CICS Transaction Server for z/OS
Version 5 Release 2

Upgrading from CICS TS Version 4.1

GC34-7298-01

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Version 5 Release 2

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GC34-7298-01

Note
Before using this information and the product it supports, read the information in "Notices" on page 287.

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

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Preface

This information is about upgrading to CICS® Transaction Server for z/OS®, Version 5 Release 2. This information set provides the relevant information for users who are upgrading from CICS Transaction Server for z/OS, Version 4 Release 1.

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 5 Release 2 is CICS Transaction Server for z/OS, Version 3 Release 1. 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.

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.

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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.

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Chapter 1. Changes to installation procedures

When you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2, note these changes to the installation process.

You can install this release of CICS Transaction Server using the **SMP/E RECEIVE**, **APPLY**, and **ACCEPT** commands. Use the SMP/E dialogs to complete 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 is still available if you prefer this method for installing CICS Transaction Server.

You must install the activation module. For more information, see Installing the CICS TS activation module in Installing.

For information about all the processes for installing CICS Transaction Server, see Installing.

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. Such action contravenes the z/OS Statement of Integrity.

If you invoke such services from CICS, you might compromise your system integrity, and IBM Service will not resolve any resulting problems.

Value for the JAVADIR parameter

The default location for Java has changed to support the 64-bit JVM.

The default value for the **JAVADIR** parameter in the installation procedures has changed to `java/J7.0_64`. You must download the IBM 64-bit SDK for z/OS, Java Technology Edition and configure CICS to point to the correct location in z/OS UNIX. For more information about upgrading the Java environment, see Chapter 25, “Upgrading the Java environment,” on page 169.

Value for the z/OS MEMLIMIT parameter

To provide sufficient 64-bit (above-the-bar) storage for a CICS TS for z/OS, Version 5.2 region, set the value for the z/OS **MEMLIMIT** parameter equal to or greater than 6 GB. The default value in z/OS for **MEMLIMIT** is 2 GB.

CICS requires a **MEMLIMIT** value of 6 GB; any additional use by applications or JVMs should be allowed for with a larger value of **MEMLIMIT**. If you attempt to start a CICS region with a **MEMLIMIT** value that is less than 6 GB, message DFHSM0602 is issued, a system dump with the dump code KERNDUMP is produced, and CICS terminates.

You cannot alter the **MEMLIMIT** value for the CICS region while CICS is running. You can specify a new **MEMLIMIT** value on the next start of the CICS region.

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A suitable **MEMLIMIT** value for a CICS region must provide sufficient storage for the facilities that use 64-bit storage that you plan to use. When upgrading, it is recommended that you check your **MEMLIMIT** calculation and take into account any changes in the use of 64-bit storage that may occur. For more information, see Estimating, checking, and setting MEMLIMIT in Improving performance.

This storage is not allocated on initialization; CICS allocates it as the need arises.

Size of the auxiliary trace data sets

The default size of the auxiliary trace data sets has changed.

The supplied JCL in SDFHINST for DFHDEFDS, EYUCMSDS, and EYUCSYDS has changed. The default value of the auxiliary trace data sets has changed from 1 cylinder to 25 cylinders. The increased value ensures that data is not overwritten so quickly in a CICS region.

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 5.2 is 0690. This number is returned in the RELEASE parameter of the INQUIRE SYSTEM command.

The level number also appears in the alternative decimal form 6.9 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 DFHPD690.

Changing start procedures to include the activation module

If you use a common, release-independent procedure to start CICS regions, you must include the data set for the activation module in the procedure.

The following JCL is an example of how you can add the data set for the activation module:

CICS procedure:

```
//CICSTS PROC REL=52
//CICS      EXEC PGM=DFHSIP,PARM='SI',REGION=0K,TIME=1439
//STEPLIB DD DISP=SHR,DSN=CICS&REL..SDFHAUTH ...
                    ... plus other CICS datasets
//                  INCLUDE MEMBER=LIC&REL
```

The PROCLIB has the following members for CICS TS for z/OS V5.2 and V5.1:

```
LIC52
//      DD DISP=SHR,DSN=CICS52.SDFHLIC

LIC51
//*     No activation module dataset required
```

Chapter 2. Changes to system initialization parameters

In CICS Transaction Server for z/OS, Version 5 Release 2, 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.

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. If you specify any of these parameters, they are rejected and a message is issued.

System initialization parameters made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2

No system initialization parameters were made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2.

System initialization parameters made obsolete in CICS Transaction Server for z/OS, Version 5 Release 1

EJBROLEPRFX
: **EJBROLEPRFX** was used to specify a prefix that qualified the security role defined in an enterprise bean's deployment descriptor.

IIOPLISTENER
: **IIOPLISTENER** was used to specify whether the CICS region was to function as an IIOP listener region.

JVMCCSIZE
: **JVMCCSIZE** was used to specify the size of the shared class cache for pooled JVMs on an initial or cold start of CICS.

JVMCCSTART
: **JVMCCSTART** was used to specify the startup behavior for the shared class cache that was used by pooled JVMs.

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JVMLEVEL0TRACE
JVMLEVEL0TRACE was used to specify the default option for pooled JVM level 0 trace that corresponded to the trace level 29 of the SJ component.

JVMLEVEL1TRACE
JVMLEVEL1TRACE was used to specify the default option for pooled JVM level 1 trace that corresponded to the trace level 30 of the SJ component.

JVMLEVEL2TRACE
JVMLEVEL2TRACE was used to specify the default option for pooled JVM level 2 trace that corresponded to the trace level 31 of the SJ component.

JVMUSERTRACE
JVMUSERTRACE was used to specify the default option for JVM user trace that corresponded to trace level 32 of the SJ component.

MAXJVMTCBS
MAXJVMTCBS was used to specify the maximum number of open TCBs in the JVM pool, which contained J8 and J9 mode open TCBs for use by Java programs that ran in pooled JVMs. The JVM pool no longer exists.

STNTRII
STNTRII was used to specify the level of standard tracing you require for the IIOP domain component.

TDSUBTASK
TDSUBTASK was used to specify whether CICS used the FO TCB to write to an extrapartition transient data queue, where the record format is FIXED and the block format is UNBLOCKED.

XEJB
XEJB was used to specify whether support of security roles for enterprise beans was enabled.

Changed system initialization parameters

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

APAR PI28039 update

The default setting for the **ENCRYPTION** system initialization parameter, **ENCRYPTION=STRONG**, no longer allows the use of the SSL version 3.0 security protocol. The minimum security protocol allowed with **ENCRYPTION=STRONG** is now TLS version 1.0.

If you have clients that still require the SSL version 3.0 protocol, you can enable support for that protocol by specifying the system initialization parameter **ENCRYPTION=SSLV3** for the CICS region. SSL 3.0 should only be used for a migration period while clients that still require this protocol are upgraded. Any connections that require encryption automatically use the TLS protocol, unless the client specifically requires SSL 3.0.

System initialization parameters changed in CICS Transaction Server for z/OS, Version 5 Release 2

ENCRYPTION={ALL|TLS12|STRONG|SSLV3}

Before CICS TS for z/OS, Version 5.2, the **ENCRYPTION** system initialization parameter supported these values: STRONG, ALL, and TLS12FIPS.The value TLS12FIPS is no longer supported. The new value TLS12 is added. To obtain the same result as using the old TLS12FIPS option, use TLS12, and also code the new system initialization parameter **NISTSP800131A=CHECK**.

If your system initialization table contains an invalid value, the default value, STRONG, is used instead. If you specify an override with an invalid value in your CICS JCL, CICS pauses during startup and prompts you to respecify the override. To avoid these occurrences, update any system initialization tables or JCL overrides to specify a valid value.

JVMPROFILEDIR={/usr/lpp/cicsts/cicsts52/JVMProfiles|*directory***}**

From CICS TS for z/OS, Version 5.2, JVM servers can be defined in CICS bundles. For these JVM servers, the JVM profile is packaged in the CICS bundle with the JVMSERVER resource definition. CICS does not load these JVM profiles from the directory that is specified by **JVMPROFILEDIR**. Instead, they are stored in a suitable directory for the CICS bundle, and the location is specified by the CICS bundle.

MXT={250|*number***}**

Before CICS TS for z/OS, Version 5.1, the minimum, default, and maximum values of the **MXT** parameter were 1, 5, and 999. In CICS TS for z/OS, Version 5.1, the minimum, default, and maximum values were changed to 10, 500, and 2000. From CICS TS for z/OS, Version 5.2, the minimum value is 10, the default value is 250, and the maximum value is 2000. These adjustments were made to ensure that CICS regions operate efficiently with the default setting and can process more workload.

System initialization parameters changed in CICS Transaction Server for z/OS, Version 5 Release 1

AKPFREQ={4000|*number***}**

Before CICS TS for z/OS, Version 5.1, the minimum value of the range for the **AKPFREQ** parameter was 200. This minimum value is now decreased to 50. This value means that completed log task records can be deleted more frequently, which reduces the DASD dataspace usage.

AUTORESETTIME={IMMEDIATE|NO|YES}

Before CICS TS for z/OS, Version 5.1, the CICS time-of-day was synchronized with the system time-of-day only at midnight. A new option, IMMEDIATE, now synchronizes the time at the next task attach. The IMMEDIATE option is the default.

EDSALIM={800M|*number***}**

In CICS TS for z/OS, Version 4.2, the minimum value for the **EDSALIM** parameter was changed from 10 MB to 48 MB, and the default value was increased to 48 MB, which is the minimum that is required to start a CICS region. The default value is now further increased to 800 MB, which enables a CICS region started with the default value to process a reasonable workload. If you created your SIT or CICS startup JCL using previously supplied defaults, or a value less than the minimum of 48 MB, update them to use the new CICS-supplied default, or to an appropriate value.

ENCRYPTION={STRONG|ALL|TLS12FIPS}

Before CICS TS for z/OS, Version 5.1, the **ENCRYPTION** parameter supported the value STRONG only. Two new values are introduced:

ALL

This option provides support for all SSL protocols up to and including TLSV1_1 and TLSV1_2.

TLS12FIPS

Initializes an SSL environment that is restricted to the TLS 1.2 protocol and has FIPS 140.2 standards imposed.

ICVTSD={0|number}

Before CICS TS for z/OS, Version 5.1, the default value for the **ICVTSD** parameter was 500. The default value is now 0. The terminal scan delay facility was used in earlier releases to limit how quickly CICS dealt with some types of terminal output requests made by applications, in order to spread the overhead for dealing with the requests. Specifying a nonzero value was sometimes appropriate where the CICS system used non-SNA networks. However, with SNA and IPIC networks, setting ICVTSD to 0 is appropriate to provide a better response time and best virtual storage usage.

PRTYAGE={1000|*value*}

Before CICS TS for z/OS, Version 5.1, the default value for the **PRTYAGE** parameter was 32786 (32.786 seconds). The default value is now decreased to 1000 (1 second). This value means that the priority of long-running tasks that are on the ready queue increases more rapidly.

SPCTRxx={(1,2)|(1[,2][,3][,4])|ALL|OFF}

A new component code (MP) has been added to support the special tracing levels for the managed platform domain. The special tracing level numbers 29, 30, 31, and 32 that traced the SJ component for Java are obsolete.

STATINT={010000|*hhmmss* }

Before CICS TS for z/OS, Version 5.1, the default value of the **STATINT** parameter was 030000 (3 hours). The default value is now changed to 010000 (1 hour), so that useful CICS system and resource data is collected more frequently. The number of SMF 110 monitoring records that are written by CICS regions that use the default value for this parameter will increase.

STATRCD={OFF|ON}

Before CICS TS for z/OS, Version 5.1, the default value of the STATINT parameter meant that on a cold start of a CICS region, where **STATRCD** was set to ON and the default value for STATINT was used, interval statistics were recorded at three-hourly intervals. The new default value for the STATINT parameter means that interval statistics are recorded at hourly intervals for a CICS region in this situation.

STNTRxx={1|(1[,2][,3][,4])|ALL|OFF}

A new component code (MP) has been added to support the standard tracing levels for the managed platform domain. The trace levels 29, 30, 31, and 32 are obsolete and no longer traced.

TBEXITS=([name1][,name2][,name3][,name4][,name5][,name6])

The TBEXITS system initialization parameter enables specified global user exit programs as backout exit programs. The backout exit programs are used during emergency restart backout for user log record recovery and file control recovery. In releases earlier than CICS TS for z/OS, Version 5.1, these global user exit programs were enabled with a global work area of 4 bytes in 24-bit

(below-the-line) storage. These global user exit programs are now enabled with a global work area of 4 bytes in 31-bit (above-the-line) storage.

TCTUALOC={BELOW|ANY}

Before CICS TS for z/OS, Version 5.1, the default value for the **TCTUALOC** parameter was BELOW, which meant that terminal user areas were always stored in 24-bit (below-the-line) storage. The default value is now ANY, which means that terminal user areas can be stored in 24-bit (below-the-line) storage or in 31-bit (above-the-line) storage, and CICS uses 31-bit storage to store them if possible. If you require the terminal user area to be in 24-bit storage, because you have application programs that are not capable of 31-bit addressing, specify the system initialization parameter **TCTUALOC=BELOW** for the CICS region.

TRANISO={NO|YES}

In CICS TS for z/OS, Version 4.2, some CICS facilities used 64-bit storage or 31-bit storage, depending on the version of the z/OS operating system and whether the CICS region operated with transaction isolation (set by using the **TRANISO** system initialization parameter). This parameter now no longer affects whether 64-bit storage is used by these CICS facilities.

TRTRANSZ={1024|*number-of-kilobytes*}

Before CICS TS for z/OS, Version 5.1, the default value of the **TRTRANSZ** parameter was 16 KB. The default value is now increased to 1024 KB. This value provides a larger transaction dump trace table, which might contain more useful trace information.

Check your current setting for the z/OS parameter **MEMLIMIT**, which limits the amount of 64-bit storage that the CICS address space can use. Your setting for **TRTRANSZ** must remain within **MEMLIMIT**, and you must also allow for other use of 64-bit storage in the CICS region.

Also check the current space allocations for the CICS transaction dump data sets. Increase the amount of space currently allocated to match the new value.

System initialization parameters changed in CICS Transaction Server for z/OS, Version 4 Release 2

CSDLSRNO={1|*number*|NONE|NO}

Before CICS TS for z/OS, Version 4.2, you specified an LSR pool number in the range 1 - 8. The number of LSR pools that can be defined is now increased to 255.

FCQRONLY={YES|NO}

Before CICS TS for z/OS, Version 4.2, you specified **FCQRONLY=YES** to improve the performance of all file-owning regions. However, for file-owning regions at or after CICS TS for z/OS, Version 4.2, choose an appropriate setting for FCQRONLY:

- For FORs where the connections to that region are primarily MRO or ISC connections, these requests run on the QR TCB, and CICS runs the mirror program primarily on the QR TCB. Specify **FCQRONLY=YES** so that all file control requests are processed on the QR TCB. This setting improves performance by avoiding locking, which is unnecessary when all file control requests run on the same TCB.
- For FORs where the connections to that region are primarily IPIC connections, these requests run on open TCBs, and CICS runs the mirror program on an L8 open TCB whenever possible. Specify **FCQRONLY=NO** so that

file control requests do not switch to the QR TCB to be processed. This setting improves performance by multi-threading file control requests.

TRTABSZ={4096|*number-of-kilobytes*}
Before CICS TS for z/OS, Version 4.2, the storage specified by **TRTABSZ** for the CICS internal trace table was always 31-bit (above-the-line) storage. The internal trace table can now be in 64-bit (above-the-bar) storage.

CICS obtains MVS 64-bit (above-the-bar) storage (outside the CICS DSAs) for the internal trace table.

If you change the size of the internal trace table, check your current setting for the z/OS parameter **MEMLIMIT**. **MEMLIMIT** limits the amount of 64-bit storage that the CICS address space can use. Your setting for **TRTABSZ** must remain within **MEMLIMIT**, and you must also allow for other use of 64-bit storage in the CICS region.

When the internal trace table is in 64-bit storage, the **TRTABSZ** value no longer influences your setting for the **EDSALIM** system initialization parameter. If you previously set the EDSA limit for a CICS region so that there was enough 31-bit storage outside the CICS DSAs for a large internal trace table, you can now adjust the limit to provide more storage for the CICS extended dynamic storage areas.

TRTRANSZ={16 |*number-of-kilobytes*}
From CICS TS for z/OS, Version 4.2, CICS uses 64-bit (above-the-bar) storage for the transaction dump trace table.

Before CICS TS for z/OS, Version 4 Release 2, the transaction dump trace table was in 31-bit (above-the-line) storage. If you specified a small size for the transaction dump trace table at that time because of concerns about the availability of 31-bit storage, consider reviewing your **TRTRANSZ** value to provide a larger transaction dump trace table now that 64-bit storage is used.

Because the transaction dump trace table is in 64-bit storage, check your current setting for the z/OS parameter **MEMLIMIT** when you set the size of the trace table.

New system initialization parameters

The default values for these parameters have minimal impact when you are upgrading from an earlier release of CICS. However, if your region uses a lot of main temporary storage queues, review whether the default **TSMAINLIMIT** value is sufficient.

New system initialization parameters added in CICS Transaction Server for z/OS, Version 5 Release 2

- The **NISTSP800131A** system initialization parameter specifies whether the CICS region is to check for conformance to the NIST SP800-131A standard.

  NISTSP800131A={NOCHECK|CHECK}
  NOCHECK
  Conformance checking is not required in this CICS region. This is the default value.
  CHECK
  The CICS region is required to check for conformance with the NIST SP800-131A security standard. If this value is set, CICS issues a message if an actual or potential violation is detected.

This option also causes the CICS SSL environment to use only TLS v 1.2 with FIPS 140-2 standards applied.

The checks that are performed are as follows:

Web services

If the <wsse_handler> tag is specified in a pipeline configuration file, it implies that the pipeline is to be used for web services security. Because not all of the encryption algorithms that can be used for web services security are SP800-131A conformant, installing a pipeline that uses web services means that CICS might be non-conformant. CICS issues message DFHXS1300, which warns of potential nonconformance.

If you receive message DFHXS1300, check whether you are using DFHWSSE as the web services security handler. If you are not using DFHWSSE, inspect your security handler to check which encryption and signing algorithms it uses. If these algorithms are SP800-131A conformant, you can ignore the message. If they are not conformant, consider whether to use conformant algorithms instead. Otherwise, if the CICS region that issues the message must be conformant, consider moving the web service security workload to a different CICS region where conformance is not required.

CICS also checks for certain things that are not conformant to SP800-131A. If any of these situations are found, CICS issues message DFHXS1301:

- An <algorithm> element exists within the <authentication> element of the <wsse_handler> definition in the pipeline configuration file. The only algorithms that can be used are SHA-1 routines, which are not conformant with NIST SP800-131A.
- A <sign_body> element exists in the pipeline configuration file. The only algorithms that can be used are SHA-1 routines, which are not conformant with SP800-131A.
- An <encrypt_body> element in the pipeline configuration file. Of the four algorithms that can be used, three are conformant with SP800-131A but one is not. If the nonconformant algorithm is specified, DFHXS1301 is issued.

If you receive message DFHXS1301, consider not performing the encryption or signing operations in this CICS region. If the nonconformant algorithm is specified in the <encrypt_body> element, consider using a conformant algorithm.

Sockets

If SSL is active, setting **NISTSP800131A**=CHECK forces **ENCRYPTION**=TLS12 if it is not already set. If **ENCRYPTION**=TLS12 is forced, message DFHSO0144 is issued. Sockets domain initializes the SSL environment with the FIPS option on and the System SSL started task runs in FIPS mode. The effect of this is that SSL allows fewer ciphers to be used on a successful handshake.

To use FIPS with z/OS Version 2 Release 1 or later, ICSF (Integrated Cryptographic Services Facility) must be active on your system. If you have not already done so, apply APAR OA14956 to z/OS.

If SSL is inactive because no **KEYRING** parameter is specified, then setting NISTSP800131A has no effect on sockets domain.

JVM servers

When a JVM server is started, CICS sets the Java properties to make Java NIST SP800-131A conformant.

If you set **NISTSP800131A**=CHECK, you should also set **ENCRYPTION**=TLS12. However, if you do not do so, CICS overrides the value of **ENCRYPTION** to **ENCRYPTION**=TLS12 and issues a warning message.

- The **USSCONFIG** system initialization parameter specifies the name and path of the root directory for CICS Transaction Server configuration files on z/OS UNIX.

  USSCONFIG={/var/cicsts/dfhconfig | *directory*}

  Specifies the directory in which z/OS UNIX configuration files are stored. The default value is /var/cicsts/dfhconfig.

New system initialization parameters added in CICS Transaction Server for z/OS, Version 5 Release 1

- The **RACFSYNC** system initialization parameter specifies whether CICS listens for type 71 ENF events.

  RACFSYNC={YES|NO|RACFDB2SYNC}

  RACF® sends a type 71 ENF signal to listeners when a **CONNECT**, **REMOVE**, or **REVOKE** command changes a user's resource authorization. When CICS receives a type 71 ENF event for a user ID, all cached user tokens for the user ID are invalidated, irrespective of the setting of the **USRDELAY** parameter. Subsequent requests from that user ID force a full RACF RACROUTE VERIFY request, which results in a refresh of the user's authorization level. User tokens for tasks that are currently running are not affected.

  Note: Specify the **RACFSYNC=NO** parameter only under direction from IBM Service.

  YES CICS listens for type 71 ENF events.

  NO CICS does not listen for type 71 ENF events.

  RACFDB2SYNC
  CICS listens for type 71 ENF events. In addition to the function provided by specifying YES, CICS will also make DB2® threads for the associated userid issue a full signon when they are next reused.

  Restrictions: You can specify the **RACFSYNC** parameter only in the system initialization table (SIT), the **PARM** parameter of the **EXEC PGM=DFHSIP** statement, or the SYSIN data set.

- The **SECVFYFREQ** system initialization parameter specifies whether or not CICS makes a full verification request at least once a day for each user ID that is used to log on to the CICS region.

  SECVFYFREQ={NEVER|USRDELAY}

  When a user logs on to CICS by a method that uses password verification, such as the **EXEC CICS VERIFY PASSWORD** or **EXEC CICS VERIFY PHRASE**

command, instead of a full verification request such as the **EXEC CICS SIGNON** command, RACF normally does not record the login, and does not write audit information for the user ID. You can use **SECVFYFREQ** to require that CICS makes a full verification request for each user at least once a day. The full verification request makes RACF record the date and time of last access for the user ID, and write user statistics.

The following login processes in CICS use password verification:

- HTTP basic authentication with CICS web support
- Web services authentication
- IP interconnectivity (IPIC) authentication

You might also have your own login processes that use the **EXEC CICS VERIFY PASSWORD** or **EXEC CICS VERIFY PHRASE** command.

NEVER
When the login process uses password verification, CICS makes a full verification request only if an attempt at password verification fails. User IDs that are used only with login processes involving password verification can appear to be unused.

USRDELAY
CICS makes a full verification request at least once a day for each user ID that is used to log on to the CICS region. The **USRDELAY** system initialization parameter for the CICS region controls the interval between full verification requests for the user IDs.

- When the user ID is unused for more than the **USRDELAY** limit and is removed from the system, CICS makes a full verification request when the user next logs in. If **USRDELAY** is set to 1440 minutes (1 day) or higher, CICS enforces a full verification request at user login for each user ID once a day.
- If **USRDELAY** is set to 0, CICS always makes a full verification request when a user logs in, unless the user is currently signed on and running a task in the CICS region.

Additional full verification requests can take place for other reasons, such as a user sign-on using the **EXEC CICS SIGNON** command.

The full verification request uses the RACROUTE REQUEST=VERIFYX macro, instead of the RACROUTE REQUEST=EXTRACT macro that is used for password verification. The RACROUTE REQUEST=VERIFYX macro has a higher processor cost and response time, so you might notice a slight performance impact when you implement this function. If your **USRDELAY** parameter is set to less than 1440 minutes, the performance impact is greater, because the full verification request takes place at user login more frequently than once a day.

Restriction: You can specify the **SECVFYFREQ** system initialization parameter in the SIT, PARM, or SYSIN only.

New system initialization parameters added in CICS Transaction Server for z/OS, Version 4 Release 2

- The **TSMAINLIMIT** system initialization parameter specifies a limit for the storage that is available for main temporary storage queues to use. You can specify an amount of storage in the range 1 - 32768 MB (32 GB), but this amount must not be greater than 25% of the value of the z/OS parameter **MEMLIMIT**. The default is 64 MB.

TSMAINLIMIT={64M|*nnnnn*M|*nn*G}

64M The default setting in megabytes.

*nnnnn***M**
An amount of storage in megabytes. The allowed range is 1 - 32768 MB.

*nn***G** An amount of storage in gigabytes. The allowed range is 1 - 32 GB.

For example, `TSMAINLIMIT=2G` makes 2 GB of storage available to main temporary storage queues.

When you set this parameter, check your current setting for the z/OS parameter **MEMLIMIT**. **MEMLIMIT** limits the amount of 64-bit storage that the CICS address space can use. Your setting for **TSMAINLIMIT** must not be greater than 25% of the **MEMLIMIT** value.

In versions of CICS before CICS TS for z/OS, Version 4.2, the limit of storage available for main temporary storage queues to use was determined by the **EDSALIM** parameter. If your region uses a lot of main temporary storage queues, the current default **TSMAINLIMIT** value might not provide sufficient storage, compared with the limit determined by the previous **EDSALIM** value. Therefore consider whether you need to increase the **TSMAINLIMIT** value.

Chapter 3. Changes to the application programming interface

CICS Transaction Server for z/OS, Version 5 Release 2 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*.

Application program mask setting following a handled condition

CICS TS for z/OS, Version 5.2 resolves the problem reported in APAR PM73097. Previously, when CICS handled a condition encountered by an application as requested by an earlier EXEC CICS HANDLE CONDITION command, the application's program mask was set to zero in the PSW. As a consequence, in the event of a subsequent program exception in a PL/I program, such as an overflow, no interrupt occurred. Now, when CICS handles a condition, the application's program mask is correctly restored to the value that it had when the EXEC CICS HANDLE CONDITION command was issued.

COMMAREA length on XCTL commands

When a communication area (COMMAREA) is used with an XCTL command, CICS now creates the COMMAREA in 31-bit storage, rather than 24-bit storage, where appropriate, to reduce the use of 24-bit storage.

When XCTL is used, CICS now ensures that any COMMAREA is addressable by the program that receives it, by creating the COMMAREA in an area that conforms to the addressing mode of the receiving program. If the receiver is AMODE(24), the COMMAREA is created below the 16 MB line, and if the receiver is AMODE(31), the COMMAREA is created above 16 MB but below 2 GB. In earlier releases of CICS, the COMMAREA was always copied below the 16 MB line.

Because the COMMAREA can now be in 31-bit storage, ensure that the XCTL commands in your applications specify an accurate length for the COMMAREA. If the value specified for the LENGTH option differs from the length of the data area specified in the COMMAREA option, a destructive overlap might occur when the data is being copied, because of the incorrect length. In this situation, CICS returns a LENGERR response with a RESP2 value of 28 to the application.

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DFH3QSS program

If any of your applications call the DFH3QSS program to query the CICS environment and API capability, re-link those applications with the version of DFH3QSS supplied with CICS TS for z/OS, Version 5.2.

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.

ASSIGN

New options ERRORMSG and ERRORMSGLEN on the **ASSIGN** command return the error message for the CICS task:

ERRORMSG(*data-area***)**
Returns the error message up to a maximum of 500 bytes that is currently referenced in the transaction abend control block for the CICS task. Following a failure of a DPL request, the message is that returned from the remote system. For messages shorter than 500 bytes the message is padded with nulls.

If no message is present, the 500 byte area contains nulls.

ERRORMSGLEN(*data-area***)**
Returns a halfword binary value representing the length of the message returned for ERRORMSG. If the message referenced in the transaction abend control block exceeds 500 bytes, the message is truncated and the length is set to 500.

If no message is present the length returned is 0.

The new option LINKLEVEL on the **ASSIGN** command returns the program link level:

LINKLEVEL(*data-area***)**
Returns a halfword binary value representing the program link level in the local system. The topmost link level is level one and for each EXEC CICS LINK the link level is incremented by one. The link level is not incremented for a language CALL statement. If a program is the target of a DPL request, the link level returned is that within the CICS region it is executing and not the wider distributed transaction. If a program is DPLed to, then link level one will be the CICS mirror program DFHMIRS.

