or IPv6 address of the URL. All IPv4 addresses are displayed as native IPv4 dotted decimal addresses; for example, `1.2.3.4`, regardless of the type of address format used. If you are using a URIMAP definition relating to CICS as an HTTP client, USAGE(CLIENT), and a native IPv4 address or host name is used, the address or host name and port number are displayed; for example, `1.2.3.4:80` or `hostname.com:443`. If you specify a

hostname that is greater than 110 characters in length, port information is not displayed in the HOST option. Use the PORT option to view the port number.

HOSTTYPE
Displays the address format of the Host option. The Hosttype option is available using an expanded query only. The possible values are as follows:

HOSTNAME
The Host option contains a character host name.

IPV4HOST
The address is an IPv4 address.

IPV6HOST
The address is an IPv6 address.

IPFAMILY
Displays the address format of the IPRESOLVED option. The IPFAMILY option is available using an expanded query only. Filtering interacts with the IPFAMILY option when you filter using wildcard characters. For example, if the value in IPFAMILY is IPV6FAMILY, you must use the colon character to retrieve an IP address. The possible values are as follows:

IPV4FAMILY
The address is an IPv4 address.

IPV6FAMILY
The address is an IPv6 address.

UNKNOWN
The IPRESOLVED option is not yet in use, or the address cannot be resolved.

IPRESOLVED(*value*)
Displays the IPv4 or IPv6 address of the host. The IPRESOLVED option is available using an expanded query only.

PORT(*value*)
Displays the numeric port number value used by USAGE(CLIENT) for the connection to the server, in the range 1 - 65535. The port number is also displayed in the HOST option if HOST contains a native IPv4 address or a host name. For USAGE(CLIENT), the PORT attribute always contains the port number that is being used for the communication, even if PORT(NO) is specified on the URIMAP at define time. For USAGE(ATOM), USAGE(SERVER), or USAGE(PIPELINE), the PORT option displays `()`.

Usage
Displays the usage for the URIMAP definition.

ATOM
The URIMAP definition is for an Atom feed. It is used for an incoming request for data that CICS makes available as an Atom feed.

INQUIRE VTAM

A new option PSTYPE is added:

PSTYPE
Displays the type of VTAM persistent sessions support for the CICS region. The values are as follows:

SNPS Single-node persistent sessions. VTAM sessions can be recovered after a CICS failure and restart.

MNPS
Multinode persistent sessions. VTAM sessions can also be recovered after a VTAM or z/OS failure in a sysplex.

NOPS VTAM persistent sessions support is not used for this CICS region.

INQUIRE WORKREQUEST

A new option, CLNTIP6ADDR, displays the IPv6 address of the client that originated the request. The values IPV4FAMILY, IPV6FAMILY, and UNKNOWN filter the contents of the CLIENTIPADDR option and the new CLNTIP6ADDR option. A new option, TARGETSYS, displays the IPv4 or IPv6 address of the target system. This option is an alternative to TSYSTEM. The values IPV4TSYS, IPV6TSYS, APPLID, and NOTAPPLIC filter the contents of the TSYSTEM option and the new TARGETSYS option.

CLNTIPFAMILY(*value*)
Displays the address format of the IP address in CLIENTIPADDR and CLNTIP6ADDR. The CLNTIPFAMILY option is available using an expanded query only. Filtering interacts with the CLNTIPFAMILY option when you filter using wildcard characters. For example, if the value in Clntipfamily is IPV6FAMILY, you must use the colon character to retrieve an IP address. The possible values are as follows:

IPV4FAMILY
The address is an IPv4 address.

IPV6FAMILY
The address is an IPv6 address.

UNKNOWN
The IPRESOLVED option is not yet in use, or the address cannot be resolved.

CLNTIP6ADDR(*value*)
Displays the colon hexadecimal IPv6 address of the TCP/IP client that originated the request as a 39-character value.

TARGETSYS(*value*)
Displays the applid of the target CICS system as a 50-byte field. This field can contain one of the following values:

- The colon hexadecimal TCP/IP address and port number of the target system, in the format `[::a:b:c:d]:port` where `[]` are X'BA' & X'BB' (code page 37).
- The dotted decimal TCP/IP address and port number of the target system. All IPv4 addresses are displayed as native IPv4 dotted decimal addresses, for example, `1.2.3.4`, irrespective of which type of address format is used. For information on accepted IPv4 formats, see the *CICS Internet Guide*.
- The VTAM applid of the target system. The applid can be up to 8 characters followed by blanks.
- A string of blank characters. The target system is not CICS over MRO, the target system is not CICS over TCP/IP, or an error has occurred.
- A different value, which CICS captures but does not translate.

TSYSTYPE
Displays the address format of the IP address in TSYSTEM and TARGETSYS. Here are the values:

IPV4 The TSYSTEM and TARGETSYS options contain a dotted decimal IPv4 address.

IPV6 The TARGETSYS option contains a colon hexadecimal IPv6 address. This value is returned only if an IPv6 address is returned in the TARGETSYS option.

APPLID
The TSYSTEM and TARGETSYS options contain an applid.

NOTAPPLIC
No entry is specified in the TSYSTEM or TARGETSYS option. Blanks are returned.

SET MONITOR

New options DPLLIMIT, FILELIMIT, IDNTYCLASS, and TSQUEUELIMIT are added.

DPLLIMIT (*value*)
The maximum number of distributed program link requests for which CICS is to perform transaction resource monitoring. The value specified must be in the range 0 - 64.

FILELIMIT (*value*)
The maximum number of files for which CICS is to perform transaction resource monitoring. The value specified must be in the range 0 - 64.

IDNTY
The identity class of monitoring data is to be collected.

NOIDNTY
The identity class of monitoring data is not to be collected.

TSQUEUELIMIT (*value*)
The maximum number of temporary storage queues for which CICS is to perform transaction resource monitoring. The value specified must be in the range 0 - 64.

Resource signature options added to CEMT INQUIRE command

Changed command, INQUIRE

The definition and installation signature options are added to the **INQUIRE** command for the following resource types:

ATOMSERVICE
BUNDLE
CONNECTION
CORBASERVER
DB2CONN
DB2ENTRY
DB2TRAN
DJAR
DOCTEMPLATE
ENQMODEL
EVENTBINDING

FILE
IPCONN
JOURNALMODEL
JVMSERVER
LIBRARY
MQCONN
MQINI
PIPELINE
PROFILE
PROCESSTYPE
PROGRAM
REQUESTMODEL
TCPIPSERVICE
TDQUEUE
TRANCLASS
TRANSACTION
TSMODEL
URIMAP
WEBSERVICE
XMLTRANSFORM

The list of possible values for each resource type **CHANGEAGENT** and **INSTALLAGENT** can vary and depends on the how the resource is defined and installed. For details of a specific INQUIRE command, see *CICS Supplied Transactions*.

CHANGEAGENT(*value*)
Displays a value identifying the agent that made the last change to the resource definition. You cannot use CEMT to filter on some of these values because they are duplicated. The possible values are as follows:

AUTOINSTALL
The resource was autoinstalled.

AUTOINSTALL
The resource was autoinstalled as a result of specifying an initiation queue name on a CKQC START command, and the previously installed MQCONN definition did not specify a value for INITQNAME.

CREATESPI
The resource definition was last changed by an **EXEC CICS CREATE** command.

CSDAPI
The resource definition was last changed by a CEDA transaction or the programmable interface to DFHEDAP.

CSDBATCH
The resource definition was last changed by a DFHCSDUP job.

DREPAPI
The resource definition was last changed by a CICSPlex SM BAS API command.

DYNAMIC
The resource definition was last changed by a PIPELINE scan.

DYNAMIC
The resource was defined as a result of the installation of a DB2ENTRY with TRANSID specified.

DYNAMIC
The resource was defined by the CICS scanning mechanism.

DYNAMIC
The resource was defined by the CICS system for a template being used through the CICS template manager, DFHWBTL.

DYNAMIC
The resource was defined as a result of a MQCONN resource definition with INITQNAME specified.

DYNAMIC
The resource was defined by an ATOMSERVICE resource.

SYSTEM
The resource definition was last changed by the CICS or CICSPlex system.

TABLE
The resource definition was last changed by a table definition.

TABLE
The resource definition was last changed by a File Control table definition.

CHANGEAGREL(*value*)
Displays the 4-digit number of the CICS release that was running when the resource definition was last changed.

CHANGETIME(*date time*)
Displays the date and time when the resource definition was last changed. The format of the date depends on the value that you selected for the DATFORM system initialization parameter for your CICS region. The format of the time is hh:mm:ss.

CHANGEUSRID(*value*)
Displays the 8-character user ID that ran the change agent.

DEFINESOURCE(*value*)
Displays the source of the resource definition. The DEFINESOURCE value depends on the CHANGEAGENT option. For details, see in the *CICS Resource Definition Guide*.

DEFINETIME(*date time*)
Displays the date and time when the resource was created. The format of the date depends on the value that you selected for the DATFORM system initialization parameter for your CICS region. The format of the time is hh:mm:ss.

INSTALLAGENT(*value*)
Displays a value identifying the agent that installed the resource. You cannot use CEMT to filter on some of these values because they are duplicated. The possible values are as follows:

AUTOINSTALL
The resource was autoinstalled.

AUTOINSTALL
The resource was autoinstalled as a result of specifying an initiation queue name on a CKQC START command, and the previously installed MQCONN definition did not specify a value for INITQNAME.

BUNDLE
The resource was installed by a bundle deployment.

CREATESPI
The resource was installed by an **EXEC CICS CREATE** command.

CSDAPI
The resource was installed by a CEDA transaction or the programmable interface to DFHEDAP.

DYNAMIC
The resource was installed using a PIPELINE scan.

DYNAMIC
The resource was installed as a result of the installation of a DB2ENTRY with TRANSID specified.

DYNAMIC
The resource was installed by the CICS scanning mechanism.

DYNAMIC
The resource was installed by the CICS system for a template being used through the CICS template manager, DFHWBTL.

DYNAMIC
The resource was installed as a result of the installation of a MQCONN with INITQNAME specified.

DYNAMIC
The resource was installed by an ATOMSERVICE resource.

GRPLIST
The resource was installed by **GRPLIST INSTALL**.

SYSTEM
The resource was installed by the CICS or CICSPlex SM system.

TABLE
The resource was installed using a table definition.

TABLE
The resource was installed using a File Control table definition.

INSTALLTIME(*date time*)
Displays the date and time when the resource was installed. The format of the date depends on the value that you selected for the DATFORM system initialization parameter for your CICS region. The format of the time is hh:mm:ss.

INSTALLUSRID(*value*)
Displays the 8-character user ID that installed the resource.

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

INQUIRE DOCTEMPLATE

A new option SIZE is added to this command:

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 inquiry.

INQUIRE DSAS

The SOSSTATUS option is removed, and new options MEMLIMIT, SOSABOVEBAR, SOSABOVELINE and SOSBELOWLINE are added:

MEMLIMIT(*value*)
displays the amount of storage available above the 2 GB 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 2 GB boundary (above the bar).

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

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

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

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

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

SOSBELOWLINE(*value*)
displays whether CICS is short-on-storage in the dynamic storage areas below the 16 MB line.

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

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

INQUIRE FILE

A new option RBATYPE is added:

RBATYPE
Displays whether, for VSAM files, the data set uses extended addressing.

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

A new option XCFGROUP is added:

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 relevant XCF group for the region if XCF was open.

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

INQUIRE MONITOR

A new option COMPRESSST is added:

COMPRESSST
Displays whether data compression is performed for monitoring records. The values are as follows:
COMPRESS
Data compression is performed. The default is for monitoring records to be compressed.
NOCOMPRESS
Data compression is not performed.

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

A number of new options are added to this command:

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 sent in MIME format only 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 sent in MIME format only 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

The SOSSTATUS option is removed, and new options SOSABOVEBAR, SOSABOVELINE and SOSBELOWLINE are added:

SOSABOVEBAR(*value***)**
Displays whether CICS is short on storage in the dynamic storage areas above the 2 GB boundary (above the bar).
NOTSOS
CICS is not short on storage in any of the dynamic storage areas above the 2 GB boundary.
SOS CICS is short on storage in at least one of the dynamic storage areas above the 2 GB boundary.

SOSABOVELINE(*value***)**
Displays whether CICS is short on storage in the dynamic storage areas above the 16 MB line, but below the 2 GB boundary.
NOTSOS
CICS is not short on storage in any of the dynamic storage areas above the 16 MB line (but below the 2 GB boundary).
SOS CICS is short on storage in at least one of the dynamic storage areas above the 16 MB line (but below the 2 GB boundary).

SOSBELOWLINE(*value***)**
Displays whether CICS is short on storage in the dynamic storage areas below the 16 MB line.
NOTSOS
CICS is not short on storage in any of the dynamic storage areas below the 16 MB line.
SOS CICS is short on storage in at least one of the dynamic storage areas below the 16 MB line.

INQUIRE TCPIPSERVICE

A new value of Identify can be returned on the ATTACHSEC option.

ATTACHSEC
Indicates the level of attach-time security used by the connection.

LOCAL
CICS does not require a user ID or password from clients.

NOTAPPLIC
This option has no meaning for Web interface or IIOP TCP/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.

The PROTOCOL option also has a new value:

IPIC IP interconnectivity.

INQUIRE WEBSERVICE

A number of new options are added to this command:

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, 2.0, or 2.1. 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, 2.0, or 2.1.

XOPDIRECTST*(value)*
Indicates whether the Web service can handle XOP documents and binary attachments in direct mode.

NOXOPDIRECT
The Web service cannot handle XOP documents and binary attachments in direct mode, 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 can handle XOP documents and binary attachments.

NOXOPSUPPORT
The Web service implementation cannot handle XOP documents and binary attachments.

XOPSUPPORT
The Web service implementation can handle XOP documents and binary

attachments. This case is true for any CICS-generated Web service created by a level of CICS that supports MTOM/XOP.

SET MONITOR

New options COMPRESS and NOCOMPRESS are added to this command:

COMPRESS
Data compression is to be performed for monitoring records. The default is for monitoring records to be compressed.

NOCOMPRESS
Data compression is not to be performed for monitoring records.

SET PIPELINE

A new option RESPWAIT is added to this command:

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

INQUIRE DISPATCHER

New options are added to this command to display new TCB types. 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

The new option HFSFILE returns the fully qualified name of the z/OS UNIX System Services file where the template resides.

INQUIRE PROGRAM

The new option APIST displays the API attribute of the installed program definition. The new XPLINK value for the RUNTIME option means that the program is a C or C++ program that has been compiled using the XPLINK option.

INQUIRE SYSTEM

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 TCPIP

New options CRLPROFILE and SSLCACHE are added to this command. CRLPROFILE displays the name of the profile that authorizes CICS to access the LDAP server that stores certificate revocation lists for SSL connections. SSLCACHE displays whether CICS is using local (CICS) or sysplex caching of session IDs.

INQUIRE TCPIPSERVICE

The new option MAXDATALEN displays the maximum length of data that can be received by CICS as an HTTP server.

INQUIRE WORKREQUEST

The new option SOAP specifies that any action you request is limited to Web service work requests.

PERFORM STATISTICS

Statistics can be written for the new resource types PIPELINE and WEBSERVICE.

SET DISPATCHER

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 SYSTEM

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 TCPIPSERVICE

The new option MAXDATALEN specifies the maximum length of data that can be received by CICS as an HTTP server.

SET WORKREQUEST

The new option SOAP specifies that any action you request is limited to Web service work requests.

New CEMT commands

These CEMT commands support new CICS functions.

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

New CEMT commands in CICS Transaction Server for z/OS, Version 4 Release 1

DISCARD ATOMSERVICE

Remove a ATOMSERVICE resource definition.

DISCARD BUNDLE

Remove a BUNDLE resource definition. Any resources that were dynamically created by the bundle are also discarded.

DISCARD EVENTBINDING

Remove an event binding.

DISCARD JVMSERVER

Remove a JVMSERVER resource definition.

DISCARD MQCONN

Remove an MQCONN resource definition. If there is an implicit MQINI resource definition, it is also discarded.

INQUIRE ATOMSERVICE

Retrieve information about ATOMSERVICE resource definitions.

INQUIRE BUNDLE

Retrieve information about a BUNDLE resource.

INQUIRE EVENTBINDING

Retrieve information about an event binding.

INQUIRE EVENTPROCESS

Retrieve the status of event processing.

INQUIRE JVMSERVER

Retrieve information about the status of a JVM server.

INQUIRE MQCONN

Retrieve information about the connection between CICS and WebSphere MQ.

INQUIRE MQINI

Retrieve the name of the default initiation queue used for the connection between CICS and WebSphere MQ.

INQUIRE XMLTRANSFORM

Retrieve information about an installed XMLTRANSFORM resource.

SET ATOMSERVICE

Enable or disable an ATOMSERVICE resource.

SET BUNDLE

Enable or disable a BUNDLE resource.

SET EVENTBINDING

Enable or disable an EVENTBINDING resource.

SET EVENTPROCESS

Change the status of event processing in the CICS region.

SET JVMSERVER

Change the attributes of a JVM server.

SET MQCONN

Change information about the attributes of the connection between CICS and WebSphere MQ. You can also start and stop the connection.

SET XMLTRANSFORM

Change the validation status of an XMLTRANSFORM resource.

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

DISCARD IPCONN

Remove an IPCONN resource definition.

DISCARD LIBRARY

Remove a LIBRARY resource definition.

INQUIRE IPCONN

Retrieve information about IPCONN resources.

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 resource or cancel outstanding AIDs.

SET LIBRARY

Change the attributes of a 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 CICS Transaction Server for z/OS, Version 3 Release 1

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.

INQUIRE HOST

Retrieve information about virtual hosts in the local 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.

PERFORM PIPELINE

Initiate a scan of the Web service binding directory that is specified in the WSBIND attribute of the PIPELINE definition.

SET HOST

Enable or disable a virtual host.

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.

Chapter 8. Changes to the CICS-supplied transactions

Some CICS-supplied transactions are new or have changed in support of new functions.

Changes to CEMN

The CEMN transaction has new and changed options.

The CEMN transaction now includes the new distributed program link resource limit and a new identity class field. The CEMN transaction has been split into a primary panel and a second options panel. Also, you can change the DPLLIMIT, FILELIMIT, and TSQUEUELIMIT values using the CEMN transaction.

Changes to CETR

You can now use the CETR transaction to set special tracing for these new components.

IS Intersystems communication and MRO

PI Pipeline Manager domain

Changes to CKQC

When you use the CKQC transaction from the CICS-MQ adapter control panels or call it from the CICS command line or a CICS application, the default settings in the transaction are now taken from the MQCONN resource definition for the CICS region, rather than from an INITPARM system initialization parameter.

The default values supplied on the CICS-MQ adapter control panels for the queue manager name and initiation queue name are taken from the MQCONN resource definition and its implied MQINI resource definition.

When CICS is connected to WebSphere MQ, the field "QMgr name" in the Display Connection panel shows the name of the queue manager to which CICS is connected, or to which CICS is waiting to connect (if resynchronization is in progress). When CICS is not connected to WebSphere MQ, the field is blank. The new field "Mqname" in the Display Connection panel shows the name of the default WebSphere MQ queue-sharing group or queue manager for the connection, which you specified using the MQNAME attribute in the MQCONN resource definition. The value for the Mqname field is displayed whether or not CICS is connected to WebSphere MQ.

You can issue the CKQC START command without specifying a queue manager name, and CICS connects to the queue manager or a member of the queue-sharing group that you have specified in the MQCONN resource definition. You can also specify the name of a queue-sharing group on the CKQC START command in place of the name of a single queue manager. If you specify the name of a queue manager or queue-sharing group on the CKQC START command, the name that you specify replaces the setting for MQNAME in the installed MQCONN resource definition.

The following table summarizes the operator actions that you can perform for the CICS-WebSphere MQ connection, and whether you can perform these actions using **EXEC CICS** and CEMT commands, the CKQC transaction, the CICS Explorer®, or CICSPlex SM.

Table 5. Operator actions for CICS-WebSphere MQ connection

Operator action	EXEC CICS, CEMT	CKQC	CICS Explorer or CICSPlex SM
Start CICS-WebSphere MQ connection	Yes, using SET MQCONN, but you cannot specify the default initiation queue name	Yes	Yes
Stop CICS-WebSphere MQ connection	Yes, using SET MQCONN	Yes	Yes
Display connection status and settings	Yes, using INQUIRE MQCONN	Yes	Yes
Display connect and disconnect time	Yes, using CICS statistics commands	No	Yes
Display and reset detailed connection statistics including call types	Yes, using CICS statistics commands (resets all statistics)	Yes (resets CICS-WebSphere MQ connection statistics only)	No
Display tasks that are using the CICS-WebSphere MQ connection	Yes, but only the number of tasks, using INQUIRE MQCONN	Yes, full listing of tasks	No
Purge individual tasks that are using the CICS-WebSphere MQ connection	Yes, using SET TASK FORCEPURGE	No	No
Enable or disable CICS-WebSphere MQ API-crossing exit	No	Yes	No
Start instances of CKTI (CICS-WebSphere MQ trigger monitor or task initiator)	No	Yes	No

Changes to CWXN

If you are upgrading 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 **CRLPROFILE** system initialization parameter is defined with the profile that authorizes CICS to access 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.

Note that if you use the Frequency option in CEMN to set the interval at which CICS produces performance class records for long-running tasks, CICS can only produce a performance class monitoring record in this way when the long-running transaction is running on the QR or CO TCBs.

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, garbage collection 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, and 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.

Changes to CRTE

The routing transaction, CRTE, now supports transaction routing over an IPIC connection.

New transaction CEPH

CEPH, the HTTP EP adapter for event processing, is introduced in CICS Transaction Server for z/OS, Version 4 Release 1.

CEPH is defined by the event processing domain during CICS initialization. It is defined with RESSEC(YES) and CMDSEC(YES). CEPH runs the CICS program DFHECEAH, the HTTP EP adapter for event processing program. You can use an alternative transaction to run DFHECEAH.

CEPH is a RACF Category 2 transaction.

New transaction CEPQ

CEPQ, the WMQ adapter for event processing, is introduced in CICS Transaction Server for z/OS, Version 4 Release 1.

CEPQ is defined by the event processing domain during CICS initialization. It is defined with RESSEC(YES) and CMDSEC(YES). CEPQ runs the CICS program DFHECEAM, the WMQ adapter for event processing program. You may use an alternative transaction that executes DFHECEAM.

CEPQ is a RACF Category 2 transaction.

New transaction CEPT

CEPT, the TSQ adapter for event processing transaction, is introduced in CICS Transaction Server for z/OS, Version 4 Release 1.

CEPT is defined by the event processing domain during CICS initialization. It is defined with RESSEC(YES) and CMDSEC(YES). CEPT runs the CICS program DFHECEAT, the TSQ adapter for event processing program. You may use an alternative transaction that executes DFHECEAT.

CEPT is a RACF Category 2 transaction.

New transaction CWWU

CWWU was introduced in CICS Transaction Server for z/OS, Version 4 Release 1 for the CICS management client interface. It calls the alias program DFHWBA to analyze CICS Web requests.

CWWU is defined in the CICS-supplied resource definition group DFHCURDI. The CICS management client interface uses CWWU instead of CWBA to run the CICS alias program DFHWBA, to distinguish CICS management client interface requests from other types of Web requests.

CWWU is a RACF Category 2 transaction.

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 TCPIPSERVICE 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 TCPIPSERVICE resource definition.

CWXU is a RACF Category 1 transaction.

New transaction CW2A

CW2A, the default alias transaction for Atom feeds, was introduced in CICS Transaction Server for z/OS, Version 4 Release 1. It is used for processing with ATOMSERVICE resource definitions.

CW2A is defined in the new CICS-supplied resource definition group DFHWEB2. It is defined with RESSEC(YES) and CMDSEC(YES). CW2A runs the CICS program DFHW2A, the W2 domain alias program. You may use an alternative transaction that executes DFHW2A.

CW2A is a RACF Category 2 transaction.

Chapter 9. Additions to CICS RACF category 1 transactions

The list of category 1 transactions has some new CICS internal system transactions. These transactions must be defined to your external security manager, and the CICS region user ID must be authorized to use them, so that CICS can initialize successfully when it is running with security enabled (SEC=YES).

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

The new category 1 transactions are as follows:

- CEPD
- CEPM
- CISB
- CISC
- CISD
- CISE
- CISM
- CISQ
- CISR
- CISS
- CIST
- CISU
- CISX
- CIS4
- CJGC
- CJPI
- CJSR
- CPIR
- CPIS
- CRLR
- CRTP
- CWXU

Chapter 10. Changes to global user exits, task-related user exits, and the exit programming interface

CICS Transaction Server for z/OS, Version 4 Release 1 has changes to some existing global user exit programs and task-related user exit programs, and there are some new global user exit points. Check your existing global user exit programs against the changes summarized here.

Reassembling global user exit programs

The CICS global user exit programming interface is product-sensitive, and depends on the facilities that you have set up in your CICS system. Global user exit programs must be reassembled for each CICS release.

Check the changes summarized in this section, and modify your global user exit programs to take account of changes to relevant parameters. When you have completed your program changes, you must reassemble *all* your global user exit programs against the CICS Transaction Server for z/OS, Version 4 Release 1 libraries.

Note: If a global user exit or task-related user exit is assembled using CICS libraries from a release earlier than CICS TS 4.1 and makes an XPI call on a CICS TS 4.1 system the exit will fail. An error message is issued and the transaction that called the exit might end. You must reassemble all global user exits and task-related user exits, against the CICS TS 4.1 libraries, if they contain *any* XPI calls.

Obsolete global user exit points

These global user exit points are no longer called in CICS Transaction Server for z/OS, Version 4 Release 1.

Global user exit points made obsolete in CICS Transaction Server for z/OS, Version 3 Release 1

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 4 Release 1 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 4 Release 1 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 6. TCB indicators changed in DFHUEPAR

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
UEPTS8	S8	Addition	An S8 open TCB, used for the secure sockets layer (SSL).
UEPTTP	TP	Addition	A TP open TCB, used to own the Language Environment enclave and THRD TCB pool for a JVM server.
UEPTT8	T8	Addition	A T8 open TCB, used by a JVM server to attach pthreads for system processing.
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

Some existing global user exits have new parameters, new values or return codes, or changes to the way in which the exits are used.

HTTP client authorization and send exits: XWBAUTH and XWBSNDO

XWBAUTH and XWBSNDO now support the HTTP EP adapter. If your target system requires basic authentication or security policies when using the HTTP EP adapter, you must implement XWBSNDO and XWBAUTH user exits to provide the required credentials.

HTTP client open and send exits: XWBAUTH, XWBOPEN, and XWBSNDO

XWBAUTH, XWBOPEN, and XWBSNDO now support IPv6 addressing. You must ensure that any programs that use these global user exits can process IPv6 addresses that are passed in the UEPHOST parameter.

Threadsafe PLT-enabled global user exit programs

You can now define as threadsafe global user exit programs that are enabled from first-phase PLT programs. 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. THREADSAFE 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 now covers the installation and discarding of the following new resource types:

UEIDATOM
An ATOMSERVICE resource.

UEIDBNDL
A BUNDLE resource.

UEIDEVCS
An event capture resource.

UEIDEVNT
An EVENTBINDING resource.

UEIDIPCO
An IPCONN resource.

UEIDJSRV
A JVM server resource.

UEIDLBRY
A LIBRARY resource.

UEIDMQCN
An MQCONN resource definition for the connection between CICS and WebSphere MQ.

UEIDMQIN
An MQINI resource definition.

UEIDPIPE
A pipeline (PIPELINE).

UEIDURIM
A URIMAP resource.

UEIDWEBS
A Web service (WEBSERVICE).

UEIDXMLT
An XMLTRANSFORM resource.

New parameters added to XRSINDI

New parameters are added to the install and discard global user exit, XRSINDI, to support the resource signature.

UEPDEFTM
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the definition time of the individual resource as an 8-character STCK value.

Note: The parameters UEPDEFTM, UEPCHUSR, UEPCHAGT, UEPCHREL, UEPCHTIM, UEPDEFSRC, UEPINUSR, UEPINTIM, and UEPINAGT are valid for the following resources: ATOMSERVICE, BUNDLE, CONNECTION, CORBASERVER, DB2CONN, DB2ENTRY, DB2TRAN, DJAR, DOCTEMPLATE, ENQMODEL, EVENTBINDING, FILE, IPCONN, JOURNALMODEL, JVMSERVER, LIBRARY, MQCONN, MQINI, PIPELINE, PROFILE, PROCESSTYPE, PROGRAM, REQUESTMODEL, TCPIPSERVICE, TDQUEUE, TRANCLASS, TRANSACTION, TSMODEL, URIMAP, WEBSERVICE, and XMLTRANSFORM. The parameter value is zero for all other resources.

UEPCHUSR
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the 8-character user ID that ran the agent that last changed the individual resource.

UEPCHAGT
Address of a variable-length list, which corresponds to the list in UEPIDNAM, of a 2-byte identifier representing the agent that last changed the individual resource. The possible values are as follows:

UEPUNKAGT
The resource was changed by an unknown agent.

UEPCSDAPI
The resource was changed using the CSD API or CEDA.

UEPCSDBAT
The resource was changed using the CSD batch program, DFHCSDUP.

UEPDRPAPI
The resource was changed using the CICSPlex SM BAS API.

UEPAUTOIN
The resource was changed using autoinstall.

UEPSYSTEM
The resource was changed by the running CICS region.

UEPDYNAMC
The resource was changed dynamically.

UEPTABLE
The resource was changed using a table.

UEPCHREL
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the 4-character CICS release level that was running when the individual resource was last changed.

UEPCHTIM
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the CSD record time stamp change for the individual resource as an 8-character STCK value.

UEPDEFSRC
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the 8-character CSD group name or source corresponding to the individual resource.

UEPINUSR
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the 8-character user ID that installed the individual resource.

UEPINTIM
Address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the time that the domain was called for the installation of the individual resource as an 8-character STCK value.

UEPINAGT
Address of a variable-length list, which corresponds to the list in UEPIDNAM, of a 2-byte identifier representing the agent that installed the individual resource. The possible values are as follows:

UEPCSDAPI
The resource was installed using the CSD API or CEDA.

UEPCRESPI
The resource was installed using the EXEC CICS CREATE SPI commands.

UEPGRPLST
The resource was installed at startup using GRPLIST install.

UEPAUTOIN
The resource was autoinstalled.

UEPSYSTEM
The resource was installed by the running CICS system.

UEPDYNAMC
The resource was installed dynamically.

UEPBUNDLE
The resource was installed by a bundle deployment.

UEPTABLE
The resource was installed using a table.

Changes to global user exits in CICS Transaction Server for z/OS, Version 4 Release 1

Global user exits, XPCTA, XPCABND, and XPCHAIR

The transaction abend control block, TACB, now includes the breaking event address register information, BEAR. The XPCTA, XPCABND, and XPCHAIR global user exits are passed a pointer to the TACB parameter. These exits have to be reassembled only if the new information is to be processed by the exit or the ABNDMSGT field is not referenced by its address in field ABNDAMSG.

The TACB also includes additional GP and FP register information. Again, these exits have to be reassembled only if the new information is to be processed by the exit or the ABNDMSGT field is not referenced by its address in field ABNDAMSG.

Changed global user exit, XSRAB

New fields in the system recovery program exit, XSRAB, support the extended z/Architecture MVS linkage support.

SRP_ADDITIONAL_REG_INFO
An area containing additional register information.

SRP_ADDITIONAL_REGS_FLAG
1 byte containing flags:

SRP_CICS_GPR64_AVAIL
The 64-bit CICS GP registers are available.

SRP_SYSTEM_GPR64_AVAIL
The 64-bit system GP registers are available.

SRP_ADDITIONAL_FPR_AVAIL
Additional FP registers are available.

SRP_CICS_GP64_REGS
128-byte area containing the CICS 64-bit GP registers at the time of the abend.

SRP_SYSTEM_GP64_REGS
128-byte area containing the system 64-bit GP registers at the time of the abend.

SRP_FP_REGS
128-byte area containing all of the FP registers at the time of the abend.

SRP_FPC_REG
4-byte field containing the FPC register at the time of the abend.

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

XEIIN, XEIOUT, 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) 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. For more information about the IWMMEXTR macro, see *z/OS MVS Programming: Workload Management Services*.

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 can be returned in the UEP_FC_RECORD_ID_TYPE exit-specific parameter.

  UEP_FC_XRBA
  VSAM extended ESDS access
- The following new return codes can 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 GB, 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`) can 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 have 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) 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. For more information about the IWMMEXTR macro, see *z/OS MVS Programming: Workload Management Services*.

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

XRMIIN and XRMIOUT, 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) 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. For more information about the IWMMEXTR macro, see *z/OS MVS Programming: Workload Management Services*.

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

XPCFTCH

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.

XPCTA

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.

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

CICS Transaction Server for z/OS, Version 4 Release 1 includes some new global user exit points to help you customize new or existing CICS functions.

New global user exit points added in CICS Transaction Server for z/OS, Version 4 Release 1

File control RLS coexistence program exit XFCRLSCO

The XFCRLSCO exit can be called during a request to open a file. Use this exit to allow an application to switch the mode between RLS and read-only non-RLS to access a particular data set.

Intersystem communication program exit XISQLCL

You can use the XISQLCL exit for EXEC CICS START NOCHECK commands that are scheduled for an IPIC connection.

You can use the XISQLCL sample global user exit program, DFH£XISL, to control the queueing of START NOCHECK requests that are scheduled for an IPIC connection.

Pipeline processing exit XWSPRROI
Use the XWSPRROI exit to access containers on the current channel before the containers are processed by a Web services provider application, but after any instance of the XWSPRRWI exit is invoked.

Pipeline processing exit XWSPRRWI
Use the XWSPRRWI exit to access containers on the current channel that are to be processed by the Web services provider application, after CICS has converted the Web services request body into a language structure and before any instance of the XWSPRROI exit is invoked.

Pipeline processing exit XWSPRRWO
Use the XWSPRRWO exit to access containers on the current channel that have been processed by a Web services provider application after any instance of the XWSPRROO exit.

Pipeline processing exit XWSRQROI
Use the XWSRQROI exit to access containers on the current channel after they are processed by the transport as a Web services response. The XWSRQROI exit is invoked directly after CICS has processed the outbound Web service provider. It can also be invoked before any instance of the XWSRQRWI exit.

Pipeline processing exit XWSRQROO
Use the XWSRQROO exit to access containers on the current channel before they are passed to the transport to be processed. This exit runs after any instance of the XWSRQRWO exit is processed and before the data flowing outbound on the Web services transport.

Pipeline processing exit XWSRQRWI
Use the XWSRQRWI exit to access containers on the current channel after they have been processed by the transport as a Web services response. The XWSRQRWI exit is invoked directly after CICS has processed the inbound Web service response. It is also invoked after any instance of the XWSRQROI exit.

Pipeline processing exit XWSRQRWO

Use the XWSRQRWO exit to access containers on the current channel before they are passed to the transport to be processed. This exit runs after CICS has converted the application's language structure into a Web services request body and before CICS processes the optional XWSRQROO exit point.

Pipeline processing exit XWSRQROI

Use the XWSRQROI exit to access containers on the current channel, with CICS acting as a secured Web services requester, after they are processed by the transport as a Web services response. This exit runs after CICS processes the Web service response and before any instance of the XWSSRRWI exit.

Pipeline processing exit XWSSRROO

Use the XWSSRROO exit to access containers on the current channel, with CICS acting as a secured Web services requester, before they are passed to the transport to be processed. This exit runs after any instance of the XWSSRRWO exit is processed and before the encryption of data flowing outbound on the Web services transport.

Pipeline processing exit XWSSRRWI

Use the XWSSRRWI exit to access containers on the current channel, with CICS acting as a secured Web services requester, after they have been processed by the transport as a Web services response. This exit runs after CICS processes the Web service response and after any instance of the XWSSRROI exit.

Pipeline processing exit XWSSRRWO

Use the XWSSRRWO exit to access containers on the current channel, with CICS acting as a secured Web services requester, before they are passed to the transport to be processed. This exit runs after CICS converts the application's language structure into a Web services request body and before CICS processes the optional XWSSRROO exit point, and before being encrypted by the pipeline's security handler.

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

Application Associated Data exit XAPADMGR

Use the XAPADMGR exit for distributed transactions. XAPADMGR allows you to add user information to the association data of a task, at the point of origin of the distributed transaction. This information could be used later, for example, as a search key 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 called, if enabled, when nonsystem tasks for which no input Origin Descriptor Record is provided are attached.

HTTP client send exit XWBAUTH

With XWBAUTH, you can specify basic authentication credentials (username and password) for a target server or service provider. XWBAUTH passes these to CICS on request, to create an Authorization header which is forwarded using HTTP. 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.

Intersystem queues on IPIC connections exit XISQUE

You can use the XISQUE exit to control queuing on IP interconnectivity (IPIC) connections.

Use the XISQUE exit to detect queuing problems (bottlenecks) early.

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 ended and then reestablished.

Pipeline processing exit XWSPRROO

Use the XWSPRROO exit to access containers on the current channel after the Web services provider application issues the Web service response message and before CICS creates the body of the response message.

New global user exit points added in CICS Transaction Server for z/OS, Version 3 Release 1

HTTP client open exit XWBOPEN

XWBOPEN is invoked during processing of an **EXEC CICS WEB OPEN** or **EXEC CICS INVOKE SERVICE** 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.

Changes to task-related user exits

In CICS Transaction Server for z/OS, Version 4 Release 1, task-related user exit programs can now be invoked at an additional invocation point.

Invocation by CICS context management

You can now invoke task-related user exit programs at an additional invocation point. Currently, you can invoke a task-related user exit program from:

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

You can now also invoke a task-related user exit program from CICS context management.

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 *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.

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. You can schedule 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. The **EXEC CICS ENABLE** command has no equivalent option 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 the *CICS Customization Guide*.

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

At the attach of the transaction started by the **EXEC CICS START** command, if a valid correlator is present, 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.

CICS uses it to identify the piece of work in any further WLM calls.

Changes to the exit programming interface (XPI)

These changes to the exit programming interface (XPI) mean that you might have to change global user exit programs that contain XPI calls. Check whether or not your global user exit programs are affected by these changes to the XPI and modify your programs accordingly.

New RELSENSCALL call

By replacing the CALL XPI parameter with the RELSENSCALL XPI parameter, a XPI call assembled using the CICS TS 4.1 libraries will execute successfully on all currently supported CICS releases. The release sensitive XPI call alternative applies to *all* XPI commands.

For details of the XPI function, see the *CICS Customization Guide*.

New INQUIRE_ACTIVATION call

The new INQUIRE_ACTIVATION function is provided on the DFHBABRX macro call. You can use the INQUIRE_ACTIVATION call to obtain the activity name and the process type for the business transaction activity of the current transaction.

For details of the XPI function, see the *CICS Customization Guide*.

Changed DFHNQEDX call

A new `ENQUEUE_TYPE` option has been added to the ENQUEUE function.

ENQUEUE_TYPE (XPI | EXECSTRN | EXECADDR)
Specifies the type of resource being enqueued upon. XPI specifies the traditional DFHNQEDX behavior (the resource pool used is exclusive to XPI and cannot be accessed by the CICS API). Use EXECSTRN or EXECADDR to indicate that ENQUEUE_NAME1 specifies an enqueue resource, located in the

same namespace, as the one being used by EXEC CICS ENQ. See *CICS Problem Determination Guide* for an explanation of EXECSTRN and EXECADDR.

A new `ENQUEUE_TYPE` option has been added to the DEQUEUE function.

`ENQUEUE_TYPE (XPI | EXECSTRN | EXECADDR)`
For details of the function, see the *CICS Customization Guide*.

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

Chapter 11. 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. The EXCI options table has some changes.

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 in the same sysplex to communicate with each other across multiregion operation (MRO) connections. For introductory information about XCF/MRO, and instructions on how to set up XCF groups, see 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.

You are recommended to use a group name beginning with the letters “DFHIR”.

Chapter 12. Changes to user-replaceable programs

For each CICS release, you must reassemble all user-replaceable programs, whether or not you make any changes to them. Before reassembling the programs, check whether these changes 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.

Changed user-replaceable programs

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, the parameters passed to the programs might be changed, or the programs might need to take new actions. 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.

Analyzer program for CICS Web support

New fields, **wbra_client_ipv6_address** and **wbra_server_ipv6_address**, handle IPv6 addressing. User replaceable modules will behave as before with all IPv4 connections and you do not need to recompile existing modules unless they use the new parameters. If you introduce an IPv6 connection, the **wbra_client_ip_address** and **wbra_server_ip_address** fields are populated with zeros.

Converter program for CICS Web support

New fields, **decode_client_ipv6_address** and **decode_client_ipv6_address_string**, handle IPv6 addressing. User replaceable modules will behave as before with all IPv4 connections and you do not need to recompile existing modules unless they use the new parameters. If you introduce an IPv6 connection, the **decode_client_address** and **decode_client_address_string** fields are populated with zeros.

DFHWBEP, Web error program

New fields, **wbep_client_ipv6_address_len**, **wbep_client_ipv6_address**, **wbep_server_ipv6_address_len**, and **wbep_server_ipv6_address** handle IPv6 addressing. User replaceable modules will behave as before with all IPv4 connections and you do not need to recompile existing modules unless they use the new parameters. If you introduce an IPv6 connection, the **wbep_client_address_len**, **wbep_client_address**, **wbep_server_address_len**, and **wbep_server_address** fields are populated with zeros.

If a URIMAP resource associated with the current HTTP request is disabled, error message DFHWB0763 is issued and the Web error program is started. This

message is written to the CICS log each time the disabled URIMAP resource is encountered. Use the XMEOUT global user exit to suppress or reroute your messages if you do not want them to be written to the CICS log.

Changed program error program, DFHPEP

A new field has been added to the supplied program error program to support the improvements in wild branch diagnosis.

```
*       Breaking Event Address
*
PEP_COM_BEAR                  DS     AD        Breaking Event Addr

*
```

New fields have been added to the supplied program error program to support the extended z/Architecture MVS linkage conventions.

```
*
*       Additional register information
*
                              DS     0D        Force alignment
PEP_COM_FLAG1                 DS     X         Flag byte
PEP_COM_GP64_REGS_AVAIL       EQU    X'80'     64 bit register values
*                                              available in
*                                              PEP_COM_G64_REGISTERS
PEP_COM_ACCESS_REGS_AVAIL     EQU    X'40'     64 bit register values
*                                              available in
*                                              PEP_COM_ACCESS_REGISTERS
PEP_COM_ORIGINAL_FPR_AVAIL    EQU    X'20'     FPR 0, 2, 4 & 6 values
*                                              available in
*                                              PEP_COM_FP_REGISTERS
PEP_COM_ADDITIONAL_FPR_AVAIL  EQU    X'10'     All FPR available in
*                                              PEP_COM_FP_REGISTERS &
*                                              FPCR in
*                                              PEP_COM_FPC_REGISTER
                              DS     CL7       Reserved
PEP_COM_GP64_REGISTERS        DS     CL128     64 bit GP registers
PEP_COM_FP_REGISTERS          DS     0CL132    FP registers
PEP_COM_FP_REGISTER0          DS     FD        FP register 0
PEP_COM_FP_REGISTER1          DS     FD        FP register 1
PEP_COM_FP_REGISTER2          DS     FD        FP register 2
PEP_COM_FP_REGISTER3          DS     FD        FP register 3
PEP_COM_FP_REGISTER4          DS     FD        FP register 4
PEP_COM_FP_REGISTER5          DS     FD        FP register 5
PEP_COM_FP_REGISTER6          DS     FD        FP register 6
PEP_COM_FP_REGISTER7          DS     FD        FP register 7
PEP_COM_FP_REGISTER8          DS     FD        FP register 8
PEP_COM_FP_REGISTER9          DS     FD        FP register 9
PEP_COM_FP_REGISTER10         DS     FD        FP register 10
PEP_COM_FP_REGISTER11         DS     FD        FP register 11
PEP_COM_FP_REGISTER12         DS     FD        FP register 12
PEP_COM_FP_REGISTER13         DS     FD        FP register 13
PEP_COM_FP_REGISTER14         DS     FD        FP register 14
PEP_COM_FP_REGISTER14         DS     FD        FP register 15
PEP_COM_FPC_REGISTER          DS     F         FPC register
PEP_COM_ACCESS_REGISTERS      DS     CL64      Access registers
*
```

Changes to DFHCNV

When upgrading from CICS Transaction Server for z/OS, Version 2 Release 3 to CICS Transaction Server for z/OS, Version 4 Release 1, 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*.

New user-replaceable programs

CICS Transaction Server for z/OS, Version 4 Release 1 includes user-replaceable programs to support new CICS functions.

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 runtime 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 CICSTS41.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. It manages the autoinstall of IP interconnectivity (IPIC) connections.

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

- 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 in the CICSTS41.CICS.SDFHSAMP library.

For more information about this program, see the *CICS Customization Guide*.

Chapter 13. Changes to CICS utilities

Changes to CICS utilities in CICS Transaction Server for z/OS, Version 4 Release 1 relate to new, changed, or obsolete CICS functions. The existing utility programs DFHCSDUP, DFHSTUP and DFH0STAT support new resources, and the trace formatting utility program DFHTUxxx and IPCS dump exit routine DFHPDxxx support new resources and are renamed for the release. Support for the DFHCSDUP MIGRATE command is withdrawn in CICS TS for z/OS, Version 4.1.

CSD utility program, DFHCSDUP

The CSD utility program supports all the new and changed resource types and attributes. See Chapter 5, "Changes to resource definitions," on page 33 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.

Changed DFHCSDUP MIGRATE command

Support for the DFHCSDUP MIGRATE command is withdrawn in CICS TS for z/OS, Version 4.1.

In previous versions of CICS, the DFHCSDUP MIGRATE command migrated the eligible DFHDCT, DFHRCT, DFHTCT and DFHTST macro resource definitions to the CICS system definition data set (CSD).

If you use any of these tables, you must migrate them to the CSD before you upgrade to CICS TS for z/OS, Version 4.1. To do so, you can use the DFHCSDUP MIGRATE command on any supported release up to CICS TS for z/OS, Version 3.2 .

Changed DFHCSDUP LIST command

A new SIGSUMM option is added to **DFHCSDUP LIST** to produce a summary of definition signatures for all of the specified resources.

Sigsumm
Shows the definition signatures for each of the resource definitions in the group specified.

Changed DFHCSDUP ADD command

New BEFORE and AFTER options are added to **DFHCSDUP ADD** to control where a new group is placed.

After*(groupname2)*
Specify AFTER to place the new group name after the existing group name. The group name is added at the end of the list if BEFORE or AFTER is not specified.

Before*(groupname3)*
Specify BEFORE to place the new group name before the existing group name. The group name is added at the end of the list if BEFORE or AFTER is not specified.

Changed sample EXTRACT programs

These sample EXTRACT user programs for the DFHCSDUP utility program support the definition signature fields:

DFH$CRFA, DFH$CRFP, and DFH0CRFC

DFH$FORA, DFH$FORP, and DFH0FORC

DFH0CBDC

DFH$DB2T and DFH$SQLT

Statistics formatting utility program, DFHSTUP

The statistics formatting utility program formats additional statistics reports for the new and updated resource types. See Chapter 15, “Changes to statistics,” on page 155 for information about the new keywords available on the SELECT TYPE and IGNORE TYPE parameters.

There is a new distributed program link resource limit, DPLLIMIT, parameter in the DFHSTUP Interval, End of Day, Requested and Summary reports for transaction resource monitoring.

There is a new field Events to HTTP EP adapter, EVNTHTTPCNT, attribute in the EVENTPROCESS: global statistics and EVENTPROCESS: summary global statistics reports.

Sample statistics utility program, DFH0STAT

DFH0STAT, the sample statistics utility program, produces additional statistics reports for the new resource types.

To accommodate new statistics records added in CICS TS for z/OS, Version 4.1, DFH0STAT now has three panels for selecting reports to be printed. New COBOL modules for DFH0STAT are also provided, and some of the existing modules now print a different selection of statistics from those that they previously printed.

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 six decimal places (down to one microsecond) instead of five 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 LIBRARY resources, which will provide details about the data sets in the concatenation as well as the LIBRARY statistics. The DFHRPL Analysis provided by DFH0STAT is revised to provide a DFHRPL and LIBRARY analysis showing the programs from the DFHRPL concatenation and those from LIBRARY resources.

There is a new distributed program link resource limit, DPLLIMIT, parameter in the DFH0STAT System Status Report.

There is a new field Events to HTTP EP adapter, EVNTHTTPCNT, attribute in the DFH0STAT EVENTPROCESS report.

New sample EXTRACT statistics utility program, DFH0STXD

The DFH0STXD sample extract program produces a basic report from the CICS statistics records for installed CICS resources. Each print line displays details for the resource listed including the resource type, the define source and the installation signature. For more information, see the *CICS Operations and Utilities Guide*.

Trace formatting utility program, DFHTU660

The trace formatting utility program is renamed to DFHTU660. Always ensure that you use the trace program with the correct level number for the release of CICS TS that created the trace data set that you are formatting.

The program formats trace entries written by the new domains and functions. The new identifiers that you can specify to DFHTU660 on the **TYPETR** parameter for these functional areas are the same as the CETR trace component codes.

IPCS dump exit routine, DFHPD660

The dump formatting utility program is renamed to DFHPD660. Always ensure that you use the dump formatting program with the correct level number for the release of CICS TS that created the dump data set that you are formatting.

The dump exit routine for formatting CICS system dumps formats 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 helps system administrators and application programmers to discover static variables in Java applications that they use or plan to use in their CICS regions. Application developers then review the findings of the utility and determine whether or not the application might exhibit unintended behavior when it runs in a continuous JVM. You can use the utility when migrating Java workloads from resettable to continuous JVMs.

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.

The CICS JVM Application Isolation Utility is shipped with CICS Transaction Server for z/OS, Version 4 Release 1 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 4 Release 1 region or any other CICS region running when you use the utility.

Chapter 14. Changes to monitoring

Changes to CICS monitoring data might affect user-written and vendor-written utilities that analyze and print CICS SMF 110 monitoring records.

You can request a new type of monitoring data called identity data, which retrieves the distinguished name and realm for a transaction. This facility depends on the z/OS Identity Propagation function that is provided in z/OS, Version 1 Release 11 and three enabling Program Temporary Fixes (PTF). For more information, see APARs PK95579, PM01622, PK83741, and PK98426.

The length of a standard performance class monitoring record, as output to SMF, has increased to 2672 bytes. The length 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).

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

CICS Transaction Server for z/OS, Version 3 Release 2 introduced a data compression facility for SMF 110 monitoring records, which can provide a significant reduction in the volume of data written to SMF.

All monitoring records, except identity records, are compressed by default. If you do not want to compress monitoring records, you must change the compression option to COMPRESS=NO.

The length of a monitoring clock for performance class data, such as USRCPUT, has increased from 8 bytes to 12 bytes. For detailed information about the new format, see the Technote Interpreting new 12 byte format of USRCPUT in SMF110 records. This change affects all performance class data fields defined as TYPE-S and also affects any user-defined event-monitoring points (EMPs) that involve clocks. User clocks are defined in the monitoring control table (MCT) using DFHMCT TYPE=EMP macros. 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 must ensure that they can handle the SMF 110 records correctly. If you want to activate data compression for monitoring records, these programs must handle data compression correctly. You must make sure that the product can 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 cannot work in this way, consider using 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, with which the tool can work.

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 new type of monitoring class, identity class monitoring is available. A number of new performance data fields are added to performance class data records. Some existing performance class, resource class, and exception class data fields are changed.

New identity class monitoring added in CICS Transaction Server for z/OS, Version 4 Release 1

You can request a new type of monitoring data called identity data, which retrieves the distinguished name and realm for a transaction. For more information, see Chapter 14, "Changes to monitoring," on page 137.

New performance data fields added in CICS Transaction Server for z/OS, Version 4 Release 1

Group DFHCICS

372 (TYPE-C, 'OCLIPADR', 40 BYTES)
The IP address of the originating client or Telnet client.

402 (TYPE-A, 'EICTOTCT', 4 BYTES)
The total number of EXEC CICS commands issued by the user task.

405 (TYPE-A, 'TIASKTCT', 4 BYTES)
The number of EXEC CICS ASKTIME commands issued by the user task.

406 (TYPE-A, 'TITOTCT', 4 BYTES)
The total number of EXEC CICS ASKTIME, CONVERTTIME, and FORMATTIME commands issued by the user task.

408 (TYPE-A, 'BFDGSTCT', 4 BYTES)
The total number of EXEC CICS BIF DIGEST commands issued by the user task.

409 (TYPE-A, 'BFTOTCT', 4 BYTES)
The total number of EXEC CICS BIF DEEDIT and BIF DIGEST commands issued by the user task.

415 (TYPE-A, 'ECSIGECT', 4 BYTES)
The number of EXEC CICS SIGNAL EVENT commands issued by the user task.

416 (TYPE-A, 'ECEFOPCT', 4 BYTES)
The number of event filter operations performed by the user task.

417 (TYPE-A, 'ECEVNTCT', 4 BYTES)
The number of events captured by the user task.

Group DFHDATA

397 (TYPE-S, 'WMQASRBT', 12 BYTES)
The WebSphere MQ SRB time this transaction spent processing MQ API requests. Add this field to the transaction CPU time field (USRCPUT) when considering the measurement of the total CPU time consumed by a transaction. This field is zero for point-to-point messaging activity, but it is nonzero where MQ API requests result in publish and subscribe type messaging.

Note: WebSphere MQ only returns this value to CICS when Class 3 accounting information is being collected in WebSphere MQ; if this information is not

being collected, the field is always zero. To start collecting Class 3 accounting information, issue the command `START TRACE(ACCTG) DEST(SMF) CLASS(3)` in WebSphere MQ.

Group DFHSOCK

318 (TYPE-C, 'CLIPADDR', 40 BYTES)
The IP address of the client or Telnet client.

Group DFHTASK

283 (TYPE-S, 'MAXTTDLY', 12 BYTES)
The elapsed time for which the user task waited to obtain a T8 TCB, because the CICS system reached the limit of available threads. The T8 mode open TCBs are used by a JVM server to perform multithreaded processing. Each T8 TCB runs under one thread. The thread limit is 1024 for each CICS region and each JVM server in a CICS region can have up to 256 threads. This field is a component of the task suspend time field, SUSPTIME (group name: DFHTASK, field ID: 014).

400 (TYPE-S, 'T8CPUT', 12 BYTES)
The processor time during which the user task was dispatched by the CICS dispatcher domain on a CICS T8 mode TCB. T8 mode TCBs are used by a JVM server to perform multithreaded processing. When a thread is allocated a T8 mode TCB, that same TCB remains associated with the thread until the processing completes. This field is a component of the total task CPU time field, USRCPUT (field ID 008 in group DFHTASK), and the task key 8 CPU time field, KY8CPUT (field ID 263 in group DFHTASK).

401 (TYPE-S, 'JVMTHDWT', 12 BYTES)
The elapsed time that the user task waited to obtain a JVM server thread because the CICS system had reached the thread limit for a JVM server in the CICS region. This field is a component of the task suspend time field, SUSPTIME (group name: DFHTASK, field ID: 014).

Group DFHWEBB

380 (TYPE-C, 'WBURIMNM', 8 BYTES)
For CICS Web support, Atom feeds, and Web service applications, the name of the URIMAP resource definition that was mapped to the URI of the inbound request that was processed by this task.

381 (TYPE-C, 'WBPIPLNM', 8 BYTES)
For Web service applications, the name of the PIPELINE resource definition that was used to provide information about the message handlers that act on the service request processed by this task.

382 (TYPE-C, 'WBATMSNM', 8 BYTES)
For Atom feeds, the name of the ATOMSERVICE resource definition that was used to process this task.

383 (TYPE-C, 'WBSVCENM', 32 BYTES)
For Web service applications, the name of the WEBSERVICE resource definition that was used to process this task.

384 (TYPE-C, 'WBSVOPNM', 64 BYTES)
For Web service applications, the first 64 bytes of the Web service operation name.

385 (TYPE-C, 'WBPROGNM', 8 BYTES)
For CICS Web support, the name of the program from the URIMAP resource definition that was used to provide the application-generated response to the HTTP request processed by this task.

386 (TYPE-A, 'WBSFCRCT', 4 BYTES)
The number of **EXEC CICS SOAPFAULT CREATE** commands issued by the user task.

387 (TYPE-A, 'WBSFTOCT', 4 BYTES)
The total number of **EXEC CICS SOAPFAULT ADD, CREATE, and DELETE** commands issued by the user task.

388 (TYPE-A, 'WBISSFCT', 4 BYTES)
The total number of SOAP faults received in response to the **EXEC CICS INVOKE SERVICE and EXEC CICS INVOKE WEBSERVICE** commands issued by the user task.

390 (TYPE-A, 'WBSREQBL', 4 BYTES)
For Web service applications, the SOAP request body length.

392 (TYPE-A, 'WBSRSPBL', 4 BYTES)
For Web service applications, the SOAP response body length.

411 (TYPE-S, 'MLXSSCTM', 12 BYTES)
The CPU time taken to convert a document using the z/OS XML System Services parser. This field is a subset of the total CPU time as measured in the USRCPUT field (owner DFHTASK, field ID 008).

412 (TYPE-A, 'MLXSSTDL', 4 BYTES)
The total length of the documents that were parsed using the z/OS XML System Services parser.

413 (TYPE-A, 'MLXMLTCT', 4 BYTES)
The number of **EXEC CICS TRANSFORM** commands issued by the user task.

420 (TYPE-A, 'WSACBLCT', 4 BYTES)
The number of **EXEC CICS WSACONTEXT BUILD** commands issued by the user task.

421 (TYPE-A, 'WSACGTCT', 4 BYTES)
The number of **EXEC CICS WSACONTEXT GET** commands issued by the user task.

422 (TYPE-A, 'WSAEPCCT', 4 BYTES)
The number of **EXEC CICS WSAEPR CREATE** commands issued by the user task.

423 (TYPE-A, 'WSATOTCT', 4 BYTES)
The total number of EXEC CICS WS-Addressing commands issued by the user task.

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 TCPIPSERVICE.

367 (TYPE-A, 'OPORTNUM', 4 BYTES)
The port number used by the originating TCPIPSERVICE.

372 (TYPE-C, 'OCLIPADR', 40 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
X'14' Event

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', 8 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 originating 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 DFHSOCK

288 (TYPE-A, 'ISALLOCT, 4 BYTES)
The number of allocate session requests issued by the user task for sessions using IPIC

300 (TYPE--S, 'ISIOWTT', 12 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 for the TCP/IP service that 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 4 Release 1

Group DFHPROG

071 (TYPE-C, 'PGMNAME', 8 BYTES)

For Web service applications, this field contains the target application program name.

Group DFHTASK

007 (TYPE-S, 'USRDISPT', 12 BYTES)
Total elapsed time during which the user task was dispatched on each CICS TCB under which the task ran. The TCB modes managed by the CICS dispatcher are: QR, RO, CO, FO, SZ ,RP, SL, SP, SO, EP, J8, J9, L8, L9, S8, TP, T8, X8, X9, JM, and D2. Be aware that, for each CICS release, new TCB modes might be added to this list, or obsolete TCB modes might be removed.

008 (TYPE-S, 'USRCPUT', 12 BYTES)
Processor time for which the user task was dispatched on each CICS TCB under which the task ran. The TCB modes managed by the CICS dispatcher are: QR, RO, CO, FO, SZ, RP, SL, SP, SO, EP, J8, J9, L8, L9, S8, TP, T8, X8, X9, JM, and D2. Be aware that, for each CICS release, new TCB modes might be added to this list, or obsolete TCB modes might be removed.

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 abnormal completion 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

X'14' Event

Byte 5 Transaction status information:

Bit 0 The transaction origin

Bit 1 Reserved

Bit 2 Resource class record, or records, for this task

Bit 3 Identity class record, or records, for this task

Bit 4 Reserved

Bit 5 Reserved

Bit 6 Task purged on an open TCB

Bit 7 Task abnormally terminated

Note: If bit 6 is set, the task was purged while running on an open TCB, and its transaction timing clocks were left in an unreliable state. Because of this, the clocks are 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 are reset on a SYNCPOINT request when the MNSYNC=YES option is specified.

257 (TYPE-S, 'MSDISPT', 12 BYTES)
Elapsed time for which the user task was dispatched on each CICS TCB. The CICS TCB modes are used as follows:

- RO and FO are always used.
- CO is used if **SUBTSKS=1** is specified as a system initialization parameter.
- SZ is used if FEPI is active.
- RP is used if ONC/RPC is installed and active.
- SL, SO, and SP are used if **TCPIP=YES** is specified as a system initialization parameter. Mode SL is used by the CICS support for TCP/IP (TCP/IP Service) Listener system transaction CSOL. Mode SO is used to process the CICS support for TCP/IP socket requests issued by or on behalf of the user task. Mode SP is the CICS support for TCP/IP sockets IPT task (Initial Pthread TCB) and also owns all the SSL pthreads (S8 TCBs).
- D2 is used to stop DB2 protected threads.
- JM is used for Java shared class cache management when JVMs running in CICS are using a shared class cache.
- EP is used for event processing.
- CICS creates a TP mode TCB for every JVMSERVER resource definition that is installed and enabled. The TP TCB owns the IPT task (Initial Process Thread TCB), the Language Environment enclave, the JVM, the THRD TCB pool, and the T8 TCBs for that JVM server.

For more information, see Clocks and time stamps.

258 (TYPE-S, 'MSCPUT', 12 BYTES)
The processor time for which the user task was dispatched on each CICS TCB. The usage of each CICS TCB is shown in the description for field **MSDISPT** (field ID 257 in group DFHTASK). For more information, see Clocks and time stamps.

262 (TYPE-S, 'KY8DISPT', 12 BYTES)
The total elapsed time during which the user task was dispatched by the CICS dispatcher on a CICS Key 8 mode TCB:

- A J8 mode TCB is allocated when a transaction calls a Java program that is defined with EXECKEY=CICS, indicating that the program requires a JVM in CICS key. A J8 mode TCB can also be allocated if the Java program is defined with EXECKEY=USER, but the storage protection facility is inactive. The TCB remains associated with the task until the Java program completes.

- An L8 mode TCB is allocated when a transaction calls an OPENAPI application program defined with EXECKEY=CICS or a task-related user exit program that has been enabled with the OPENAPI option. The TCB remains associated with the task until the transaction is detached.
- An S8 mode TCB is allocated when a transaction is using the secure sockets layer (SSL) during client certificate negotiation. The S8 mode TCB remains associated with the same task for the life of the SSL request.
- A T8 mode TCB is allocated when a transaction is using a JVM server to perform multithreaded processing. When a thread is allocated a T8 mode TCB, that same TCB remains associated with the thread until the processing completes.
- An X8 mode TCB is allocated when a transaction calls a C or C++ program that was compiled with the XPLINK option and that is defined with EXECKEY=CICS. The TCB remains associated with the task until the program ends.

This field is a component of the task dispatch time field, **USRDISPT** (field ID 007 in group DFHTASK).

263 (TYPE-S, 'KY8CPUT', 12 BYTES)
The processor time during which the user task was dispatched by the CICS dispatcher on a CICS Key 8 mode TCB. The usage of the CICS Key 8 mode TCBs is shown in the description for field **KY8DISPT** (field ID 262 in group DFHTASK). This field is a component of the task CPU time field, **USRCPUT** (field ID 008 in group DFHTASK).

Group DFHWEBB

224 (TYPE-A, 'WBREADCT', 4 BYTES)
The number of CICS Web support READ HTTPHEADER, READ FORMFIELD, and READ QUERYPARM requests issued by the user task.

235 (TYPE-A, 'WBTOTWCT', 4 BYTES)
The total number of CICS Web support requests issued by the user task.

239 (TYPE-A, 'WBBRWCT', 4 BYTES)
The number of CICS Web support browsing requests for HTTPHEADER, FORMFIELD, and QUERYPARM (STARTBROWSE, READNEXT, and ENDBROWSE) issued by the user task.

340 (TYPE-A, 'WBIWBSCT', 4 BYTES)
The number of **EXEC CICS INVOKE SERVICE and EXEC CICS INVOKE WEBSERVICE** requests issued by the user task.

Resource class

New transaction resource class monitoring data for distributed program link requests to improve the work load management of DPL applications.

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

Group DFHSOCK

318 (TYPE-C, 'CLIPADDR', 40 BYTES)
The IP address of the client or Telnet client.

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 abnormal completion 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

X'14' Event

Byte 5 Transaction status information:

Bit 0 The transaction origin

Bit 1 Reserved

Bit 2 Resource class record, or records, for this task

Bit 3 Identity class record, or records, for this task

Bit 4 Reserved

Bit 5 Reserved

Bit 6 Task purged on an open TCB

Bit 7 Task abnormally terminated

Note: If bit 6 is set, the task was purged while running on an open TCB, and its transaction timing clocks were left in an unreliable state. Because of this, the clocks are 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 are 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)

EXCMNTRF has changed to match the changes for 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 over a longer period. When you upgrade to CICS Transaction Server for z/OS, Version 4 Release 1, 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 caused 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 were added to the time on the clock, but the other 8 microseconds would go unreported. However, in CICS Transaction Server for z/OS, Version 4 Release 1, 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 when you have a transaction with a high level of TCB switching, such as a nonthreadsafe transaction that 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 were not reported correctly in the performance class data, because the timer component and period count wrapped around after that time. In CICS Transaction Server for z/OS, Version 4 Release 1, the clock components are still not protected against wraparound, but, because of the increased clock capacity, it is unlikely to occur. Therefore 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. A new field in the SMF product section identifies a compressed monitoring record and gives its length after compression.

Effect of data compression

When data compression is active, CICS uses the standard z/OS Data Compression and Expansion Services, CSRCESRV, 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 must be identified, and the data section must be expanded using the z/OS Data Compression and Expansion Services, before the records can be processed by SMF 110 reporting tools.

Data compression applies only 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 is 32598 bytes.

Changes to the monitoring sample program DFH$MOLS

DFH$MOLS is a sample program that you can modify or adapt to your own purposes. It shows 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 can identify any SMF 110 monitoring records that have been compressed and expand them using the z/OS Data Compression and Expansion Services, CSRCESRV, before printing reports.

New options

A new DPL option is added to the DFH$MOLS **RESOURCE** control statement to control the printing of the distributed program link resource monitoring data.

DFH$MOLS now contains an IDN option on the PRINT control statement to allow you produce a report of the new identity class records. The DFH$MOLS totals report page also includes information about the number of identity records processed.

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 six 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 and the records that were not 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, with the records that were never compressed. The output data set of

SMF 110 monitoring records can be used by reporting tools that are not able to use the z/OS Data Compression and Expansion Services (CSRCESRV) 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 present only for a compressed record.

If you want to just print reports, or to unload the records into a fixed-length format, you do not have to specify the EXPAND option. DFH$MOLS identifies and expands any compressed monitoring records automatically before working with them. You need to specify only 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 must specify the PRINT control statement explicitly. When you specify the PRINT statement to print monitoring records, all 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 CSRCESRV FUNCTION=EXPAND was unable to expand the data section in the SMF record. For more information on the return codes issued by the CSRCESRV 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 '*xxxxxxxx*'; 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. '*xxxxxxxx*' 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 CSRCESRV 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 CSRCESRV FUNCTION=QUERY. For more information on the return codes issued by the CSRCESRV 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 4 Release 1 release of DFH$MOLS no longer processes monitoring data for CICS releases earlier than CICS Transaction Server for z/OS, Version 2 Release 2. The UNLOAD control statement has additional restrictions.

In CICS Transaction Server for z/OS, Version 4 Release 1, DFH$MOLS can process SMF 110 monitoring data records for the following supported releases:

- CICS Transaction Server for z/OS, Version 4 Release 1
- 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

However, the UNLOAD control statement (which unloads performance class monitoring data into a fixed length record format) can be used only with monitoring data for CICS Transaction Server for z/OS, Version 3 Release 2 onwards. Any version or release of DFH$MOLS cannot process monitoring data for a version or release *later* than itself, so you must always use the DFH$MOLS from the highest version or release available to you.

Chapter 15. Changes to statistics

CICS statistics records contain changes because of new domains or because of enhancements to CICS. New statistics types are added and some statistics types have new or changed fields. You might need to recompile application programs using the changed DSECTs.

New statistics types

Copybook
For functional area

DFHDHDDS
Document template statistics

DFHECCDS
CAPTURESPEC resource statistics

DFHECGDS
EVENTBINDING global statistics

DFHECRDS
EVENTBINDING resource statistics

DFHEPGDS
Event processing global statistics

DFHISRDS
IPCONN resource statistics

DFHLDBDS
LIBRARY resource statistics

DFHMLRDS
XMLTRANSFORM resource statistics

DFHMNIDS
Identity class statistics

DFHMQGDS
WebSphere MQ Connection statistics

DFHPIPDS
Pipeline resource statistics

DFHPGDDS
Program definition statistics

DFHPIWDS
Webservice resource statistics

DFHRLRDS
BUNDLE resource statistics

DFHSJSDS
JVMSERVER resource statistics

DFHWBRDS
URIMAP resource statistics

DFHWBSDS
URIMAP global statistics

DFHW2RDS
Atom feed statistics

Changed statistics types

Copybook
For functional area

DFHA03DS
VTAM global statistics

DFHA14DS
Connection resource statistics

DFHA17DS
File resource statistics

DFHDHDDS
DOCTEMPLATE resource statistics

DFHDSGDS
Dispatcher statistics

DFHD2GDS
DB2 connection statistics

DFHDSRDS
MVS TCB resource statistics

DFHD2RDS
DB2ENTRY resource statistics

DFHDSTDS
MVS TCB global statistics

DFHEJRDS
CorbaServer resource statistics

DFHIIRDS
Requestmodel resource statistics

DFHISRDS
IP connection resource statistics

DFHLDBDS
LIBRARY resource statistics

DFHLDGDS
Loader statistics

DFHLDRDS
Loader statistics for programs

DFHMNGDS
Monitor global statistics

DFHMNTDS
Transaction performance monitoring resource statistics. Data is not written to SMF by DFHMNTDS. It is relevant only when used through the COLLECT STATISTICS interface.

DFHMQGDS
WebSphere MQ connection statistics

DFHPIRDS
PIPELINE resource statistics

DFHPIWDS
Web service resource statistics

DFHSJGDS
The JVM pool global statistics

DFHSJRDS
JVM profiles

DFHSMSDS
Storage above 16 MB

DFHSORDS
TCP/IP service resource statistics

DFHTQRDS
Transient data queue resource statistics

DFHWBGDS
URIMAP global statistics

DFHWBRDS
URIMAP resource statistics

DFHXMCDS
Tranclass resource statistics

DFHXMRDS
Transaction resource statistics

Existing application programs are unaffected by the changes if they use the old versions of the following changed DSECTS:
DFHDSTDS
DFHDSRDS
DFHMNGDS
DFHSORDS

They are unaffected 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 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 you must recompile application programs using these DSECTs.

New or changed statistics types might increase the amount of statistics data that is written to the MVS systems management facility (SMF). To avoid any problems caused by multiple CICS regions writing increased interval statistics to the SMF at the same time, you can use the DFH$STED sample utility program. This program varies the statistics interval occurrence time for each CICS region. For more information, see Stagger end-of-day time sample utility program (DFH$STED) in the *CICS Operations and Utilities Guide*.

New values in DFHSTIDS (statistics record identifiers)

The new DSECTs added 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 new values in that list are as follows:

```
STIRLR   100   DFHRLRDS   BUNDLEs (resource) id
STIW2R   110   DFHW2RDS   ATOMSERVICE (resource) id
STIMLR   113   DFHMLRDS   XMLTRANSFORM (resource) id
STISJS   116   DFHSJSDS   JVMSERVER stats (resource) id
STIPGD   120   DFHPGDDS   PROGRAMDEF stats (resource) id
STIECG   140   DFHECGDS   EVENTBINDINGs (global) id
STIECR   141   DFHECRDS   EVENTBINDINGs (resource) id
STIEPG   142   DFHEPGDS   EVENTPROCESS (global) id
STIECC   143   DFHECCDS   CAPTURESPECs (resource) id
```

The values in that list that were new for CICS Transaction Server for z/OS, Version 3 Release 2 were as follows:

```
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 now formats additional statistics reports for the new statistics. You can code new resource types on the SELECT TYPE and IGNORE TYPE parameters using these keywords:

- ATOMSERVICE
- BUNDLE
- CAPTURESPEC
- EVENTBINDING
- EVENTPROCESS
- JVMSERVER
- LIBRARY
- MQCONN
- PIPELINE
- PROGRAMDEF
- WEBSERVICE
- XMLTRANSFORM

CEMT and EXEC CICS statistics commands

You can retrieve all the new statistics described in this topic using the **EXEC CICS EXTRACT STATISTICS** command, the **EXEC CICS PERFORM STATISTICS RECORD** command, and the **CEMT PERFORM STATISTICS** command.

The list of resources supported by the **EXEC CICS COLLECT STATISTICS** command is now closed. All new resources introduced from CICS Transaction Server for z/OS, Version 3 Release 1 onwards are supported by the **EXEC CICS EXTRACT STATISTICS** command, which operates in the same way.

Chapter 16. Changes to sample programs

CICS Transaction Server for z/OS, Version 4 Release 1 has a number of changes to the samples provided 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$WB1A (assembler language) and DFH$WB1C (C), are updated to use the EXEC CICS WEB commands. In addition, a new sample URIMAP definition DFH$URI1 can be used to access DFH$WB1C. The CICS-supplied sample analyzer, DFHWBADX, 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 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$WBPA (assembler language), DFH$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$URI2, to pipeline requests to a CICS region that has been set up as an HTTP server, to be handled there by the verification sample program DFH$WB1C.

The PROGRAM resource definitions for the pipelining sample programs, and the URIMAP definition DFH$URI2, are in the new DFH$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$WBCA (assembler language), DFH$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$WBHA (assembler language), DFH$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$WBHA, the assembler language server chunking sample. You can update the server URIMAP to point at a different server program if required. The PROGRAM resource definitions for the chunking sample programs, and the URIMAP definitions DFH$URI3 and DFH$URI4, are provided in the DFH$WEB resource definition group.

Atom feed samples: DFH$W2S1 (C) and DFH0W2F1 (COBOL)

The C language sample service routine, DFH$W2S1, shows you how to respond to requests for Atom entries by reading the parameters in the DFHATOMPARMS container, updating the character containers, and updating and returning the DFHATOMPARMS container.

DFH0W2F1 is a COBOL sample service routine that shows you how to handle POST, PUT, and DELETE requests for Atom collections. DFH0W2F1 is an updated version of the sample service routine DFH0W2FA that was provided in SupportPac CA8K. CICS provides sample URIMAP and ATOMSERVICE resources in the DFH$WEB2 group that you can use to run DFH0W2F1. The resources are both named DFH$W2P1.

Event processing sample: DFH0EPAC (COBOL)

The sample custom EP adapter is provided in the COBOL language. It is shipped as source code in the `CICSTS41.CICS.SDFHSAMP` library, and also as a load module.

- The source code is named `DFH0EPAC`.
- The load module is named after the source code.
- Group `DFH$EPAG` is defined in `DFHCURDS.DATA`. The group defines program `DFH0EPAC` and transaction ID `EPAT` to include in your event binding to run it.

CICS system management client API samples: DFH$WUUR and DFH$WUTC

DFH$WUUR and DFH$WUTC are new sample resource definitions to help you set up the CICS system management client API.

DFH$WUUR is a sample URI Map definition. The URI map uses transaction CWWU and calls program DFHWBA to analyze the CICS web request. DFH$WUTC is sample TCP/IP service definition.

The sample definitions are supplied in group DFH$WU. You must install definitions like these before you can use the API.

IPIC sample: DFH$XISL

A new sample global user exit program, DFH$XISL, has been added. You can use the XISQLCL sample global user exit program, DFH$XISL, to control the queueing of START NOCHECK requests that are scheduled for an IPIC connection.

JVM server samples: DFHJVMAX and DFHAXRO

DFHJVMAX is a new JVM profile file that specifies the options for initializing the JVM server. The JVMSERVER resource defines the name of the JVM profile. Its location is determined by the **`JVMPROFILEDIR`** system initialization parameter.

DFHAXRO is a new sample program that provides default values for configuring the Language Environment enclave of a JVM server. Modify and recompile this program to change the Language Environment enclave for a JVM server. The JVMSERVER resource defines the name of the program that controls the options for the Language Environment enclave. Each JVM server can use a different version of the runtime options if required. The program must be in the *hlq*.SDFHLOAD library.

Chapter 17. Changes to problem determination

CICS provides information to help you diagnose problems relating to new functions.

Part 5, "Changes to CICS messages and codes," on page 327 lists messages and abend codes that have been removed, changed, and added for CICS Transaction Server for z/OS, Version 4 Release 1.

New component codes

The following component codes have been added to support new functions in CICS TS for z/OS, Version 4.1:

Component code	Component keyword	Description
EC	None	Event capture domain
EP	EVENTPROC	Event processing domain
ML	None	Markup language domain
RL	RESLIFEMGR	Resource life cycle domain
RS	REGIONSTAT	Region status domain
WU	WEBRESTMGR	Application domain: RESTful API component
W2	WEB2	Web 2.0 domain

You can use the component codes in the following ways:

- To select the level of standard and special tracing in each component:
  - In the CETR transaction.
  - In the **STNTRxx** and **SPCTRxx** system initialization parameters.
  - In the **INQUIRE TRACETYPE** and **SET TRACETYPE** system programming commands. If there is a component keyword, you can use it instead of the component codes in these commands.
- To specify the areas of CICS storage that you want to be included in a formatted dump and the amount of data that you want formatted.
- To specify the trace entries that you want to be included in a formatted dump and in the output from the trace utility program.

On output, CICS uses the component codes to identify messages and trace entries.

Changes to HTTP status codes for Atom feed support

When serving Atom feeds, CICS issues some new HTTP status codes, and some status codes that CICS previously issued are now issued for new reasons. The new status codes that are issued by CICS are as follows:

201 Created	Issued in response to a request with the POST method. A new object has been created. The new URL for the object is returned in the Location header.

409 Conflict	When issued in response to a request with the POST method, this status code means that an existing object already exists with the specified URL, so the new object is not created.
These status codes were previously issued by CICS, but are now issued for new reasons:	
400 Bad Request	When issued in response to a request with the PUT method, this status code might mean that a PUT request without an If-Match header was received. A client that wants to update an object without knowing the current entity tag must specify If-Match: *. The status code is also issued for a markup or data problem in the Atom entry submitted by the Web client for a POST or PUT request.
403 Forbidden	Now issued when the current user is not authorized to access one of the following: • The alias transaction specified in the TRANSACTION attribute of the URIMAP resource definition • The ATOMSERVICE resource definition • The CICS resource specified in the ATOMSERVICE resource definition • Any CICS resource or command accessed by a program that is specified in the ATOMSERVICE resource definition
404 Not Found	Now issued when any of the following items cannot be found: • The ATOMSERVICE resource definition specified in the URIMAP resource definition • The CICS resource specified in the Atom configuration file • The selected record in the CICS resource
412 Precondition Failed	Now issued in response to a request with the PUT method, when the entity tag value on the If-Match header does not match the entity tag for the object being updated. The current contents of the object are returned in the response body, and the Etag header contains the new entity tag value.
500 Resource Error	Now issued for some errors involving a resource for an Atom feed, such as an error producing XML markup from a resource record for use as Atom entry content.
503 Service Unavailable	Now issued when either a requested ATOMSERVICE resource definition, or the CICS resource that it references, is disabled.

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.

- All trace entries produced by the CICS-MQ components use the CICS trace domain. If you have user tracing enabled for WebSphere MQ tracing only, you can turn off user tracing, saving the overhead of application trace.
- The CICS-DBCTL Attach and CICS-DB2 Attach 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 CSQCxxx to DFHMQ0xxx. Ensure that your message retrieval applications cope with this change.

Part 2. Upgrading CICS Transaction Server

To upgrade your CICS regions to CICS Transaction Server for z/OS, Version 4 Release 1, carry out the tasks described here. There are some general upgrading tasks which you must always perform. There are also upgrading tasks for some specific functional areas where there is a need for special considerations.

Chapter 18. Upgrade procedures for all CICS regions

Complete these tasks when you upgrade any CICS Transaction Server region to CICS Transaction Server for z/OS, Version 4 Release 1.

Redefining and initializing the local and global catalogs

When you upgrade to a new CICS release, delete, redefine, and initialize the CICS local catalog and global catalog.

Procedure

1. Delete your existing local catalog and global catalog.
2. Define and initialize new local and global catalogs, following the instructions in the *CICS System Definition Guide*. When you initialize the catalogs, make sure that you use the CICS Transaction Server for z/OS, Version 4 Release 1 versions of the DFHRMUTL and DFHCCUTL utility programs and the sample jobs.
3. When you start the CICS region for the first time after upgrading, make sure that it is an initial start with the START=INITIAL parameter.

Enabling z/OS conversion services

To obtain 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 must enable the z/OS conversion services and install a conversion image that specifies the conversions that you want CICS to perform.

Refer to the instructions in *z/OS Support for Unicode: Using Conversion Services*, SA22-7649, to find out how to set up and configure conversions supported through the operating system services.

If z/OS conversion services are not enabled, CICS issues a message to indicate this. You can suppress that message 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.

If you want to enter the command from SDSF, add a / to the beginning of the command.

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 have resource definitions in your CSD that support other IBM products, such as z/OS, you might need to upgrade these also.

About this task

If you need to share your upgraded CSD with different CICS releases, see "CSD compatibility between different CICS releases" on page 168.

Procedure

1. 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 *CICS Operations and Utilities Guide*. To help estimate the space you need in your CSD for definition records, see the *CICS System Definition Guide*.
2. 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 job for additional CSD modification" has an example job to delete and replace the CSD group containing these.

Sample job for additional CSD modification

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=CICSTS41.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD DSN=CICSTS41.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=CICSTS41.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD DSN=CICSTS41.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN    DD DSN=SYS1.ZOS190.SCEESAMP(CEECCSD),DISP=SHR
/*
//
```

Figure 1. Upgrading Language Environment resource definitions

Upgrading 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 have modified in earlier releases. The safest way to do this is to copy the upgraded CICS-supplied definitions and reapply your modifications. This action is necessary because the UPGRADE command does not operate on your own groups or on CICS groups that you have copied.

About this task

It is important to upgrade these modified definitions to ensure that they are defined correctly with nondefault values for attributes that are new. If you fail to upgrade modified definitions, CICS assigns default values to any new attributes, and these might 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 command to compare the CICS-supplied resource definitions with any user-modified versions.

The DFHCSDUP SCAN command 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 a CICS-supplied definition, the SCAN command enables you to specify the changed name as an alias.

Upgrading 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 that 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.

Procedure

1. Review your resource definitions to determine if you have copied any CICS-supplied definitions.
2. Review DFH$CSDU to determine if the changes that it contains should apply to your resource definitions.
3. Make any necessary changes to DFH$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. As supplied, the ALTER commands in DFH$CSDU specify `GROUP(*)`, which means that DFHCSDUP attempts to change resources in the CICS-supplied groups. This action 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 DFHCOMP*x* compatibility groups in your startup group list to provide the required support for earlier releases. Table 7 shows you which DFHCOMP*x* 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.

You must install the compatibility groups in the correct order, as shown in the table. For example, to run a CICS TS 3.1 region, with the CSD upgraded to CICS TS 4.1, append the compatibility groups DFHCOMPD followed by DFHCOMPC at the end of your group list.

Table 7. Required compatibility groups for earlier releases of CICS

	CICS TS 4.1 CSD	CICS TS 3.2 CSD	CICS TS 3.1 CSD	CICS TS 2.3 CSD
Shared with CICS TS 3.2	DFHCOMPD	None	Do not share	Do not share

Table 7. Required compatibility groups for earlier releases of CICS (continued)

	CICS TS 4.1 CSD	CICS TS 3.2 CSD	CICS TS 3.1 CSD	CICS TS 2.3 CSD
Shared with CICS TS 3.1	DFHCOMPD DFHCOMPC	DFHCOMPC	None	Do not share
Shared with CICS TS 2.3	DFHCOMPD DFHCOMPC DFHCOMPB	DFHCOMPC DFHCOMPB	DFHCOMPB	None

Chapter 19. Upgrading 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 CICS 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 the *CICS Transaction Server for z/OS What's New*.

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	DFHZITDL (without XPLINK) DFHZITFL (with XPLINK)
C++	DFHYITEL	DFHYXTEL	DFHZITEL (without XPLINK) DFHZITGL (with XPLINK)
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, 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.

Withdrawal of runtime support for OS/VS COBOL

Runtime support for OS/VS COBOL programs is withdrawn. If you try to use an OS/VS COBOL program, CICS issues the abend code ALIK, abnormally terminates the task, and disables the program.

You must upgrade OS/VS COBOL programs to Language Environment-conforming COBOL, and recompile them against a level of COBOL compiler supported by CICS.

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, you cannot use COBOL class definitions and methods (object-oriented COBOL). This restriction includes both Java classes and COBOL classes.

Modules using OO features and 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 must 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 an upgrade path for SOM-based OO COBOL programs.

Upgrading routing programs to tolerate channels

If you use a user-written dynamic routing program or distributed routing program for workload management, rather than CICSPlex SM, you must modify your program to handle the new values that it might be passed in the DYRLEVEL, DYRTYPE, and DYRVER fields of the DFHDYPDS communications area. This is required whether or not you plan to implement channels and containers in your own applications.

Chapter 20. Security updates to monitor RACF Event Notifications (ENF)

CICS now monitors for RACF type 71 Event Notifications (ENF) that is issued when a CONNECT or REMOVE command has affected a RACF user profile, or a user ID is revoked using the REVOKE option of the ALTUSER command. With z/OS 1.11, RACF issues an ENF 71 event code and CICS is notified immediately, overriding any setting you have specified in the USRDELAY system initialization parameter.

If you are using RACF with a z/OS 1.11 system, review your USRDELAY settings.

Chapter 21. Upgrading Business Transaction Services (BTS)

When you upgrade your BTS environment to CICS Transaction Server for z/OS, Version 4 Release 1, 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 stores 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 in CICS, you must migrate the contents of your DFHLRQ data set as part of the upgrade. You can use a utility such as IDCAMS COPY to update the CICS TS for z/OS, Version 4.1 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 modification 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 4.1, 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 4.1. In this case, you must complete your BTS workload before you upgrade to CICS TS for z/OS, Version 4.1, 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 sharing enables requests for the processes and activities stored on the data sets to be routed across the participating regions. As you upgrade your CICS releases, you may therefore still share older versions of repository data sets. The expectation is that you define and use different repository data sets whenever you want to assign different sets of process-types, rather than because a CICS upgrade has occurred.

Chapter 22. Migrating from BTAM and TCAM networks

Transactions cannot be routed to a CICS Transaction Server for z/OS, Version 4 Release 1 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 4 Release 1application-owning region (AOR). You must either migrate your terminals or route to an AOR atCICS 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 4 Release 1 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 upgrade the TOR to CICS Transaction Server for z/OS, Version 4 Release 1. 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 4 Release 1. 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)'
```

tttt and *nnnnnnnn* 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(*tttt*) 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 to assist you to upgrade, 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 XSNEX global user exit, and if that exit sets a return code of 4. Note that the XSNEX global user exit was provided only to assist you to upgrade, and the use of XSNEX 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(tttt) 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 aids described in this topic (dummy TCAM terminals, dummy consoles, or the XSNEX user exit), you should redesign them as soon as possible to use this correct method.

Chapter 23. 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 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.

In these instructions, `structure` is the name of your defined data structure. The EXEC CICS GET CONTAINER and PUT CONTAINER commands use a 16–character field to identify the container. A helpful convention is to give the container the same name as the data structure that you are using, shown here as `structure-name`.

Table 8. 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.

In these instructions, `structure` is the name of your defined data structure. The EXEC CICS GET CONTAINER and PUT CONTAINER commands use a 16–character field to identify the container. A helpful convention is to give the container the same name as the data structure that you are using, shown here as `structure-name`.

Table 9. 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.

In these instructions, `structure` is the name of your defined data structure. The EXEC CICS GET CONTAINER and PUT CONTAINER commands use a 16–character field to identify the container. A helpful convention is to give the container the same name as the data structure that you are using, shown here as `structure-name`.

Table 10. 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.

In these instructions, `structure` is the name of your defined data structure. The EXEC CICS GET CONTAINER and PUT CONTAINER commands use a 16–character field to identify the container. A helpful convention is to give the container the same name as the data structure that you are using, shown here as `structure-name`.

Table 11. 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 4 Release 1 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 Sever for VSE/ESA Release 1.1
APAR PQ83049

Chapter 24. Upgrading to extended addressing for ESDS

Restriction: Data sets that are used internally by CICS, such as `DFHDMPA`, `DFHDMPB`, `DFHINTRA`, and `DFHTEMP` do not use extended ESDS. Do not migrate these data sets.

To use an extended ESDS data set, upgrade 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).

Upgrading a standard ESDS to an extended addressing ESDS

Before upgrading a standard ESDS data set to use extended addressing, if your dataset is defined to use forward recovery you must upgrade your forward recovery product to one that can read the new log records written for extend 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, re-create 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. The *DFSMS Storage Administration Reference* manual describes how to define SMS data classes.
4. If necessary, restore the contents of the data set from the copy taken previously.

Upgrading 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):

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 do not change the length of the key areas:

   a. On STARTBR and READ commands, CICS treats your 4-byte RBAs as being the top half of 8-byte XRBAs. In most cases this produces a huge XRBA number. You can track down this error because the program immediately receives a "no record at RBA" response.

b. WRITE commands might produce more subtle, and therefore probably more serious, errors. The command feeds back an 8-byte XRBA, which overwrites the 4 bytes immediately following the key area.

Using RBA-insensitive programs to access extended ESDS data sets

You can reuse existing 32-bit RBA programs that do not make use of the RBAs to access 64-bit extended ESDS data sets.

For example, a common type of application has records that are first written sequentially and later browsed sequentially from the beginning. Although RBAs are passed between CICS and the program, the program makes no use of them. The program only reads or writes the next record. Such programs are "RBA-insensitive". Other programs, such as those that directly read or update records at named RBAs, are "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 GB of data.

Connecting a back-level AOR to a CICS TS for z/OS, Version 4.1 FOR

In this scenario, old-style 32-bit RBA programs try to access files on a CICS TS for z/OS, Version 4.1, file-owning region (FOR). This is successful 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 4.1 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 25. Migrating to IPv6 addressing

You need a minimum level of CICS TS 4.1 to communicate using IPv6. The CICS TS 4.1 region must be running in a dual-mode (IPv4 and IPv6) environment and the client or server that CICS is communicating with must also be running in a dual-mode environment. Explicitly defined IP version 4 (IPv4) connections in either single-mode or dual-mode environments continue to operate as before.

Before you begin

Ensure that you have an existing TCP/IP network configured and available and that you have existing TCP/IP resources defined and installed.

About this task

Follow these steps to migrate CICS network resources from an earlier release and to enable IPv6 addressing:

Procedure

1. Copy your existing resource definitions to the system definition data set (CSD) for the new release system. For information on migrating CICSPlex SM CSD structures, see the *CICSPlex System Manager Concepts and Planning*.
2. Inquire on the new resources to verify that they have been defined correctly.
3. If you are running in a dual-mode environment and you are connecting to another CICS TS 4.1 region that is running in a dual-mode environment and you have specified HOST(ANY) or IPADDRESS(ANY) in your TCPIPSERVICE definition, you do not have to make any updates to receive IPv6 traffic. If you have defined a specific IPv4 address in the TCPIPSERVICE definition, you will need to change this address to receive IPv6 traffic.
4. Make sure that new application programs that manipulate IP addresses use the options that support IPv6 addressing:
   a. If you are using the **EXTRACT WEB**, **WEB EXTRACT**, **WEB OPEN**, or **WEB PARSE URL** commands, the HOST option allows you to specify IP address information
   b. If you are using **EXTRACT TCPIP**, new client and server options return IPv6 address information.

   You do not have to recompile existing application programs that return IPv4 addressing information.

Results

Existing IPv4 connections continue to function correctly and your IPv6 resources are defined and ready for network traffic.

What to do next

If you are having problems with your connection, see the *CICS Problem Determination Guide*.

Chapter 26. Migrating connections to IP interconnectivity

If you do not want to use IPIC connections, you do not need to do anything about them when upgrading. Existing MRO, APPC, and LUTYPE6.1 connections continue to operate as before.

About this task

If you do want to migrate APPC or MRO connections to IPIC, follow these steps:

Procedure

1. Install support for IPIC. IP interconnectivity (IPIC), in the *CICS Transaction Server for z/OS Installation Guide* describes how to do this.
2. Migrate your existing connections to IPIC. CICS supplies the DFH0IPCC migration utility to help you do this.

The DFH0IPCC migration utility

The DFH0IPCC utility program that is provided with CICS converts existing APPC and MRO connections to IPIC connections (IPCONNs). DFH0IPCC is a sample program for use with the DFHCSDUP system definition utility program. The utility generates a set of statements that form the input to DFHCSDUP.

The DFH0IPCC program takes input supplied in a table that you can edit, called an *APPLID table*. This table is used to store the APPLIDs of all the regions in the relevant setup, with the corresponding HOST name of the region and the listening PORT of the TCPIPSERVICE definition used to deal with inbound TCP/IP connections.

The DFH0IPCC program examines lists and resource groups in the CSD for CICS regions, 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 the utility program has completed an IPCONN definition, it writes a series of DEFINE statements, which form the SYSIN for your resulting DFHCSDUP invocation JCL.

IPCONN attribute mapping

This table summarizes how the DFH0IPCC utility program maps the CONNECTION attributes to the IPCONN definition.

Table 12. IPCONN attribute mapping

IPCONN definition attribute	Migrated From or Created By	Comments
APPLID	CONNECTION (NETNAME)	Direct migration
AUTOCONNECT	CONNECTION (AUTOCONNECT)	Direct migration. But, if ALL, set the new value to YES.

Table 12. IPCONN attribute mapping (continued)

IPCONN definition attribute	Migrated From or Created By	Comments
CERTIFICATE	N/A	Blank
CIPHERS	N/A	Blank
DESCRIPTION	N/A	Blank. Not migrated. You can add this in the DFH0IPCC output.
GROUP	CONNECTION (GROUP) SESSIONS (GROUP)	Not changed
HOST	APPLID table	Must be specified in the APPLID table.
INSERVICE	CONNECTION (INSERVICE)	Direct migration
IPCONN	CONNECTION (CONNECTION)	Direct migration. See "IPCONN names."
MAXQTIME	CONNECTION (MAXQTIME)	Direct migration
NETWORKID	APPLID table	No equivalent. Leave blank if not specified in the APPLID table or if using the default.
PORT	APPLID table	Must be specified in the APPLID table.
QUEUELIMIT	CONNECTION (QUEUELIMIT)	Direct migration
RECEIVECOUNT	Sum of SESSIONS (MAXIMUM)	Direct migration from the MRO SESSIONS equivalent setting, or derived from the APPC SESSIONS MAXIMUM setting.
SENDCOUNT	Sum of SESSIONS (MAXIMUM)	Direct migration from the MRO SESSIONS equivalent setting, or derived from the APPC SESSIONS MAXIMUM setting.
SSL	N/A	Left blank. You can modify this in the DFH0IPCC output.
TCPIPSERVICE	APPLID table	Always "DFHIPIC" or as in the APPLID table. See "TCPIPSERVICE names" on page 191.
XLNACTION	CONNECTION (XLNACTION)	Direct migration

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. The coexistence of same-name CONNECTION and IPCONN definitions is fully supported by CICS provided that the CONNECTION NETNAME and IPCONN APPLID are the same. In this instance, CICS selects the IPCONN definition instead of the CONNECTION definition for routing of supported function.

TCPIPSERVICE names

Because an IPCONN definition cannot determine the TCPIPSERVICE name of a partner region, the utility cannot produce TCPIPSERVICE definitions; you must define them manually. The utility works in such a way that all TCPIPSERVICE names in regions for which the utility produces IPCONN definitions must be the same.

All IPCONN definitions created by the DFH0IPCC utility program have the default attribute, TCPIPSERVICE (DFHIPIC), unless you supply a different name using the .DEFAULT row in the APPLID file. If you specify another name, use that name for all TCPIPSERVICE definitions that you create.

Migrating APPC and MRO connections to IPIC

You can migrate your existing MRO, APPC, and LUTYPE6.1 connections to IPIC connections. Existing connections continue to operate as before.

Before you begin

If you want to migrate APPC or MRO connections to IPIC, you must have installed support for IPIC. The *CICS Transaction Server for z/OS Installation Guide* describes how to do this.

About this task

To migrate your existing connections to IPIC, use the topic, "The DFH0IPCC migration utility" on page 189.

Procedure

1. Create a TCPIPSERVICE resource definition in each of the interconnected regions.
   a. Specify PROTOCOL(IPIC).
   b. Specify TCPIPSERVICE(DFHIPIC) or TCPIPSERVICE(*servicename*). If you specify a user-defined name, use this same name for all the TCPIPSERVICE definitions that you create.
   c. Specify other options, such as PORTNUMBER, according to the requirements of the region where the TCPIPSERVICE definition is to be installed.

   The number of definitions you require depends on, for example, the number of unique port numbers you must specify.
2. Put each TCPIPSERVICE definition in a resource definition group of its own.
3. 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 TCPIPSERVICE definitions that they require.
4. Install one TCPIPSERVICE, named DFHIPIC, or user-defined service name, in each of the interconnected regions.
5. Complete an APPLID table for the interconnected CICS regions, as shown in Example 1 below.
   a. Create the table as a fixed-block, 80-byte record format.

b. You can use any method to fill the table; manually, for example, or by a utility, such as a spreadsheet or script, but you must preserve the fixed-length format. You can remove or omit any of the provided comments or header lines.
c. 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.
d. If the previously defined TCPIPSERVICE definitions were named anything other than DFHIPIC, the table must contain a .DEFAULT record with `TCPIPSERVICE=servicename` in the HOST column.

6. Copy your APPLID table to every system that contains a CSD used by the interconnected regions.
7. Create JCL that can be used to invoke DFH0IPCC through DFHCSDUP, like that shown in Example 2 below. Specify the lists and resource groups that you want DFH0IPCC to search for information about CONNECTION and SESSIONS definitions. The JCL issues a **DFHCSDUP EXTRACT** command, passing the utility program as the *USERPROGRAM*.
8. On one of the CSD-owning systems, use your customized JCL file to invoke the DFH0IPCC utility program. The utility program collects information about CONNECTION and SESSIONS definitions, creates IPCONN definitions, and writes a series of DEFINE statements, which form the SYSIN for your resulting DFHCSDUP invocation JCL.
9. Review the output produced by the utility program.
   a. Check that the IPCONN definitions are correct for your installation. You might want to modify the default SSL settings to add greater security controls for a particular connection.
   b. Modify the USER, PASSWORD, and library names in the generated JCL, to match those used by your location.
10. Run the generated JCL to add the new IPCONN resources to your CSD file.
11. Repeat steps 8, 9, and 10 for each CSD file used by the interconnected CICS regions.

Example

This example of an APPLID table shows the format that you must use. The table following the example has reference information for the table format.

```
*******************************************************************************
*                                                                             *
* Description:                                                                *
*     This Applid Table is for DFH0IPCC. This table must contain the          *
*     APPLIDs, NETWORKIDs (where applicable for foreign network connectivity), *
*     PORT numbers, and TCP/IP HOST names for all CICS regions in the systems  *
*     for which IPCONN definitions are to be created.                         *
*                                                                             *
* File Format:                                                                *
*     This file must be in FB80 format, and relies on a tabular layout shown  *
*     below. Any characters can be used as separators. Add comments using an  *
*     asterisk in the first column of the line. A HOST name that is too long  *
*     to fit into the table can be continued by placing an asterisk in column *
*     80, and continuing on column 25 of the next row (the first column of the *
*     space for HOST). The APPLID field of any continuation record(s) must be *
*     left blank.                                                             *
*                                                                             *
* Notes:                                                                      *
*     The optional .DEFAULT record (shown below) can be used to provide either *
*     one or both of the following parameters:                                *
*     > A TCPIPSERVICE name, which must be provided immediately after         *
*       'TCPIPSERVICE=' in the HOST column. If a name is not provided, it     *
*       defaults to 'DFHIPIC'. In either case, this value is the name that must*
*       be used when defining the TCPIPSERVICEs for the CICS systems referred *
*       to in this table.                                                     *
*     > A default NETWORKID, which must be provided in the NET-ID column.     *
*       Its omission results in the omission of the NETWORKID parameter in    *
*       the generated IPCONN definition statements for those APPLIDs that had *
*       a blank NET-ID column.                                                *
*                                                                             *
*     Examples of various valid table entries are shown following the .DEFAULT *
*     record. These are examples only. Ensure that all rows adhere to your    *
*     site's standards and conventions.                                       *
*                                                                             *
*     Important! When editing this file, ensure that the CAPS setting is OFF. *
*     Otherwise, the case-sensitive HOST names might be destroyed.            *
*                                                                             *
*******************************************************************************
*
*******************************************************************************
APPLID. |NET-ID. |PORT.|HOST.
*******************************************************************************
.DEFAULT|LOCALNET|     |TCPIPSERVICE=TCPSERV1
APPL1A  |        |9876 |my.local.hostname
OTHERCIC|OTHERNET|12345|this.host.has.a.very.long.name.which.is.going.to.requir*
        |        |     |e.a.continuation.record
* Comments such as this are entirely free-form other than the * in column 1
CICSXYZ |        |9875 |10.2.156.221
```

Figure 2. Example 1: APPLID table

Table 13. Format of APPLID table

Table column	Length	Description
APPLID	char 8	Unique identifier or .DEFAULT. Use .DEFAULT to specify default values for NETID or TCPIPSERVICE. 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.

Table 13. Format of APPLID table (continued)

Table column	Length	Description
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
Continuation column	char 1	Normally blank. Any nonblank character in this field indicates that the host name is longer than 55 characters and continues in the HOST column in the following row.

You can use this example JCL to invoke DFH0IPCC through DFHCSDUP.

```
//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
/*
//
```

Figure 3. Example 2: JCL to invoke DFH0IPCC through DFHCSDUP

Equivalent attributes on IPCONN definitions

If you want to migrate your APPC and MRO connections manually, instead of running the DFH0IPCC migration utility, these tables show the attributes of CONNECTION and SESSION resource definitions for MRO and APPC connections and the equivalent attributes on IPCONN definitions.

APPC connections

Table 14. 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)
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 15. 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 to which this SESSION 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

Table 15. Migrating APPC connections to IPIC. SESSIONS options and their IPCONN equivalents (continued)

SESSIONS options	APPC possible values	IPCONN equivalent value
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
RECOVOPTION	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 connections

MRO connections are all CICS-to-CICS connections between regions in the same sysplex. For this type of connection, MRO might be more useful than IPIC because it supports all the base CICS intercommunication functions, whereas IPIC supports a subset.

Table 16. 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 the SIT of the remote region	`host.domain.country[:port]`
PROTOCOL	Blank	Not applicable
PSRECOVERY	Not applicable	Not applicable
QUEUELIMIT	NO | 0 - 9999	As is
RECORDFORMAT	U	Not applicable

Table 16. Migrating MRO connections to IPIC. CONNECTION options and their IPCONN equivalents (continued)

CONNECTION options	MRO possible values	IPCONN equivalent value
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
USEDFLTUSER	NO | YES	Not applicable
XLNACTION	KEEP | FORCE	As is

Table 17. 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 to which this SESSION definition applies	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
RECOVOPTION	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 to sign in	Not applicable

Chapter 27. Upgrading IP interconnectivity (IPIC)

If you have already upgraded to IPIC with a previous version of CICS, and you have upgraded your IPCONN resource definitions to CICS TS for z/OS, Version 4.1, you must install the CICS TS for z/OS, Version 4.1 version of the DFHISCIP group. This is because the IPIC resource definitions that are provided in group DFHISCIP are extended in this release.

Communicating over IPIC with different levels of CICS

If both an APPC or MRO connection and an IPIC connection exist between two CICS regions, and both have the same name, the IPIC connection takes precedence.

However, if your terminal-owning region (TOR) and application-owning region (AOR) are in CICS systems that are using different levels of CICS, the rules can differ. An APPC or MRO connection is defined using the CONNECTION resource. An IPIC connection is defined using the IPCONN resource. CICS always attempts to use an IPIC connection for communication, unless a non-3270 terminal is being used, or the request is being sent using enhanced routing.

If both a CONNECTION resource and an IPCONN resource exist between two CICS regions, and both have the same name, the IPIC connection takes precedence. However, if the IPCONN resource is not available, CICS will attempt to route over an APPC or MRO connection using a CONNECTION resource. If the request fails, a SYSID error is returned to the application that scheduled the request. For more information about how IPIC overrides default connections, see Chapter 5, “Changes to resource definitions,” on page 33.

Table 18 shows how the resources are used, depending on the level of CICS installed at the communicating regions, the availability of resources, and the intercommunication method that is being used.

Table 18. Selection behavior for IPCONN and CONNECTION resources

Version of CICS in the TOR or routing region	**Status of IPCONN resource**	**CICS TS 3.2 AOR**		**CICS TS 4.1 AOR**	
		DPL	**Asynchronous processing and transaction routing**	**DPL**	**Asynchronous processing and transaction routing**
CICS TS 3.2	Acquired	IPIC connection	APPC or MRO connection	IPIC connection	APPC or MRO connection
	Released	Request rejected	APPC or MRO connection	Request rejected	APPC or MRO connection
CICS TS 4.1	Acquired	IPIC connection	APPC or MRO connection	IPIC connection	IPIC connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Chapter 28. Upgrading multiregion operation (MRO)

To upgrade CICS multiregion operation (MRO) support, install the latest DFHIRP and DFHCSVC modules in the MVS link pack area (LPA) and carry out tests.

About this task

For MRO, the interregion communication program DFHIRP is installed in the link pack area (LPA). The CICS TS for z/OS, Version 4.1 DFHIRP module is compatible with earlier releases, and works with all releases of CICS. However, the CICS TS for z/OS, Version 4.1 version of DFHIRP, required for multiple XCF group support, can be used only on z/OS Version 1.7 or later.

DFHIRP can be used only from the LPA. Therefore in an MVS image you can have only 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.

In 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 4.1 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.

These steps are a guide to the upgrading 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*. These steps assume that RACF is your external security manager (ESM).

Procedure

1. Install the CICS SVC routine, DFHCSVC, in the LPA, and specify a new CICS SVC number for this routine in the MVS SVCPARM table. If the new DFHCSVC has to coexist with an older version, rename one of them so that both versions can be installed in the LPA. However, coexistence is not recommended or necessary: DFHCSVC is compatible with earlier releases and the latest CICS TS version supports all the earlier releases of CICS.
2. Test the new SVC on stand-alone CICS regions, without using any MRO. You can do this running the CICS IVP, DFHIVPOL.
3. 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 upgrading between releases, because you might 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. 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, an absolute limit no longer applies to 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.

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 do not have to specify DFHIR000 explicitly on the XCFGROUP parameter of the system initialization table and DFHXCOPT EXCI table.

Upgrading 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 do not want to create a large number of XCF groups. An obvious method of partitioning many regions puts 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 use the XCF group feature to isolate your development and test regions from your production regions.

If you decide to have multiple XCF groups, note these recommendations:

- Put your production regions in a different XCF group from your development and test regions.
- Do not create more XCF groups than you need; two, separated as described, may be sufficient.
- Try not to move regions between XCF groups.
- Try not to add or remove regions from existing XCF groups.

Releases of CICS earlier than CICS TS for z/OS, Version 3.2 can join only the DFHIR000 group, so you must first upgrade to CICS TS for z/OS, Version 3.2 or a later release those systems that need 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.

Chapter 29. Upgrading the Java environment

When you upgrade 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 TS 4.1 supports the JVM provided by the IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6 and Version 6.0.1. CICS TS 4.1 supports only the 31-bit version of the SDK. You can find more information about Java on the z/OS platform and download a suitable version of the SDK at http://www.ibm.com/servers/eserver/zseries/software/java/.

Earlier versions of Java

Java programs that ran under CICS Transaction Server for z/OS, Version 2 Release 3, or CICS Transaction Server for z/OS, Version 3 can also run under CICS Transaction Server for z/OS, Version 4.

When you upgrade from one version of Java to another, check for compatibility issues between the Java APIs, and compatibility issues specific to the IBM SDK for z/OS. You can find this information at http://www.ibm.com/systems/z/os/zos/tools/java/services/j6restrict31.html and in the Java compatibility and deprecated API information provided at http://java.sun.com.

To avoid potential problems with deprecated APIs, develop all new Java programs for CICS Transaction Server for z/OS, Version 4 Release 1 using an application development environment that supports the same version of Java as used by CICS. You may run code compiled with an older version of Java in a new runtime, if it does not use APIs that have been removed in the newer version of Java.

In CICS Transaction Server for z/OS, Version 3 Release 2, support for resettable JVMs, which were reset between each use, was withdrawn. Any Java programs that ran in resettable JVMs must be migrated to run in continuous JVMs. Continuous JVMs generally perform better and are more consistent with other versions of Java. The migration process involves ensuring that the Java programs behave as expected when a continuous JVM is reused by a subsequent program.

JVM profiles

If you already have JVM profiles that you set up in a previous CICS release, you might want to upgrade 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 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 described in the *CICS Transaction Server for z/OS What's New* and also listed in "Changes to options in JVM profiles" on page 206. 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, use the new samples supplied with CICS Transaction Server for z/OS, Version 4 Release 1 to help you create new files, rather than upgrading 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 upgrade 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 are not compatible.

Ensure that the JVM profiles that 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 DFHJVMCD 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.

Key changes to CICS support for Java applications

Note these changes that will affect your Java environment when you upgrade to CICS Transaction Server for z/OS, Version 4 Release 1.

- In CICS Transaction Server for z/OS, Version 4 Release 1, 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 DFHJVMCD for CICS-supplied system programs.
- The class sharing function, first introduced with Version 5, has a number of changes that are important if you are upgrading from Version 1.4.2:
  - The Version 6 shared class cache contains all application classes, with no distinction between shareable and nonshareable application classes. All the application classes are placed on the standard class path in the JVM profiles, and they are all eligible to be loaded into the shared class cache. (In some exceptional scenarios, discussed in the *IBM Developer Kit and Runtime Environment, Java Technology Edition, Version 6 Diagnostics Guide*, some classes might not be eligible to be loaded into the shared class cache.) The shareable application class path in the JVM properties file (**-Dibm.jvm.shareable.application.class.path**), which was used with the Version 1.4.2 shared class cache, is obsolete.
  - The Version 6 shared class cache does not contain compiled classes produced by just-in-time (JIT) compilation. These classes are stored in individual JVMs, not in the shared class cache, because the compilation process can vary for different workloads. The Version 1.4.2 shared class cache did contain compiled classes, so you might find that your Version 6 shared class cache uses less storage.
  - The Version 6 shared class cache updates its contents automatically if you change any application classes or JAR files, or add new items to the class paths in your JVM profiles, and restart the appropriate JVMs. You do not need to stop and restart the shared class cache as well, as you did with the Version 1.4.2 shared class cache.
  - If the Version 6 shared class cache becomes full, JVMs can continue to use the classes that are already present in it, and any further classes are loaded into the individual JVMs. A warning message is issued if you have requested verbose output, but the JVMs can continue to run applications as they did before. With the Version 1.4.2 shared class cache, a JVM throws an error if it tries to add a new class or the results of JIT-compilation to a full shared class cache.

- The Version 6 shared class cache is normally persistent across warm and emergency CICS starts, except in some circumstances such as an IPL of z/OS, so there is no startup cost to the first JVM in the CICS region at those times. The Version 6 shared class cache is destroyed on only a cold or initial start, and normally starts again automatically when it is required. The Version 1.4.2 shared class cache was terminated each time CICS shut down.
- The Version 6 shared class cache does not have a master JVM, so you do not have to specify the **JVMCCPROFILE** system initialization parameter or configure a master JVM profile. (The master JVM profile DFHJVMCC, and its associated JVM properties file `dfhjvmcc.props`, were the default files for the Version 1.4.2 shared class cache.) CICS uses the CICS-supplied sample profile DFHJVMCD to initialize and terminate the Version 6 shared class cache, but you do not need to make any additional changes to this profile for use with the shared class cache.
- JVMs that use the Version 6 shared class cache do not inherit values for JVM options from a master JVM, and you do not have to place classes on the library path and shareable application class path in a JVM profile or JVM properties file for a master JVM. All the JVM options and classes are specified in the JVM profiles for the individual JVMs. So, with the Version 6 shared class cache, the JVM options for a JVM that uses the shared class cache and a JVM that does not are the same. Except for the CLASSCACHE option, the JVM profiles are set up in the same way, and the same class paths are used. Therefore, with Java 6, reusable JVMs that use the shared class cache are no longer referred to as worker JVMs.
- If required, JVMs that use the Version 6 shared class cache can be single-use JVMs (REUSE=NO) instead of continuous JVMs (REUSE=YES), and they can also be used for debugging.

• The format for the JVM trace point ID, which appears in the CICS trace entries SJ 4D01 and SJ 4D02, is different with Java 6. Again, this change was first introduced in Java 5.
  - With Java 1.4.2, the JVM trace point ID was in the format TPID_*xxxxxx*, where *xxxxxx* represents the hex JVM trace point ID. This format is fixed length, so the Java 1.4.2 trace point ID always ended at offset 8 in the data.
  - With Java 6, the JVM trace point ID is in the format TPID_*componentId.number*, where *componentId* is the name of the JVM component that issued the trace point, and *number* is the unique identifying number in the component. This format is variable length.

  For more information, see the topics about tracing Java applications and the JVM in the Version 6 *IBM Developer Kit and Runtime Environment, Java Technology Edition Diagnostics Guide*, which is available to download from www.ibm.com/developerworks/java/jdk/diagnosis/.

• 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.

- 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.

Changes to options in JVM profiles

A reference for changes to options in JVM profiles.

Table 19. Changed options in JVM profiles

Option	Status	CICS and Java launcher action	Replace with	Notes
REUSE=RESET	Obsolete	JVM does not start	REUSE=YES	CICS issues message DFHSJ0524 if found.
Xresettable=YES	Obsolete	JVM does not start	REUSE=YES	CICS issues message DFHSJ0525 if found.
ibm.jvm.crossheap. events	Obsolete	Java launcher ignores	n/a	Only used in resettable JVM.
ibm.jvm.events.output	Obsolete	Java launcher ignores	n/a	Only used in resettable JVM.
ibm.jvm.reset.events	Obsolete	Java launcher ignores	n/a	Only used in resettable JVM.
ibm.jvm.resettrace. events	Obsolete	Java launcher ignores	n/a	Only used in resettable JVM.
ibm.jvm.unresettable. events.level	Obsolete	Java launcher ignores	n/a	Only used in resettable JVM.
Xinitacsh	Obsolete	Java launcher ignores	Add value to -Xms	Only used in resettable JVM.
Xinitth	Obsolete	Java launcher ignores	Add value to -Xms	Only used in resettable JVM.
Xinitsh	Obsolete	Java launcher ignores	Add value to -Xms	Only used in resettable JVM.
TMPREFIX	Obsolete	CICS prefixes to standard class path	CLASSPATH_PREFIX	CICS issues message DFHSJ0521 if found. Move classes with care.
TMSUFFIX	Obsolete	CICS places on standard class path	CLASSPATH_SUFFIX	CICS issues message DFHSJ0522 if found.

Table 19. Changed options in JVM profiles (continued)

Option	Status	CICS and Java launcher action	Replace with	Notes
MAX_RESETS_ TO_GC	Obsolete	CICS ignores and uses default for GC_HEAP_ THRESHOLD	GC_HEAP_ THRESHOLD	CICS issues message DFHSJ0528 if found.
-Dibm.jvm.shareable. application. class.path	Obsolete	CICS adds entries to standard classpath	CLASSPATH_SUFFIX	Obsolete for Java 5
-generate (for STDOUT, STDERR)	Enhanced	Accepted	n/a	Now adds unique JVM number to generated output file names, in addition to CICS region applid, time stamp and suffix.
CICS_DIRECTORY	Renamed	CICS treats as CICS_HOME	CICS_HOME	CICS issues message DFHSJ0534 if found.
LIBPATH	Replaced by new equivalents	CICS treats as LIBPATH_ SUFFIX	LIBPATH_SUFFIX (LIBPATH_PREFIX also available)	CICS issues message DFHSJ0538 if found. You do not need to specify directories for base library path, only directories that you add.
CLASSPATH	Replaced by new equivalents	CICS treats as CLASSPATH_ SUFFIX	CLASSPATH_SUFFIX (CLASSPATH_PREFIX also available)	CICS issues message DFHSJ0523 if found.
VERBOSE	Withdrawn from sample profiles	Accepted	-verbose:gc	Works as before if specified in old format.
Xcheck (JVM default is NO)	Withdrawn from sample profiles	Accepted	-Xcheck	Only specify this if other than JVM default.
Xdebug (JVM default is NO)	Withdrawn from sample profiles	Accepted	-Xdebug (no value) to set debug on	Only specify this if other than JVM default.
Xnoclassgc (JVM default is NO)	Withdrawn from sample profiles	Accepted	-Xnoclassgc (no value) to specify no class garbage collection	Only specify this if other than JVM default.
Xverify (JVM default is remote)	Withdrawn from sample profiles	Accepted	n/a	Do not specify, use JVM default.
IDLE_TIMEOUT	New	Defaults to 30 minutes	n/a	Used to specify timeout threshold.
GC_HEAP_ THRESHOLD	New	Defaults to 85%	n/a	Used to specify heap utilization limit for CICS-scheduled garbage collection
CICS_HOME	New, replaces CICS_ DIRECTORY	Preferred	n/a	Used to specify home directory for CICS files in the z/OS UNIX file system.
CLASSPATH_PREFIX, CLASSPATH_SUFFIX	New, replace CLASSPATH	Preferred	n/a	Used for standard class path.
LIBPATH_PREFIX, LIBPATH_SUFFIX	New, replace LIBPATH	Preferred	n/a	Used for library path.

Table 19. Changed options in JVM profiles (continued)

Option	Status	CICS and Java launcher action	Replace with	Notes
JAVA_DUMP_OPTS	New for CICS sample profiles	UNIX System Services environment variable set	n/a	Used to set dump options.
JAVA_DUMP_ TDUMP_PATTERN	New for CICS sample profiles	UNIX System Services environment variable set	n/a	Used to specify location for Java dumps.
DISPLAY_JAVA_ VERSION	New for CICS sample profiles	Preferred	n/a	Used to show JVM version in CICS MSGUSR log.

Undocumented options

Table 19 on page 206 lists only the options which were formerly used in the CICS-supplied sample files, together with the new options. Some options for JVM profiles and JVM properties files did not appear in the CICS-supplied sample files in previous CICS releases, but were documented in the CICS documentation. Some of these options have now been removed from the CICS documentation.

The `java.compiler` option has been undocumented because its primary use was to disable the Java just-in-time (JIT) compiler during the development process for applications in a resettable JVM. In a continuous JVM, this option is not required for that purpose.

The remaining undocumented options are still valid, but they can now be specified in the standard Java way (rather than in a special way for CICS), and so the documentation for the IBM 31-bit SDK for z/OS, Java Technology Edition and other Java documentation can be used. If you have any of these options in an existing JVM profile for CICS, they are still accepted.

The main categories of valid options which have been undocumented are:

- The options relating to assertions. You can find more information about programming with assertions, and about enabling and disabling assertions, at `http://java.sun.com/j2se/1.5.0/docs/guide/language/assert.html`.
- Various Java nonstandard options (beginning with `-X`), including `-Xmaxe`, `-Xmaxf`, `-Xmine`, `-Xminf`, `-Xrun`*`dllname`* and `-Xrs`. You can find more information about these options in *IBM 31-bit and 64-bit SDKs for z/OS, Java 2 Technology Edition, Version 5 SDK and Runtime Environment User Guide*. The documents is available to download from www.ibm.com/servers/eserver/zseries/software/java/javaintr.html.
- Various JVM system properties, most of which should not be changed by users of the IBM JVM with CICS.

-Xquickstart option

In some earlier versions of CICS, you could use the `-Xquickstart` option (specified using the `Xservice` option) in a JVM profile to reduce the startup time for the JVM. However, with improvements in JVM technology, the `-Xquickstart` option is now permanently enabled, and specifying `-Xquickstart` in a JVM profile has no effect.

New symbol &JVM_NUM;

When the &JVM_NUM; symbol is used in a value in a JVM profile (for example, as part of the file name for a Java dump), CICS substitutes the unique JVM number for it at runtime. The new symbol can be specified for any type of output from the JVM, and it can be used in combination with the &APPLID; symbol (which provides the CICS region applid). The **-generate** option for `stdout` and `stderr` files also now adds the unique JVM number automatically.

DFHJVMAT

DFHJVMAT is a user-replaceable program that you can use to override the options specified in a JVM profile. It can only be used for a single-use JVM, and not for a continuous JVM. The use of DFHJVMAT is not recommended for new development.

Only certain options in JVM profiles are available to DFHJVMAT. There are changes to the list of available options, as follows:

CICS_DIRECTORY
: No longer available

CICS_HOME
: New, replaces CICS_DIRECTORY

CLASSCACHE_MSGLOG
: New

CLASSPATH
: No longer available

CLASSPATH_PREFIX, CLASSPATH_SUFFIX
: New, replace CLASSPATH

JAVA_DUMP_OPTS
: New

LIBPATH
: No longer available

LIBPATH_PREFIX, LIBPATH_SUFFIX
: New, replace LIBPATH

TMPREFIX, TMSUFFIX
: No longer available

Xresettable
: No longer available

Several of the options available to DFHJVMAT are among the Java nonstandard options which have been undocumented. There is no further information about these options in the CICS documentation, and information about these can be found in the documentation for the IBM 31-bit SDK for z/OS, Java Technology Edition and other Java documentation.

Migrating from resettable to continuous JVMs

From CICS Transaction Server for z/OS, Version 3 Release 2 onwards, resettable JVMs are not supported. You must migrate any Java programs that ran in resettable JVMs, to run in continuous JVMs. The migration process involves checking for certain actions in the program code, and then changing some options in your JVM profiles.

About this task

To migrate Java programs that ran in resettable JVMs, to run in continuous JVMs, follow these steps:

Procedure

1. Check that your Java programs do not contain any code that might have an unwanted effect on serial isolation when the continuous JVM is reused by a subsequent program. Carry out these checks:
   a. Check for any code that changes the state of the JVM; for example, changing the default time zone. Ensure that the program resets the JVM to the original state. If you need to police any application actions in the continuous JVM, use the Java security manager to do this.
   b. Check that any DB2 connections, or other task lifetime system resources, opened by the application are closed or released.
   c. Use the CICS JVM Application Isolation Utility to check for the use of any static variables in your Java programs. The use of static variables might cause Java programs that were designed to execute in a resettable JVM to exhibit changed behavior when they execute in a continuous JVM. Possible Java application behavior changes in continuous JVMs explains potential problems. Review the findings of the utility and make any code changes that are necessary to preserve the original behavior. Auditing Java applications for the use of static variables tells you how to use the utility.
2. Examine the existing JVM profiles and JVM properties files for your applications. You can either make a new copy of your existing files and make changes to the options specified in them, or transfer the relevant settings from your existing files to new files based on the samples provided with CICS Transaction Server for z/OS, Version 4 Release 1. 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 to help you create new files, rather than migrating your existing files.
3. Compare your existing JVM profiles and JVM properties files with the new CICS-supplied samples, and with the table of changed options shown in Changes to options in JVM profiles and JVM properties files. Identify the options and system properties that you customized in your existing files, and note any that are now obsolete or that you must specify differently.
4. Either transfer relevant settings from your existing files to new files based on the new CICS-supplied samples, or make appropriate changes to a new copy of your existing files. The most important changes to make are:
   a. Set the correct CICS and Java home directories to match your CICS Transaction Server for z/OS, Version 4 Release 1 installation. The CICS-supplied samples already specify the correct directories.
   b. Change REUSE=RESET to REUSE=YES or replace `Xresettable` with REUSE=YES.

c. Add the paths to classes that were specified on class paths in your existing files to the appropriate class path in the new files. There are a number of changes to the way class paths are specified in CICS Transaction Server for z/OS, Version 4 Release 1. “Changes to class paths in JVM profiles” on page 216 explains how to handle each of the changed class paths.

d. Migrate your storage settings from the existing files to the new files. The way in which a continuous JVM uses storage differs in some respects from the way a resettable JVM uses storage. Migrating storage settings in JVM profiles from resettable JVMs explains how to specify suitable storage settings as a starting point for your continuous JVMs.

When you use the JVM profiles, if you have omitted any key changes, CICS issues warning messages to explain what changes are still required.

Possible Java application behavior changes in continuous JVMs

Because there is no reset operation in the continuous JVM, applications that were designed to execute in a resettable JVM might exhibit changed behavior when they execute in a continuous JVM. You might have to make changes to an application to preserve its original behavior while running in a continuous JVM.

In a resettable JVM, the state of the JVM was reset after each use, so that no application transaction (that is, code other than trusted middleware code) could affect the operation of subsequent transactions. The JVM reset cleaned up the JVM's storage heaps, reinitialized shareable application classes, and discarded and reloaded nonshareable application classes, meaning that no objects other than trusted static middleware objects could persist in the JVM from one use of the JVM to the next.

The continuous JVM does not reset the JVM’s state between uses. This continuity enables the persistence of static objects across tasks, which can be a powerful tool when used deliberately. For example, an application developer can use caching techniques to avoid reinitializing objects on each use. It can also, however, be a source of unexpected and erroneous behavior unless it is handled carefully.

Example 1: Altering static variables

The most common type of state change that an application can make is to alter the value of a static variable. static variables are shared by all instances of a class, unlike non-static variables, which are allocated separately for each instance.

In a resettable JVM, when a class is first loaded, the JVM takes a copy of the initial value of each static variable and uses it to restore the variable to its original state at the end of each transaction. Consider the following trivial case:

```
public class HelloWorld
{
    public static int count = 0;

    public static void main(String args[])
    {
        count++;
        System.out.println("Hello World, count is " + count);
    }
}
```

In a resettable JVM, the static variable count is reset to zero by the JVM after each invocation of the HelloWorld main() method. The message therefore shows that count is 1 each time HelloWorld is invoked.

In a continuous JVM, however, count is not reset to its original value before the next invocation of the main() method, and the old, shared, value persists. The message therefore shows the count increasing by 1 on each invocation in subsequent transactions.

To preserve the original behavior while running in a continuous JVM, the HelloWorld class could be changed to make count an instance variable and initialize it on each invocation in a constructor:

```
public class HelloWorld
{
    public int count = 0;

    public static void main(String args[])
    {
        HelloWorld hw = new HelloWorld();
        hw.count++;
        System.out.println("Hello World, count is " + hw.count);
    }

    HelloWorld()
    {
        count = 0;
    }
}
```

Example 2: Altering the contents of static objects

A more subtle type of issue can arise when the static variable is an object reference whose internal state might change, as in this example:

```
import java.util.Hashtable;
import java.util.Enumeration;

class StaticHash
{
    private static final Hashtable myHashtable = new Hashtable();

    public static void main(String[] args)
    {
        int count = myHashtable.size();
        myHashtable.put("key" + count, "value" + count);

        Enumeration keys = myHashtable.keys();
        while (keys.hasMoreElements())
        {
            Object key = keys.nextElement();
            System.out.println("Found this key in the Hashtable: " + key);
        }
    }
}
```

In a resettable JVM, a new instance of myHashtable is created every time the JVM is reset, and it will only ever contain a single key, “key0”. In a continuous JVM, however, only one instance of myHashtable is created, and each time the class is run, a new key is added to it.

You can solve the problem in a similar manner to the first example, by making myHashtable an instance variable and creating the new Hashtable in a constructor.

Alternatively, myHashtable could be left as a static reference and be reset each time by adding a constructor containing an invocation of myHashtable.clear().

Auditing Java applications for the use of static variables

The CICS JVM Application Isolation Utility helps system administrators and application programmers to discover static variables in Java applications that they use or plan to use in their CICS regions. Application developers then review the findings of the utility and determine whether or not the application might exhibit unintended behavior when it runs in a continuous JVM. You can use the utility when migrating Java workloads from resettable to continuous JVMs.

Before you begin

The CICS JVM Application Isolation Utility is shipped with CICS Transaction Server for z/OS, Version 4 Release 1 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 4 Release 1 region or any other CICS region running when you use the utility.

About this task

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.

To inspect Java applications using the CICS JVM Application Isolation Utility, follow these steps:

Procedure

1. Confirm that the CICS-supplied file `dfhjaiu.jar`, which is the CICS JVM Application Isolation Utility, is present in the `/utils/isolation` subdirectory of the home directory for CICS files on z/OS UNIX. The default name for the home directory is `/usr/lpp/cicsts/cicsts41/`, where `cicsts41` is defined by the USSDIR installation parameter when you installed CICS TS for z/OS, Version 4.1. You can add the `/utils/isolation` directory to the PATH environment variable in z/OS UNIX System Services, so that you do not need to give the full path to the file when you run the utility.
2. Confirm that the shell script DFHIsoUtil, which is used to run the CICS JVM Application Isolation Utility, is also present in the `/utils/isolation` subdirectory of the home directory for CICS files on z/OS UNIX. Check that the script file specifies the correct value for the CICS_HOME environment variable, and edit the file to change this if necessary.
3. Identify the class files or JAR files that you want to specify to the utility for inspection. Bear these points in mind:
   a. A Java application can involve classes and JAR files that are specified on several different class paths in the JVM profile or JVM properties file. Make sure you include all of them in your inspections.
   b. You can use wildcard characters in the file names, to inspect all the class files or JAR files in a given directory.
   c. When you specify a JAR file for inspection, the utility inspects all the classes contained in the JAR file.

d. If you specify an individual class file for inspection, the utility inspects only the named class. If the class includes inner classes, the utility does not automatically inspect these. Specifying JAR files, or using wildcards to inspect a whole directory, ensures that any inner classes are included in the inspection.

4. Log in to a z/OS Unix System Services shell, and enter the command

   ```
   DFHIsoUtil [-verbose] filename [filename ... filename]
   ```

   In this command:

   a. DFHIsoUtil is the name of the script file which runs the CICS JVM Application Isolation Utility. If you have not set an appropriate PATH environment variable and you are not working in the directory containing the script file, give the full path to the file, for example `/usr/lpp/cicsts/cicsts41/utils/isolation/DFHIsoUtil`.

   b. The **-verbose** option makes the utility provide additional information. See "The -verbose option" on page 215.

   c. *filename* specifies the names of one or more class files or JAR files that you have identified for the utility to inspect. Separate each file name with a space. Give the full path to the files if necessary. You can use wildcard (glob) characters in the file names.

   For example, to inspect the class file HelloWorld and obtain the standard report (not the verbose report), enter the command

   ```
   DFHIsoUtil HelloWorld.class
   ```

5. The report produced by the CICS JVM Application Isolation Utility is written to System.out. You can redirect it to another destination as required.

6. Review the findings of the utility and then examine the source code for your Java applications. The reports produced by the utility identify some potential issues, but you must check if these affect the behavior of the application when it runs in a continuous JVM.

Example 1: Report showing alteration of `static` variables

When the CICS JVM Application Isolation Utility is used to inspect the HelloWorld class file used in Example 1 in "Possible Java application behavior changes in continuous JVMs" on page 211, the report looks like this:

```
CicsIsoUtil: CICS JVM Application Isolation Utility

Copyright (C) IBM Corp. 2006

Reading Class File: HelloWorld.class

    Method: public static void main(java.lang.String[])
      Static fields written in this method:
        public static int count

    Method: <clinit> (Class Initialization)
      Static fields written in this method:
        public static int count

  Number of methods inspected       : 3
  Total static writes for this class: 2

Number of Jar Files inspected    : 0
Number of Class Files inspected  : 1
```

The report shows that the static field count is written to during Class Initialization and in the main() method. The report indicates that count might behave differently

when the class is used in a continuous JVM, rather than in a resettable JVM. The application programmer must examine the source code to decide whether count really does behave differently.

Example 2: Report showing alteration of the contents of `static` objects

When the CICS JVM Application Isolation Utility is used to inspect the StaticHash class file used in Example 2 in "Possible Java application behavior changes in continuous JVMs" on page 211, the report looks like this:

```
CicsIsoUtil: CICS JVM Application Isolation Utility

Copyright (C) IBM Corp. 2006

Reading Class File: StaticHash.class

    Method: <clinit> (Class Initialization)
      Static fields written in this method:
        private static final java.util.Hashtable myHashtable

  Number of methods inspected       : 3
  Total static writes for this class: 1

Number of Jar Files inspected    : 0
Number of Class Files inspected  : 1
```

Note that the static variable myHashtable is only written to during Class Initialization, but the internal state of the Hashtable changes on each invocation.

This problem is more difficult to assess. The output of the utility identifies that a static object exists. In this case, the object is a hash table; other items such as arrays might also be in this situation. The application developer must check the source code of the application to ensure that the state of the static object is not changed in a way that unintentionally affects subsequent invocations of the class in a continuous JVM.

You must also check the entire graph of other objects that might be referenced from the original static object. Any static object can contain state of its own. This state can include further objects that are not defined as static, but are included within the static context of the parent object. A large graph of objects can be built up in this way, where only the root object is declared as static, but state held in any of the objects might be available for use by subsequent applications, because of the static root object. The application developer must check for application isolation problems at every level of the object graph, in addition to checking at the root level.

The `-verbose` option

Normally, the CICS JVM Application Isolation Utility does not print details of methods which do not write to static variables, or details of static final String variables. With the **–verbose** option specified, the utility does print these extra details and also lists all static method invocations made.

This additional information can identify other potential problems with your applications. For example, this extract from a report shows code relating to the resettable JVM:

```
Static methods invoked by this method:
        boolean isResettableJVM()
           (defined in class: com.ibm.jvm.ExtendedSystem)
```

All methods in the com.ibm.jvm.ExtendedSystem class are related to the resettable JVM. They are all deprecated, and you should remove them from any application code.

Migrating storage settings in JVM profiles from resettable JVMs

You will probably need to adjust and tune the storage-related options in your JVM profiles when you migrate applications to run in continuous JVMs.

When you migrate an application from a resettable JVM to run in a continuous JVM, initially deal with each storage option that you have specified in the JVM profile as shown in Table 20.

Table 20. Migrating storage options in JVM profiles

Option (if specified)	Action
-Xmx	Use the setting from the resettable JVM profile
-Xinitth	Comment out (no longer used)
-Xms	Take the setting from the resettable JVM profile and increase it by the values of **-Xinitth** and **-Xinitacsh** from the resettable JVM profile
-Xinitacsh	Comment out (no longer used)
-Xinitsh	Comment out (no longer used)

These suggestions assume that the continuous JVM is running the same application or applications as the resettable JVM; that is, you are changing an existing resettable JVM profile to become a continuous JVM profile. If the mix of applications running in the continuous JVM is different, your choice of storage settings will not fit this model.

These suggestions also assume that the storage settings for the resettable JVM were correctly tuned for the needs of your applications. If that is not the case, migrating the storage settings according to this model will not improve that situation.

Use your new settings as a starting point for the continuous JVM. The way in which storage is used in a continuous JVM differs in some respects from the way it is used in a resettable JVM. In particular, bear in mind that the storage heaps in continuous JVMs are not automatically cleaned up after each program invocation. Because of this, depending on the application design and the extent to which each program cleans up after itself, compared to a resettable standalone JVM running the same workload, the continuous JVM might require either larger storage heap sizes or more frequent garbage collection.

Changes to 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 4 Release 1. Identify an appropriate class path for each of the items that you specified on class paths in your existing JVM profiles and optional JVM properties files, and transfer the items to the correct class paths.

To help you to upgrade, if you continue to specify items on class paths using the old options, CICS accepts these options and builds them into an appropriate class path.

You must use IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6 for Java support with CICS Transaction Server for z/OS, Version 4 Release 1. Two class paths are built using the options in the order shown here:

Library path for Java 6

1. LIBPATH_PREFIX
2. CICS-supplied DLL files in the CICS_HOME/lib and CICS_HOME/ctg directories
3. IBM SDK-supplied DLL files in the JAVA_HOME/bin and JAVA_HOME/bin/classic directories
4. LIBPATH (old option)
5. LIBPATH_SUFFIX

Standard class path for Java 6

1. TMPREFIX (old option)
2. CLASSPATH_PREFIX
3. CICS-supplied jar files in the CICS_HOME/lib directory
4. IBM SDK-supplied jar files in the JAVA_HOME/standard directory
5. TMSUFFIX (old option)
6. ibm.jvm.shareable.application.class.path (old option)
7. CLASSPATH (old option)
8. CLASSPATH_SUFFIX

Changes to class paths in JVM profiles: library path

From CICS Transaction Server for z/OS, Version 3 Release 2 onwards, the base library path is not visible in the JVM profile. You specify only 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, you specified the base library path explicitly in the JVM profile, but now that is not required.

The LIBPATH option in the JVM profile is no longer used. To help you to upgrade, 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 upgrading JVM profiles, any items that you added to the library path in previous CICS releases, such as the DLL files required to use the DB2-supplied JDBC drivers, you now specify using LIBPATH_SUFFIX. The CICS-supplied `/lib` and `/ctg` directories, and the IBM JVM-supplied `/bin` and `/bin/classic` directories, which you specified on the library path in the CICS-supplied sample JVM profiles in earlier CICS releases, are not now specified explicitly in the JVM profile. These directories are now part of the base library path.

The option LIBPATH_PREFIX is available if you need to place items before the base library path, but use this option only under the guidance of IBM support.

Changes to class paths in JVM profiles: middleware classes

In a continuous JVM, you now place the classes formerly treated as middleware classes on the same class path as user application classes. You specified these classes on the trusted middleware class path options TMPREFIX and TMSUFFIX in the JVM profile.

To help you to upgrade, 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 upgrading JVM profiles, place the classes formerly treated as middleware classes on the standard class path. The standard class path is defined by the CLASSPATH_SUFFIX option in the JVM profile for the JVM where the application will run. When you have placed the classes on the standard class path, remove the TMPREFIX and TMSUFFIX options from your JVM profiles.

Changes to class paths in JVM profiles: standard class path

From CICS Transaction Server for z/OS, Version 3 Release 2 onwards, the standard class path is constructed in a new way. 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. To help you to upgrade, 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 upgrading JVM profiles, specify any items that you added to the standard class path in previous CICS releases using CLASSPATH_SUFFIX.

If you are changing JVM profiles from resettable (REUSE=RESET) to continuous (REUSE=YES), place application classes on the standard class path. With IBM 31-bit SDK for z/OS, Java Technology Edition Version 6, there is no shareable application class path, so you must use the standard class path whether or not you are using the shared class cache. Classes on the standard class path are placed into the shared class cache. 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 in the JVM and kept across reuses.

For CICS Transaction Server for z/OS, Version 4 Release 1, you must upgrade to use Version 6 of the IBM 31-bit SDK for z/OS, Java Technology Edition for Java support.

Changes to class paths in JVM profiles: shareable application class path

In Java 6, the shareable application class path is not used for class sharing. To share Java classes when using Java 6, place the classes on the standard class path for the JVM.

When you upgrade to using Java 6 in a CICS region, if you have any classes on the shareable application class path in your JVM profiles, you must put them on the standard class path. CICS still accepts the shareable application class path but places the classes on the standard class path instead.

With Java 6, the shared class cache does not have a special shareable application class path. If you request class sharing to take place with Java 6 JVMs, all of the classes in the JVMs are shared, and all must be placed on the standard class path, which is defined by the CLASSPATH_SUFFIX option in the JVM profile.

Upgrading from IBM SDK for z/OS, Java Technology Edition, Version 1.4.2 to Version 6

Carry out the steps listed in this topic to upgrade to Version 6 because Version 1.4.2 is no longer supported.

About this task

If you are upgrading from Java 1.4.2, carry out the steps listed here. If you are upgrading from Java 5, see "Upgrading from IBM SDK for z/OS, Java Technology Edition, Version 5 to Version 6" on page 223.

The steps in this topic assume that you have one or more CICS regions at CICS TS 3.2 or earlier, with existing Java workloads supported by Version 1.4.2 of the IBM SDK for z/OS, and that you are upgrading these regions to CICS TS 4.1 and therefore must use Version 6 of the SDK for the first time.

You can upgrade to Version 6.0.0 of the SDK or, if you have applied APAR PM38397, you can upgrade to Version 6.0.1 of the SDK.

If you have implemented workload balancing for enterprise beans and you have a logical EJB server that consists of cloned CICS regions that listen for and fulfil IIOP enterprise bean requests, upgrade all the CICS regions in the logical EJB server to CICS TS 4.1 and Java 6 at the same time. In a logical EJB server, IIOP messages from a single client process might be handled in different CICS regions, and, if the CICS regions are using different versions of Java, application errors might occur in some circumstances.

To upgrade to Version 6 of the SDK:

Procedure

1. Check your Java programs against the information at http://www.ibm.com/systems/z/os/zos/tools/java/services/j6restrict31.html for compatibility issues between the IBM SDK for z/OS, V6 and the IBM SDK for z/OS, V1.4.2 and V5. The information includes links to Java compatibility and deprecated API information for both Java V6.0.0 and Java V6.0.1. Make any changes that are necessary to enable your programs to run with the Java 6 API and the IBM SDK for z/OS, V6.

2. Download and install the IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6 on your z/OS system.
   - You can download V6.0.1 from http://www.ibm.com/systems/z/os/zos/tools/java/products/sdk601_31.html.
   - You can download V6.0.0 from http://www.ibm.com/systems/z/os/zos/tools/java/products/j6pcont31.html.

   CICS TS 4.1 supports only the 31-bit version of the SDK, not the 64-bit version. For details of which service refresh is required, see CICS TS 4.1 detailed system requirements.
3. If you want to upgrade some or all of the JVM profiles and JVM properties files that you used with your previous CICS release, so that you can continue to use them, make copies of them in a new location on z/OS UNIX. The full path to this location, including the directory name, must be 240 characters or less, so that you can specify it on the **JVMPROFILEDIR** system initialization parameter for CICS.
4. If you do not want to continue using the JVM profiles and JVM properties files that you used with your previous CICS release, make copies of the new sample JVM profiles supplied with CICS TS 4.1 in a new location on z/OS UNIX. JVM properties files are not supplied with CICS TS 4.1. The samples are in the `/usr/lpp/cicsts/cicsts41/JVMProfiles` directory, where the `/usr/lpp/cicsts/cicsts41` directory is the installation directory for CICS files on z/OS UNIX, specified by the **USSDIR** parameter in the DFHISTAR installation job. If you created your existing JVM profiles more than one or two releases ago, you might want to use the new samples rather than upgrading your existing files, because a number of changes have been made to the options.
5. If you used the shared class cache in Version 1.4.2, and want to upgrade JVM profiles for which CLASSCACHE=YES is specified in the profile so that the JVMs use the shared class cache (known as worker JVMs in Version 1.4.2), make changes to the copies of your JVM profiles as follows:
   a. Locate the JVM profile for your Version 1.4.2 master JVM (DFHJVMCC or a profile modeled on it), and its associated JVM properties file (`dfjjvmcc.props` or a file modeled on it).
   b. Copy the CICS_HOME, JAVA_HOME, and REUSE options and their values from the master JVM profile into each of the profiles for JVMs that use the shared class cache (worker JVM profiles).
   c. Change the CICS_HOME option in each of the profiles for JVMs that use the shared class cache to specify the path for the home directory for CICS TS 4.1 files on z/OS UNIX. The new sample JVM profiles supplied with CICS TS 4.1 show this path.
   d. Change the JAVA_HOME option in each of the profiles for JVMs that use the shared class cache to specify the location where you installed Version 6 of the IBM 31-bit SDK for z/OS, Java Technology Edition. `/usr/lpp/java/J6.0/` is the default install location for the product.
   e. Copy the LIBPATH_PREFIX and LIBPATH_SUFFIX options and their values from the master JVM profile into each of the profiles for JVMs that use the shared class cache. Native C dynamic link library (DLL) files specified on the library path are not stored in each of the individual JVMs, and they are not stored in the shared class cache; a single copy of each DLL file is used by all the JVMs that need it.
   f. If the CLASSPATH_PREFIX and CLASSPATH_SUFFIX options, or the older CLASSPATH option, are included in any of your profiles for JVMs that use the shared class cache, check whether the classes that they specify must be

isolated to JVMs with that particular profile or whether they can safely be placed in the shared class cache. With Version 1.4.2, classes specified in this way were not loaded into the shared class cache, but with Version 6, all the classes on the standard class path are now eligible for sharing. If you want to exclude classes from the shared class cache, you must make the JVM profile that contains them into a standalone JVM by specifying CLASSCACHE=NO instead of CLASSCACHE=YES in the profile.

g. Copy the classes specified by the **-Dibm.jvm.shareable.application.class.path** system property in the JVM properties file for the master JVM, and specify them as values for the CLASSPATH_SUFFIX option in each of the profiles for JVMs that use the shared class cache. The shareable application class path in the master JVM properties file contained the shareable application classes for all the applications which ran in your worker JVMs. With Version 6, all these classes are placed on the standard class path in the individual JVM profiles.

h. If you have a number of profiles for JVMs that use the shared class cache, and you can identify which classes on the shareable application class path belong to each of your Java applications and which of the JVM profiles each application uses, you can delete unwanted items from each CLASSPATH_SUFFIX option so that each class is specified only in the appropriate JVM profiles. If you cannot determine the unwanted items, keep all the classes in every JVM profile. Keeping all the classes does not use any additional storage because the JVMs are sharing the class cache, but if you make changes to a class, you must restart more JVMs than if the classes were correctly arranged.

i. To check the results of your changes, you can compare your JVM profiles with the CICS TS 4.1 CICS-supplied sample JVM profile DFHJVMPR, for a JVM that uses the shared class cache.

j. When you have finished transferring options and their values from the master JVM profile to the profiles for JVMs that use the shared class cache, remove the master JVM profile from the folder of profiles where you are working, because it is not used for the Version 6 shared class cache.

6. For any other JVM profiles that you want to upgrade, including the default CICS-supplied JVM profiles, DFHJVMPR and DFHJVMCD, if you have made copies of your versions of these profiles from a previous CICS release, change the JAVA_HOME option to specify the installation location for IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6. `/usr/lpp/java/J6.0/` is the default installation location for the product.
7. Check all the JVM profiles that you have upgraded against the listing of changes to JVM options in "Changes to options in JVM profiles" on page 206 and make any further required changes.
8. If you have chosen to make copies of the new sample JVM profiles supplied with CICS TS 4.1 and to use these instead of your existing JVM profiles from previous CICS releases, use the documentation in *Java Applications in CICS* to help you set these up for your CICS regions.

   Note: The JAVA_HOME option in the CICS TS 4.1 sample JVM profiles is set at installation by the JAVADIR parameter in the DFHISTAR job. The default is the default installation location for Version 6 of the IBM 31-bit SDK for z/OS, Java Technology Edition, which is `/usr/lpp/java/J6.0/`. Check whether the installation location in the sample JVM profiles that you have used matches the location where you installed the Version 6 SDK, and change it if necessary.

9. Give all your CICS regions read and execute access on z/OS UNIX to these directories, files, and profiles:
   a. The directories and files for the IBM SDK for z/OS, V6 installation.
   b. Your Version 6 JVM profiles and optional JVM properties files (the files that you have been modifying during these steps) and the directory containing them.
10. Change the **JVMPROFILEDIR** system initialization parameter in all the CICS regions that you are upgrading to CICS TS 4.1 and Java 6, to specify the location on z/OS UNIX where you placed the Version 6 JVM profiles.
11. When you have completed any other necessary upgrade tasks for the CICS regions, start one region and run your Java workload in it as a test region. Make these checks:
    a. Confirm that you can start JVMs with each of your JVM profiles successfully and can use them to run applications. You can use the **INQUIRE JVM** command to browse the JVMs in a CICS region, identify their JVM profiles, and see when they are allocated to a task.
    b. Confirm that the shared class cache (if used) has been started successfully. You can use the **INQUIRE CLASSCACHE** command to see the status of the shared class cache and the number of JVMs that are using it.
    c. Check that the behavior of your application is as it was when you used Version 1.4.2 of the SDK.
    d. If you are using class sharing, check that the amount of storage specified for the shared class cache (by the **JVMCCSIZE** system initialization parameter) and for the individual JVMs (in the JVM profiles) is right for the new mix of items stored in each location. Compiled classes produced by just-in-time (JIT) compilation are now stored in individual JVMs, not in the shared class cache. However, classes that were on the standard class path in a Version 1.4.2 JVM profile are now stored in the shared class cache, not individual JVMs.
12. If you encounter any problems in the test CICS region, make these checks:
    a. Check that your Version 6 SDK installation was successful, that you gave the CICS region the correct permissions to access it, and that the JAVA_HOME option in your JVM profiles correctly specifies the Version 6 SDK installation. If you try to start a JVM using a profile that specifies the Version 1.4.2 SDK, CICS issues message DFHSJ0900 and abend ASJJ. Abend ASJJ is also issued if CICS cannot access the JAVA_HOME directory or if the installation appears to be invalid.
    b. Check that the directory specified by the **JVMPROFILEDIR** system initialization parameter is the directory containing the Version 6 JVM profiles, and that the CICS region has permissions for this directory and the files.
    c. If you are unable to start the shared class cache, check that the default CICS-supplied JVM profile DFHJVMCD is available in the directory specified by the **JVMPROFILEDIR** system initialization parameter, is set up correctly for use in your CICS region, and correctly specifies the Version 6 SDK installation. With Version 6, CICS uses this JVM profile to initialize and terminate the shared class cache.
    d. If you had JVM profiles for Version 1.4.2 worker JVMs that you upgraded for use with Version 6, check that all the items listed in 5 on page 220 have been transferred correctly from the master JVM profile to the individual JVM profiles.

e. Check that you have correctly addressed any compatibility issues between Java 1.4.2 and Java 6.

f. Adjust the size of the shared class cache or the storage specified in the JVM profiles, as appropriate for your new storage use. Use the **PERFORM CLASSCACHE** command to phase in a new, larger, or smaller shared class cache while CICS is running, and set the **JVMCCSIZE** system initialization parameter to specify the new size permanently. To change the maximum size of the storage heap for a JVM, increase or decrease the value of the **-Xmx** option in the JVM profile for the JVM, and use the **PERFORM JVMPOOL** command to stop and restart the JVMs that use the changed profile.

13. Start the remaining upgraded CICS regions and use them for your Java workload.
14. If you did not use the shared class cache supplied by the IBM SDK for z/OS, V1.4.2, consider using the shared class cache supplied by Version 6 of the SDK. This shared class cache requires minimal setup and administration, updates itself automatically when classes or JAR files change or when new ones are added, and is persistent across warm starts of CICS.

Upgrading from IBM SDK for z/OS, Java Technology Edition, Version 5 to Version 6

Follow these steps to upgrade from Java 5 in CICS TS 3.2 to Java 6 in CICS TS 4.1.

About this task

The steps in this topic assume that you have one or more CICS regions at CICS TS 3.2 or earlier, with existing Java workloads supported by Version 5 of the IBM SDK for z/OS, and that you are upgrading these regions to CICS TS 4.1 and therefore must use Version 6 of the SDK for the first time.

You can upgrade to Version 6.0.0 of the SDK or, if you have applied APAR PM38397, you can upgrade to Version 6.0.1 of the SDK.

If you have implemented workload balancing for enterprise beans and you have a logical EJB server that consists of cloned CICS regions that listen for and fulfil IIOP enterprise bean requests, upgrade all the CICS regions in the logical EJB server to CICS TS 4.1 and Java 6 at the same time. In a logical EJB server, IIOP messages from a single client process might be handled in different CICS regions, and, if the CICS regions are using different versions of Java, application errors might occur in some circumstances.

To upgrade to Version 6 of the SDK:

Procedure

1. Check your Java programs against the information at http://www.ibm.com/systems/z/os/zos/tools/java/services/j6restrict31.html for compatibility issues between the IBM SDK for z/OS, V6 and the IBM SDK for z/OS, V5. The information includes links to Java compatibility and deprecated API information for both Java V6.0.0 and Java V6.0.1. Make any changes that are necessary to enable your programs to run with the Java 6 API and the IBM SDK for z/OS, V6.
2. Download and install the IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6 on your z/OS system.

- You can download V6.0.1 from http://www.ibm.com/systems/z/os/zos/tools/java/products/sdk601_31.html.
- You can download V6.0.0 from http://www.ibm.com/systems/z/os/zos/tools/java/products/j6pcont31.html.

CICS TS 4.1 supports only the 31-bit version of the SDK, not the 64-bit version. For details of which service refresh is required, see CICS TS 4.1 detailed system requirements.

3. If you want to upgrade some or all of the JVM profiles and JVM properties files that you used with your previous CICS release, so that you can continue to use them, make copies of them in a new location on z/OS UNIX. The full path to this location, including the directory name, must be 240 characters or less, so that you can specify it on the **JVMPROFILEDIR** system initialization parameter for CICS.
4. If you do not want to continue using the JVM profiles and JVM properties files that you used with your previous CICS release, make copies of the new sample JVM profiles supplied with CICS TS 4.1 in a new location on z/OS UNIX. Sample JVM properties files are not supplied with CICS TS 4.1. The JVM profile samples are in the `/usr/lpp/cicsts/cicsts41/JVMProfiles` directory, where the `/usr/lpp/cicsts/cicsts41` directory is the installation directory for CICS files on z/OS UNIX, specified by the **USSDIR** parameter in the DFHISTAR installation job.
5. If you want to upgrade JVM profiles where CLASSCACHE=YES is specified in the profile so that the JVMs use the shared class cache, make changes to the copies of your JVM profiles as follows:
   a. Locate the JVM profile.
   b. Copy the CICS_HOME, JAVA_HOME and REUSE options and their values into each of the profiles for JVMs that use the shared class cache.
   c. Change the CICS_HOME option in each of the profiles for JVMs that use the shared class cache to specify the path for the home directory for CICS TS 4.1 files on z/OS UNIX. The new sample JVM profiles supplied with CICS TS 4.1 show this path.
   d. Change the JAVA_HOME option in each of the profiles for JVMs that use the shared class cache to specify the location where you installed Version 6 of the IBM 31-bit SDK for z/OS, Java Technology Edition. `/usr/lpp/java/J6.0/` is the default installation location for the product.
   e. Copy the LIBPATH_PREFIX and LIBPATH_SUFFIX options and their values into each of the profiles for JVMs that use the shared class cache. Native C dynamic link library (DLL) files specified on the library path are not stored in each of the individual JVMs, and they are not stored in the shared class cache; a single copy of each DLL file is used by all the JVMs that need it.
   f. If the CLASSPATH_PREFIX and CLASSPATH_SUFFIX options, or the older CLASSPATH option, are included in any of your profiles for JVMs that use the shared class cache, check whether the classes that they specify must be isolated to JVMs with that particular profile or whether they can safely be placed in the shared class cache. With Version 6, as with Java 5 all the classes on the standard class path are now eligible for sharing. If you want to exclude classes from the shared class cache, you must make the JVM profile that contains them into a standalone JVM by specifying CLASSCACHE=NO instead of CLASSCACHE=YES in the profile.
   g. If you have not already done so, copy the classes specified by the **-Dibm.jvm.shareable.application.class.path** system property, and

specify them as values for the CLASSPATH_SUFFIX option in each of the profiles for JVMs that use the shared class cache.

h. If you have a number of profiles for JVMs that use the shared class cache, and you can identify what classes on the shareable application class path belong to each of your Java applications and which of the JVM profiles each application uses, you can delete unwanted items from each CLASSPATH_SUFFIX option so that each class is specified only in the appropriate JVM profiles. If you cannot determine the unwanted items, keep all the classes in every JVM profile. Keeping all the classes does not use any additional storage because the JVMs are sharing the class cache, but, if you make changes to a class, you must restart more JVMs than if the classes were correctly arranged.

i. To check the results of your changes, you can compare your JVM profiles with the CICS TS 4.1 CICS-supplied sample JVM profile DFHJVMPR, for a JVM that uses the shared class cache.

j. When you have finished transferring options and their values from the master JVM profile to the profiles for JVMs that use the shared class cache, remove the master JVM profile from the folder of profiles where you are working, because it is not used for the Version 6 shared class cache.

6. For any other JVM profiles that you want to upgrade, including the default CICS-supplied JVM profiles, DFHJVMPR and DFHJVMCD, if you have made copies of your versions of these profiles from a previous CICS release, change the JAVA_HOME option to specify the installation location for IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6. /usr/lpp/java/J6.0/ is the default installation location for the product.
7. Check all the JVM profiles that you have upgraded against the listing of changes to JVM options in "Changes to options in JVM profiles" on page 206 and make any further required changes.
8. If you have chosen to make copies of the new sample JVM profiles supplied with CICS TS 4.1 and to use these instead of your existing JVM profiles from previous CICS releases, use the documentation in *Java Applications in CICS* to help you set these up for your CICS regions.

   Note: The JAVA_HOME option in the CICS TS 4.1 sample JVM profiles is set at installation by the JAVADIR parameter in the DFHISTAR job. The default is the default installation location for Version 6 of the IBM 31-bit SDK for z/OS, Java Technology Edition, which is `/usr/lpp/java/J6.0/`. Check whether the installation location in the sample JVM profiles that you have used matches the location where you installed the Version 6 SDK, and change it if necessary.
9. Give all your CICS regions read and execute access on z/OS UNIX to these directories, files, and profiles:

   a. The directories and files for the IBM SDK for z/OS, V6 installation.

   b. Your Version 6 JVM profiles and optional JVM properties files (the files you have been modifying during these steps) and the directory containing them.
10. Change the **JVMPROFILEDIR** system initialization parameter in all the CICS regions that you are upgrading to CICS TS 4.1 and Java 6, to specify the location on z/OS UNIX where you placed the Version 6 JVM profiles.
11. When you have completed any other necessary upgrade tasks for the CICS regions, start one region and run your Java workload in it as a test region. Make these checks:

    a. Confirm that you can start JVMs with each of your JVM profiles successfully and can use them to run applications. You can use the **INQUIRE**

JVM command to browse the JVMs in a CICS region, identify their JVM profiles, and see when they are allocated to a task.

b. Confirm that the shared class cache (if used) has been started successfully. You can use the **INQUIRE CLASSCACHE** command to see the status of the shared class cache and the number of JVMs that are using it.

c. Check that the behavior of your application is as it was when you used Version 5 of the SDK.

d. If you are using class sharing, check that the amount of storage specified for the shared class cache (by the **JVMCCSIZE** system initialization parameter) and for the individual JVMs (in the JVM profiles) is right for the new mix of items stored in each location. Compiled classes produced by just-in-time (JIT) compilation are now stored in individual JVMs, not in the shared class cache.

12. If you encounter any problems in the test CICS region, make these checks:

a. Check that your Version 6 SDK installation was successful, that you gave the CICS region the correct permissions to access it, and that the JAVA_HOME option in your JVM profiles correctly specifies the Version 6 SDK installation. If you try to start a JVM using a profile that specifies the Version 5 SDK, CICS issues message DFHSJ0900 and abend ASJJ. Abend ASJJ is also issued if CICS cannot access the JAVA_HOME directory or if the installation appears to be invalid.

b. Check that the directory specified by the **JVMPROFILEDIR** system initialization parameter is the directory containing the Version 6 JVM profiles, and that the CICS region has permissions for this directory and the files.

c. If you are unable to start the shared class cache, check that the default CICS-supplied JVM profile DFHJVMCD is available in the directory specified by the **JVMPROFILEDIR** system initialization parameter, is set up correctly for use in your CICS region, and correctly specifies the Version 6 SDK installation. With Version 6, CICS uses this JVM profile to initialize and terminate the shared class cache.

d. If you had JVM profiles that you upgraded for use with Version 6, check that all the items have been transferred correctly.

e. Check that you have correctly addressed any compatibility issues between Java 5 and Java 6.

f. Adjust the size of the shared class cache or the storage specified in the JVM profiles, as appropriate for your new storage use. Use the **PERFORM CLASSCACHE** command to phase in a new, larger, or smaller shared class cache while CICS is running, and set the **JVMCCSIZE** system initialization parameter to specify the new size permanently. To change the maximum size of the storage heap for a JVM, increase or decrease the value of the **-Xmx** option in the JVM profile for the JVM, and use the **PERFORM JVMPOOL** command to stop and restart the JVMs that use the changed profile.

13. Start the remaining upgraded CICS regions and use them for your Java workload.

Upgrading from IBM SDK for z/OS, Java Technology Edition, Version 6.0.0 to Version 6.0.1

Support for Version 6.0.1 of the SDK is provided by APAR PM38397. If you have already upgraded to Version 6.0.0, follow these steps to upgrade to Version 6.0.1.

Procedure

1. Check your Java programs against the information at http://www.ibm.com/systems/z/os/zos/tools/java/services/j6restrict31.html for compatibility issues between the IBM SDK for z/OS, V6.0.1 and the IBM SDK for z/OS, V6.0.0. The information includes links to Java compatibility and deprecated API information. Make any changes that are necessary to enable your programs to run with the Java 6 API and the IBM SDK for z/OS, V6.0.1.
2. Download and install the IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6.0.1 on your z/OS system. You can download the product, and find out more information about it, at http://www.ibm.com/systems/z/os/zos/tools/java/products/sdk601_31.html. CICS TS 4.1 supports only the 31-bit version of this SDK, not the 64-bit version. For details of which service refresh is required, see CICS TS 4.1 detailed system requirements.
3. Edit your JVM profiles, including the supplied profiles, to change the `JAVA_HOME` option to specify the installation direction of the Java SDK for V6.0.1. The default installation value is `/usr/lpp/java/J6.0.1_31/`.
4. If any of the JVM profiles use the shared class cache, you must remove the existing class cache before starting any JVMs with the V6.0.1 SDK. You cannot share a class cache between V6.0.0 and V6.0.1 JVMs.

   You can either use the **PERFORM CLASSCACHE** command to remove the class cache in each CICS region or you can use Java commands in UNIX System Services to check and remove all class caches across the system. Follow these steps if you want to use UNIX System Services:

   a. Shut down CICS before removing the shared class cache.
   b. In UNIX System Services, enter the following command to list the class caches:

      ```
      java -Xshareclasses:listallcaches
      ```

   c. Remove the class caches by entering the following command:

      ```
      java -Xshareclasses:name=CICS_sharedcc_APPLID_n,destroy
      ```

      APPLID is the APPLID of the CICS region and *n* is the number assigned to the class cache.
   d. Restart CICS to start using V6.0.1 of the SDK.
5. If you encounter any problems in the CICS region, make these checks:
   a. Check that your Version 6.0.1 SDK installation was successful, that you gave the CICS region the correct permissions to access it, and that the `JAVA_HOME` option in your JVM profiles correctly specifies the Version 6.0.1 SDK installation.
   b. Check that the directory specified by the **JVMPROFILEDIR** system initialization parameter is the directory containing the Version 6.0.1 JVM profiles, and that the CICS region has permissions for this directory and the files.
   c. If you are unable to start the shared class cache, check that the supplied JVM profile DFHJVMCD is available in the directory specified by the **JVMPROFILEDIR** system initialization parameter, is set up correctly for use in your CICS region, and correctly specifies the Version 6.0.1 SDK installation.
   d. Check that you have correctly addressed any compatibility issues between Java V6.0.0 and Java V6.0.1.
   e. Adjust the size of the shared class cache or the storage specified in the JVM profiles, as appropriate for your new storage use. Use the **PERFORM CLASSCACHE** command to phase in a new, larger, or smaller shared class cache while CICS is running, and set the **JVMCCSIZE** system initialization parameter to specify the new size permanently. To change the maximum

size of the storage heap for a JVM, increase or decrease the value of the **-Xmx** option in the JVM profile for the JVM, and use the **PERFORM JVMPOOL** command to stop and restart the JVMs that use the changed profile.

Upgrading Java garbage collection settings

CICS now initiates garbage collection when heap utilization in the active part of the 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.

Procedure

- If you have specified the MAX_RESETS_TO_GC option in your JVM profiles, 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 heap, above which CICS initiates garbage collection. The default setting is 85%.
- If you previously tuned your JVMs so that your applications used almost all of the storage in the active part of the 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, adjust the GC_HEAP_THRESHOLD setting to a higher level to return to the same frequency of garbage collection.

Migrating 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).

Procedure

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, rerun 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.

Upgrading Java applications that use a CICS connector

Runtime support for the CICS Connector for CICS TS, introduced in CICS Transaction Server for z/OS, Version 2, was withdrawn in CICS Transaction Server for z/OS, Version 3 Release 1. You need to upgrade 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 Transaction Server for z/OS, Version 2 Release 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 upgrading 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 30. Upgrading to threadsafe programming and the open transaction environment (OTE)

The open transaction environment (OTE) is an environment where CICS application code can use non-CICS services (facilities outside the scope of the CICS API) inside the CICS address space, without interference with other transactions.

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 subdispatching on an open TCB. If the application running on an open TCB calls a non-CICS service that blocks the TCB, the TCB blocking does not affect other CICS tasks.

TCB modes

There are a number of open TCB *modes*. Each mode has a 2-character identifier to indicate its specific purpose, and is handled by CICS in a different way:

J8 mode TCBs and J9 mode TCBs

Both these 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

Both these TCBs are 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

These 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.

TP mode TCB and T8 mode TCBs

These TCBs are used by a JVM server to perform system processing. The JVM server provides a mechanism for CICS to use the same JVM for multiple tasks concurrently. The TP mode TCB owns the Language Environment enclave and the pool of T8 TCBs. There is one TP TCB for each JVM server that is running in the CICS region.

Each T8 TCB requires a pthread and an MVS task. The maximum number of T8 TCBs that is allowed for the CICS region is 1024.

X8 mode TCBs and X9 mode TCBs

Both these TCBs are 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.

DB2 applications

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 can 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 does not need to switch between different TCBs several times during the execution of a CICS DB2 application. This situation also decreases usage of the QR TCB.

The most important prerequisite 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 run on open TCBs.

An application that meets this requirement 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.

Other types of application

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 can be defined as OPENAPI programs if required.

How to make 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-threadsafe 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 XRMIOUT 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 high-level language constructs or Language Environment callable services used by your program that result in using CICS services. CICS services used in this way might involve non-threadsafe CICS commands, and cause a switch back to the QR TCB. In particular, the COBOL statement DISPLAY UPON SYSOUT, some types of PL/I and C++ output, and the Language Environment callable services CEEMOUT and CEE3DMP, write data to the Language Environment transient data destinations CESE and CESO. This involves an EXEC CICS WRITE TD command, which is not threadsafe.
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” 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 DSNCUEXT (which is not defined as threadsafe), the alternative dynamic plan exit DFHD2PXT (which is defined as threadsafe), and the global user exits XRMIIN and XRMIOUT. Also be aware of the global user exits XEIIN 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" 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 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 31. Upgrading the CICS-WebSphere MQ connection

If you use the CICS-WebSphere MQ adapter, bridge, trigger monitor, or API crossing exit to connect CICS to WebSphere MQ, you must make some changes to your configuration.

Review availability of TCBs for CICS-WebSphere MQ connection (MAXOPENTCBS setting)

Before CICS TS for z/OS, Version 3.2, a CICS region used a pool of eight subtask TCBs to connect to WebSphere MQ queue managers. The subtask TCBs were not owned by the CICS tasks that made the requests to connect to WebSphere MQ. When a subtask TCB returned the results of a request to a CICS task, the subtask TCB became available for other CICS tasks that needed to connect to WebSphere MQ.

From CICS TS for z/OS, Version 3.2, a CICS region uses open TCBs in L8 mode to connect to WebSphere MQ queue managers. When a CICS task makes a request to connect to WebSphere MQ, it obtains an L8 TCB from the pool in the CICS region, and keeps the L8 TCB from the time it is allocated to the end of the task. Even if the CICS task switches back to run on the QR TCB or makes no further requests to connect to WebSphere MQ, the L8 TCB is not released until the CICS task ends. Each concurrent CICS task that connects to WebSphere MQ therefore requires one L8 TCB for the duration of the task.

The availability of L8 TCBs in the pool is determined by the setting for the MAXOPENTCBS system initialization parameter, and by the number of other CICS tasks that are using L8 or L9 TCBs, such as CICS applications that connect to DB2. A CICS task is allowed at most one L8 TCB, which the task can use for any purpose that requires an L8 TCB. For example, a task that connected to both WebSphere MQ and DB2 would use only one L8 TCB. Within the overall limit set for the TCB pool by MAXOPENTCBS, there is no specific limit on the number of L8 TCBs that are allocated for CICS tasks that connect to WebSphere MQ queue managers; these tasks can potentially occupy all of the available L8 TCBs in the pool.

When you upgrade from a release earlier than CICS TS for z/OS, Version 3.2, it is important to review your setting for the MAXOPENTCBS system initialization parameter to ensure that enough L8 TCBs are available to provide one for each concurrent CICS task that connects to WebSphere MQ, and to leave sufficient L8 and L9 TCBs available for the other users of these TCBs in the CICS region. For guidance on reviewing your setting for the MAXOPENTCBS system initialization parameter, see "MAXOPENTCBS" in the *CICS Performance Guide* and "Setting MAXOPENTCBS" in the *CICS Performance Guide*. It is helpful to review the MAXOPENTCBS setting each time you upgrade to a new CICS release.

CICS tasks that connect to WebSphere MQ require storage in the WebSphere MQ subsystem. When you upgrade from a release earlier than CICS TS for z/OS, Version 3.2, or when the peak number of concurrent CICS tasks that connect to WebSphere MQ changes, review the use of common storage in the WebSphere MQ subsystem. For information about common storage and connections from CICS to WebSphere MQ, see the topic "Common storage" in the WebSphere MQ information center. For further information about storage and performance

requirements in WebSphere MQ, including velocity goals for CICS regions, see the topic "Planning your storage and performance requirements" in the WebSphere MQ information center.

If CICS is connecting to WebSphere MQ Version 6, you might also need to increase your setting for the WebSphere MQ subsystem tuning parameter CTHREAD. Before CICS TS for z/OS, Version 3.2, CICS always took up nine of the connections specified by CTHREAD, plus one for each task initiator (CKTI). From CICS TS for z/OS, Version 3.2, the number of connections depends on the number of CICS tasks that are using L8 TCBs to connect to WebSphere MQ. In WebSphere MQ Version 6, you can change the value of CTHREAD using the WebSphere MQ SET SYSTEM command. From WebSphere MQ Version 7, the CTHREAD parameter cannot be adjusted in WebSphere MQ.

New CICS resources and commands for CICS-WebSphere MQ connection

To support WebSphere MQ queue-sharing groups, CICS TS 4.1 introduces the MQCONN resource definition and new EXEC CICS and CEMT commands for the CICS-WebSphere MQ connection.

Before CICS TS 4.1, you used the DFHMQPRM operand of the CICS system initialization parameter INITPARM to specify a default WebSphere MQ queue manager name and initiation queue name for the CICS-WebSphere MQ connection. (The DFHMQPRM operand was called CSQCPARM before CICS TS 3.2.) An example of this statement is as follows:

```
INITPARM=(DFHMQPRM='SN=CSQ1,IQ=CICS01.INITQ')
```

You can no longer use the INITPARM system initialization parameter to specify these defaults. CICS issues a warning message if the DFHMQPRM operand is present on INITPARM when you start the CICS-WebSphere MQ connection, and the settings are ignored. The INITPARM system initialization parameter itself is still valid with other operands.

You must now set up an MQCONN resource definition for the CICS region to provide defaults for the connection between CICS and WebSphere MQ. You must install the MQCONN resource definition before you start the connection. The defaults that you specify in the MQCONN resource definition apply when you use the CKQC transaction from the CICS-WebSphere MQ adapter control panels or call it from the CICS command line or a CICS application. CICS uses the defaults when you use the MQCONN system initialization parameter to specify that CICS starts a connection to WebSphere MQ automatically during initialization. This example MQCONN resource definition can replace the example INITPARM statement shown above:

```
MQconn         : MQDEF1
Group          : MQDEFNS
DEScription  ==>
Mqname       ==> CSQ1
Resyncmember ==> Yes                  Yes | No
Initqname    ==> CICS01.INITQ
```

You can specify either a WebSphere MQ queue-sharing group as a default in the MQCONN resource definition, or the name of a single queue manager. To use a WebSphere MQ queue-sharing group, the CICS TS 4.1 CICS SVC must be active for the CICS region. When you install a new level of the CICS SVC, an IPL is required to activate it. Message DFHMQ0325 is issued if a CICS region attempts to connect

to a WebSphere MQ queue-sharing group when the CICS TS 4.1 CICS SVC is not active, and a system dump is taken with the dump code DFHAP0002 and the severe error code X'A0C6'.

You can use new EXEC CICS and CEMT commands to work with the MQCONN resource definition. You can also use the SET MQCONN command to start and stop the CICS-WebSphere MQ connection, as an alternative to issuing CKQC START or STOP commands.

If you use an application program to control the CICS-WebSphere MQ connection, you might experience some new results from the application. For information about these changes, see "Possible application behavior changes for CICS-WebSphere MQ connection" on page 243. For information about upgrading your application to use the new functions, see "Upgrading your application for CICS-WebSphere MQ connection" on page 244.

Support for WebSphere MQ Version 7 API calls

If you are using WebSphere MQ Version 7 and you want to use the API calls that are new in Version 7 in your CICS application programs, the WebSphere MQ queue manager must be at WebSphere MQ Version 7.0.1 or higher, and you must apply the following PTFs:

- In CICS, the PTF for APAR PK89844
- In WebSphere MQ Version 7.0.1, the PTFs for APARs PK97364 and PK97972

If you have installed WebSphere MQ Version 7 and you have applied the PTF for APAR PK89844, you must ensure that your CICS STEPLIB concatenation includes only the WebSphere MQ Version 7 SCSQAUTH. All modules in WebSphere MQ Version 7 SCSQAUTH are downwardly compatible.

Applications that do not use the Version 7 API calls can operate without these PTFs.

If you use CICSPlex SM, you must apply the PTF for APAR PK89845 to CICSPlex SM to display statistics for the new API calls.

When you have applied the PTF for APAR PK89844 to CICS, you must upgrade the CICS-WebSphere MQ resource definitions in the CSD by running a DFHCSDUP job with the command UPGRADE USING(DFHCURDM). After the upgrade, the DFHMQ group contains definitions for programs CSQBCRMH, CSQCBFMH, CSQBPAPI, CSQCCTMH, CSQCDTMH, CSQCDTMP, CSQCIQMP, CSQCMHBF, CSQCSTAT, CSQCSTMP, and DFHMQMCM. If you are installing CICS TS 4.1 with this maintenance applied, the DFHCSDUP job with the command UPGRADE REPLACE includes the CICS-WebSphere MQ resource definitions.

New or changed CICS applications that use the new API calls in WebSphere MQ Version 7 must be link-edited with the WebSphere MQ API stub modules that are shipped with CICS. The new API calls are MQBUFMH, MQCB, MQCTL, MQCRTMH, MQDLTMH, MQDLTMP, MQINQMP, MQMHBUF, MQSETMP, MQSTAT, MQSUB, and MQSUBRQ. These Version 7 API calls are only supported in CICS when you use the stubs shipped with CICS, not the stubs shipped with WebSphere MQ. New and existing CICS applications that do not use the Version 7 API calls can use the stubs shipped with CICS or WebSphere MQ.

If you use the new Version 7 API calls MQCB and MQCTL for asynchronous message consumption by CICS applications, you must code your program using

information given in the CICS documentation, in addition to the WebSphere MQ programming documentation. The requirements for asynchronous message consumption in a CICS environment are listed in "Asynchronous message consumption and callback routines" in the CICS integration with WebSphere MQ documentation.

CICS-WebSphere MQ connection components moved to CICS

The CICS-WebSphere MQ adapter, bridge, trigger monitor and API crossing exit moved from WebSphere MQ to CICS in CICS TS 3.2.

You must take the following actions to use the CICS-WebSphere MQ connection components in their new location:

- If you are using WebSphere MQ Version 6, apply the PTF for APAR PK42616 to WebSphere MQ to police the use of the correct adapter. This PTF is not required if you are using WebSphere MQ Version 7.
- If you do not share your CSD with earlier releases of CICS, you can remove the existing groups CSQCAT1 and CSQCKB, which contain CSQCxxx definitions, from your CSD.
- If you do share your CSD with earlier CICS releases, ensure that CSQCAT1 and CSQCKB are not installed for CICS TS 4.1 or CICS TS 3.2. You must also delete the CKQQ TDQUEUE from group CSQCAT1. For CICS TS releases earlier than CICS TS 3.2, install the CSQCAT1 and CSQCKB groups as part of a group list, after installing DFHLIST. This overrides group DFHMQ and correctly installs the required definitions.
- The WebSphere MQ libraries in the CICS STEPLIB and DFHRPL concatenation of the CICS procedure must be included after the CICS libraries to ensure the correct adapter, trigger monitor and bridge code is used.
- Unlike WebSphere MQ, CICS does not support upper case English. If you want to use upper case English for your CICS-WebSphere MQ components, you must ensure that ASSIGN NATLANGINUSE returns E (US English), and the system initialization parameter is set to `MSGCASE=UPPER`. This allows the upper case English mapset to be used.
- CICS supplies the program definition for CSQCAPX in group DFHMQ with the parameter CONCURRENCY(THREADSAFE). Specify CONCURRENCY(THREADSAFE) when you define your exit program and any programs that your exit program calls and use only threadsafe CICS commands within the exit. You should also examine any existing API crossing exits to ensure that their logic is threadsafe.
- CICS-WebSphere MQ messages are changed from the format CSQCxxx to DFHMQ0xxx. Ensure that your message retrieval applications cope with this change.
- All trace entries produced by the CICS-WebSphere MQ components now use the CICS trace domain. If you have user tracing enabled for WebSphere MQ tracing only, you can turn off user tracing, saving the overhead of application trace.
- If you want the CICS-WebSphere MQ connection to start automatically at CICS start up, add the system initialization parameter **MQCONN** to the system initialization table.
- From CICS TS 3.2, the open TCBs used for connections to WebSphere MQ are allocated for the duration of the CICS task. In CICS TS releases earlier than CICS TS 3.2, the open TCBs were only allocated for the duration of the WebSphere MQ request.

Some additional functional changes do not require any action:

- Modules are renamed to use CICS naming conventions, except for all WebSphere MQ stubs and exits. The names for these have been preserved so that existing JCL works, and you are not required to relink-edit applications, unless you modify them to use the new API calls that were added in Version 7 of WebSphere MQ.
- CSQCCOPEN, CSQCCLOS, CSQCGET, CSQCPUT1 and CSQCINQ are shipped unchanged, and are all entry points into DFHMQSTB, which is loaded from SDFHLOAD.
- There are two new transient data queues, CMQM and CKQQ, both defined in group DFHDCTG. CMQM logs all CICS-WebSphere MQ messages issued by the CICS-WebSphere MQ adapter, trigger monitor and bridge. CKQQ logs all messages relating to CICS-WebSphere MQ connection and disconnection.
- WebSphere MQ statistics can now be reset during the life of a CICS execution. This means that when you use the **CKQC DISPLAY** commands, you see only active CICS-WebSphere MQ threads, so numbers can go down or reduce to zero.

Possible application behavior changes for CICS-WebSphere MQ connection

You can start the CICS-WebSphere MQ connection from an application in the same way as you did prior to CICS TS 4.1, by issuing an EXEC CICS LINK command to link to program DFHMQQCN (or CSQCQCON, which is retained for compatibility) and passing a set of parameters. However, if you continue to use this method of starting the CICS-WebSphere MQ connection, you might experience some new results depending on the parameters that you use in the application.

If you upgrade your application to use the new SET MQCONN command to control the CICS-WebSphere MQ connection, you can avoid these results. The new results that you might now experience when you use program DFHMQQCN to start the CICS-WebSphere MQ connection are as follows:

CONNSSN parameter
If your application uses the CONNSSN parameter to specify the name of a WebSphere MQ queue manager for the connection, CICS connects to this queue manager as before. In addition, your setting for the MQNAME attribute in the installed MQCONN definition is replaced with the name of the queue manager that you specified on the command. If you want to revert to the original queue manager or queue-sharing group, set MQNAME in the resource definition again.

CONNIQ parameter
If your application uses the CONNIQ parameter to specify the name of the default initiation queue for the connection, CICS uses that initiation queue name, and the INITQNAME attribute in the installed MQINI resource definition is replaced with the name of the initiation queue that you specified on the command. (MQINI is an implicit resource definition that CICS installs when you install the MQCONN resource definition.)

INITP parameter
If your application uses the INITP parameter, which specifies that the default settings are used, these default settings are now taken from the installed MQCONN resource definition, and not from the INITPARM system initialization parameter. The INITP parameter is therefore now known as MQDEF. When MQDEF is set to Y, the setting from the MQCONN resource definition applies as follows:

- If the MQCONN resource definition specifies the name of a WebSphere MQ queue manager in the MQNAME attribute, CICS connects to that queue manager.
- If the MQCONN resource definition specifies a WebSphere MQ queue-sharing group in the MQNAME attribute, CICS connects to any active member of that group. In the event of reconnection, CICS might either connect to the same queue manager or to a different queue manager, depending on the setting for the RESYNCMEMBER attribute in the MQCONN resource definition. You might need to modify your application to take this new behavior into account.

You can stop the CICS-WebSphere MQ connection from an application in the same way as before, by issuing an EXEC CICS LINK command to program DFHMQDSC (or CSQCDSC, which is retained for compatibility). The results of this operation remain unchanged.

Upgrading your application for CICS-WebSphere MQ connection

You can upgrade your application to specify a queue-sharing group, or use the new SET MQCONN command to control the CICS-WebSphere MQ connection instead of linking to another program.

Procedure

- In the parameter list that your application passes to DFHMQQCN (or CSQCQCON), the CONNSSN parameter maps to the MQNAME attribute in the installed MQCONN definition. You can therefore now use this parameter to specify either the name of a WebSphere MQ queue-sharing group, or the name of a single WebSphere MQ queue manager.
- As an alternative to using the EXEC CICS LINK command to DFHMQQCN, you can use the new EXEC CICS SET MQCONN CONNECTED command to start the CICS-WebSphere MQ connection. You can specify the name of a queue-sharing group and suitable resynchronization behavior, or use the settings specified in the MQCONN resource definition for the CICS region.
- You can also use the new EXEC CICS SET MQCONN NOTCONNECTED command to stop the CICS-WebSphere MQ connection. You can specify a force stop or a quiesce stop with the new command, and, in addition, for a quiesce stop you can specify whether control is returned to the application before or after the connection is stopped.
- If you want to enable or disable the CICS-WebSphere MQ API-crossing exit while the connection is active, you must still link to the adapter reset program, DFHMQRS (or CSQCRST, which is retained for compatibility).

Chapter 32. Upgrading CICS Web support applications

CICS Transaction Server for z/OS, Version 4 Release 1 supports 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 upgrade them to take advantage of the enhancements that are now available. If you have existing CICS Web support applications from earlier releases, note these points for upgrade.

- **If you are using CICS Web support to process non-HTTP requests, specify the new USER protocol on the TCPIPSERVICE 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 TCPIPSERVICE. 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 TCPIPSERVICE 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 TCPIPSERVICE 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 as follows:
  - Specify XRES=NO explicitly 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 "Implementing resource security for CICS document templates and z/OS UNIX files" on page 249.

When CICS is initializing, 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 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, activate the FSSEC class in RACF. If you decide to specify XHFS=YES, follow the instructions in "Implementing resource security for CICS document templates and z/OS UNIX files" on page 249.
- **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 now take effect for forms submitted with the GET method as well as the POST method, and the defaults are the same in both cases. Therefore, if the form uses the POST method and you do not specify the HOSTCODEPAGE option, and your LOCALCCSID initialization parameter is not 037, you receive your data in your local CCSID, instead of CCSID 037 (the default EBCDIC code page). To specify 037 as the host code page, 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 nontext media type is present, CICS does not convert the message body. If you are using the DFHWBCLI Web Client interface, you must either specify a WBCLI_MEDIATYPE of TEXT, or you must include the required WBCLI_CHARSET value for DFHWBCLI to perform the required code page conversion.
- **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 TCPIPSERVICE 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. To assist you to upgrade, 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 **CRLPROFILE** 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 TCPIPSERVICE resource definitions to specify a list of cipher suite codes for use with SSL or TLS. The PRIVACY attribute of the TCPIPSERVICE resource definition changes to reflect the CIPHERS attribute value.

Suggestions for upgrading 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 upgrade 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 TCPIPSERVICE 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 upgrade 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.

Implementing 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.

About this task

Procedure

- 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 that access document templates, including the following:
  - 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, 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. To change this attribute, copy the definitions to your own group, where you can change the attribute. CEMT is in group DFHOPER; 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. 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. The security checking process is case sensitive, so the case of the profile name must match the case of the resource type and resource definition name.
  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, if 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 33. Upgrading CICS Web services

If you have used CICS Web services in earlier releases, note these points during your upgrade to CICS Transaction Server for z/OS, Version 4 Release 1.

- SOAP for CICS is not supported by CICS Transaction Server for z/OS, Version 4 Release 1.

  Because there is no support or service provided for the SOAP for CICS feature in CICS Transaction Server for z/OS, Version 4 Release 1, you must migrate any of your applications that use this feature before, or as part of, your upgrade to CICS Transaction Server for z/OS, Version 4 Release 1.
- Improvements in the XML parsing of SOAP messages mean that some malformed SOAP messages that were previously tolerated by CICS are now rejected.

  For more information on XML parsing in z/OS, refer to the *z/OS XML System Services User's Guide and Reference*: http://www-03.ibm.com/servers/eserver/zseries/zos/xml/Library/.
- The performance of XML parsing in CICS has improved with the introduction of the IBM z/OS XML System Services (XMLSS) parser, which can be accessed directly from CICS. The XMLSS parser also allows XML parsing to be offloaded to a zSeries® Application Assist Processor (zAAP). The XMLSS parser uses above-the-bar storage, so there is more below-the-bar storage available for user programs.

  For more information on zAAP, see the *zSeries Application Assist Processor (zAAP) Implementation* IBM Redbook: http://www.redbooks.ibm.com/abstracts/sg246386.htmlhttp://www.redbooks.ibm.com/abstracts/sg246386.html.
- Web Services Atomic Transactions (WS-AT) use Web Services Addressing (WS-Addressing) elements in their SOAP headers. The default namespace prefix for these WS-Addressing elements has changed from `wsa` to `cicswsa`.

Upgrading 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.

The region size must now be at least 200 MB. You can either increase the region size accordingly or set the region size to `0M`.

If you redeploy your existing Web services in a CICS TS 4.1 region, the regenerated Web service binding files are slightly larger in size.

Migrating to 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, note the following:

- 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. Ensure that your message handlers can still run successfully when processing containers that hold XOP documents and binary attachments.
- Only configure the attribute `send_mtom="yes"` in a provider pipeline configuration file when you are sure that all of your Web service requesters can receive MTOM messages. The default value is `send_mtom="same"`, so that 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.

Migrating from the SOAP for CICS feature

If you use the SOAP for CICS feature, you must perform a number of tasks to migrate applications that use the feature. The support for Web services provided in CICS Transaction Server is substantially different from that provided in the SOAP for CICS feature.

About this task

The SOAP for CICS feature relies mainly on user-written code, and therefore it is not possible to set out a step-by-step migration task. Here are some of the things you must consider when you migrate from the CICS for SOAP feature.

Because there is no support or service provided for the SOAP for CICS feature in CICS Transaction Server for z/OS, Version 4 Release 1, you must migrate any of your applications that use this feature before, or as part of, your upgrade to CICS Transaction Server for z/OS, Version 4 Release 1.

Procedure

- Consider using the Web services assistant to construct and parse SOAP messages. If you use the Web services assistant to construct and parse SOAP messages, it is recommended that you discard your existing message adapters and design new wrapper programs to replace them. This is because it is unlikely that you will be able to reuse significant amounts of code in your adapters.
- If you use SOAP messages, but decide not to use the Web services assistant, you might be able to reuse your existing code for constructing and parsing the messages. Even if you don't use the Web services assistant, you might want to use the CICS-provided SOAP message handlers because they are designed to work with SOAP 1.1 and SOAP 1.2 messages.
- Review your use of containers. The SOAP for CICS feature uses BTS containers, whereas CICS Transaction Server uses channel containers. You must review your programs and change any BTS-related commands required by the feature. You must also review the name and usage of each container, because most of these have changed.
- Consider how to migrate the function that was provided by your pipeline programs. The pipeline in the SOAP for CICS feature has a fixed number of user-written programs, each with a designated purpose. The function provided

by some of these programs is provided in CICS Transaction Server by the CICS-provided SOAP message handlers, so you might be able to dispense with these programs.

You can use CICS Transaction Server to define as many programs in your pipeline as you need. Therefore, you must consider whether the function performed by your pipeline programs needs restructuring to take advantage of the new framework.

The way that pipeline programs communicate with CICS, and with one another, has changed, so you must review these pipeline programs to check if they can be reused in the new environment.

In the SOAP for CICS feature, you can have just one pipeline for all your service provider applications, and one for all your service requester applications. In CICS Transaction Server, you can configure many different pipelines. Therefore, it is possible that the logic you provided in your pipeline programs to distinguish one application from another can be replaced by CICS resource definitions. For example, in a service provider, code that distinguishes between applications based upon a URI, can be replaced with a suitable set of URIMAP resources.

Chapter 34. Implementing 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.

Procedure

1. Ensure that your C or C++ program is reentrant and threadsafe, or modify it so that it conforms to these standards. Chapter 30, "Upgrading to threadsafe programming and the open transaction environment (OTE)," on page 231 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.

Chapter 35. Upgrading DB2 security support

If you use RACF for some or all of the security checking in your DB2 address space, the circumstances in which CICS passes the RACF access control environment element (ACEE) to DB2 have changed.

In previous releases, the ACEE was passed to DB2 only when AUTHTYPE(USERID) or AUTHTYPE(GROUP) was specified for a DB2CONN or a DB2ENTRY resource. This behavior is unchanged, but, in addition, CICS now passes the address of the ACEE to DB2 when you specify AUTHTYPE(SIGN), and the SIGNID attribute specifies the CICS region user ID.

This change makes it possible for DB2 to use RACF security when you use the CICS region user ID to control access to DB2. However, you must verify that your existing resource definitions do not introduce this changed behavior unexpectedly. You must also check any DB2 signon exits to ensure they operate as expected when the CICS region ACEE is passed to DB2.

Chapter 36. Upgrading file definitions

Nonshared resource (NSR) files are not supported with transaction isolation. If CICS writes to these files, upgrade your file definitions to avoid receiving an AFDK abend.

About this task

Any attempt to issue a file control write or update request against an NSR file with transaction isolation active results in an AFDK abend. Requests to read or browse the file that do not attempt to update the file is any way do not result in an abend.

Procedure

You can upgrade your file definitions in one of the following ways:

- If the file requires transaction isolation, upgrade the file to use LSR pools or RLS.
- If the file does not require transaction isolation, change the transaction definition to specify ISOLATE(NO). Setting this value causes the individual transaction to run without transaction isolation.

Part 3. Changes to CICSPlex SM externals

CICSPlex SM views and functions have changed to support the changes in function for this release of CICS and CICSPlex SM. Check which changes might affect your system.

Chapter 37. Changes to CICSPlex SM installation and definition

Changes to CICSPlex SM installation, initialization parameters, resource definition, or setup are summarized here.

Integration of CICSPlex SM and 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 combination of parameters that apply only for CICSPlex SM, parameters that apply only for CICS, and parameters that are common to CICS and CICSPlex SM.

For CICSPlex SM, DFHISTAR generates these sample JCL procedures:

- 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)

With these procedures, you can create a 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 set up and use a CAS (coordinating address space) to support a CICS Transaction Server for z/OS, Version 4 Release 1 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 you have no CAS-related data sets to install and no CAS to CAS links to configure.

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. You specified this parameter 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 message EYUXL0206E.

The CASNAME parameter is still valid for CICSPlex SM configurations prior to CICS Transaction Server for z/OS, Version 4 Release 1.

Datasets *.SEYUADEF, *.SEYUVDEF, and *.SEYUJCL, which were supplied in previous releases to support the EUI, are not included as part of CICS Transaction Server for z/OS, Version 4 Release 1.

All EUI and CAS-messages and abend codes are removed, including 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 is 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 initialization complete`.

Related concepts:

Chapter 50, “Phased upgrade scenario to remove CICSPlex SM CAS,” on page 319
You no longer set up and use a CAS (coordinating address space) to support a CICS TS for z/OS, Version 4.1 CMAS (CICSPlex SM address space). This scenario presents one way that you might upgrade an environment at an earlier release to Version 4.1, replacing the use of the CAS with the use of a Web User Interface server. Another set of procedures might be more appropriate to your own environment.

Dynamic creation of CICS resource definitions for CICSPlex SM

The additional CICS resource definitions specifically required to run a 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 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 change makes the CICSPlex SM installation process more straightforward. You no longer 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. However, you must still 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 166. For information about sharing CSDs across CICS releases, see “CSD compatibility between different CICS releases” on page 168.

You can still 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. Previously, you created these definitions with the EUI, which is now withdrawn, or a batch utility.

The EYU9XDUT 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 names 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 system parameters

You use CICSPlex system parameters to identify or alter CICSPlex SM attributes. These parameters are specified in the extrapartition transient data queue COPR. The parameters can be assigned to a DD * file, sequential data set, or a partitioned data set member. The DD name for the extrapartition transient data queue is EYUPARM.

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

The **MASALTLRTCNT** system initialization parameter was available as a PTF for 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. It determines the number of alternate long running tasks (CONA) started in the MAS during MAS agent initialization.

MASALTLRTCNT={0 - 5 | 0}

The tasks remain active until the MAS agent terminates or goes into restart mode, and handle all API, WUI, and RTA requests normally handled by the CONL task, allowing the CONL task to perform other processing in the MAS. At any time, only one of the CONA tasks processes requests. If the CONA task that is currently processing requests becomes busy (as determined by the value of the MASALTLRTTIM EYUPARM), subsequent requests are directed to another CONA task.

If zero (0) is specified, no CONA tasks are started and the CONL task services the API, WUI, and RTA requests that are normally directed to the long running task.

Specifying different values for MASALTLRTCNT for multiple WLM target regions might result in an uneven distribution of transactions to those regions because of differing long running task counts.

The **MASALTLRTPRI** system initialization parameter was available as a PTF for 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. It determines the priority given to the CONA transaction for the current execution of the MAS.

MASALTLRTPRI={0 - 255 | 255}
Specifying this value less than 255 can adversely affect the response time of API, and WUI users, and might result in RTA EVENTs not being created or resolved in a timely manner.

The **MASALTLRTTIM** system initialization parameter was available as a PTF for 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. It determines the amount of time in seconds for which a CONA task can be busy before subsequent requests are directed to another active CONA task.

MASALTLRTTIM={1 - 3600 | 10}

STALL*xxx*TSK
Where *xxx* represents a CICSPlex SM suspend class.

Identifies the minimum number of concurrent tasks required to enter the suspend class. The value can be 0 - 999. Use 0 to indicate STALL detection for the *xxx*suspend class is not active.

STALL*xxx*CNT
Where *xxx* represents a CICSPlex SM suspend class.

Identifies the number of consecutive occurrences of an entry in the suspend class required for CICSPlex SM to report a STALL. The value can be 0 - 999. Use 0 to indicate STALL detection for the *xxx* suspend class is not active.

New and changed CICSPlex SM WUI server initialization parameters

You can specify these CICSPlex SM Web User Interface server initialization parameters in the startup job or in a fixed block 80 data set.

Changed CICSPlex SM WUI server initialization parameter in CICS Transaction Server for z/OS, Version 4 Release 1

TCPIPSSLCERT(*name*)
Specifies the label for the SSL certificate that is to be used for the connection between the Web User Interface and the Web browser. The value that you specify for this parameter is now case-sensitive. In previous releases, CICS folded the value to uppercase. If you previously entered the value in lower case and relied on the folding behavior to set the correct SSL certificate name, you must now change the value to upper case.

New CICSPlex SM WUI server 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. The data set cannot be longer than 31 characters. Currently, the supplied set of WUI view and menu definitions is in the SEYUVIEW data set. If you specify an AUTOIMPORTDSN name, you must specify the name of a data set member using the AUTOIMPORTMEM parameter.

Use the AUTOIMPORTDSN and AUTOIMPORTMEM parameters when you want to import specific IBM-supplied view set and menu definitions as a result of service (by a PTF).

AUTOIMPORTMEM(*member_name*)
Specifies the name of the data set member containing the specific IBM-supplied view and menu definitions that you want to import. You can use an asterisk at the end of the name to specify a group of data set members that begin with the same characters. For example, specifying AUTOIMPORTMEM(EYUEA*) with the IBM-supplied SEYUVIEW data set in AUTOIMPORTDSN imports all of the members beginning with the characters EYUEA.

Use the AUTOIMPORTDSN and AUTOIMPORTMEM parameters when you want to import specific IBM-supplied view set and menu definitions as a result of service (by a PTF).

DEFAULTMAPBAS(name | EYUSTARTMAPBAS)
Specifies the name of the map object used to generate maps of business application services definitions.

DEFAULTMAPCOLL(value | 0)
Specifies the number of rows in a generated map below which a map opens in the expanded state. If the number of rows to be displayed is above this number, the map opens in a fully collapsed state. The default value of 0 means that in every generated map all of the rows are visible when opened.

DEFAULTMAPMON(name | EYUSTARTMAPMON)
Specifies the name of the map object used to generate maps of monitoring definitions.

DEFAULTMAPRTA(name | EYUSTARTMAPRTA)
Specifies the name of the map object used to generate maps of real-time-analysis definitions.

DEFAULTMAPWLM(name | EYUSTARTMAPWLM)
Specifies the name of the map object used to generate maps of workload management definitions.

New EYU9XDBT utility for CMAS and CICSplex definition

You can use the new EYU9XDBT utility to perform all CMAS and CICSplex definition activities after the basic CMAS environment has been established. You specify the required CICSplex names, and the utility sets up the definitions for you.

Use the utility to perform these tasks:

- Define and remove CICSplexes to and from a CMAS.
- Define and remove CICS regions to and from a CICSplex.
- Define and remove CICS groups to and from a CICSplex.
- Add and remove CICS regions to and from CICS groups.
- Import, print, or export 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. You specify the Common Work Area size in 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*.

Change to EYUJXBTP JCL procedure

The EYUJXBTP STEPLIB reference to the Alternate Library for REXX, REXX.SEAGALT, is commented out because z/OS 1.9 supplies the Alternate Library for REXX as a base element. EYUJXBTP is a JCL procedure used by the samples EYUJXBT1 and EYUJXBT2 to call the EYU9XDBT CICSPlex SM definition utility.

You might have to change the EYUJXBTP STEPLIB if the z/OS Alternate Library for REXX customization is not complete.

Removal of SEYUMLIB, SEYUPLIB and SEYUTLIB libraries

Following the removal of the CICSPlex SM TSO end-user interface (EUI) in CICS TS for z/OS, Version 3.2, the libraries SEYUMLIB, SEYUPLIB and SEYUTLIB and all their contents are no longer shipped with CICS Transaction Server. If you have any references to these libraries in your TSO login profiles or other locations, remove them.

Referencing these libraries might cause your TSO login to fail.

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 upgrading 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 upgrading to CICSPlex SM Version 4 Release 1.

Table 21 on page 269 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 21. Processing with and without PTF applied for RASGNDEF processing APAR

PROGDEF or TRANDEF REMOTE-SYSTEM	**RASGNDEF USAGE**	**RASGNDEF MODE**	**RASGNDEF REMOTE-SYSTEM OVERRIDE**	**Target REMOTE-SYSTEM** *without* **PTF applied**	**Target REMOTE-SYSTEM** *with* **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:

1. Note the difference from versions of CICSPlex SM where the PTF for the APAR is not applied.
2. CICSPlex SM BAS does not provide a value for this during install. CICS defaults to the target system's SYSIDNT.

Change to generic alert structures used by CICSPlex SM

When you upgrade to CICS Transaction Server for z/OS, Version 4 Release 1, 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 product number has changed to 5655S97.

The previous product numbers were as follows, depending on the version of CICS TS from which you are upgrading:

- In CICS Transaction Server for z/OS, Version 2, the product number was 5695081.
- In CICS Transaction Server for z/OS, Version 3, the product number was 5655M15.

Chapter 38. Changes to CICSPlex SM views and resource tables

These changes affect 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) and the provision of the EYU9XDBT batch facility, you can now use the CICSPlex SM WUI to perform all 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 and later releases.

All of the function of the MVS/TSO ISPF end-user interface has been removed, including all associated views, panels, menus and action commands, with the supporting CAS and all PlexManager functions. Equivalent function is available solely from the CICSPlex SM Web User Interface. 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 "Integration of CICSPlex SM and CICS installation" on page 4.

New data type SCLOCK12

The new data type SCLOCK12 was 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 first byte contains a flag field, which is not part of the counter. The actual count is held in the last 3 bytes.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 have access only 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 limitation 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.

The numeric value representing the internal data type for SCLOCK12 is 152.

Like the existing data type SCLOCK (the 8-byte interval store clock), you can use the new data type SCLOCK12 as a filter on the DATA/GET command, and 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. Attributes have been converted in these resource tables:

- 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.

You must recompile application programs 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 use only 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 as follows:

- `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 format is the default 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 format is the default 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 panel (select the **Table contents** option on that panel) or the Detailed Form Components panel (select **Form contents**). On the Table contents or Form contents panel, 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 and 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 4.1 you can use your external security manager to control user access to views, menus, help information, and the View Editor. To do so, you create an appropriate profile in the FACILITY class.

The following ESM FACILITY profiles are available, where *wui_server_applid* is the CICS APPLID of the server:

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.

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. Controlling read access 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. Controlling update access enables you to open the view editor to more users, but restrict 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.

This security protects the views and menus themselves and not the objects they manage, which are 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 regions from CICS Transaction Server for z/OS, Version 3 Release 2. The corresponding SJGREQSRESET attribute in the JVMPOOL resource table returns "Not applicable" for regions from CICS Transaction Server for z/OS, Version 3 Release 2.

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 regions from CICS Transaction Server for z/OS, Version 3 Release 2. The corresponding CJVMSUNRESET and UJVMSUNRESET attributes in the JVMPROFILE resource table return "Not applicable" for regions from CICS Transaction Server for z/OS, Version 3 Release 2.

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 for regions 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 for regions from CICS Transaction Server for z/OS, Version 3 Release 1.

CICSPlex SM resource tables no longer supported

A number of CICSPlex SM resource tables are no longer supported in CICS Transaction Server for z/OS, Version 3 Release 2 and later releases. The information in them has moved to other tables.

Table 22. CICSPlex SM resource tables no longer supported

Resource table no longer supported	Table to which information has moved
XDSPGBL	DSPGBL
XDSPPOOL	DSPPOOL

Table 22. CICSPlex SM resource tables no longer supported (continued)

Resource table no longer supported	Table to which information has moved
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 upgrade to CICS TS for z/OS, Version 4.1, 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 changed CICSPlex SM views and resource tables now 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 23. Changed CICSPlex SM views

Changed CICS resource type or function	Corresponding CICSPlex SM views that have changed
Bundles	1. **Administration views** > **Basic CICS resource administration views** > **Resource definitions** 2. **CICS operations views**
Configuring VTAM persistent sessions support	**CICS operations views** > **CICS region operations views** > **CICS regions - CICSRGN**
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	1. **CICS operations views** > **Task operations views** > **Active tasks** 2. **CICS operations views** > **Task operations views** > **Completed tasks**

Table 23. Changed CICSPlex SM views (continued)

Changed CICS resource type or function	Corresponding CICSPlex SM views that have changed
Document templates in HFS files	1. **CICS operations views > Document template operations views > Document template** 2. **Administration views > Basic CICS resource administration views > Resource definitions > Document template definitions**
Event processing statistics	1. **CICS operations views > Application operations views > Event processing**
Identity propagation	1. **CICS operations views > Task operations views > Task association information** 2. **CICS operations views > CICS region operations views > CICS regions** 3. **Administration views > Monitor administration views > Definitions**
Internet security	1. **CICS operations views > Enterprise Java component operations views > CorbaServers** 2. **CICS operations views > TCP/IP service operations views > TCP/IP service** 3. **CICS operations views > TCP/IP service operations views > TCP/IP global status** 4. **Administration views > Basic CICS resource administration views > Resource definitions > Enterprise Java CORBASERVER definitions** 5. **Administration views > Basic CICS resource administration views > Resource definitions > TCP/IP service definitions**
IPIC	1. **CICS operations views > Enterprise Java component operations views > CorbaServers** 2. **CICS operations views > Task operations views > Task association information** 3. **CICS operations views > TCP/IP service operations views > TCP/IP services** 4. **CICS operations views > TCP/IP service operations views > URI maps** 5. **Administration views > CICS resource definitions > URI mapping definitions** 6. **CICS operations views > Task operations views > Work requests**
IPv6	1. **CICS operations views > TCP/IP service operations views > IPIC connections** 2. **CICS operations views > Task operations views > Task association information**
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 > JVM pool**

Table 23. Changed CICSPlex SM views (continued)

Changed CICS resource type or function	Corresponding CICSPlex SM views that have changed
JVMs: withdrawal of resettable mode	1. **CICS operations views > Enterprise Java component operations views > JVM pool** 2. **CICS operations views > Enterprise Java component operations views > JVM profile** 3. **CICS operations views > Enterprise Java component operations views > JVM status** 4. **CICS operations views > Enterprise Java component operations views > JVM Class Cache status**
JVM servers	1. **CICS operations views > CICS region operations views > CICS regions** 2. **EYUSTARTCICSRGN.DETAILED > Logging and journaling activity > Monitor status** 3. **CICS operations views > Task operations views**
LIBRARY resources	**CICS operations views > Program operations views > Program**
Monitoring details (new DPLLIMIT field, DPLLIMIT, FILELIMIT, and TSQLIMIT values can be set)	**CICS Regions > CICS system name > Monitoring and statistics details > Monitoring details**
MVS workload manager statistics	**CICS operations views > CICS region operations views > MVS workload management**
Storage information for MVS TCBs	1. **CICS operations views > CICS region operations views > MVS TCBs** 2. **CICS operations views > CICS region operations views > Global MVS TCB information** 3. **CICS operations views > CICS region operations views > MVS storage areas**
SYSLINK objects that support IPIC connections	1. **Administration views > Basic resource administration views** 2. **Administration views > Fully functional resource administration views** 3. **Administration views > Basic CICS resource administration views > CICS system links and related resources > System link definitions** 4. **Administration views > Basic CICS resource administration views > CICS system links and related resources > CICS system definitions** 5. **Administration views > Basic CICS resource administration views > System link definitions > MASs known to CICSplex**
TCP/IP service	**CICS operations views > TCP/IP service operations views > TCP/IP service**
TCPIPSERVICE resource definition attributes	**Administration views > Basic CICS resource administration views > Resource definitions > TCP/IP service definitions**

Table 23. Changed CICSPlex SM views (continued)

Changed CICS resource type or function	Corresponding CICSPlex SM views that have changed
Workload management improvements	1. **Active workload views** 2. **Active workload views > Active workloads** 3. **Active workload views > Active routing regions** 4. **Active workload views > Active workload target distribution factors** 5. **Active workload views > CICSplex definitions** 6. **Active workload views > CICS system definitions** 7. **Active workload views > Active MASs in CICSplex** 8. **CICSPlex SM operations views > CMASs managing CICSplex** 9. **Administration views > CMAS configuration administration views > CMAS in CICSplex definitions**
XCF group ID	**CICS regions > region name**
XMLTRANSFORM resources	1. **CICS operations views > CICS region operations views > Request statistics processing** 2. **EYUSTARTCICSRGN.DETAILED > Monitoring and statistics details > Statistics details > Request statistics processing**
z/OS Communications Server and partner system information	**CICS operations views > TCP/IP service operations views > IP connections**
z/OS Communications Server information	**CICS operations views > Task operations views > Task association information**

Changed CICSPlex SM resource tables

Review these resource tables for possible affect on any RTA evaluation definitions (EVALDEF) or CICSPlex SM API programs that you are using:

- CICSPLEX
- CICSRGN
- CLCACHE
- CMAS
- CMASPLEX
- CONNECT
- CPLEXDEF
- CPLXCMAS
- CSYSDEF
- DB2CONN
- DB2ENTRY
- DB2TRN
- DOCDEF
- DOCTEMP
- DSPGBL
- EJCODEF
- EJCOSE

- EJDJAR
- ENQMODEL
- EPLEXCHG
- EVNTGBL
- EXTRATDQ
- HTASK
- INDTDQ
- INTRATDQ
- IPCONDEF
- IPCONN
- JRNLMODL
- JVM
- JVMPOOL
- JVMPROF
- LIBRARY
- LOCFILE
- LOCTRAN
- MAS
- MONDEF
- MONITOR
- MVSESTG
- MVSTCB
- MVSTCBGL
- MVSWLM
- PIPELINE
- PROCTYP
- PROFILE
- PROGDEF
- PROGRAM
- REMFILE
- REMTDQ
- REMTRAN
- RESDESC
- RESGROUP
- RQMODEL
- SYSLINK
- TASK
- TASKASSC
- TASKRMI
- TCPDEF
- TCPIPGBL
- TCPIPS
- TERMDEF
- TRANCLAS

- TSMODEL (The TSMODEL base table attribute called DESCRIPTION in earlier releases is renamed to RSVRD1.)
- URIMAP
- URIMPDEF
- WEBSERV
- WLMATARG
- WLMAWAOR
- WLMAWORK
- WLMAWTOR
- WORKREQ

Resource tables that support CICS management client interface (CMCI) requests include a new URI resource name attribute. The CICS management client interface uses these resource name attributes to specify CICS and CICSPlex SM resources in URI requests.

Changes to views for the resource signature

Detailed resource signature information can be viewed in the CICS operations views, listed in the table below. These new fields can also be displayed in the Web User Interface resource administration views.

View set	Navigation
EYUSTARTATOMSERV	**CICS operations views > TCP/IP service operations views > Atomservices > EYUSTARTATOMSERV.DETAIL1**
EYUSTARTBUNDLE	**CICS operations views > Application operations views > Bundles > EYUSTARTBUNDLE.DETAILED1**
EYUSTARTCONNECT	**CICS operations views > Connection operations views > ISC/MRO connections > EYUSTARTCONNECT.DETAIL4**
EYUSTARTDB2CONN	**CICS operations views > DB2, DBCTL and WebSphere MQ operations views > Connections > EYUSTARTDB2CONN.DETAIL4**
EYUSTARTDB2ENTRY	**CICS operations views > DB2, DBCTL and WebSphere MQ operations views > Entries > EYUSTARTDB2ENTRY.DETAIL2**
EYUSTARTDB2TRN	**CICS operations views > DB2, DBCTL and WebSphere MQ operations views > Entry associated transactions > EYUSTARTDB2TRN.DETAIL1**
EYUSTARTDOCTEMP	**CICS operations views > Document template operations views > Document template > EYUSTARTDOCTEMP.DETAIL2**
EYUSTARTEJCOSE	**CICS operations views > Enterprise Java component operations views > CorbaServers > EYUSTARTEJCOSE.DETAIL5**
EYUSTARTEJDJAR	**CICS operations views > Enterprise Java component operations views > CICS-deployed JAR files > EYUSTARTEJDJAR.DETAIL1**
EYUSTARTENQMODEL	**CICS operations views > Enqueue model operations views > Enqueue model > EYUSTARTENQMODEL.DETAIL1**

View set	Navigation
EYUSTARTEXTRATDQ	**CICS operations views > Transient data queue (TDQ) operations views > Extrapartition > EYUSTARTEXTRATDQ.DETAIL1**
EYUSTARTINDTDQ	**CICS operations views > Transient data queue (TDQ) operations views > Indirect > EYUSTARTINDTDQ.DETAIL1**
EYUSTARTINTRATDQ	**CICS operations views > Transient data queue (TDQ) operations views > Intrapartition > EYUSTARTINTRATDQ.DETAIL1**
EYUSTARTJRNLMDL	**CICS operations views > Journal operations views > Models > EYUSTARTJRNLMODL.DETAIL1**
EYUSTARTJVMSERV	**CICS operations views > Enterprise Java component operations views > JVM server > EYUSTARTJVMSERV.DETAIL1**
EYUSTARTLIBRARY	**CICS operations views > Program operations views > LIBRARYs, including DFHRPL > EYUSTARTLIBRARY.DETAIL1**
EYUSTARTLOCFILE	**CICS operations views > File operations views > Local files > EYUSTARTLOCFILE.DETAIL3**
EYUSTARTLOCTRAN	**CICS operations views > Transaction operations views > Local or dynamic > EYUSTARTLOCTRAN.DETAIL3**
EYUSTARTMQCON	**CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ connections > EYUSTARTMQCON.DETAIL4**
EYUSTARTMQINI	**CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ initiation queue > EYUSTARTMQINI.DETAILED**
EYUSTARTPIPELINE	**CICS operations views > TCP/IP service operations views > Pipelines > EYUSTARTPIPELINE.DETAIL1**
EYUSTARTPROCTYP	**CICS operations views > CICS Business Transaction Services (BTS) operations views > Process type > EYUSTARTPROCTYP.DETAIL1**
EYUSTARTPROFILE	**CICS operations views > Connection operations views > Profiles > EYUSTARTPROFILE.DETAIL1**
EYUSTARTPROGRAM	**CICS operations views > Program operations views > Programs > EYUSTARTPROGRAM.DETAIL1**
EYUSTARTREMFILE	**CICS operations views > File operations views > Remote files > EYUSTARTREMFILE.DETAIL1**
EYUSTARTREMTDQ	**CICS operations views > Transient data queue (TDQ) operations views > Remote > EYUSTARTREMTDQ.DETAIL1**
EYUSTARTREMTRAN	**CICS operations views > Transaction operations views > Remote > EYUSTARTREMTRAN.DETAIL1**
EYUSTARTRQMODEL	**CICS operations views > Transaction operations views > Request model > EYUSTARTRQMODEL.DETAIL1**
EYUSTARTTCPIPS	**CICS operations views > TCP/IP service operations views > TCP/IP service > EYUSTARTTCPIPS.DETAIL2**
EYUSTARTTRANCLAS	**CICS operations views > CICS region operations views > Transaction classes > EYUSTARTTRANCLAS.DETAIL1**

View set	Navigation
EYUSTARTTSMODEL	**CICS operations views** > **Temporary storage queue (TSQ) operations views** > **Models** > **EYUSTARTTSMODEL.DETAIL1**
EYUSTARTURIMAP	**CICS operations views** > **TCP/IP service operations views** > **URI map** > **EYUSTARTURIMAP.DETAIL3**
EYUSTARTWEBSERV	**CICS operations views** > **TCP/IP service operations views** > **Web services** > **EYUSTARTWEBSERV.DETAIL1**
EYUSTARTXMLTRANS	**CICS operations views** > **Application operations views** > **XML transformation** > **EYUSTARTXMLTRANS.DETAILED1**

Changed operations base tables for the resource signature

The resource signature attributes are added to the following operations base tables:

ATOMSERV
BUNDLE
CONNECT
DB2CONN
DB2ENTRY
DB2TRN
DOCTEMP
EJCOSE
EJDJAR
ENQMODEL
EXTRATDQ
INDTDQ
INTRATDQ
IPCONN
JRNLMODL
JVMSERV
LIBRARY
LOCFILE
LOCTRAN
MQCON
MQINI
PIPELINE
PROCTYP
PROFILE
PROGRAM
REMFILE
REMTDQ
REMTRAN
RQMODEL
TCPIPS
TRANCLAS

TSMODEL
URIMAP
WEBSERV
XMLTRANS

Table 24. New fields in views

Field	Attribute name	Description
BAS resource definition version	BASDEFINEVER	The BAS version number of this definition.
Last modification agent	CHANGEAGENT	The change agent identifier that made the last modification.
Last modification agent release	CHANGEAGREL	The CICS release level of the agent that made the last modification to the resource definition.
Last modification user ID	CHANGEUSRID	The user ID that made the last modification to the resource definition.
Source of the resource definition	DEFINESOURCE	The source of the definition, depending on which agent made the last change.
Creation time	DEFINETIME	The local date and time when the resource definition record was created on DFHCSD or EYUDREP.
Installation agent	INSTALLAGENT	The change agent identifier that made the installation.
Installation time	INSTALLTIME	The local date and time when the definition was installed.
Installation user ID	INSTALLUSRID	The user ID that installed the resource definition.

For more information, see the *CICSPlex System Manager Application Programming Guide*

New CICSPlex SM views and resource tables

These new CICSPlex SM views and resource tables support CICS resource types and functions.

Table 25. New CICSPlex SM views and resource tables

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
Association data for tasks	**CICS operations views** > **Task operations views** > **Task association data**	TASKASSC

Table 25. New CICSPlex SM views and resource tables (continued)

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
Atom feeds	**CICS operations views** > **TCP/IP service operations views** > **Atomservice definitions**	ATOMSERV
ATOMSERVICE resource definitions	**Administration views** > **Basic CICS resource administration views** and **Resource definitions** > **Atomservice definitions**	ATOMDEF
ATOMSERVICE resources in a resource group	**Administration views** > **Basic CICS resource administration views** > **Resource definitions in a resource group**	ATMINGRP
Batched repository update job	**Administration views** > **General views** > **Batched repository update job**	BATCHREP
Bundles	**CICS operations views** > **Applications** > **Bundles**	BUNDLE, CRESBUND
BUNDLE resource definitions	**Administration views** > **Basic CICS resource administration views** and **Resource definitions** > **BUNDLE definitions**	BUNDDEF
BUNDLE resources in a resource group	**Administration views** > **Basic CICS resource administration views** > **Resource definitions in a resource group**	BUNINGRP
Channels	**CICS operations views** > **Active tasks** > **Channel usage**	TASK (existing resource table)
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)
Event capture specifications	**Application operations views** > **Event capture specification**	EVCSPEC, CRESEVCS
Event bindings	**Application operations views** > **Event bindings**	EVNTBIND, CRESEVBD
Event processing	**Application operations views** > **Global event processing attributes**	EVNTGBL
Historical data for tasks	**EYUSTARTHTASK**, **EYUSTARTMASHIST** , and **EYUSTARTTASKRMI**	HTASK (existing resource table) MASHIST TASKRMI

Table 25. New CICSPlex SM views and resource tables (continued)

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
HOST resource definition (virtual hosts)	**CICS operations views** > **TCP/IP service operations views** > **URI host**	HOST
IPIC connection	**CICS operations views** > **Connection operations views** > **IP connections**	IPCONN
JVM servers	**CICS operations views** > **Enterprise Java operations views** > **JVM servers**	JVMSERV
JVMSERVER resource definitions	**Administration views** > **Basic CICS resource administration views** > **Resource definitions** > **JVMSERVER definitions**	JVMSVDEF
JVMSERVER resources in a resource group	**Administration views** > **Basic CICS resource administration views** > **Resource definitions in a resource group**	JMSINGRP
LIBRARY	**CICS operations views** > **Program operations views** > **Program** > **LIBRARYs**	LIBRARY
LIBRARY data set names	**CICS operations views** > **Program operations views** > **Program** > **LIBRARYs including DFHRPL** > **LIBRARY name** > **Number of DSNAMEs**	LIBRARY LIBDSN
LIBRARY resource definitions	**Administration views** > **Basic CICS resource administration views** and **Resource definitions** > **LIBRARY definitions**	LIBDEF
LIBRARY definitions in a resource group	**Administration views** > **Basic CICS resource administration views** > **Resource definitions in a resource group**	LIBINGRP
MQCONN resource definitions	**Administration views** > **Basic CICS resource administration views** and **Resource definitions** > **WebSphere MQ connection definitions**	MQCONDEF
MQCONN resources in a resource group	**Administration views** > **Basic CICS resource administration views** > **Resource definitions in a resource group**	MQCINGRP

Table 25. New CICSPlex SM views and resource tables (continued)

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
PIPELINE resource definition	**CICS operations views** > **TCP/IP service operations views** > **Pipeline** , **Administration views** > **Basic CICS resource administration views**, and **CICS resource definitions** > **Pipeline definitions** >	PIPELINE, PIPEDEF
Resource definitions in a resource group	**Administration views** > **Basic CICS resource administration views** and **CICS resource definitions in a resource group**	RESINGRP
System initialization parameters	None	SYSPARM
System link definitions	**Administration views** > **Basic CICS resource administration views** > **CICS system links and related resources**	SYSLINK (existing resource table)
Target region for one or more active workloads	**Active workload views** > **Target region distribution statistics**	WLMATARG
Task element storage	**EYUSTARTTASKESTG**	TASKESTG
Task file usage	**EYUSTARTTASKFILE**	TASKFILE
Task temporary storage queue usage	**EYUSTARTTASKTSQ**	TASKTSQ
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)
URIMAP resource definition	**TCP/IP service operations views** > **URIMAP global statistics**, **Administration views** > **Basic CICS resource administration views**, and **CICS resource definitions** > **URI mapping definitions** >	URIMAP, URIMPDEF
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 administration views**, and **CICS resource definitions** > **Web service definitions**	WEBSERV, WEBSVDEF

Table 25. New CICSPlex SM views and resource tables (continued)

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
WebSphere MQ connection	**CICS operations views** > **DB2, DBCTL and WebSphere MQ operations views** > **WebSphere MQ connections**	MQCONN
WebSphere MQ connection definition with MQCONN resource	**CICS operations views** > **DB2, DBCTL and WebSphere MQ operations views** > **WebSphere MQ Connection**	MQCON
WebSphere MQ connection with dynamically created MQINI resource	**CICS operations views** > **DB2, DBCTL and WebSphere MQ operations views** > **WebSphere MQ initiation queue**	MQINI
XMLTRANSFORM resources	**Application operations views** > **XMLTRANSFORM resources**	XMLTRANS

New Business Application Services definition objects

These new Business Application Services definition objects describe new CICS resource types and functions.

Table 26. New BAS definition objects

BAS object	What is it?
ATOMDEF	CICS definition that describes an ATOMSERVICE resource.
ATMINGRP	BAS definition that describes the membership of an ATOMSERVICE definition (ATOMDEF) in a resource group.
BUNDDEF	CICS definition that describes a BUNDLE resource.
BUNINGRP	BAS definition that describes the membership of a BUNDLE definition (BUNDDEF) in a resource group.
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.
JVMSVDEF	CICS definition that describes a JVMSERVER resource.
JMSINGRP	BAS definition that describes the membership of a JVMSERVER definition (JVMSVDEF) in a resource group.
LIBINGRP	BAS definition that describes the membership of a LIBRARY definition (LIBDEF) in a resource group.
LIBDEF	CICS definition that describes a LIBRARY resource.
MQCONDEF	CICS definition that describes an MQCONN resource.
MQCINGRP	BAS definition that describes the membership of an MQCONN definition (MQCONDEF) in a resource group.

Changed Business Application Services definition objects

These Business Application Services definition objects have new attributes or new values for attributes.

Table 27. Changed BAS definition objects

BAS object	Change
RASGNDEF	New REDEFTYPE values: IPCONDEF LIBDEF
RESDESC	New attributes added: IPCDEFRG IPCDEFTS IPCDEFRS LIBDEFRG LIBDEFTS LIBDEFRS
TCPDEF	• New attribute added: REALM • New value allowed for PROTOCOL attribute: IPIC

Chapter 39. Changes to CICSPlex SM transactions

These changes affect CICSPlex SM transactions.

New CICSPlex SM transactions

The following new transactions have been added to support enhancements in CICSPlex SM. These transactions are listed in the CSD group EYU$CDEF and must be defined to your external security manager.

The new CICSPlex SM transactions are as follows:

- LCMU
- LSGT
- XMLT
- WMWD
- XZLT

Changed Web User Interface control transaction (COVC)

The Web User Interface control transaction (COVC) has changed to display IPv6 information.

Several COVC panels have changed to support IPv6 addressing.

COVC front panel

The Current Status, Time, Applid, and Date fields have moved by one line down the screen COVC status screen. Please review any automated processes that use these fields.

COVC status panel

A new field, TCP/IP Family, displays whether the address of the connected region is an IPv4 or IPv6 address.

COVC user sessions panel

An existing field, ClientIp, now displays IPv6 addresses. The IPv6 address extends over two lines, which reduces the number of users visible per page (to a minimum of three users, if they all have IPv6 addresses). IPv4 addresses are displayed on a single line.

Chapter 40. National language support for CICSPlex SM messages

You can now use the CICS message domain to issue CICSPlex SM messages, which have a destination of EYULOG, in national languages other than English. The CICS XMEOUT global user exit has changed to support this, and some CICSPlex SM problem determination system initialization parameters have been removed.

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 can be suppressed or rerouted from the joblog or console but not from the EYULOG. "Changes to global user exits" on page 114 lists the new fields added to XMEOUT to support this function.

Because CICSPlex SM is now using the CICS message domain to enable national language support, some of the CICSPlex SM messages might change to multiple-line formats. This might have an effect on tools that you are using to monitor messages.

CICSPlex SM messages are not available through the CMAC transaction.

Problem determination system parameters removed

The CICSPlex SM problem determination system parameters (EYUPARMS) for a CMAS in the format xxxCONMSG or xxxTDQMSG, which specified message flags, have been removed. They are no longer supported as valid CICSPlex SM system parameters. You must remove them, because if they are used for a CMAS, the CMAS fails to initialize. Message EYUXL0206E is issued in this situation.

The redundant system parameters are:

- BASCONMSG
- BASTDQMSG
- CHECONMSG
- CHETDQMSG
- COMCONMSG
- COMTDQMSG
- DATCONMSG
- DATTDQMSG
- KNLCONMSG
- KNLTDQMSG
- MASCONMSG
- MASTDQMSG
- MONCONMSG
- MONTDQMSG
- MSGCONMSG
- MSGTDQMSG
- QUECONMSG
- QUETDQMSG

- RTACONMSG
- RTATDQMSG
- SIMCONMSG
- SIMTDQMSG
- SLMCONMSG
- SLMTDQMSG
- SRVCONMSG
- SRVTDQMSG
- TOPCONMSG
- TOPTDQMSG
- TRCCONMSG
- TRCTDQMSG
- WLMCONMSG
- WLMTDQMSG

Messages added

The following messages have been added to support CICSPlex SM messages in national languages:

- 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

Messages removed

The following messages have been removed:

- EYUBM0322I
- EYUBM0323I
- EYUBM0324I
- EYUBM0325I
- EYUBM0326I
- EYUBM0327I
- EYUBN0012W
- EYUXL0020I

Chapter 41. 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 use 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 upgrade to the new release. 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, 300,000 to 500,000 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 case, 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 storage and CPU consumption do not increase significantly.

Part 4. Upgrading CICSPlex SM

To upgrade CICSPlex SM to the CICS Transaction Server for z/OS, Version 4 Release 1 level, carry out the tasks described here. Also check the important information here about the compatibility of CICSPlex SM with previous releases of CICS Transaction Server.

Make sure that you complete all your upgrades to CICS TS for z/OS, Version 4.1 CICSPlex SM, including your CMAS, all MASs that are connected to it, and all MASs that act as Web User Interface servers for it, before you restart CICSPlex SM.

Several skeleton postinstallation members are distributed with CICSPlex SM. You must generate these postinstallation members for use during the upgrade. For information about generating the postinstallation members, see CICS Transaction Server for z/OS Installation Guide.

So that you can revert to the previous release of CICSPlex SM if you encounter problems during the upgrade to CICS TS for z/OS, Version 4.1 CICSPlex SM, take backup copies of the previous release components such as JCL, CLISTs, CICS tables, CMAS data repositories, and WUI repositories before you start the upgrade process.

Chapter 42. Conditions for running CICSPlex SM Version 4.1 and earlier releases concurrently

You can run CICSPlex SM Version 4.1 and earlier releases concurrently, but you must take account of a number of conditions for compatibility.

The CICSPlex SM releases referred to in this information are the CICSPlex SM element of CICS Transaction Server for z/OS releases. They are not available as separate products. For example, CICSPlex SM Version 4.1 is the CICSPlex SM element of CICS Transaction Server for z/OS, Version 4 Release 1.

You can run CICSPlex SM Version 4.1, Version 3.2, Version 3.1, and Version 2.3 at the same time, with interconnected CMASs at different levels. The ability to do this allows gradual upgrading of the environment to Version 4.1. However, in CICS TS for z/OS, Version 4.1, a CICSPlex SM CMAS will run only in a CICS system at Version 4.1.

CICS systems (MASs) running the following supported CICS releases can be connected to CICSPlex SM Version 4.1:

- CICS TS for z/OS, Version 3.2
- CICS TS for z/OS, Version 3.1
- CICS TS for z/OS, Version 2.3

To be connected to CICSPlex SM Version 4.1, CICS systems must use the CICSPlex SM Version 4.1 MAS agent, so they must have the CICSPlex SM Version 4.1 libraries in their CICS JCL. For a CICS system running CICS TS for z/OS, Version 3.1 or CICS TS for z/OS, Version 2.3, you must also apply a compatibility APAR to the CICS system as follows:

- APAR PK17360 for CICS TS 3.1
- APAR PK16582 for CICS TS 2.3

If you have difficulty running CICSPlex SM with CICS TS for z/OS, Version 3.2 because of a recursive 0c4 protection exception in module DFHSMSR, apply PTF UK43094 for apar PK77484 and restart the system.

If you have any CICS systems at the release levels listed here that are connected to an earlier release of CICSPlex SM, you are recommended to migrate them to the current release of CICSPlex SMto take full advantage of the enhanced management services.

If you want to manage CICS systems at an earlier release level than those listed here, connect them to a CMAS running at an earlier release level that supported those systems. This CMAS can be connected to your CICSPlex SM Version 4.1 CMAS, so that the older CICS systems are indirectly connected to the Version 4.1 CMAS.

The following conditions apply to environments in which CICSPlex SM Version 4.1 and earlier releases of CICSPlex SM are running concurrently:

- For a CMAS and a MAS (including those MASs that act as Web User Interface servers) to communicate, they must be running at the same release of CICSPlex SM.

- A CMAS running at Version 4.1 can be connected to a CMAS running at Version 3.2, Version 3.1, or Version 2.3.
- In a CICSplex that consists of CMASs at the Version 4.1 level and at one or more earlier levels, the maintenance point CMAS must be at the Version 4.1 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 4.1 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 4.1 CMAS:
  - All WUI servers must connect to the Version 4.1 CMAS.
  - All API programs must run in such a way that they are connected to the Version 4.1 CMAS. This requirement applies only if the API program accesses new fields or later-level CICS systems. If the API program connects to a lower level CMAS, any resource tables that contain new or updated fields for the new release are not returned to the API program connected to the lower release level CMAS.
- You cannot view all resources of a CICS TS for z/OS, Version 4.1 region using a CMAS running at an earlier release.
- A WUI server at an earlier release that is connected to a CMAS at an earlier release can retrieve data from a MAS connected to a Version 4.1 CMAS if the CMAS participates in the management of the CICSplex. However, the WUI server cannot retrieve data about resource types that were not available in the earlier release.
- If you want to create any of the following CICSPlex SM objects, you must create them using a WUI server that is running at the same CICSPlex SM release level as the maintenance point CMAS:
  - CPLEXDEF (CICSPlex definition)
  - CMTCMDEF (CMAS to CMAS link definition)
  - CSYSGRP (system group definition)
  - PERIODEF (time period definition)
  - MONSPEC (monitor specification)
  - MONGROUP (monitor group)
  - MONDEF (monitor definition)
  - RTAGROUP (RTA group)
  - RTADEF (RTA definition)
  - WLMSPEC (WLM specification)
  - WLMGROUP (WLM group)
  - WLMDEF (WLM definition)
  - TRANGRP (transaction group)

  If you use the API or the BATCHREP batched repository-update facility to create these objects, CICSPlex SM and the maintenance point CMAS release level must, again, be at the same release level.

Chapter 43. Removal of support for Windows remote MAS

Previous releases of CICSPlex SM 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 was removed in 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 CICS Transaction Server for z/OS, Version 2 Release 3 for TXSeries support in CICSPlex SM.

Chapter 44. Upgrading a CMAS

You must upgrade your CICSPlex SM CMAS to Version 4.1 at the same time as you upgrade the CICS system on which it runs. 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 stops with message EYUXL0142 if the release does not match.

About this task

Follow these steps to upgrade your CMAS to Version 4.1:

Procedure

1. If the CMAS is running, stop it.
2. In the z/OS image that contains the CMAS, verify that the IEASYSxx member of the SYS1.PARMLIB library that you use for z/OS initialization includes the **MAXCAD** and **NSYSLX** parameters, with appropriate values. the *CICS Transaction Server for z/OS Installation Guide* explains what values are suitable. If you are running both a previous release and Version 4.1 of CICSPlex SM, an Environment Services System Services (ESSS) space is started for each release, so you might need to modify the **NSYSLX** value.
3. Authorize the Version 4.1 libraries by adding them to the list of APF-authorized libraries in the appropriate PROGxx or IEAAPFxx member in SYS1.PARMLIB. For information about how to do this, see the *CICS Transaction Server for z/OS Installation Guide*.
4. Update the MVS linklist with the Version 4.1 modules that are required for CICS and CICSPlex SM. For information about how to do this, see the *CICS Transaction Server for z/OS Installation Guide*.
5. Upgrade the CSD file with the Version 4.1 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 166. You do not need to carry out an additional upgrade using a release-dependent set of definitions for CICSPlex SM.
6. If you made any modifications to the default resource definitions for your earlier release that were supplied by CICSPlex SM in the EYU$CDEF sample (which contains definitions for a CMAS), manually upgrade your modified resource definitions using the equivalents in the EYU$CDEF sample for Version 4.1. The safest way to do this is to copy the upgraded default resource definitions and reapply your modifications. It is important to upgrade your modified definitions to ensure that they are defined correctly with nondefault values for attributes that are new. If you fail to upgrade modified definitions, CICS assigns default values to any new attributes, and these might be inappropriate for CICS-supplied resource definitions.
7. Edit the JCL used to start the CMAS, changing the previous release of CICSPlex SM library names to the Version 4.1 names. If you have BBACTDEF, BBVDEF, or BBIPARM DD statements in the JCL, delete them. For information about the CMAS startup JCL, see the *CICS Transaction Server for z/OS Installation Guide*.
8. Use the EYU9XDUT utility to upgrade the data repository (EYUDREP data set) for the CMAS to Version 4.1. For information about how to upgrade the data repository, see the *CICS Transaction Server for z/OS Installation Guide*. The

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

Note: After upgrading the data repository for the CMAS, the next time the CMAS is started it must point to the upgraded EYUDREP data set. If it does not, data repository updates might be lost. This loss can lead to incorrect results, which can include other CMASs isolating themselves when they connect to this CMAS.

9. Ensure that you have deleted, redefined, and initialized the CICS local catalog and global catalog using the DFHCCUTL and the DFHRMUTL utility programs.
10. Verify the CICSPlex SM system parameters referenced by the EYUPARM DD statement. If the CASNAME system parameter is present, delete it. For information about these parameters, see the *CICS Transaction Server for z/OS Installation Guide*.
11. Verify that the CICS system initialization parameter GRPLIST references the CICS-supplied default startup group list, DFHLIST, and any CSD groups containing resource definitions that you have modified.

Results

When you have completed all these steps, you can cold start the CMAS.

Chapter 45. Upgrading a Web User Interface server

Both the Web User Interface server and the CMAS to which it connects must be at the highest level of CICSPlex SM and CICS in the CICSplex. They must be at the same level as the maintenance point CMAS.

About this task

A Web User Interface server can connect only to a CMAS at the same release level. Before you upgrade a Web User Interface server, you must upgrade the CMAS to which it connects. If the CMAS to which the Web User Interface server connects is not the maintenance point CMAS, you must also upgrade the maintenance point CMAS before you start the Web User Interface server and the CMAS to which it connects. Upgrade the Web User Interface server before you start any other MASs, so that it is ready to manage the upgraded MASs.

Because a CICS system that acts as a 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 upgrade a Web User Interface server to Version 4.1 :

Procedure

1. Increase the size of the DFHTEMP data set, which is used in the COVC import process. The standard CICS sample has only a primary allocation, but 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(CICSTS41.CICS.CNTL.CICSqualifier.DFHTEMP)-
                  RECORDSIZE(4089,4089)           -
                  RECORDS(200 200)                -
                  NONINDEXED                      -
                  CONTROLINTERVALSIZE(4096)       -
                  SHAREOPTIONS(2 3)               -
                  VOLUMES(volid))                 -
                DATA(NAME(CICSTS41.CICS.CNTL.CICSqualifier.DFHTEMP.DATA) -
                  UNIQUE)
/*
```

2. Upgrade the MAS that acts as your Web User Interface server. See Chapter 46, “Upgrading a MAS,” on page 309.
3. Upgrade the contents of the Web User Interface server repository (EYUWREP). See “Upgrading the contents of the Web User Interface server repository (EYUWREP)” on page 306.

Phased upgrade scenario for Web User Interface servers

If you have CICSPlex SM 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 upgrade the other MASs at the same time as the CMAS. In that case, consider using this phased upgrade path.

About this task

Assuming you are running the latest CICSPlex SM maintenance levels, you can upgrade one LPAR at a time.