New options APPLICATION, MAJORVERSION, MICROVERSION, MINORVERSION, OPERATION and PLATFORM on the **ASSIGN** command return the current application context associated with the task:

APPLICATION (*data-area***)**
Returns the 64 character name of the current application associated with the task. It is part of the application context that is made up of the application name, the platform name, the operation name and the major, minor and micro version number of the application. If there is no application context associated with the task, then blanks are returned.

MAJORVERSION(*data-area***)**
Returns the fullword binary value representing the major version of the current

application associated with the task, which is part of the application context. If there is no application context associated with the task, then -1 is returned.

MICROVERSION(*data-area***)**
Returns the fullword binary value representing the micro version of the current application associated with the task, which is part of the application context. If there is no application context associated with the task, then -1 is returned.

MINORVERSION(*data-area***)**
Returns the fullword binary value representing the minor version of the current application associated with the task, which is part of the application context. If there is no application context associated with the task, then -1 is returned.

OPERATION(*data-area***)**
Returns the 64 character name of the current operation associated with the task, which is part of the application context. If there is no application context associated with the task, then blanks are returned.

PLATFORM(*data-area***)**
Returns the 64 character name of the platform associated with the task, which is part of the application context. If there is no application context associated with the task, then blanks are returned.

For more information see ASSIGN.

DELAY

The **DELAY** command has been enhanced to allow a value to be specified in milliseconds. However, CICS checks for delay expiry every 250 milliseconds, so the actual interval might vary depending on where in the scan cycle your request is made.

MILLISECS(*data-value***)**
specifies a fullword binary value in the range 0–999, when HOURS, MINUTES or SECONDS are also specified, or 0-359999999 when MILLISECS is the only option specified.

For more information see DELAY.

FORMATTIME

The new option STRINGZONE on the **FORMATTIME** command specifies in what timezone the DATESTRING value should be returned, UTC or local time.

STRINGZONE*(cvda)*
Specifies the timezone in which the time stamp returned in DATESTRING is to be returned. The CVDA values are as follows:

UTC DATESTRING is to be returned in UTC. This value is the default setting.

LOCAL
DATESTRING is to be returned in LOCAL timezone.

For more information see FORMATTIME.

LINK

This command operates in the current application context. If the command is issued by a program that is running under a task for an application deployed on a platform, CICS searches first for the named program in the private program directory for the application. If the named program is not found there, CICS then searches the public program directory.

When this command is used to link to a program that is declared as an application entry point for an application deployed on a platform, the CICS bundle where the application entry point is declared must have a status of AVAILABLE. The link is made to the highest numbered version of the application that is installed, enabled, and available. To link to a specified version of an application deployed on a platform, use the INVOKE APPLICATION command instead of the LINK command.

For more information see LINK.

Changed API commands in CICS TS 5.1

These API commands were extended or changed in CICS Transaction Server for z/OS, Version 5 Release 1.

ASSIGN

Two new options are provided for the **ASSIGN** command to support non-Language Environment (LE) AMODE(64) assembler programs:

ASRAPSW16(*data-area***)**
Returns a 16-byte data area that contains the 128-bit program status word (PSW) at the point when the latest abend with a code of AICA, ASRA, ASRB, ASRD, or ASRE occurred.

The field contains binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

ASRAREGS64(*data-area***)**
Returns the contents of the 64-bit general registers 0 - 15 at the point when the latest AICA, ASRA, ASRB, ASRD, or ASRE abend occurred.

The contents of the registers are returned in the data area (128 bytes long) in the order 0, 1, ..., 14, 15.

The data area is set to binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

The ASRASTG option of the **ASSIGN** command is changed to return a value of CICS for a storage type of ETDSA or GCDSA, and USER for a storage type of GUDSA. For more information, see ASSIGN in Reference -> Application development.

GET CONTAINER

The new BYTEOFFSET option on the **GET CONTAINER** retrieves data beginning at a specified offset in a container, and continuing to the length specified in the FLENGTH option. For example, you can use this option in web services applications to retrieve a single occurrence of a recurring data structure from a container. The option is also available on the new **GET64 CONTAINER** command.

BYTEOFFSET(*data-value***)**
Specifies the offset in bytes where the data returned starts. For CHAR containers, the BYTEOFFSET value is used as an offset into the data in the requested codepage. If you use a codepage with multibyte characters, depending on the BYTEOFFSET value you specify, the data returned might have partial characters at the beginning, end, or both. In this situation, your application program must be able to handle and interpret the data returned. If the value specified is less than zero, zero is assumed.

For more information, see GET CONTAINER.

LOAD PROGRAM

The ENTRY option of the **LOAD PROGRAM** command is changed to support non-Language Environment (LE) AMODE(64) assembler programs. CICS program load services now set the entry point according to the addressing mode of the load module as follows:

- AMODE(24): bit 0 is 0 and bit 31 is 0.
- AMODE(31): bit 0 is 1 and bit 31 is 0.
- AMODE(64): bit 0 is 0 and bit 31 is 1.

For more information, see LOAD in Reference -> Application development.

PUT CONTAINER

The new APPEND option on the **PUT CONTAINER** command appends the specified data to the existing data in the container. For example, you can use this option in web services applications to build up a container with repeated occurrences of the same data structure. The option is also available on the new **PUT64 CONTAINER** command, and the same function is available in the JCICS Container class.

APPEND
Specifies that the data passed to the container is appended to the existing data in the container. If this option is not stated, the existing data in the container is overwritten by the data passed to the container.

For more information, see PUT CONTAINER.

QUERY SECURITY

The **QUERY SECURITY** command is changed to include a new resource type of EPADAPTERSET.

For more information, see QUERY SECURITY.

START and START CHANNEL

The **EXEC CICS START** and **EXEC CICS START CHANNEL** commands are enhanced to support identity propagation. If an **ICRX** is available and neither **USERID** nor **TERMID** are specified, the ICRX is propagated to the new task.

For more information, see START in Reference -> Application development and START CHANNEL in Reference -> Application development.

VERIFY PASSWORD and VERIFY PHRASE

The **EXEC CICS SIGNON** command uses the RACROUTE REQUEST=VERIFY macro to make a full verification request to the external security manager. However, the **EXEC CICS VERIFY PASSWORD** and **EXEC CICS VERIFY PHRASE** commands normally use the RACROUTE REQUEST=EXTRACT macro to verify a user's password. If password verification fails, CICS then uses the RACROUTE REQUEST=VERIFYX macro to make a full verification request.

The RACROUTE REQUEST=EXTRACT macro does not make RACF record the login as the last access for the user ID, or write user statistics for the user ID. User IDs that are only used with login processes involving password verification can therefore appear to be unused, and could be revoked.

If you specify the system initialization parameter **SECVFYFREQ=USRDELAY** for the CICS region, CICS enforces a full verification request at least once a day for each user ID that is used to log on to the CICS region. The full verification request using the RACROUTE REQUEST=VERIFYX macro makes RACF record the date and time of last access for the user ID, and write user statistics. The behavior of your applications is the same whether or not you specify the **SECVFYFREQ** system initialization parameter. CICS checks the user ID at user login and replaces the password verification request with a full verification request when necessary.

Because the full verification request has a higher processor cost and response time than password verification, you might notice a slight performance impact when you specify the **SECVFYFREQ** system initialization parameter. The extent of the performance impact depends on your setting for the **USRDELAY** system initialization parameter for the CICS region. When you specify **SECVFYFREQ**, CICS makes a full verification request for a user ID when the user logs on after the **USRDELAY** interval has expired. CICS also applies a maximum limit of one day between full verification requests at user login. If your **USRDELAY** parameter is set to less than 1440 minutes (1 day), a full verification request takes place at user login more frequently than once a day.

For more information, see VERIFY PASSWORD and VERIFY PHRASE.

Changed API commands in CICS TS 4.2

These API commands were extended or changed in CICS Transaction Server for z/OS, Version 4 Release 2.

QUERY SECURITY

The QUERY SECURITY command is changed to include a new resource type of EPADAPTER.

For more information, see QUERY SECURITY.

SIGNON

The SIGNON command is changed to support password phrases as well as standard passwords.

For more information, see SIGNON.

WRITEQ TS

The MAIN and AUXILIARY options on the WRITEQ TS command have been enhanced with IPIC support for function-shipped requests between CICS TS 4.2 regions or later. Previously, the MAIN and AUXILIARY options were supported only by using the multiregion operation (MRO) facility. APPC does not support the MAIN and AUXILIARY options. Temporary storage queues (TSQs) created as a result of function shipping WRITEQ TS using APPC are stored in auxiliary storage.

For more information, see WRITEQ TS.

New API commands

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

EXEC CICS VERIFY TOKEN
Verify that a Kerberos token is valid, as determined by an external security manager, and optionally allow the caller to extract the RACF user ID that is associated with the principal in the Kerberos token.

EXEC CICS INVOKE APPLICATION
Invoke an application entry point program. **EXEC CICS INVOKE APPLICATION** allows invocation of an application by naming an operation that corresponds to one of its program entry points, without having to know the name of the application entry point program and regardless of whether the program is public or private.

New API commands added in CICS Transaction Server for z/OS, Version 5 Release 1

EXEC CICS FREEMAIN64
Release storage that was acquired by using a GETMAIN or GETMAIN64 request. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs.

EXEC CICS GETMAIN64
Get 24-bit, 31-bit, or 64-bit storage. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs.

EXEC CICS GET64 CONTAINER
Retrieve data from a named channel container into 64-bit storage. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs. CICS business transaction services (BTS) containers are not supported.

EXEC CICS PUT64 CONTAINER
Place data from 64-bit storage in a named channel container. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs. CICS business transaction services (BTS) containers are not supported.

New API commands added in CICS Transaction Server for z/OS, Version 4 Release 2

EXEC CICS CHANGE PHRASE
Change the password or password phrase recorded by an external security manager (ESM) for a specified user ID.

EXEC CICS VERIFY PHRASE
Verify that a password or password phrase matches the password or password phrase recorded by an external security manager.

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 5 Release 2

No existing API commands were made threadsafe in this release.

API commands that were made threadsafe in CICS Transaction Server for z/OS, Version 5 Release 1

DELETEQ TD: This command is now threadsafe when it is used with a queue in a local CICS region, and when it is function shipped to a remote CICS region over an IPIC connection only. For other types of connections to remote CICS regions, the command is not threadsafe.
WRITEQ TD: In the same way as **DELETEQ TD**, this command is now threadsafe when it is used with a queue in a local CICS region, and when it is function shipped to a remote CICS region over an IPIC connection only.
READQ TD: In the same way as **DELETEQ TD**, this command is now threadsafe when it is used with a queue in a local CICS region, and when it is function shipped to a remote CICS region over an IPIC connection only.

API commands that were made threadsafe in CICS Transaction Server for z/OS, Version 4 Release 2

BIF DEEDIT
BIF DIGEST
CHANGE PASSWORD
DEFINE COUNTER and **DEFINE DCOUNTER**
DELETE: before CICS TS for z/OS, Version 4.2, this command was threadsafe when it was used with a file in a local CICS region, but it was not threadsafe when it was used with a file in a remote CICS region. The command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only. For other types of connection to remote CICS regions, the command remains nonthreadsafe.
DELETEQ TS: before CICS TS for z/OS, Version 4.2, this command was threadsafe when it was used with a queue in main storage or auxiliary storage in a local CICS region, but it was not threadsafe when it was used with a queue in a remote CICS region. The command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only. For other types of connection to remote CICS regions, the command remains nonthreadsafe. The command also remains nonthreadsafe when it is used with a queue in a shared temporary storage pool in a z/OS coupling facility managed by a temporary storage data sharing server (TS server).

DELETE COUNTER and **DELETE DCOUNTER**
ENDBR: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
EXEC DLI
EXTRACT CERTIFICATE
EXTRACT TCPIP
GET COUNTER and **GET DCOUNTER**
LINK: before CICS TS for z/OS, Version 4.2, this command was threadsafe when it was used to link to a program in a local CICS region, but it was not threadsafe when it was used to link to a program in a remote CICS region. The LINK command is now threadsafe when it is used to link to a program in a remote CICS region over an IPIC connection only. For other types of connection to remote CICS regions, the command remains nonthreadsafe.
QUERY COUNTER and **QUERY DCOUNTER**
QUERY SECURITY
READ: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
READQ TS: in the same way as **DELETEQ TS**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
READNEXT: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
READPREV: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
RESETBR: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
REWIND COUNTER and **REWIND DCOUNTER**
REWRITE: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
SIGNOFF
SIGNON
STARTBR: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
SYNCPOINT: the Recovery Manager now processes this command on an open TCB wherever possible to minimize TCB switching.
SYNCPOINT ROLLBACK: the Recovery Manager now processes this command on an open TCB wherever possible to minimize TCB switching.
UNLOCK: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
UPDATE COUNTER and **UPDATE DCOUNTER**
VERIFY PASSWORD
WRITE: in the same way as **DELETE**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.
WRITEQ TS: in the same way as **DELETEQ TS**, this command is now threadsafe when it is function shipped to a remote CICS region over an IPIC connection only.

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 5 Release 2

A new method in the Task class returns the current application context of the task:

com.ibm.cics.server.Task.getApplicationContext()

The JCICS API provides an equivalent for the following new API command:

INVOKE APPLICATION

The support is provided by the following new JCICS class:

com.ibm.cics.server.Application
: This class is the Java implementation of the **EXEC CICS INVOKE APPLICATION** command.

New JCICS methods in CICS Transaction Server for z/OS, Version 5 Release 1

To support starting new CICS tasks from a Java application, a new class CICSExecutorService is available in JCICS. The class implements the Java ExecutorService interface that creates threads that can use the JCICS API to access CICS services. This class has a static method called runAsCICS().

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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).

Resources that can be defined and installed in CICS bundles

The updated BUNDLE resource has additional features to support the use of CICS bundles as part of applications that are deployed on platforms.

You can now create resource definitions in CICS bundles for the following additional CICS RDO resources:

- FILE
- JVMSERVER
- PIPELINE
- TCPIPSERVICE
- WEBSERVICE

For the list of all artifacts that you can define and deploy in CICS(r) bundles, including further RDO resources, JSON transforms, web applications, OSGi bundles and events, see resource.bundle.artifacts.

Using existing CICS bundles with platforms and applications

CICS bundle projects created in the CICS Explorer® must have an ID and a version number to be included in an application project for deployment on a platform. CICS bundle projects that were created for releases before CICS Transaction Server Version 5 Release 1 did not have an ID and a version number. If you want to include these CICS bundle projects in your applications, use the CICS Bundle Manifest Editor in the CICS Explorer to add an ID and version number to the projects.

Obsolete resource definition types and attributes

Some resource definition types and some attributes are now obsolete. You must replace obsolete resource definitions, and obsolete attributes as appropriate.

Resource definition attributes made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2

DNSGROUP in TCPIPSERVICE resource
: The DNSGROUP attribute on TCPIPSERVICE resource definitions specified the group name with which CICS registered to Workload Manager, for connection optimization. DNSGROUP is obsolete as part of the removal of support for DNS Connection Optimization. DNSGROUP is supported for CSD compatibility for earlier releases of CICS where it is still valid.

EXPIRYINT in TSMODEL resource
: The EXPIRYINT attribute on TSMODEL resource definitions specified the expiry interval for matching temporary storage queues in hours. It has

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been replaced by the EXPIRYINTMIN attribute, which specifies the expiry interval in minutes. EXPIRYINT is supported for CSD compatibility, and an expiry interval specified using EXPIRYINT is accepted in compatibility mode. New models should use the EXPIRYINTMIN attribute.

GRPCRITICAL in TCPIPSERVICE resource
The GRPCRITICAL attribute on TCPIPSERVICE resource definitions marked the service as a critical member of the DNS group. GRPCRITICAL is obsolete as part of the removal of support for DNS Connection Optimization. GRPCRITICAL is supported for CSD compatibility for earlier releases of CICS where it is still valid.

Resource definitions made obsolete in CICS Transaction Server for z/OS, Version 5 Release 1

CORBASERVER
The CORBASERVER resource, used for defining the execution environment for enterprise beans and stateless CORBA objects, is obsolete and is removed.

DJAR The DJAR resource, used for defining a deployed JAR file in the local CICS region, is obsolete and is removed.

REQUESTMODEL
The REQUESTMODEL resource, used for defining how an Internet Inter-ORB Protocol (IIOP) inbound request is mapped to the CICS transaction that is to be initiated, is obsolete, and is removed.

Resource definition attributes made obsolete in CICS Transaction Server for z/OS, Version 5 Release 1

JVMPROFILE in PROGRAM resource
The JVMPROFILE attribute in PROGRAM definitions is obsolete and is removed from CICS as part of the removal of support for JVM pool infrastructure. The attribute is supported for CSD compatibility for earlier releases of CICS where it is still valid.

LSRPOOLID in LSRPOOL resource definitions
The LSRPOOLID attribute in LSRPOOL resource definitions is obsolete, but is supported to provide compatibility with earlier releases of CICS. The value specified for LSRPOOLID in existing definitions is transferred to the new option LSRPOOLNUM, which has values in the range 1 - 255, compared to the range 1 - 8 for LSRPOOLID. A value that you set for the new option LSRPOOLNUM is not transferred to the old option LSRPOOLID.

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.

CICS-supplied resource definitions made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2

No CICS-supplied resource definitions were made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2.

CICS-supplied resource definitions made obsolete in CICS Transaction Server for z/OS, Version 5 Release 1

DFH$CCI
CICS-supplied sample group **DFH$CCI** is removed. This group contained sample resource definitions for the CICS CCI Connector that you could modify to suit your requirements.

DFH$EJB
CICS-supplied resource definition group **DFH$EJB** is removed. This group contained sample resource definitions for the EJB "Hello World" sample.

DFH$EJB2
CICS-supplied sample group **DFH$EJB2** is removed. This group contains sample resource definitions for the EJB “Bank Account” sample that you could modify to suit your requirements.

DFH$IIOP
CICS-supplied sample group **DFH$IIOP** is removed. This group contained sample resource definitions for the IIOP sample application that you could modify to suit your requirements.

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.

DFH$JVM
CICS-supplied sample group **DFH$JVM** is removed. This group contained resource definitions for the Java sample programs that you could modify to suit your requirements.

DFHADET
CICS-supplied sample group **DFHADET** is removed. This group contained all of the definitions needed for the Resource Manager for Enterprise Beans and a file definition for DFHADEM.

DFHADST
CICS-supplied sample group **DFHADST** is removed. This group defined CREA, a CICS-supplied transaction that enabled the system programmer to create REQUESTMODEL definitions for the beans in an installed deployed JAR file.

DFHCOMPB
CICS-supplied sample group **DFHCOMPB** is removed. This group was required for compatibility with release CICS TS 2.3 .

DFHEJBU
CICS-supplied sample group **DFHEJBU** is removed. This group contained the program resource definition needed for the CICS EJB user-replaceable program, DFHEJEP. This program intercepted EJB events for the EJB application development tool.

DFHIIOP
CICS-supplied sample group **DFHIIOP** is removed. This group contained program resource definitions needed for using IIOP-based applications in CICS .

Changed resource definitions

Some existing resource definitions have new attributes added, or have changes to the values or scope of existing attributes. You can use the new attributes to add support for new CICS functions. If you have resource definitions that use the changed attributes, check that the value you are using is still the best for your situation.

If you have existing resource definitions that were created before the new attributes for the resources were available, check those resource definitions after you upgrade to this CICS release, to ensure that the default values are suitable for your situation. In some situations, CICS enforces certain values for options if these are required for compatibility with existing options in your resource definition.

Changed resource definitions in CICS Transaction Server for z/OS, Version 5 Release 2

DB2CONN resource definition: changed TCBLIMIT attribute
The CICS-DB2 interface has been enhanced to detect a mismatch between the number of threads defined and the number of TCBs defined. If the sum of the THREADLIMIT value for the pool (specified in the DB2CONN) and the THREADLIMIT values for all the DB2ENTRYs exceeds the TCBLIMIT value in the DB2CONN, then message DFHDB2110 is issued.

IPCONN resource definition: new HA attribute
The new HA attribute specifies whether or not the IPCONN definition can be used to connect to a high-availability cluster. The default setting, NO, means that it cannot be used to connect to a high-availability cluster.

IPCONN resource definition: changed APPLID attribute
The APPLID attribute specifies the application identifier of the remote system, such as a remote CICS region. If the IPCONN definition is used to connect to a high-availability cluster, you must specify a 1 to 8 character value that identifies the cluster.

TCPIPSERVICE resource definition: new SPECIFTCPS attribute
The new SPECIFTCPS attribute names the specific TCPIPSERVICE when you define a generic TCPIPSERVICE as part of a high-availability cluster. Use this parameter with the IPIC protocol, when the IP end point defined by the PORT and HOSTNAME or IPADDRESS attributes is the generic end point of an HA cluster of CICS regions.

TSMODEL resource definition: new EXPIRYINTMIN attribute
Support for expiration of temporary storage queues is extended to include temporary storage queues in shared temporary storage pools. A new attribute, EXPIRYINTMIN, specifies the expiry interval, in minutes, for a temporary storage queue that matches the temporary storage model. EXPIRYINTMIN replaces the EXPIRYINT attribute, which is still accepted for compatibility.

EXPIRYINTMIN specifies the expiry interval in minutes, rather than hours. TSMODEL resource definitions that specify the expiry interval in hours, using the EXPIRYINT attribute, are accepted. New models should specify the interval in minutes. CICS rounds the minutes value up to a multiple of ten minutes. For more information, see TSMODEL resources in Reference -> System definition.

Changed resource definitions in CICS Transaction Server for z/OS, Version 5 Release 1

IPCONN resource definition: changed CIPHERS attribute
The CIPHERS attribute formerly held a string of hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. It can now alternatively hold the name of a z/OS UNIX file that contains a list of cipher suites that can be used in an SSL connection.

IPCONN resource definition: changed NUMCIPHERS attribute
If the CIPHERS attribute holds a file name, NUMCIPHERS is set to 0. The value of 0 can indicate either that there are no cipher suites in use, or that they are defined in a file.

TCPIPSERVICE resource definition: changed AUTHENTICATE attribute
The value ASSERTED for the AUTHENTICATE attribute, which is used for authentication when an IIOP client communicates with the target server through an intermediate server, is now obsolete. The value is supported for CSD compatibility for earlier releases of CICS where it is still valid.

TCPIPSERVICE resource definition: changed BACKLOG attribute

The default value was formerly BACKLOG(1); it is now BACKLOG(0). To obtain a backlog size of one request, specify it explicitly.

The attribute BACKLOG(0) formerly had the effect of preventing CICS receiving any connections. The new behavior is to take the backlog value from the value of the TCP/IP configuration attribute SOMAXCONN. To prevent CICS from receiving connections, close the TCPIPSERVICE.

TCPIPSERVICE resource definition: changed CIPHERS attribute
The CIPHERS attribute formerly held a string of hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. It can now alternatively hold the name of a z/OS UNIX file that contains a list of cipher suites that can be used in an SSL connection.

TCPIPSERVICE resource definition: changed NUMCIPHERS attribute
If the CIPHERS attribute holds a file name, NUMCIPHERS is set to 0. The value of 0 can indicate either that there are no cipher suites in use, or that they are defined in a file.

TCPIPSERVICE resource definition: changed TYPE attribute
The value IIOP for the TYPE attribute is now obsolete. The value is supported for CSD compatibility for earlier releases of CICS where it is still valid.

URIMAP resource definition: changed CIPHERS attribute
The CIPHERS attribute formerly held a string of hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. It can now alternatively hold the name of a z/OS UNIX file that contains a list of cipher suites that can be used in an SSL connection.

URIMAP resource definition: changed NUMCIPHERS attribute
If the CIPHERS attribute holds a file name, NUMCIPHERS is set to 0. The value of 0 can indicate either that there are no cipher suites in use, or that they are defined in a file.

URIMAP resource definition: changed USAGE attribute
The USAGE attribute has a new value of JVMSERVER. This value specifies that the URI map is used to map web requests to a Java servlet or JSP application that is running in a JVM server. For more information, see URIMAP resources in Reference -> System definition.

Changed resource definitions in CICS Transaction Server for z/OS, Version 4 Release 2

FILE resource definition: new LSRPOOLNUM attribute
A new attribute, LSRPOOLNUM, specifies the identifier of the local shared resource pool. The value must be in the range 1 - 255. For more information, see FILE resources in Reference -> System definition.

LSRPOOL resource definition: new LSRPOOLNUM attribute
A new attribute, LSRPOOLNUM, specifies the identifier of the local shared resource pool. The value must be in the range 1 - 255. For more information, see LSRPOOL resources in Reference -> System definition.

PROGRAM resource definition: changed CONCURRENCY attribute
The CONCURRENCY option of the PROGRAM resource now allows you to specify the new option REQUIRED.

PROGRAM resource definition: new JVMSERVER attribute
A new attribute, JVMSERVER, specifies the name of the JVMSERVER resource that you want to use to run a Java program. A JVMSERVER resource represents the JVM server runtime environment in CICS. For more information, see JVMSERVER resources in Reference -> System definition.

TCPIPSERVICE resource definition: new MAXPERSIST attribute
A new attribute, MAXPERSIST, specifies the maximum number of persistent connections from Web clients that the CICS region allows for this port at any one time. For more information, see TCPIPSERVICE resources in Reference -> System definition.

TSMODEL resource definition: new EXPIRYINT attribute
A new attribute, EXPIRYINT, specifies the expiry interval, in hours, for a local temporary storage queue that matches the temporary storage model. For more information, see TSMODEL resources in Reference -> System definition.

URIMAP resource definition: new SOCKETCLOSE attribute
A new attribute, SOCKETCLOSE, specifies if, and for how long, CICS keeps a client HTTP connection open for reuse after the CICS application has finished using it. For more information, see URIMAP resources in Reference -> System definition.

WEBSERVICE resource definition: new ARCHIVEFILE attribute
A new attribute, ARCHIVEFILE, specifies the 1- to 255-character fully-qualified file name of an archive that contains one or more WSDL files. The supported format for the archive is `.zip`. For more information, see WEBSERVICE resources in Reference -> System definition.

New resource definitions

You can use the new resource definitions that are available in CICS Transaction Server for z/OS, Version 5 Release 2 to define support for new CICS functions.

New resource definitions in CICS Transaction Server for z/OS, Version 5 Release 2

No new resource definition types were added in this release.

New resource definitions in CICS Transaction Server for z/OS, Version 5 Release 1

No new resource definition types were added in this release.

New resource definitions in CICS Transaction Server for z/OS, Version 4 Release 2

No new resource definition types were added in this release.

New CICS-supplied resource definition groups

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

DFHFCRL

The CICS-supplied group DFHFCRL, introduced in CICS Transaction Server for z/OS, Version 5 Release 2, contains definitions for new file control resources.

Group DFHFCRL is in DFHLIST. It contains a TRANSACTION resource definition for transaction CFCR, which is used by CICS to disable files that are defined in CICS bundles, and a PROGRAM resource definition for the program DFHFCRN which it runs.

DFHPIVAL

The CICS-supplied group DFHPIVAL, introduced in CICS Transaction Server for z/OS, Version 5 Release 1, contains the SOAP message validation program, DFHPIVAL.

The DFHPIVAL program definition was previously in the DFHPIPE group. In the new DFHPIVAL group, it can be edited to change the JVM server to which it refers. The default is the sample JVM server, DFHJVMS.

Changed CICS-supplied resource definition groups

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

Changed CICS-supplied resource definition groups in CICS TS 5.2

DFHPGAIP

The resource definitions for programs DFHPGADX, DFHPGAHX, DFHPGALX, and DFHPGAOX now specify CONCURRENCY(THREADSAFE).

For more information, see “DFHPGAIP” on page 35

Changed CICS-supplied resource definition groups in CICS TS 5.1

DFH$AFLA

All programs are now DATALOCATION(ANY).

All transactions are now TASKDATALOC(ANY).

DFH$DB2

Programs DFJ$DSDB, DFJ$DSPU, and DFJ$DSRE are removed.

Transactions DSDB, DSPU and DSRE are removed.

DFHDB2
Program DFHD2EDF is marked thread safe.

DFHDCTG
Transient data queues CADS and CMPO are added.

DFHEDF

Program DFHEDFX is marked threadsafe.

Programs DFHEIGDS, DFHEITAB, DFHSMTAB are changed to DATALOCATION(ANY).

DFHEP
Transaction CEPS has been added.

DFHEPI
Program DFHEITSZ is changed to DATALOCATION(ANY).

DFHINQUI
Program DFHEITBS is changed to DATALOCATION(ANY).