Procedure

1. Define a new Version 4.1 CMAS on the same z/OS image as the Web User Interface server.
2. Connect the Version 4.1 CMAS to the CICSplex to which the Web User Interface server CMAS is connected. This CMAS will not become available for use until the maintenance point CMAS has been upgraded. If you see message EYUCP0022E at this time, take no action.
3. Upgrade the maintenance point CMAS to Version 4.1 and take down the Web User Interface server at the same time.
4. Upgrade the Web User Interface server to Version 4.1 and, when you restart it, connect it to the Version 4.1 CMAS. The Version 4.1 CMAS should now connect successfully to the Version 4.1 maintenance point CMAS.
5. Upgrade the remaining MASs when required, and connect them to the Version 4.1 CMAS as you restart them.
6. When you have moved all the MASs to the Version 4.1 CMAS, you can remove the original CMAS.

Upgrading the contents of the Web User Interface server repository (EYUWREP)

With each release of CICS, internal Web User Interface repository record versions might be incremented to enable the new features in view definitions. For this reason, if your existing Web User Interface repository contains customized view sets or menus, you must upgrade your view set and menu definitions.

About this task

You can import a view set and menu definitions from a previous release into a CICS TS for z/OS, Version 4.1 Web User Interface server repository.

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.

To upgrade the Web User Interface server repository to the current version:

Procedure

1. With your Web User Interface server still running at your current release, use the export function of the COVC transaction to export your view set and menu definitions to an extrapartition transient data queue. It is not necessary for the Web User Interface server to be connected to a CMAS. 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 CICS TS for z/OS, Version 4.1 Web User Interface server using the new Web User Interface server repository.
4. Use COVC to import the view set and menu definitions from your previous release from the extrapartition transient data queue to which you exported

them. For information about the import function of the COVC transaction, see the *CICSPlex System Manager Web User Interface Guide*. This import is necessary for each type of resource (VIEW, MENU, USER, USERGRP, and so on) that you had previously customized.

5. Use COVC to import the new starter set definitions. Specify the OVERWRITE option on the **Import option** field of the COVC panel to ensure that none of the new starter set views are accidentally overwritten by views from a previous release. For information about using COVC, see the *CICSPlex System Manager Web User Interface Guide*.

What to do next

You can also export view set and menu definitions from a CICS TS for z/OS, Version 4.1 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*.

Chapter 46. Upgrading a MAS

Follow these steps to upgrade a CICSPlex SM MAS to Version 4.1. Because a CICS system that acts as a Web User Interface server is a MAS, you must complete these steps as part of the process of upgrading a Web User Interface server.

Procedure

1. Authorize the Version 4.1 libraries. See the *CICS Transaction Server for z/OS Installation Guide*.
2. If you use the link pack area (LPA), decide when you will replace the previous release modules in the LPA with the Version 4.1 modules. Every CICSPlex SM module installed in the LPA can be used only by the release of CICSPlex SM to which it relates.
   a. If you put the Version 4.1 modules in the LPA immediately, change your previous release MASs to use the previous release modules from the STEPLIB and DFHRPL concatenations, instead of the LPA.
   b. If you put the Version 4.1 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 4.1 modules from the STEPLIB and DFHRPL concatenations instead of the LPA, then change them to use the LPA when you replace the modules.

   For information about this task, see the *CICS Transaction Server for z/OS Installation Guide*.
3. Optional: If you are not using **CPSMCONN=LMAS**, upgrade the CSD file with the Version 4.1 group of resource definitions and CICS startup group list. For information about upgrading the CSD, see "Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions" on page 166. You do not need to carry out an additional upgrade using a release-dependent set of definitions for CICSPlex SM.
4. If you made any modifications to the default resource definitions for your earlier release that were supplied by CICSPlex SM in the EYU$MDEF sample (which contains definitions for a MAS), or the EYU$WDEF sample (which contains definitions for a WUI), manually upgrade your modified resource definitions using the equivalents in the EYU$MDEF or EYU$WDEF sample for Version 4.1. The safest way to do this is to copy the upgraded default resource definitions and reapply your modifications. It is important to upgrade your modified definitions to ensure that they are defined correctly with nondefault values for attributes that are new. If you fail to upgrade modified definitions, CICS assigns default values to any new attributes, and these might be inappropriate for CICS-supplied resource definitions.
5. Edit the JCL used to start the MAS, changing the previous release of CICSPlex System Manager library names to the Version 4.1 names. For information about the MAS startup JCL, see the *CICS Transaction Server for z/OS Installation Guide*.
6. In the sequential data set or partitioned data set member identified by the CICS SYSIN statement, verify that the CICS system initialization parameter **EDSALIM** is included, and set it to a value of at least 50 MB. 50 MB is the minimum EDSALIM required to start the MAS agent for Version 4.1.
7. Optional: If you are upgrading the CICS region and not just migrating the CPSM agent code, ensure that you have deleted, redefined, and initialized the CICS local catalog and global catalog using the DFHCCUTL and the DFHRMUTL utility programs.

8. Optional: If you are upgrading the CICS region and not just migrating the CPSM agent code, verify that the CICS system initialization parameter GRPLIST references the CICS-supplied default startup group list, DFHLIST, any CSD groups containing resource definitions that you have modified, and the lists of definitions for your own applications.
9. If you intend to use MAS history recording, you are recommended to define new history data sets using the EYUJHIST sample job. If, however, you need to upgrade your existing history data sets, you can still use the EYUJHIST sample job, following the upgrading instructions, supplied as comments, in 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 startup JCL to include the history data sets.

Results

When you have completed these steps, you can cold start the MAS.

Chapter 47. Upgrading CICSPlex SM workload management

Changes to CICSPlex SM workload management, modules, application programs, or parameters are summarized here.

Changes to CICSPlex SM EYU9WRAM module

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 4 libraries.

Changes to CICSPlex SM application programs

If you have modified your application programs to make a call to EYU9XLOP using the EYUAWTRA commarea, you must also recompile and link-edit them using the Version 4 libraries.

Changes to CICSPlex SM EYUPARM values

The **WLMLOADCOUNT** and **WLMLOADTHRSH** EYUPARM values are discontinued. You must now specify these attributes in the CSYSDEF and MAS resource tables:

WLMLOADTHRSH is now defined using the **Task load health threshold** attribute in the CSYSDEF resource table. The value can now be modified for an active CICS region using the**CICS system definitions** view or the **MASs known to CICSplex** view found in **CICSplex SM operations views**. The value is also reported in the WLMATARG resource table. The attribute is used to specify a percentage threshold for the task load of a dynamic routing target region, which is calculated by dividing the current task count by the maximum task count. When the load for a target region reaches this threshold, WLM considers the region to be relatively unhealthy, causing higher link weights to be applied to the WLM routing algorithm when evaluating this region. The possible range for the value is from 1 - 100. The default value is 60.

By changing the value of the **Task load health threshold** attribute to an active CICS region, using the MAS resource table, you can change the routing weight factor of that region to make it more, or less, favourable as a dynamic routing target when being evaluated against other target regions in a similar load and health state. Raising the value makes the region more likely to be selected; lowering it has the opposite effect. When the WLMLOADTHRSH value is exceeded, CICSPlex SM applies a higher link weight to the overall routing weight evaluation for a target region. Changes to this value are not reflected in the "WLM routing weight for region" displayed in the WLMATARG and WLMAWAOR views, which show only the weight factors applying to the target region in isolation from the overall WLM link weight, which excludes the abend probability factor and (healthy or unhealthy) link weight to a routing region.

Note: If you are using WLMLOADTHRSH EYUPARM, you must now specify the WLMLOADTHRSH EYUPARM as a **Task load health threshold** attribute in your target regions. This specification is a change from the discontinued EYUPARM which you previously specified in the routing regions.

WLMLOADCOUNT is now defined using the **Task load queue mode** attribute in the CSYSDEF resource table. The value can now be modified for an active CICS region using the **CICS system definitions** view or the **MASs known to CICSplex** view found in **CICSplex SM operations views**. The value is also reported in the WLMATARG resource table. This attribute is used by CICSPlex SM Workload Manager. It specifies how the queued task load of a dynamic routing target region is to be evaluated, with these values:

- MAXTASK specifies that both active and MAXTASK queued tasks are to be included in the task load evaluation for a target region.
- ALL specifies that the task load evaluation for a region will include active tasks, tasks queued for the MAXTASK limit, and tasks that are queued because of a TRANCLASS limit.

The default value is ALL.

IPIC connections with workload management

CICSPlex SM workload management has been updated to support MASs connected with CICS IPIC connections (IPCONNs). There are no new external changes to workload management to use CICS IP connections but you might notice different behavior when CICS IPIC connections are introduced into a workload.

- IPIC supports these intercommunication functions and releases:
  - Distributed program link (DPL) calls between CICS TS 3.2, or later regions
  - Distributed program link (DPL) calls between CICS TS and TXSeries Version 7.1, or later
  - Asynchronous processing of **EXEC CICS START**, START CHANNEL, and CANCEL commands, between CICS TS 4.1, or later regions
  - Traditional transaction routing of 3270 terminals, where the terminal-owning region (TOR) is uniquely identified by an APPLID between CICS TS 4.1, or later regions
  - ECI requests from CICS Transaction Gateway Version 7.1 or later

Consider a simple workload installed on a routing region that needs to balance requests between a pair of target regions. Target region A is connected to the routing region using MRO, and target region B is connected to the routing region using 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 the target region. In this situation, CICSPlex SM will always select the MRO-connected target region A as the target for the request, because its link weight is less (because the connection is faster) than that for IPIC connections.

In a second example, target region C is connected to the routing region using both MRO and IPIC connections, and target region D is connected to the routing region using a CICS IPIC connection only. For IPIC-supported requests, CICSPlex SM treats target region C as if it is IPIC-only connected target, because CICS will always choose to use the IPIC connection for eligible requests over any other connection type (an IPIC connection overrides any other connection with the same name).

Related information:

Chapter 5, “Changes to resource definitions,” on page 33
Changes to the resource definitions available in CICS relate to new, changed, or obsolete CICS functions. The changes might involve complete resource definitions or individual attributes. The resource definitions supplied by CICS have corresponding changes, which you can implement by running the UPGRADE function of the CSD utility program (DFHCSDUP).

Chapter 48. Upgrading CICSPlex SM API programs

CICSPlex SM API programs that were written to run in a MAS at a previous release can be run in a Version 4.1 MAS.

You can either continue to access the data provided by the previous release or access the new data available from Version 4.1. For information about using API programs with different releases of CICSPlex SM, see the *CICSPlex System Manager Application Programming Guide*.

Chapter 49. Deleting previous CICSPlex SM release definitions from CSD files

If you are upgrading from CICS TS for z/OS, Version 3.1 or an earlier release, when you have successfully upgraded all your systems to CICSPlex SM Version 4.1, you must delete the definitions for previous versions and releases from the CSD of each CMAS and MAS.

About this task

From CICS TS for z/OS, Version 3.2 onwards, the CICS resource definitions for CICSPlex SM are created dynamically, so you no longer need to delete those definitions following the upgrade.

To delete the definitions from a CSD:

Procedure

1. Issue the DFHCSDUP UPGRADE command specifying module EYU9R*xxx*, where *xxx* is the release number for the previous release; for example, EYU9R310 for Version 3.1. This module is supplied in CICSTS41.CPSM.SEYULOAD. For example:

   ```
   //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)
   /*
   ```

   When this JCL is run, EYU9R*xxx* attempts to delete all the groups and group lists for that CICSPlex SM version from the CSD. However, because not all of the items that the job attempts to delete are defined in the CSD, DFHCSDUP gives a return code of 04.
2. Use the DFHCSDUP SYSPRINT output to verify the results of the deletions. The output lists those items that were deleted and those that were not found.

Chapter 50. Phased upgrade scenario to remove CICSPlex SM CAS

You no longer set up and use a CAS (coordinating address space) to support a CICS TS for z/OS, Version 4.1 CMAS (CICSPlex SM address space). This scenario presents one way that you might upgrade an environment at an earlier release to Version 4.1, replacing the use of the CAS with the use of a Web User Interface server. Another set of procedures might be more appropriate to your own environment.

The environment

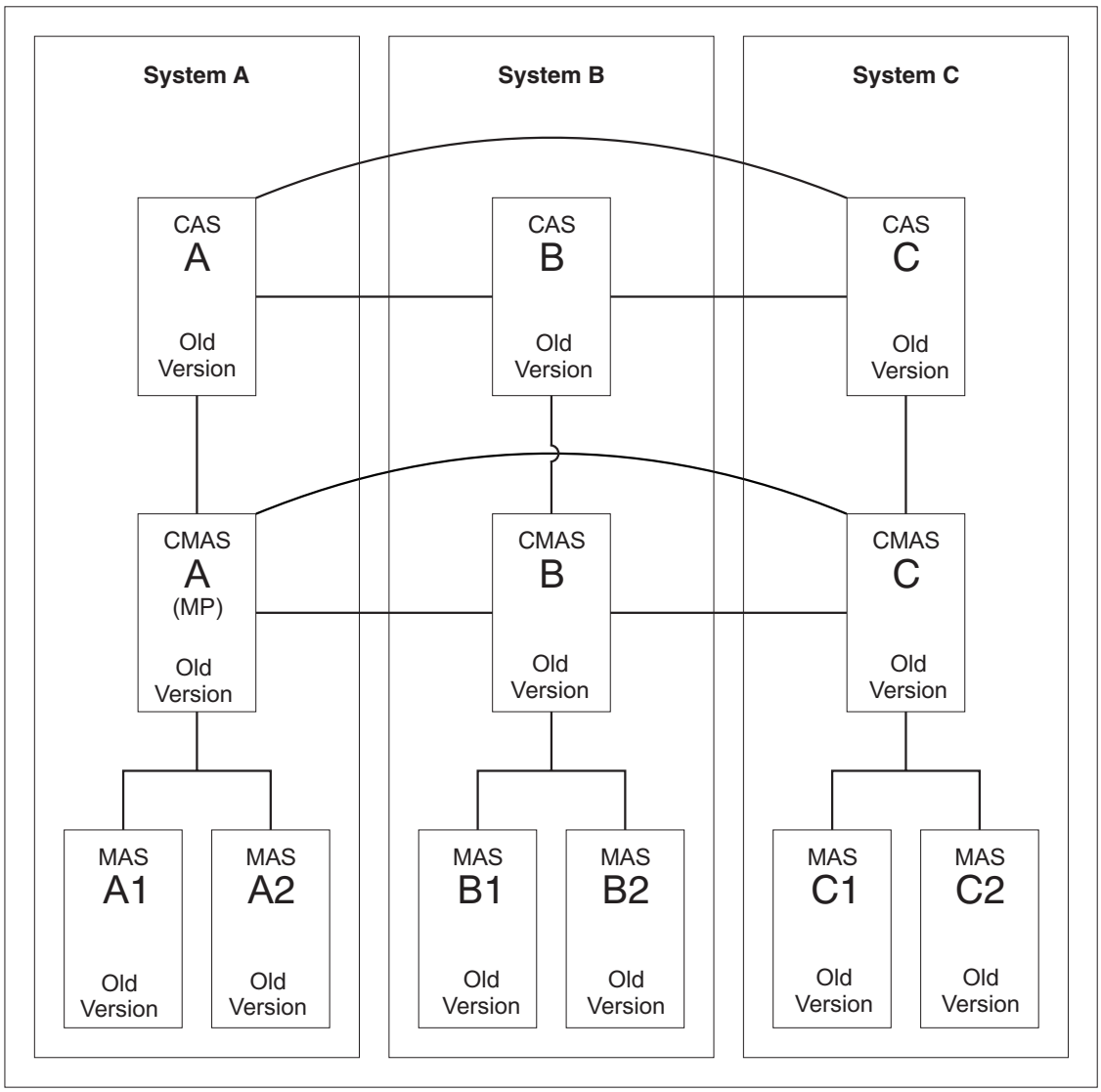

Figure 4. An environment at an earlier release

Figure 4 shows a CICSPlex SM environment that is made up of the following components:

- Three MVS systems (System A, System B, System C)
- Three CASs
  - All interconnected
- Three CMASs
  - All interconnected
  - CMAS A connects to CAS A. Both are in System A. This CMAS 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.
- One CICSplex
  - CMAS A is the maintenance point.
- Six CICS regions that are 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 an earlier CICS TS release.

Objective 1: Add a WUI server at the earlier release

When you complete Objective 1, a WUI at the earlier release level is connected to CMAS A.

About this task

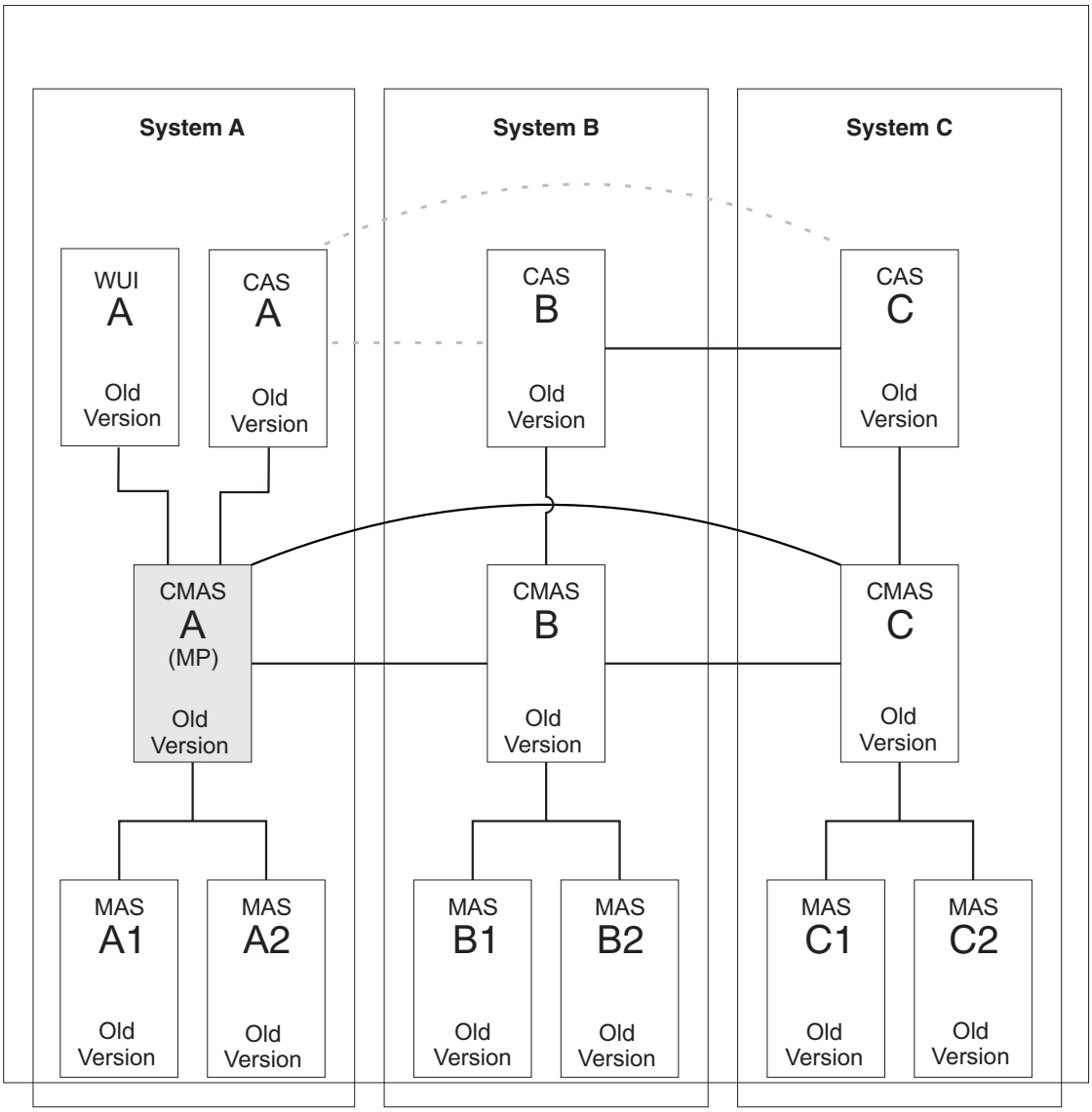

Figure 5. Adding a WUI server at the earlier release

To add a WUI to System A:

Procedure

1. Connect a WUI server to the maintenance point CMAS A at the earlier CICS Transaction Server release level.
2. Create a separate CICSplex for the WUI server, defining CMAS A as the maintenance point.

Objective 2: Upgrade MP 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 their different release levels. CAS A and its connections are removed but CAS B and CAS C remain connected to one another.

About this task

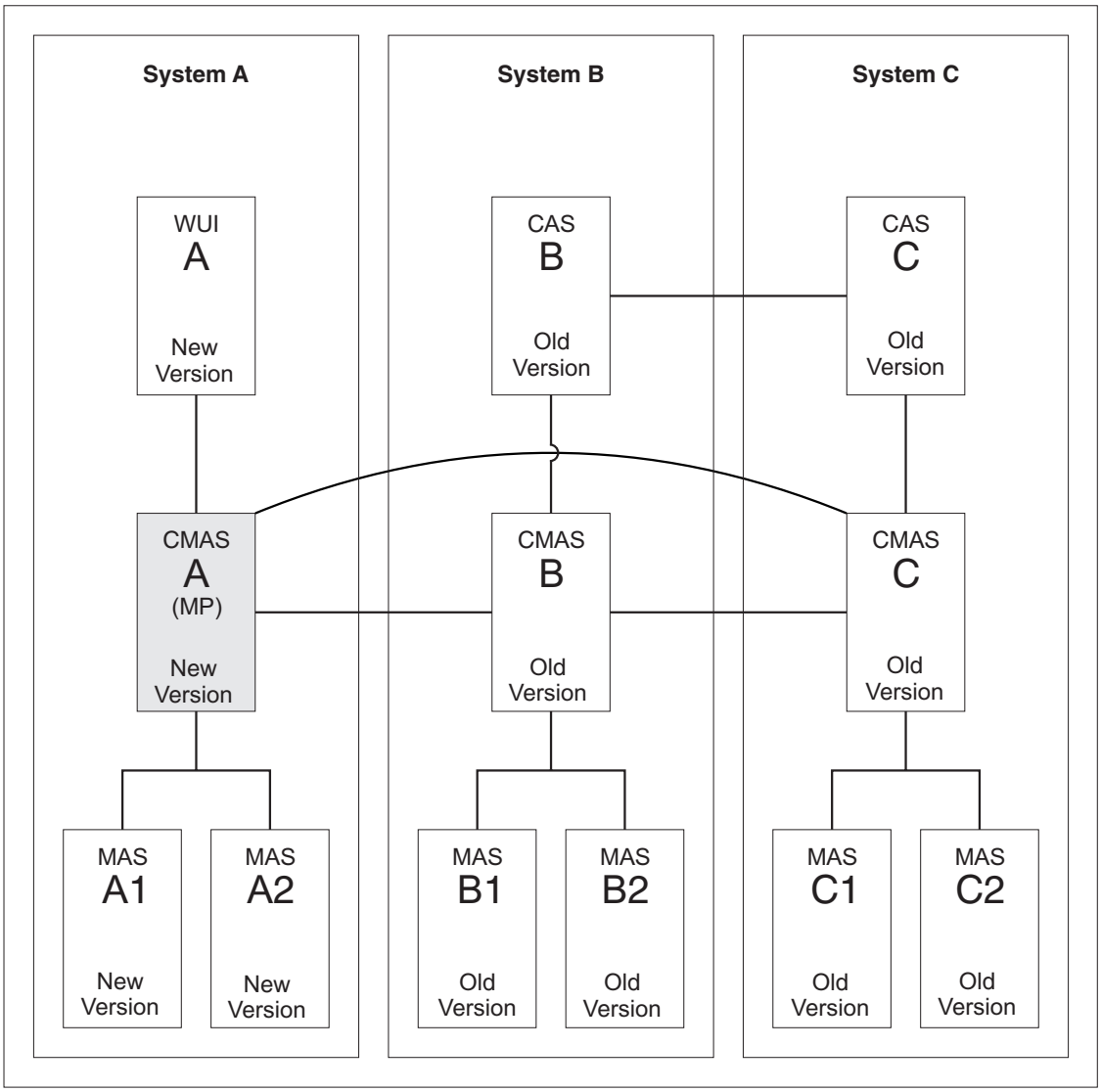

Figure 6. Upgrading the maintenance point CMAS to the new version

The conversion of the maintenance point CMAS A to the new version requires conversion of these components:

- CMAS A
- WUI A
- MAS A1
- MAS A2

Procedure

1. Stop any regions that are to be upgraded. If the following systems are running, stop them:
   - CMAS A
   - WUI A
   - MAS A1
   - MAS A2

2. Upgrade CMAS A to the new version. Follow the instructions in Chapter 44, “Upgrading a CMAS,” on page 303.
3. Upgrade WUI A to the new version. Follow the instructions in Chapter 45, “Upgrading a Web User Interface server,” on page 305.
4. Upgrade MAS A1 and MAS A2 to the new version. Follow the instructions in Chapter 46, “Upgrading a MAS,” on page 309.

Objective 3: Upgrade 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 their different release levels. CAS B and its connection to CAS C are removed.

About this task

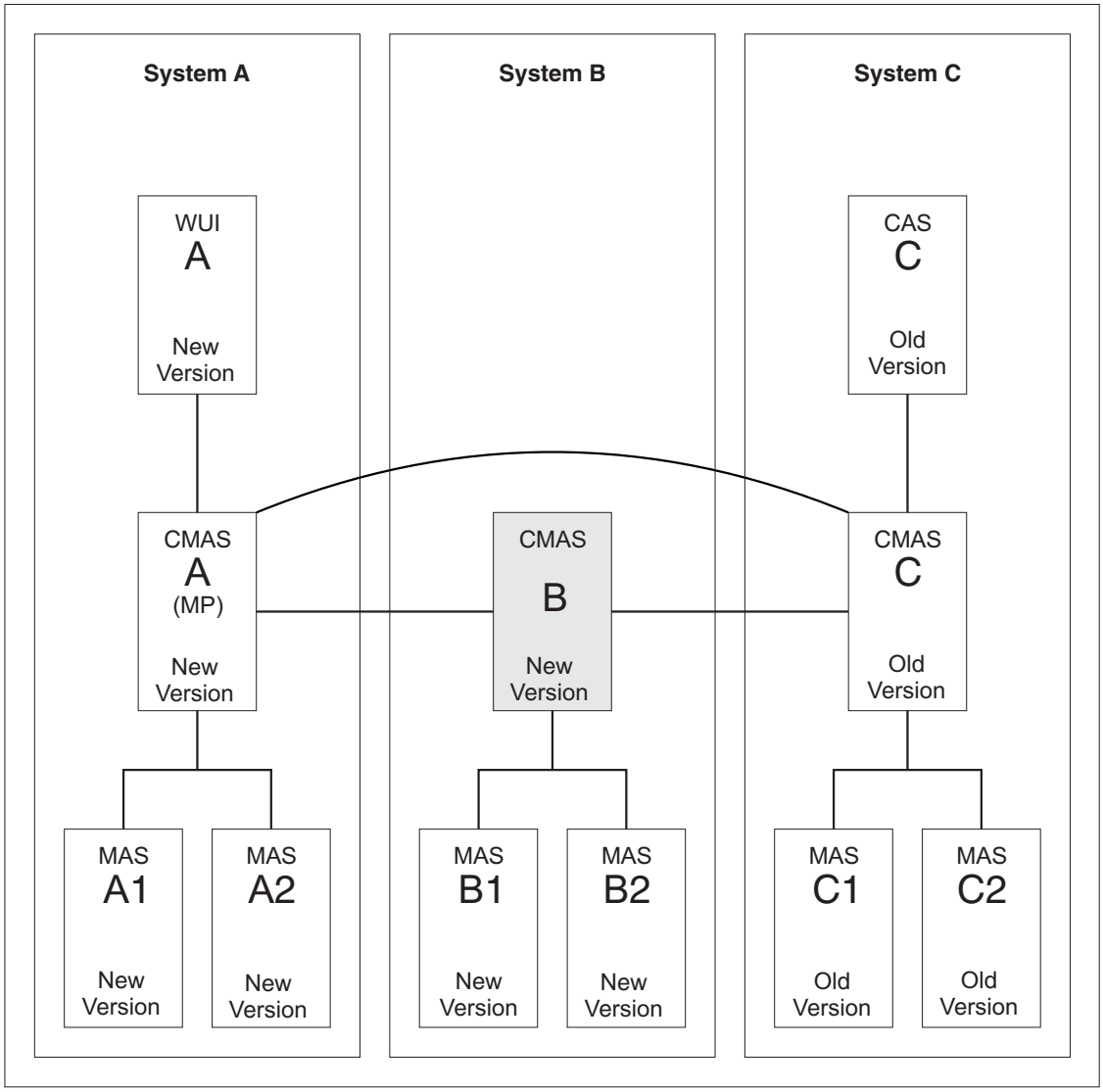

Figure 7. Upgrading CMAS B to the new version

The conversion of CMAS B to the new version requires conversion of these components:

- CMAS B
- MAS B1
- MAS B2

Procedure

1. Stop any regions that are to be upgraded. If the following systems are running, stop them:
   - CMAS B
   - MAS B1
   - MAS B2
2. Upgrade CMAS B to the new version. Follow the instructions in Chapter 44, “Upgrading a CMAS,” on page 303.
3. Upgrade MAS B1 and MAS B2 to the new version. Follow the instructions in Chapter 46, “Upgrading a MAS,” on page 309.

Objective 4: Upgrade CMAS C to the new version

When you complete Objective 4, all CICS systems are at the new version, and all CASs are removed.

About this task

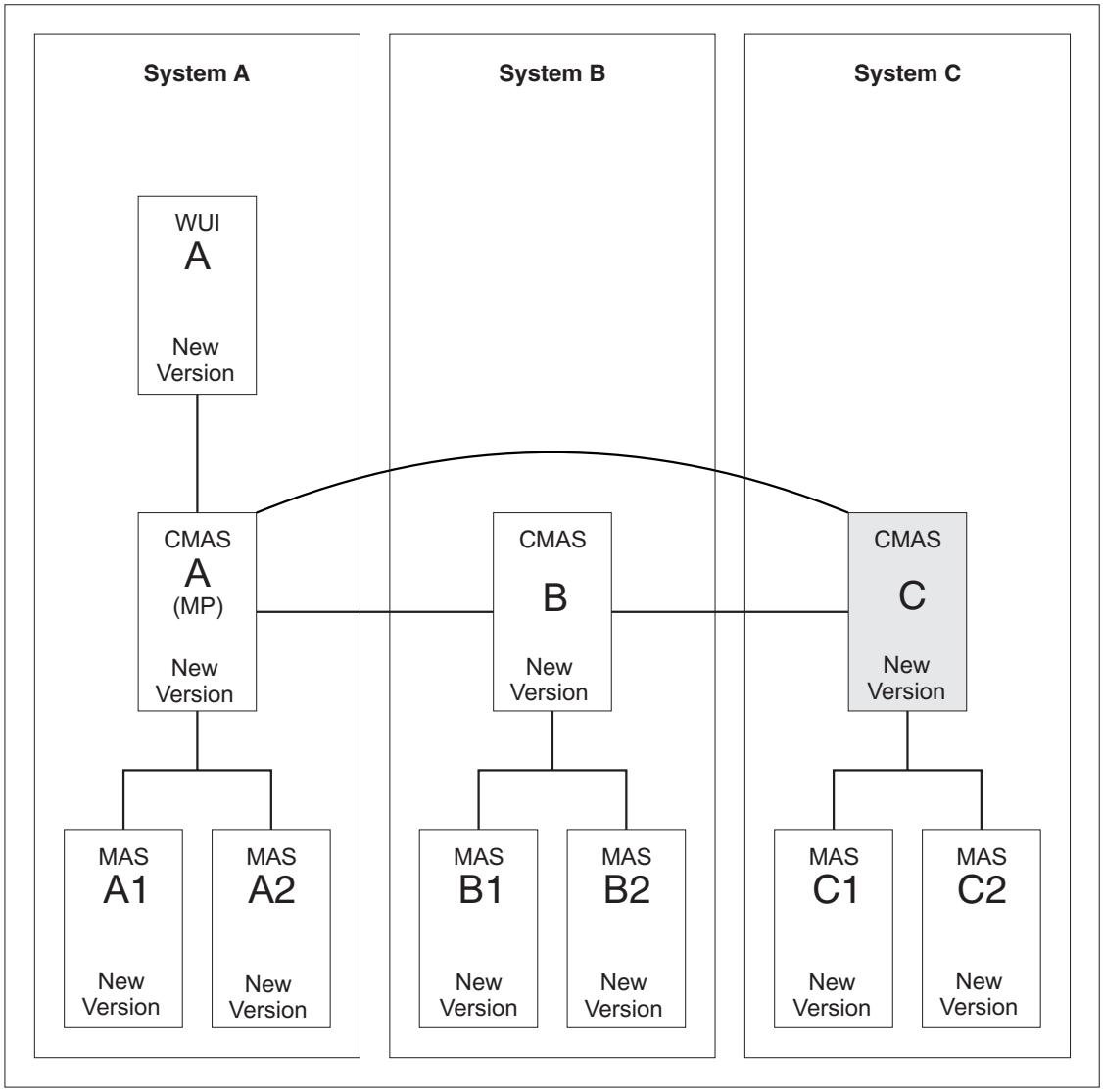

Figure 8. Upgrading CMAS C to the new version

The conversion of CMAS C to the new version requires conversion of these components:

- CMAS C
- MAS C1
- MAS C2

Procedure

1. Stop any regions that are to be upgraded. If the following systems are running, stop them:
   - CMAS C
   - MAS C1
   - MAS C2
2. Upgrade CMAS C to the new version. Follow the instructions in Chapter 44, "Upgrading a CMAS," on page 303.

3. Upgrade MAS C1 and MAS C2 to the new version. Follow the instructions in Chapter 46, “Upgrading a MAS,” on page 309.

Part 5. Changes to CICS messages and codes

This section lists messages and abend codes that have been removed, changed, and added for CICS Transaction Server for z/OS, Version 4 Release 1.

Chapter 51. Deleted messages

This section lists messages deleted for CICS Transaction Server for z/OS, Version 4 Release 1.

Messages deleted in CICS Transaction Server for z/OS, Version 4 Release 1

- DFHIS0003
- DFHIS0004
- DFHIS0006
- DFHIS1024
- DFHMQ0212 E
- DFHMQ0213 E
- DFHMQ0214 E
- DFHMQ0216 E
- DFHMQ0217 E
- DFHSJ0504
- DFHSJ0513
- DFHSJ0519
- DFHSJ0520
- DFHSJ0540
- DFHSJ0541
- DFHSJ0701
- DFHSJ0702
- DFHSJ0703
- DFHSJ0704
- DFHSJ0705
- DFHSJ0706
- DFHSJ0707
- DFHSJ0708
- DFHSJ0709
- DFHSJ0801
- DFHSJ0802
- DFHSJ0803
- EYUNL0125W
- EYUNX0042E
- EYUNX0043E

Message deleted in CICS Transaction Server for z/OS, Version 3 Release 2

- DFHPI0999

Messages deleted in CICS Transaction Server for z/OS, Version 3 Release 1

DFHAP1219
DFHAP1220
DFHAP1221
DFHAP1222
DFHAP1223
DFHAP1224
DFHAP1225
DFHAU2101
DFHAU2102
DFHAU2103
DFHAU2104
DFHAU2105
DFHAU2106
DFHAU2107
DFHAU2110
DFHAU2111
DFHAU2114
DFHAU2115
DFHAU2116
DFHAU2117
DFHAU2118
DFHAU2119
DFHAU2120
DFHAU2121
DFHAU2122
DFHAU2125
DFHAU2127
DFHAU2201
DFHAU2202
DFHAU2203
DFHAU2204
DFHAU2205
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DFHAU3314
DFHAU3315
DFHAU4100
DFHAU4200
DFHAU5000
DFHAU5001
DFHAU5002
DFHAU5004
DFHAU5005
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DFHCZ0156
DFHCZ0157
DFHCZ0158
DFHCZ0159
DFHSI1513
DFHSI1520
DFHZC6310
DFHZC6311

Chapter 52. Changed messages

This section lists messages changed for CICS Transaction Server for z/OS, Version 4 Release 1.

Messages changed in CICS Transaction Server for z/OS, Version 4 Release 1

Table 28. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 1

Message number	Message text
DFHAM4834E	*applid* Install of *{TDQUEUE | PROCESSTYPE | LIBRARY | URIMAP | ATOMSERVICE} resourcename* failed because the installed definition is not disabled.
DFHAM4851E	*applid* Install of*{ DB2ENTRY | DB2TRAN | DB2CONN | LIBRARY | ATOMSERVICE }name* failed because of a security error.
DFHAM4898E	*applid* Installation of *{TDQUEUE | PROCESSTYPE | LIBRARY | ATOMSERVICE} resourcename* failed because of insufficient storage.
DFHAM4921E	*applid* The installation of CORBASERVER *cname* has failed because the specified *{CORBASERVER | STATE | SESSBEANTIME | CERTIFICATE | HOST | SHELF | JNDIPREFIX}* is not valid.
DFHIS1011	*date time applid* Unable to acquire IPCONN *ipconn*. An *{EXCEPTION | DISASTER | INVALID | KERNERROR | PURGED}* response to the capability exchange was received, reason=*{AUTOINSTALL_FAILED | INVALID_IPCONN_STATE | INVALID_PARTNER_STATE | IPCONN_NOT_FOUND | ISCE_ERROR | ISCE_INVALID_APPLID | ISCE_TIMED_OUT | ISCE_BAD_RECOV | ISCER_BAD_RESPONSE | ISCER_ERROR | ISCER_HTTP_ERROR | ISCER_TIMED_OUT | SESSION_OPEN_FAILED | SHUTDOWN | TCPIP_CLOSED | TCPIPSERVICE_MISMATCH | TCPIPSERVICE_NOT_FOUND | TCPIPSERVICE_NOT_OPEN | NO_IPCONN | ONE_WAY_IPCONN | CAPEX_RACE | SECURITY_VIOLATION | SEC_SOCKET_ERROR | UNKNOWN}*.
DFHIS2001	*date time applid* Client web session *sessindex* from applid *applid* accepted for IPCONN *ipconn*.
DFHIS2009	*date time applid* Client web session *sessindex* in IPCONN *ipconn* from applid *applid* released.
DFHIS2010	*date time applid* Server web session *sessindex* in IPCONN *ipconn* with applid *applid* on host *hostname*, port *portnumber* released.
DFHMQ0453I	*date time applid* Status of connection to *qmgr-name* is *{Connecting | Pending | Connected | Quiescing | Stopping-Force | Disconnected | Inactive | Unknown}*. *number* tasks are in flight.
DFHPI0119	*date time applid* The XML Toolkit could not be loaded. Some configurations of the CICS Supplied WS-Security handler are not usable.
DFHPI0400	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to send a request because *{the request was using an invalid host codepage | there was a socket error | the URL was invalid | the connection was closed | a socket request timed out | a proxy error was detected | there was an HTTP error | an invalid media type was used | there was an authorization problem | there was a problem with the client certificate | there was a URIMAP problem | SSL is not supported in CICS}*.
DFHPI0515	*date time applid tranid* The CICS Pipeline Manager cannot run a CICS supplied WS-Security handler in pipeline: *pipeline*. The XML Toolkit was not available.

Table 28. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHPI0720E	*date time appliduserid* PIPELINE *pipeline* encountered an error in the configuration file *filename* at offset *X'offset'*. Found : *element_found* yet expected : *{<service> | <transport> or <service> | a transport handler list | <service_handler_list> or <terminal_handler> | <handler> | <program> | <handler_parameter_list> | <name> | <cics_soap_1.1_handler> | <cics_soap_1.2_handler> | <header_program> | <service_handler_list> | <default_target> or a default handler list | <program_name> | <namespace> | <localname> | <mandatory> | true, false, 1 or 0 | <terminal_handler> | <service_parameter_list> | <service>, <transport> or <service_parameter_list> | /}*.
DFHPI0911E	*date time applid userid* WEBSERVICE *WebService* within PIPELINE *Pipeline* was not created because: *{there is insufficient storage | there is a directory domain error | the specified PIPELINE is not installed | a lock cannot be obtained | there is a duplicate resource error}*.
DFHPI0914E	*date time applid userid* WEBSERVICE *WebService* is UNUSABLE because: *{the WSBind file was not found | CICS is not authorized to read the WSBind file | there is insufficient storage to load the WSBind file | the HFS read for the WSBind file failed | writing the WSBind file to the shelf failed | the PIPELINE is incompatible with this WEBSERVICE | the CPIR resolution transaction could not be attached | the direction of the PIPELINE can't be determined | the WSBind file is corrupt | the WSBind file has an invalid version number | the WSBind file has an out of date version number | the WSBind file product number was not recognized | the PIPELINE is not a SOAP PIPELINE | the PIPELINE does not support SOAP version 1.2 | the PIPELINE is not configured for SOAP version 1.1}*.
DFHPI0997	*date time applid tranid pipeline* The CICS pipeline manager has encountered an error: *{PIPELINE not found | PIPELINE not active | PIPELINE mode mismatch | unhandled node failure | context switch failed | request stream creation failure | request stream transport error | target program unavailable | channel error | channel not found | URI not found | invalid URI | authorization failure | program abend | unidentified problem | timeout occurred | no request message | there was a problem with file PIDIR | attempt to register a WS-AT context twice | empty DFHREQUEST container returned from a handler | req and resp containers both returned from a handler | empty DFHRESPONSE container returned from a handler}*.
DFHRL0119 E	*applid* The CICS resource life-cycle bundle class failed to re-create the BUNDLE resource *bundle_name* because of failed consistency checks with the manifest *manifest_file*
DFHSO0123	*date time applid* Return code *rc* received from function '*{unknown | gsk_environment_init | gsk_environment_open | gsk_environment_close | gsk_secure_socket_init | gsk_secure_socket_open | gsk_secure_socket_close | gsk_secure_socket_read | gsk_secure_socket_write | gsk_attribute_set_buffer | gsk_attribute_set_callback | gsk_attribute_set_enum | gsk_attribute_set_numeric_value}*' of System SSL. Reason: *{Unrecognized return code | Key database not found | Key database access not authorized | Invalid password for key database | Expired password for key database | Stashed password file not found | Session timeout value is invalid | An I/O error occurred | An unknown error occurred | Invalid distinguished name | No common ciphers negotiated | No certificate available | Certificate rejected by peer | Root certificate authority not supported | Unsupported operation | Invalid certificate signature | SSL protocol violation | Not authorized | Self-signed certificate | Invalid session state | Handle creation failed | No private key | Untrusted Certificate Authority | Certificate date invalid | Invalid cipher suite | Handshake abandoned by peer | Cannot open key database | Host certificate not yet valid | Certificate parsing error | Certificate is revoked | LDAP server is inactive | Unknown Certificate Authority | Internal error on partner | Unknown alert received | Client authentication alert | Incorrect key usage | Server name not recognized}*. Peer: *peeraddr*, TCPIPSERVICE: *tcpipservice*.
DFHZC2352	*date time applid sysid netname* Intersystem parallel connection still active after TC shutdown threshold expired. ((*instance*) Module DFHZSHU)
DFHZC2401E	*date time applid termid tranid* RPL Active. *sense* ((*instance*) Module name: {DFHZRVS | DFHZSDA | DFHZSDL | DFHZSDS | DFHZSES | DFHZSKR | DFHZRVL | DFHZSDR})
DFHZC2405E	*date time applid termid tranid* Node *netname* not activated. *sense* ((*instance*) Module name: {DFHZSIM | DFHZSYX | DFHZSIX})

Table 28. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHZC2411E	*date time applid termid tranid nodeid* attempted invalid logon. *sense* ((*instance*) Module name: {DFHZSCX | DFHZBLX | DFHZATA | DFHZLGX | RESERVE | DFHTFP})
DFHZC2417E	*date time applid termid tranid* VTAM Inactive to TCB. *sense* ((*instance*) Module name: {DFHZOPX | DFHZCLS | DFHZOPN | DFHZRLP | DFHZRST | DFHZRVS | DFHZRVX | DFHZSDA | DFHZSDL | DFHZSDS | DFHZSES | DFHZSIM | DFHZSKR | DFHZSLX | DFHZRAC | DFHZCLX | DFHZRVL | DFHZSDR | DFHZSIX | DFHZTAX | DFHZSYX})
DFHZC2419E	*date time applid termid tranid* Unknown command in RPL. *sense* ((*instance*) Module name: {DFHZSSX | DFHZSLX | DFHZRAC})
DFHZC2422E	*date time applid termid tranid* ZCP Logic Error. *sense* ((*instance*) Module name: {DFHZDET | DFHZSIM | DFHZERH | DFHZNAC | DFHZSDS | DFHZEV1 | DFHZOPN | DFHZRVS | DFHZSKR | DFHZSSX | DFHZSLX | DFHZRAC | DFHZARL | DFHZEV2})
DFHZC2432E	*date time applid termid tranid* Exception response received. *sense* ((*instance*) Module name: {DFHZRVX | DFHZSSX | DFHZRAC})
DFHZC2433E	*date time applid termid tranid nodeid* Logon has failed because autoinstall is disabled. *sense* ((*instance*) Module name: {DFHZLGX | DFHZBLX})
DFHZC2447E	*date time applid termid tranid* A severe error has occurred as a result of a previous failure. *sense* ((*instance*) Module name: {DFHZOPN | DFHZRVS | DFHZSDA | DFHZRAC | DFHZFRE | DFHZRLP | DFHZACT | DFHZGET})
DFHZC2449E	*date time applid termid tranid* Bracket Error. *sense* ((*instance*) Module name: {DFHZRVX | DFHZRAC})
DFHZC2450E	*date time applid termid tranid* Bid issued but ATI cancelled. *sense* ((*instance*) Module name: {DFHZRVX | DFHZSSX | DFHZRAC})
DFHZC2456E	*date time applid termid tranid* Exception response received to a command. *sense* ((*instance*) Module name {DFHZSYX | DFHZRAC})
DFHZC2458E	*date time applid termid tranid* Exception response received to an exception response send. *sense* ((*instance*) Module name: {DFHZRVX | DFHZRAC})
DFHZC2488 E	*date time applid termid tranid nodeid* logon request rejected as terminal recovery is in progress. *sense* ((*instance*) Module name: {DFHZLGX | DFHZSCX | DFHZBLX})
DFHZC3205 E	*date time applid* Transaction CTIN - virtual terminal *termid* VTAM netname *netname*. CICS cannot support the *{n.a. | combination of client and virtual terminal codepage. | client codepage. | virtual terminal codepage.}*
DFHZC3418 E	*date time applid termid tranid* System generation error. The *netname* logon request was rejected. *sense* ((*instance*) Module name: {DFHZSCX | DFHZBLX | DFHZLGX})
DFHZC3419 E	*date time applid termid tranid* Session failure. The bind parameter for node *netname* is unacceptable. *sense* ((*instance*) Module name: {RESERVE | DFHZBLX | DFHZSCX})
DFHZC3420 E	*date time applid termid tranid* Session connection error. Node *netname* is out of service. *sense* ((*instance*) Module name: {DFHZOPN | DFHZBLX})
DFHZC3433 E	*date time applid termid tranid* FMH7 was received on ISC session. Sense code is : *xxxxxxxx{Error log data is : | No error log data received. | No error log data available. }xxxxxxxx sense* ((*instance*) Module name: {DFHZRVX | DFHZRAC | DFHZERH})
DFHZC3442 I	*date time applid* Immediate termination of VTAM sessions requested. *sense* ((*instance*) Module name: {DFHZSHU | RESERVE | DFHZTPX})
DFHZC3444 E	*date time applid termid tranid* Unexpected condition detected during RECEIVE processing. *sense* ((*instance*) Module name: {DFHZRVS | DFHZRAC})
DFHZC3461 I	*date time applid termid tranid* Node *netname* session started. *sense* ((*instance*) Module name: {DFHZOPX | DFHZEV1 | DFHZEV2})

Table 28. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHZC3480E	*date time applid termid tranid* Session could not be started due to insufficient CICS nucleus function - ISC not loaded. *sense* ((*instance*) Module name: {DFHZSIM | DFHZBLX | DFHZLGX})
DFHZC3482E	*date time applid tranid* Logon from node *nodeid* rejected. Insufficient storage for autoinstall request. *sense* ((*instance*) Module name: {DFHZLGX | DFHZBLX | DFHZSCX})
DFHZC3499E	*date time applid* OS Getmain failure in module DFH*modname* with return code *X'return_code'* while attempting to process message DFHZC*message_number*. *sense* ((*instance*) Module name: {DFHZLEX | DFHZSHU | DFHZSCX | DFHZSYX | DFHZTPX | DFHZRAC | DFHZATA | DFHZLGX})
DFHZC4904E	*date time applid termid tranid* Bracket FSM error. *sense* ((*instance*) Module name: {DFHZRLP | DFHZSDL | DFHZSLX | DFHZRAC})
DFHZC4905E	*date time applid termid tranid* Chain FSM error. *sense* ((*instance*) Module name: {DFHZRLP | DFHZDET | DFHZERH | DFHZSDL | DFHZSLX | DFHZRAC})
DFHZC4906E	*date time applid termid tranid* Contention FSM error. *sense* ((*instance*) Module name: {DFHZDET | DFHZRAC | DFHZRLP | DFHZCLS})
DFHZC4919E	*date time applid termid tranid* Invalid indicators received. *sense* ((*instance*) Module name: {DFHZARL | DFHZARER})
DFHZC4920E	*date time applid termid tranid* Invalid data received. *sense* ((*instance*) Module name: {DFHZERH | DFHZARL | DFHZARER})
DFHZC4922E	*date time applid termid tranid* Single session shutdown with DRAIN=CLOSE. *sense* ((*instance*) Module name: {DFHZRAC | DFHZGDA | DFHZERH})
DFHZC4924E	*date time applid termid tranid* Bind security password missing or invalid. *sense* ((*instance*) Module name: {DFHZOPX | DFHZBLX | DFHZSCX})
DFHZC4925E	*date time applid termid tranid* Inconsistent attach security required. *sense* ((*instance*) Module name: {DFHZOPX | DFHZOPN})
DFHZC4926E	*date time applid termid tranid* Bind security encryption error. *sense* ((*instance*) Module name {DFHZEV1 | DFHZEV2})
DFHZC4937E	*date time applid* SAF request for LU6.2 bind has been rejected. Return Codes from the Security Manager are: RF= *X'rf'* and R0= *X'r0'* *sense* ((*instance*) Module name: {DFHZOPN | DFHZEV1 | DFHZEV2})
DFHZC4938E	*date time applid* SAF request for LU6.2 bind has failed with ESM return code RF= *X'rf'* and reason code R0= *X'r0'* *sense* ((*instance*) Module name: {DFHZOPN | DFHZEV1 | DFHZEV2})
DFHZC4941E	*date time applid* Bind time failure. LU6.2 profile locked. *sense* ((*instance*) Module name: {DFHZOPN | DFHZEV1 | DFHZEV2})
DFHZC4942E	*date time applid* Bind time failure. Expired LU6.2 profile found. *sense* ((*instance*) Module name: {DFHZOPN | DFHZEV1 | DFHZEV2})

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

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 2

Message number	Message text
DFHAC2216	*time applid* Transaction termination processing for transaction *tranid* has failed because a connected system has requested that the UOW be rolled back. *condmsg*
DFHAC2234	*date time applid* A commit failure has occurred during syncpoint processing for transaction *tranid*, terminal *termid*. The transaction will be allowed to complete normally *{. EXCI job = }exci_id. condmsg*

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHAC2235	*date time applid* A backout failure has occurred during syncpoint processing for transaction *tranid*, terminal *termid*. The transaction will be allowed to complete normally *{. EXCI job = }exci_id. condmsg*
DFHAC2246	*date time applid* Transaction termination processing for transaction *tranid* could not be completed normally because a connected system has requested that the unit of work be rolled back*{. EXCI job = }exci_id. condmsg*
DFHAC2247	*date time applid* Transaction *tranid* running program *program name* term *termid* has requested rollback, but was using a type of processing for which rollback is not supported. The transaction has been abnormally terminated with code ASP8 *{. EXCI job = }exci_id. condmsg*
DFHAM4834 E	*applid* Install of *{TDQUEUE | PROCESSTYPE | LIBRARY | URIMAP} resourcename* failed because the installed definition is not disabled.
DFHAM4851 E	*applid* Install of*{ DB2ENTRY | DB2TRAN | DB2CONN | LIBRARY }name* failed because of a security error.
DFHAM4889 E	*applid* Install of *{JOURNALMODEL | TSMODEL | TCPIPSERVICE | CORBASERVER | IPCONN | URIMAP} resourcename* failed because *attribute attname* is invalid.
DFHAM4898 E	*applid* Installation of *{TDQUEUE | PROCESSTYPE | LIBRARY} resourcename* failed because of insufficient storage.
DFHAM4920 E	*applid* The installation of*{ CORBASERVER | DJAR | PIPELINE | WEBSERVICE | LIBRARY }resourcename* has failed because it is a duplicate of one which already exists.
DFHAM4928 E	*applid* Install of *{TCPIPSERVICE | CORBASERVER | IPCONN | URIMAP} resourcename* failed because the specified certificate is *{expired | not yet current | not owned by this CICS | not trusted}*.
DFHAP1300	*date time applid* The JVM at address *X'jvm_anchor'* on thread *X'thread_anchor'* has encountered an error (reason code: *X'reason_code'*) and has requested further diagnostic data from CICS. More information may be found in the STDERR file: *stderr*.
DFHCA5147 E	*date time applid netname tranid* Command not executed. *lgname* already exists as a *group-or-list*
DFHCA5190 S	*date time applid netname tranid* Command is not executed. Unable to get storage for service module *progname*
DFHCA5272 I	*date time applid netname tranid resource object* deleted from group *grpname*
DFHCA5288 E	Get-command terminated at user's request. RC=*retcode*
DFHDB2063	*date time applid* Authorization failure starting the CICS-DB2 attachment with RESP=*xxxx* and RESP2=*yyyy*
DFHEJ0601 W	*date time applid JRAS_informational_message*
DFHFC0312	*applid* Message *msgno* data set *dsname*
DFHFC6018	*date time applid* Attempt by CICS to cancel a *{non-BWO | BWO}* backup of a data set failed because the SMSVSAM server is not available. Data set *dsname*
DFHFC6026	*date time applid* An error has occurred while notifying VSAM RLS of the completion of CICS processing for a data set quiesce or backup. The SMSVSAM server is not available. Data set *dsname*
DFHFC6031	*date time applid* Attempt by *{CICS | user}* to process data set operation request *{quiesce | unquiesce}* failed because the SMSVSAM server detected an internal error. Data set *dsname*
DFHFC6034	*date time applid* Attempt by *{CICS | user}* to process data set operation request *{quiesce | unquiesce}* failed because the user is not authorized to access the sphere. Data set *dsname*
DFHII1013 E	*date time applid* Failure establishing connection to host *host* port *port*. Reason is: *exception*.
DFHNC0944 I	R12=*prv* CF Exit *response* Name=*counter*

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI0301	*date time applid* CICS was unable to link to PROGRAM *program_name* while attempting to invoke WEBSERVICE *WebService*. *{The program abended. | The program was not defined. | The program was not enabled. | The program was not loadable. | No further details are available.}*
DFHPI0400	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to send a request because *{the request was using an invalid host codepage | there was a socket error | the URL was invalid | the connection was closed}*.
DFHPI0401	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to send a response or receive a request because *{the codepage was not found | there was a socket error | the connection was closed | the client codepage was invalid}*.
DFHPI0700 S	*date time applid userid* PIPELINE *pipeline* failed to install completely because PL/I support is not available and is required for pipeline usage.
DFHPI0704 I	*date time applid userid* PIPELINE *pipeline* Implicit scan has completed. Number of wsbind files found in the WSDIR directory: *num_files*. Number of successful WEBSERVICE creates: *num_ok*. Number of failed WEBSERVICE creates: *num_failed*.
DFHPI0715 I	*date time applid userid* PIPELINE *pipeline* explicit scan has completed. Number of wsbind files found in the WSDIR directory: *num_files*. Number of WEBSERVICEs created or updated: *num_ok*. Number of WEBSERVICEs not requiring an update: *num_nun*. Number of failed WEBSERVICE creates or updates: *num_failed*.
DFHPI0716 E	*date time applid userid* Unable to dynamically create a WEBSERVICE for PIPELINE *pipeline*. The complete WSBIND file name is too long.
DFHPI0720 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* at offset *X'offset'*. Found : *element_found* yet expected : *{<service> | <transport> or <service> | a transport handler list | <service_handler_list> or <terminal_handler> | <handler> | <program> | <handler_parameter_list> | <name> | <cics_soap_1.1_handler> | <cics_soap_1.2_handler> | <header_program> | <service> | <service_handler_list> | <default_target> or a default handler list | <program_name> | <namespace> | <localname> | <mandatory> | true, false, 1 or 0 | <terminal_handler> | <service_parameter_list> | <service>, <transport> or <service_parameter_list> | /}*.
DFHPI0730	*date time applid* An attempt to register a remote Web service as a participant in unit of work - *X'uowid'* has failed.
DFHPI0914 E	*date time applid userid* WEBSERVICE *WebService* is UNUSABLE because: *{the WSBind file was not found | CICS is not authorized to read the WSBind file | there is insufficient storage to load the WSBind file | the HFS read for the WSBind file failed | writing the WSBind file to the shelf failed | the PIPELINE is incompatible with this WEBSERVICE | the CPIR resolution transaction could not be attached | the direction of the PIPELINE can't be determined | the WSBind file is corrupt | the WSBind file has an invalid version number | the WSBind file has an out of date version number | the WSBind file product number was not recognised | the PIPELINE is not a SOAP PIPELINE | the PIPELINE does not support SOAP version 1.2 | the PIPELINE is not configured for SOAP version 1.1}*.
DFHPI1001	*date time applid* Validation of a *{request | response}* message for WEBSERVICE *webservicename* and operation *operationname* failed. The failure response contains the following message: '*message*'.
DFHPI1002	*date time applid* Validation of a *{request | response}* message for WEBSERVICE *webservicename* and operation *operationname* was successful.
DFHPI1007	*date time applid trannum* XML to data transformation failed because of incorrect input (*{XML_FORMAT_ERROR | UNEXPECTED_CONTENT | HEADER_FORMAT_ERROR | UNDEFINED_ELEMENT | UNDEFINED_NAME_SPACE | ARRAY_OVERFLOW | NAME_TOO_LONG | PREFIX_TOO_LONG | NAME_SPACE_TOO_LONG | UNEXPECTED_XOP_INCLUDE | XOP_INCLUDE_ERROR | DUPLICATE_CHOICE | MISSING_XSI_TYPE | UNKNOWN_XSI_TYPE} error_qualifier*).

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI1008	*date time applid trannum* XML generation failed because of incorrect input (*{ARRAY_CONTAINER_TOO_SMALL | INPUT_STRUCTURE_TOO_SMALL | INPUT_ARRAY_TOO_LARGE | INPUT_ARRAY_TOO_SMALL | CONTAINER_NOT_FOUND | CONTAINER_NOT_BIT | CONTAINER_NOT_CHAR | BAD_CHOICE_ENUM} error_qualifier*).
DFHSI1519 I	*applid* The interregion communication session was successfully started in XCF group *xcfgroup*
DFHSJ0201	*date time applid JVMProfile* A call to CEEPIPI with function code INIT_SUB_DP has failed. (Return code - *X'rc'*).
DFHSJ0202	*date time applid JVMProfile* A call to CEEPIPI with function code TERM has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.
DFHSJ0203	*date time applid JVMProfile* A call to CEEPIPI with function code CALL_SUB has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.
DFHSJ0204	*date time applid JVMProfile* A call to CEEPIPI with function code CALL_SUB has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.
DFHSJ0205	*date time applid JVMProfile* A call to CEEPIPI with function code CALL_SUB has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.
DFHSJ0501	*date time applid JVMProfile* An attempt to obtain the CICS Wrapper class *wrapper_name* using the JNI function 'FindClass' has failed.
DFHSJ0502	*date time applid JVMProfile* Attempt to change the HFS working directory to *pathname* has failed. Runtime error message is *errmsg*
DFHSJ0503	*date time applid JVMProfile* Attempt to load DLL *dllname* has failed. Runtime error message is *errmsg*
DFHSJ0505	*date time applid* Attempt to open jvmprofile *filename* has failed. Runtime error message is *errmsg*
DFHSJ0507	*date time applid JVMProfile* The option *option* is not recognized, and has been ignored.
DFHSJ0508	*date time applid JVMProfile* The maximum number of JVM options has been exceeded. Option *option* has been ignored.
DFHSJ0509	*date time applid JVMProfile* Attempt to open JVM system properties file *filename* has failed. Runtime error message is *errmsg*
DFHSJ0511	*date time applid JVMProfile* Attempt to open *filename* in work directory *dirname* for output has failed. Runtime error message is *errmsg*
DFHSJ0512	*date time applid JVMProfile* Unexpected end of file while concatenating lines in system properties file.
DFHSJ0513	*date time applid JVMProfile* Unable to build shareable application class path: *{Either CICS_HOME or JAVA_HOME too long | CICS_HOME or JAVA_HOME or TMPREFIX too long | CICS_HOME not specified in JVM profile | JAVA_HOME not specified in JVM profile | Cannot add TMSUFFIX as class path would be too long | Cannot add ibm.jvm.shareable.application.class.path}*.
DFHSJ0514	*date time applid JVMProfile* Problem encountered on line *line_number* of the JVM profile: *{Unexpected EOF while concatenating lines | Concatenation too long}*.
DFHSJ0515	*date time applid JVMProfile* Problem encountered on line *line_number* of the JVM system properties file *{Unexpected EOF while concatenating lines | Concatenation too long | CICS ignoring this tm classpath setting | CICS ignoring this java.class.path setting}*.
DFHSJ0516	*date time applid JVMProfile* An attempt to create a Java Virtual Machine using the JNI has failed. See the JVM's STDERR log for further details.
DFHSJ0520	*date time applid* The setting for environment variable *env_var1* in JVM Profile *JVMprof* is not valid for a master JVM.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHSJ0706	*date time applid* During processing of transaction *tranid*, a call to CEEPIPI with function code INIT_SUB_DP has failed. (Return code - *X'rc'*).
DFHSJ0707	*date time applid* During processing of transaction *tranid*, a call to CEEPIPI with function code CALL_SUB has failed. (Return code - *X'rc'* , sub-routine return code - *X'subrc'*). See the JVM's STDERR log for further details.
DFHSJ0708	*date time applid* During processing of transaction *tranid*, a call to CEEPIPI with function code TERM has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.
DFHSJ0801	*date time applid* An attempt to create a master Java Virtual Machine using the JNI has failed. See the JVM's STDERR log for further details.
DFHSJ0802	*date time applid* Attempt to load DLL *dllname* has failed for the master JVM. Runtime error message is *errmsg*
DFHSJ0803	*date time applid* Attempt to change the HFS working directory to *pathname* has failed for the master JVM. Runtime error message is *errmsg*
DFHSO0123	*date time applid* Return code *rc* received from function '*{unknown* | *gsk_environment_init* | *gsk_environment_open* | *gsk_environment_close* | *gsk_secure_socket_init* | *gsk_secure_socket_open* | *gsk_secure_socket_close* | *gsk_secure_socket_read* | *gsk_secure_socket_write* | *gsk_attribute_set_buffer* | *gsk_attribute_set_callback* | *gsk_attribute_set_enum* | *gsk_attribute_set_numeric_value}*' of System SSL. Reason: *{Unrecognized return code* | *Key database not found* | *Key database access not authorized* | *Invalid password for key database* | *Expired password for key database* | *Stashed password file not found* | *Session timeout value is invalid* | *An I/O error occurred* | *An unknown error occurred* | *Invalid distinguished name* | *No common ciphers negotiated* | *No certificate available* | *Certificate rejected by peer* | *Root certificate authority not supported* | *Unsupported operation* | *Invalid certificate signature* | *SSL protocol violation* | *Not authorized* | *Self-signed certificate* | *Invalid session state* | *Handle creation failed* | *No private key* | *Untrusted Certificate Authority* | *Certificate date invalid* | *Invalid cipher suite* | *Handshake abandoned by peer* | *Cannot open key database* | *Host certificate not yet valid* | *Certificate parsing error* | *Certificate is revoked* | *LDAP server is inactive* | *Unknown Certificate Authority }*. Peer: *peeraddr*, TCPIPSERVICE: *tcpipservice*.
DFHTC2534	*date time applid* Invalid destination at term *termid{, trans }tranid,time*
DFHUP0203	*applid* USAGE DATA COLLECTION FUNCTION IS NOT AVAILABLE ON THIS SYSTEM. IFAUSAGE RC 16 HAS BEEN ISSUED. MODULE *module*
DFHWB0101	*date time applid tranid* The CICS Web Interface alias program DFHWBA detected a failure in program DFHWBBLI. Host IP address *hostaddr*. Client IP address: *clientaddr.{* | *TCPIPSERVICE: }tcpipservice*
DFHWB0151	*date time applid tranid* The CICS Web Interface 3270 emulation code was unable to process the data it was passed.*{* | *TCPIPSERVICE: }tcpipservice*
DFHWB0731	*date time applid tranid* CICS Web attach processing detected an HTTP header longer than 32767 bytes. Host IP address *hostaddr*. Client IP address: *clientaddr.{* | *TCPIPSERVICE: }tcpipservice*
DFHWB0734	*date time applid tranid* CICS Web attach processing failed because the SSL handshake with the client has failed. Host IP address *hostaddr*. Client IP address: *clientaddr.{* | *TCPIPSERVICE: }tcpipservice*
DFHXC6646 I	*applid* ERROR CALLING CICS SVC - *xxxxxxxxxxxx*
DFHXS1115	*applid* USER *userid* IS NOT AUTHORIZED TO INVOKE *{HOME* | *REMOTE}* METHOD *method-name* FROM BEAN *bean-name* {FOR APPLICATION *application-name*} IN CORBASERVER *cs-name*. USER HAS NO ACCESS TO ANY OF THESE ROLES {FOR METHOD(*)}: *role-name-list*

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHZC3205 E	*date time applid* Transaction CTIN - virtual terminal *termid* VTAM netname *netname*. CICS cannot support the *{n.a. | n.a. | n.a. | combination of client and virtual terminal codepage. | client codepage. | virtual terminal codepage.}*
DFHZC5908 E	*date time applid* Install for terminal *termid* failed. The security manager gave return code *retcode*
DFHZC5939 E	*date time applid* Install for *name* failed. Duplicate session- or modegroup-name for connection *sysid*
DFHZC5978 E	*date time applid* Unable to replace pool *pppp*
DFHZC5983 E	*date time applid* Unable to replace *resource*

Messages changed in CICS Transaction Server for z/OS, Version 3 Release 1

Table 30. Messages changed in CICS Transaction Server for z/OS, Version 3 Release 1

Message number	Message text
DFHAM4834 E	*applid* Install of *{TDQUEUE | PROCESSTYPE | URIMAP} resourcename* failed because the installed definition is not disabled.
DFHAM4889 E	*applid* Install of *{JOURNALMODEL |TSMODEL | TCPIPSERVICE | CORBASERVER |URIMAP} resourcename* failed because *attribute attname* is invalid.
DFHAM4920 E	*applid* The installation of *{ CORBASERVER | DJAR | PIPELINE | WEBSERVICE } resourcename* has failed because it is a duplicate of one which already exists.
DFHDH0105	*date time applid* Document template definition *doctemplate* has been added as *{PDS-MEMBER |FILE | PROGRAM | TSQUEUE | TDQUEUE | EXITPGM | HFSFILE}(resourcename)* with template name *templatename*.
DFHTO6003 E	*date time applid* TERMINAL *termdef* specifies CONSNAME but refers to TYPETERM *termtype* which does not specify DEVICE=CONSOLE.
DFHTO6004 E	*date time applid* TERMINAL *termdef* does not specify a CONSNAME but refers to TYPETERM *termtype* which specifies DEVICE=CONSOLE.

Chapter 53. New messages

This section lists new messages for CICS Transaction Server for z/OS, Version 4 Release 1.

New messages in CICS Transaction Server for z/OS, Version 4 Release 1

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1

Message number	Message text
DFHAM4936 E	*Applid* The installation of BUNDLE *Resourcename* failed because the manifest found in the bundle root directory was not valid.
DFHAM4937 E	*Applid* The installation of BUNDLE *Resourcename* failed because a manifest was not found in the bundle root directory.
DFHAM4938 W	*Applid* BUNDLE *Resourcename* has been installed as disabled because one or more of its associated resources failed to install.
DFHAM4939 E	*Applid* The installation of ATOMSERVICE *Resourcename* failed due to a configuration error.
DFHAM4940 E	*Applid* Install of MQCONN *Mqconn-name* failed because an MQCONN is already installed and is in use.
DFHAM4941 E	*Applid* The installation of *{ATOMSERVICE} Resourcename* failed because the *{configfile | Bindfile}* does not exist.
DFHAM4942 E	*Applid* The installation of *{ATOMSERVICE} Resourcename* failed because CICS does not have authority to access the *{configfile | Bindfile}*.
DFHAM4943 E	*Applid* The installation of *{ATOMSERVICE} Resourcename* failed because the associated *{configfile | Bindfile}* is invalid.
DFHAM4944 E	*Applid* JVMSERVER *Resourcename* has been installed with less threads than requested on its definition.
DFHAM4945 E	*Applid* JVMSERVER *Resourcename* has been installed as disabled with a threadlimit of 0.
DFHAM4946 E	*Applid* The installation of *{bundle} Resourcename* failed because CICS does not have authority to access the manifest found in the bundle root directory.
DFHAP0702	*Applid* An abend (code *Abcode*) has occurred in exit program *Progname* at exit point *Xxxxxxxx* because a backlevel XPI call has been made.
DFHAP0703	*Applid* An abend (code *Abcode*) has occurred in exit program *Progname* at exit point *Xxxxxxxx* because a backlevel XPI call has been made.
DFHAP0708	*Applid* An abend (code *Abcode*) has occurred in task related user exit program *Progname* because a backlevel XPI call has been made.
DFHAP1301	*Date time applid* Language Environment has detected a corruption of its control blocks. Transaction *Transaction* currently executing.
DFHAP1600	*Date time applid* An attempt to start a JVM for the JVMSERVER resource *Jvmserver* has failed. Reason code {*{JVMPROFILE_ERROR | OPEN_JVM_ERROR | JNI_CREATE_NOT_FOUND | SETUP_CLASS_NOT_FOUND | TERMINATION_CLASS_NOT_FOUND | CREATE_JVM_FAILED | CHANGE_DIRECTORY_CALL_FAILED | STDOUT/STDERR_ACCESS_FAILED | ERROR_LOCATING_MAIN_METHOD | ATTACH_JNI_THREAD_FAILED | SETUP_CLASS_TIMEDOUT | ENCLAVE_INIT_FAILED | ERROR_CODE_UNRECOGNIZED}*. }.
DFHAP1601	*Date time applid* An exception has been thrown by the main method of the JVM belonging to the JVMSERVER resource *Jvmserver*.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHAP1602	*Date time applid* An error occurred while terminating the JVM belonging to the JVMSERVER resource *Jvmserver*. Reason code *{termination_class_not_found | Error_locating_main_method | Error_code_unrecognized | Termination_class_timed_out}*.
DFHAP1603	*Date time applid* An exception has been thrown by the main method of a termination class, which was running in the JVM belonging to the JVMSERVER resource *Jvmserver*.
DFHBR0509	*Date time applid* You are approaching or have reached the maximum number of times a Link3270 bridge routing region can be started.
DFHCA4800 I	*Date time applid* New group *Grpname* created.
DFHCA4801 I	*Date time applid* New list *Lstname* created.
DFHCA4802 E	*Date time applid Name* is an invalid name.
DFHCA4803 E	*Date time applid* Install failed because an existing definition for file *Filename* could not be deleted.
DFHCA4805 E	*Date time applid* Unable to perform operation: *Name* is locked to applid *Applid*, opid *Opid* to prevent updating.
DFHCA4806 E	*Date time applid* Group name *Grpname* exists as a list name.
DFHCA4808 E	*Date time applid* Object already exists in this group.
DFHCA4809 E	*Date time applid* Date/time fields do not match (object updated by another user).
DFHCA4810 E	*Date time applid* Object not found (deleted by another user).
DFHCA4811 E	*Date time applid Name1* does not contain *Name2*.
DFHCA4812 W	*Date time applid* Install of library *Libname* encountered a data set *{allocation | Concatenation | Open}* failure. The library is installed but disabled.
DFHCA4813 W	*Date time applid* Install of library *Libname* encountered an MVS abend. The library is installed but disabled.
DFHCA4814 E	*Date time applid* List name *Listname* exists as a group name.
DFHCA4815 E	*Date time applid* group *Grpname* not found in this list.
DFHCA4816 E	*Date time applid* unable to install group *Grpname* - group not found.
DFHCA4817 E	*Date time applid* install of library *Libname* failed with an MVS abend. The library is not installed.
DFHCA4819 E	*Date time applid* group already exists in this list.
DFHCA4820 S	*Date time applid* unable to perform request - CSD full.
DFHCA4823 S	*Date time applid* unable to perform request - DFHCSD not open.
DFHCA4824 S	*Date time applid* unable to perform request - insufficient function in file definition for DFHCSD.
DFHCA4825 S	*Date time applid* unable to perform request - file control has returned an INVREQ response.
DFHCA4828 E	*Date time applid* group *Grpname* not found.
DFHCA4829 S	*Date time applid* storage violation. CSD primary control record not updated.
DFHCA4830 E	*Date time applid Restype Resname* already exists in the target group.
DFHCA4831 E	*Date time applid* the new name *Name* is longer than the four characters allowed for *Restype* names.
DFHCA4832 E	*Date time applid* unable to open TDQUEUE *Tdqname* because the dfhintra data set is not open.
DFHCA4833 E	*Date time applid* a security error has occurred while attempting to install TDQUEUE *Tdqname*. The definition has not been installed.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHCA4834 E	*Date time applid* install of *{TDQUEUE | PROCESSTYPE| LIBRARY | URIMAP | ATOMSERVICE |JVMSERVER} Resourcename* failed because the installed definition is not disabled.
DFHCA4836 E	*Date time applid* install of db2conn *Db2conn-name* failed because a db2conn is already installed and is in use.
DFHCA4837 E	*Date time applid* install of*{ DB2ENTRY | Db2tran }Name* failed because a db2conn is not installed.
DFHCA4838 E	*Date time applid* install of DB2ENTRY *Db2entry-name* failed because an existing definition could not be deleted. The existing definition is not disabled.
DFHCA4839 E	*Date time applid* list *Listname* not found.
DFHCA4840 W	*Date time applid* group *Grpname* not appended - group already exists in target list.
DFHCA4841 E	*Date time applid* install failed because definition of *Restype Resname* is in use by task no. *Taskno* (transaction id. *Tranid*).
DFHCA4842 E	*Date time applid* install failed because *Restype Resname* is currently in use.
DFHCA4843 W	*Date time applid Ttttttt Nnnnnnnn* is internally locked to opid *Opid* applid *Applid*.
DFHCA4850 E	*Date time applid* install of DB2TRAN *Db2tran-name* failed because DB2ENTRY *Db2entry-name* to which it refers has not been installed.
DFHCA4851 E	*Date time applid* install of*{ DB2ENTRY | Db2tran | Db2conn | Library | Atomservice }Name* failed because of a security error.
DFHCA4852 W	*Date time applid Restype* name *Resname* begins with 'dfh'. Such names are reserved and may be redefined by CICS.
DFHCA4853 E	*Date time applid* install of DB2TRAN *Db2tran-name* failed because another DB2TRAN is installed with the same transid.
DFHCA4854 W	*Date time applid* the specified *{group | List}* contains *Objtype* objects but no *Restype* found.
DFHCA4857 W	*Date time applid* the specified *{group | List}* contains more than one *Objtype*.
DFHCA4858 S	*Date time applid* unable to perform request - DFHCSD not enabled.
DFHCA4859 S	*Date time applid* unable to perform request - the csdstrno operand in the system initialization table (sit) is too small.
DFHCA4860 W	*Date time applid* the specified list contains DB2ENTRY or DB2TRAN definitions before a DB2CONN definition.
DFHCA4863 I	*Date time applid Name* is now locked. No group or list of that name exists.
DFHCA4866 E	*Date time applid* unable to perform operation: *Name* is IBM protected.
DFHCA4867 E	*Date time applid* file name DFHCSD is reserved and must not be modified.
DFHCA4869 E	*Date time applid* single resource install of *Restype Resname* in group *Grpname* is not allowed.
DFHCA4871 W	*Date time applid* file *Filename* has been installed but set *Filename* failed.
DFHCA4872 S	*Date time applid* unable to connect to CICS catalog.
DFHCA4873 S	*Date time applid* unable to disconnect the CICS catalog.
DFHCA4874 E	*Date time applid* install of *{TSMODEL | Enqmodel} Rsrce-name1* failed because *{prefix | Enqname} Attribute-name* already exists in *{TSMODEL | Enqmodel} Rsrce-name2*.
DFHCA4875 E	*Date time applid* unable to perform operation: *Name* is currently being updated by applid *Applid* opid *Opid* - please retry later.
DFHCA4876 W	*Date time applid* partner *Partnername* specifies netname *Netname* which is not found in any connection definition that specifies access method = z/OS Communications Server.
DFHCA4877 W	*Date time applid* partner *Partnername* specifies a netname and profile for which there is no common implied sessions definition.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHCA4878 E	*Date time applid* install of *{IPCONN} Resourcename* failed because one with this name is already installed and is in use.
DFHCA4879 W	*Date time applid {group | List} Name* has been partially installed.
DFHCA4880 S	*Date time applid* unable to perform operation - not allowed by file attributes for DFHCSD.
DFHCA4881 I	*Date time applid* group *Name* deleted.
DFHCA4883 I	*Date time applid* list *Listname* deleted.
DFHCA4884 S	*Date time applid Restype* name *Resname* is reserved by CICS.
DFHCA4885 E	*Date time applid* install of IPCONN *Resourcename* failed. Duplicate applid *Applid* found.
DFHCA4887 I	*Date time applid* unrecognized resource type found in the CSD file and has been ignored.
DFHCA4888 I	*Date time applid* group *Groupname* removed from list *Listname*.
DFHCA4889 E	*Date time applid* install of *{journalmodel | Tsmodel | Tcpipservice | Corbaserver | IPCONN | Urimap} Resourcename* failed because *Attribute Attname* is invalid.
DFHCA4890 E	*Date time applid* install of TDQUEUE *Tdqname* failed because the type has not been specified.
DFHCA4891 W	*Date time applid Restype* name *Resname* begins with 'c'. Such names are reserved and may be redefined by CICS.
DFHCA4892 W	*Date time applid* install for group *Grpname* has completed with errors.
DFHCA4893 I	*Date time applid* install for group *Grpname* has completed successfully.
DFHCA4894 E	*Date time applid* install of *{enqmodel} Rsrcename1* failed because installed *{enqmodel} Rsrcename2* is not disabled.
DFHCA4895 E	*Date time applid* install of TSMODEL *Resourcename* in group *Groupname* failed because ts was started using an assembled tst without the migrate option.
DFHCA4896 E	*Date time applid* install of TDQUEUE *Tdqname* failed because the queue is not closed.
DFHCA4897 W	*Date time applid* The definition of *{TDQUEUE | Tcpipservice} Resourcename* specified *{opentime=initial | Status=open}* but the open failed.
DFHCA4898 E	*Date time applid* Installation of *{TDQUEUE | Processtype | Library | Atomservice} Resourcename* failed because of insufficient storage.
DFHCA4899 E	*Date time applid* TDQUEUE *Tdqname* cannot be replaced because the existing definition is for a different queue type.
DFHCA4901 E	*Date time applid* Install of REQUESTMODEL *Resourcename1* failed because a duplicate pattern already exists in *Resourcename2*.
DFHCA4902 E	*Date time applid* Install of*{ corbaserver | Requestmodel }Resourcename* failed because it is not a valid*{ corbaserver | Requestmodel }*for this level of CICS.
DFHCA4903 E	*Date time applid* Install for TCPIPSERVICE *Tcpipservice* has failed because the service is open.
DFHCA4904 W	*Date time applid* Opening TCPIPSERVICE *Tcpipservice* has failed because port *Portno* is already in use.
DFHCA4905 E	*Date time applid* Install failed for *Resource*. Option *Opt* is not available on this system.
DFHCA4906 W	*Date time applid* Opening TCPIPSERVICE *Tcpipservice* has failed because port *Portno* is not authorized.
DFHCA4907 W	*Date time applid* Opening TCPIPSERVICE *Tcpipservice* has failed because the *{IP address | Host}* is not known.
DFHCA4908 E	*Date time applid* Install of DOCTEMPLATE *Doctemplate1* failed because templatename(*Template*) already exists in DOCTEMPLATE *Doctemplate2*.
DFHCA4909 E	*Date time applid* Install of DOCTEMPLATE *Doctemplate* failed. Ddname(*Ddname*) not found.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHCA4910 E	*Date time applid* Install of DOCTEMPLATE *Doctemplate* failed. Member(*Membername*) not found in *Ddname*.
DFHCA4911 W	*Date time applid* Transaction *Tranid* installed but at least one of alias, taskreq or xtranid failed to be replaced because it exists as a primary transaction.
DFHCA4912 E	*Date time applid* Install of *Resource Resourcename* failed because *Attribute* is invalid for this release.
DFHCA4913 E	*date time applid* Install of *{IPCONN} resourcename* failed because a CONNECTION resource with this name and a different APPLID is already installed.
DFHCA4914 E	*date time applid* Install of *resourcetype resourcename* failed. The specified *targetresource* is unusable.
DFHCA4915 E	*date time applid* Install of *resourcetype resourcename* failed. Open for data set *dsname* has abended.
DFHCA4916 E	*date time applid* TCPIPSERVICE *tcpipservice* has not been opened because the MAXSOCKETS limit has been reached.
DFHCA4917 W	*Date time applid{ corbaserver | Tcpipservice | IPCONN | Urimap }Resourcename* was installed with a reduced set of cipher codes.
DFHCA4918 E	*Date time applid* The installation of*{corbaserver | Tcpipservice | IPCONN | Urimap }Resourcename* has failed because its requested cipher list was rejected.
DFHCA4920 E	*Date time applid* The installation of*{corbaserver | Djar | Pipeline | Webservice | Library | Bundle }Resourcename* has failed because it is a duplicate of one which already exists.
DFHCA4921 E	*Date time applid* The installation of corbaserver *Cname* has failed because the specified *{corbaserver | State | Sessbeantime | Certificate | Host | Shelf | Jndiprefix}* is not valid.
DFHCA4922 E	*Date time applid* The installation of*{corbaserver | Djar }Resourcename* has failed because the ej resource resolution transaction, CEJR, could not attach.
DFHCA4923 E	*Date time applid* The installation of DJAR *Dname* has failed because the specified corbaserver *Cname* does not exist.
DFHCA4924 E	*Date time applid* The installation of DJAR *Dname* has failed because the specified *{corbaserver | State | Hfsfile | Djar}* is not valid.
DFHCA4925 E	*Date time applid* The installation of corbaserver *Cname* has failed because at least one of its associated tcpipservices has not been installed.
DFHCA4926 E	*Date time applid* The installation of DJAR *Dname* has failed because the specified corbaserver *Cname* is not in a valid state.
DFHCA4927 E	*Date time applid* The installation of*{corbaserver | Djar }Resourcename* has failed because its hfsfile is a duplicate of one which already exists.
DFHCA4928 E	*Date time applid* Install of *{TCPIPSERVICE | Corbaserver | IPCONN | Urimap} Resourcename* failed because the specified certificate is *{expired | Not yet current | Not owned by this CICS | Not trusted}*.
DFHCA4929 E	*Date time applid {URIMAP}*(*Resourcename*) was not installed because of conflicting attributes.
DFHCA4930 E	*Date time applid* URIMAP(*Urimap1*) not installed because it maps the same URI as *Urimap2*.
DFHCA4931 E	*Date time applid* The installation of WEBSERVICE *Resourcename* failed because the associated *{wsbind file | Pipeline}* does not exist.
DFHCA4932 E	*Date time applid* The installation of *{pipeline | Webservice} Resourcename* failed because the *{hfsfile | Pipeline}* setup was not correct.
DFHCA4933 E	*Date time applid* The installation of pipeline *Resourcename* failed because the WSDIR file specified is not accessible.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHCA4934 E	*Date time applid* The installation of URIMAP *Resourcename* failed because hostcodepage *Hcodepage* is not valid in combination with characterset *Charset*.
DFHCA4935 E	*Date time applid* install of *{TCPIPSERVICE | Corbaserver | IPCONN | Urimap} Resourcename* failed because the keyring has no default certificate.
DFHCA4936 E	*Date time applid* The installation of bundle *Resourcename* failed because the manifest found in the bundle root directory was not valid.
DFHCA4937 E	*Date time applid* The installation of bundle *Resourcename* failed because a manifest was not found in the bundle root directory.
DFHCA4938 W	*Date time applid* bundle *Resourcename* has been installed as disabled because one or more of its associated resources failed to install.
DFHCA4939 E	*Date time applid* The installation of ATOMSERVICE *Resourcename* failed due to a configuration error.
DFHCA4940 E	*Date time applid* install of MQCONN *Mqconn-name* failed because an MQCONN is already installed and is in use.
DFHCA4941 E	*Date time applid* The installation of *{ATOMSERVICE} Resourcename* failed because the *{configfile | Bindfile}* does not exist.
DFHCA4942 E	*Date time applid* The installation of *{ATOMSERVICE} Resourcename* failed because CICS does not have authority to access the *{configfile | Bindfile}*.
DFHCA4943 E	*Date time applid* The installation of *{ATOMSERVICE} Resourcename* failed because the associated *{configfile | Bindfile}* is invalid.
DFHCA4944 W	*Date time applid* JVMSERVER *Resourcename* has been installed with less threads than requested on its definition.
DFHCA4945 W	*Date time applid* JVMSERVER *Resourcename* has been installed as disabled with a THREADLIMIT of 0.
DFHCA4946 W	*Date time applid* The installation of *{bundle} Resourcename* failed because CICS does not have authority to access the manifest found in the bundle root directory.
DFHCA4999 E	*Date time applid* install of *Resourcetype* resources is not supported.
DFHCA5137 E	*Date time applid Netname tranid* group *Grpname* not found in list *Listid*
DFHCA5559 W	*Date time applid* host conflicts with ipaddress. Host takes precedence.
DFHCA5560 W	*Date time applid port_attribute* conflicts with port number found in host attribute.
DFHCC0105	*Applid* the *{local | Global}* catalog is incorrectly defined. Expected:keylen=*Req_keylen*, lrecl=*Req_lrecl*. Defined:keylen=*Def_keylen*, lrecl=*Def_lrecl*.
DFHCC0106	*Applid* insufficient MVS storage for *{cc | Gc}* domain anchor block. Bytes requested=*Bytes*.
DFHDB2212	The DB2 subsystem ID *db2id* specified for the CICS-DB2 attachment cannot be found. The attachment facility cannot start.
DFHDS0007	*Applid* module *Module* has detected a *{suspend resume area overflow | Architecture limit}* (code *X'code'*)*{. CICS will be terminated. | .}*
DFHDU0218	No PROBDESC parameters supplied to DFHDUMPX.
DFHEC0001	*Applid* an abend (code *Aaa/bbbb*) has occurred at offset *X'offset'* in module *Modname*.
DFHEC0002	*Applid* a severe error (code *X'code'*) has occurred in module *Modname*.
DFHEC0004	*Applid* a possible loop has been detected at offset *X'offset'* in module *Modname*.
DFHEC1000	*Date time applid* invalid parameter list passed to EC component module *Modname*.
DFHEC1001	*Date time applid* Event binding *Evbname* installed successfully.
DFHEC1002	*Date time applid* Event binding Evbname discarded successfully.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHEC1003	*Date time applid* The CICS event capture component failed to create the EVENTBINDING resource *Evbname* for reason *Reason*.
DFHEC1004	*Date time applid* event processing found invalid data address *X'address'* while capturing data for CAPTURESPEC *Csname* of EVENTBINDING *Evbname* in capture data item *Description* at offset *Offset* with length *Length*.
DFHEC1005	*Date time applid* event processing found invalid data address *X'address'* while filtering events for CAPTURESPEC *Csname* of EVENTBINDING *Evbname* in filter item *Description* at offset *Offset* with length *Length*.
DFHEC1006I	*Applid* event processing status is *{started | draining | stopped}*.
DFHEC1007	*Date time applid* event processing found invalid packed data x'data' while filtering events for CAPTURESPEC *Csname* of EVENTBINDING *Evbname* in filter item *Description* at offset *Offset* with length *Length*.
DFHEC1008	*Date time applid* event processing found invalid zoned data *X'data'* while filtering events for CAPTURESPEC *Csname* of EVENTBINDING *Evbname* in filter item *Description* at offset *Offset* with length *Length*.
DFHEC1009	*Date time applid* the CICS event capture component found an inconsistency in one or more values during install of EVENTBINDING *Evbname* for reason *Reason*.
DFHEC2100	*Applid* program DFHECRP cannot be found.
DFHEC3100	*Date time applid* an error (code *X'code'*) has occurred during creation of capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3101	*Date time applid* invalid or unsupported codepage (*Codepage*) found in capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3102	*Date time applid* invalid API command (*Command*) specified in capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3103	*Date time applid* invalid comparison operator (*Code*) specified in capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3104	*Date time applid* {*Pre_API* | *Post_API*} event point command in capture specification *Cs_name* in event binding *Evb_name* is not supported.
DFHEC3105	*Date time applid* invalid data type (*Datatype*) was specified in capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3106	*Date time applid* invalid capture data source (*Source*) in capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3107	*Date time applid* invalid eibaid value (*Aiddata*) specified in context filter for capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3108	*Date time applid* invalid keyword (*Keyword*) specified in event capture specification *Cs_name* in event binding *Evb_name*.
DFHEC3110	*date time applid* Invalid filter length of 0 specified in event capture specification *Cs_name* in event binding *Evb_name*.
DFHEC4007 E	*Applid* start transid *Tranid* Failed with response code *Response* and reason code *Reason*.
DFHEC4008	*Date time applid tranid* EP Adapter failed to emit an event to queue *queuename*. WRITEQ TS returned with condition *resp*.
DFHEC4111	*Date time applid tranid* Call to WebSphere MQ function *Function* returned with reason code *Reason_code*. Transaction terminated.
DFHEC4112	*Applid* WebSphere MQ support for CICS event processing WebSphere MQ adapter is not available.
DFHEC4117	*Date time applid tranid* the event's size of *Buffer_length* bytes exceeds message queue's *Queuename* maximum message length of *Max_msg_length* bytes. Transaction terminated.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHEC4120	*date time applid tranid* The HTTP EP Adapter failed to emit event for capture specification *csname* in event binding *evbname* using URIMAP *urimap_name*. *function* returned with response code *resp* reason code *resp2*.
DFHEC4121	*date time applid tranid* The HTTP EP Adapter failed to emit an event for capture specification *csname* in event binding *evbname* using URIMAP *urimap_name*. Server responded with HTTP status code *http_status_code*.
DFHEC4122	*date time applid tranid* The HTTP EP Adapter failed to emit event for capture specification *csname* in event binding *evbname* using URIMAP *urimap_name*. *function* returned with response code *resp* reason code *resp2*.
DFHEC4123	*date time applid tranid* The HTTP EP Adapter failed to emit an event for capture specification *csname* in event binding *evbname* using URIMAP *urimap_name*. Server responded with HTTP status code *http_status_code*.
DFHEP0001	*Applid* An abend (code *Aaa/bbbb*) has occurred at offset *X'offset'* in module *Modname*.
DFHEP0002	*Applid* A severe error (code *X'code'*) has occurred in module *Modname*.
DFHEP0101I	*Applid* Event processing domain initialization has started.
DFHEP0102I	*Applid* Event processing domain initialization has ended.
DFHEP0113	CEPM is stopping event processing after a severe error.
DFHEP0114	*date time applid tranid* The EP adapter user ID of *adapter_userid* is revoked, not valid, or not defined. Event discarded.
DFHEP0115	*Applid* Event processing event dispatcher task limit reached.
DFHEP0116	*Applid* Event processing event dispatcher task limit relieved.
DFHEP0117	*date time applid tranid* The EP adapter transaction ID of *adapter_tranid* is disabled or undefined. Event discarded.
DFHEP0118	*Date time applid tranid* The EP adapter transaction ID of *Adapter_tranid* is remote. Transaction terminated.
DFHEP0119	*date time applid tranid* Event processing global event queue depth: *number_events_queued* High Water Mark: *events_queued_hwm*.
DFHEP0120	*date time applid tranid* The EPADAPTER transaction ID *adapter_tranid* is defined to start the wrong program for this type of adapter. An event from EVENTBINDING *evbname* has been discarded.
DFHEP0121	*date time applid* Synchronous event emission by EPADAPTER *epadapter* failed for an event from EVENTBINDING *evbname*. The UOW will be backed out.
DFHEP1000	*date time applid* Invalid parameter list passed to EP domain module *modname*.
DFHEP1001	*date time applid* EPADAPTER *adaptername* installed successfully.
DFHEP1002	*date time applid* EPADAPTER *adaptername* discarded successfully.
DFHEP2001	*date time applid* The CICS event processing domain failed to create EPADAPTER resource *adapter* in BUNDLE *bundle* because the EP adapter, which is of type *adapterType* and emission mode *emitmode{, requires a program name. | , does not support transactional events. | , requires a transaction ID. | , is invalid or unrecognised. | , has an invalid or unsupported event format. | , has an unsupported combination of attributes.}*
DFHEP2002	*date time applid* The CICS event processing domain failed to create the EPADAPTER resource *adaptername* in BUNDLE *bundle* because the *{EP adapter name is invalid. | XML data for the EP adapter could not be parsed. | eventDispatcher is missing or invalid. | configuration data is too long.}*
DFHEP2003	*date time applid* The CICS event processing domain failed to create the EPADAPTER resource *adaptername* in BUNDLE *bundle* because the *{LOCALCCSID SIT parameter is not supported: | EP adapter schema level is not supported: }error_data*.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHEP2005	*date time applid* The CICS event processing domain found an inconsistency in the advanced options during install of EPADAPTER *adaptername* with emission mode *emitmode* and type *adapterType*. The *option* option is ignored.
DFHEX0005	Jobname: *Jobname*, stepname: *Stepname*, procname *Procname*, sysid in smf: *Sysid*, applid: *Applid*, transid: *Transid*.
DFHFC0209	*applid* User exit XFCRLSCO is allowing non-RLS file *filename* to bypass the RLS coexistence checks.
DFHFC0210	*applid* User exit XFCRLSCO is allowing RLS file *filename* to bypass the RLS coexistence checks.
DFHFC6039	*Date time applid* CICS has been invoked by vsam rls to process a *Reason* of data set *Dsname*.
DFHII1039 E	*Date time applid* Failure establishing connection to host *Host* as unauthenticated connections are not supported. An attempt to establish a CSIV2 secure connection failed because: *{CSIV2 security is not supported in the server | the server does not support the use of ssl/tls | the server does not support client certification | a required capability is not supported by the server | the server requires something not supported by CICS | the server does not support identity assertion | the server does not support principal assertion | the server does not support gssup exported names}*.
DFHII1040 E	*Date time applid* A CSIV2 connection has been refused because: *{it was not an establishcontext message |it contained authorization tokens | it used an unsupported identity type | the identity type was not recognized | it specified more than one authorization tokens | an authorization token was too long}*.
DFHIS0100	*Applid* Unable to start is domain because transaction CISC cannot be attached.
DFHIS1032	*Date time applid* Unable to acquire IPCONN *IPCONN*. Applid *Networkid.applid* is the same as the local applid.
DFHIS1033	*Date time applid* BIS processing error (code *X'errorcode'*) occurred during release of *Sesstype* IPIC session in IPCONN *IPCONN*.
DFHIS1034	*Date time applid* Conversation *Convid* no longer pending on IPCONN *IPCONN*.
DFHIS1035	*Date time applid* Unable to send a *{start | cancel | transaction routing}* request using IPCONN *IPCONN*. Partner region does not support this function over IPIC.
DFHIS1036	*Date time applid* Unable to process local queue for IPCONN *IPCONN*. IPCONN connected to system that does not support starts over IPIC.
DFHIS1037	*Date time applid* Log data sent on IPCONN *IPCONN* is: 'data'.
DFHIS1038 E	*Date time applid* Invalid host address *ipaddr*.
DFHIS1039	*Date time applid* IPIC secondary socket request for *Networkid.Applid* has failed because a matching IPCONN could not be found.
DFHIS1040	*Date time applid* Unable to schedule transaction CRSR for IPCONN *ipconn*.
DFHIS1041	*Date time applid* Identity propagation error has occurred while using IPCONN *ipconn* and transaction ID *transid*.
DFHIS3040 E	*date time applid* Deletion of IPCONN *cccccccc* failed. Its AID-Chains are not empty.
DFHIS3041	*date time applid nnnn* AIDs *{canceled | force-canceled}* for IPCONN *conname*. *nnnn* AIDs remain.
DFHKE0106	*Applid* GETMAIN failed in module *Modname*, r15=*Mvscode*. CICS will terminate.
DFHKE0997	*Applid* DFHKESTX driven for cleanup on an essential TCB with completion code *Code*. Unable to recover.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHLD0731	*Applid* data set *Dsname* Could not be allocated for library *Libname* because CICS could not determine that the data set is valid for a dynamic library. Reason: *{locate error. Locate macro | Obtain error. Obtain macro | Not enough working storage. Loader svc | CICS internal error. Loader svc }*return code: *X'rc'*
DFHLD0732	*Applid* Data set *Dsname* Could not be allocated for library *Libname* because it is not valid for a dynamic library. Reason: *{not dasd volume | Not partitioned organization | Record format is not set to unspecified}*.
DFHLG0195	Log gap warning up to block id *X'data1'*
DFHLG0196	STCK of block after gap (*Time format*): *X'data1'*
DFHLG0197	The CICS LOGR subsystem has detected an error. This might be caused by incorrect JCL.
DFHME0141	Message *Msgno* not issued by *Module* because MVS WTOR short on storage.
DFHML0001	*Applid* an abend (code *Aaa/bbbb*) has occurred at offset *X'offset'* in module *Modname*.
DFHML0002	*Applid* a severe error (code) has occurred in module .
DFHML0100	*Date time applid tranid* Call to z/OS XML system services parser for function *Function* failed with return code *X'return_code'* and reason code *X'reason_code'*.
DFHML0500	*Date time applid Userid Tranid* XMLTRANSFORM *Xmltransform_name* for *{bundle | Atomservice} Owner_name* has been added.
DFHML0501	*Date time applid Userid Tranid* XMLTRANSFORM *Xmltransform_name* for *{bundle | Atomservice} Owner_name* has been deleted.
DFHML0502	*Date time applid Userid Tranid* XMLTRANSFORM *Xmltransform_name* for *{bundle | Atomservice} Owner_name* has been *{enabled | Disabled}*.
DFHML0503	*Date time applid Userid Tranid* XMLTRANSFORM *Xmltransform_name* for *{bundle | Atomservice} Owner_name* cannot be installed as a duplicate XMLTRANSFORM resource with the same name already exists.
DFHML0504	*Date time applid Userid Tranid* XMLTRANSFORM *Xmltransform_name* for *{bundle | Atomservice} Owner_name* cannot be *{enabled | Disabled | Discarded}* because it is in the *{enabling | Enabled | Disabling | Disabled | Discarding | Permanently disabled | Unknown}* state.
DFHML0505	*Date time applid Userid Tranid* XMLTRANSFORM *Xmltransform_name* for *{bundle | Atomservice} Owner_name* has an unsupported runtime level.
DFHML0506	*Date time applid Trannum* XMLTRANSFORM *Xmltransform_name* Cannot link to program *Program_name* because *{the program abended | There is a problem with the resource definition | The program cannot be loaded | An unspecified problem occurred}*.
DFHML0507	*Date time applid Trannum* Validation of XML data for XMLTRANSFORM *Xmltransform_name* failed. The validation process returned the following message: '*Message*'.
DFHML0508	*Date time applid Trannum* Validation of XML data for XMLTRANSFORM *Xmltransform_name* was successful.
DFHML0509	*Date time applid Userid Tranid* XMLTRANSFORM *xmltransform_name* for *{BUNDLE | ATOMSERVICE} Owner_name* cannot be installed as one or more invalid characters exist in the resource name.
DFHML0510	*date time applid userid tranid* XMLTRANSFORM *xmltransform_name* for *{BUNDLE | ATOMSERVICE} owner_name* is incompatible with the LOCALCCSID.
DFHMQ0209 E	*Date time applid* Unable to inquire on MQCONN. Eibfn=*X'eibfn'* eibresp=*Eibresp* eibresp2=*Eibresp2* eibrcode=*X'eibrcode'*.
DFHMQ0210 E	*Date time applid* Unable to inquire on MQINI. Eibfn=*X'eibfn'* eibresp=*Eibresp* eibresp2=*Eibresp2* eibrcode=*X'eibrcode'*.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHMQ0218 W	*Date time applid* Obsolete INITPARM for program dfhmqprm detected. All dfhmqprm INITPARM values are ignored.
DFHMQ0303 E	*Date time applid tranid* module *Modname* could not be found.
DFHMQ0317	*Date time applid* CICS-MQ command is invalid. No MQCONN is installed.
DFHMQ0320I	*Date time applid* The CICS-MQ adapter cannot find mqname *Id*.
DFHMQ0324 I	*Date time applid* All queue managers in queue sharing group *Qsg-name* are inactive.
DFHMQ0325 I	*Date time applid* Call to CICS svc for CICS-MQ function failed.
DFHMQ0792 I	*Date time applid tranid Trannum* routemem=*Routemem*
DFHMQ2064	*Date time applid* Resynchronization outstanding for queue manager *Qmgr1* after CICS-MQ group attach has connected to queue manager *Qmgr2*.
DFHMQ2100	*Applid* Program DFHMQRP cannot be found.
DFHMQ2101	*Date time applid Terminal Userid tranid* MQCONN *Mqconn-name* has been added.
DFHMQ2102	*Date time applid Terminal Userid tranid* MQCONN *Mqconn-name* has been replaced.
DFHMQ2103	*Date time applid Terminal Userid tranid* MQCONN *Mqconn-name* has been deleted.
DFHMQ2107	*Date time applid Terminal Userid tranid* MQINI *Mqini-name* has been added.
DFHMQ2108	*Date time applid Terminal Userid tranid* MQINI *Mqini-name* has been replaced.
DFHMQ2109	*Date time applid Terminal Userid tranid* MQINI *Mqini-name* has been deleted.
DFHPA1947	*applid* A PSDINT value greater than zero was specified with PSTYPE=NOPS. PSDINT has been reset to 0.
DFHPI0116	*Date time applid* A one-way request has been received as a WebSphere MQ persistent message, but the provider pipeline has abended or backed out changes to recoverable resources. The BTS process *Processname* of processtype *Processtype* has completed with status abended and this process can be re-tried or used to provide information for reporting the failure.
DFHPI0117	*Date time applid* BTS process *Processname* of processtype *Processtype*, which has completed with status abended, has been cancelled. A provider pipeline started with a persistent WebSphere MQ message has abended or backed out, but a response has been sent to the requester.
DFHPI0118	*Applid* CICS has attempted to use BTS processes to support pipelines started with WebSphere MQ persistent messages. This attempt failed. CICS will continue, using channel based containers for the pipeline, but there is a risk of data loss in the event of a system failure. Ensure that BTS processtype, repository and local request queue are correctly defined and installed.
DFHPI0119	*Date time applid* the XML toolkit could not be loaded. Some configurations of the CICS supplied WS-security handler are not usable.
DFHPI0450	*Date time applid tranid* The CICS transport mechanism in the pipeline was unable to successfully handle the request because of an invalid URI.
DFHPI0451	*Date time applid tranid* The CICS transport manager DFHPITS encountered an error while trying to link to program *Program_name*.
DFHPI0452	*date time applid tranid* The CICS transport manager encountered an error while trying to locate URIMAP with HOST=localhost and PATH=*urimap_path*.
DFHPI0453	*date time applid tranid* The CICS transport manager encountered an error while trying to use URIMAP *urimap_name*.
DFHPI0454	*date time applid tranid* The CICS transport manager encountered an error while trying to use provider pipeline *pipeline_name*.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHPI0455	*date time applid tranid* The CICS transport manager encountered an error while trying to use requester pipeline *pipeline_name*.
DFHPI0456	*date time applid tranid* The CICS transport manager encountered an error with the input data being greater then the maximum COMMAREA length.
DFHPI0457	*date time applid tranid* The CICS transport manager was unable to successfully handle the request because of the missing targetServiceUri parameter in the URI.
DFHPI0514	*Date time applid tranid* The CICS pipeline manager has failed to find the required credentials in a request. An element *Local_name* , in namespace: *Namespace*, was expected.
DFHPI0727	*date time applid userid* PIPELINE *pipeline* cannot be installed as it requires support for ICRX based identity tokens and these are not supported by the platform.
DFHPI0732	*Date time applid* A request to rollback unit of work - *X'uowid'* has been received from a remote WS-AT coordinating transaction.
DFHPI0733	*Date time applid* A transaction timed out while waiting for a prepare message from a remote WS-AT coordinator. The unit of work - *X'uowid'* will be rolled back.
DFHPI0801I E	*Date time applid* A one way message has been found in an atomic transaction message exchange for transaction *Tran*.
DFHPI0917 W	*date time applid userid* WEBSERVICE *webservice* might perform unpredictably as the PIPELINE *pipeline* is non-SOAP.
DFHPI0999	*Date time applid tranid* The CICS pipeline manager has encountered a problem with file DFHPIDIR: *{the file was not found | The file key length was too small | The file record size was too small | The file is full | The file control record is full | File recovery mode was not backout | There was an internal error | File failed to open or connect}*.
DFHPI1000	*Date time applid* The outbound router program, DFHPIRT, has detected an invalid URI in the DFHWS-STSACTION container. The URI was '*Uri*'.
DFHPI1020E	*Date time applid tranid* The CICS handling program for the http://www.ibm.com/xmlns/prod/CICS/bundle/SCACOMPOSITE resource type failed to create resource *Resource_name* in the bundle resource *Bundle_name* because CICS failed to parse the SCDL resource definition *Scdl_path_name* specified in bundle root directory *Bundle_root*. *{the SCDL is not valid. | Failed to convert the SCDL.}*
DFHPI2000 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. *{a WEBSERVICE wsbind file was not found. | A WEBSERVICE name was a duplicate. | A URIMAP has an invalid path. | A URIMAP has a duplicate path. | A binding combination was invalid. | A binding did not provide required values. | A service required for wiring was not found. | A reference required for wiring was not found. | A wire target was already wired. | A service or reference name was a duplicate.}*
DFHPI2001 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. The bindfile could not be read. Bindfile: *Bindfile_name* ,binding:*Binding_name*.
DFHPI2002 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A duplicate WEBSERVICE name was used in a binding. Webservice: *Webservice_name* ,binding:*Binding_name* .
DFHPI2003 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A duplicate URIMAP path was used in a binding. Path: *Path_name* ,binding:*Binding_name* .
DFHPI2004 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A invalid URIMAP path was used in a binding. Path: *Path_name* ,binding:*Binding_name* .
DFHPI2005 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A binding attempted to wire to a target with an incompatabile binding type. Target: *Target* ,binding:*Binding_name* .

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHPI2006 W	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A wired binding did not provide a required value. Value type:*{pipeline | Uri | Bindfile}* ,binding: *Binding_name* .
DFHPI2007 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A wired binding targeted a service which could not be found. Target: *Target_name* ,binding *Binding_name* .
DFHPI2008 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A wired binding targeted a reference which could not be found. Target: *Target_name* ,binding: *Binding_name* .
DFHPI2009 E	*Date time applid tranid* The installation of SCACOMPOSITE *Resource_name* in the bundle resource *Bundle_name* did not complete successfully. A wired binding targeted a service or reference which had alreay been wired. Target: *Target_name* ,binding: *Binding_name* .
DFHPI2011 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. No services or references could be found in the composite implementation *impl_comp*.
DFHPI2012 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The prerequisite composite implementation *impl_comp* could not be found.
DFHPI2015 E	*Date time applid tranid* a attempt to directly invoke a service *Service_name* failed. *{the service is internal. | The service cannot be invoked directly. | The composite that defines the service is disabled. | The service uses the web services binding.}*
DFHPI2016 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. A Web service binding was used to wire an internal reference to a service. Binding:*binding_name*.
DFHPI2018 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The resource name must be the same as the composite name. Composite name:*composite_name*.
DFHPI2019 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The SCDL encoding is invalid.
DFHPI2020 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The SCDL is invalid.
DFHPI2021 W	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* might not complete successfully. *{A composite name was not provided. | An internal reference name was not provided. | An internal reference target was not provided. | An internal service name was not provided. | An external reference name was was not provided. | An external reference promote was not provided. | An external reference target was not provided. | An external service name was not provided. | An external service promote was not provided.}*
DFHPI2022 W	*date time applid tranid* The SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* defined an unsupported attribute in the SCDL. Attribute:*{policySets. | requires. }{Composite | Service | Reference | Component | Implementation | Binding}:element_name*.
DFHPI2023 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The mapping modes of *{reference | service }element_name* and *{reference | service }element_name* must be identical.
DFHPI2024	*date time applid tranid* BUNDLE resource *bundle_name* cannot be enabled because one or more resources in the BUNDLE were not created successfully.
DFHPI2025 W	*date time applid tranid* An INVOKE SERVICE call failed because it used an unwired reference. Reference: *reference_name* , Scope: *scope_name* .

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHPI2026 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The prerequisite composite implementation *impl_comp* does not have any components defined.
DFHPI2027 E	*date time applid tranid* The installation of SCACOMPOSITE *resource_name* in the BUNDLE resource *bundle_name* did not complete successfully. The composite name is a duplicate of an existing composite.
DFHPI9033 E	Duplicate elements with the same name in the same scope are not supported. The duplicated name is *Name*.
DFHPI9034 W	Schema type *Type* is being restricted to a total of *Value* digits.
DFHPI9035 E	XML schema element cannot be found in document *Document*.
DFHPI9036 W	Abstract data types are not supported. Problems may be experienced with type *Type* in element *Element*.
DFHPI9037 E	XML schema model groups are not supported within <choice> structures. Problem found in type *Type*.
DFHPI9038 E	The number of options for an enumerated set of options exceeds the maximum supported value of 255.
DFHPI9039 E	Substitution groups within xsd:choice constructs are not supported. The substitution group name is *Name*.
DFHPI9664 E	The value specified for parameter *Parameter* is invalid. Valid values are: *Values*.
DFHPI9665 E	The WSDL binding for operation *Operation* specifies an invalid message. *Messagefound* was found, but *Messageexpected* was expected.
DFHPI9666 E	A complextype can not contain more than one 'any' type. Problem found in type: '*Type*'.
DFHPI9667 E	The supplied WSDL contains an 'any' or 'anytype' element. This is only supported when 'pgmint' is set to 'channel'.
DFHPI9668 E	Invalid value specified for the XML-only parameter. Valid values are: true or false.
DFHPI9669 E	Global XML element *Element* not found.
DFHPI9670 E	No global XML elements or types have been processed.
DFHPI9671 E	Mismatch between WS-Addressing action and soap action for operation *Operation*.
DFHPI9672 E	Mismatch between WS-Addressing endpoint reference address and port address.
DFHPI9673 E	Mismatch between WS-Addressing endpoint reference address and endpoint address.
DFHPI9674 E	Non-abstract global XML type *Type* not found.
DFHPI9675 E	Multiple WS-Addressing endpoint references exist.
DFHPI9676 E	The supplied WSDL contains constructs that are only supported when 'PGMINT' is set to 'CHANNEL'.
DFHPI9677 E	Invalid WS-Addressing endpoint reference element *Element*.
DFHPI9679 E	Invalid WS-Addressing endpoint reference element, 'address' element not found.
DFHPI9680 W	The minimum-runtime-level is less than 3.0. The WS-Addressing content in the WSDL is ignored.
DFHPI9681 E	Invalid value specified for the 'WSADDR-EPR-ANY' parameter. Valid values are: 'TRUE' or 'FALSE'.
DFHPI9682 W	Container names beginning 'DFH' should not be used in channel description documents. The problem is for container '*containerName*'.
DFHPI9683 W	Bundle directory *Dirname* already exists and may contain files that are inconsistent with the new bundle manifest file.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHPI9684 W	The value of the XSDBIND parameter indicates a directory name of *Dirname*. This is ignored as the xsdbind file is being generated into a bundle.
DFHPI9800 E	The service registry client has not been initialized.
DFHPI9801 E	A document with a matching name, namespace and version already exists within the registry. The publish step was not run.
DFHPI9802 E	The setting of the registry endpoint was not successful.
DFHPI9803 W	Greater than 250 custom properties have been defined; the first 250 are used.
DFHPI9804 E	When retrieving a document from a registry a fault was returned with message *Faultmessage*.
DFHPI9805 E	An attempt to retrieve a document from a registry failed with reason *Failreason*.
DFHPI9806 E	The WSDL file was not found at the specified location.
DFHPI9807 E	The WSDL file can not be read in the CCSID specified.
DFHPI9808 E	The WSDL file could not be used due to an ioexception.
DFHPI9809 E	When querying a registry a fault was returned with message *Faultmessage*.
DFHPI9810 E	An attempt to query a registry failed with reason *Failreason*.
DFHPI9811 I	The document *Docname* has been found in the registry with unique identifier *Docuri*.
DFHPI9812 W	Multiple documents matching the query have been found. The first will be used.
DFHPI9813 E	When publishing to a registry a fault was returned with message *Faultmessage*.
DFHPI9814 E	An attempt to publish to a registry failed with reason *Failreason*.
DFHPI9815 I	Starting *Requesttype* Web service request.
DFHPI9816 I	Response received for *Requesttype* Web service request.
DFHPI9817 I	The WSRR-SERVER location is *Wsrrserver*.
DFHPI9818 I	Custom property set with name *Propertyname* and value *Propertyvalue*.
DFHPI9819 I	Starting write of file *Filename*.
DFHPI9820 E	An ioexception occurred when attempting to write file *Filename*.
DFHPI9821 E	No document matched name *Filename*, namespace *Xmlns*, and version *Version*.
DFHPI9822 E	The parameter *Parametername* has an invalid value of *Value*.
DFHPI9823 W	Publishing of WSDL 2.0 documents to WSRR is not supported. The document *Documentname* has not been published.
DFHRD0128 I	*date time applid terminal userid tranid* INSTALL BUNDLE(*bundle-name*)
DFHRD0129 I	*date time applid terminal userid tranid* INSTALL ATOMSERVICE(*atomservice-name*)
DFHRD0130 I	*date time applid terminal userid tranid* INSTALL MQCONN(*mqconn-name*)
DFHRD0131 I	*date time applid terminal userid tranid* INSTALL JVMSERVER(*jvmserver-name*)
DFHRL0001	*Applid* An abend (code *Aaa/bbbb*) has occurred at offset *X'offset'* in module *Modname*.
DFHRL0002	*Applid* A severe error (code *X'code'*) has occurred in module *Modname*.
DFHRL0101 E	*date time applid tranid* The CICS resource life-cycle manager encountered an error while trying to link to program *program_name*. *{The program abended. | The program was not defined. | The program was not enabled. | The program was not loadable. | No further details are available.}*
DFHRL0102 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the resource *resource_name* and returned with reason *reason*.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHRL0103 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the BUNDLE resource *bundle_name* because the manifest *manifest_file* specified in the bundle root directory was not found.
DFHRL0104 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the BUNDLE resource *bundle_name* because CICS is not authorized to read the resource *path_name* defined in the bundle manifest.
DFHRL0105 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the BUNDLE resource *bundle_name* because the resource *path_name* defined in the bundle manifest was not found.
DFHRL0106 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the BUNDLE resource *bundle_name* because CICS is not authorized to read the manifest *manifest_file* in the root directory of the bundle.
DFHRL0107 I	*date time applid userid* The CICS resource life-cycle manager has started to create the BUNDLE resource *bundle_name*.
DFHRL0108 I	*date time applid tranid* The CICS resource life-cycle manager is in the process of creating the BUNDLE resource *bundle_name* and the BUNDLE is in the *state* state.
DFHRL0109 I	*date time applid tranid* The CICS resource life-cycle manager has created the BUNDLE resource *bundle_name* and the BUNDLE is in the *state* state.
DFHRL0110 E	*date time applid tranid* The CICS resource life-cycle manager has failed to create the BUNDLE resource *bundle_name*.
DFHRL0111 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the resource *resource_name* because the resource type *resource_type* has not been registered.
DFHRL0112 E	*date time applid tranid* The encoding of the manifest *manifest_name* in the root directory of the bundle *bundle_name* is not valid.
DFHRL0113 E	*date time applid tranid* The CICS resource life-cycle manager failed to create the BUNDLE resource *bundle_name* because CICS failed to parse the manifest *manifest_name* specified in the bundle root directory. *{The manifest is not valid. | Failed to convert the manifest.}*
DFHRL0114 W	*date time applid tranid* The CICS resource life-cycle manager detected a missing import for BUNDLE *resource_name*. Import name: *import_name* type: *import_type* .
DFHRL0115 W	*date time applid tranid* The attempt to *{enable | disable | discard}* the BUNDLE *bundle_name* failed because one or more its defined resources are in an *{ENABLED | UNUSABLE}* state.
DFHRL0116 E	*applid* The CICS resource life-cycle bundle class failed to re-create the BUNDLE resource *bundle_name* because the manifest *manifest_file* specified in the bundle was not found.
DFHRL0117 E	*applid* The CICS resource life-cycle bundle class failed to re-create the BUNDLE resource *bundle_name* because CICS is not authorized to read the manifest *manifest_file*.
DFHRL0118 E	*applid* The CICS resource life-cycle bundle class has failed to re-create the BUNDLE resource *bundle_name*.
DFHRL0119 E	*applid* The CICS resource life-cycle bundle class failed to re-create the BUNDLE resource *bundle_name* because of failed consistency checks with the manifest *manifest_file*.
DFHRL0120 W	*date time applid tranid* The import of resource *resource_name* of type *type_name* failed as the resource was not available in an enabled state.
DFHRL0121 W	*date time applid tranid* The CICS resource life-cycle manager detected that a composite name was not provided in the BUNDLE resource *bundle_name*.
DFHRM0402	*date time applid* UOWID:*X'luowid'* found.
DFHRM0403	*date time applid* UOWID:*X'luowid'* recovered for resolution, current status:*uowstatus*, tasknum:*tasknum*, tranid:*tranid*, Net UOWID:*networkuowid*