DFHIPECI
Transaction CIEP is changed to TASKDATALOC(ANY) and PRIORITY(255).

DFHISC

The storage location is changed for the mirror transactions defined in the CICS-supplied group DFHISC.

For more information, see “DFHISC” on page 35

DFHISCIP

Programs DFHISPHP and DFHISPRP are added.

Transactions CISC and CISS are changed to DTIMOUT(NO).

Transactions CISP and CIS1 are added.

Profile definition DFHCICSC is added

For more information, see “DFHISCIP” on page 36

DFHISCQ
Transaction CQPI and CQPO are changed to TASKDATALOC(ANY).

DFHJAVA

Programs DFHDLLOD, DFHEJDNX, DFHJVCVT, DFHSJGC, DFHSJPI, DFJCICS, DFJCICSB, DFJCZDTC, DFJ1ESN, DFJ1ICS, DFJ1ICSB, DFJ1ZDTC are removed.

Program DFHSJITL is added.

Transactions CJGC and CJPI are removed.

Transactions is CJSA, CJSR are added.

DFHMQ

Program DFHMQBP3 is added.

Transaction CKBC is added.

DFHOPER
Transactions CBAM, CEMT, CEOT, CEST, and CETR are now TASKDATALOC(ANY).

DFHPIPE
Program DFHPIVAL is added.

DFHRMI
Transaction CRSY is now TASKDATALOC(ANY).

DFHROFA

All programs are now DATALOCATION(ANY).

All transactions are now TASKDATALOC(ANY).

DFHROFT
All transactions are now TASKDATALOC(ANY).

DFHSIGN
All transactions are now TASKDATALOC(ANY).

DFHSTAND

Program DFHPIITL is added.

Programs DFHEJITL, DFHPIITL, DFHSJITL, DFJDESN are removed.

Transactions CEJR and CJSR are removed.

Transactions CSAC and CXCU are now TASKDATALOC(ANY).

DFHSWIT
Transaction CMSG is now TASKDATALOC(ANY).

DFHPGAIP

In CICS TS 5.2, the definitions for the CICS-supplied default autoinstall program, in the CICS-supplied group DFHPGAIP, changed to specify CONCURRENCY(THREADSAFE) to avoid TCB switching during program autoinstall.

The resource definitions for the following programs now specify CONCURRENCY(THREADSAFE):

- DFHPGADX, Assembler program
- DFHPGAHX, C program
- DFHPGALX, PL/I program
- DFHPGAOX, COBOL program

If you are using the CICS-supplied default program for program autoinstall, examine any code added to the exit to ensure it is threadsafe. If the code is not threadsafe, you must either make changes to make it threadsafe, or change the resource definition to specify CONCURRENCY(QUASIRENT).

For more information about threadsafe programming techniques, see Threadsafe programs in Developing applications.

DFHISC

In CICS TS 5.1, the storage location was changed for the mirror transactions defined in the CICS-supplied group DFHISC.

The TRANSACTION resource definitions for the CICS-supplied mirror transactions, CEHP, CEHS, CPMI, CSHR, CSMI, CSM1, CSM2, CSM3, CSM5, and CVMI, are changed to specify TASKDATALOC(ANY) instead of TASKDATALOC(BELOW). The changed resource definitions are included in the compatibility group DFHCOMPF.

The CICS-supplied mirror transactions use 31-bit storage (above 16 MB but below 2 GB). If an **EXEC CICS LINK** command is issued over DPL for an AMODE(24) application, an AEZA or AEZC abend will occur. To avoid this situation, do one of the following:

- Define your own mirror transaction that uses 24-bit storage. For example, you can copy a CICS-supplied mirror transaction, then specify the TASKDATALOC(BELOW) attribute.
- Modify the application so that it is AMODE(31) and update the appropriate program definition.

For more information about programming for mirror transactions, see Application programming for CICS DPL in Developing applications.

DFHISCIP

In CICS TS 5.1, profile definition DFHCICSC was added to the CICS-supplied group DFHISCIP.

DFHCICSC is a profile definition for IP interconnectivity (IPIC) support and is used by transactions CISC and CISS, which run during IPCONN acquire processing. DFHCICSC has a default value of (0030) for the RTIMOUT parameter so that message transmissions during IPCONN acquire processing are subject to a read timeout of 30 seconds.

In CICS TS 4.2 and earlier releases, the profile DFHCICST is used by transactions CISC and CISS. If any changes for your installation have been made to profile DFHCICST it might be necessary to consider whether you need to change profile DFHCICSC.

Changes to control tables (macro resource definition)

When upgrading to CICS Transaction Server for z/OS, Version 5 Release 2, reassemble all CICS control tables using the CICS TS 5.2 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 5 Release 2, 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.

DFHDCT destination control table

The DFHDCT macro is no longer shipped with CICS from CICS TS for z/OS, Version 5.1.

Chapter 6. Changes to the system programming interface

CICS Transaction Server for z/OS, Version 5 Release 2 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 SPI commands and options

These system programming interface commands and options are obsolete. Remove these commands and options from your applications, because they represent functions that are no longer available, so the behavior of applications that use these commands changes.

Obsolete SPI options in CICS Transaction Server for z/OS, Version 5 Release 2

CREATE TCPIPSERVICE

The DNSGROUP and GRPCRITICAL options, which were used in connection with DNS Connection Optimization, are obsolete. DNSGROUP specified the group name with which CICS registered with the z/OS Workload Manager (WLM) for connection optimization. GRPCRITICAL specified whether the TCPIPSERVICE resource was a critical member of the DNS group.

INQUIRE TCPIPSERVICE

The DNSGROUP, DNSSTATUS, and GRPCRITICAL options, which were used in connection with DNS Connection Optimization, are obsolete. DNSGROUP returned the group name with which CICS registered with the z/OS Workload Manager (WLM) for connection optimization. DNSSTATUS returned the Domain Name System (DNS) and Workload Manager (WLM) registration status of the TCPIPSERVICE resource. GRPCRITICAL identified whether the TCPIPSERVICE resource was a critical member of the DNS group.

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SET TCPIPSERVICE
The DNSSTATUS option is obsolete. DNSSTATUS was used to specify the Domain Name System (DNS) and Workload Manager (WLM) registration status of the TCPIPSERVICE resource.

Obsolete SPI commands in CICS Transaction Server for z/OS, Version 5 Release 1

If you use these obsolete system programming commands in new or existing CICS application programs, CICS returns responses as follows:

- If you translate a program that includes any of the commands, the CICS translator returns a warning.
- If you run a program that includes any of the DISCARD, INQUIRE, or SET commands, CICS returns a NOTFND response.
- If you run a program that includes any of the CREATE commands, CICS returns an INVREQ response with a RESP2 value of 687.

For any commands that support a browse option, a NORMAL condition is returned for the START browse and END browse operations, and the END condition is returned for the NEXT browse operation.

CREATE CORBASERVER
Define a CorbaServer in the local CICS region.

CREATE DJAR
Define a deployed JAR file in the local CICS region.

CREATE REQUESTMODEL
Define a request model in the local CICS region.

DISCARD CORBASERVER
Remove the definition of a CorbaServer from the system, together with any associated deployed JAR files and beans.

DISCARD DJAR
Remove the definition of a specified deployed JAR file from the system, together with any associated beans.

DISCARD REQUESTMODEL
Remove a request model definition.

INQUIRE BEAN
Retrieve information about an installed enterprise bean.

INQUIRE CLASSCACHE
Retrieve information about the shared class cache for pooled JVMs in the CICS region, and report the presence of any old shared class caches that are awaiting deletion.

INQUIRE CORBASERVER
Retrieve information about a particular CorbaServer.

INQUIRE DJAR
Retrieve information about a DJAR definition.

INQUIRE JVM
Identify pooled JVMs in a CICS region and report their status.

INQUIRE JVMPOOL
Retrieve information about the pool of JVMs in the CICS address space.

INQUIRE JVMPROFILE
Identify JVM profiles that have been used in a CICS region for pooled JVMs.

INQUIRE REQUESTMODEL
Retrieve information about a request model.

INQUIRE WORKREQUEST
Retrieve information about work requests in the local CICS region. Use the INQUIRE ASSOCIATION command in place of this command.

PERFORM CLASSCACHE
Initialize and terminate the shared class cache that is used by pooled JVMs in the CICS region.

PERFORM CORBASERVER
Perform certain actions against a specified CorbaServer.

PERFORM DJAR
Perform certain actions against a specified DJAR.

PERFORM JVMPOOL
Start and terminate JVMs in the JVM pool.

SET CLASSCACHE
Set the status of autostart for the shared class cache that is used by pooled JVMs in the CICS region.

SET CORBASERVER
Set various attributes of a specified CorbaServer.

SET JVMPOOL
Enable or disable the JVM pool and set JVM tracing options.

SET WORKREQUEST
Purge or force purge a specific local task.

Obsolete SPI options in CICS Transaction Server for z/OS, Version 5 Release 1

COLLECT STATISTICS
The BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL options are obsolete. If you run a program that includes any of these options, CICS returns a NOTFND response with a RESP2 value of 0.

CSD INSTALL
The CORBASERVER, DJAR, and REQUESTMODEL options are obsolete. If you run a program that includes any of these options for the CSD INSTALL command, CICS returns an INVREQ response with a RESP2 value of 687.

INQUIRE DISPATCHER
The ACTJVMTCBS option and the MAXJVMTCBS option are obsolete. ACTJVMTCBS was used to inquire on the number of J8 and J9 mode TCBs currently allocated to user tasks. MAXJVMTCBS was used to inquire on the maximum number of J8 and J9 mode TCBs allowed in the JVM pool.

PERFORM STATISTICS RECORD
The BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL options are obsolete. If you run a program that includes any of these options, CICS returns a normal response but does not record any statistics for those resource types.

SET DISPATCHER

The MAXJVMTCBS option is obsolete. MAXJVMTCBS was used to change the maximum number of J8 and J9 mode open TCBs allowed in the JVM pool, which no longer exists.

Obsolete SPI commands and options in CICS Transaction Server for z/OS, Version 4 Release 2

CREATE FILE

The LSRPOOLID option is obsolete. Use the new option LSRPOOLNUM instead. If you do use LSRPOOLID in any CICS SPI command, CICS transfers the value that you specify to LSRPOOLNUM.

CREATE LSRPOOL

The LSRPOOLID option is obsolete, but is supported to provide compatibility with earlier releases of CICS. Use the new option LSRPOOLNUM instead, which has values in the range 1 - 255, compared to the range 1 - 8 for LSRPOOLID. If you do use LSRPOOLID in any CICS SPI command, CICS transfers the value that you specify to LSRPOOLNUM.

INQUIRE FILE

The LSRPOOLID option is obsolete. Use the new option LSRPOOLNUM instead. If you do use LSRPOOLID in any CICS SPI command, CICS transfers the value that you specify to LSRPOOLNUM.

SET FILE

The LSRPOOLID option is obsolete. Use the new option LSRPOOLNUM instead. If you do use LSRPOOLID in any CICS SPI command, CICS transfers the value that you specify to LSRPOOLNUM.

Changed SPI commands

A number of existing system programming interface commands have new options or changes to the values that are available for options.

Inquiring on private resources for applications

A resource that is defined as part of an application installed on a platform is private to that version of that application. For supported resource types, a resource is private if the resource is defined in a CICS bundle that is packaged and installed as part of an application, either as part of the application bundle, or as part of the application binding bundle. A resource that is defined by any other method is publicly available for all tasks, and is known as a public resource.

The following CICS resources are supported as private resources for applications:

- LIBRARY resources, which represent one or more data sets, known as dynamic program LIBRARY concatenations, from which program load modules can be loaded.
- POLICY resources, which represent one or more rules that manage the behavior of user tasks in CICS regions.
- PROGRAM resources, which represent an application program. A program that is auto-installed by a task for an application that is deployed on a platform is also private to that version of the application.

You can inquire on or browse private resources using the **EXEC CICS INQUIRE** system programming command for the resource type. By default, CICS searches for

the resources that are available to the program where the **EXEC CICS INQUIRE** command is issued. You can also choose to browse private resources for a specified application.

- When you issue an **EXEC CICS INQUIRE** command from a public program, information is returned about the named public resource. If the resource is not available as a public resource, a "not found" response is returned.
- When you issue an **EXEC CICS INQUIRE** command from a program that is running under a task for an application deployed on a platform, information is returned about the named private resource for that application, if it exists. If the application does not have a private resource with that name, information is returned about a public resource with the specified name. If the resource is not available as a private resource for that application or as a public resource, a "not found" response is returned.
- When you use an **EXEC CICS INQUIRE** command in browse mode from a public program, if you do not specify any other input parameters, the set of public resources of the specified type is returned. If the same browse command is issued from a program that is running under a task for an application deployed on a platform, the browse returns a set of resources consisting of any private resources of the specified type for the application, and the public resources of the specified type.
- To browse the private resources for an application, from either a public program or a private program, issue the **EXEC CICS INQUIRE** command with the START option and specify as input the application context, consisting of the platform, application, and application version. The browse returns a set of resources consisting of only the private resources of the specified type for the application. If no application is found with the specified application context, the APPNOTFOUND condition is returned.

For more information about browsing private resources, including examples of browsing resources for a different application from the application where you issue the command, see Browsing resource definitions in Developing system programs.

CREATE IPCONN

A new option HA is added to the **CREATE IPCONN** command.

HA({**NO**|**YES**})
Specifies whether the IPCONN can be used to connect to a high-availability cluster.

NO This is the default value. The IPCONN cannot be used to connect to a high-availability cluster.

YES The IPCONN must connect to a region that is part of a high-availability cluster.

The APPLID option specifies the application identifier of the remote system, such as a remote CICS region. If the IPCONN definition is used to connect to a high-availability cluster, you must specify a 1 to 8 character value that identifies the cluster.

CREATE TCPIPSERVICE

A new option SPECIFTCPS is added to the **CREATE TCPIPSERVICE** command.

SPECIFTCPS
This parameter specifies the 8-character name of the specific TCPIPSERVICE

when defining a generic TCPIPSERVICE as part of a high-availability cluster. This parameter is only valid when the protocol is IPIC and the IP end point defined by the PORT and HOSTNAME or IPADDRESS attributes is the generic end point of an HA cluster of CICS regions.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

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

CREATE TSMODEL

A new option `EXPIRYINTMIN` is added to the **`CREATE TSMODEL`** command.

`EXPIRYINTMIN`({**0**|*number*})

Specifies the expiry interval, in minutes, for a temporary storage queue that matches this model. CICS uses the value rounded up to the nearest multiple of 10 minutes. The interval count begins after each use of the temporary storage queue. If the queue is not used again before the expiry interval is reached, the queue becomes eligible for CICS to delete it automatically.

0
: No expiry interval applies to temporary storage queues that match this model, and they are never eligible for automatic deletion. This setting is the default.

number
: An expiry interval in minutes, in the range 1 - 900000. After this expiry interval, a temporary storage queue that matches this model becomes eligible for automatic deletion if it has not been used again.

Expiry intervals apply to temporary storage queues in the following locations:

- Main temporary storage in the local CICS region.
- Nonrecoverable auxiliary temporary storage (DFHTEMP data set) associated with the local CICS region.
- Temporary storage queues in shared temporary storage pools (CICS TS 5.2 and higher).

Expiry intervals do not apply to the following types of temporary storage queues, so CICS never deletes them automatically:

- Queues in auxiliary temporary storage that are defined as recoverable.
- Queues in a remote CICS region. To make CICS delete remote temporary storage queues, specify an expiry interval in a suitable TSMODEL resource definition in the region that owns the queues.
- Queues that CICS creates for its own use.

If you change the expiry interval in a TSMODEL resource definition, existing temporary storage queues that match the model are not affected. Those queues continue to use the expiry interval that applied when they were created. If all the TSMODEL resource definitions with a nonzero expiry interval are deleted from a CICS region, CICS stops scanning for expired temporary storage queues.

EXTRACT STATISTICS and COLLECT STATISTICS

When you use the **`EXEC CICS EXTRACT STATISTICS`** or **`EXEC CICS COLLECT STATISTICS`** command to request resource statistics for a specific resource of a

resource type that is supported as a private resource, the command operates according to the context in which the task is running.

- If the command is issued from a public program, statistics are returned for the named public resource.
- If the command is issued from a program that is part of an application deployed on a platform, so is running with an application context, the private resources for the application are searched first for the named resource. If a private resource is not found, statistics are returned for the named public resource.
- For the **EXEC CICS EXTRACT STATISTICS** command only, you can specify a different application context to be searched for private resources. When you request statistics for a different application, if a private resource is not found for that application, no statistics are returned.

When you use the **EXEC CICS EXTRACT STATISTICS** or **EXEC CICS COLLECT STATISTICS** command to return statistics for a specified program that is declared as an application entry point, only one statistics record is returned. If the command is issued in or for an application context, and the program was defined as a private resource for the application, the DSECT for private resources is used to format the data, even if the program has currently been promoted to a public program in order to make the application entry point available.

The following new options are added to the EXTRACT STATISTICS command to specify an application context:

APPLICATION*(data-value)*
Specifies the application name element of the application context. The application name can be up to 64 characters in length.

Specify the application context to return statistics for a private resource that is part of an application deployed on a platform. Statistics for private resources can only be returned as specific, or resource, statistics for a named resource of the JVMPROGRAM, LIBRARY, PROGRAM, or PROGRAMDEF resource types, which are supported as private resources. You must specify a complete application context, including the platform name, application name, and full application version number. If the private resource that you name on the RESID option is not found in the specified application context, no statistics are returned.

You do not need to specify an application context if the command is issued from a program that is part of the relevant application. By default, CICS returns statistics for a private resource from the application where the command is issued, or statistics for a public resource if no private resource can be found.

APPLMAJORVER*(data-value)*
Specifies the application major version element of the application context, in fullword binary form.

APPLMICROVER*(data-value)*
Specifies the application micro version element of the application context, in fullword binary form.

APPLMINORVER*(data-value)*
Specifies the application minor version element of the application context, in fullword binary form.

PLATFORM*(data-value)*
Specifies the platform name element of the application context. The platform name can be up to 64 characters in length.

INQUIRE ASSOCIATION

New attributes ACAPPLNAME, ACMAJORVER, ACMICROVER, ACMINORVER, ACOPERNAME, and ACPLATNAME return the current application context for the application that is associated with the task:

ACAPPLNAME(*data-area***)**
Returns, in a 64-character area, the name of the application that is associated with the task. If no application context is associated with the task, this option is blank.

ACMAJORVER(*data-area***)**
Returns, in fullword binary form, the major version number of the application associated with the task. If no application context is associated with the task, this option returns 0.

ACMICROVER(*data-area***)**
Returns, in fullword binary form, the micro version number of the application associated with the task. If no application context is associated with the task, this option returns 0.

ACMINORVER(*data-area***)**
Returns, in fullword binary form, the minor version number of the application associated with the task. If no application context is associated with the task, this option returns 0.

ACOPERNAME(*data-area***)**
Returns, in a 64-character area, the name of the application operation that is associated with the task. If no application context is associated with the task, this option is blank.

ACPLATNAME(*data-area***)**
Returns, in a 64-character area, the name of the platform that is associated with the task. If no application context is associated with the task, this option is blank.

INQUIRE BUNDLE and INQUIRE BUNDLEPART

The new AVAILSTATUS option on the **INQUIRE BUNDLE** and **INQUIRE BUNDLEPART** commands returns the availability status for the CICS bundle.

AVAILSTATUS(*cvda*)
Returns the status of the BUNDLE resource that represents the CICS bundle:

AVAILABLE
Callers can access all the resources identified in the CICS bundle as application entry points.

UNAVAILABLE
Callers cannot access any of the resources identified in the CICS bundle as application entry points.

SOMEAVAIL
Some application entry points are available and some are unavailable.

NONE
The bundle does not contain any statements of application entry points.

INQUIRE IPCONN

The new HA option on the **INQUIRE IPCONN** command shows whether the IPCONN definition can be used to connect to a high-availability cluster.

HA(*cvda***)**
Returns a CVDA value indicating whether the IPCONN can be used to connect to a high-availability cluster. CVDA values are as follows:

NOTREQUIRED
The IPCONN cannot be used to connect to a high-availability cluster.

REQUIRED
The IPCONN must connect to a region that is part of a high-availability cluster.

The APPLID, IPRESOLVED, and PORT options of the **INQUIRE IPCONN** command, when used with HA IPCONNs that are acquired, now return the values for the specific region in the high-availability cluster to which the IPCONN connected.

INQUIRE JVMSERVER

The PROFILEDIR option of the **INQUIRE JVMSERVER** command now displays the JVM profile directory for JVM servers that are packaged in CICS bundles.

PROFILEDIR(*data-area*)
Returns a 240-character data value of the directory on z/OS UNIX that contains the JVM profile for the JVM server. For a JVM server that is defined in a local CICS region, which uses a JVM profile stored in the local CICS region, the value is the directory specified by the JVMPROFILEDIR system initialization parameter in Reference -> System definition system initialization parameter for the CICS region. For a JVM server that is defined in a CICS bundle, which uses a JVM profile packaged in the CICS bundle, the value is the CICS bundle subdirectory where the JVM profile is stored.

INQUIRE LIBRARY

New options are added to the INQUIRE LIBRARY command to specify the application context for browsing private resources.

APPLICATION(*data-area***)**
Specifies the application name element of the application context. The application name can be up to 64 characters in length.

To browse private resources for an application deployed on a platform, use the APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, and PLATFORM options with the browse command START to specify the platform, application name, and full version number for the application whose resources you want to browse.

APPLMAJORVER(*data-area***)**
Specifies the application major version element of the application context, in fullword binary form.

APPLMINORVER(*data-area***)**
Specifies the application minor version element of the application context, in fullword binary form.

APPLMICROVER(*data-area***)**
Specifies the application micro version element of the application context, in fullword binary form.

PLATFORM(*data-area***)**
Specifies the platform name element of the application context. The platform name can be up to 64 characters in length.

INQUIRE PIPELINE

The **INQUIRE PIPELINE** command now includes a MSGFORMAT parameter for determining the message format processed by a pipeline:

MSGFORMAT(*data-area*)
Returns an 8-byte character string that indicates the message format processed by the PIPELINE.

SOAP11
The pipeline processes the SOAP 1.1 message format.

SOAP12
The pipeline processes the SOAP 1.2 message format, and can also process the SOAP 1.1 message format.

JSON
The pipeline processes the JSON message format.

OTHER
The pipeline processes other message formats, such as customer-specified formats.

INQUIRE PROGRAM

A new option RESIDENCY is added to the **INQUIRE PROGRAM** command.

RESIDENCY(*cvda***) (programs only)**
Returns a CVDA value that indicates the program's residency attributes. The CVDA values are as follows:

RESIDENT
The program is permanently resident. It is defined as RESIDENT(YES).

NONRESIDENT
The program has been defined as RESIDENT(NO).

New options are added to the INQUIRE PROGRAM command to specify the application context for browsing private resources. For the **INQUIRE PROGRAM** command only, the application context is used to specify a different application for browsing private resources, and also to return information for an inquiry on a public PROGRAM resource that is defined as an application entry point. For other resource types that are supported as private resources, the application context is not used to return information.

APPLICATION(*data-area***)**
Specifies or returns the application name element of the application context. The application name can be up to 64 characters in length.

To browse private resources for an application deployed on a platform, use the APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, and

PLATFORM options with the browse command START, to specify the platform, application name, and full version number for the application whose resources you want to browse.

For an inquiry on a public PROGRAM resource, the APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, and PLATFORM options return the name, version number, and platform of the application for which the program is defined as an application entry point. The OPERATION option returns the name of the relevant operation in the application. If the program is not defined as an application entry point, APPLICATION returns 64 blanks.

APPLMAJORVER(*data-area***)**
Specifies or returns the application major version element of the application context, in fullword binary form. For an inquiry on a public PROGRAM resource, if the program is not defined as an application entry point, APPLMAJORVER returns a value of -1.

APPLMINORVER(*data-area***)**
Specifies or returns the application minor version element of the application context, in fullword binary form. For an inquiry on a public PROGRAM resource, if the program is not defined as an application entry point, APPLMINORVER returns a value of -1.

APPLMICROVER(*data-area***)**
Specifies or returns the application micro version element of the application context, in fullword binary form. For an inquiry on a public PROGRAM resource, if the program is not defined as an application entry point, APPLMICROVER returns a value of -1.

PLATFORM(*data-area***)**
Specifies or returns the platform name element of the application context. The platform name can be up to 64 characters in length. For an inquiry on a public PROGRAM resource, if the resource is not defined as an application entry point, PLATFORM returns 64 blanks.

INQUIRE SYSTEM

Three new keywords have been added to the **INQUIRE SYSTEM** command. These are MESSAGECASE, MVSSMFID and MVSSYSNAME.

MESSAGECASE(*cvda***)**
Returns a CVDA value that shows how the message domains display mixed case messages, as set by the **MSGCASE** system initialization parameter. CVDA values are as follows:

MIXED
All messages displayed by the CICS message domain or the CICSPlex SM message domain remain in mixed case.

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

MVSSMFID(*data-area***)**
Returns a 4-byte value indicating the MVS system identification. This field is copied from the SMCASID field of the SMCA MVS control block.

MVSSYSNAME(*data-area***)**
Returns an 8-byte value indicating the MVS system name. This field is copied from the CVTSNAME field of the MVS CVT control block.

INQUIRE TCPIPSERVICE

New options are added to the **INQUIRE TCPIPSERVICE** command to support access to high-availability clusters of CICS regions over IP interconnectivity (IPIC) connections.

GENERICTCPS(*data-area*
: Returns the 8-character generic TCPIPSERVICE name that this specific TCP/IP service is associated with when used as part of the configuration within an IPIC high-availability cluster. This information is only present when both TCP/IP services are opened. It is blank when there is no generic TCPIPSERVICE or when this generic TCPIPSERVICE is closed.

SPECIFTCPS(*data-area*
: Returns the 8-character specific TCPIPSERVICE name that this generic TCP/IP service uses when receiving a high-availability IPIC connection request.

When the TCP/IP service is in OPEN or CLOSING status, the value returned by the BACKLOG option of the **INQUIRE TCPIPSERVICE** command is now the actual value for the maximum number of queued requests that the local TCP/IP stack permits for this service, taking into account the setting for the SOMAXCONN parameter in the PROFILE.TCPIP data set for the z/OS Communications Server port. When the TCP/IP service is in CLOSED or OPENING status, the value returned by the BACKLOG option is the value defined in the BACKLOG attribute of the TCPIPSERVICE resource definition.

A new value BUNDLE is added for the INSTALLAGENT option of the **INQUIRE TCPIPSERVICE** command, to show that the TCPIPSERVICE resource was installed by a bundle deployment.

INQUIRE UOWLINK

The new PORT option on the **INQUIRE UOWLINK** command returns the port number of the partner system for IPIC connections.

PORT(*data-area***)**
: For TYPE value IPIC, returns the TCP/IP port number that the partner system was listening on when the connection was acquired. Port is a number in the range 1 to 65535 and will be zero for other TYPE values.

INQUIRE URIMAP

New options are added to the **INQUIRE URIMAP** command to return the details of the application entry point for the URIMAP resource, and of the resulting availability status of the URIMAP resource.

AVAILSTATUS*(cvda)*
: Returns the availability status of the URIMAP resource as an application entry point for an application deployed on a platform.

  AVAILABLE
  : The URIMAP resource is declared as an application entry point, and the application entry point controls its availability and is available, so the URIMAP resource is available to callers.

  UNAVAILABLE
  : The URIMAP resource is declared as an application entry point, but the application entry point that controls its availability is unavailable, so the URIMAP resource is not available to callers.

NONE
The URIMAP resource is available to callers. Either the URIMAP resource is not declared as an application entry point, or it is declared as an application entry point but the application entry point is disabled or does not control the availability of the URIMAP resource.

APPLICATION*(data-value)*
Returns a 64-character area containing the application name of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not defined as an application entry point, APPLICATION returns blanks.

APPLMAJORVER*(data-value)*
Returns the fullword binary form of the major version number of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not defined as an application entry point, APPLMAJORVER returns -1.

APPLMINORVER*(data-value)*
Returns the fullword binary form of the minor version number of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not defined as an application entry point, APPLMINORVER returns -1.

APPLMICROVER*(data-value)*
Returns the fullword binary form of the micro version number of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not defined as an application entry point, APPLMICROVER returns -1.

OPERATION*(data-value)*
Returns a 64-character area containing the operation name of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not defined as an application entry point, OPERATION returns blanks.

PLATFORM*(data-value)*
Returns a 64-character area containing the platform name of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not defined as an application entry point, PLATFORM returns blanks.

INQUIRE WEBSERVICE

The STATE option of the **INQUIRE WEBSERVICE** command returns two new states, DISABLING and DISABLED, which apply only for web services that are packaged in CICS bundles.

DISABLED
This state is only available for WEBSERVICE resources that are defined in a CICS bundle. The web service has completed quiescing and is not accepting new work.

DISABLING
This state is only available for WEBSERVICE resources that are defined in a CICS bundle. The web service is quiescing. It is not accepting new work, but is allowing currently-executing work to complete. When the web service is no longer in use, the state of the WEBSERVICE resource changes to DISABLED.

PERFORM STATISTICS RECORD

Continue to use the existing keywords on the **EXEC CICS PERFORM STATISTICS RECORD** system programming command to write statistics for program, program definition, JVM program, or library resource types to the SMF data set. If a resource is a public resource, the existing DSECT is used to map its data, and if a resource is a private resource, the new DSECT is used to map its data.

Programs that are declared as application entry points are identified by a field in the DSECTs for public and private program definitions (PROGRAMDEF statistics keyword) and JVM programs (JVMPROGRAM keyword). When interval statistics, end-of-day statistics, requested statistics, requested reset statistics, or unsolicited statistics are produced for a program definition or JVM program that is declared as an application entry point, two statistics records are written, one mapped by the DSECT for public resources, and one mapped by the DSECT for private resources. For the program statistics that are produced by the loader domain (PROGRAM keyword), application entry points are not identified, and only one private program statistics record is written.

SET BUNDLE

A new option AVAILSTATUS on the **SET BUNDLE** command gives or removes access to application entry points that are declared in the CICS bundle. For a CICS bundle that declares application entry points, you must first enable the bundle, then make it available, to give users access to the resources. For a CICS bundle that does not declare application entry points, you only need to enable the bundle.

AVAILSTATUS(*cvda*)
Changes the status of the BUNDLE resource that represents the CICS bundle:

AVAILABLE
CICS gives callers access to the resources identified in the CICS bundle as application entry points, so that they can access all the resources in the CICS bundle.

UNAVAILABLE
CICS removes access to the resources identified in the CICS bundle as application entry points, so callers cannot access any of the private resources in the CICS bundle.

SET FILE

To change the status of a FILE resource that was defined and installed in a CICS bundle, change the status of the CICS bundle or the application with which it is deployed. When you perform the disable action on a CICS bundle that defines a FILE resource, the action completes when the file is no longer in use and any retained locks have been resolved.

If you are experiencing a problem with disabling a CICS bundle that defines a FILE resource, you may issue the **EXEC CICS SET FILE DISABLED** or **EXEC CICS SET FILE CLOSED** command with the FORCE option against the dynamically generated resource, if this action is required. Follow the troubleshooting procedure in Diagnosing application errors to diagnose the problem and take suitable action.

SET JVMSERVER

To disable a JVMSERVER resource that is defined in a CICS bundle, you must first disable the CICS bundle or the application with which it is deployed. If the disable process does not complete, because the resource is still in use, you can now use the **SET JVMSERVER** PURGE, FORCEPURGE, or KILL command on the dynamically generated resource in the CICS region. If you attempt to issue the command before performing the disable action on the CICS bundle, CICS issues error message DFHSJ1203.

SET TCPIPSERVICE

To disable a TCPIPSERVICE resource that is defined in a CICS bundle, you must first disable the CICS bundle or the application with which it is deployed. If the disable process does not complete, because the resource is still in use, you can now use the **SET TCPIPSERVICE** IMMCLOSE command on the dynamically generated resource in the CICS region. If you attempt to issue the command before performing the disable action on the CICS bundle, CICS issues error message DFHSO0140.

Changed SPI commands in CICS TS 5.1

These system programming interface commands were changed in CICS Transaction Server for z/OS, Version 5 Release 1.

ENABLE PROGRAM

A new option, GALOCATION, is added to the **ENABLE PROGRAM** command to choose the storage location for the global work area for global user exits and task related user exits.

GALOCATION(*cvda***)**
Specifies the location of the storage that CICS provides as a global work area for this exit program. You must also specify the GALENGTH option to create the global work area. CVDA values are as follows:

LOC24
The global work area is in 24-bit storage. This is the default location.

LOC31
The global work area is in 31-bit storage.

CICS does not return the address of the global work area on the **ENABLE PROGRAM** command. You can use an **EXTRACT EXIT** command to determine the address.

A new option REQUIRED, is added to the **ENABLE PROGRAM** command to control which TCB runs a task-related user exit.

REQUIRED (task-related user exits only)
Specifies that the task-related user exit program is to run on an open TCB. If OPENAPI is specified, an L8 open TCB is used. If OPENAPI is not specified, any eligible key-8 open TCB can be used: L8, T8, or X8. If REQUIRED is not specified, the task-related user exit must use only the CICS API, or perform its own TCB switch to invoke non-CICS services.

The OPENAPI option is also changed.

OPENAPI (task-related user exits only)
Specifies that the task-related user exit program is using non CICS APIs. If the user application program that invokes the task-related user exit is defined as quasi-reentrant, CICS switches the user task to an L8 mode open TCB before passing control to the task-related user exit program. CICS assumes that a task-related user exit enabled with OPENAPI does not manage its own private pool of TCBs for non CICS services, and can perform its processing on the L8 mode TCB.

If you specify OPENAPI without REQUIRED, CICS enforces REQUIRED by default. A task-related user exit that specifies OPENAPI must be written to threadsafe standards.

For the rules that determine which calls to a task-related user exit cause the exit to be invoked on an L8 mode TCB or the QR TCB, and for other associated information, see Calling an OPENAPI task-related user exit in Developing system programs.

Note: When a task-related user exit program is enabled REQUIRED and OPENAPI, it is treated the same as if it were enabled THREADSAFE and OPENAPI. For compatibility, an **INQUIRE EXITPROGRAM** command for either combination will always return THREADSAFE, OPENAPI. An **INQUIRE EXITPROGRAM** command will return REQUIRED, CICSAPI only for a task-related user exit program enabled REQUIRED and CICSAPI.

INQUIRE ASSOCIATION

The **INQUIRE ASSOCIATION** command has new options to support application context data.

ACAPPLNAME(*data-area***)**
Returns, in a 64-character area, the name of the application that is associated with the task. If no application context is associated with the task, this option is blank.

ACMAJORVER(*data-area***)**
Returns, in fullword binary form, the major version number of the application associated with the task. If no application context is associated with the task, this option returns 0.

ACMICROVER(*data-area***)**
Returns, in fullword binary form, the micro version number of the application associated with the task. If no application context is associated with the task, this option returns 0.

ACMINORVER(*data-area***)**
Returns, in fullword binary form, the minor version number of the application associated with the task. If no application context is associated with the task, this option returns 0.

ACOPERNAME(*data-area***)**
Returns, in a 64-character area, the name of the application operation that is associated with the task. If no application context is associated with the task, this option is blank.

ACPLATNAME(*data-area***)**
Returns, in a 64-character area, the name of the platform that is associated with the task. If no application context is associated with the task, this option is blank.

The existing options FACILTYPE and ODFACILTYPE have a new CVDA value of JVMSERVER to identify tasks that are running in a JVM server. The existing option IPFAMILY has a new CVDA value of UNKNOWN.

INQUIRE BUNDLE

The **INQUIRE BUNDLE** command has new options to support bundle ID and version information.

BUNDLEID(*data-value*)
Returns the 1 - 64 character ID of the bundle. If no ID is specified, this option returns blanks.

MGMTPART(*data-value*)
Returns the 8 - byte ID of the management part under which this bundle was installed for an application or platform. If the bundle was not installed for an application or platform, this option returns binary zeros.

MAJORVERSION(*data-area*)
Returns the major version number of the bundle. If no major version is specified, this option returns 0.

MICROVERSION(*data-area*)
Returns the micro version number of the bundle. If no micro version is specified, this option returns 0.

MINORVERSION(*data-area*)
Returns the minor version number of the bundle. If no minor version is specified, this option returns 0.

INQUIRE BUNDLEPART

The PARTCLASS option on the **INQUIRE BUNDLEPART** command has a new value:

ENTRYPOINT
The resource is an entry point to an application.

INQUIRE CAPTURESPEC

The PRIMPREDTYPE option on the **INQUIRE CAPTURESPEC** command has a new value:

MESSAGEID
The primary predicate is a CICS or CPSM message id of form DFHxxnnnn or EYUxxnnnn.

INQUIRE DISPATCHER

The MAXOPENTCBS and MAXXPTCBS options on the **INQUIRE DISPATCHER** command are still available, but the values that they return now represent limits set automatically by CICS based on the maximum number of tasks specified for the CICS region.

INQUIRE DSNAME

The **INQUIRE DSNAME** command has a new option to support replication logging.

LOGREPSTATUS(*cvda*)
Returns a CVDA value identifying whether the data set was defined with LOGREPLICATE. The valid values are:

LOGREPLICATE
All updates to the data set are logged for replication.

NOLOGREPLICA
Updates to the data set are not logged for replication.

NOTAPPLIC
The data set has not been opened by the CICS region in which the command is issued, or the data set is BDAM .

INQUIRE EVENTBINDING

The **INQUIRE EVENTBINDING** command is changed to support two new options EPADAPTERRES and EPADAPTERSET.

EPADAPTERRES *(cvda)*
Returns a CVDA value indicating whether events are emitted to one or multiple EP adapters. CVDA values are as follows:

EPADAPTER
Events captured by this event binding will be emitted to an EP adapter.

EPADAPTERSET
Events captured by this event binding will be emitted to all EP adapters in an EP adapter set.

EPADAPTERSET*(data-area)*
Returns the 32-character name of the EP adapter set used by this event binding. If this option is not blank, the option of EPADAPTER will be blank. Or vice versa.

INQUIRE EXITPROGRAM

The CONCURRENTST option of the **INQUIRE EXITPROGRAM** command is extended to return a third CVDA, REQUIRED.

CONCURRENTST
returns a CVDA indicating the concurrency status of the global or task-related user exit program. This is the value of the CONCURRENCY attribute of the PROGRAM definition, or of any override specified by the latest ENABLE command for this program.

CVDA values are:

QUASIRENT
The exit program is defined as being quasi-reentrant, and is able to run only under the CICS QR TCB when invoking CICS services through the CICS API. To use any MVS services, a task-related user exit program must switch to a privately-managed TCB.

THREADSAFE
The exit program is defined as threadsafe, and is capable of running on an open TCB.

For task-related user exit programs only, if the APIST option returns OPENAPI the program will always be invoked under an open TCB.

For both global and task-related user exit programs, an APIST option of CICSAPI means that the program is invoked under whichever TCB is in use by its user task when the program is given control. This could be either an open TCB or the CICS QR TCB.

REQUIRED (task-related user exits only)
The exit program is always run on an open TCB. If OPENAPI is specified, an L8 open TCB is used. If OPENAPI is not specified, then any eligible key 8 open TCB is used, L8, T8, or X8.

Note: When a task-related user exit is enabled REQUIRED and OPENAPI, it is treated the same as if it were enabled THREADSAFE and OPENAPI. For compatibility, an **INQUIRE EXITPROGRAM** command for either combination will always return THREADSAFE, OPENAPI. For a task-related user exit enabled REQUIRED and CICSAPI, **INQUIRE EXITPROGRAM** will return REQUIRED, CICSAPI.

INQUIRE JVMSERVER

The **INQUIRE JVMSERVER** command is changed to support the new option PROFILEDIR.

PROFILEDIR(*data-area*)
Returns a 240-character data value of the directory on z/OS UNIX that contains the JVM profile for the JVM server. For a JVM server that is defined in a local CICS region, which uses a JVM profile stored in the local CICS region, the value is the directory specified by the JVMPROFILEDIR system initialization parameter in Reference -> System definition system initialization parameter for the CICS region. For a JVM server that is defined in a CICS bundle, which uses a JVM profile packaged in the CICS bundle, the value is the CICS bundle subdirectory where the JVM profile is stored.

INQUIRE PROGRAM

The ENTRYPOINT option of the **INQUIRE PROGRAM** command is changed to support non-Language Environment AMODE(64) assembler programs. The **INQUIRE PROGRAM** command is changed to support the new APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, OPERATION and PROGRAM options, which tell CICS that the PROGRAM resource is an entry point for an application.

APPLICATION(*data-area***)**
Specifies or returns the application name element of the application context. The application name can be up to 64 characters in length.

To browse private resources for an application deployed on a platform, use the APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, and PLATFORM options with the browse command START, to specify the platform, application name, and full version number for the application whose resources you want to browse.

For an inquiry on a public PROGRAM resource, the APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, and PLATFORM options return the name, version number, and platform of the application for which the program is defined as an application entry point. The OPERATION option returns the name of the relevant operation in the application. If the program is not defined as an application entry point, APPLICATION returns 64 blanks.

APPLMAJORVER(*data-area***)**
Specifies or returns the application major version element of the application context, in fullword binary form. For an inquiry on a public PROGRAM resource, if the program is not defined as an application entry point, APPLMAJORVER returns a value of -1.

APPLMINORVER(*data-area***)**
Specifies or returns the application minor version element of the application context, in fullword binary form. For an inquiry on a public PROGRAM resource, if the program is not defined as an application entry point, APPLMINORVER returns a value of -1.

APPLMICROVER(*data-area***)**
Specifies or returns the application micro version element of the application context, in fullword binary form. For an inquiry on a public PROGRAM resource, if the program is not defined as an application entry point, APPLMICROVER returns a value of -1.

ENTRYPOINT(*ptr-ref***)**
Returns the entry point of the module, if it is loaded. CICS program load services set the entry point according to the addressing mode of the load module:

- AMODE(24): bit 0 is 0 and bit 31 is 0.
- AMODE(31): bit 0 is 1 and bit 31 is 0.
- AMODE(64): bit 0 is 0 and bit 31 is 1.

If the module is not loaded, or is a remote program, or is a Java program that runs in a JVM, a null pointer (X'FF000000') is returned.

OPERATION(*data-value***)**
Returns, in a 64-character area, the name of the application operation for which this program is defined as an entry point. If the program is not defined as an application entry point, OPERATION returns 64 blanks.

PROGRAM(*data-value***)**
Specifies the name of the program, map set, or partition set about which you are inquiring. The name can be up to 8 characters in length.

INQUIRE SYSTEM

The **INQUIRE SYSTEM** command is changed to support the following new options:

ETDSASIZE(*data-area***)**
Returns the current size in bytes of the extended trusted dynamic storage area (ETDSA), in fullword binary form. It includes both storage in use and storage available for use. This size is calculated and managed by CICS automatically, within the EDSALIMIT value, that is, the overall limit for dynamic storage areas that reside above 16 MB but below 2 GB (above the line).

GCDSASIZE(*data-area***)**
Returns the current size in bytes of the above-the-bar CICS dynamic storage area (GCDSA), in doubleword binary form. It includes both storage in use and storage available for use. This size is calculated and managed by CICS automatically.

GSDSASIZE(*data-area***)**
Returns the current size in bytes of the above-the-bar shared dynamic storage area (GSDSA), in doubleword binary form. It includes both storage in use and storage available for use. This size is calculated and managed by CICS automatically.

GUDSASIZE(*data-area***)**
Returns the current size in bytes of the above-the-bar user dynamic storage area (GUDSA), in doubleword binary form. It includes both storage in use and storage available for use. This size is calculated and managed by CICS automatically.

The MAXOPENTCBS option on the **INQUIRE SYSTEM** command is still available, but the value that it returns now represents a limit set automatically by CICS based on the maximum number of tasks specified for the CICS region.

INQUIRE URIMAP

The USAGE option on the **INQUIRE URIMAP** command has a new value:

JVMSERVER
A URIMAP for a JVM server. This type of URIMAP resource maps an incoming request for a Java web application to run under a CICS transaction that has appropriate security.

SET PROGRAM

The **SET PROGRAM** command has a new option OPERATION.

OPERATION(*data-value***)**
Specifies the 64-character name of the application operation for which this program is to be defined as an application entry point. You cannot specify the OPERATION option for CICS programs (programs beginning with 'DFH').

To notify CICS that a program is no longer to be used as an entry point, specify a value of a space character for the OPERATION option.

You cannot use the OPERATION option to specify or remove application operations for programs that are defined in CICS bundles as application entry points. You can use this command only to modify programs that are not being used as an entry point by a CICS bundle.

SET STATISTICS

The default value of the INTERVAL option on the **SET STATISTICS** command is decreased from 3 hours to 1 hour.

INTERVAL(*data-value***)**
Specifies the recording interval for system statistics, as a 4-byte packed decimal field in the format *0hhmmss+*. The interval must be at least 1 minute and no more than 24 hours. When you use the INTERVAL option, or more than one of the separate interval options, the minutes and the seconds portions of the time each must not exceed 59. If you use INTERVALMINS alone, the range is 1 - 1440. If you use INTERVALSECS alone, the range is 60 - 86400.

SET SYSTEM

The maximum value of the MAXTASKS option of the **SET SYSTEM** command is increased from 999 to 2000, and the minimum value is increased to 10.

MAXTASKS(*data-value***)**
Specifies, as a fullword binary value, the maximum number of tasks that can be eligible for dispatch at any one time in this CICS system. Both active and suspended tasks count toward this limit, but tasks that have not reached the point of initial dispatch do not. System tasks, for example terminal and journal control tasks, are not counted. The value can be in the range 10 - 2000.

Changed SPI commands in CICS TS 4.2

These system programming interface commands were changed in CICS Transaction Server for z/OS, Version 4 Release 2.

CREATE FILE

A new option LSRPOOLNUM is added:

LSRPOOLNUM({**1**|*number*|**NONE**})
Specifies the identity of the local shared resource pool. The default value for LSRPOOLNUM is 1, unless a value has been specified for the NSRGROUP attribute, in which case the default value for LSRPOOLNUM is NONE.

NONE
Specifies that the data set associated with this file uses VSAM nonshared resources (NSR).

You cannot specify NONE for a CICS shared data table (CICS or user-maintained), because these types of data tables must use an LSR pool. However, this restriction does not apply to a coupling facility data table, for which you can specify NONE.

VSAM nonshared resources (NSR) are not supported for transactions that use transaction isolation. Specify ISOLATE(NO) when you define transactions that access VSAM files that use NSR. You can also function ship the file request to a remote region. The DFHMIRS program that carries out the request is defined with an EXECKEY of CICS. A CICS-key program has read and write access to CICS-key and user-key storage of its own task and all other tasks, whether or not transaction isolation is active.

number
Identifies the number of the VSAM shared resource pool that is used by the VSAM data set associated with this file. The value must be in the range 1 through 255. The data set is defined as using VSAM local shared resources (LSR). Define the buffers, strings, and other resources explicitly in an LSRPOOL resource definition that corresponds to the assigned LRPOOLNUM value.

By default, if the file definition specifies RLSACCESS(YES), the LSRPOOLNUM value is ignored when CICS opens the file. However, if you change a file definition that specifies an LSR pool from RLSACCESS(NO) to RLSACCESS(YES), you are advised to keep the LSRPOOLNUM value. LSRPOOLNUM ensures that, if the file is switched at any time from RLS to LSR mode, the file correctly references an LSR pool.

CREATE LSRPOOL

A new option LSRPOOLNUM is added:

LSRPOOLNUM({**1**|*number*})
Specifies the identifier of the local shared resource pool that is being defined. The value must be in the range 1 through 255.

CREATE MQCONN

A new value GROUPRESYNC is added to the RESYNCMEMBER option:

RESYNCMEMBER({**YES**|**NO**|**GROUPRESYNC**})

GROUPRESYNC
CICS connects to any member of the queue-sharing group. The queue manager is chosen by WebSphere® MQ and it asks CICS to resolve indoubt units of work on behalf of all eligible queue managers in the queue-sharing group. This function is called *group unit of recovery*. The

GROUPRESYNC option can be used only when you are running WebSphere MQ 7.1, or higher, that supports group unit of recovery for CICS and when group unit of recovery is enabled in the queue managers.

The main use of the GROUPRESYNC option is with shared queues, but it can be used with private queues. Messages on shared queues are resolved immediately, but resolution of private queues occurs when the owning queue manager restarts. If using private queues, it can be convenient to define the queues with QSGDISP(GROUP). QSGDISP(GROUP) ensures that an instance of the private queue exists on every manager in the queue sharing group, so that in the event of failure and reconnection to a different queue manager, the application can continue using the new queue instance. The application would need to be able to tolerate using a new queue instance.

Do not change the setting for RESYNCMEMBER when units of work are outstanding in WebSphere MQ, because units of work cannot be resolved. A unit of work held in CICS is identified with a resource manager qualifier. When RESYNCMEMBER(GROUPRESYNC) is used the qualifier is the name of the queue-sharing group, otherwise the qualifier used is the name of the individual queue manager.

CREATE PROGRAM

A new option JVMSERVER is added:

JVMSERVER(*jvmserver*)
Specifies the name (up to 8 characters in length) of the JVMSERVER resource that contains the OSGi service. A JVMSERVER resource represents the JVM server runtime environment in CICS. The JVM server runs all programs in the CICS key.

Acceptable characters:
A-Z a-z 0-9 $ @ # . - _ % ? ! : | = , ;

A new CVDA value REQUIRED is added to the CONCURRENCY option:

REQUIRED
The program is written to threadsafe standards. CICS starts the program on an open TCB and ensures that the program always runs on an open TCB. If CICS switches to the QR TCB to run a CICS command, it returns to the open TCB before handing control back to the application program. The type of open TCB used depends on the API setting and the language of the program.

- Java programs and OSGi bundles that run in a JVM server use a T8 TCB.
- C or C++ XPLink programs operate like OPENAPI programs and use an X8 TCB if CICS key is set, and an X9 TCB if user key is set.
- COBOL, PL/I, non-XPLink C or C++, and assembler language programs that also specify API(CICSAPI) use an L8 TCB because CICS commands can operate on this TCB irrespective of the execution key of the program.

REQUIRED is applicable to user application programs, PLT programs, and user-replaceable programs, and is the preferred option for Java programs. The REQUIRED setting is also suitable for programs that access resource

managers like DB2 and WebSphere MQ, which also require an L8 TCB. However, for OPENAPI programs CICS must use an L9 TCB for user key programs and an L8 TCB for CICS key programs so that non-CICS API commands such as MVS requests operate correctly. The CICS-DB2 task-related user exit will use an L8 TCB if it is run with CONCURRENCY(REQUIRED) and API(OPENAPI) or it will run on any eligible key 8 open TCB if run with CONCURRENCY(REQUIRED) and API(OPENAPI).

CREATE TCPIPSERVICE

A new option MAXPERSIST is added:

MAXPERSIST({**NO**|*number*})

Specifies the maximum number of persistent connections from web clients that the CICS region allows for this port at any one time. This setting applies only for the HTTP protocol.

- The default value NO means that there is no limit on the number of persistent connections.
- In a CICS region that is at risk of being overloaded with persistent connections, you can specify a suitable value (up to a theoretical maximum of 65535) based on the number of persistent connections that the CICS region can handle simultaneously. When this limit is reached and further web clients connect on the port, CICS requires the new clients to close the connection after they receive each response. When the new clients reconnect, if they connect to another CICS region that shares the port and has not reached its limit, they can maintain a persistent connection there instead. An HTTP/1.1 server should normally allow persistent connections, so only set this option in a CICS region that has experienced performance problems due to persistent connections from long-lived web clients.
- If you specify a value of zero for this option, the CICS region does not allow persistent connections and requires every web client to close the connection after they receive each response. A zero setting for MAXPERSIST is not compliant with the HTTP/1.1 specification, so only use that setting if you have a special requirement for it in a CICS region that is not currently handling external requests, for example, in a test environment.

CREATE TSMODEL

A new option EXPIRYINT is added:

EXPIRYINT({**0**|*number*})

Specifies the expiry interval, in hours, for a temporary storage queue that matches this model. The interval count begins after each use of the temporary storage queue. If the queue is not used again before the expiry interval is reached, the queue becomes eligible for CICS to delete it automatically.

Note: EXPIRYINTMIN is introduced in 5.2 and is a preferred option.

0 No expiry interval applies to temporary storage queues that match this model, and they are never eligible for automatic deletion. This setting is the default.

number

An expiry interval in minutes, in the range 1 - 15000. After this expiry interval, a temporary storage queue that matches this model becomes eligible for automatic deletion if it has not been used again.

Expiry intervals apply to temporary storage queues in the following locations:

- Main temporary storage in the local CICS region.
- Nonrecoverable auxiliary temporary storage (DFHTEMP data set) associated with the local CICS region.

Expiry intervals do not apply to the following types of temporary storage queues, so CICS never deletes them automatically:

- Queues in auxiliary temporary storage that are defined as recoverable.
- Queues in a remote CICS region. To make CICS delete remote temporary storage queues, specify an expiry interval in a suitable TSMODEL resource definition in the region that owns the queues.
- Queues that CICS creates for its own use.
- Temporary storage queues in shared temporary storage pools.

If you change the expiry interval in a TSMODEL resource definition, existing temporary storage queues that match the model are not affected. Those queues continue to use the expiry interval that applied when they were created. If all the TSMODEL resource definitions with a nonzero expiry interval are deleted from a CICS region, CICS stops scanning for expired temporary storage queues.

CREATE URIMAP

A new option SOCKETCLOSE is added:

SOCKETCLOSE({**0**|*hhmmss*})

This attribute is for USAGE (CLIENT).

SOCKETCLOSE specifies if, and for how long, CICS keeps a client HTTP connection open after the CICS application has finished using it. After use, CICS checks the state of the connection and then places it in a pool in a dormant state. A dormant connection can be reused by the same application or by another application that connects to the same host and port.

0
: CICS closes each client HTTP connection when the CICS application has finished using it. CICS does not place the connection in a pool for reuse.

hhmmss
: When a CICS application has finished using its client HTTP connection, CICS checks the state of the connection and places it in a pool for reuse. A dormant connection that is not reused is discarded after the length of time that you specify here.

Connection pooling can provide performance benefits for the HTTP EP adapter for CICS event processing, or where multiple invocations of CICS web support applications make connection requests for the same host and port, or where a web services application makes multiple requests and responses. To activate connection pooling, your application programs must specify the URIMAP resource on the **INVOKE SERVICE** or **WEB OPEN** command. For more information about connection pooling, see Connection pooling for HTTP client performance in Improving performance.

INQUIRE ASSOCIATION

The following options have been added for transaction tracking support:

ODADPTRID(*data-area***)**
Returns, in a 64-character area, the data that was added to the origin data by the adapter. This field is created when the originating task is started. If the task was not started by using an adapter, or if it was and the adapter did not set this value, ODADPTRID returns blanks.

ODADPTRDATA1(*data-area***)**
Returns, in a 64-character area, the data that was added to the origin data by the adapter. This field is created when the originating task is started. If the task was not started by using an adapter, or if it was and the adapter did not set this value, ODADPTRDATA1 returns blanks. ODADPTRDATA1 also returns blanks if the adapter set a value for this field, but did not set an adapter identifier.

ODADPTRDATA2(*data-area***)**
Returns, in a 64-character area, the data that was added to the origin data by the adapter. This field is created when the originating task is started. If the task was not started by using an adapter, or if it was and the adapter did not set this value, ODADPTRDATA2 returns blanks. ODADPTRDATA2 also returns blanks if the adapter set a value for this field, but did not set an adapter identifier.

ODADPTRDATA3(*data-area***)**
Returns, in a 64-character area, the data that was added to the origin data by the adapter. This field is created when the originating task is started. If the task was not started by using an adapter, or if it was and the adapter did not set this value, ODADPTRDATA3 returns blanks. ODADPTRDATA3 also returns blanks if the adapter set a value for this field, but did not set an adapter identifier.

PHAPPLID(*data-area***)**
Returns the 8-character APPLID from previous hop data. If the specified task was initiated by a task in another CICS region, PHAPPLID contains the APPLID of the other CICS region, or spaces if it was not initiated in this way. For more information about previous hop data, see Transaction tracking in Getting started.

PHCOUNT(*data-area***)**
Returns, in fullword binary form, the number of times there has been a request from one CICS region to another to initiate a task with which this task is associated, or zero if there have been no such requests.

PHNETWORKID(*data-area***)**
Returns the 8-character network qualifier from previous hop data. If the specified task was initiated by a task in another CICS region, PHNETWORKID contains the network qualifier for the APPLID of the other CICS region or spaces if it was not initiated in this way.