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHRM0404	*date time applid* UOWID:*X'luowid'* is resolved, status:*uowstatus*, tasknum:*tasknum*, tranid:*tranid*, Net UOWID:*networkuowid*
DFHRM0405	*date time applid* Keypoint recovered. All relevant UOWs have been identified. Scan continuing for full recovery.
DFHRS0001	*Applid* An abend (code *Aaa/bbbb*) has occurred at offset *X'offset'* in module *Modname*.
DFHRS0002	*Applid* A severe error (code *X'code'*) has occurred in module *Modname*.
DFHSJ0004	*applid* A possible loop has been detected at offset *X'offset'* in module *modname*.
DFHSJ0207	*date time applid* CICS is running Java version *version*.
DFHSJ0910	*date time applid userid* JVMSERVER *jvmserver* has been created.
DFHSJ0911	*date time applid userid* JVMSERVER *jvmserver* was not created because *{there is insufficient storage. | there is a directory domain error. | a lock cannot be obtained. | there is a duplicate resource error.}*
DFHSJ0912	*date time applid userid* JVMSERVER *jvmserver* was successfully discarded.
DFHSJ0913	*date time applid userid* JVMSERVER *jvmserver* is being discarded.
DFHSJ0914 E	*date time applid userid* JVMSERVER *jvmserver* is DISABLED because *{the JVM server was not found. | CICS is not authorized to read the JVM profile. | the CJSR transaction could not be attached. | there is insufficient storage available. | the activate mode failed. | the add of the TP tcb failed. | the change mode to the TP tcb failed. | the Language Environment Enclave was not created. | there was a runtime options failure. | there was a failure updating the JVMProfile table. | there were insufficient threads available.}*
DFHSJ0915	*date time applid userid* JVMSERVER *jvmserver* is now enabled and is ready for use.
DFHSJ0916 W	*date time applid userid* the requested thread limit for JVMSERVER *jvmserver* exceeds the maximum available. The thread limit is set to the maximum available.
DFHSJ0917	*date time applid userid* JVMSERVER *jvmserver* is disabled.
DFHSJ0918	*date time applid userid* JVMSERVER *jvmserver* is being disabled.
DFHSJ1001	*date time applid userid* An attempt to attach a thread to JVMSERVER *jvmserver* has failed. Return code: *return_code*.
DFHSJ1002	*date time applid userid* The class *classname* that was specified to be run in JVMSERVER *jvmserver* cannot be found.
DFHSJ1003	*date time applid userid* An attempt to locate the *method_name* method in class *classname* has failed, for JVMSERVER *jvmserver*.
DFHSJ1004	*date time applid userid* An exception has been thrown by the *method_name* method of class *classname* running in JVMSERVER *jvmserver*.
DFHSJ1005	*date time applid userid* An attempt to detach a thread from JVMSERVER *jvmserver* has failed. Return code: *return_code*.
DFHSJ1006	*date time applid userid* An attempt to attach to JVMSERVER *jvmserver* has failed because *{the channel name used is invalid | the JVMSERVER name is missing | the JVMSERVER name is too long | the userclass name is missing | the user channel is invalid | the XML in the PIPELINE configuration file is invalid | the JVMSERVER does not exist | the JVMSERVER is not enabled | the wrapper class cannot be found | the transaction abended | the attach of the thread failed | the wrapper method was not found | the detach of the thread failed | the JVM threw an exception | the DFH-HANDLERPLIST container is missing | the thread was forced to terminate abnormally | the thread could not be created | the JVMSERVER failed to start the OSGi service}*.
DFHSO0118	*applid* The GETHOSTBYADDR call to resolve IP address *IP_ADDRESS* to a host name took over 3 seconds to complete.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHSO0130	*DATE TIME APPLID* A TCP/IP accept call has failed. The TCPIPSERVICE *Tcpipservice* on port *Portnumber* at IP address *Ipaddress* will be closed. The values returned are bpx_return_value(*Bpx return value*), bpx_return_code(*Bpx_return_code*), and bpx_reason_code(*Bpx_reason_code*).
DFHSO0133	*date time applid* TCPIPSERVICE *tcpipservice* has been installed.
DFHSO0134A	*applid* TCPIPSERVICE *ttttttt* was not restored because its certificate is invalid.
DFHUS0100	*applid*CICS is unable to listen for ENF event 71. Changing a users RACF attributes will only take effect after the USERDELAY timeout.
DFHWB0763	*date time applid tranid* The URIMAP associated with the HTTP request is disabled. Host IP address: *hostaddr*. Client IP address: *clientaddr*.
DFHWB0764	*date time applid tranid* An attempt was made to use URIMAP *urimap* which is disabled.
DFHWU0910	*applid* Instruction address *X'aaaaaaaa'*, offset *X'offset'* in CSECT *csect*.
DFHWU0911	*applid* EC Mode PSW at time of abend: *PSW1 PSW2 PSW3 PSW4*
DFHWU0912	*applid* Execution key: *key*, abend reason code *X'reason'*.
DFHWU0913	*applid* Execution mode: *mode*. BEAR: *X'bear'*.
DFHWU0914	*applid* Registers *R1-R2*: *REG1VAL REG2VAL*
DFHWU0915	*applid* Branch to low address; using R14 for PSW.
DFHWU0916	*applid* Storage around PSW at time of abend
DFHWU0917	*applid offset location data1 data2 data3 data4*
DFHWU0918	*applid* Abend while dumping storage; PSW probably not valid.
DFHWU0919	*applid* Transaction: *tran*. Task: *task*.
DFHWU0920	*applid* Abend recovery completed successfully.
DFHWU4001	The URI that has been specified has exceeded the maximum allowable length of 256 bytes.
DFHWU4002	The body of the HTTP request was not specified.The body of the HTTP request was not specified.
DFHWU4003	An unknown query parameter was specified in the URI. name: *parmname* value: *parmvalue*
DFHWU4005	The result cache token was missing from the URI.
DFHWU4006	The resource name was missing from the URI.
DFHWU4007	The body of the HTTP request was not specified correctly.
DFHWU4008	An action was specified in the HTTP body that was not valid. ACTION value: *action*
DFHWU4009	The record index was specified for a non-cached result. RECORDINDEX value: *recordindex*
DFHWU4010	The record index specified in the URI was not valid. RECORDINDEX value: *recordindex*
DFHWU4011	The record count specified in the URI was not valid. RECORDCOUNT value: *recordcount*
DFHWU4012	Extraneous data was detected at the end of the URI. EXTRADATA value: *data*
DFHWU4013	Multiple CRITERIA expressions were found in the URI.
DFHWU4014	Multiple PARAMETER expressions were found in the URI.
DFHWU4016	Multiple NODISCARD expressions were found in the URI.
DFHWU4017	NODISCARD is valid only for HTTP GET requests.
DFHWU4018	*applid* Abend while dumping storage; PSW probably not valid.
DFHWU4019	PARAMETER is not valid for HTTP POST requests.
DFHWU4020	Multiple SUMMONLY expressions were found in the URI.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHWU4021	CRITERIA is not valid for result cache operations. CRITERIA value: *criteria*
DFHWU4022	PARAMETER is not valid for result cache operations. PARAMETER value: *parameter*
DFHWU4025	A specified attribute was not valid for this resource.
DFHWU4026	The DEFVER attribute was not specified or was specified with a value of zero.
DFHWU4027	A value of a specified attribute was out-of-range or not valid.
DFHWU4029	The result cache token specified exceeded its maximum allowable length. CACHETOKEN value: *cachetoken*
DFHWU4030	The resource name was not specified in the URI.
DFHWU4031	Multiple ORDERBY expressions were found in the URI.
DFHWU4032	ORDERBY is valid only for HTTP GET requests.
DFHWU4300	The result cache token specified in the URI does not belong to the user who made the request.
DFHWU4301	It is not possible to run requests in this environment. This region is not configured correctly.
DFHWU4302	The requested record count will exceed the current default warning count limit. *current_record_count* value: *currcount default_warning_count* value: *warncount*
DFHWU4400	The resource specified in the URI could not be found.
DFHWU4401	The result cache record specified could not be found.
DFHWU4402	The result cache specified could not be found.
DFHWU4500	A method has been specified that is not valid for the URI sent to the CICS management client interface. METHOD value: *method*
DFHWU5000	There was insufficient GCDSA storage available to complete the request.
DFHWU5001	The CICS management client interface server has gone Short On Storage BELOW the bar.
DFHWU5002	An internal error has occurred in the CICS management client interface.
DFHW20001	*APPLID* AN ABEND (CODE *AAA/BBBB*) HAS OCCURRED AT OFFSET *X'OFFSET'* IN MODULE *MODNAME*.
DFHW20002	*APPLID* A SEVERE ERROR (CODE *X'CODE'*) HAS OCCURRED IN MODULE *MODNAME*.
DFHW20004	*APPLID* A POSSIBLE LOOP HAS BEEN DETECTED AT OFFSET *X'OFFSET'* IN MODULE *MODNAME*.
DFHW20006	*APPLID* INSUFFICIENT STORAGE TO SATISFY GETMAIN(CODE *X'CODE'*) IN MODULE *MODNAME*. MVS CODE *MVSCODE*.
DFHW20100I	*APPLID* WEB2.0 DOMAIN INITIALIZATION HAS STARTED.
DFHW20101I	*APPLID* WEB2.0 DOMAIN INITIALIZATION HAS ENDED.
DFHW20110	*date time applid userid* ATOMSERVICE *atomservice* has been created.
DFHW20111	*date time applid userid* ATOMSERVICE *atomservice* was successfully discarded.
DFHW20120	*date time applid* Configuration file *filename* is being analyzed for ATOMSERVICE *atomservice*.
DFHW20121	*date time applid* Configuration file *filename* for ATOMSERVICE *atomservice* was not found.
DFHW20122	*date time applid* The XML in the configuration file for ATOMSERVICE *atomservice* is not well-formed. Response codes from the XML System Services parser are (*X'return-code', X'reason-code'*).
DFHW20123	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Namespace URI *ns-uri* is not recognized.

Table 31. New messages in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Message number	Message text
DFHW20124	*date time applid* Configuration error for ATOMSERVICE *atomservice*. XML element *element* is not recognized.
DFHW20125	*date time applid* Configuration error for ATOMSERVICE *atomservice*. The XML root element is not valid.
DFHW20126	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Child element *prefix1*:*element1* is not valid within element *prefix2*:*element2*.
DFHW20127	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Attribute *prefix1*:*attr1* is not valid on element *prefix2*:*element2*.
DFHW20128	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Attribute *prefix1*:*attr1* on element *prefix2*:*element2* has incorrect value *attrval*.
DFHW20129	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Required attribute *prefix1*:*attr1* was not found on element *prefix2*:*element2*.
DFHW20130	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Required element *prefix1*:*element1{ with attributes }attrib-list* was not found within element *prefix2*:*element2*.
DFHW20131	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Child element *prefix1*:*element1* occurs multiple times within element *prefix2*:*element2*.
DFHW20133	*date time applid* Configuration error for ATOMSERVICE *atomservice*. The value of the attribute *attr1* on element *prefix2*:*element2* does not match the value of the attribute *attr3* in the ATOMSERVICE definition.
DFHW20141	*date time applid* The bind file *filename* for ATOMSERVICE *atomservice* was not found.
DFHW20142	*date time applid* CICS is not authorized to access *{CONFIGFILE | BINDFILE} filename* for ATOMSERVICE *atomservice*.
DFHW20151	*date time applid* Service program *service-prog* terminated abnormally with abend code *abcode* processing *req-method* for ATOMSERVICE *atomserv*.
DFH5137 E	Group *Grpname* not found in list *listid*
DFH5297 E	*command* is no longer supported.
DFH5559 W	Host conflicts with ipaddress. Host takes precedence.
DFH5560 W	Command not executed. *Port_attribute* conflicts with port number found in host attribute.

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

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2

Message number	Message text
DFHAM4812 W	*applid* Install of LIBRARY *libname* encountered a data set *{allocation | concatenation | open}* failure. The LIBRARY is installed but disabled.
DFHAM4813 W	*applid* Install of LIBRARY *libname* encountered an MVS ABEND. The LIBRARY is installed but disabled.
DFHAM4817 E	*applid* Install of LIBRARY *libname* failed with an MVS ABEND. The LIBRARY is not installed.
DFHAM4878 E	*applid* Install of *{IPCONN} resourcename* failed because one with this name is already installed and is in use.
DFHAM4885 E	*applid* Install of IPCONN *resourcename* failed. Duplicate applid *applid* found.
DFHAM4913 E	*applid* Install of *{IPCONN} resourcename* failed because a CONNECTION resource with this name and a different APPLID is already installed.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHAM4914 E	*applid* Install of *resourcetype resourcename* failed. The specified *targetresource* is unusable.
DFHAM4917 W	*applid{ CORBASERVER | TCPIPSERVICE | IPCONN | URIMAP }resourcename* was installed with a reduced set of CIPHER codes.
DFHAM4918 E	*applid* The installation of*{ CORBASERVER | TCPIPSERVICE | IPCONN | URIMAP }resourcename* has failed because its requested CIPHER list was rejected.
DFHAM4934 E	*applid* The installation of URIMAP *resourcename* failed because HOSTCODEPAGE *hcodepage* is not valid in combination with CHARACTERSET *charset*.
DFHAM4935 E	*applid* Install of *{TCPIPSERVICE | CORBASERVER | IPCONN | URIMAP} resourcename* failed because the KEYRING has no default certificate.
DFHAM4999 E	*applid* Install of *resourcetype* resources is not supported.
DFHAP1500	*applid* The CICS time-of-day is no longer synchronized with the system time-of-day.
DFHCA5553 E	*date time applid netname tranid* Command not executed. *field* cannot start with a '*char*'.
DFHCA5554 W	*date time applid netname tranid* Use of static attribute *field1* forces *field2*.
DFHCA5555 E	*date time applid netname tranid* Command not executed. There must be at least one *attribute* specified.
DFHCA5556 E	*date time applid netname tranid* Command not executed. *resource* names beginning with '*yyy*' are reserved and cannot be used.
DFHCA5557 E	*date time applid netname tranid* Command not executed. '*xxxxxxx*' is a reserved name and cannot be used as a *resource* name.
DFHCA5558 W	*date time applid netname tranid* A ranking value less than 10 for LIBRARY '*resource*' means it will appear before DFHRPL in the search order.
DFHCF0123	IXCARM REQUEST=*reqtype* failed, return code *retcode*, reason code *rsncode*.
DFHDD0004	*applid* A possible loop has been detected at offset *X'offset'* in module *modname*.
DFHDD0006	*applid* Insufficient storage to satisfy Getmain (code *X'code'*) in module *modname*. MVS code *mvscode*.
DFHFC0119	*applid* The load of callable service IGGCSI00 has failed with return code *X'eeee'* .
DFHFC0517	*applid {RLS | Non-RLS}* OPEN of file *filename* failed. An error was detected when reading the VSAM catalog.
DFHFC0518	*applid* File Control is using an extended addressing ESDS dataset.
DFHFC0519	*applid* Call to VSAM Catalog utility IGGCSI00 for dataset *dsname* failed. Return code *X'rrrr'* Reason code *X'cccc'*.
DFHFC6037 I	*date time applid* Program *program name* has issued an RBA request against an extended addressing ESDS data set. File *filename*. Data set *dsname*.
DFHFC6038	*date time applid* Program *program name* has issued an unsupported type of RBA request against an extended addressing ESDS. The request has failed. File name *filename*. Data set name *dsname*.
DFHFC6040	*date time applid* Timeout period has expired processing a generic delete against an RLS file. The task was waiting on a get for update request for a locked record that was beyond the range of the generic delete. Once the get for update request has timed out, the delete command completes and the task resumes normal execution. File name *filename*. Data set name *dsname*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHFC6041	*date time applid* Attempt to unquiesce data set *dsname* failed due to a conflict with another task.
DFHIS0001	*applid* An abend (code *aaa/bbbb*) has occurred at offset *X'offset'* in module *modname*.
DFHIS0002	*applid* A severe error (code *X'code'*) has occurred in module *modname*.
DFHIS0003	*applid* Insufficient storage to satisfy Getmain (code *X'code'*) in module *modname*.
DFHIS0004	*applid* A possible loop has been detected at offset *X'offset'* in module *modname*.
DFHIS0006	*applid* Insufficient storage to satisfy Getmain (code *X'code'*) in module *modname*. MVS code *mvscode*.
DFHIS0998	*date time applid* Mirror transaction processing DPL request using IP Interconnectivity has abended with code *abcode*.
DFHIS1000	*date time applid* Invalid parameter list passed to IS domain module *modname*.
DFHIS1001	*date time applid* Unexpected exception from domain call made by IS domain module *modname*.
DFHIS1002	*date time applid* Unable to *{acquire | release}* IPCONN *IPCONN*. IPCONN not found.
DFHIS1003	*date time applid* Unable to *{acquire | release}* IPCONN *IPCONN*. IPCONN state *{INSERVICE | OUTSERVICE},{RELEASED | OBTAINING | ACQUIRED | FREEING}* is invalid.
DFHIS1004	*date time applid* Unable to acquire IPCONN *IPCONN*. Associated TCPIPSERVICE *TCPIPSERVICE* not found.
DFHIS1005	*date time applid* Unable to acquire IPCONN *IPCONN*. Associated TCPIPSERVICE *TCPIPSERVICE* not open.
DFHIS1006	*date time applid* Unable to acquire IPCONN *IPCONN*. TCPIP not open.
DFHIS1007	*date time applid* Unable to acquire IPCONN *IPCONN*. Failure to open session to *hostname*, port *portnumber*.
DFHIS1008	*date time applid* Unable to acquire IPCONN *IPCONN*. Invalid HTTP response to capability exchange.
DFHIS1009	*date time applid* Unable to acquire IPCONN *IPCONN*. Response to capability exchange timed out.
DFHIS1010	*date time applid* Unable to acquire IPCONN *IPCONN*. Invalid capability exchange response received.
DFHIS1011	*date time applid* Unable to acquire IPCONN *IPCONN*. An *{EXCEPTION | DISASTER | INVALID | KERNERROR | PURGED}* response to the capability exchange was received, reason=*{AUTOINSTALL_FAILED | INVALID_IPCONN_STATE | INVALID_PARTNER_STATE | IPCONN_NOT_FOUND | ISCE_ERROR | ISCE_INVALID_APPLID | ISCE_TIMED_OUT | ISCE_BAD_RECOV | ISCER_BAD_RESPONSE | ISCER_ERROR | ISCER_HTTP_ERROR | ISCER_TIMED_OUT | SESSION_OPEN_FAILED | SHUTDOWN | TCPIP_CLOSED | TCPIPSERVICE_MISMATCH | TCPIPSERVICE_NOT_FOUND | TCPIPSERVICE_NOT_OPEN | NO_IPCONN | ONE_WAY_IPCONN | CAPEX_RACE | SECURITY_VIOLATION | UNKNOWN}*.
DFHIS1012	*date time applid* Invalid capability exchange request received on TCPIPSERVICE *TCPIPSERVICE*.
DFHIS1013	*date time applid* Invalid applid *networkid.applid* received in capability exchange request on TCPIPSERVICE *TCPIPSERVICE*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHIS1014	*date time applid* Capability exchange request not received on TCPIPSERVICE *TCPIPSERVICE*.
DFHIS1015	*date time applid* Unable to accept connection for IPCONN *IPCONN*. IPCONN client session state is invalid.
DFHIS1016	*date time applid* Invalid recovery protocol received in capability exchange request on TCPIPSERVICE *TCPIPSERVICE*.
DFHIS1017	*date time applid* IS domain input queue error.
DFHIS1018	*date time applid* IS domain error queue error.
DFHIS1019	*date time applid* Bad conversation ID in IPIC HTTP header on IPCONN *IPCONN*.
DFHIS1020	*date time applid* Acquire for IPCONN *IPCONN* rejected; shutdown in progress.
DFHIS1021	*date time applid* Session error occurred on *sesstype* IPIC session in IPCONN *IPCONN*.
DFHIS1022	*date time applid* Protocol error (code *X'errorcode'*) occurred on *sesstype* IPIC session in IPCONN *IPCONN*.
DFHIS1023	*date time applid* Conversation error (code *X'errorcode'*) occurred on IPIC session *name* in IPCONN *IPCONN*.
DFHIS1024	*date time applid* Mirror attach rejected on IPCONN *IPCONN*. No sessions available.
DFHIS1025	*date time applid* Failed to attach mirror transaction *tranid* on IPCONN *IPCONN*. Error code is *X'errorcode'*.
DFHIS1026	*date time applid* Incorrect TCPIPSERVICE *TCPIPSERVICE* used for inbound connection to IPCONN *IPCONN*, which is defined to use TCPIPSERVICE *IPCONN_TCPIPSERVICE*.
DFHIS1027	*date time applid* Security violation has been detected using IPCONN *IPCONN* and transaction id *transid* by userid *userid*
DFHIS1028	*date time applid* A request has been received over IPCONN *IPCONN* to use transaction id *transid* by userid *userid*. This userid is not authorized to use the transaction.'
DFHIS1029	*date time applid* One-way IPCONN *IPCONN* not valid for connection from applid *networkid.applid*. A callback is expected on host *ipaddr*, port *port*.
DFHIS1030	*date time applid* Recovery value *X'IPCONN_recovprot'* for IPCONN *IPCONN* different from capability response recovery value *X'iscer_recovprot'*.
DFHIS1031	*date time applid* Incoming acquire for IPCONN *IPCONN* rejected due to race with concurrent local acquire.
DFHIS2000	*date time applid* Server session with applid *applid* on host *hostname*, port *portnumber* acquired for IPCONN *IPCONN*.
DFHIS2001	*date time applid* Client session from applid *applid* accepted for IPCONN *IPCONN*.
DFHIS2002	*date time applid* Number of SEND sessions for IPCONN *IPCONN* set to *usable*. Number requested *req*. Partner limit *max*.
DFHIS2003	*date time applid* Number of RECEIVE sessions for IPCONN *IPCONN* set to *usable*. Number requested *req*. Limit *max*.
DFHIS2006	*date time applid* Port *IPCONN_port* for IPCONN *IPCONN* different from partner port *partner_port*.
DFHIS2008	*date time applid* Receipt of *msgtype* for task *taskno* timed out on IPCONN *IPCONN*.
DFHIS2009	*date time applid* Client session in IPCONN *IPCONN* from applid *applid* released.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHIS2010	*date time applid* Server session in IPCONN *IPCONN* with applid *applid* on host *hostname*, port *portnumber* released.
DFHIS2011	*date time applid {PURGE | FORCEPURGE | KILL}* issued successfully for *num_purged* tasks using the *sesstype* session of IPCONN *IPCONN*. There are currently *num_active* tasks active of which *num_purging* are being purged.
DFHIS2040	*date time applid* Unable to acquire IPCONN *IPCONN* due to a security violation
DFHIS3000	*date time applid* IPCONN *IPCONN* with applid *networkid.applid* autoinstalled successfully using autoinstall user program *aupname* and template *template* after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*.
DFHIS3001	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname* because the TCPIPSERVICE has URM(NO).
DFHIS3002	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. Use of autoinstall user program *aupname* has caused error code *code*.
DFHIS3003	*date time applid* IPCONN autoinstall failed due to a severe error in another CICS component.
DFHIS3004	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned invalid value *IPCONN* for use as the IPCONN name.
DFHIS3005	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned *IPCONN* for use as the IPCONN name. This name is already in use.
DFHIS3006	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned *template* as the autoinstall template. No IPCONN with this name exists.
DFHIS3007	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned *template* as the autoinstall template. This IPCONN is not in service.
DFHIS3008	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned *applid* for use as the applid. This is already in use.
DFHIS3009	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned *sysid* for use as the IPCONN name. This is already in use for a CONNECTION with a different applid.
DFHIS3010	*date time applid* IPCONN autoinstall rejected after a connection request was received on TCPIPSERVICE *TCPIPSERVICE* from host *hostname*. The autoinstall user program *aupname* returned invalid value *port* for use as the port number.
DFHIS3011	*date time applid* Failed to invoke Autoinstall User Program *aupname* during discard of IPCONN *IPCONN*.
DFHIS3030 I	*date time applid* IPCONN *name {installed | deleted}*.
DFHIS4000	*date time applid* Conversation failure on IPCONN *IPCONN*. Sense code (*X'sense'*). Message (*msgtext*).
DFHIS5000 I	*applid* Recovery action requested for IP connection *name*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHIS5001 I	*applid* IP connection *name* operating normally following recovery action.
DFHIS5002	*date time applid nnnnnnnn* queued requests to use IPCONN *IPCONN* have been canceled. There are *nnnnnnnn* requests which remain queued.
DFHIS5003	*date time applid nnnnnnnn* queued requests to use IPCONN *IPCONN* have been canceled. There are *nnnnnnnn* requests which remain queued.
DFHIS6000	*date time applid* IP Interconnectivity Recovery. A process error has occurred while running transaction CISX.
DFHIS6001	*date time applid* A communications failure has occurred while running transaction CISX.
DFHIS6002	*date time applid* IP Interconnectivity Recovery. A process error has occurred while attempting to resynchronize a transaction with an XID of *XID* .
DFHIS6003	*date time applid* IP Interconnectivity Recovery. A communications error has occurred. The unit of work *uowid* for XID *XID* has been committed.
DFHIS6004	*date time applid* IP Interconnectivity Recovery. A communications error has occurred. The unit of work *uowid* for XID *XID* has been backout out.
DFHIS6005	*date time applid* IP Interconnectivity Recovery. An attempt to resynchronize a unit of work with an XID of *XID* has failed because the unit of work could not be found.
DFHIS6006	*date time applid* IP Interconnectivity Recovery. Resynchronization has failed, because of an error in the partner region, for the following local UOW *X'localuowid'* IPCONN name *name* transaction *tranid* task number *trannum* terminal *termid* user *userid*.
DFHIS6007	*date time applid* IP Interconnectivity Recovery. Resynchronization not possible, because the corresponding unit of work could not be found by the partner region, for the following local UOW *X'localuowid'* associated with IPCONN *IPCONN*.
DFHIS6010	*date time applid* IP Interconnectivity Recovery. Resynchronization not possible for the following local UOW *X'localuowid'* IPCONN name *name* transaction *tranid* task number *trannum* terminal *termid* user *userid*.
DFHKE1798	*applid* FO TCB FORCED TO TERMINATE.
DFHLD0109 I	*applid modname1* is unable to locate module *modname2* in the LPA. DFHRPL or dynamic LIBRARY version of module will be used.
DFHLD0205	*applid* Bad Loader PLDB for LIBRARY *libname* recovered from the Global catalog. Corruption suspected.
DFHLD0206	*applid* Loader SVC *svc* request failed due to I/O errors on LIBRARY *libname*.
DFHLD0501 I	*date time applid termid tranid* LIBRARY *libname* is being installed with status *{Enabled | Disabled}*.
DFHLD0502 I	*date time applid termid tranid* Install of LIBRARY *libname* has completed successfully. Enablement status is *{Enabled | Disabled}*.
DFHLD0503 W	*date time applid termid tranid* Install of LIBRARY *libname* has failed to complete successfully, for reason code *RSN*. Enablement status is Disabled.
DFHLD0504 E	*date time applid termid tranid* Install of LIBRARY *libname* has failed because a LIBRARY of that name is already installed and enabled.
DFHLD0505 I	*date time applid* Details for LIBRARY *libname*, ranking: *ranking*, critical status: *{Critical | Noncritical}*, enablement status *{Enabled | Disabled}*.
DFHLD0506 I	*date time applid* Details for LIBRARY *libname*, data sets 1-8: *dsname01*, *dsname02*, *dsname03*, *dsname04*, *dsname05*, *dsname06*, *dsname07*, *dsname08*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHLD0507 I	*date time applid* Details for LIBRARY *libname*, data sets 9-16: *dsname09*, *dsname10*, *dsname11*, *dsname12*, *dsname13*, *dsname14*, *dsname15*, *dsname16*.
DFHLD0512 I	*date time applid termid tranid* LIBRARY *libname* has been successfully discarded.
DFHLD0513 W	*date time applid termid tranid* Discard of LIBRARY *libname* has failed for reason code *RSN*.
DFHLD0521 I	*date time applid termid tranid* Ranking of LIBRARY *libname* changed from *oldranking* to *newranking*.
DFHLD0522 I	*date time applid termid tranid* Critical status of library *libname* changed from *{Critical | Noncritical}* to *{Critical | Noncritical}*.
DFHLD0523 I	*date time applid termid tranid* LIBRARY *libname* has been enabled.
DFHLD0524 I	*date time applid termid tranid* LIBRARY *libname* has been disabled.
DFHLD0525 W	*date time applid termid tranid* Attempt to set attributes or status of LIBRARY *libname* has failed for reason code *RSN*.
DFHLD0555 I	*date time applid* Current LIBRARY search order follows.
DFHLD0556 I	*date time applid* Position in search order: *srchpos*, LIBRARY: *libname*.
DFHLD0701	*applid* LIBRARY *libname* has a smaller ranking value than DFHRPL. Ranking value is *R*.
DFHLD0702 D	*applid* Critical LIBRARY *libname* could not be installed. Reply 'GO' or 'CANCEL'.
DFHLD0703	*applid* Noncritical LIBRARY *libname* could not be installed as enabled. CICS startup continues.
DFHLD0704	*applid* Reply CANCEL was received.
DFHLD0710	*applid* Install of LIBRARY *libname* encountered an error. The LIBRARY is installed but disabled.
DFHLD0711	*applid* Install of LIBRARY *libname* encountered an error. The LIBRARY is installed as disabled.
DFHLD0712	*applid* Attempt to install or enable LIBRARY *libname* will be delayed because data set *dsname* is being recalled.
DFHLD0713	*applid* Attempt to enable LIBRARY *libname* encountered an error. The LIBRARY is disabled.
DFHLD0715	*applid* Disable processing for LIBRARY *libname* encountered an error.
DFHLD0720	*applid* Dynamic allocation of data set *dsname* for LIBRARY *libname* failed. DYNALLOC return codes *X'rrrr',X'cccc',X'dddd'*.
DFHLD0721	*applid* Dynamic concatenation of data sets for LIBRARY *libname* failed. DYNALLOC return codes *X'rrrr',X'cccc',X'dddd'*.
DFHLD0722	*applid* Open of DD for LIBRARY *libname* failed.
DFHLD0723	*applid* Dynamic unallocation of data set *dsname* for LIBRARY *libname* failed. DYNALLOC return codes *X'cccc',X'rrrr',X'dddd'*.
DFHLD0724	*applid* Dynamic deconcatenation of data sets for LIBRARY *libname* failed. DYNALLOC return codes *X'rrrr',X'cccc',X'dddd'*.
DFHLD0725	*applid* Close of DD for LIBRARY *libname* failed.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHLD0730	*applid* An MVS ABEND occurred during *{Getmain of LIBRARY control area | Dynamic allocation | Dynamic concatenation | Open | Close | Dynamic deconcatenation | Dynamic unallocation | Freemain of LIBRARY control area}* for LIBRARY *libname*.
DFHLD0800	*applid* CLDM failed due to CICS command error. EIBFN=X'*eibfn*', RESP=*resp*, RESP2=*resp2*. Instance=*instance*.
DFHLD0801	*applid* CLDM bad STARTCODE.
DFHLD0802	*applid* CLDM invalid input. Format is CLDM PATH=value or CLDM SYSOUT=value. Instance=*instance*.
DFHLD0803	*applid* CLDM CICS kernel inquire error.
DFHLD0804	*applid* CLDM CICS kernel anchor error.
DFHLD0805	*applid* CLDM output format routine, *program*, failed.
DFHLD0806	*applid* CLDM file system write failed. RETCODE=X'*retcode*' (*usserr*), RSNCODE=X'*rsncode*', FILE=*file*.
DFHLD0807	*applid* CLDM file system open failed. RETCODE=X'*retcode*' (*usserr*), RSNCODE=X'*rsncode*', FILE=*file*.
DFHLD0808	*applid* CLDM file system close failed. RETCODE=X'*retcode*' (*usserr*), RSNCODE=X'*rsncode*', FILE=*file*.
DFHLD0809	*applid* CLDM mismatched quotation marks.
DFHLD0810	*applid* CLDM absolute path name required.
DFHLD0811	*applid* CLDM complete. *recordnum* data records output.
DFHLD0812	*applid* CLDM unable to obtain loader domain state lock.
DFHLG0789	*date time applid* Deletion of log stream *lsn* data was suppressed by the Logger Resource Manager Interface. MVS Logger codes: *X'ret'*, *X'rsn'*.
DFHME0140	*applid* CICSPlex SM messages cannot be issued because the English message table *modname* cannot be found.
DFHMN0112 I	*date time applid* CICS Monitoring compression status has been changed to *{NOCOMPRESS | COMPRESS}* by USERID *userid*.
DFHMQ0100 E	*date time applid* Cannot retrieve data from a START command. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2*.
DFHMQ0101 E	*date time applid* Cannot open the initiation queue. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0102 E	*date time applid* Cannot start the CICS transaction *tran-id*. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2*.
DFHMQ0103 E	*date time applid* CKTI has read a trigger message with an incorrect MQTM-StrucId of *struc-id*.
DFHMQ0104 E	*date time applid* CKTI does not support version *version-id*.
DFHMQ0105 E	*date time applid* CKTI cannot start a process type of *process-type*.
DFHMQ0106 D	*date time applid* MQGET failure. CKTI will end. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0107 I	*date time applid* A request to end CKTI has been received. CKTI ended.
DFHMQ0108 D	*date time applid* Unexpected invocation. CKTI terminated.
DFHMQ0109 D	*date time applid* MQCLOSE failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0110 I	*date time applid* Queue name = *q-name*.
DFHMQ0111 D	*date time applid* CKTI has read a trigger message with an incorrect length of *length*.
DFHMQ0112 D	*date time applid* MQOPEN error. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0113 I	*date time applid* This message cannot be processed.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0114 D	*date time applid* MQINQ failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0116 D	*date time applid* Cannot open the queue manager. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0117 D	*date time applid* Cannot query the queue manager. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0118 I	*date time applid* MsgID=*X'msg-id'*.
DFHMQ0119 D	*date time applid* CICS detected an IRC failure. Cannot start transaction *tran-id*.
DFHMQ0120 D	*date time applid* MQPUT failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0121 D	*date time applid* No dead-letter queue defined for queue manager.
DFHMQ0122 D	*date time applid* Cannot close the queue manager. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0123 D	*date time applid* The dead-letter queue is not of type local.
DFHMQ0124 D	*date time applid* The dead-letter queue is not of usage normal.
DFHMQ0211 E	*date time applid* Unable to LINK to program DFHMQPRM. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0212 E	*date time applid* DFHMQPRM missing in SIT/SIT Override INITPARM.
DFHMQ0213 E	*date time applid* Queue manager name missing in DFHMQPRM. Command rejected.
DFHMQ0214 E	*date time applid* Initiation queue name not found. CKTI not started.
DFHMQ0216 E	*date time applid* Queue manager name invalid. Connection rejected.
DFHMQ0217 E	*date time applid* Initiation queue name invalid. CKTI not started.
DFHMQ0220 E	*date time applid* Unable to LINK to program DFHMQCON. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0221 E	*date time applid* Unable to INQUIRE SYSTEM CICSSTATUS. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0223 E	*date time applid* Unable to LINK to program DFHMQQCN. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0230 E	*date time applid* Unable to receive input. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0232 E	*date time applid* Unable to RETURN TRANSID *tran-id* IMMEDIATE. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0235 E	*date time applid* Unrecognizable screen. Re-submit CKQC.
DFHMQ0236 E	*date time applid* Display functions only supported using panel interface.
DFHMQ0237 E	*date time applid* Panel interface not supported on console.
DFHMQ0239 E	*date time applid* Unable to LINK to program DFHMQBAS. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0240 I	*date time applid* Task not associated with a terminal. Request rejected.
DFHMQ0241 E	*date time applid* Unable to receive input. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0242 D	*date time applid* Invalid input. Connect rejected.
DFHMQ0243 D	*date time applid* Unsupported terminal type. Must be a console or 3270 device.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0244 E	*date time applid* CICS is being quiesced. Connect rejected.
DFHMQ0300 I	*date time applid* Already connected to queue manager *qmgr-name*. Connect rejected.
DFHMQ0301 I	*date time applid* API exit CSQCAPX found and will be used.
DFHMQ0302 E	*date time applid* Unable to EXTRACT EXIT DFHMQTRU. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0304 E	*date time applid* Failed to ENABLE DFHMQTRU. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0305 E	*date time applid* Unable to INQUIRE MAXTASKS. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0306 E	*date time applid* Unable to START transaction CKTI. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0307 I	*date time applid* Successful connection to queue manager *ssnm*.
DFHMQ0308 I	*date time applid* Queue manager *qmgr-name* is stopped. Connect request deferred.
DFHMQ0309 E	*date time applid* Unable to connect to queue manager *qmgr-name*. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0310 I	*date time applid* Duplicate connect to queue manager *qmgr-name*. Connect rejected.
DFHMQ0311 E	*date time applid* Unable to start alert monitor CKAM. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0312 E	*date time applid* Unable to GETMAIN DFHMQLOC storage. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0313 I	*date time applid* *UOWID=*conn-name.X'uow-id'* is in doubt.
DFHMQ0314 I	*date time applid* UOWIDs highlighted with * will not be automatically resolved.
DFHMQ0315 E	*date time applid* Unable to LOAD API exit CSQCAPX. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0316 I	*date time applid* More messages. Check console for full display.
DFHMQ0318 I	*date time applid* UOWID=*conn-name.X'uow-id'* created by Transid *transid* Taskid *taskid* is in doubt.
DFHMQ0319 E	*date time applid* Unable to INQUIRE SYSTEM RELEASE. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0321 I	*date time applid* There is no active connection. Stop connection rejected.
DFHMQ0322 D	*date time applid* Invalid input. Stop connection rejected.
DFHMQ0323 I	*date time applid command* received from TERMID=*termid* TRANID=*tranid* USERID=*userid*.
DFHMQ0326 E	*date time applid* Connection status *{Connecting* | *Pending* | *Connected* | *Quiescing* | *Stopping-Force* | *Disconnected* | *Inactive* | *Unknown}* is not valid for *command* Command rejected.
DFHMQ0331 I	*date time applid* Adapter shutdown completed.
DFHMQ0332 I	*date time applid* Queue manager *qmgr-name* is already stopped. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0333 E	*date time applid* Unable to disconnect from queue manager *qmgr-name* . MQCC=*mqcc* MQRC=*mqrc*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0334 I	*date time applid* Adapter shutdown successful.
DFHMQ0336 I	*date time applid command* received from a PLT program.
DFHMQ0341 I	*date time applid shutdown-type* requested by alert monitor CKAM.
DFHMQ0342 I	*date time applid request* received from alert monitor.
DFHMQ0343 E	*date time applid* MQOPEN failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0344 E	*date time applid* MQINQ failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0345 E	*date time applid* MQCLOSE failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0350 I	*date time applid* Unable to LOAD API exit CSQCAPX. Program not found.
DFHMQ0351 I	*date time applid* Unable to LOAD API exit CSQCAPX. Program is disabled.
DFHMQ0360 D	*date time applid* Unable to RETRIEVE RTRANSID. Monitor terminated. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0361 D	*date time applid* Unexpected invocation. Monitor terminated.
DFHMQ0362 D	*date time applid* Unable to EXTRACT EXIT DFHMQTRU. Monitor terminated. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0363 D	*date time applid* Unable to perform WAIT EXTERNAL. Monitor terminated. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0364 I	*date time applid* Monitor terminated normally.
DFHMQ0365 E	*date time applid* Unable to LINK to program DFHMQQCN. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0366 E	*date time applid* Unable to LINK to program DFHMQDSC. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0368 E	*date time applid* Invalid PEB type *X'type'* at location *X'location'*. PEB ignored.
DFHMQ0369 E	*date time applid* More than 99 notify messages outstanding. This message is postponed temporarily.
DFHMQ0380 E	*date time applid* No active connection. *{STARTCKTI | STOPCKTI | RESET | DISPLAY}* rejected.
DFHMQ0381 D	*date time applid* No initiation queue name specified at connect time. *{STARTCKTI | STOPCKTI}* rejected.
DFHMQ0382 D	*date time applid* CKTI with the same initiation queue name is being started. *{STARTCKTI | STOPCKTI}* rejected.
DFHMQ0383 D	*date time applid* Another CKTI with the same initiation queue name is still running. *{STARTCKTI | STOPCKTI}* rejected.
DFHMQ0384 D	*date time applid* Another CKTI with the same initiation queue name is being stopped. *{STARTCKTI | STOPCKTI}* rejected.
DFHMQ0385 D	*date time applid* CKTI not found. *{STARTCKTI | STOPCKTI}* rejected.
DFHMQ0386 I	*date time applid {STARTCKTI | STOPCKTI | RESET}* initiated from TERMID=*termid* TRANID=*tranid* USERID=*userid* and is accepted.
DFHMQ0389 I	*date time applid* Invalid input. Start/Stop CKTI rejected.
DFHMQ0400 I	*date time applid* UOWID=*conn-name.X'uow-id'*