PHSTARTTIME(*data-area***)**
Returns a 21-character representation of the task start time from previous hop data. The time is in GMT and in the form `yyyymmddhhmmss.ssssss`. If the specified task was initiated by a task in another CICS region, PHSTARTTIME contains the start time of the task in the other CICS region, or spaces if it was not initiated in this way.

PHTASKID(*data-area***)**
Returns the 4-byte packed decimal identifier from previous hop data. If the specified task was initiated by a task in another CICS region, PHTASKID contains the identifier of the task in the other CICS region, or packed decimal zero if it was not initiated in this way.

PHTRANSID(*data-area***)**
Returns the 4-character name of a transaction from previous hop data. If the specified task was initiated by a task in another CICS region, PHTRANSID contains the transaction name of the task in the other CICS region, or spaces if it was not initiated in this way.

INQUIRE ATOMSERVICE

New options URIMAP and XMLTRANSFORM are added:

URIMAP*(data-area)*
Returns the 8-character URIMAP name that indicates the URI associated with this ATOMSERVICE definition. If there is no auto-generated URIMAP associated with this ATOMSERVICE definition, this field is empty.

XMLTRANSFORM*(data-area)*
Returns the 32-character name of the XMLTRANSFORM resource associated with the ATOMSERVICE definition. If the value of ATOMTYPE is SERVICE or CATEGORY, this field is empty.

INQUIRE CAPTURESPEC

New options are added for event processing:

CURRPGM(*data-area***)**
Specifies an 8-character data area to receive the value specified by the application context predicate for the current program name. Blanks are returned if no application context predicate for the current program name is defined for this capture specification.

CURRPGMOP(*cvda***)**
Returns a CVDA value that defines the operator that is used, together with the value in the CURRPGM option, to evaluate the application context predicate on the current program name. Possible CVDA values are as follows:

ALLVALUES
The predicate always evaluates true; that is, there is no filtering based on the name of the current program.

DOESNOTEQUAL
The predicate evaluates true when the name of the current program is not equal to the value of the CURRPGM option.

DOESNOTSTART
The predicate evaluates true when the name of the current program does not start with the value of the CURRPGM option.

EQUALS
The predicate evaluates true when the name of the current program is equal to the value of the CURRPGM option.

GREATERTHAN
The predicate evaluates true when the name of the current program is greater than the value of the CURRPGM option.

ISNOTGREATER
The predicate evaluates true when the name of the current program is equal to or less than the value of the CURRPGM option.

ISNOTLESS
The predicate evaluates true when the name of the current program is equal to or greater than the value of the CURRPGM option.

LESSTHAN
The predicate evaluates true when the name of the current program is less than the value of the CURRPGM option.

STARTSWITH
The predicate evaluates true when the name of the current program starts with the value of the CURRPGM option.

CURRTRANID(*data-area***)**
Specifies a 4-character data area to receive the value specified by the application context predicate for the current transaction name.

CURRTRANIDOP(*cvda***)**
Returns a CVDA value that defines the operator that is used, together with the value in the CURRTRANID option, to evaluate the application context predicate on the current transaction name. Possible CVDA values are as follows:

ALLVALUES
The predicate always evaluates true; that is, there is no filtering based on the name of the current transaction.

DOESNOTEQUAL
The predicate evaluates true when the name of the transaction that is running is not equal to the value of the CURRTRANID option.

DOESNOTSTART
The predicate evaluates true when the name of the transaction that is running does not start with the value of the CURRTRANID option.

EQUALS
The predicate evaluates true when the name of the current transaction is equal to the value of the CURRTRANID option.

GREATERTHAN
The predicate evaluates true when the name of the current transaction is greater (that is, higher in the collating sequence of possible transaction IDs) than the value of the CURRTRANID option.

ISNOTGREATER
The predicate evaluates true when the name of the current transaction is equal to or less (that is, lower in the collating sequence of possible transaction IDs) than the value of the CURRTRANID option.

ISNOTLESS
The predicate evaluates true when the name of the current transaction is equal to or greater (that is, higher in the collating sequence of possible transaction IDs) than the value of the CURRTRANID option.

LESSTHAN
The predicate evaluates true when the name of the current transaction is less (that is, lower in the collating sequence of possible transaction IDs) than the value of the CURRTRANID option.

STARTSWITH
The predicate evaluates true when the name of the current transaction starts with the value of the CURRTRANID option.

CURRUSERID(*data-area*)
Specifies an 8-character data area to receive the value specified by the application context predicate for the user ID that is associated with the current transaction.

CURRUSERIDOP(*cvda*)
Returns a CVDA value that defines the operator that is used, together with the value in the CURRUSERID option, to evaluate the application context predicate on the user ID. Possible CVDA values are as follows:

ALLVALUES
The predicate always evaluates true; that is, there is no filtering based on the user ID.

DOESNOTEQUAL
The predicate evaluates true when the user ID of the current user is not equal to the value of the CURRUSERID option.

DOESNOTSTART
The predicate evaluates true when the user ID of the current user does not start with the value of the CURRUSERID option.

EQUALS
The predicate evaluates true when the user ID of the current user is equal to the value of the CURRUSERID option.

GREATERTHAN
The predicate evaluates true when the user ID of the current user is greater (that is, higher in the collating sequence of possible user IDs) than the value of the CURRUSERID option.

ISNOTGREATER
The predicate evaluates true when the user ID of the current user is equal to or less (that is, lower in the collating sequence of possible user IDs) than the value of the CURRUSERID option.

ISNOTLESS
The predicate evaluates true when the user ID of the current user is equal to or greater (that is, higher in the collating sequence of possible user IDs) than the value of the CURRUSERID option.

LESSTHAN
The predicate evaluates true when the user ID of the current user is less (that is, lower in the collating sequence of possible user IDs) than the value of the CURRUSERID option.

STARTSWITH
The predicate evaluates true when the user ID of the current user starts with the value of the CURRUSERID option.

NUMDATAPRED(*data-area*)
Specifies a fullword binary field that is set to the number of application data predicates that are defined for this capture specification.

NUMINFOSRCE(*data-area*)
Specifies a fullword binary field that is set to the number of information sources that are defined for this capture specification.

NUMOPTPRED(*data-area*)
Specifies a fullword binary field that is set to the number of application

command option or system event option predicates that are defined for this capture specification. The total number of predicates includes the primary predicate.

PRIMPRED(*data-area***)**
Specifies a 32-character data area to receive the value of the primary predicate for this capture specification. The primary predicate for a capture specification is the predicate to specify with the EQUALS operator; it helps to avoid a performance impact as more capture specifications are added for a particular capture point. Blanks are returned if there is no named primary predicate defined for this capture point.

PRIMPREDOP(*cvda***)**
Returns a CVDA value that defines the operator that is used, together with the value in the PRIMPRED option, to evaluate the primary predicate. Possible CVDA values are as follows:

ALLVALUES
The predicate always evaluates true; that is, there is no filtering based on the name of the resource for the command.

DOESNOTEQUAL
The predicate evaluates true when the resource that is specified by the command is not equal to the value of the PRIMPRED option.

DOESNOTSTART
The predicate evaluates true when the resource that is specified by the command does not start with the value of the PRIMPRED option.

EQUALS
The predicate evaluates true when the resource that is specified by the command is equal to the value of the PRIMPRED option.

GREATERTHAN
The predicate evaluates true when the resource that is specified by the command is greater than the value of the PRIMPRED option.

ISNOTGREATER
The predicate evaluates true when the resource that is specified by the command is equal to or less than the value of the PRIMPRED option.

ISNOTLESS
The predicate evaluates true when the resource specified by the command is equal to or greater than the value of the PRIMPRED option.

LESSTHAN
The predicate evaluates true when the resource that is specified by the command is less than the value of the PRIMPRED option.

STARTSWITH
The predicate evaluates true when the resource that is specified by the command starts with the value of the PRIMPRED option.

PRIMPREDTYPE(*cvda***)**
Returns a CVDA value that identifies the type of the primary predicate for this capture specification. Possible CVDA values are as follows:

CONTAINER
The primary predicate is a container.

CURRENTPGM
The primary predicate is the current program name.

EVENT
The primary predicate is a CICS event.

FILE The primary predicate is a CICS file.

MAP The primary predicate is a CICS basic mapping support (BMS) map.

MESSAGEID
The primary predicate is a CICS or CPSM message id of form DFHxxnnnn or EYUxxnnnn.

NONE
The capture specification has no primary predicate.

PROGRAM
The primary predicate is a CICS program name.

SERVICE
The primary predicate is a CICS service or a WEBSERVICE resource.

TDQUEUE
The primary predicate is a CICS transient data queue.

TRANCLASS
The primary predicate is a CICS transaction class name.

TRANSACTION
The primary predicate is a CICS transaction identifier.

TSQUEUE
The primary predicate is a CICS temporary storage queue.

INQUIRE DB2CONN

A new option REUSELIMIT is added:

REUSELIMIT(*data-area***)**
Returns a value in the range 0 - 10000 representing the maximum number of times a thread can be reused before it is terminated. The default is 1000. A value of 0 means that there is no limit on the number of times that a thread can be reused. Long-running CICS DB2 threads that are constantly being reused build up resources in DB2 that can cause storage problems.

The reuse limit applies to unprotected threads both in the pool and on a DB2ENTRY, and to protected DB2ENTRY threads.

INQUIRE EVENTBINDING

A new option EPADAPTER is added:

EPADAPTER(*data-area***)**
Specifies the name (1 - 32 characters) of an EP adapter. You must specify this option to retrieve details of a particular EP adapter by name. On the browse form of this command, you must provide a 32-character data area to receive the name of the EP adapter.

INQUIRE EVENTPROCESS

A new option SCHEMALEVEL is added:

SCHEMALEVEL(*data-area***)**
Returns a 4-character value (*vvrr*) indicating the highest version and release of

event binding schema that is supported by CICS, where *vv* is the version and *rr* is the release; for example, 0201 indicates version 2 release 1 of the event binding schema.

INQUIRE FILE

A new option LSRPOOLNUM is added:

LSRPOOLNUM(*data-area***) (VSAM only)**
Returns a fullword binary field indicating the number of the VSAM LSR pool associated with this file, in the range 1 through 255. If the file does not share buffers, the LSRPOOLNUM value is 0.

INQUIRE IPCONN

A new option MIRRORLIFE is added:

MIRRORLIFE(*cvda***)**
Returns the minimum lifetime of the mirror task for function-shipped file control, transient data, and temporary storage requests received by this region. CVDA values are as follows:

REQUEST
The mirror task terminates as soon as possible. This is the default value.

TASK The mirror task remains available to the application that issues the remote request until the task of the application ends.

UOW The mirror transaction remains available to the application that issues the remote request until the next sync point is issued.

INQUIRE JVMSERVER

New options are added to report statistics on the JVM server:

CURRENTHEAP(*data-area*)
Returns a doubleword binary value indicating the current size of the heap in bytes that is allocated to the JVM server.

GCPOLICY(*data-area*)
Returns a 32-character value indicating the garbage collection policy that is being used by the JVM server.

INITHEAP(*data-area*)
Returns a doubleword binary value that indicates the initial size of the heap in bytes that is allocated to the JVM server. This value is set by the **-Xms** option in the JVM profile.

MAXHEAP(*data-area*)
Returns a doubleword binary value that indicates the maximum size of the heap in bytes that is allocated to the JVM server. This value is set by the **-Xmx** option in the JVM profile.

OCCUPANCY(*data-area*)
Returns a doubleword binary value that indicates the size of the heap in bytes after the last garbage collection ran in the JVM server.

PID(*data-area*)
Returns a fullword value that indicates the process ID (PID) of the JVM.

INQUIRE MQCONN

A new CVDA value GROUPRESYNC is added to the RESYNCMEMBER option:

GROUPRESYNC
CICS connects to any member of the queue-sharing group. The queue manager is chosen by WebSphere MQ and it asks CICS to resolve indoubt units of work on behalf of all eligible queue managers in the queue-sharing group. This function is called *group unit of recovery*.

INQUIRE PROGRAM

A new option JVMSERVER is added:

JVMSERVER(*data-area***) (Java programs only)**
Returns the name of the JVM server in which this Java program runs. The name can be up to 8 characters in length.

A new CVDA value REQUIRED is added to the CONCURRENCY option:

REQUIRED
The program is defined as threadsafe, and must run on an open TCB. The type of open TCB used depends on the API setting.

INQUIRE TCPIPSERVICE

A new option MAXPERSIST is added:

MAXPERSIST(*data-area***)**
Returns, in fullword binary form, the setting for the maximum number of persistent connections from web clients that the CICS region allows for this port at any one time. This setting applies only for the HTTP protocol. A null setting (-1) means that there is no limit on the number of persistent connections. A zero setting means that no persistent connections are allowed. A zero setting is not compliant with the HTTP/1.1 specification and must not be set in a CICS region that is handling external requests.

INQUIRE TSMODEL

A new option EXPIRYINT is added: Note: EXPIRYINTMIN is introduced in CICS TS V5.2 and is now preferred:

EXPIRYINT(*data-area***)**
Returns a fullword binary field giving the expiry interval, in hours, for temporary storage queues matching this model. The value returned is derived from the EXPIRYINTMIN value rounded up to the next hour, or if minutes are not specified from any EXPIRYINT value defined in the model from a previous release. If a temporary storage queue is not referenced during its expiry interval, it becomes eligible to be deleted automatically by CICS. A value of zero means that no expiry interval applies to queues matching this model, so they are never eligible for automatic deletion. CICS does not apply an expiry interval to recoverable, remote or temporary storage queues created by CICS. Starting with CICS TS 5.2, the expiry interval now also applies to shared temporary storage queues.

INQUIRE TSQUEUE / TSQNAME

A new option EXPIRYINT is added. Note: EXPIRYINTMIN is introduced in CICS TS V5.2 and is now preferred:

EXPIRYINT(*data-area***)**
Returns a fullword binary field that gives the expiry interval, in hours, that is defined for the temporary storage queue in its TSMODEL resource definition.

The value returned is derived from the EXPIRYINTMIN value rounded up to the next hour, or, if minutes are not specified, from any EXPIRYINT value defined in the model from a previous release.If the temporary storage queue is not referenced during the expiry interval, it becomes eligible to be deleted automatically by CICS.

A value of zero means that no expiry interval applies to the temporary storage queue, so it is never eligible for automatic deletion. In addition, the following types of temporary storage queues are never deleted automatically by CICS, even if a nonzero expiry interval is set in the matching TSMODEL resource definition:

- Queues in auxiliary temporary storage that are defined as recoverable.
- Queues in a remote CICS region.
- Queues that CICS creates for its own use.

From CICS TS 5.2, the expiry interval also applies to shared temporary storage queues.

INQUIRE URIMAP

New options SOCKETCLOSE and SOCKPOOLSIZE are added:

SOCKETCLOSE*(data-area)*
Returns, in fullword binary form, the maximum length of time in seconds that CICS keeps a client HTTP connection open for reuse after the CICS application has finished using it. If the value is 0, CICS does not keep connections open for reuse. This attribute is for USAGE(CLIENT). For other usage types, CICS returns a null value (-1).

SOCKPOOLSIZE*(data-area)*
Returns, in fullword binary form, the number of client HTTP connections that CICS is currently holding in a pool in a dormant state. The connections can be reused by any CICS application that connects as a Web client to the same host and port. This attribute is for USAGE(CLIENT). For other usage types, CICS returns a null value (-1).

INQUIRE WEBSERVICE

A new option ARCHIVEFILE is added:

ARCHIVEFILE(*data-area*)
Returns the name of an archive file that contains one or more WSDL files. The name can be up to 255 characters in length.

SET DB2CONN

A new option REUSELIMIT is added:

REUSELIMIT(*data-value***)**
Specifies, as a fullword binary value, a value in the range 0 - 10000

representing the maximum number of times a thread can be reused before it is terminated. The default is 1000. A value of 0 means that there is no limit on the number of times that a thread can be reused.

The reuse limit applies to unprotected threads both in the pool and on a DB2ENTRY, and to protected DB2ENTRY threads.

SET FILE

A new option LSRPOOLNUM is added:

LSRPOOLNUM(*data-value***) (VSAM only)**
Specifies, as a fullword binary value, the number of the LSR pool associated with this file. LSR pool IDs are in the range 1 through 255.

If the file cannot share buffers, set this value to 0.

For a CICS-maintained or user-maintained data table, the value must be 1 or greater. Both these types of CICS shared data tables must use LSR access mode (unless the file is defined to be opened in RLS access mode).

For a coupling facility data table, you can set this value to 0.

SET MQCONN

A new value GROUPRESYNC is added to the RESYNCMEMBER option:

GROUPRESYNC
CICS connects to any member of the queue-sharing group. The queue manager is chosen by WebSphere MQ and it asks CICS to resolve indoubt units of work on behalf of all eligible queue managers in the queue-sharing group. This function is called *group unit of recovery*. The GROUPRESYNC option can be used only when you are running a release of WebSphere MQ that supports group unit of recovery for CICS and when the GROUPUR attribute has been enabled in the WebSphere MQ queue managers.

When an attempt is made to connect CICS to WebSphere MQ by using an **EXEC CICS SET MQCONN CONNECTED** command and RESYNCMEMBER(GROUPRESYNC) is set but WebSphere MQ does not support group unit of recovery, or group unit of recovery is not enabled, then WebSphere MQ rejects the connection attempt. The connection attempt results in the SET command failing with INVREQ and RESP2=9 (connection error).

Do not change the setting for RESYNCMEMBER when units of work are outstanding in WebSphere MQ because this means that units of work cannot be resolved. A unit of work held in CICS is identified with a resource manager qualifier. When RESYNCMEMBER(GROUPRESYNC) is used the qualifier is the name of the queue-sharing group, otherwise the qualifier used is the name of the individual queue manager.

New SPI commands

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

No new system programming commands were added in CICS Transaction Server for z/OS, Version 5 Release 2.

New system programming commands added in CICS Transaction Server for z/OS, Version 5 Release 1

PERFORM SSL REBUILD
Refresh the SSL environment and the cache of certificates for the CICS region.

INQUIRE EPADAPTERSET
Retrieve information about a specified event processing adapter set.

INQUIRE EPADAPTINSET
Retrieve the names of all EP adapters that are specified in an EP adapter set or check whether or not a named EP adapter set contains a named EP adapter.

SET EPADAPTERSET
Set the status of a specified EP adapter set to enabled or disabled.

New system programming commands added in CICS Transaction Server for z/OS, Version 4 Release 2

INQUIRE CAPDATAPRED
Retrieve information about an application data predicate that is defined for a capture specification.

INQUIRE CAPINFOSRCE
Retrieve information about an information source that is defined for a capture specification.

INQUIRE CAPOPTPRED
Retrieve information about an application command option predicate that is defined for a capture specification.

INQUIRE EPADAPTER
Retrieve information about a specified event processing adapter.

INQUIRE OSGIBUNDLE
Retrieve information about an OSGi bundle that is installed in a JVM server.

INQUIRE OSGISERVICE
Retrieve information about OSGi services that are registered in a CICS region.

INQUIRE TEMPSTORAGE
Retrieve information about storage used by temporary storage queues in the CICS region.

SET EPADAPTER
Set the status of a specified EP adapter to enabled or disabled.

SET TEMPSTORAGE
Set the amount of storage that is available to temporary storage queues in the CICS region.

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 5 Release 2

DISCARD PROGRAM
DISCARD TRANSACTION
EXTRACT STATISTICS
INQUIRE DISPATCHER
INQUIRE MONITOR
INQUIRE MVSTCB
INQUIRE PROGRAM
INQUIRE STATISTICS
INQUIRE SYSTEM
INQUIRE TRANSACTION
SET DISPATCHER
SET MONITOR
SET PROGRAM
SET STATISTICS
SET SYSTEM
SET TRANSACTION

SPI commands that were made threadsafe in CICS Transaction Server for z/OS, Version 5 Release 1

INQUIRE TRACEDEST
INQUIRE TRACEFLAG
INQUIRE TRACETYPE
SET TASK
SET TRACEDEST
SET TRACEFLAG
SET TRACETYPE

SPI commands that were made threadsafe in CICS Transaction Server for z/OS, Version 4 Release 2

RESYNC ENTRYNAME

Chapter 7. Changes to CEMT

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

The CICS transactions accept as few characters of a keyword as needed to identify the keyword uniquely in the request. Minimum abbreviations might change between CICS releases because of the introduction of new commands. If you use automated processes or programs to issue commands for CICS transactions, and you use abbreviations for the keywords, check for any changes to these abbreviations in the new release. In the syntax displays on your screen, the minimum permitted abbreviation is shown in uppercase characters, and the remainder is shown in lowercase.

In CICS TS Version 5.1, the storage location was changed for the CICS-supplied transaction CEMT. The TRANSACTION resource definition for CEMT was changed to specify TASKDATALOC(ANY) instead of TASKDATALOC(BELOW). The CEMT transaction therefore uses virtual storage above the 16 MB line. If you use CEMT to shut down CICS and have PLTSD programs that are AMODE(24), an AEZC abend will occur. To avoid this situation, modify the shutdown program so that it is AMODE(31) and update the appropriate program definition.

Obsolete CEMT commands and options

These CEMT commands and options represent functions that are no longer available, so are no longer displayed in the CEMT transaction.

Obsolete CEMT commands and options in CICS Transaction Server for z/OS, Version 5 Release 2

CEMT INQUIRE TSMODEL, CEMT INQUIRE TSQUEUE, and CEMT INQUIRE TSQNAME

The EXPIRYINT option is obsolete. EXPIRYINT was used to set the expiry interval for temporary storage queues in hours. It has been superseded by the EXPIRYINTMIN option, which sets the expiry interval for temporary storage queues in minutes.

Obsolete CEMT commands in CICS Transaction Server for z/OS, Version 5 Release 1

CEMT INQUIRE JVM

Identifies the pooled JVMs in a CICS region and reports their status.

CEMT INQUIRE JVMPOOL

Retrieves information about the JVM pool in the CICS region.

CEMT INQUIRE CLASSCACHE

Retrieves information about the shared class cache for pooled JVMs.

CEMT SET JVMPOOL

Enable or disable the Java virtual machine (JVM) pool.

CEMT SET CLASSCACHE

Set the status of autostart for the shared class cache.

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CEMT PERFORM CLASSCACHE
Initialize and terminate the shared class cache that is used by pooled JVMs in the CICS region.

CEMT PERFORM JVMPOOL
Start and terminate JVMs in the JVM pool.

Obsolete CEMT options in CICS Transaction Server for z/OS, Version 5 Release 1

CEMT INQUIRE DISPATCHER
The ACTJVMTCBS option and the MAXJVMTCBS option are obsolete. ACTJVMTCBS was used to inquire on the number of J8 and J9 mode TCBs currently allocated to user tasks. MAXJVMTCBS was used to inquire on the maximum number of J8 and J9 mode TCBs allowed in the JVM pool.

CEMT PERFORM STATISTICS
The BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL options are obsolete. These options were used to request statistics for enterprise beans, CorbaServer entries, pooled JVMs and their profiles, and request models, which CICS no longer supports.

CEMT SET DISPATCHER
The MAXJVMTCBS option is obsolete. MAXJVMTCBS was used to change the maximum number of J8 and J9 mode open TCBs allowed in the JVM pool, which no longer exists.

Changed CEMT commands

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

Inquiring on private resources for applications

A resource that is defined as part of an application installed on a platform is private to that version of that application. For supported resource types, a resource is private if the resource is defined in a CICS bundle that is packaged and installed as part of an application, either as part of the application bundle, or as part of the application binding bundle. A resource that is defined by any other method is publicly available for all tasks, and is known as a public resource.

The following CICS resources are supported as private resources for applications:

- LIBRARY resources, which represent one or more data sets, known as dynamic program LIBRARY concatenations, from which program load modules can be loaded.
- POLICY resources, which represent one or more rules that manage the behavior of user tasks in CICS regions.
- PROGRAM resources, which represent an application program. A program that is auto-installed by a task for an application that is deployed on a platform is also private to that version of the application.

Private LIBRARY and PROGRAM resources cannot be viewed using the **CEMT INQUIRE LIBRARY** and **CEMT INQUIRE PROGRAM** commands. To inquire on or browse these resources, use the CICS Explorer, or the **EXEC CICS INQUIRE LIBRARY** and **EXEC CICS INQUIRE PROGRAM** CICS system programming commands.

LIBRARY concatenations and programs that are defined as a dependency or import for an application bundle or an application binding bundle, and LIBRARY

concatenations and programs that are defined to CICS using any other method, remain publicly available for all tasks. These LIBRARY concatenations and programs can be viewed using the CEMT commands.

CEMT INQUIRE BUNDLE

The new AVAILSTATUS option for the **CEMT INQUIRE BUNDLE** command returns the availability status for the CICS bundle.

AVAILSTATUS(*value***)**
Displays the availability status of the bundle. The possible values are as follows:
AVAILABLE
Callers can access all the resources identified in the CICS bundle as application entry points.
UNAVAILABLE
Callers cannot access any of the resources identified in the CICS bundle as application entry points.
SOMEAVAIL
Some application entry points are available and some are unavailable.
NOTAPPLIC
The bundle does not contain any statements of application entry points.

CEMT INQUIRE JVMSERVER

The PROFILEDIR option for the **CEMT INQUIRE JVMSERVER** command now displays the JVM profile directory for JVM servers that are packaged in CICS bundles.

PROFILEDIR(*directory***)**
Displays the directory on z/OS UNIX that contains the JVM profile for the JVM server. For a JVM server that is defined in a local CICS region, which uses a JVM profile stored in the local CICS region, this is the directory specified by the JVMPROFILEDIR system initialization parameter for the CICS region. For a JVM server that is defined in a CICS bundle, which uses a JVM profile packaged in the CICS bundle, this is the CICS bundle subdirectory where the JVM profile is stored.

CEMT INQUIRE PROGRAM

The **CEMT INQUIRE PROGRAM** command has a new option RESIDENCY.

RESIDENCY(*value***)**
Displays the program's residency attributes:

RESIDENT
The program is permanently resident. It is defined as RESIDENT(YES).

NONRESIDENT
The program is defined as RESIDENT(NO).

CEMT INQUIRE URIMAP

New options are added to the **CEMT INQUIRE URIMAP** command to return the details of the application entry point for the URIMAP resource, and of the resulting availability status of the URIMAP resource.

AVAILSTATUS*(value)*
Displays the availability status of the URIMAP resource as an application entry point for an application deployed on a platform.

AVAILABLE
The URIMAP resource is declared as an application entry point, and the application entry point controls its availability and is available, so the URIMAP resource is available to callers.

UNAVAILABLE
The URIMAP resource is declared as an application entry point, but the application entry point that controls its availability is unavailable, so the URIMAP resource is not available to callers.

NOTAPPLIC
The URIMAP resource is available to callers. Either the URIMAP resource is not declared as an application entry point, or it is declared as an application entry point but the application entry point is disabled or does not control the availability of the URIMAP resource.

APPLICATION*(data-value)*
Displays the application name of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not declared as an application entry point, APPLICATION displays blanks.

APPLMAJORVER*(data-value)*
Displays the major version number of the application. If the URIMAP resource is declared as an application entry point, the major version number of this application is returned. If the URIMAP resource is not declared as an application entry point, APPLMAJORVER returns -1.

APPLMINORVER*(data-value)*
Displays the minor version number of the application. If the URIMAP resource is declared as an application entry point, the minor version number of this application is returned. If the URIMAP resource is not declared as an application entry point, APPLMINORVER returns -1.

APPLMICROVER*(data-value)*
Displays the micro version number of the application. If the URIMAP resource is declared as an application entry point, the micro version number of this application is returned. If the URIMAP resource is not declared as an application entry point, APPLMICROVER returns -1.

OPERATION*(data-value)*
Displays the operation name of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not declared as an application entry point, OPERATION displays blanks.

PLATFORM*(data-value)*
Displays the platform name of the application for which this URIMAP resource is declared as an application entry point. If the URIMAP resource is not declared as an application entry point, PLATFORM displays blanks.

CEMT INQUIRE WEBSERVICE

The STATE option of the **CEMT INQUIRE WEBSERVICE** command displays two new states, DISABLING and DISABLED, which apply only for web services that are packaged in CICS bundles.

DISABLED
This state is only available for WEBSERVICE resources that are defined in a CICS bundle. The web service has completed quiescing and is not accepting new work.

DISABLING
This state is only available for WEBSERVICE resources that are defined in a CICS bundle. The web service is quiescing. It is not accepting new work, but is allowing currently-executing work to complete. When the web service is no longer in use, the state of the WEBSERVICE resource changes to DISABLED.

CEMT PERFORM DUMP and CEMT PERFORM SNAP

A new DUMPCODE parameter has been added to the **CEMT PERFORM DUMP** and **CEMT PERFORM SNAP** commands to specify a dump code for the dump request.

DUMPCODE (*data-value***)**
Specifies a maximum 8-character dump code for this dump request. The value is a user defined code which can be any character string that does not contain leading or imbedded blank characters. If a dump code is not specified, CICS uses a default dump code of MT0001.

CEMT SET BUNDLE

New AVAILABLE and UNAVAILABLE options on the **SET BUNDLE** command give or remove access to application entry points that are declared in the CICS bundle. For a CICS bundle that declares application entry points, you must first enable the bundle, then make it available, to give users access to the resources. For a CICS bundle that does not declare application entry points, you only need to enable the bundle.

AVAILABLE
Make one or more BUNDLE resources available. CICS gives callers access to the resources identified in the CICS bundle as application entry points.

UNAVAILABLE
Make one or more BUNDLE resources unavailable. CICS removes access to the resources identified in the CICS bundle as application entry points, so callers cannot access any of the private resources in the CICS bundle.

CEMT SET FILE

To disable a file that is defined in a CICS bundle, you must first disable the CICS bundle or the application with which it is deployed. If you are experiencing a problem with disabling a CICS bundle that defines a FILE resource, you can now issue the **CEMT SET FILE** command with the FORCECLOSE option against the dynamically generated resource, if this action is required. Follow the troubleshooting procedure in Diagnosing application errors to diagnose the problem and take suitable action.

CEMT SET JVMSERVER

To disable a JVMSERVER resource that is defined in a CICS bundle, you must first disable the CICS bundle or the application with which it is deployed. If the disable process does not complete, because the resource is still in use, you can now use the **CEMT SET JVMSERVER** PURGE, FORCEPURGE, or KILL command on the dynamically generated resource in the CICS region.

CEMT SET TCPIPSERVICE

To disable a TCPIPSERVICE resource that is defined in a CICS bundle, you must first disable the CICS bundle or the application with which it is deployed. If the disable process does not complete, because the resource is still in use, you can now use the **CEMT SET TCPIPSERVICE** IMMCLOSE command on the dynamically generated resource in the CICS region.

Changed CEMT commands in CICS TS 5.1

These CEMT commands were changed in CICS Transaction Server for z/OS, Version 5 Release 1.

CEMT INQUIRE BUNDLE

The **CEMT INQUIRE BUNDLE** command is changed to return bundle ID and version information.

BUNDLEID(*value*)
Displays the ID of the bundle, if specified in the bundle manifest.

MAJORVERSION(*value*)
Displays the major version number of the bundle. If no version is specified in the bundle, 0 is displayed.

MICROVERSION(*value*)
Displays the micro version number of the bundle. If no version is specified in the bundle, 0 is displayed.

MINORVERSION(*value*)
Displays the minor version number of the bundle. If no version is specified in the bundle, 0 is displayed.

CEMT INQUIRE DSAS

The **CEMT INQUIRE DSAS** command is changed to return the following new values:

ETDSASIZE(*value***)**
Displays the size, in bytes, of the extended trusted dynamic storage area (ETDSA) above 16 MB but below 2 GB (above the line). CICS calculates and manages the size of this storage area automatically, within the overall limits specified for all the DSAs that reside above the line.

GCDSASIZE(*value***)**
Displays the size of the above-the-bar CICS dynamic storage area (GCDSA). The value is displayed in gigabytes followed by the letter G. CICS calculates and manages the size of this storage area automatically.

GSDSASIZE(*value***)**
Displays the size of the above-the-bar shared dynamic storage area (GSDSA). The value is displayed in gigabytes followed by the letter G. CICS calculates and manages the size of this storage area automatically.

GUDSASIZE(*value***)**
Displays the size of the above-the-bar user dynamic storage area (GUDSA). The value is displayed in gigabytes followed by the letter G. CICS calculates and manages the size of this storage area automatically.

CEMT INQUIRE DISPATCHER

The MAXOPENTCBS and MAXXPTCBS options on the **CEMT INQUIRE DISPATCHER** command are still available, but the values that they return now represent limits set automatically by CICS based on the maximum number of tasks specified for the CICS region.

CEMT INQUIRE DSNAME

The **CEMT INQUIRE DSNAME** command has a new option LOGREPSTATUS to support replication logging.

LOGREPSTATUS (*cvda***)**
Returns a CVDA value that identifies whether the data set was defined with LOGREPLICATE. Valid values are as follows:

LOGREPLICATE
All updates to the data set are logged for replication.

NOLOGREPLICA
Updates to the data set are not logged for replication.

NOTAPPLIC
The data set has not been opened by the CICS region in which the command is issued, or the data set is BDAM .

CEMT INQUIRE EVENTBINDING

The **CEMT INQUIRE EVENTBINDING** command is changed to support two new options, EPADAPTERRES and EPADAPTERSET.

EPADAPTERRES*(cvda)*
Displays the type of the EP adapter resource.

EPADAPTERSET*(data-area)*
Displays the 32-character name of an EP adapter set. If this option is not blank, the option of EPADAPTER will be blank. Or vice versa.

CEMT INQUIRE JVMSERVER

The **CEMT INQUIRE JVMSERVER** command is changed to support a new option, PROFILEDIR.

PROFILEDIR(*directory***)**
Displays the directory on z/OS UNIX that contains the JVM profile for the JVM server. For a JVM server that is defined in a local CICS region, which uses a JVM profile stored in the local CICS region, this is the directory specified by the JVMPROFILEDIR system initialization parameter for the CICS region. For a JVM server that is defined in a CICS bundle, which uses a JVM profile packaged in the CICS bundle, this is the CICS bundle subdirectory where the JVM profile is stored.

CEMT INQUIRE PROGRAM

The following new attributes can be inquired upon:

APPLICATION
Displays the name of the application for which this program is defined as an entry point. If the program is not defined as an application entry point, the field is blank.

APPLMAJORVER
Displays the major version number of the application for which this program is defined as an entry point. If the program is not defined as an application entry point, the field is blank.

APPLMICROVER
Displays the micro version number of the application for which this program is defined as an entry point. If the program is not defined as an application entry point, the field is blank.

APPLMINORVER
Displays the minor version number of the application for which this program is defined as an entry point. If the program is not defined as an application entry point, the field is blank.

OPERATION
Displays the name of the application operation for which this program is defined as an entry point. If the program is not defined as an application entry point, the field is blank.

PLATFORM
Displays the platform name of the application for which this program is defined as an entry point. If the program is not defined as an application entry point, the field is blank.

CEMT INQUIRE URIMAP

The USAGE option of the **CEMT INQUIRE URIMAP** command has a new CVDA value:

JVMSERVER
The URIMAP resource is for a JVM server. It maps incoming requests for a Java web application to run under a CICS transaction that has appropriate security.

CEMT SET PROGRAM

The **CEMT SET PROGRAM** command is changed to support a new OPERATION option. The new option specifies the name of the application operation for which the program is defined as an entry point.

CEMT SET STATISTICS

The default value of the INTERVAL option of the **CEMT SET STATISTICS** command is decreased from 030000 (3 hours) to 010000 (1 hour).

INTERVAL (*hhmmss*)
Specifies the length of time during which the statistics counters are incremented. At the end of each interval, the accumulated statistics are recorded and the statistics counters are reset.

CEMT SET SYSTEM

The maximum value of the MAXTASKS option of the **CEMT SET SYSTEM** command is increased from 999 to 2000, and the minimum value is increased to 10.

MAXTASKS (*value*)
Specifies the maximum number of tasks, both active and suspended, allowed at any one time in the CICS system. The value must be in the range 10 - 2000.

Note: The value assigned to MAXTASKS might be less than the requested value, because of CICS storage constraints. If this occurs, the message CEILING REACHED is displayed when the request is made.

Changed CEMT commands in CICS TS 4.2

These CEMT commands were changed in CICS Transaction Server for z/OS, Version 4 Release 2.

INQUIRE ATOMSERVICE

New options URIMAP and XMLTRANSFORM are added:

URIMAP
Displays the 8-character URIMAP name that indicates the URI associated with this ATOMSERVICE definition. If there is no dynamically generated URIMAP associated with this ATOMSERVICE definition, this field is empty.

XMLTRANSFORM
Displays the 32-character name of the XMLTRANSFORM resource associated with the ATOMSERVICE definition. If the value of ATOMTYPE is SERVICE or CATEGORY, this field is empty.

INQUIRE EVENTBINDING

A new option EPADAPTER is added:

EPADAPTER*(value)*
Displays the 32-character name of an EP adapter. If this option is not blank, the option of EPADAPTERSET will be blank. Or vice versa.

INQUIRE EVENTPROCESS

A new option SCHEMALEVEL is added:

SCHEMALEVEL (*vvrr***)**
Returns a 4-character value (*vvrr*) indicating the highest version and release of event binding schema that is supported by CICS, where *vv* is the version and *rr* is the release; for example, 0201 indicates version 2 release 1 of the event binding schema.

INQUIRE IPCONN

A new option MIRRORLIFE is added:

MIRRORLIFE(*value***)**
Indicates the minimum lifetime of the mirror task for function-shipped file control, transient data, and temporary storage requests received by this region. This parameter only takes affect when it is specified on the IPCONN definition on the resource-owning region. It is not valid for function shipping interval control or link requests. The possible values are as follows:

REQUEST
The mirror task terminates as soon as possible.

TASK The mirror task remains available to the application that issues the remote request the until the application task ends.

UOW The mirror transaction remains available to the application that issues the remote request until the next sync point is issued.

INQUIRE JVMSERVER

New options are added to return statistics for the JVM server.

CURRENTHEAP(*number***)**
Displays the current heap size in bytes that is allocated to the JVM server.

GCPOLICY(*value***)**
Displays the garbage collection policy that is being used by the JVM server.

INITHEAP(*number***)**
Displays the initial heap size in bytes that is allocated to the JVM server.

MAXHEAP(*number***)**
Displays the maximum heap size in bytes that is allowed in the JVM server.

OCCUPANCY(*number***)**
Displays the heap size in bytes after the last garbage collection ran in the JVM server.

PID(*number***)**
Displays the process ID (PID) of the JVM.

INQUIRE MQCONN

A new value GROUPRESYNC is added to the RESYNCMEMBER option:

GROUPRESYNC
CICS connects to any member of the queue-sharing group. The queue manager is chosen by WebSphere MQ and it asks CICS to resolve indoubt units of work on behalf of all eligible queue managers in the queue-sharing group. This function is called *group unit of recovery*.

INQUIRE PROGRAM

A new option JVMSERVER is added:

JVMSERVER
Displays the name of the JVMSERVER resource that is used to run this OSGi service in a JVM server.

The CONCURRENCY option has a new value:

OREQUIRED
The program is defined as threadsafe, and must run on an open TCB. The type of open TCB used depends on the API setting.

A value of CONCURRENCY(OREQUIRED) is equivalent to CONCURRENCY(REQUIRED) on the program definition. CEMT uses a value of OREQUIRED to distinguish it from a value of REQUIRED on the option COPYSTATUS. You can use the filter OREQUIRED to return all programs with the concurrency setting of REQUIRED.

INQUIRE TCPIPSERVICE

A new option MAXPERSIST is added:

MAXPERSIST(*value***)**
Returns a fullword value that contains the maximum number of persistent connections from web clients that the CICS region allows for this port at any one time. This setting applies only for the HTTP protocol. NO means that there

is no limit on the number of persistent connections. A zero setting means that no persistent connections are allowed. A zero setting is not compliant with the HTTP/1.1 specification and must not be set in a CICS region that is handling external requests.

INQUIRE URIMAP

New options SOCKETCLOSE and SOCKPOOLSIZE are added:

SOCKETCLOSE(*value***)**
Displays the maximum length of time in seconds that CICS keeps a client HTTP connection open for reuse after the CICS application has finished using it. If the value is 0, CICS does not keep connections open for reuse. A value is only displayed when the URIMAP definition has a usage type of CLIENT. For other usage types, SOCKETCLOSE displays ().

SOCKPOOLSIZE(*value***)**
Displays the number of client HTTP connections that CICS is currently holding in a pool in a dormant state. The connections can be reused by any CICS application that connects as a Web client to the same host and port. A value is only displayed when the URIMAP definition has a usage type of CLIENT. For other usage types, SOCKPOOLSIZE displays ().

INQUIRE WEBSERVICE

A new option ARCHIVEFILE is added:

ARCHIVEFILE*(value)*
Displays the name and location (1-255 characters) of the archive that is associated with the web service. The archive contains one or more WSDL files. The name can be up to 255 characters long.

SET MQCONN

A new value GROUPRESYNC is added to the RESYNCMEMBER option:

GROUPRESYNC
CICS connects to any member of the queue-sharing group. The queue manager is chosen by WebSphere MQ and it asks CICS to resolve indoubt units of work on behalf of all eligible queue managers in the queue-sharing group. This function is called *group unit of recovery*. The GROUPRESYNC option can be used only you are when running a release of WebSphere MQ that supports group unit of recovery for CICS and when the GROUPUR attribute has been enabled in the WebSphere MQ queue managers.

When an attempt is made to connect CICS to WebSphere MQ by using an EXEC CICS SET MQCONN CONNECTED command and RESYNCMEMBER(GROUPRESYNC) is set but WebSphere MQ does not support group unit of recovery, or group unit of recovery is not enabled, then WebSphere MQ rejects the connection attempt. The connection attempt results in the SET command failing with INVREQ and RESP2=9 (connection error).

Do not change the settings for RESYNCMEMBER when units of work are outstanding in WebSphere MQ because the units of work cannot then be resolved. A unit of work held in CICS is identified with a resource manager qualifier. When RESYNCMEMBER(GROUPRESYNC) is used, the qualifier is the name of the queue-sharing group, otherwise the qualifier used is the name of the individual queue manager.

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 5 Release 2

No new CEMT commands were added in CICS Transaction Server for z/OS, Version 5 Release 2.

New CEMT commands in CICS Transaction Server for z/OS, Version 5 Release 1

PERFORM SSL REBUILD
Refresh the SSL environment and the cache of certificates for the CICS region.

INQUIRE EPADAPTERSET
Retrieve information about an EP adapter set.

SET EPADAPTERSET
Enable or disable an EP adapter set.

New CEMT commands in CICS Transaction Server for z/OS, Version 4 Release 2

INQUIRE EPADAPTER
Retrieve information about an EP adapter.

INQUIRE TEMPSTORAGE
Retrieve information about storage used by temporary storage queues in the CICS region.

SET EPADAPTER
Enable or disable an EP adapter.

SET TEMPSTORAGE
Set the amount of storage that is available to temporary storage queues in the CICS region.

Chapter 8. Changes to the CICS management client interface (CMCI)

The CICS management client interface (CMCI) supports additional CICSPlex SM and CICS resources, and you can query the resources using external resource names.

The 256-byte limitation on the length of URIs passed across the CMCI is relaxed. The PATH component of the URI is still limited to 256 bytes, but the URI in total can now be up to 64 KB long.

New CICSPlex SM resources supported in CICS Transaction Server for z/OS, Version 5 Release 2

No new CICSPlex SM resources were added in CICS Transaction Server for z/OS, Version 5 Release 2.

New CICSPlex SM resources supported in CICS Transaction Server for z/OS, Version 5 Release 1

The new supported resources, together with their external resource names for use in CMCI queries, are as follows:

CICSPlex SM resource name	External resource name	Description
APPLCTN	CICSApplication	CICS application
APPLDEF	CICSApplicationDefinition	Definition of a CICS application resource
CRESEPAS	CICSTopologyEPAdapterSet	Event processing adapter set
EPADSET	CICSEPAdapterSet	CICS event processing adapter set
EPAINSET	CICSEPAdapterinSet	CICS event processing adapters in an event processing adapter set
PLATFORM	CICSPlatform	CICS platform
PLATDEF	CICSPlatformDefinition	Definition of a CICS platform resource
RULE	CICSRule	Policy rule information

New CICSPlex SM resources supported in CICS Transaction Server for z/OS, Version 4 Release 2

The new supported resources together with their external resource names for use in CMCI queries, are as follows:

CICSPlex SM resource name	External resource name	Description
CMTPMLNK	CICSCMASToMASLink	CMAS to MAS link
CRESEVCS	CICSTopologyCaptureSpecification	Event Processing capture specification
CRESEPAD	CICSTopologyEPAdapter	Event processing adapter
CRESEVBD	CICSTopologyEventBinding	Event Binding in a CICS system
EPADAPT	CICSEPAdapter	CICS event processing adapter

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CICSPlex SM resource name	External resource name	Description
EVCSDATA	CICSCaptureSpecificationDataPredicate	CICS event capture specification data predicates
EVCSINFO	CICSCaptureSpecificationInformationSource	CICS event capture specification information sources
EVCSOPT	CICSCaptureSpecificationOptionPredicate	CICS event capture specification command option predicates
LNKSMSCG	CICSMonitorSpecificationsToSystemGroup	Monitor specifications to system group links
LNKSMSCS	CICSMonitorSpecificationsToSystem	Monitor specifications to CICS system links
MASHIST	CICSTaskHistoryCollection	CICS task history collection
MONDEF	CICSMonitorDefinition	Monitor definitions
MONGROUP	CICSMonitorGroup	Monitor groups
MONINGRP	CICSMonitorResourceInGroup	Monitor definitions in groups
MONINSPC	CICSMonitorGroupInSpecification	Monitor groups in monitor specifications
MONSPEC	CICSMonitorSpecification	Monitor specifications
OSGIBUND	CICSOSGIBundle	OSGi bundles
OSGISERV	CICSOSGIService	OSGi services
SYSPARM	CICSSystemParameter	CICS system parameter
WLMAROUT	CICSWLMActiveRouter	CICS router region in an active workload

Chapter 9. Changes to the CICS-supplied transactions

Some CICS-supplied transactions are new, or have changed to support new functions.

The CICS transactions accept as few characters of a keyword as needed to identify the keyword uniquely in the request. Minimum abbreviations might change between CICS releases because of the introduction of new commands. If you use automated processes or programs to issue commands for CICS transactions, and you use abbreviations for the keywords, check for any changes to these abbreviations in the new release. In the syntax displays on your screen, the minimum permitted abbreviation is shown in uppercase characters, and the remainder is shown in lowercase.

Obsolete transactions

Some supplied transactions are obsolete and are no longer supplied with CICS.

Table 1. List of obsolete transactions

Transaction	Description
CIRP	Request processor transaction for CorbaServers
CIRR	Request receiver transaction for CorbaServers
CJGC	CICS JVM garbage collection transaction
CJPI	Started JVMs following a **PERFORM JVMPOOL** command
CREA	Generated REQUESTMODEL definitions dynamically or saved them in the CSD
CREC	Generated REQUESTMODEL definitions but could not update the CSD

Changes to CETR

The CETR transaction has new options.

The CETR transaction now includes controls for setting the MP domain standard and special trace levels.

The CETR transaction now includes the TA domain keyword to provide support for the new CICS transition assistant search (CTAS) facility.

The Pooled JVMs Trace Options screen has been removed from the CETR transaction, as this function is obsolete.

Changes to CSFE

The CSFE terminal and system test transaction can now be used to check on the status of a previous debug request.

CSFE now allows the status of DEBUG parameters to be queried, so for example to report if the global trap is active, or whether storage violation checking is active.

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This transaction is mainly intended to be used by system programmers and IBM field engineers.

New transaction CEPS

CEPS, the start transaction adapter for event processing, was introduced in CICS Transaction Server for z/OS, Version 5 Release 1.

CEPS is defined in the supplied resource definition group DFHEP. It is defined with RESSEC(YES) and CMDSEC(YES). CEPS runs the CICS program DFHECEAS, the start transaction adapter program. You can use an alternative transaction that runs DFHECEAS.

CEPS is a RACF Category 2 transaction.

New transaction CESL

CESL, the sign-on long transaction, was introduced in CICS Transaction Server for z/OS, Version 4 Release 2.

With CESL, you can sign on to CICS with a password phrase of 9 to 100 characters or a standard password of up to 8 characters. In other respects CESL operates in the same way as the CESN sign-on transaction.

CESL is a RACF Category 3 transaction.

New transaction CFCR

CFCR was introduced in CICS Transaction Server for z/OS, Version 5 Release 2. CICS uses this transaction to disable files that are defined in CICS bundles.

CFCR, and the program DFHFCRN that it runs, are defined in the new CICS-supplied resource definition group DFHFCRL. When you perform the disable action on a CICS bundle that contains a definition for a FILE resource, CICS attaches CFCR to manage the disable process for the file.

CFCR is a RACF Category 1 transaction.

New transaction CKBC

CKBC was introduced in CICS Transaction Server for z/OS, Version 5 Release 1. Specify CKBC, or your own transaction based on CKBC, to use channels and containers with the CICS-WebSphere MQ DPL Bridge.

CKBC runs program DFHMQBP3. This program passes and receives data using the DFHMQBR_CHANNEL channel and the DFHREQUEST and DFHRESPONSE containers.

To continue to pass and receive data using a COMMAREA, allow the transaction code to default to CKBP, or specify CKBP (or a transaction code modeled on CKBP), to run program DFHMQBP0.

CKBC is a RACF category 2 transaction.

New transaction CJSA

CJSA was introduced in CICS Transaction Server for z/OS, Version 5 Release 1 for JVM servers. It is the default transaction to start CICS tasks that run new threads in the JVM server for a Java application. You can override it using a URIMAP resource.

CJSA is defined in the CICS-supplied resource definition group DFHJAVA. The JVM server has a listener that runs as a long-running task. The listener runs the CJSA transaction to create CICS tasks when an application requests a new thread. These threads can use JCICS to access CICS services.

CJSA is a RACF category 2 transaction.

Chapter 10. Changes to global user exits and task-related user exits

CICS Transaction Server for z/OS, Version 5 Release 2 has changes to some existing global user exit programs and task-related user exit programs. 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 are set up in your CICS system. It is advisable to reassemble global user exit programs for each CICS release, because changes to CICS internals might affect structures used by the CICS global user exit programming interface, even if there are no changes to the externals of the programming interface.

In CICS TS for z/OS, Version 5.1, there were changes to the parameter list structure for functions on the KEDS gate. If you have global user exit programs that use the kernel domain XPI functions, which are the DFHKEDSX calls START_PURGE_PROTECTION and STOP_PURGE_PROTECTION, then you must reassemble those exit programs.

For other areas of the XPI, check the changes to externals that are summarized in this section, and modify your global user exit programs to allow for changes to relevant parameters. After you complete your program changes, reassemble the affected global user exit programs against the CICS Transaction Server for z/OS, Version 5 Release 2 libraries.

A global user exit or task-related user exit might be assembled using CICS libraries from one CICS release and make an XPI call on a system that runs a different CICS release. In this situation, whether or not control is successfully transferred from the exit to the correct CICS module to handle that XPI call depends on the combination of CICS releases, and whether the XPI call is a release-sensitive call. For the user exit to succeed, you must also check other factors, for example whether XPI parameters have changed between releases.

If a user exit fails, an error message is issued and the transaction that called the exit might abend.

The following table summarizes the effect of different CICS releases on user exits. Release-sensitive XPI calls are not available in releases before CICS TS 4.1.

Table 2. User exits with different CICS releases

CICS release of the libraries used to assemble the XPI call	Release-sensitive XPI call?	CICS system that the XPI call is made on	Result
CICS TS 5.2, CICS TS 5.1, CICS TS 4.2, or CICS TS 4.1	Yes	All currently supported CICS releases	Control transfers to the correct CICS module for the XPI call

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Table 2. User exits with different CICS releases (continued)

CICS release of the libraries used to assemble the XPI call	Release-sensitive XPI call?	CICS system that the XPI call is made on	Result
CICS TS 5.2, CICS TS 5.1 or CICS TS 4.2	No	CICS TS 5.2, CICS TS 5.1 or CICS TS 4.2	Control transfers to the correct CICS module for the XPI call
CICS TS 5.2, CICS TS 5.1 or CICS TS 4.2	No	CICS TS 4.1, CICS TS 3.2, and CICS TS 3.1	Unpredictable result
CICS TS 4.1	No	CICS TS 5.2, CICS TS 5.1, CICS TS 4.2, or CICS TS 4.1	Control transfers to the correct CICS module for the XPI call
CICS TS 4.1	No	CICS TS 3.2 and CICS TS 3.1	Unpredictable result
CICS TS 3.2 or CICS TS 3.1	No	CICS TS 5.2, CICS TS 5.1, CICS TS 4.2, or CICS TS 4.1	Back level XPI call detected, and user exit fails
CICS TS 3.2	No	CICS TS 3.2	Control transfers to the correct CICS module for the XPI call
CICS TS 3.2	No	CICS TS 3.1	Unpredictable result
CICS TS 3.1	No	CICS TS 3.2 or CICS TS 3.1	Control transfers to the correct CICS module for the XPI call

Changes to the DFHUEPAR standard parameter list

DFHUEPAR is a standard parameter list of TCB 2-character codes and symbolic values addressed by the global user exit task indicator field, UEPGIND. TCB modes are represented in DFHUEPAR as both a 2-character code and a symbolic value.

No changes were made to the DFHUEPAR standard parameter list in CICS Transaction Server for z/OS, Version 5 Release 2.

The following changes were made in earlier releases:

Table 3. TCB indicators changed in DFHUEPAR

Symbolic value	2-byte code	Change	Description
UEPTJ8	J8	Obsolete	The J8 open TCB, used for pooled JVMs in CICS key.
UEPTJ9	J9	Obsolete	The J9 open TCB, used for pooled JVMs in user key.

Table 3. TCB indicators changed in DFHUEPAR (continued)

Symbolic value	2-byte code	Change	Description
UEPTJM	JM	Obsolete	The JM TCB, used with the IBM SDK for z/OS for shared class cache management purposes.

Changes to global user exits

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

Resource management installation and discard exit: XRSINDI

The new **UEPAPCTXT** and **UEPAPPTK** parameters of the XRSINDI global user exit now supply the application context information for private resources for applications that are deployed on platforms.

UEPAPCTXT
For private resources for applications that are deployed on platforms, this parameter contains the address of a variable-length list, which corresponds to the list in UEPIDNAM, containing the application context information for the resource. The information is listed in the following order:

1. The platform name, padded with spaces to 64 characters.
2. The application name, padded with spaces to 64 characters.
3. The major version number for the application, which is a fullword binary value.
4. The minor version number for the application, which is a fullword binary value.
5. The micro version number for the application, which is a fullword binary value.

CICS supplies a DSECT named **DFHUEACD** which maps this information. For more information about **DFHUEACD**, see UEACD - User exit application context in Data Areas.

UEPAPPTK
Address of a variable-length list, containing an 8-character token representing the application instance to which this resource belongs. For public resources, this address is zero.

Changed global user exits in CICS TS 5.1

These existing global user exits were extended or changed in CICS Transaction Server for z/OS, Version 5 Release 1.

Choice of global work area storage location

You can now specify the GALOCATION option on the ENABLE PROGRAM command to select 24-bit storage or 31-bit storage for the global work area for a global user exit program.

The normal maximum size for a global work area is 32 KB, although it is possible to obtain a larger global work area when you issue the ENABLE PROGRAM command from a program. If you require additional storage for use by an exit program, you can use the techniques demonstrated in the DFH$PCPI sample

program for global user exits. Remember that you can now also add the GALOCATION option when you enable exit programs, and obtain the global work areas from 31-bit storage.

Increase to UEPXSTOR storage

The LIFO storage that CICS provides for a global user exit program to use when calling the XPI is increased from 320 bytes to 1024 bytes. The global user exit program can access this storage using parameter UEPXSTOR of the DFHUEPAR parameter list.

Backout exit programs enabled with TBEXITS system initialization parameter

The **TBEXITS** system initialization parameter enables specified global user exit programs as backout exit programs. The backout exit programs are used during emergency restart backout for user log record recovery and file control recovery. Before CICS TS for z/OS, Version 5.1, these global user exit programs were enabled with a global work area of 4 bytes in 24-bit storage (below the 16 MB line). In CICS TS for z/OS, Version 5.1, these global user exit programs are enabled with a global work area of 4 bytes in 31-bit storage (above 16 MB but below 2 GB).