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0402 I	*date time applid* Resolved with COMMIT.
DFHMQ0403 I	*date time applid* Resolved with BACKOUT.
DFHMQ0404 E	*date time applid* Resolve failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0405 E	*date time applid* Execute resolve failed. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0406 E	*date time applid* Cannot resolve, syncpoint disposition lost.
DFHMQ0407 E	*date time applid* Cannot resolve, syncpoint disposition unknown.
DFHMQ0408 I	*date time applid* Only partial resynchronization achieved. Check above messages.
DFHMQ0409 I	*date time applid* Resynchronization completed successfully.
DFHMQ0410 I	*date time applid* CICS immediate shutdown detected. Adapter terminated.
DFHMQ0411 I	*date time applid* CICS warm shutdown detected. Adapter is quiescing.
DFHMQ0412 I	*date time applid* CICS abend detected. Adapter terminated.
DFHMQ0414 I	*date time applid* Abending task ID *task-id* Abend Code *abend-code*.
DFHMQ0415 I	*date time applid* Task ID *task-id* will continue. Force purge ignored.
DFHMQ0416 I	*date time applid* Address *X'address'* is out of range. Area of length *length* is not traced.
DFHMQ0418 E	*date time applid* Unable to LOAD program CSQAVICM. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0420 E	*date time applid* Unable to send map *map-id* mapset DFHMQ1x. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0421 I	*applid* Tab cursor was not on a valid object.
DFHMQ0422 E	*date time applid* Unable to RETURN TRANSID CKBM. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0423 E	*date time applid* Unable to XCTL to program *pgm-name*. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0424 I	*applid* Invalid key entered.
DFHMQ0425 E	*applid* No parameter window for this function.
DFHMQ0430 E	*date time applid* Unknown map name *map-id*. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0431 E	*applid* Invalid action number. Re-enter.
DFHMQ0432 E	*applid* Invalid task number. Re-enter.
DFHMQ0433 E	*date time applid* Invalid option. Must be 1, 2, or 3.
DFHMQ0434 E	*date time applid* Queue manager name missing. Must be entered.
DFHMQ0439 E	*date time applid* Invalid Stop option. Must be 1 or 2.
DFHMQ0440 E	*date time applid* Unable to send map *map-id* mapset DFHMQHx. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0443 E	*date time applid* Unable to RETURN TRANSID CKRT. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*.
DFHMQ0451 I	*date time applid* Nothing to reset. Reset completed.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0452 I	*date time applid* Invalid input. Reset rejected.
DFHMQ0453 I	*applid* Status of connection to *qmgr-name* is *{Connecting | Pending | Connected | Quiescing | Stopping-Force | Disconnected | Inactive | Unknown}*. *number* tasks are in flight.
DFHMQ0455 E	*date time applid* Unable to WRITEQ TS. EIBFN=*X'eibfn'* EIBRESP=*eibresp* EIBRESP2=*eibresp2* EIBRCODE=*X'eibrcode'*. Queue name is *q-name*.
DFHMQ0456 I	*applid* No tasks found. Display completed.
DFHMQ0457 I	*applid* No CKTI found. Display rejected.
DFHMQ0458 E	*date time applid* Invalid input. Display rejected.
DFHMQ0460 I	*applid* Bottom of display.
DFHMQ0461 I	*applid* Top of display.
DFHMQ0462 E	*date time applid* Invalid input. Request rejected.
DFHMQ0480 E	*date time applid* MQCC=*mqcc* MQRC=*mqrc* QRPL at *X'qrpl-address'* FRB at *X'frb-address'*.
DFHMQ0481	*date time applid* Unexpected error. MQCC=*mqcc* MQRC=*mqrc* FRB at *X'frb-address'*.
DFHMQ0500	*{Connecting | Pending | Connected | Quiescing | Stopping-Force | Disconnected | Inactive | Unknown }*
DFHMQ0501	*{Initiation Queue Name:}*
DFHMQ0502	*{More - + | More - | More +}*
DFHMQ0503	*{Off | On | Yes | No }*
DFHMQ0504	*{In Queue | Msg Wait | Purged | Between | Running | Normal | Shutdown | Starting | Stopping}*
DFHMQ0505	*{(Not specified at connect time) }*
DFHMQ0506	*{Start Task Initiator | Stop Task Initiator }*
DFHMQ0700 I	*date time applid tranid trannum* CICS-MQ Bridge initialization in progress.
DFHMQ0702 I	*date time applid tranid trannum* CICS-MQ bridge monitor initialization complete.
DFHMQ0703 I	*date time applid tranid trannum* WaitInterval=*interval*, Auth=*auth-option* Q=*q-name*.
DFHMQ0704 E	*date time applid tranid trannum* EIBRESP=*eibresp* EIBRESP2=*eibresp2* returned for EXEC CICS call. EIBFN=*eibfn*.
DFHMQ0705 E	*date time applid tranid trannum* Parameter at offset *nn* in input string is invalid.
DFHMQ0707 I	*date time applid tranid trannum* CICS-MQ Bridge is not supported on non-z/OS platforms.
DFHMQ0710 E	*date time applid tranid trannum* MQCC=*mqcc* MQRC=*mqrc* returned for *MQ-call*.
DFHMQ0711 E	*date time applid tranid trannum* Unable to open bridge queue *q-name*.
DFHMQ0712 I	*date time applid tranid trannum* CICS-MQ Bridge quiescing.
DFHMQ0713 I	*date time applid tranid trannum* CICS-MQ Bridge terminated normally.
DFHMQ0714 I	*date time applid tranid trannum* CICS-MQ Bridge task starting.
DFHMQ0715 E	*date time applid tranid trannum* Invalid COMMAREA length *length* in message.
DFHMQ0716 E	*date time applid tranid trannum* MQCIH required for UOW middle and last messages.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0717 E	*date time applid tranid trannum* UOW first or only received when UOW middle or last expected.
DFHMQ0718 E	*date time applid tranid trannum* UOW middle or last received when UOW first or only expected.
DFHMQ0720 E	*date time applid tranid trannum* Authentication option IDENTIFY or VERIFY_ requires a security manager to be active.
DFHMQ0721 E	*date time applid tranid trannum* Invalid MQCIH.
DFHMQ0724 E	*date time applid tranid trannum* Bridge queue *q-name* is not defined as local.
DFHMQ0725 I	*date time applid tranid trannum* Messages on bridge queue are not persistent by default.
DFHMQ0729 I	*date time applid tranid trannum* No dead-letter queue defined to queue manager.
DFHMQ0730 I	*date time applid tranid trannum* Unable to open dead-letter queue. MQRC=*mqrc*.
DFHMQ0731 I	*date time applid tranid trannum* Unable to inquire on dead-letter queue, MQRC=*mqrc*.
DFHMQ0732 I	*date time applid tranid trannum* Unable to put message to dead-letter queue. MQRC=*mqrc*.
DFHMQ0733 I	*date time applid tranid trannum* Dead-letter queue not defined with USAGE(NORMAL).
DFHMQ0734 I	*date time applid tranid trannum* Dead-letter queue max message length *length* is too small.
DFHMQ0735 I	*date time applid tranid trannum* CICS or queue manager quiesced before bridge task started.
DFHMQ0736 I	*date time applid tranid trannum* Bridge quiesced before task started.
DFHMQ0737 E	*date time applid tranid trannum* CICS or queue manager quiesced, bridge task backed out.
DFHMQ0738 E	*date time applid tranid trannum* CICS-MQ Bridge quiesced, task backed out.
DFHMQ0739 E	*date time applid tranid trannum* Bridge terminated, timeout interval expired before middle or lastUOW message received.
DFHMQ0740 E	*date time applid tranid trannum* Client application requested backout.
DFHMQ0745 E	*date time applid tranid trannum* Unable to put message to reply queue. MQRC=*mqrc*.
DFHMQ0746 E	*date time applid tranid trannum* Invalid CCSID. *ccsid1* expected but *ccsid2* received.
DFHMQ0747 E	*date time applid tranid trannum* Invalid encoding. *encoding1* expected but *encoding2* received.
DFHMQ0748 E	*date time applid tranid trannum* Message removed from the request queue during backout processing.
DFHMQ0749 E	*date time applid tranid trannum* Authentication error. MQCC=*mqcc* MQRC=*mqrc* Userid=*user-id*.
DFHMQ0750 E	*date time applid tranid trannum* CICS-MQ Bridge internal error.
DFHMQ0751 E	*date time applid tranid trannum* EIBRESP=*eibresp* EIBRESP2=*eibresp2* .Unable to LINK to program *program-name*.
DFHMQ0753 E	*date time applid tranid trannum* Message has been processed previously and returned to the queue using backout.
DFHMQ0754 E	*date time applid tranid trannum* Bridge task abend *abend-code* in program *program-name*.
DFHMQ0755 E	*date time applid tranid trannum* Bridge queue is not shareable.
DFHMQ0756 E	*date time applid tranid trannum* Dead-letter queue not defined as local.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0757 E	*date time applid tranid trannum* Unable to open reply-to queue. MQRC=*mqrc*.
DFHMQ0758 E	*date time applid tranid trannum* Unable to START bridge task. EIBRESP=*eibresp* EIBRESP2=*eibresp2*. Userid *userid* is not authorized.
DFHMQ0759 E	*date time applid tranid trannum* Transaction *transid* is transid not defined to CICS.
DFHMQ0760 I	*date time applid tranid trannum* MsgId=*msgid*.
DFHMQ0761 I	*date time applid tranid trannum* CorrelId=*CorrelId*.
DFHMQ0762 I	*date time applid tranid trannum* Queue name=*q-name*.
DFHMQ0763 I	*date time applid tranid trannum* Queue manager=*queue-manager-name*.
DFHMQ0764 E	*date time applid tranid trannum* Invalid userid. *user-id1* expected but *user-id2* received.
DFHMQ0766 I	*date time applid tranid trannum* Bridge queue not defined with INDXTYPE(CORRELID).
DFHMQ0767 I	*date time applid tranid trannum* Unable to open backout-requeue queue. MQRC=*mqrc*.
DFHMQ0768 E	*date time applid tranid trannum* Backout-requeue queue not defined as local.
DFHMQ0769 I	*date time applid tranid trannum* Unable to inquire on backout-requeue queue. MQRC=*mqrc*.
DFHMQ0770 I	*date time applid tranid trannum* Backout-requeue queue not defined with USAGE(NORMAL).
DFHMQ0771 I	*date time applid tranid trannum* Unable to put message to backout-requeue queue. MQRC=*mqrc*.
DFHMQ0772 E	*date time applid tranid trannum* Invalid FacilityLike value *xxx* in message.
DFHMQ0773 E	*date time applid tranid trannum* Invalid or expired Facility token in message.
DFHMQ0774 E	*date time applid tranid trannum* Unable to start transaction on CICS system *sys-name*.
DFHMQ0775 I	*date time applid tranid trannum* Unable to start transaction on this CICS system.
DFHMQ0776 E	*date time applid tranid trannum* Invalid FacilityKeepTime value *xxx* in message.
DFHMQ0777 E	*date time applid tranid trannum* Link3270 error. RC=*code*.
DFHMQ0778 E	*date time applid tranid trannum* Abend *abend-code* in transaction *tran-id*.
DFHMQ0779 E	*date time applid tranid trannum* Mapset does not match. *mapset-id1* expected but *mapset-id2* received.
DFHMQ0780 E	*date time applid tranid trannum* Map name does not match. *map-id1* expected but *map-id2* received.
DFHMQ0781 E	*date time applid tranid trannum* Invalid bridge vector.
DFHMQ0782 E	*date time applid tranid trannum* File DFHBRNSF is not available.
DFHMQ0783 I	*date time applid tranid trannum* Msg=BOTH, PassTktA=*applid*.
DFHMQ0784 E	*date time applid tranid trannum* Input=*parm_string*.
DFHMQ0785 E	*date time applid tranid trannum* Link3270 routing failed - not supported by CICS system.
DFHMQ0786 E	*date time applid tranid trannum* Link3270 routing failed - connection error.
DFHMQ0787 E	*date time applid tranid trannum* Link3270 routing failed - TERMERR.
DFHMQ0788 E	*date time applid tranid trannum* Link3270 routing failed - TRANDEF error.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHMQ0789 E	*date time applid tranid trannum* Link3270 routing failed - URM error. RC=*code* CompCode=*compcode*.
DFHMQ0790 E	*date time applid tranid trannum* Transaction not running.
DFHMQ0791 E	*date time applid tranid trannum* Invalid header *format* found in message.
DFHMQ0999I **DFHNC0123**	*date time applid tranid tasknum* Trace point: *trace function* IXCARM REQUEST=*reqtype* failed, return code *retcode*, reason code *rsncode*.
DFHPA1946	*applid* APPLID is already in use by another CICS in the sysplex. CICS is terminated.
DFHPI0115	*date time applid tranid* The service provider pipeline has returned a response message to the MQ transport, but the inbound request did not expect a response. The response message is ignored.
DFHPI0116	*date time applid* A one-way request has been received as a Websphere MQ persistent message, but the provider pipeline has abended or backed out changes to recoverable resources. The BTS process *processname* of processtype *processtype* has completed with status ABENDED and this process can be re-tried or used to provide information for reporting the failure.
DFHPI0117	*date time applid* BTS Process *processname* of processtype *processtype*, which has completed with status ABENDED, has been cancelled. A provider pipeline started with a persistent Websphere MQ message has abended or backed out, but a response has been sent to the requester.
DFHPI0118	*applid* CICS has attempted to use BTS processes to support pipelines started with Websphere MQ persistent messages. This attempt failed. CICS will continue, using channel based containers for the pipeline, but there is a risk of data loss in the event of a system failure. Ensure that BTS processtype, repository and local request queue are correctly defined and installed.
DFHPI0403	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to receive a response because *{the socket receive was timed out}*. The RESPWAIT interval was exceeded.
DFHPI0511	*date time applid tranid* The CICS Pipeline Manager has failed to receive a response from the target Secure Token Service *sts_URI*. The response message failed to parse.
DFHPI0512	*date time applid tranid* The CICS Pipeline Manager has received a fault from the target Secure Token Service: *sts_URI*. The fault had a fault code of *fault_code*.
DFHPI0513	*date time applid tranid* The CICS Pipeline Manager has failed to find the required credentials in a response from the Secure Token Service: *sts_URI*.
DFHPI0514	*date time applid tranid* The CICS Pipeline Manager has failed to find the required credentials in a request. An element *local_name* , in namespace: *namespace*, was expected.
DFHPI0602	*date time applidtranid trannum* The CICS SOAP handler failed to parse a message. The parser error code is *errcode*. The error was found at offset *offset* into the message.
DFHPI0721 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for pipeline at offset *X'offset'*. The value *attribvalue* for attribute *attribname* is not valid.
DFHPI0722 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The WSSE_Handler configuration has values specified for mode and trust that are not valid in this pipeline.
DFHPI0723 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The value for the algorithm specified for the *element* is not supported.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI0724 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The WSSE_Handler configuration has both <authentication> and <sts_authentication> elements specified. You must only specify one of these elements.
DFHPI0725 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The element *element* must be specified.
DFHPI0726 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The element *element* is a duplicate or unrecognized element.
DFHPI0731	*date time applid* An attempt to register unit of work - *X'uowid'* with a remote WSAT coordinating transaction has failed.
DFHPI0732	*date time applid* A request to rollback unit of work - *X'uowid'* has been received from a remote WS-AT coordinating transaction.
DFHPI0733	*date time applid* A transaction timed out while waiting for a Prepare message from a remote WS-AT coordinator. The unit of work - *X'uowid'* will be rolled back.
DFHPI0801	*date time applid* A one way message has been found in an atomic transaction message exchange for transaction *TRAN*.
DFHPI0917	*date time applid userid* WEBSERVICE *webservice* might perform unpredictably as the PIPELINE *pipeline* is non-SOAP.
DFHPI0996	*date time applid* The Outbound Router program, DFHPIRT, has received a non-NORMAL response while attempting to read a container. The resulting error code is *X'code'* and the container name is *container_name*.
DFHPI0997	*date time applid tranid pipeline* The CICS pipeline manager has encountered an error: *{PIPELINE not found | PIPELINE not active | PIPELINE mode mismatch | unhandled node failure | context switch failed | request stream creation failure | request stream transport error | target program unavailable | channel error | channel not found | URI not found | invalid URI | authorization failure | program abend | unidentified problem | RESPWAIT timeout has occurred | no request message}*.
DFHPI1000	*date time applid* The Outbound Router program, DFHPIRT, has detected an invalid URI in the DFHWS-STSACTION container. The URI was '*URI*'.
DFHPI1007	*date time applid trannum* SOAP message processing failed because of incorrect input (*{XML_FORMAT_ERROR | UNEXPECTED_CONTENT | HEADER_FORMAT_ERROR | UNDEFINED_ELEMENT | UNDEFINED_NAME_SPACE | ARRAY_OVERFLOW | NAME_TOO_LONG | PREFIX_TOO_LONG | NAME_SPACE_TOO_LONG | UNEXPECTED_XOP_INCLUDE | XOP_INCLUDE_ERROR} error_qualifier*).
DFHPI1008	*date time applid trannum* SOAP message generation failed because of incorrect input (*{ARRAY_CONTAINER_TOO_SMALL | INPUT_STRUCTURE_TOO_SMALL | INPUT_ARRAY_TOO_LARGE | INPUT_ARRAY_TOO_SMALL | CONTAINER_NOT_FOUND | CONTAINER_NOT_BIT} error_qualifier*).
DFHPI1009	*date time applid trannum* SOAP message processing failed. A conversion error (*{UNKNOWN_CONVERSION | INPUT_TOO_LONG | OUTPUT_OVERFLOW | NEGATIVE_UNSIGNED | NO_FRACTION_DIGITS | FRACTION_TOO_LONG | INVALID_CHARACTER | ODD_HEX_DIGITS | INVALID_BASE64 | NOT_PURE_DBCS | INVALID_FIELD_SIZE | EXPONENT_OVERFLOW | EXPONENT_UNDERFLOW}*) occurred when converting field *fieldname*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI1010	*date time applid trannum* SOAP message generation failed. A conversion error (*{UNKNOWN_CONVERSION | NEGATIVE_UNSIGNED | INVALID_CHARACTER | INVALID_PACKED_DEC | INVALID_ZONED_DEC | INCOMPLETE_DBCS | ODD_DBCS_BYTES | INVALID_FIELD_SIZE | EXPONENT_OVERFLOW | EXPONENT_UNDERFLOW}*) occurred when converting field *fieldname*.
DFHPI1100 E	*date time applid userid* PIPELINE *pipeline* encountered an error while processing an inbound MIME mes sage. The problem with the MIME message is: *{it contained an invalid character | it had an invalid header | it had an invalid MIME header | it had a boundary error | it did not contain a root part | it used an unsupported encoding | it caused an unexpected response}*.
DFHPI1101 E	*date time applid userid* PIPELINE *pipeline* encountered an error while processing an inbound MIME mes sage in compatibility mode. The problem with the MIME message was it contained: *{a body that could not be parsed | an include for which there was no attachment}*.
DFHPI1102 E	*date time applid userid* PIPELINE *pipeline* encountered an error while processing an outbound MIME me ssage in compatibility mode. Generation of the MIME message failed because: *{it contained a body that could not be parsed | a container had an invalid CCSID | a container had the wrong type}*.
DFHPI1103 E	*date time applid userid* PIPELINE *pipeline* encountered an error while processing an outbound message in MIME compatibility mode. The problem with the MIME message was *{it contained a body that could not be parsed | it had an include for which there was no attachment | it caused an unexpected exception}*.
DFHPI9000 E	ResourceBundle not found issuing message: *value*.
DFHPI9001 E	Message not found issuing message: *value*.
DFHPI9002 E	A WSDL operation name is too long to be supported by CICS *value*.
DFHPI9003 E	A WSDL part name is too long to be supported by CICS: *value*.
DFHPI9004 E	The WSDL specifies a style value of document and contains a part name that refers to an XML type. Document style WSDL must only refer to XML elements.
DFHPI9010 E	Simple data type *type* is not atomic. List and union data types are not supported.
DFHPI9011 E	Unsupported super type *super_type* found for type *base_type*.
DFHPI9012 E	Schema wild cards (<any> tags) are not supported.
DFHPI9013 E	Schema model groups with maxOccurs or minOccurs not equal to 1 are not supported. Problem found for type: *value*.
DFHPI9014 E	No model group found for model group definition *definition*.
DFHPI9015 E	A schema particle with unrecognized content has been found *value*.
DFHPI9016 E	Required schema element *element* cannot be found.
DFHPI9017 E	Unsupported attribute *attribute* found for schema element *element*.
DFHPI9018 E	Schema element *element* is missing a type definition.
DFHPI9019 E	Schema type *type* is not supported.
DFHPI9020 W	Schema attribute *attribute* has been found and ignored for type *type*.
DFHPI9021 E	A schema type with unrecognized content has been found: *value*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9022 W	Schema type *type* is being restricted to a total of *value* digits in the response message of operation *operation*.
DFHPI9023 W	Schema type *type* is being restricted to a total of *value* digits for operation *operation*.
DFHPI9024 E	Recursion within type *type* is not supported.
DFHPI9025 E	Required schema type *type* cannot be found.
DFHPI9026 E	URI *URI* cannot be resolved. Consider checking that the HTTP Proxy is correct.
DFHPI9027 E	The XML parser has found an error: *value* at line *line* and column *column* in document *document*.
DFHPI9028 E	The length of schema element *element* is set to *value* characters. CICS only supports up to *value2* characters.
DFHPI9029 E	Implicit padding (slack bytes) are not supported for PL/I. Please change the language structure to ensure that all slack bytes are explicitly referenced and that top level structures start on a double-word boundary. Slack bytes are needed near or around field *field*.
DFHPI9030 E	Implicit padding (slack bytes) are not supported for PL/I. Please change the language structure to ensure that all slack bytes are explicitly referenced and that top level structures start on a double-word boundary. Slack bytes are needed near or around structure *structure*.
DFHPI9031 E	A structure or array is unexpectedly empty.
DFHPI9032 W	Schema attribute wild cards (<anyAttribute> tags) are not supported.
DFHPI9035 E	XML Schema element cannot be found in document *document*.
DFHPI9036 W	Abstract Data Types are not supported. Problems may be experienced with type *type* in element *element*.
DFHPI9037 E	XML Schema model groups are not supported within <choice> structures. Problem found in type *type*.
DFHPI9038 E	The number of options for an enumerated set of options exceeds the maximum supported value of 255.
DFHPI9039 E	Substitution groups within xsd:choice constructs are not supported. The substitution group name is *name*.
DFHPI9500 E	An internal error has occurred. Please contact IBM Support.
DFHPI9501 E	The HTTPPROXY parameter is invalid. The correct format is proxy.hostname.com:8080 or similar.
DFHPI9502 E	One or more incorrect parameters have been specified.
DFHPI9503 E	Required parameter *parameter* is missing.
DFHPI9504 E	Parameter *parameter* has been specified but is not valid for program *program*.
DFHPI9505 E	Invalid value specified for the LANG parameter. Valid values are COBOL, PLI-ENTERPRISE, PLI-OTHER, C or CPP.
DFHPI9506 E	Parameter *parameter* exceeds the maximum valid length of *value* characters.
DFHPI9507 W	Parameter *parameter* is not set therefore parameter *parameter2* is ignored.
DFHPI9509 E	Parameter *parameter* contains invalid characters.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9510 W	Invalid value specified for the PGMINT parameter. Valid values are CHANNEL or COMMAREA. The default value of CHANNEL is assumed.
DFHPI9511 W	Parameter PGMINT is set to CHANNEL but parameter CONTID is not set. The default value of *value* is assumed.
DFHPI9512 W	Parameter CONTID is set but not needed for PGMINT=COMMAREA. Parameter CONTID is ignored.
DFHPI9513 W	The value of parameter WSBIND is missing a file extension, .wsbind is assumed.
DFHPI9514 W	The value of parameter WSBIND specified a file extension other than
DFHPI9515 E	PDS library *library* cannot be found.
DFHPI9516 E	PDS library *library* exists but cannot be read.
DFHPI9517 E	PDS library *library* exists but cannot be written to.
DFHPI9518 W	PDS library *library* specifies a record length less than 80 characters, output may be truncated.
DFHPI9519 E	Codepage *codepage* is not recognized.
DFHPI9520 E	Parameter RESPMEM and parameter REQMEM must supply different values.
DFHPI9521 E	The record format of PDS member *member* must be FB and have a record length of 80.
DFHPI9522 E	File *file* cannot be read.
DFHPI9523 E	An unexpected error occurred whilst processing file *file*. The problem is: *value*.
DFHPI9524 E	File *file* cannot be written to.
DFHPI9525 E	Cannot write a file because directory *directory* does not exist.
DFHPI9526 E	Cannot write a file because directory *directory* is not writable.
DFHPI9527 E	Cannot write to the log file, *file,* is not writable.
DFHPI9528 E	Cannot find or read file *file*.
DFHPI9529 W	Characters beyond column *column* have been truncated for line *line*.
DFHPI9530 I	Parameter *parameter* is not recognized and has been ignored.
DFHPI9531 E	Parameter STRUCTURE must only contain (or) characters in the first or last position.
DFHPI9532 E	Parameter STRUCTURE must be of the form STRUCTURE=(request_structure_name, response_structure_name).
DFHPI9533 E	Parameter *parameter* contains an invalid character *character* at position *position* in value *value*.
DFHPI9534 E	Non-unique operation signature found: *value*.
DFHPI9535 E	WSDL operation *operation* has an operation signature greater than *value* characters long and therefore is not supported by CICS.
DFHPI9536 E	User Defined Type *type* cannot be found.
DFHPI9537 W	Compiler directive *directive* has been ignored.
DFHPI9538 E	The required struct entry cannot be found.
DFHPI9539 E	An invalid character *character* has been found.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9540 E	Unsupported keyword *keyword* has been found.
DFHPI9541 E	Fixed point decimal types are not supported.
DFHPI9542 E	Unsupported macro *macro* has been found.
DFHPI9543 E	Constant *constant* is not supported in array dimension.
DFHPI9544 W	Unsupported keyword *keyword* has been found and ignored.
DFHPI9545 W	Assignment operator detected and ignored.
DFHPI9546 W	Initialization operator detected and ignored.
DFHPI9547 E	Top level variables are not supported: *value*.
DFHPI9548 E	Top-level structure *structure* must be named *value*.
DFHPI9549 E	A type definition has been found with no instance and no label.
DFHPI9550 E	Duplicate type name *name* found.
DFHPI9551 E	Structure *structure* cannot be found.
DFHPI9552 E	Value *value* is not a valid integer.
DFHPI9553 E	PICTURE *picture* is not supported for BINARY or DISPLAY types.
DFHPI9554 E	PICTURE *picture* is not supported.
DFHPI9555 E	Top level structure found within the main structure.
DFHPI9556 E	An unexpected error occurred whilst writing to file *file*. The problem is: *value*.
DFHPI9557 E	ERRORS and WARNINGS have been generated processing file *file*.
DFHPI9558 E	ERRORS have been generated processing file *file*.
DFHPI9559 W	Illegal character *character* has been found at the start of a name and replaced with X.
DFHPI9560 W	Illegal character *character* has been found in a name and replaced with X.
DFHPI9561 I	Identifier *identifier* has generated a name-clash for operation *operation*. Subsequent declarations have been renamed to ensure their uniqueness.
DFHPI9562 E	Parameter PGMINT is specified with value COMMAREA but there is too much data required for a COMMAREA.
DFHPI9563 E	Unsupported PL/I source code detected in line *line*.
DFHPI9564 W	A terminating ; is missing, it is assumed to be at the end of the file.
DFHPI9565 E	ALIGNED and UNALIGNED keywords are not supported for an entire structure.
DFHPI9566 E	The FIXED and FLOAT attributes are both missing: *value*.
DFHPI9567 E	Too many digits have been specified for a packed decimal field *value*.
DFHPI9568 E	The UNSIGNED attribute is not supported unless PLI-ENTERPRISE is specified: *value*.
DFHPI9569 E	Unsupported PL/I source code detected after line *line*.
DFHPI9570 E	FIXED BINARY types with length greater than 31 are not supported unless PLI-ENTERPRISE is specified: *value*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9571 W	ORDINAL references are always treated as SIGNED FIXED BINARY (7) data types. If this is incorrect then please replace the ordinal reference with an equivalent FIXED BINARY variable: *value*.
DFHPI9572 E	ORDINAL types are only supported if PLI-ENTERPRISE is specified *value*.
DFHPI9573 E	BIT fields are only supported if they are in multiples of 8 *value*.
DFHPI9574 E	Lengths less that one are not supported for array data types *dataType*.
DFHPI9575 E	The length of a PICTURE cannot be found: *value*.
DFHPI9576 E	FIXED BINARY data types with a scaling factor of the form (p,q) with q not equal to 0 are not supported: *value*.
DFHPI9577 E	Precision factor *factor* is out of supported range *value*.
DFHPI9578 E	FIXED DECIMAL data types with a scaling factor of the form (p,q) with q greater than p are not supported: *value*.
DFHPI9579 E	FIXED DECIMAL data types with a scaling factor of the form (p,q) with q less than 0 are not supported: *value*.
DFHPI9580 I	PDS member *member* has been replaced.
DFHPI9581 E	An unexpected exception occurred when writing to the PDS.
DFHPI9582 I	File *file* has been replaced.
DFHPI9583 E	The supplied WSDL contains an element with different minOccurs and maxOccurs values. This is only supported when PGMINT is set to CHANNEL.
DFHPI9584 E	The WSDL file contains at least one request message but the REQMEM parameter has not been set.
DFHPI9585 E	The WSDL file contains at least one response message but the RESPMEM parameter has not been set.
DFHPI9586 W	A reserved word *word* has been detected in the WSDL, it has been changed to *value*.
DFHPI9587 I	Program *program* has completed SUCCESSFULLY.
DFHPI9588 E	WSDL binding *binding* has no operation elements in the WSDL.
DFHPI9589 E	The supplied WSDL requires too much data for a CICS Commarea. The PGMINT parameter must be set to CHANNEL.
DFHPI9590 E	A style attribute has not been specified for WSDL operation *operation*.
DFHPI9591 E	No input message has been found for WSDL operation *operation*.
DFHPI9592 W	An expected soapAction attribute is missing for WSDL operation *operation*.
DFHPI9593 W	An unexpected soapAction attribute has been found for WSDL operation *operation*. This can only be used with SOAP version 1.1.
DFHPI9594 E	An unexpected soapAction attribute has been found for WSDL operation *operation*. This can only be used with SOAP version 1.1.
DFHPI9595 E	The WSDL binding contains a mixture of rpc and document style attributes. This is not supported.
DFHPI9596 E	The WSDL Binding for operation *operation* is missing an input message.
DFHPI9597 E	The WSDL file specifies a 'use' attribute value of *value*. Only literal WSDL is supported.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9598 E	WSDL binding *binding* references more than one transport protocol. Only one protocol is supported.
DFHPI9599 E	WSDL binding *binding* is not associated with a transport protocol.
DFHPI9600 E	The WSDL file contains multiple binding elements. The BINDING parameter must be set to specify which one to use.
DFHPI9601 E	Binding element *element* cannot be found in the WSDL file. Only one of the following values may be specified: *value*.
DFHPI9602 E	WSDL binding *binding* is not a SOAP binding.
DFHPI9603 E	Multiple WSDL service elements exist for a single binding element. Only one is supported unless the 'WSDL-SERVICE' parameter is set.
DFHPI9604 E	File *file* does not contain valid WSDL.
DFHPI9605 E	The value of the XML encoding tag must match that of the underlying file system. For example, the value UTF-8 may be appropriate.
DFHPI9606 E	The value of the XML encoding tag must match that of the underlying file system. For example, the value EBCDIC-CP-US may be appropriate.
DFHPI9607 E	An unexpected error occurred whilst processing WSDL operation *operation*. The problem is: *value*.
DFHPI9608 W	WARNINGS have been generated processing file *file*.
DFHPI9609 I	Parameter *parameter* has value *value*.
DFHPI9610 W	Platform *platform* is not a supported platform for this API.
DFHPI9611 W	All content after the first ';' for line *line* is ignored.
DFHPI9612 E	Provider mode Web services with more than one operation must specify 'PGMINT=CHANNEL'.
DFHPI9613 E	Mapping level *level* is not recognized.
DFHPI9614 I	Mapping level *old* has been requested. The most current mapping level available is *new*.
DFHPI9615 E	The version of Java in use is *current*. The minimum version of Java required is *required*.
DFHPI9616 W	National characters in COBOL are assumed to be DBCS characters *line*.
DFHPI9617 E	The supplied WSDL contains an element with unknown length content which should be stored in a separate CONTAINER. This is only supported when PGMINT is set to CHANNEL.
DFHPI9618 E	The *keyword* keyword has been specified. This requires the use of LANG=PLI-ENTERPRISE.
DFHPI9619 E	Parameter *parameter* has been specified. It is not supported at mapping level *level*.
DFHPI9620 E	CCSID *CCSID* is not recognized.
DFHPI9621 W	CCSID *CCSID* is not recognized as an EBCDIC CCSID. Use of this CCSID may cause problems when the Web service is executed.
DFHPI9622 E	Invalid value specified for the *parameter* parameter. The length specified must be a positive integer between *min* and *max*.
DFHPI9623 E	Invalid value specified for the CHAR-VARYING parameter. Valid values are: NULL, NO or YES.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9624 E	Invalid value specified for the FLOAT parameter. Valid values are IEEE, HEX or HEXADEC.
DFHPI9625 E	Invalid value specified for the CHAR-VARYING parameter. Valid values are: NULL or NO.
DFHPI9626 W	Parameter *parameter* has been specified but is not valid when parameter *parameter2* is set. The parameter is ignored.
DFHPI9627 E	Minimum runtime level *level* is not recognized.
DFHPI9628 E	Parameter *parameter* has been specified but it is not compatible with the specified minimum runtime level.
DFHPI9629 I	The minimum runtime level required for this Web service is *level*.
DFHPI9630 W	The minimum runtime level required for this Web service is greater than the mapping level due to the use of the *parameter* parameter.
DFHPI9631 E	Field *field* requires a character array length of *length* but the largest length that can be used in *language* is *maxlength*.
DFHPI9632 E	URI *URI* is invalid. The reported problem is: *problem*.
DFHPI9633 E	Invalid value specified for the SOAPVER parameter. Valid values are: 1.1, 1.2 or ALL.
DFHPI9634 E	WSDL service element *service* cannot be found in the WSDL document.
DFHPI9635 E	WSDL reusable binding *binding* may only be used if the WSDL-SERVICE parameter is specified.
DFHPI9636 E	WSDL operation *operation* cannot be found.
DFHPI9637 W	One or more WSDL operations have not been processed for a provider mode Web service.
DFHPI9638 W	The minimum runtime level required for this Web service is greater than the mapping level due to the use of WSDL 2.0
DFHPI9639 E	WSDL 2.0 has been used but it is not compatible with the specified minimum runtime level.
DFHPI9640 I	This Web service should be installed into a PIPELINE that uses SOAP version *soapver*.
DFHPI9641 E	Unsupported message content model *contentModel* found whilst processing operation *operation*.
DFHPI9642 E	WSDL Message Exchange Pattern *mep* is unsupported. This pattern is specified for operation *operation*.
DFHPI9643 I	This Web service requires a capability implied by URI *URI*. It must be installed into an appropriate PIPELINE.
DFHPI9644 I	This Web service supports a capability implied by URI *URI*.
DFHPI9645 I	Operation *operation* requires a capability implied by URI *URI*. It must be installed into an appropriate PIPELINE.
DFHPI9646 I	Operation *operation* supports a capability implied by URI *URI*.
DFHPI9647 I	The request message for operation *operation* requires a capability implied by URI *URI*. It must be installed into an appropriate PIPELINE.
DFHPI9648 I	The request message for operation *operation* supports a capability implied by URI *URI*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHPI9649 I	The response message for operation *operation* requires a capability implied by URI *URI*. It must be installed into an appropriate PIPELINE.
DFHPI9650 I	The response message for operation *operation* supports a capability implied by URI *URI*.
DFHPI9651 E	The value of parameter *parameter1* is incompatible with the value of parameter *parameter2*.
DFHPI9652 W	A required but unsupported WSDL extensibility element has been detected. The element is of type *type*.
DFHPI9653 W	An unresolved PolicyReference element has been found and ignored. The URI associated with this PolicyReference is *URI*.
DFHPI9654 W	An unsupported Policy element has been found. The element is of type *type* in namespace *namespace*.
DFHPI9655 E	The supplied WSDL file contains a message exchange pattern of in-opt-out. This is only supported when PGMINT is set to CHANNEL.
DFHPI9656 E	The WSDL file does not contain any binding elements. There must be at least one WSDL binding.
DFHPI9657 W	The WSDL file contains *elementType* elements but the *parameter* parameter has not been specified. These elements are ignored.
DFHPI9658 E	Directory *directory* cannot be read.
DFHPI9659 E	Directory *directory* is not a valid directory.
DFHPI9660 I	WS-Policy file *file* has been processed.
DFHPI9661 E	File *file* is not a CICS WS-Policy file.
DFHPI9662 E	An exception was thrown whilst processing WS-Policy file *file*. The exception message is: *exception*.
DFHPI9663 E	Operation *Operation* specified a SOAP MEP of *specified_MEP*. The only SOAP MEP supported is *supported_MEP*.
DFHPI9668 E	Invalid value specified for the XML-ONLY parameter. Valid values are: TRUE or FALSE.
DFHPI9676 E	The supplied WSDL contains constructs that are only supported when 'PGMINT' is set to 'CHANNEL'.
DFHRD0126 I	*date time applid terminal userid tranid* INSTALL IPCONN(*IPCONN-name*)
DFHRD0127 I	*date time applid terminal userid tranid* INSTALL LIBRARY(*library-name*)
DFHSI8421	*date time applid* PLT program *progname* has been invoked during the second stage of initialization.
DFHSI8431	*date time applid* PLT program *progname* has been invoked during the third stage of initialization.
DFHSI8445	*applid* An attempt to GETMAIN storage intended for the Language Interface work area failed.
DFHSJ0206	*date time applid* The runtime options specified in DFHJVMRO are too long. The Language Environment enclave cannot be initialized. The JVM was not started.
DFHSJ0521	*date time applid* Option TMPREFIX found in JVM profile *jvmprof* should only be used under guidance from IBM.
DFHSJ0522	*date time applid* Deprecated option TMSUFFIX found in JVM profile *jvmprof*. Value will be added to ibm.JVM.shareable.application.class.path after the CICS-supplied jar files.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHSJ0523	*date time applid* Deprecated option CLASSPATH found in JVM profile *jvmprof*. Use CLASSPATH_SUFFIX instead.
DFHSJ0524	*date time applid* Obsolete JVM option *option* found in JVM profile *profile*. Specify REUSE=YES or REUSE=NO. The JVM cannot be started.
DFHSJ0525	*date time applid* Obsolete JVM option Xresettable found in JVM profile *profile* has been ignored.
DFHSJ0526	*date time applid* Obsolete option *option* found in JVM properties file *jvmprops* has been ignored.
DFHSJ0527	*date time applid* Obsolete option *option* found in JVM profile *jvmprof* has been ignored.
DFHSJ0528	*date time applid* Deprecated option MAX_RESETS_TO_GC found in JVM Profile *JVMprof*. Use GC_HEAP_THRESHOLD instead.
DFHSJ0529	*date time applid* Value *value* for GC_HEAP_THRESHOLD found in JVM Profile *JVMprof* must be between 50 and 100.
DFHSJ0530	*date time applid* Value *value* for IDLE_TIMEOUT found in JVM profile *profile* must be between 0 and 10080.
DFHSJ0531	*date time applid* JAVA_HOME directory *directory* specified in JVM profile *jvmprof* failed to open. The JVM cannot be started. Runtime error message is *errmsg*.
DFHSJ0532	*date time applid* Insufficient permission to access the JAVA_HOME directory *directory* specified in the JVM profile *jvmprof*. The JVM cannot be started.
DFHSJ0533	*date time applid* JAVA_HOME directory *directory* specified in JVM profile *jvmprof* does not contain a valid Java installation. The JVM cannot be started.
DFHSJ0534	*date time applid* Deprecated option CICS_DIRECTORY found in JVM profile *jvmprof*. Use CICS_HOME instead. Value will be treated as CICS_HOME.
DFHSJ0535	*date time applid* CICS_HOME directory *directory* specified in JVM profile *jvmprof* failed to open. The JVM cannot be started. Runtime error message is *errmsg*.
DFHSJ0536	*date time applid* Insufficient permission to access the CICS_HOME directory *directory* specified in JVM profile *jvmprof*. The JVM cannot be started.
DFHSJ0537	*date time applid* Incorrect CICS version in CICS_HOME directory *directory* specified in JVM profile *jvmprof*. The JVM cannot be started.
DFHSJ0538	*date time applid* Deprecated option LIBPATH found in JVM profile *jvmprof*. Use LIBPATH_SUFFIX instead.
DFHSJ0539	*date time applid* Deprecated option *option* found in JVM profile *profile*. Use *option2* instead.
DFHSJ0709	*date time applid* The runtime options specified in DFHJVMRO are too long. The Language Environment enclave cannot be initialized. The master JVM was not started.
DFHSM0601 I	*applid* Limit of above the bar storage available is *gdsalimitgdsaunits{NOLIMIT | }*from *gdsaloc*.
DFHSM0602	*applid* Insufficient storage to allocate the minimum above the bar memory object.
DFHSM0603	*applid* Insufficient storage to allocate the recommended 2GB above the bar memory object.
DFHSM0606	*applid* The amount of MVS above the bar storage available to CICS is critically low.
DFHSM0607	*applid* The amount of MVS above the bar storage available to CICS is no longer critically low.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHSO0128 A	*applid* Information to specify a bind to an LDAP server cannot be obtained from the PROXY segment of CRLPROFILE *profile*.
DFHSO0129 A	*applid* The LDAP server whose name was obtained from CRLPROFILE is inactive. Certificate revocation checks have been disabled.
DFHSO0131	*date time applid* The TCPIPSERVICE *TCPIPSERVICE* cannot be opened on the IP address *ipaddress* because the maximum number of ports has been reached.
DFHSO0132	An invalid function has been passed to DFHSOLX.
DFHST0236	DFHSTUP has reached its reporting limit of 520 applids, subsequent applid reporting is now suppressed.
DFHTC1600	*applid* The value for SYSIDNT, *sysid1*, does not match the one specified in the last cold or initial start, *sysid2*. CICS normal operation may be affected.
DFHTD0247	*applid* NOSPACE condition on a PUT to the intrapartition data set (DD name *ddname*). The data set is full.
DFHTD0386	*applid* The high RBA value of the primary extent for intrapartition data set (DD name *ddname*) is *highrba*. This exceeds the maximum allowable value of 2GB, and will be capped to a value of X'80000000' minus the CI size of the data set.
DFHTI0100	*applid* This is the Beta version of CICS TS which expires on *date*.
DFHTI0101	*applid* CICS failed to initialize. Beta version of CICS TS expired on *date*.
DFHWB0154 E	*date time applid client_ip_addr TCPIPSERVICE* The request receiver SOCB notify gate is unable to obtain storage.
DFHWB0364	*date time applid* An attempt to establish security for userid *userid* has failed. The requested static response cannot be returned. SAF codes are (*X'safresp'*,*X'safreas'*). ESM codes are (*X'esmresp'*,*X'esmreas'*). Host IP address: *hostaddr*. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*.
DFHWB0756	*date time applid tranid* The host on the received HTTP request is invalid. Client IP address: *clientaddr*. TCPIPSERVICE: *TCPIPSERVICE*
DFHWB0757	*date time applid tranid* A precondition specified by an If-Modified-Since header has failed. Client IP address: *clientaddr*. TCPIPSERVICE: *TCPIPSERVICE*.
DFHWB0758	*date time applid tranid* An attempt to access static data *data* has failed because the transaction user does not have READ access to the resource. Client IP address: *clientaddr* TCPIPSERVICE: *TCPIPSERVICE*.
DFHWB0759	*date time applid tranid* An attempt to access static data *data* has failed because the resource is not found. Client IP address: *clientaddr* TCPIPSERVICE: *TCPIPSERVICE*.
DFHWB0760	*date time applid tranid* An attempt to read HFS file *filename* has failed. Client IP address: *clientaddr*. TCPIPSERVICE: *TCPIPSERVICE*.
DFHWB0761	*date time applid tranid* An attempt to send a static response has failed due to an internal error. Client IP address *clientaddr* TCPIPSERVICE: *TCPIPSERVICE*.
DFHWB0762	*date time applid tranid* The received HTTP request specifies the OPTIONS method but cannot be handled by CICS. Status code *statuscode*. Host IP address: *hostaddr*. Client IP address: *clientaddr*. TCPIPSERVICE: *TCPIPSERVICE*.
DFHWB1560	*date time applid userid* URIMAP *URIMAP* has been created.
DFHWB1570	*date time applid userid* URIMAP *URIMAP* was successfully discarded.
DFHXQ0123	IXCARM REQUEST=*reqtype* failed, return code *retcode*, reason code *rsncode*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Message number	Message text
DFHXS1116	*date time applid tranid* Security violation by user *userid{ at IP address }location* for HFS file *hfsfile*. USS codes are (*X'ussvalue',X'ussreturn',X'ussreason'*).
DFHZC6312 E	*date time applid* Install for connection *cccc* failed. An IPCONN with this name already exists and its applid is not *netname*.
EYUVC1019E	You cannot mix passwords and password phrases in a change request.
EYUVC1020E	The CICS external security manager interface has not been initialized. Sign-on request failed.
EYUVC1021E	the ESM is currently not accepting signons. Please try later.
EYUVC1022E	Your user ID is invalid. Please retype.
EYUVC1023E	Incorrect password length. Sign-on is terminated.
EYUVC10234E	Incorrect new password length. Sign-on is terminated.

New messages in CICS Transaction Server for z/OS, Version 3 Release 1

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1

Message number	Message text
DFHAC2204	*time applid* A commit failure has occurred during syncpoint processing for transaction *tranid*. *condmsg*
DFHAC2205	*time applid* A backout failure has occurred during syncpoint processing for transaction *tranid*. *condmsg*
DFHAM4912 E	*applid* Install of *resource resourcename* failed because *attribute* is invalid for this release.
DFHAM4929 E	*applid URIMAP*(*resourcename*) was not installed because of conflicting attributes.
DFHAM4930 E	*applid* URIMAP(*urimap1*) not installed because it maps the same URI as *urimap2*.
DFHAM4931 E	*applid* The installation of WEBSERVICE *resourcename* failed because the associated *WSBIND file* | *PIPELINE* does not exist.
DFHAM4932 E	*applid* The installation of *PIPELINE* | *WEBSERVICE resourcename* failed because the *hfsfile* | *PIPELINE* setup was not correct.
DFHAM4933 E	*applid* The installation of PIPELINE *resourcename* failed because the WSDIR file specified is not accessible.
DFHAP0801I	*applid* z/OS Conversion Services are not available.
DFHAP0802	*applid* Data conversion using CCSID *ccsid1* and CCSID *ccsid2* is not supported by this system.
DFHAP0900	*applid* MQ support for CICS Web Services is not available.
DFHAP1218	*date time applid* CEEPIPI function *pipifn* failed with return code *r15rc*.
DFHAP1226	*date time applid* Program *program* is defined as EXECKEY(USER) but transaction *transaction* as TASKDATAKEY(CICS): these attributes are incompatible.
DFHBA0235	The container record being processed is not complete.
DFHCA5551 E	*date time applid* Command not executed. *keyword1* cannot be specified as generic unless *keyword2* is also generic.

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1 (continued)

Message number	Message text
DFHCE3540	Ensure that passwords are entered in the correct case.
DFHDS0010	*applid* Kill request accepted for transaction id *transid* , transaction number *tranum*, userid *userid*.
DFHDS0011	*applid* Kill request reaccepted for transaction id *transid* , transaction number *tranum*, userid *userid*.
DFHME0139	*applid* (Module:*modname*) Message *msgno* has been suppressed by KILL processing.
DFHOT0004	*applid* A possible loop has been detected at offset *X'offset'* in module *modname*.
DFHPI0001	*applid* An abend (code *aaa/bbbb*) has occurred at offset *X'offset'* in module *modname*.
DFHPI0002	*applid* A severe error (code *X'code'*) has occurred in module *modname*.
DFHPI0004	*applid* A possible loop has been detected at offset *X'offset'* in module *modname*.
DFHPI0110	*date time applid* An attempt to start transaction CPIH by something other than an attach request from web domain has been made. This is not allowed.
DFHPI0111	*date time applid tranid* Call to Websphere MQ function *function* returned with reason code *reason_code*. Transaction abended.
DFHPI0112	*date time applid tranid* Unable to locate URIMAP to match HOST *hostname* and PATH *pathname*. Unable to process inbound MQ message.
DFHPI0113	*date time applid tranid* URIMAP *urimapname* has been located for HOST *hostname* and PATH *pathname*, but does not have USAGE(PIPELINE). Unable to process inbound MQ message.
DFHPI0114	*date time applid tranid* The pipeline MQ transport mechanism failed because a call to Websphere MQ function *function* returned with reason code *reason_code*.
DFHPI0300	*date time applid* CICS could not invoke WEBSERVICE *WebService* because it was unable to find container .
DFHPI0301	*date time applid* CICS was unable to link to program *program_name* while attempting to invoke webservice *WebService*. *The program abended.* | *The program was not defined.* | *The program was not enabled.* | *The program was not loadable.* | *No further details are available.*
DFHPI0400	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to send a request because *it was using an invalid host codepage* | *of a socket error*.
DFHPI0401	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to send a response or receive a request because *the codepage was not found* | *of a socket error* | *the connection was closed* .
DFHPI0402	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to send
DFHPI0500	*date time applid tranid* The CICS Pipeline Manager DFHPIPM encountered an error while trying to link to program *program_name*. *The program abended.* | *The program was not defined.* | *The program was not enabled.* | *The program was not loadable.* | *No further details are available.* PIPELINE: *pipeline*.
DFHPI0501	*date time applid tranid* The CICS Pipeline Manager cannot proceed as the pipeline is unusable. *The pipeline was not found.* | *The pipeline is disabled.* | *The pipeline was of the wrong type.* PIPELINE: *pipeline*.
DFHPI0502	*date time applid tranid* The CICS Pipeline Manager has failed to receive a request from the underlying transport. TRANSPORT: *transport*, PIPELINE: *pipeline*.
DFHPI0503	*date time applid tranid* The CICS Pipeline Manager has failed to send a response on the underlying transport. TRANSPORT: *transport*, PIPELINE: *pipeline*.

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1 (continued)

Message number	Message text
DFHPI0504	*date time applid tranid* The CICS Pipeline Manager has failed to communicate with a remote server due to an error in the underlying transport. TRANSPORT: *transport*, PIPELINE: *pipeline*.
DFHPI0505	*date time applid tranid* The CICS Pipeline Manager has failed to communicate with a remote server as no URI was provided. PIPELINE: *pipeline*.
DFHPI0506	*date time applid tranid* The CICS Pipeline Manager has failed to communicate with a remote server due to an invalid URI scheme being specified. URI: *uri*, PIPELINE: *pipeline*.
DFHPI0507	*date time applid tranid* The CICS Pipeline Manager has failed to receive a response from an application handling task.*The request timed out.* | *The application task abended.* | *The connection to the application task was closed.* PIPELINE: *pipeline*.
DFHPI0508 E	*date time applid* The pipeline manager is unable to create or join a request stream because it is unable to reach the target for transaction *tranid* with userid *userid*.
DFHPI0509 E	*date time applid* The pipeline manager is unable to create or join a request stream because transaction *tranid* is not installed.
DFHPI0510 E	*date time applid* The pipeline manager is unable to create or join a request stream because it has encountered a severe error for transaction *tranid* with userid *userid*.
DFHPI0600	*date time applid* The CICS SOAP handler has been passed a container that is not DATATYPE(CHAR).
DFHPI0601	*date time applid* The CICS SOAP handler has been passed data that does not begin with a '<' character.
DFHPI0700 S	*date time applid userid* PIPELINE *pipeline* PL/I support is required in order to use pipelines.
DFHPI0701 I	*date time applid userid* PIPELINE *pipeline* has been created.
DFHPI0702 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for pipeline at offset *X'offset'*. The element name is *elementname*.
DFHPI0703 I	*date time applid userid* PIPELINE *pipeline* is about to scan the WSDIR directory.
DFHPI0704 I	*date time applid userid* PIPELINE *pipeline* Implicit scan has completed. Number of wsbind files found in the WSDIR directory: *num_files*. Number of successful webservice creates: *num_ok*. Number of failed webservice creates: *num_failed*.
DFHPI0705 E	*date time applid userid* PIPELINE *pipeline* encountered an error writing the configuration to the der ived shelf *derived-shelf* . The response code from the HFS write was *X'uss-response'* and the reason code was *'X'uss-reason'*.
DFHPI0706 E	*date time applid userid* PIPELINE *pipeline* resolution failed because it cannot be determined if this is a requester or provider pipeline.
DFHPI0707 E	*date time applid userid* PIPELINE *pipeline* resolution failed because namespace prefixes are not supp orted in the XML configuration file.
DFHPI0708 E	*date time applid userid* PIPELINE *pipeline* resolution failed because the XML configuration file cann ot be found.
DFHPI0709 E	*date time applid userid* PIPELINE *pipeline* resolution failed because the XML configuration file cann ot be copied to the derived shelf.
DFHPI0710 I	*date time applid userid* PIPELINE *pipeline* was successfully discarded.
DFHPI0711 E	*date time applid userid* PIPELINE *pipeline* resolution failed because the SAX parser returned error c ode *X'errcode'*. The error was at offset *X'offset'* in the CFGFILE. The first eight bytes of data at this offset are: *'hexdata'*.

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1 (continued)

Message number	Message text
DFHPI0712 E	*date time applid userid* PIPELINE *pipeline* failed to install due to insufficient access rights to a HFS file.
DFHPI0713 E	*date time applid userid* PIPELINE *pipelinename* The pipeline resolution transaction CPIR did not attach.
DFHPI0714 E	*date time applid userid* PIPELINE *pipeline* failed to install. The directory specified in the WSDIR p arameter is invalid.
DFHPI0715 I	*date time applid userid* PIPELINE *pipeline* Explicit scan has completed. Number of wsbind files found in the WSDIR directory: *num_files*. Webservices successful create/update: *num_ok*. Webservices not requiring update: *num_nun*. Webservices failed create/update: *num_failed*.
DFHPI0716 E	*date time applid userid* Unable to dynamically create a webservice for PIPELINE *pipeline*. The complete WSBIND file name is too long.
DFHPI0720 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* at offset *X'offset'* . Found : *element_found* yet expected : *element_expected* .
DFHPI0730	*date time applid* An attempt to register a remote webservice as a participant in unit of work - *X'uowid'* has failed.
DFHPI0800 E	*date time applid userid* Atomic Transaction processing failed because the SAX parser returned error code *X'errcode'*. The error was at offset *X'offset'* in the SOAP message.
DFHPI0901 I	*date time applid userid* New WEBSERVICE *WebService* is being created during a scan against PIPELINE *Pipeline*
DFHPI0902 I	*date time applid userid* WEBSERVICE *WebService* is being updated during a scan against PIPELINE *Pipeline*
DFHPI0903 I	*date time applid userid* New URIMAP *UriMap* is being created during a scan against PIPELINE *Pipeline* for WEBSERVICE *WebService*.
DFHPI0904 I	*date time applid userid* URIMAP *UriMap* could not be created for WEBSERVICE *WebService* in PIPELINE *Pipeline* . The URI that could not be allocated is: ' *Uri*'.
DFHPI0910 I	*date time applid userid* WEBSERVICE *WebService* within PIPELINE *Pipeline* has been created.
DFHPI0911 E	*date time applid userid* WEBSERVICE *WebService* within PIPELINE *Pipeline* was not created because: *there is insuffient storage* | *there is a directory domain error* | *the specified PIPELINE is not installed* | *a lock cannot be obtained* | *there is a duplicate resource error*.
DFHPI0912 I	*date time applid userid* WEBSERVICE *WebService* was successfully discarded.
DFHPI0913 I	*date time applid userid* WEBSERVICE *WebService* is being discarded.
DFHPI0914 E	*date time applid userid* WEBSERVICE *WebService* is UNUSABLE because: *the WSBind file was not found* | *CICS is not authorized to read the WSBind file* | *there is insufficient storage to load the WSBind file* | *the HFS read for the WSBind file failed* | *writing the WSBind file to the shelf failed* | *the PIPELINE is incompatible with this WEBSERVICE* | *the CPIR resolution transaction could not be attached* | *the direction of the PIPELINE can't be determined* | *the WSBind file is corrupt* | *the WSBind file has an invalid version number* | *the WSBind file has an out of date version number* | *the WSBind file product number was not recognised* .
DFHPI0915 I	*date time applid userid* WEBSERVICE *WebService* is now INSERVICE and is ready for use.
DFHPI0916 E	*date time applid userid* WEBSERVICE *WebService* within PIPELINE *Pipeline* was not created because it clashes with another WEBSERVICE of the same name in PIPELINE *Pipeline*.

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1 (continued)

Message number	Message text
DFHPI0998	*date time applid* The Outbound Router program, DFHPIRT, has received a non-NORMAL response while attempting to get the pipeline name from the DFHWS-PIPELINE container. The resulting error code is *X'code'*.
DFHPI0999	*date time applid* The Outbound Router program, DFHPIRT, has received an error from the Pipeline Manager.
DFHPI1001	*date time applid* Validation of a *request* | *response* message for webservice *webservicename* and operation *operationname* failed. The failure response contains the following message: '*message*'.
DFHPI1002	*date time applid* Validation of a *request* | *response* message for webservice *webservicename* and operation *operationname* was successful.
DFHPI1003	*date time applid* No current channel located. Validation cannot occur.
DFHPI1004	*date time applid* The attempt to link to DFHPIVAL to perform validation failed.
DFHPI1005	*date time applid* Attempt to link to program *progname* failed. SOAP conversions cannot be performed. Module: *modname*
DFHPI1006	*date time applid* The WSBIND file used for WEBSERVICE *WebService* is not a type which CICS can use. Module: *modname*
DFHRD0123 I	*date time applid terminal userid tranid* INSTALL URIMAP(*urimap-name*)
DFHRD0124 I	*date time applid terminal userid tranid* INSTALL PIPELINE(*pipeline-name*)
DFHRD0125 I	*date time applid terminal userid tranid* INSTALL WEBSERVICE(*webservice-name*)
DFHTR2006	UNKNOWN ENTRY PASSED FOR FORMATTING.
DFHUS0070	*applid* Security check for CICS region userid (*userid*) has failed. SAF codes are (*X'safresp',X'safreas'*). ESM codes are (*X'esmresp',X'esmreas'*). USAD reason code is (*reason*).
DFHWB0152 E	*date time applid client_ip_addr tcpipservice* The request receiver SOCB notify gate is unable to attach transaction *transaction*.
DFHWB0153 E	*date time applid client_ip_addr tcpipservice* The web asynchronous socket receive failed with an IO error.
DFHWB0736	*date time applid tranid* The method in the received HTTP request is not implemented by the server. Host IP address: *hostaddr*. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*.
DFHWB0737	*date time applid tranid* CICS Web support has detected that the version of the incoming HTTP request is higher than the version that CICS supports. Host IP address: *hostaddr*. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*.
DFHWB0738	*date time applid tranid* CICS Web Support has detected that the incoming HTTP request has a version that is at least HTTP/1.1 but has no host header. Host IP address: *hostaddr*. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*.
DFHWB0739	*date time applid tranid* An invalid EXPECT header has been received. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWB0740	*date time applid tranid* An HTTP/1.0 client has sent an EXPECT header which is not supported. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWB0741	*date time applid tranid* An HTTP socket receive request has timed out. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1 (continued)

Message number	Message text
DFHWB0742	*date time applid tranid* Conversion of HTTP header failed. Host IP address: *hostaddr*. Client IP address: *clientaddr*. | *TCPIPSERVICE: tcpipservice*
DFHWB0743	*date time applid tranid* The CICS Web characterset codepage is invalid. Host IP address: *hostaddr*. Client IP address: *clientaddr*. | *TCPIPSERVICE: tcpipservice* The CICS Web characterset codepage is invalid
DFHWB0744	*date time applid tranid* The CICS Web host codepage is invalid. Host IP address: *hostaddr*. Client IP address: *clientaddr*. | *TCPIPSERVICE: tcpipservice* The CICS Web host codepage is invalid
DFHWB0745	*date time applid tranid* Conversion of user data failed. Host IP address: *hostaddr*. Client IP address: *clientaddr*. | *TCPIPSERVICE: tcpipservice* The conversion of the inbound user data has failed
DFHWB0746	*date time applid tranid* The maximum length of data that can be received has been exceeded. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWB0747	*date time applid tranid* A Content-Length and Transfer-Encoding conflict has been detected. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWB0748	*date time applid tranid* An invalid Chunk Size header has been received. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWB0749	*date time applid tranid* An invalid Trailer has been received. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWB0750	*date time applid tranid* HTTP warning request header received. Warning: *warnvalue* Host IP address: *hostaddr* Client IP address: *clientaddr*
DFHWB0751	*date time applid tranid* A precondition specified by an If-Unmodified-Since header has failed. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*.
DFHWB0752	*date time applid tranid* HTTP Warning response header received. Warning: *warnvalue* Client IP address: *clientaddr* Server IP address: *serveraddr*.
DFHWB0753	*date time applid* Transaction *tranid* chunked request incomplete. Session token: *X'sesstoken'*. The transaction has terminated with an incomplete chunked
DFHWB0754	*date time applid tranid* An invalid Chunk has been received. Client IP address: *clientaddr*. TCPIPSERVICE: *tcpipservice*
DFHWU0910 I	*applid* Instruction address *X'aaaaaaaa'*, offset *X'offset'* in CSECT *csect*.
DFHWU0911 I	*applid* EC Mode PSW at time of abend: *PSW1 PSW2 PSW3 PSW4*
DFHWU0912 I	*applid* Execution key: *key*, abend reason code *X'reason'*.
DFHWU0913 I	*applid* Execution mode: *mode*. BEAR: *X'bear'*.
DFHWU0914 I	*applid* Registers *R1-R2*: *REG1VAL REG2VAL*
DFHWU0915 I	*applid* Branch to low address; using R14 for PSW.
DFHWU0916 I	*applid* Storage around PSW at time of abend
DFHWU0917 I	*applid offset location data1 data2 data3 data4*
DFHWU0918 I	*applid* Abend while dumping storage; PSW probably not valid.
DFHWU0919 I	*applid* Transaction: *tran*. Task: *task*.
DFHWU0920 I	*applid* Abend recovery completed successfully.

Table 33. New messages in CICS Transaction Server for z/OS, Version 3 Release 1 (continued)

Message number	Message text
DFHZC2119 E	*date time applid termid tranid* LUSTAT received on pipeline session incorrectly requests a definite response. ((*instance*) Module name: {DFHZRAC})
DFHZN2200	*date time applid* FREE IMPLICIT failed during syncpoint processing for session *session id* , remote system *netname*. Transid *transid*. The original abend code was *abend code*.
DFH5551 E	COMMAND NOT EXECUTED. *keyword1* CANNOT BE SPECIFIED AS GENERIC UNLESS *keyword2* IS ALSO GENERIC.
DFH5552 S	COMMAND NOT EXECUTED. CIPHER VALUE '*value*' IS NOT IN THE VALID SET (*list*).

Chapter 54. New abend codes

CICS Transaction Server for z/OS, Version 4 Release 1 has these new abend codes.

New abend codes in CICS Transaction Server for z/OS, Version 4 Release 1

Table 34. New abend codes in CICS Transaction Server for z/OS, Version 4 Release 1

Abend code	Abend text
AALA	An error (INVALID, DISASTER, or unexpected EXCEPTION response) has occurred on a call to the Atomservice Manager. The domain that detected the original error provides a trace entry and possibly a system dump (depending on the options specified in the dump table).
AALC	An error (INVALID, DISASTER, or unexpected EXCEPTION response) has occurred on a call to the JVM server resource manager. The domain that detected the original error provides a trace entry and possibly a system dump (depending on the options specified in the dump table).
AAM4	An error (INVALID, DISASTER, or unexpected EXCEPTION response) has occurred on a call to the Resource Lifecycle Manager. The domain that detected the original error provides a trace entry and possibly a system dump (depending on the options specified in the dump table).
ACRQ	An attempt has been made to route unsupported function across an IPIC connection. If message DFHIS1035 is issued immediately before the ACRQ abend, the ACRQ abend is caused by an attempt to route to a backlevel release. If message DFHIS1035 is not issued, the ACRQ abend is caused by an attempt to route an APPC device.
AECA	An attempt has been made to run one of the CICS internal EP adapter transactions, CEPQ or CEPT, as a user transaction.
AECC	An error occurred while emitting an event. This problem is likely to have been caused by an error in the specification of the event or in the configuration of the EP adapter.
AECO	An unexpected error occurred while emitting an event.
AECY	The task was purged before a request to the storage manager (SM) domain was able to complete successfully. The domain that first detected the purged condition will have provided an exception trace.
AECZ	An error (INVALID, DISASTER or unexpected EXCEPTION response) has occurred on a call to the storage manager (SM) domain. The domain that detected the original error will have provided an exception trace, a console message and, possibly, a system dump (depending on the options specified in the dump table).
AEPD	An unexpected error occurred while dispatching events.
AEPM	An attempt was made to attach a CICS EP dispatcher task, but the transaction was not attached internally by CICS.
AEPO	An unexpected error occurred in the EP dispatcher event queue server task.
AFDK	A file control update request was made against an NSR file while transaction isolation was active for the task. Using NSR files with transaction isolation active is not supported. The **TRANISO** system initialization parameter is YES and the transaction definition has ISOLATE set to YES.
AIPM	The transaction was connected to another transaction in another CICS system by means of an IPIC link. This other transaction has abnormally stopped.

Table 34. New abend codes in CICS Transaction Server for z/OS, Version 4 Release 1 (continued)

Abend code	Abend text
AIPN	IP interconnectivity program DFHISLQP has been initiated incorrectly, probably by entering a transaction ID that refers to it, CISQ, at a terminal. This program must be initiated only by CICS internal processes.
AIPO	IP interconnectivity program DFHISLQP has been initiated with incorrect attach parameters by CICS internal processes. This initiation be the result of a configuration error or a storage overwrite.
AIPP	IP interconnectivity program DFHISLQP received an INVALID, DISASTER, or EXCEPTION response from a call to the intersystems communication (IS) domain to process requests that are locally queued for an IPCONN.
AIPR	IP interconnectivity program DFHISLQP received an PURGED response from a call to the intersystems communication (IS) domain to acquire or release an IPCONN.
ALIL	CICS has tried to change to an OPEN TCB on which to run the JAVA, XPLINK, or OPENAPI program, but the change mode was unsuccessful. CICS might be short-on-storage and have insufficient storage to allow creation of the new TCB.
AKEJ	A backlevel XPI call has been detected by the kernel (KE) domain.
ASJO	The JVM server resolution transaction CJSR, has encountered an internal error. The CICS system transaction CJSR provides support for initializing new JVM servers. If this fails, it is likely that there is an underlying error with the CICS system.
AW2A	The DFHW2A Web 2.0 alias program ran in a transaction that was not attached by CICS Web support. This is typically caused by attempting to issue the CW2A transaction directly from a terminal. This is not supported.
AW2B	The CICS-supplied Atom service routines use the transaction work area to contain the responses that are returned to the Atom feed manager. The service routine has determined that the transaction work area is too small to contain the required responses.
AXFN	The user domain module, DFHUSAD, has returned a condition not expected by DFHXFX.
AXFV	The user domain module, DFHUSAD, has returned a condition not expected by DFHXFX.

New abend codes in CICS Transaction Server for z/OS, Version 3 Release 2

Table 35. New abend codes in CICS Transaction Server for z/OS, Version 3 Release 2

Abend code	Abend text
AALY	An error (INVALID, DISASTER or unexpected EXCEPTION response) has occurred on a call to the ISC/IP Domain. The domain that detected the original error provides a trace entry and possibly a system dump (depending on the options specified in the dump table).
AALZ	An error (INVALID, DISASTER or unexpected EXCEPTION response) has occurred on a call to the Document Handler. The domain that detected the original error provides a trace entry and possibly a system dump (depending on the options specified in the dump table).
AAM3	An error (INVALID, DISASTER or unexpected EXCEPTION response) has occurred on a call to the Loader Domain. The domain that detected the original error provides a trace entry and possibly a system dump (depending on the options specified in the dump table).
ABRP	The bridge client is no longer available.

Table 35. New abend codes in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Abend code	Abend text
ADCF	This abend is issued when the module DFHDLIDP detects that the CICS-DBCTL Interface has been configured using a DRA startup table (DFSPZPxx) which specifies option PCBLOC=31, and the application is amode 24. PCBLOC=31 specifies that the PCB address list and PCBs can be stored above the line. This is incompatible with amode 24 applications.
AEZY	CODEPAGEERR condition not handled. This is one of a number of abends issued by the EXEC interface program. Because of their similar characteristics these abends are described as a group. See the description of abend AEIA for further details.
AFCI	The transaction issued a file request resulting in a call to the main file control program (DFHFCFR). During the processing of the request the transaction was purged. That is, the transaction was the subject of an explicit PURGE or FORCEPURGE request, was timed out, or was selected by CICS for termination in an attempt to alleviate an SOS condition.
AFDI	A call to directory domain failed when trying to locate an fct entry.
AFDJ	A call to lock manager failed when trying to locate an fct entry.
AIPA	IP interconnectivity program DFHISCOP has been initiated invalidly, probably by entering a transaction id that refers to it, for example CISC or CISS, at a terminal. This program must only be initiated by CICS internal processes.
AIPB	IP interconnectivity receiver program DFHISRRP has been initiated invalidly, probably by entering a transaction id that refers to it, for example CISR, at a terminal. This program must only be initiated by CICS internal processes.
AIPC	IP interconnectivity error and message program DFHISEMP has been initiated invalidly, probably by entering a transaction id that refers to it, for example CISE, at a terminal. This program must only be initiated by CICS internal processes.
AIPD	IP interconnectivity program DFHISCOP has been initiated with invalid attach parameters by CICS internal processes. This could be the result of a configuration error or a storage overwrite. DFHISCOP should be defined as the initial program for the IS domain connectivity transactions; these are CISC and the transactions for TCPIPSERVICEs with protocol IPIC, CISS by default. This error could occur if DFHISCOP is defined as the initial program for some other CICS internal transaction.
AIPE	IP interconnectivity program DFHISCOP received an INVALID, DISASTER, or EXCEPTION response from a call to the intersystems communication (IS) domain to acquire or release an IPCONN. The domain that detected the original error provides an exception trace, a console message and, possibly, a system dump.
AIPF	IP interconnectivity program DFHISCOP received an PURGED response from a call to the intersystems communication (IS) domain to acquire or release an IPCONN. The domain that detected the original error provides an exception trace, a console message and, possibly, a system dump.
AIPG	IP interconnectivity long-running request/response receiver program received an INVALID, DISASTER, or EXCEPTION response from its PROCESS_INPUT call to the intersystems communication (IS) domain. The domain that detected the original error provides an exception trace, a console message and, possibly, a system dump.

Table 35. New abend codes in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Abend code	Abend text
AIPH	IP interconnectivity long-running error and message program received an INVALID, DISASTER, or EXCEPTION response from its PROCESS_ERROR call to the intersystems communication (IS) domain. The domain that detected the original error provides an exception trace, a console message and, possibly, a system dump.
AIPI	IP interconnectivity program DFHISREX has been initiated invalidly, probably by entering a transaction id that refers to it, CISX, at a terminal. This program must only be initiated by CICS internal processes.
AIPJ	The IS attach client module DFHISXM received an INVALID, DISASTER, or unexpected EXCEPTION response from its INITIALIZE_RECEIVER call to module DFHISIS. The call was issued during initialization of a transaction that was started by a transaction attach message received on an IP connection. The call was made as part of processing to associate the transaction with its intended user. The attempt to associate the intended user with the transaction has failed. The userid for the intended user of the transaction may not be correctly defined. Security attributes defined for the IPCONN may not be consistent with the security parameters received in the transaction attach message.
AIPK	The IS attach client module DFHISXM received a PURGED response from its INITIALIZE_RECEIVER call to module DFHISIS.
AIPL	The IS attach client module DFHISXM received an INVALID, DISASTER, or unexpected EXCEPTION response from its BIND_RECEIVER call to module DFHISIS.
AITJ	A mirror transaction processing a request from a client connected using IP interconnectivity has failed while trying to receive data from, or send data to, a client. This could be a read time out, or a more serious error in the flows that prevented CICS from correctly processing the data.
AITK	The ISCINVREQ condition has been raised. This can happen when the resource proves to be on yet another remote system, that is, when daisy-chaining is active.
AITL	The IPIC client sent a CCSID that was not recognized.
AITM	A command has been received by the mirror program to call itself.
AKEX	A program check has been detected by the kernel (KE) domain while executing under a TCB that is not enabled for EXEC CICS commands. This is probably because of an attempt to execute a CICS command in an environment where this is not possible.
AMQA	DFHMQCON had enabled DFHMQTRU with a global work area smaller than that needed by DFHMQTRU. This could be due to a mismatch of version level between DFHMQCON and DFHMQTRU.
AMQB	DFHMQCON had enabled DFHMQTRU with a task local work area smaller than that needed by DFHMQTRU. This could be due to a mismatch of version level between DFHMQCON and DFHMQTRU.
AMQC	Unrecognizable WMQ API call. All supported API calls are documented in the *WebSphere MQ Application Programming Reference* manual.
AMQD	Unrecognizable RMI API call. The CICS-MQ task related user exit (TRUE) was invoked with an unrecognizable request type.
AMQE	An attempt to EXEC CICS LOAD the data conversion service module CSQAVICM was unsuccessful.

Table 35. New abend codes in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Abend code	Abend text
AMQF	An internal logic error has been detected in the CICS bridge monitor.
AMQG	The CICS DPL bridge program has detected an error in a request message for this unit of work.
AMQH	The CICS bridge monitor or DPL bridge program abended due to an unexpected return code from an EXEC CICS API call.
AMQI	The CICS bridge monitor or DPL bridge program abended due to an unexpected return code from an MQ API call.
AMQJ	The CICS DPL bridge program abended before processing any messages for the unit of work.
AMQK	The CICS DPL bridge program abended during error processing.
APGA	An error has occurred obtaining a lock within the Program Manager domain.
APGB	An error has occurred releasing a lock within the Program Manager domain.
APGC	A transaction has tried to allocate an excessive amount of storage for containers. A transaction must not allocate more than 10% of the storage available for holding containers above the bar.
APIR	The Web Services Atomic Transaction (WS-AT) handler has detected a problem. The WSAT application handler program has encountered an attempt to use one-way messages in a WS-AT message. This combination is not permitted in WS-AT. The program is abnormally terminated.
APIS	CICS detected an error during transaction initialization for a Web services task.
APIU	The Pipeline MQ Listener program has encountered an attempt to parse a target URI that is longer than 255 bytes. The maximum length of a target URI in the RFH2 header is expected to be 255 bytes.
ARZ5	The target request stream task detected that the source task was no longer active. The target task is unable to process the request it was attached for.
ASJA	An error has occurred obtaining a lock within the Java domain.
ASJB	An error has occurred releasing a lock within the Java domain.
ASJC	The CICS_HOME directory is inaccessible, does not exist, or contains a version of CICS Java support which is not the same as this release of CICS.
ASJK	An attempt was made to attach transaction CJGC, but the transaction was not attached internally by CICS. The CICS system transaction CJGC provides support for initiating Garbage Collection in a JVM. It can only be attached internally by CICS.
ASJL	An attempt was made to attach a transaction specifying DFHSJGC as the program to be given control, but the transaction id was not CJGC. DFHSJGC is for use by CICS system transaction CJGC, which provides support for initiating Garbage Collection in a JVM.
ASJM	An attempt was made to attach transaction CJPI, but the transaction was not attached internally by CICS. The CICS system transaction CJPI provides support for initializing new JVMs.It can only be attached internally by CICS.

Table 35. New abend codes in CICS Transaction Server for z/OS, Version 3 Release 2 (continued)

Abend code	Abend text
ASJN	An attempt was made to attach a transaction specifying DFHSJPI as the program to be given control, but the transaction id was not CJPI. DFHSJPI is for use by CICS system transaction CJPI, which provides support for initializing new JVMs.
ASJR	An attempt was made to start a JVM in resettable mode by specifying [-]Xresettable=YES or REUSE=RESET.
ATSU	A DISASTER response caused by an IOERR was received from a request to the Temporary Storage (TS) Domain.
AWC9	CICS detected an error during transaction initialization for a CICS IPCONN acquire server-side transaction.
AWSY	A problem was encountered in the DFHPIRT outbound router program. This usually implies that one of the containers used by DFHPIRT was not populated correctly.

Chapter 55. Deleted abend codes

These abend codes are discontinued in CICS Transaction Server for z/OS, Version 4 Release 1.

Deleted abend codes in CICS Transaction Server for z/OS, Version 4 Release 1

Table 36. Deleted abend codes in CICS Transaction Server for z/OS, Version 4 Release 1

Abend code	Abend text
AMQL	DFHMQCON issued a call to CICS enqueue domain to create an enqueue pool for use in later CICS-MQ adapter processing, but the call to enqueue domain failed.

Part 6. Appendixes

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Other CICS publications

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 4 Release 1.

Designing and Programming CICS Applications, SR23-9692

CICS Application Migration Aid Guide, SC33-0768

CICS Family: API Structure, SC33-1007

CICS Family: Client/Server Programming, SC33-1435

CICS Family: Interproduct Communication, SC34-6853

CICS Family: Communicating from CICS on System/390, SC34-6854

CICS Transaction Gateway for z/OS Administration, SC34-5528

CICS Family: General Information, GC33-0155

CICS 4.1 Sample Applications Guide, SC33-1173

CICS/ESA 3.3 XRF Guide , SC33-0661

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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
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- 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.

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CICS Transaction Server for z/OS
Version 4 Release 1
Upgrading from CICS TS Version 2.3

Publication No. GC34-6996-03

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