You can use the **TBEXITS** system initialization parameter to specify programs to be invoked at the following global user exit points:

- User log record recovery program exits: XRCINIT and XRCINPT
- File control backout failure exit: XFCBFAIL
- File control backout exit: XFCBOUT
- File control backout override exit: XFCBOVER
- File control logical delete exit: XFCLDEL

Program control program exit: XPCFTCH

The XPCFTCH exit is invoked before a program that is defined to CICS receives control, and can be used to modify the entry address used when linking to the program. This exit now indicates the addressing mode of the program that has been loaded. The information that is indicated by the UEPPCDS parameter now includes the following DFHPCUE fields:

PCUE_AMOD
The addressing mode of the program is AMODE(31). This field is provided for compatibility with existing exit programs.

PCUE_AMOD_31
The addressing mode of the program is AMODE(31). Use this field in preference to PCUE_AMOD.

PCUE_AMOD_64
The addressing mode of the program is AMODE(64).

Resource management installation and discard exit: XRSINDI

A new parameter is added to the XRSINDI global user exit to support the EPADAPTERSET resource and the EPADAPTERSET resource signature parameter.

UEIDEPAS
An EPADAPTERSET resource.

The obsolete UEIDBEAN enterprise bean parameter is removed from the XRSINDI global user exit.

System recovery program exit: XSRAB

Exit XSRAB is invoked when the system recovery program (DFHSRP) finds a match in the system recovery table (SRT) for an operating system abend code. The error data structure, SRP_ERROR_DATA, that is indicated by the UEPERROR parameter now includes the following SRP_CICS_ERROR_DATA field:

SRP_CICS_PSW16
16-character field that contains the 128-bit PSW

The UEPERROR parameter also includes the following SRP_SYSTEM_ERROR_DATA field:

SRP_SYSTEM_PSW16
16-character field that contains the 128-bit PSW

Transient data exits: XTDEREQ, XTDEREQC, XTDREQ, XTDIN, and XTDOUT

The CICS transient data facility is now threadsafe, so CICS can process transient data requests on an open TCB. Transient data requests are also threadsafe when you function ship them to a remote region over an IPIC connection. To optimize TCB switching and gain the performance benefits of the open transaction environment, programs that run at XTDEREQ, XTDEREQC, XTDREQ, XTDIN, and XTDOUT must be coded to threadsafe standards and defined to CICS as threadsafe.

The XTDEREQ exit is invoked before CICS processes a transient data API request, and the XTDEREQC exit is invoked after processing a transient data API request. The XTDREQ exit intercepts a transient data request before request analysis. The XTDOUT and XTDIN exits are invoked before and after data is exchanged with QSAM or VSAM.

Changed global user exits in CICS TS 4.2

These existing global user exits were extended or changed in CICS Transaction Server for z/OS, Version 4 Release 2.

File control domain exits: XFCFRIN and XFCFROUT

The UEPTERM parameter is a zero value for file control requests that have been function shipped over an IPIC connection. To use IPIC connections for function shipping file control requests, ensure that XFCFRIN and XFCFROUT check that the UEPTERM parameter is a non-zero value before trying to use it as an address.

XFCFRIN and XFCFROUT must be coded to threadsafe standards and declared threadsafe to get the benefits of threadsafe remote file support using an IPIC connection.

Managing IPIC intersystem queues exit: XISQUE

XISQUE controls the requests and commands that are queued on an IPIC connection. XISQUE must be coded to threadsafe standards and declared threadsafe to get the benefits of threadsafe distributed program link (DPL) support,

and threadsafe function shipping file control and temporary storage support, using an IPIC connection.

Temporary storage exits domain exits: XTSQRIN, XTSQROUT, XTSPTIN, and XTSPTOUT

The UEPTERM parameter is a zero value for temporary storage requests that have been function shipped over an IPIC connection. To use IPIC connections for temporary storage requests, ensure that XTSQRIN, XTSQROUT, XTSPTIN, and XTSPTOUT check that the UEPTERM parameter is a non-zero value before trying to use it as an address.

The CICS temporary storage facility is threadsafe, so CICS can process temporary storage requests on an open TCB. Temporary storage requests are also threadsafe when you function ship them to a remote region over an IPIC connection. To optimize TCB switching and gain the performance benefits of the open transaction environment, programs that run at XTSQRIN, XTSQROUT, XTSPTIN, and XTSPTOUT must be coded to threadsafe standards and defined to CICS as threadsafe.

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.

New global user exit points

New global user exit points help you customize new or existing CICS functions.

New global user exit points added in CICS Transaction Server for z/OS, Version 5 Release 2

No new global user exit points were added in this release.

New global user exit points added in CICS Transaction Server for z/OS, Version 5 Release 1

No new global user exit points were added in this release.

New global user exit points added in CICS Transaction Server for z/OS, Version 4 Release 2

Event capture exit XEPCAP

The XEPCAP exit is invoked just before an event is captured by CICS event processing. Use the XEPCAP exit to detect when events are captured.

Changes to task-related user exits

Task-related user exit programs may be invoked and used in new ways in new CICS releases.

In CICS Transaction Server for z/OS, Version 5 Release 2 there were no changes to task-related user exits.

The following changes were made in earlier releases:

Choice of global work area storage location

You can now specify the GALOCATION option on the ENABLE PROGRAM command to select 24-bit storage or 31-bit storage for the global work area for a task-related user exit program.

A task-related user exit can have both a global work area and a local work area. The GALOCATION option does not apply to the local work area, which you create using the TALENGTH option on the ENABLE PROGRAM command. CICS already creates the local work area in 31-bit storage if the task-related user exit program is enabled with the LINKEDITMODE option on the ENABLE PROGRAM command and the task-related user exit program is link-edited AMODE(31). If you do not specify the LINKEDITMODE option, or if the task-related user exit program is link-edited AMODE(24), the local work area is located in 24-bit storage.

Tracking information for programs called from CICS context management

Extra parameters are added to the context-related parameter list that is passed when a task-related user exit program is called from CICS context management. The new parameters allow third party adapters to provide information on the origin of, and reason for, the transaction they are starting.

At the attach of the transaction started by the non-terminal EXEC CICS START command, if an adapter ID is provided by the task-related user exit, the adapter data is placed into the adapter fields in the origin data, providing a way of tracking work initiated by the adapter.

For information about the context-related parameter list for task-related user exit programs, see the *CICS Customization Guide*.

For information about origin data, see the *CICS Intercommunication Guide*.

New options for ENABLE PROGRAM and INQUIRE EXITPROGAM

A new option, `REQUIRED`, is added to the **`ENABLE PROGRAM`** command. You can use this option to specify that a task-related user exit will run on an open TCB. If **`OPENAPI`** is specified, an L8 TCB will be used. If OPENAPI is not specified, any eligible key-8 open TCB can be used: L8, T8, or X8.

The CONCURRENTST option of the **`INQUIRE EXITPROGRAM`** command now returns a new CVDA, `REQUIRED`, to indicate that the task-related user exit will always run on an open TCB. When a task-related user exit is enabled REQUIRED and OPENAPI, it is treated the same as if it were enabled THREADSAFE and OPENAPI. For compatibility, an INQUIRE EXITPROGRAM for either combination will always return THREADSAFE, OPENAPI. For a task-related user exit enabled REQUIRED and CICSAPI, INQUIRE EXITPROGRAM will return REQUIRED, CICSAPI.

During the life of the task, the type of TCB can change. This is called a `switch_application_environment` event. A task-related user exit can express an interest in a `switch_application_environment` event that happens during the lifetime of a task, so that it can remove any affinity it has to the open TCB currently being used. This is relevant to TRUEs that are enabled as REQUIRED, CICSAPI, which means they can be called on an X8, L8, or T8 TCB.

For more information, see ENABLE PROGRAM command in Reference > System programming and INQUIRE EXITPROGRAM in Reference > System programming.

Chapter 11. Changes to the exit programming interface

CICS Transaction Server for z/OS, Version 5 Release 2 has changes to some existing programming interface. 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 are set up in your CICS system. It is advisable to reassemble global user exit programs for each CICS release, because changes to CICS internals might affect structures used by the CICS global user exit programming interface, even if there are no changes to the externals of the programming interface.

In CICS TS for z/OS, Version 5.1, there were changes to the parameter list structure for functions on the KEDS gate. If you have global user exit programs that use the kernel domain XPI functions, which are the DFHKEDSX calls START_PURGE_PROTECTION and STOP_PURGE_PROTECTION, then you must reassemble those exit programs.

For other areas of the XPI, check the changes to externals that are summarized in this section, and modify your global user exit programs to allow for changes to relevant parameters. After you complete your program changes, reassemble the affected global user exit programs against the CICS Transaction Server for z/OS, Version 5 Release 2 libraries.

A global user exit or task-related user exit might be assembled using CICS libraries from one CICS release and make an XPI call on a system that runs a different CICS release. In this situation, whether or not control is successfully transferred from the exit to the correct CICS module to handle that XPI call depends on the combination of CICS releases, and whether the XPI call is a release-sensitive call. For the user exit to succeed, you must also check other factors, for example whether XPI parameters have changed between releases.

If a user exit fails, an error message is issued and the transaction that called the exit might abend.

The following table summarizes the effect of different CICS releases on user exits. Release-sensitive XPI calls are not available in releases before CICS TS 4.1.

Table 4. User exits with different CICS releases

CICS release of the libraries used to assemble the XPI call	Release-sensitive XPI call?	CICS system that the XPI call is made on	Result
CICS TS 5.2, CICS TS 5.1, CICS TS 4.2, or CICS TS 4.1	Yes	All currently supported CICS releases	Control transfers to the correct CICS module for the XPI call

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Table 4. User exits with different CICS releases (continued)

CICS release of the libraries used to assemble the XPI call	Release-sensitive XPI call?	CICS system that the XPI call is made on	Result
CICS TS 5.2, CICS TS 5.1 or CICS TS 4.2	No	CICS TS 5.2, CICS TS 5.1 or CICS TS 4.2	Control transfers to the correct CICS module for the XPI call
CICS TS 5.2, CICS TS 5.1 or CICS TS 4.2	No	CICS TS 4.1, CICS TS 3.2, and CICS TS 3.1	Unpredictable result
CICS TS 4.1	No	CICS TS 5.2, CICS TS 5.1, CICS TS 4.2, or CICS TS 4.1	Control transfers to the correct CICS module for the XPI call
CICS TS 4.1	No	CICS TS 3.2 and CICS TS 3.1	Unpredictable result
CICS TS 3.2 or CICS TS 3.1	No	CICS TS 5.2, CICS TS 5.1, CICS TS 4.2, or CICS TS 4.1	Back level XPI call detected, and user exit fails
CICS TS 3.2	No	CICS TS 3.2	Control transfers to the correct CICS module for the XPI call
CICS TS 3.2	No	CICS TS 3.1	Unpredictable result
CICS TS 3.1	No	CICS TS 3.2 or CICS TS 3.1	Control transfers to the correct CICS module for the XPI call

Changes to the exit programming interface (XPI)

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

Changes to the loader XPI, DFHLDLDX

In the loader functions of the XPI, the size of the tokens that are used for the PROGRAM_TOKEN and NEW_PROGRAM_TOKEN options has increased from 4 bytes to 8 bytes. The DFHLDLDX calls affected by this change are ACQUIRE_PROGRAM, DEFINE_PROGRAM, and RELEASE_PROGRAM. If you have used the PROGRAM_TOKEN or NEW_PROGRAM_TOKEN options on these calls in an existing exit program, you must change your exit program to specify suitable locations to contain the larger tokens, and recompile the exit program. Exit programs that do not use the PROGRAM_TOKEN option or NEW_PROGRAM_TOKEN option are not affected.

Changed ACQUIRE_PROGRAM call

The size of the token that you specify on the PROGRAM_TOKEN option of the ACQUIRE_PROGRAM call has increased from 4 bytes to 8 bytes. The size of the token returned by the NEW_PROGRAM_TOKEN option has also increased from 4 bytes to 8 bytes. If you have used either of these options in an existing exit program, you must change your exit program to specify suitable locations to contain the larger tokens, and recompile the exit program.

For details, see The ACQUIRE_PROGRAM call in Reference -> System programming reference.

Changed DEFINE_PROGRAM call

You can use the REQUIRED_AMODE option of the DEFINE_PROGRAM call to specify the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs.

Also, the size of the token returned by the NEW_PROGRAM_TOKEN option of the DEFINE_PROGRAM call has increased from 4 bytes to 8 bytes. If you have used this option in an existing exit program, you must change your exit program to specify a suitable location to contain the larger token, and recompile the exit program.

For details, see The DEFINE__PROGRAM call in Reference -> System programming reference.

Changed GET_NEXT_PROGRAM call

The SPECIFIED_AMODE option of the GET_NEXT_PROGRAM call now returns the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs.

For details, see The GET_NEXT_PROGRAM call in Reference -> System programming reference.

Changed INQUIRE_APP_CONTEXT call

The INQ_APP_CONTEXT call now returns the current application context for the most recent application that has been set onto the task.

For details, see The INQUIRE_APP_CONTEXT call in Reference -> System programming reference and Application context in Product overview.

Changed INQ_APPLICATION_DATA call

The DSA option of the INQ_APPLICATION_DATA call now returns the address of the head of the dynamic storage chain as a 64-bit address.

For details, see The INQ_APPLICATION_DATA call in Reference -> System programming reference.

Changed INQUIRE_CURRENT_PROGRAM call

The CURRENT_AMODE option of the INQUIRE_CURRENT_PROGRAM call now returns the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs.

For details, see The INQUIRE_CURRENT_PROGRAM call in Reference -> System programming reference.

Changed INQUIRE_PROGRAM call - AMODE(64) assembler programs

The SPECIFIED_AMODE option of the INQUIRE_PROGRAM call now returns the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs.

For details, see The INQUIRE_PROGRAM call in Reference -> System programming reference.

Changed INQUIRE_PROGRAM and START_BROWSE_PROGRAM calls - application context

You can use new options on the INQUIRE_PROGRAM and START_BROWSE_PROGRAM calls to inquire on private programs for applications deployed on platforms. To inquire on private programs for applications deployed on platforms, you must specify the AC_APPLICATION_NAME, AC_MAJOR_VERSION, AC_MINOR_VERSION, AC_MICRO_VERSION, and AC_PLATFORM_NAME fields to provide a complete application context. The SHOW_PROGRAMS option specifies whether to search for private programs only, or both private and public programs.

For details, see The INQUIRE_PROGRAM call in Reference -> System programming reference.

Changed RELEASE_PROGRAM call

The size of the token that you specify on the PROGRAM_TOKEN option of the RELEASE_PROGRAM call has increased from 4 bytes to 8 bytes. If you have used this option in an existing exit program, you must change your exit program to specify a suitable location to contain the larger token, and recompile the exit program.

For details, see The RELEASE__PROGRAM call in Reference -> System programming reference.

Changed SET_PROGRAM call

You can use the REQUIRED_AMODE option of the INQUIRE_PROGRAM call to specify the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs.

For details, see The SET_PROGRAM call in Reference -> System programming reference.

New exit programming interface (XPI) calls

CICS provides XPI calls that you can use in exit programs to retrieve information about functions in CICS.

In CICS Transaction Server for z/OS, Version 5 Release 2 there were no changes to XPI calls.

The following changes were made in earlier releases:

New INQUIRE_APP_CONTEXT call

The new INQUIRE_APP_CONTEXT call is provided on the DFHMNMNX macro call to retrieve application context data for a task.

For details of the XPI function, see The INQUIRE_APP_CONTEXT call in Reference -> System programming reference.

Chapter 12. Changes to user-replaceable programs

Reassemble all user-replaceable programs, checking whether any changes to the user-replaceable program interface affect your own customized 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 Customizing with user-replaceable programs in the *CICS Customization Guide* for programming information about user-replaceable programs.

AMODE(24) shutdown programs and CEMT

In CICS TS Version 5.1, the storage location was changed for the CICS-supplied transaction CEMT. The TRANSACTION resource definition for CEMT was changed to specify TASKDATALOC(ANY) instead of TASKDATALOC(BELOW). The CEMT transaction therefore uses virtual storage above the 16 MB line. If you use CEMT to shut down CICS and have PLTSD programs that are AMODE(24), an AEZC abend will occur. To avoid this situation, modify the shutdown program so that it is AMODE(31) and update the appropriate program definition.

Obsolete user-replaceable programs

These user-replaceable programs are no longer used in CICS Transaction Server for z/OS, Version 5 Release 2.

No user-replaceable programs were made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2.

The following changes were made in earlier releases:

Table 5. Obsolete user-replaceable programs

Module	Explanation
DFHEJDNX	The distinguished name user-replaceable program is obsolete because EJB support is removed.
DFHEJEP	The EJB event program is obsolete because EJB support is removed.
DFHJVMAT	The program to override JVM profile options is obsolete because support for pooled JVMs is removed.
DFHJVMRO	The program to modify the enclave for pooled JVMs is obsolete because support for pooled JVMs is removed.
DFHXOPUS	The IIOP security exit program is obsolete because IIOP cannot be specified on a TCPIPSERVICE resource.

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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.

Custom EP adapters

Your custom adapter programs must now honor the `EPAP_RECOVER` flag in the `DFHEP.ADAPTPARM` container to support synchronous event emission. You must review your custom EP adapter programs and update as necessary.

If the field **`EPCX_PROGRAM`** in the `DFHEP.CONTEXT` container is used by your custom EP adapter you must review and change your programs as required, because the field is not set for system events.

DFHDSRP, distributed routing program: DFHDYPDS copybook

There are changes to the copybook DFHDYPDS that defines the communication area for the CICS-supplied sample distributed routing program DFHDSRP.

The following changes were introduced in CICS TS 5.2:

- The following DFHDYPDS tokens are new:

  DYRCLOUD
  Cloud Routing Data.

  DYRPLATFORM
  Platform name.

  DYRAPPLICATION
  Application name.

  DYRAPPLVER
  Application version.

  DYRAPPLMAJOR
  Application major version.

  DYRAPPLMINOR
  Application minor version.

  DYRAPPLMICRO
  Application micro version.

  DYROPERATION
  Operation name.
- The DYRVER token is incremented by 1 to indicate that this module is changed for this CICS TS release.

The following changes were introduced in CICS TS 4.2:

- The following DFHDYPDS tokens are new:

  DYRUOWAF
  Indicates that callback is required at the end of the unit of work.

DYRFUNC 7 = End_UOW
Identifies that this call is for end of unit of work processing.

DYRLUOWID
Identifies the local unit of work. This token forms part of the key for the LOCKED affinity type.

DYRNUOWID
Identifies the network unit of work. This token forms part of the key for the LOCKED affinity type.

- The DYRVER token is incremented by 1 to indicate that this module is changed for this CICS TS release.

If you use your own routing program, you might have to make adjustments for these changes. Because the length of DFHDYPDS has changed, you must recompile your user-written dynamic routing and distributed routing programs if they check the length of DFHDYPDS as the CICS-supplied samples do.

DFHDYP, dynamic routing program

A threadsafe program can function ship a DPL request using dynamic routing to ship the request to another region. If the dynamic routing program DFHDYP is coded to threadsafe standards and defined CONCURRENCY(REQUIRED) or CONCURRENCY(THREADSAFE) there should be no or minimal penalty in terms of undesirable TCB switches to invoke DFHDYP.

DFHPGADX, program autoinstall program

In CICS TS 5.2, the definitions for the CICS-supplied default autoinstall program, in the CICS-supplied group DFHPGAIP, changed to specify CONCURRENCY(THREADSAFE) to avoid TCB switching during program autoinstall. The resource definitions for the following programs now specify CONCURRENCY(THREADSAFE):

- DFHPGADX, Assembler program
- DFHPGAHX, C program
- DFHPGALX, PL/I program
- DFHPGAOX, COBOL program

If you are using the CICS-supplied default program for program autoinstall, examine any code added to the exit to ensure it is threadsafe. If the code is not threadsafe, you must either make changes to make it threadsafe, or change the resource definition to specify CONCURRENCY(QUASIRENT).

For more information about threadsafe programming techniques, see Threadsafe programs in Developing applications.

DFHXCURM, External interface program

A new parameter, **URMXCFG**, is provided which allows the value specified for the **XCFGROUP** parameter in the DFHXCOPT table be overridden. It can be overridden when DFHXCURM is invoked during EXCI allocate_pipe request processing.

EYU9WRAM, dynamic routing program: EYURWCOM communication area

EYURWCOM is the communication area that is used by the dynamic routing user-replaceable module EYU9WRAM.

The following EYURWCOM tokens were added in CICS TS 5.2:

WCOM_APPL_CONTEXT
Application context.

WCOM_PLATFORM
Requesting platform name.

WCOM_APPLICATION
Requesting application name.

WCOM_APPLVER
Application version.

WCOM_APPLMAJORVER
Application major version.

WCOM_APPLMINORVER
Application minor version.

WCOM_APPLMICROVER
Application micro version.

WCOM_OPERATION
Requesting operation name.

The following EYURWCOM tokens were changed in CICS TS 5.2:

- **WCOM_FILL3** has a new value of **WCOM_VERSION**. In CICS TS 5.2 it is initialized with the character value 01.

The following EYURWCOM tokens were added in CICS TS 4.2:

WCOM_DYRLUOW
Identifies the local unit of work for this request.

WCOM_DYRNUOW
Identifies the network unit of work for this request.

The following EYURWCOM tokens were changed in CICS TS 4.2:

- **WCOM_AFF_TYPE** has a new value of **WCOM_AFF_LOCKED**.
- **WCOM_AFF_LIFE** has a new value of **WCOM_AFF_UOW**.

If you have customized EYU9WRAM, you might have to make adjustments for these changes.

EYU9XLOP, dynamic routing program: EYURWTRA communication area

EYURWTRA is the communication area for the dynamic routing program EYU9XLOP.

The following EYURWTRA tokens were added in CICS TS 5.2:

WTRA_APPL_CONTEXT
Application context.

WTRA_PLATFORM
Requesting platform name.

WTRA_APPLICATION
Requesting application name.

WTRA_APPLVER
Application version.

WTRA_APPLMAJORVER
Application major version.

WTRA_APPLMINORVER
Application minor version.

WTRA_APPLMICROVER
Application micro version.

WTRA_OPERATION
Requesting operation name.

The following EYURWTRA tokens are changed in CICS TS 5.2:

- **WTRA_FILL1** has a new value of **WTRA_VERSION**.

  Note: Existing applications that use this field should have the field initialized to nulls. In CICS TS 5.2 only new fields in the WTRA COMMAREA that are commensurate with the version number are extracted and passed forwards. The version is in character format, and the version number for the Application Context additions is 01. A new declaration is added to the EYURWTRA member for Version 1:

  ```
  DCL WTRA_VERSION_01 CHAR(2) CONSTANT('01');       /* EYURWTRA Version 1
  */
  ```

  If you want to pass the application contexts through to your own WRAM program, you must initialize the WTRA_APPL_CONTEXT fields with the appropriate values, and must also set:

  ```
  WTRA_VERSION = WTRA_VERSION_01;
  ```

The following EYURWTRA tokens were added in CICS TS 4.2:

WTRA_UOWOPT
Signifies that the exit requires callback processing at the end of the UOW.

WTRA_LOCUOWID
Identifies the local UOW token to be used.

WTRA_NETUOWID
Identifies the network UOW token to be used.

If you have customized EYU9XLOP, you might have to make adjustments for these changes.

New user-replaceable programs

CICS Transaction Server for z/OS, Version 5 Release 2 includes user-replaceable programs to support new CICS functions.

No new user-replaceable programs were added in CICS Transaction Server for z/OS, Version 5 Release 2.

New sample user-replaceable program for IPCONN autoinstall

In CICS Transaction Server for z/OS, Version 5 Release 1 a new sample user-replaceable program was added for IPCONN autoinstall. The supplied source of the new user-replaceable program is a sample to illustrate a technique of customizing autoinstall of an IPCONN, such that the IPCONN name and APPLID are generated according to a template IPCONN that is previously installed.

The source of the additional IPCONN autoinstall user replaceable program is supplied in the SDFHSAMP library. The code is supplied in assembler as module DFH$ISAI and COBOL as module DFH0ISAI. The executable load modules are supplied in the CICSTS SDFHLOAD library.

When the user-replaceable program is deployed, all IPIC installation requests are based on a template IPCONN that must match the name of the network ID of the partner (for CICS Transaction Gateway clients, this is the APPLID qualifier). Connection requests are accepted only if the APPLID of the partner matches the APPLID value that is specified in the template IPCONN.

For more information, see Sample autoinstall user program to support predefined connection templates.

Chapter 13. Changes to CICS utilities

Changes to CICS utilities in CICS Transaction Server for z/OS, Version 5 Release 2 relate to new, changed, or obsolete CICS functions. The existing utility programs DFHCSDUP, DFHSTUP, and DFH0STAT support new resources. The trace formatting utility program DFHTUxxx and IPCS dump exit routine DFHPDxxx support new resources and are renamed for the release.

CICS JVM Application Isolation Utility removed

Because of the removal of support for pooled JVMs in CICS TS for z/OS, Version 5.1, the CICS JVM Application Isolation Utility is no longer shipped with CICS. The CICS JVM Application Isolation Utility was a code analyzer tool to discover static variables in Java applications. It was provided to assist with moving Java workloads from resettable to continuous JVMs.

The CICS JVM Application Isolation Utility was shipped with CICS as a JAR file named `dfhjaiu.jar`. It ran under z/OS UNIX System Services as a stand-alone utility.

DFH0STAT, sample statistics utility program

DFH0STAT, the sample statistics utility program, produces additional statistics reports for any new resource types that are added in each CICS release. Statistics reports relating to any obsolete resource types are no longer produced.

In CICS TS 5.2, no new statistics reports were added.

DFH0STAT does not report any private resources for applications deployed on platforms, and it does not identify programs that are declared as application entry points.

DFH0STAT uses the **INQUIRE TEMPSTORAGE** command, introduced in CICS TS for z/OS, Version 4.2. This command is subject to command security checking. If command security checking is active in a CICS region, user IDs that run DFH0STAT must have READ access to the **INQUIRE TEMPSTORAGE** command, through the RACF resource class that is specified on the **XCMD** system initialization parameter. Give access to user IDs that run the STAT transaction, and also to user IDs under which DFH0STAT is called during CICS shutdown by the PLTSD process.

The Data Tables Storage report that is produced by DFH0STAT now includes storage totals for each data table in the report.

The Storage above 2 GB report that is produced by DFH0STAT now includes a number of new fields relating to 64-bit storage use in the GDSA.

DFHCSDUP, CSD utility program

The CSD utility program supports all the new and changed resource types and attributes. See Chapter 5, “Changes to resource definitions,” on page 27 for details of all the changes to CSD resource definitions that are supported by DFHCSDUP.

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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.

The report data sets produced by the LIST function of DFHCSDUP now include release information for the CSD. The field CREATED BY RELEASE shows the release in which the CSD was created. The field UPGRADED TO RELEASE, if present, indicates that the CSD has been upgraded and to what release.

DFHCSVCU, new utility program

A new utility, DFHCSVCU, is provided to install the CICS Type 3 SVC without the need to perform an IPL of the z/OS system. Use of this utility program must be restricted to authorized users only.

This utility updates or adds a single SVC entry in the SVC table with a pointer containing the entry point of the supplied module. For an existing SVC number, before the SVC is updated, all CICS regions using that SVC number must be shut down, otherwise results can be unpredictable.

DFHPD690, IPCS dump exit routine

The dump formatting utility program is renamed to DFHPD690. When formatting a dump data set always ensure that you use the dump formatting program with the same level number for the release of CICS TS that created the dump data set.

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.

DFHMEU, message editing utility

The message editing utility is obsolete in this release. This function is no longer available.

DFHSTUP, statistics formatting utility program

The statistics formatting utility program formats additional statistics reports for new and updated resource types. Statistics reports relating to obsolete resource types are no longer produced. See Chapter 15, “Changes to statistics,” on page 129 for information about changes to resource types and new and obsolete keywords on the SELECT TYPE and IGNORE TYPE parameters.

DFHSTUP reports private resources for applications deployed on platforms, and identifies programs that are declared as application entry points.

The maximum number of CICS regions (APPLIDs) that the DFHSTUP utility can process is increased from 520 to 2000. This change provides the flexibility to include all CICS regions in a single statistics report.

DFHTU690, trace formatting utility program

The trace formatting utility program is renamed to DFHTU690. When formatting a dump data set always ensure that you use the dump formatting program with the same level number for the release of CICS TS that created the dump data set.

The program formats trace entries written by the new domains and functions. The new identifiers that you can specify to DFHTU690 on the **TYPETR** parameter for these functional areas are the same as the CETR trace component codes.

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.

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

- The length of a standard performance class monitoring record, as output to SMF, has increased to 3260 bytes. The length does not allow for 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.

Obsolete monitoring data fields

Some obsolete data fields are no longer available in the CICS monitoring facility. If you have any of these fields specified in a DFHMCT TYPE=RECORD macro, you must remove them.

Obsolete performance class data fields in CICS Transaction Server for z/OS, Version 5 Release 2

No performance class data fields were made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2.

Obsolete performance class data fields in CICS Transaction Server for z/OS, Version 5 Release 1

The following performance class data field in group DFHDATA is obsolete:

189 (TYPE-S, 'DB2WAIT', 12 BYTES)
This field, which returned zero in CICS Transaction Server for z/OS, Version 5 Release 1, is no longer produced. The data collected by this field ceased to be meaningful when CICS DB2 support began to exploit the open transaction environment (OTE).

The whole of the performance data group DFHEJBS is obsolete, comprising the following fields:

311 (TYPE-C, 'CBSRVRNM', 4 BYTES)
The CorbaServer for which this request processor instance is handling requests.

312 (TYPE-A, 'EJBSACCT', 4 BYTES)
The number of bean activations that have occurred in this request processor.

313 (TYPE-A, 'EJBSPACT', 4 BYTES)
The number of bean passivations that have occurred in this request processor.

314 (TYPE-A, 'EJBCRECT', 4 BYTES)
The number of bean creation calls that have occurred in this request processor.

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315 (TYPE-A, 'EJBREMCT', 4 BYTES)
The number of bean removal calls that have occurred in this request processor.

316 (TYPE-A, 'EJBMTHCT', 4 BYTES)
The number of bean method calls executed in this request processor.

317 (TYPE-A, 'EJBTOTCT', 4 BYTES)
The total for this request processor of fields 312–316.

The following performance class data fields in group DFHTASK are obsolete:

260 (TYPE-S, 'J8CPUT', 12 BYTES)
The processor time during which the user task was dispatched by the CICS dispatcher domain on a CICS J8 mode TCB.

267 (TYPE-S, 'J9CPUT', 12 BYTES)
The processor time during which the user task was dispatched by the CICS dispatcher domain on a CICS J9 mode TCB.

277 (TYPE-S, 'MAXJTDLY', 12 BYTES)
The elapsed time for which the user task waited to obtain a CICS JVM TCB (J8 or J9 mode), because the CICS system reached the limit set by the system parameter, MAXJVMTCBS. This field is a component of the task suspend time, SUSPTIME (014), field.

The following performance class data field in group DFHWEBB is obsolete:

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).

Changed monitoring data fields

Existing data fields can change from release to release in the performance class data, identity class data, transaction resource class data, and exception class data produced by CICS monitoring.

No monitoring data fields were changed in CICS Transaction Server for z/OS, Version 5 Release 2.

The following monitoring data fields were changed in earlier releases:

Performance class data fields changed in CICS Transaction Server for z/OS, Version 5 Release 1

The following performance data fields in the DFHCHNL group are changed to include data from the new GET64 CONTAINER and PUT64 CONTAINER commands.

323 (TYPE-A, 'PGGETCCT', 4 BYTES)
The number of GET CONTAINER and GET64 CONTAINER requests for channel containers issued by the user task.

324 (TYPE-A, 'PGPUTCCT', 4 BYTES)
The number of PUT CONTAINER and PUT64 CONTAINER requests for channel containers issued by the user task.

326 (TYPE-A, 'PGGETCDL', 4 BYTES)
The total length, in bytes, of the data in the containers of all the GET CONTAINER CHANNEL and GET64 CONTAINER CHANNEL commands issued by the user task.

327 (TYPE-A, 'PGPUTCDL', 4 BYTES)
The total length, in bytes, of the data in the containers of all the PUT CONTAINER CHANNEL and PUT64 CONTAINER CHANNEL commands issued by the user task.

328 (TYPE-A, 'PGCRECCT', 4 BYTES)
The number of containers created by MOVE, PUT CONTAINER, and PUT64 CONTAINER requests for channel containers issued by the user task.

New monitoring data fields

New data fields are added in the exception class data, identity class data, performance class data, and transaction resource class data produced by CICS monitoring.

No monitoring data fields were added in CICS Transaction Server for z/OS, Version 5 Release 2.

The following monitoring data fields were added in earlier releases:

New exception resource identifiers in exception class data

Field EXCMNRID in the exception data section of a monitoring record has the following new values:

'GUDSA'
Wait for GUDSA storage

'GSDSA'
Wait for GSDSA storage

rule_id
The ID of the policy rule whose threshold has been exceeded.

New exception type in exception class data

Field EXCMNTYP in the exception data section of a monitoring record has the following new value:

X'0004'
Exception because a policy threshold has been exceeded (EXCMNPOL)

New performance class data fields in group DFHCICS

351 (TYPE-C, 'OADID', 64 BYTES)
The adapter identifier added to the origin data by the adapter. This field is blank if the task was not started by using an adapter, or if it was and the adapter did not set this value.

352 (TYPE-C, 'OADATA1', 64 BYTES)
The data added to the origin data by the adapter. This field is blank if the task was not started by using an adapter, or if it was and the adapter did not set this value.

353 (TYPE-C, 'OADATA2', 64 BYTES)
The data added to the origin data by using the adapter. This field is blank if the task was not started by using an adapter, or if it was and the adapter did not set this value.

354 (TYPE-C, 'OADATA3', 64 BYTES)
The data added to the origin data by the adapter. This field is blank if the task was not started by using an adapter, or if it was and the adapter did not set this value.

373 (TYPE-C, 'PHNTWKID', 8 BYTES)
The network identifier of the CICS system of an immediately previous task in another CICS system with which this task is associated.

374 (TYPE-C, 'PHAPPLID', 8 BYTES)
The APPLID from previous hop data. This is the APPLID of the CICS system of a previous task in another CICS system with which this task is associated. See Previous hop data characteristics in Getting started for more information about previous hop data.

375 (TYPE-T, 'PHSTART', 8 BYTES)
The start time of the immediately previous task in another CICS system with which this task is associated.

376 (TYPE-P, 'PHTRANNO', 4 BYTES)
The task number of the immediately previous task in another CICS system with which this task is associated.

377 (TYPE-C, 'PHTRAN', 4 BYTES)
The transaction ID (TRANSID) of the immediately previous task in another CICS system with which this task is associated.

378 (TYPE-A, 'PHCOUNT', 4 BYTES)
The number of times there has been a request from one CICS system to another CICS system to initiate a task with which this task is associated.

418 (TYPE-A, 'ECSEVCCT', 4 BYTES)
The number of synchronous emission events captured by the user task.

449 (TYPE-A, 'MPPRTXCD', 4 BYTES)
Number of policy rule thresholds that this task has exceeded. This field is all nulls (0x00 bytes) if no thresholds have been exceeded or if the task has no policy rules applied to it.

New performance class data fields in group DFHDEST

403 (TYPE-S, 'TDILWTT', 12 BYTES)
The elapsed time for which the user task waited for an intrapartition transient data lock (TDIPLOCK). For more information, see Clocks and time stamps in Reference -> Monitoring and Transaction wait (suspend) times in Reference -> Monitoring. For more information about tasks suspended on resource type TDIPLOCK, see Resource type TDIPLOCK: waits for transient data intrapartition requests in Troubleshooting.

This field is a component of the task suspend time, SUSPTIME (014), field.

404 (TYPE-S, 'TDELWTT', 12 BYTES)
The elapsed time for which the user task waited for an extrapartition transient data lock (TDEPLOCK). For more information, see Clocks and time stamps in Reference -> Monitoring and Transaction wait (suspend) times in Reference -> Monitoring. For more information about tasks suspended on resource type

TDEPLOCK, see Resource type TDEPLOCK: waits for transient data extrapartition requests in Troubleshooting.

This field is a component of the task suspend time, SUSPTIME (014), field.

New performance class data fields in group DFHFILE

426 (TYPE-S, 'FCXCWTT', 12 BYTES)
The elapsed time in which the user task waited for exclusive control of a VSAM control interval. This field counts time spent waiting on resource type FCXCSUSP, FCXDSUSP, FCXCPROT, or FCXDPROT. For more information, see Clocks and time stamps in Reference -> Monitoring, and Transaction wait (suspend) times in Reference -> Monitoring.

Note: This field is a component of the task suspend time, SUSPTIME (014) field.

427 (TYPE-S, 'FCVSWTT', 12 BYTES)
The elapsed time in which the user task waited for a VSAM string. This field counts time spent waiting on resource type FCPSSUSP or FCSRSUSP. For more information, see Clocks and time stamps in Reference -> Monitoring, and Transaction wait (suspend) times in Reference -> Monitoring.

Note: This field is a component of the task suspend time, SUSPTIME (014) field.

New performance class data fields in group DFHSOCK

319 (TYPE-S, 'ISALWTT', 12 BYTES)
The elapsed time for which a user task waited for an allocate request for an IPIC session. For more information, see Clocks and time stamps in Reference -> Monitoring and Transaction wait (suspend) times in Reference -> Monitoring.

This field is a component of the task suspend time, SUSPTIME (014), field.

320 (TYPE-A, 'SOCIPHER', 4 BYTES)
Identifies the code for the cipher suite that was selected during the SSL handshake for use on the inbound connection, for example X'0000002F'. For a list of the cipher suites that are supported by CICS and z/OS and their codes, see Cipher suites in Securing.

New performance class data fields in group DFHSTOR

441 (TYPE-A, 'SC64CGCT', 4 BYTES)
Number of user-storage GETMAIN requests issued by the user task for storage above the bar, in the CICS dynamic storage area (GCDSA).

442 (TYPE-A, 'SC64CHWM', 4 BYTES)
Maximum amount (high-water mark) of user storage, rounded up to the next 4K, allocated to the user task above the bar, in the CICS dynamic storage area (GCDSA).

443 (TYPE-A, 'SC64UGCT', 4 BYTES)
Number of user-storage GETMAIN requests issued by the user task for storage above the bar, in the user dynamic storage area (GUDSA).

444 (TYPE-A, 'SC64UHWM', 4 BYTES)
Maximum amount (high-water mark) of user storage, rounded up to the next 4K, allocated to the user task above the bar, in the user dynamic storage area (GUDSA).

445 (TYPE-A, 'SC64SGCT', 4 BYTES)
Number of storage GETMAIN requests issued by the user task for shared storage above the bar, in the GCDSA or GSDSA.

446 (TYPE-A, 'SC64GSHR', 4 BYTES)
Amount of shared storage obtained by the user task by using a GETMAIN request above the bar, in the GCDSA or GSDSA. The total number of bytes obtained is rounded up to the next 4096 bytes, and the resulting number of 4K pages is displayed.

447 (TYPE-A, 'SC64FSHR', 4 BYTES)
Amount of shared storage released by the user task by using a FREEMAIN request above the bar, in the GCDSA or GSDSA. The total number of bytes obtained is rounded up to the next 4096 bytes, and the resulting number of 4K pages is displayed.

New performance class data fields in group DFHTASK

348 (TYPE-S, 'ROMODDLY', 12 BYTES)
The elapsed time for which the user task waited for redispatch on the CICS RO TCB. This time is the aggregate of the wait times between each event completion and user-task redispatch. The ROMODDLY field is a component of the task suspend time, SUSPTIME (014), field, and also the redispatch wait, DISPWTT (102), field.

349 (TYPE-S, 'SOMODDLY', 12 BYTES)
The elapsed time for which the user task waited for redispatch on the CICS SO TCB. This time is the aggregate of the wait times between each event completion and user-task redispatch. The SOMODDLY field is a component of the task suspend time, SUSPTIME (014), field, and also the redispatch wait, DISPWTT (102), field.

430 (TYPE-C, 'CECMCHTP', 4 BYTES)
The CEC machine type, in EBCDIC, for the physical hardware environment where the CICS region is running. CEC (central electronics complex) is a commonly used synonym for CPC (central processing complex).

431 (TYPE-C, 'CECMDLID', 16 BYTES)
The CEC model number, in EBCDIC, for the physical hardware environment where the CICS region is running.

433 (TYPE-A, 'MAXTASKS', 4 BYTES)
The MXT or MAXTASKS value, expressed as a number of tasks, for the CICS region at the time the user task was attached.

434 (TYPE-A, 'CURTASKS', 4 BYTES)
The current number of active user transactions in the system at the time the user task was attached.

436 (TYPE-S, 'CPUTONCP', 12 BYTES)
The total task processor time on a standard processor for which the user task was dispatched on each CICS TCB under which the task ran.

This field is a component of the task CPU time field, USRCPUT (field ID 008 in group DFHTASK). To calculate the task processor time that was spent on a specialty processor (zIIP or zAAP), subtract the time recorded in the CPUTONCP field from the time recorded in the USRCPUT field.

Note: The times shown in the CPUTONCP and OFFLCPUT fields are only available when running on a system that supports the Extract CPU Time

instruction service that is available on IBM System z9® or later hardware. For z/OS, Version 1 Release 13, the PTF for APAR OA38409 must also be applied.

437 (TYPE-S, 'OFFLCPUT', 12 BYTES)
The total task processor time that was spent on a standard processor but was eligible for offload to a specialty processor (zIIP or zAAP).

This field is a component of the task CPU time field, USRCPUT (field ID 008 in group DFHTASK), and also a component of the standard CPU time field, CPUTONCP (field ID 436 in group DFHTASK). To calculate the task processor time spent on a standard processor that was not eligible for offload to a specialty processor, subtract the time recorded in the OFFLCPUT field from the time recorded in the CPUTONCP field.

Note: The times shown in the CPUTONCP and OFFLCPUT fields are only available when running on a system that supports the Extract CPU Time instruction service that is available on IBM System z9 or later hardware. For z/OS, Version 1 Release 13, the PTF for APAR OA38409 must also be applied.

451 (TYPE-C, 'ACAPPLNM', 64 BYTES)
The 64-character name of the application in the application context data.

452 (TYPE-C, 'ACPLATNM', 64 BYTES)
The 64-character name of the platform in the application context data.

453 (TYPE-A, 'ACMAJVER', 4 BYTES)
The major version of the application in the application context data, expressed as a 4-byte binary value.

454 (TYPE-A, 'ACMINVER', 4 BYTES)
The minor version of the application in the application context data, expressed as a 4-byte binary value.

455 (TYPE-A, 'ACMICVER', 4 BYTES)
The micro version of the application in the application context data, expressed as a 4-byte binary value.

456 (TYPE-C, 'ACOPERNM', 64 BYTES)
The 64-character name of the operation in the application context data.

New performance class data fields in group DFHTERM

343 (TYPE-S, 'TCALWTT', 12 BYTES)
The elapsed time for which a user task waited for an allocate request for an MRO (Inter-Region Communication), LU6.1, or LU6.2 session. For more information, see Clocks and time stamps in Reference -> Monitoring and Transaction wait (suspend) times in Reference -> Monitoring.

This field is a component of the task suspend time, SUSPTIME (014), field.

New transaction resource class data fields

MNR_PHD_NTWKID (TYPE-C, 8 BYTES)
The network identifier of the CICS system of an immediately previous task in another CICS region with which this task is associated. For more information, see field 373 (PHNTWKID) in the DFHCICS performance data group.

MNR_PHD_APPLID (TYPE-C, 8 BYTES)
The APPLID from previous hop data. This is the APPLID of the CICS system of a previous task in another CICS system with which this task is associated.

For more information, see field 374 (PHAPPLID) in the DFHCICS performance data group. For more information about previous hop data, see Previous hop data characteristics in Getting started.

MNR_PHD_ATTACH_TIME (TYPE-T, 8 BYTES)
The start time of the immediately previous task in another CICS system with which this task is associated. For more information, see field 375 (PHSTART) in the DFHCICS performance data group.

MNR_PHD_TRANNUM (TYPE-P, 4 BYTES)
The task number of the immediately previous task in another CICS system with which this task is associated. For more information, see field 376 (PHTRANNO) in the DFHCICS performance data group.

MNR_PHD_TRANID (TYPE-C, 4 BYTES)
The transaction ID (TRANSID) of the immediately previous task in another CICS system with which this task is associated. For more information, see field 377 (PHTRAN) in the DFHCICS performance data group.

MNR_PHD_COUNT (TYPE-A, 4 BYTES)
The number of times there has been a request from one CICS system to another CICS region to initiate a task with which this task is associated. For more information, see field 378 (PHCOUNT) in the DFHCICS performance data group.

MNR_ID_TRNGRPID (TYPE-C, 28 BYTES)
The transaction group ID of the originating task.

New identity class data fields

MNI_ID_PHD_NTWKID (TYPE-C, 8 BYTES)
The network identifier of the CICS system of an immediately previous task in another CICS system with which this task is associated. For more information, see field 373 (PHNTWKID) in the DFHCICS performance data group.

MNI_ID_PHD_APPLID (TYPE-C, 8 BYTES)
The APPLID from previous hop data. This is the APPLID of the CICS system of a previous task in another CICS system with which this task is associated. For more information, see field 374 (PHAPPLID) in the DFHCICS performance data group. For more information about previous hop data, see Previous hop data characteristics in Getting started.

MNI_ID_PHD_START_TIME (TYPE-T, 8 BYTES)
The start time of the immediately previous task in another CICS system with which this task is associated. For more information, see field 375 (PHSTART) in the DFHCICS performance data group.

MNI_ID_PHD_TRANNO (TYPE-P, 4 BYTES)
The task number of the immediately previous task in another CICS system with which this task is associated. For more information, see field 376 (PHTRANNO) in the DFHCICS performance data group.

MNI_ID_PHD_TRANID (TYPE-C, 4 BYTES
The transaction ID (TRANSID) of the immediately previous task in another CICS system with which this task is associated. For more information, see field 377 (PHTRAN) in the DFHCICS performance data group.

MNI_ID_PHD_COUNT (TYPE-A, 4 BYTES)
The number of times there has been a request from one CICS system to

another CICS system to initiate a task with which this task is associated. For more information, see field 378 (PHCOUNT) in the DFHCICS performance data group.

Monitoring sample program DFH$MOLS: support for data for earlier CICS releases

The CICS Transaction Server for z/OS, Version 5 Release 2 release of DFH$MOLS processes monitoring data for earlier supported CICS releases, but the UNLOAD control statement has additional restrictions.

In CICS Transaction Server for z/OS, Version 5 Release 2, DFH$MOLS can process SMF 110 monitoring data records for the following supported releases:

- CICS Transaction Server for z/OS, Version 5 Release 2
- CICS Transaction Server for z/OS, Version 5 Release 1
- CICS Transaction Server for z/OS, Version 4 Release 2
- 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

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.

Changes to the monitoring control table (MCT)

The default value for the MCT Resource Manager Interface (RMI) parameter has changed from RMI=NO to RMI=YES. With the new setting, additional monitoring performance data is collected by default from the resource managers used by your transactions.

You can use CICS Performance Analyzer or a similar application to analyze the performance of your system using this collected data. The RMI parameter is defined in the DFHMCT TYPE=INITIAL macro, which contains the macro instructions for the control section of the MCT. For more information about the RMI parameter, see Control section—DFHMCT TYPE=INITIAL.

Chapter 15. Changes to statistics

CICS statistics records contain changes because of new domains or because of enhancements to CICS. Statistics types are added or removed and some statistics types have new or changed fields. You must recompile application programs using the changed DSECTs.

CEMT and EXEC CICS statistics commands

You can retrieve all the new statistics described in this section using the **EXEC CICS EXTRACT STATISTICS** command, the **EXEC CICS PERFORM STATISTICS RECORD** command, and the **CEMT PERFORM STATISTICS** command.

The options on the **EXEC CICS EXTRACT STATISTICS** command, the **EXEC CICS PERFORM STATISTICS RECORD** command, and the **CEMT PERFORM STATISTICS** command for the obsolete resource types described in this section are no longer valid. For details of what happens if you use the obsolete options, see the command documentation.

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.

Obsolete statistics types

CICS no longer provides statistics for these obsolete resource types.

No statistics types were made obsolete in CICS Transaction Server for z/OS, Version 5 Release 2.

The following changes were made in earlier releases:

Table 6. Discontinued statistics

Resource type	STID Symbolic name	STID Value	Copybook	Description
REQUESTMODEL	STIIIR	111	DFHIIRDS	Statistics for request models
CORBASERVER	STIEJR	114	DFHEJRDS	Statistics for CorbaServer entries
BEAN	STIEJB	115	DFHEJBDS	Statistics for enterprise beans
JVMPOOL	STISJG	117	DFHSJGDS	Statistics for pooled JVMs
JVMPROFILE	STISJR	118	DFHSJRDS	Statistics for profiles for pooled JVMs

The statistics formatting utility program, DFHSTUP

The obsolete BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL resource types can no longer be specified on the IGNORE TYPE and SELECT TYPE control statements for DFHSTUP, and the following reports are no longer provided:

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- CorbaServer: Resource statistics
- CorbaServer: Summary resource statistics
- Enterprise beans: Resource statistics
- Enterprise beans: Summary resource statistics
- JVM pool: Global statistics
- JVM pool: Summary global statistics
- JVM profiles: Resource statistics
- JVM profiles: Summary resource statistics
- Requestmodel: Resource statistics
- Requestmodel: Summary resource statistics

Changed statistics types

Changes have been made to the statistics fields for these CICS statistics types. The old DSECTs are not compatible with the new DSECTs, and you must recompile application programs using the changed DSECTs.

Statistics for private resources and application entry points

CICS now produces different SMF statistics records for private resources for applications that are deployed on platforms. A statistics record for a private resource has information about the application for which the resource was defined. The existing DSECTs for program and library resources, which are used to map the data for public resources, have corresponding new DSECTs that are used to map the data for private resources.

Table 7. DSECTs for public and private resources

Resource type	Statistics command keyword	Existing DSECT for public resources	New DSECT for private resources
LIBRARY resource statistics	LIBRARY	DFHLDBDS (STID value 31)	DFHLDYDS (STID value 32)
Program resource statistics	PROGRAM	DFHLDRDS (STID value 25)	DFHLDPDS (STID value 36)
PROGRAM definition resource statistics	PROGRAMDEF	DFHPGDDS (STID value 120)	DFHPGEDS (STID value 147)
JVM program resource statistics	JVMPROGRAM	DFHPGRDS (STID value 119)	DFHPGPDS (STID value 146)

When you use the **EXEC CICS PERFORM STATISTICS RECORD** command to write resource statistics, use the same resource type keyword whether the resource is public or private. If a resource is a public resource, the public DSECT is used to map its data, and if a resource is a private resource, the private DSECT is used to map its data.

When you use the **EXEC CICS EXTRACT STATISTICS** or **EXEC CICS COLLECT STATISTICS** command to request resource statistics for a specific resource of a resource type that is supported as a private resource, the command operates according to the context in which the task is running.

- If the command is issued from a public program, statistics are returned for the named public resource.

- If the command is issued from a program that is part of an application deployed on a platform, so is running with an application context, the private resources for the application are searched first for the named resource. If a private resource is not found, statistics are returned for the named public resource.
- For the **EXEC CICS EXTRACT STATISTICS** command only, you can specify a different application context to be searched for private resources. When you request statistics for a different application, if a private resource is not found for that application, no statistics are returned.

Programs that are declared as application entry points are identified by a field in the DSECTs for public and private program definitions (PROGRAMDEF statistics keyword) and JVM programs (JVMPROGRAM keyword). When interval statistics, end-of-day statistics, requested statistics, requested reset statistics, or unsolicited statistics are produced for a program definition or JVM program that is declared as an application entry point, two statistics records are written, one mapped by the DSECT for public resources, and one mapped by the DSECT for private resources. For the program statistics that are produced by the loader domain (PROGRAM keyword), application entry points are not identified, and only one private program statistics record is written.

When you use the **EXEC CICS EXTRACT STATISTICS** or **EXEC CICS COLLECT STATISTICS** command to return statistics for a specified program that is declared as an application entry point, only one statistics record is returned. If the command is issued in or for an application context, and the program was defined as a private resource for the application, the DSECT for private resources is used to format the data, even if the program has currently been promoted to a public program in order to make the application entry point available.

The statistics formatting utility program DFHSTUP produces separate reports for private resources. DFHSTUP lists programs that are defined as application entry points twice, in both the report for public program definitions or JVM programs, and the report for private program definitions or JVM programs. The sample statistics utility program, DFH0STAT, does not report any private resources or identify programs that are declared as application entry points.

Loader domain global statistics (DFHLDGDS)

Because program load requests can now run on multiple TCBs, rather than always being single-threaded through the RO TCB, you might see an increase in the number of waits recorded in the CICS loader domain global statistics. The fields “Waiting requests” (LDGWLR) and “Requests that waited” (LDGWTDLR) count the number of loader domain requests that are currently waiting, or waited in the past, for the loader domain to complete an operation on the program on behalf of another task. A wait is recorded if a program load request has to wait because the program is being loaded by another task that is running on an open TCB. An increase in the number of waits for this reason can be expected now that CICS can carry out program load operations on open TCBs, and this increase does not imply a decrease in throughput for your applications.

Dispatcher statistics (DFHDSGDS)

The removal of the JM, J8, and J9 TCB modes has resulted in significant changes to the dispatcher statistics provided by the DFHDSGDS copybook. Because of the extent of the changes, the previous STID value for the dispatcher statistics, 60, has been made obsolete and is replaced by a new STID value, 62. The STID symbolic name and the DSECT name are unchanged:

Table 8. Changed statistics

Resource type	STID Symbolic name	STID Value	Copybook	Description
DISPATCHER	STIDS	Was 60, Now 62	DFHDSGDS	CICS dispatcher statistics

Other changed statistics types

Table 9. Changed statistics types

Copybook	Functional area
DFHA17DS	File resource statistics
DFHECGDS	EVENTBINDING global statistics
DFHEPGDS	Event processing global statistics
DFHLDGDS	Loader domain global statistics
DFHMNGDS	Monitor global statistics
DFHPGDDS	Program statistics
DFHPGRDS	JVM program statistics
DFHSJSDS	JVMSERVER resource statistics
DFHSMDDS	Storage manager domain subpools statistics
DFHSMSDS	Storage manager global statistics
DFHSMTDS	Storage manager task subpools statistics
DFHSORDS	TCP/IP service resource statistics
DFHTSGDS	Temporary storage global statistics
DFHWBRDS	URIMAP resource statistics
DFHPIRDS	Pipeline manager statistics

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 Reference -> Utilities.

New statistics types

New CICS statistics types are added because of new domains or because of enhancements to CICS.

Table 10. New statistics types

Copybook	Functional area
DFHEPRDS	EP adapter resource statistics
DFHLDPDS	Program loader statistics for private programs
DFHLDYDS	LIBRARY resource statistics for private LIBRARY resources
DFHPGEDS	PROGRAM resource definition statistics for private programs

Table 10. New statistics types (continued)

Copybook	Functional area
DFHPGPDS	JVM program resource statistics for private Java programs

New values in DFHSTIDS (statistics record identifiers)

The new DSECTs 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 for CICS Transaction Server for z/OS, Version 5 Release 2 are as follows:

```
STILDY   32    DFHLDYDS   LIBRARY resources - private
STILDP   36    DFHLDPDS   Private Loader (Resid) id
STIPGP   146   DFHPGPDS   JVM programs - private
STIPGE   147   DFHPGEDS   Program definitions - private
```

The new value for CICS Transaction Server for z/OS, Version 4 Release 2 was as follows:

```
STIEPR   144   DFHEPRDS   EPADAPTERs (Resource) id
```

New 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*.

The statistics formatting utility program, DFHSTUP

The statistics formatting utility program now formats additional statistics reports for the new statistics. You can include or exclude the new statistics reports by using these keywords on the SELECT TYPE and IGNORE TYPE parameters:

- EPADAPTER
- JVMPROGRAM - now reports private as well as public resources
- LIBRARY - now reports private as well as public resources
- PROGRAM - now reports private as well as public resources
- PROGRAMDEF - now reports private as well as public resources

DFHSTUP produces separate reports for private resources for applications that are deployed on platforms. These reports are located after the report for public resources of the same type. DFHSTUP lists programs that are defined as application entry points twice, in both the report for public program definitions or JVM programs, and the report for private program definitions or JVM programs.

Chapter 16. Changes to sample programs

In each CICS release, check for changes to the samples provided to demonstrate the use of different CICS functions. New samples might be provided and existing samples modified or withdrawn. If you have custom programs or other items based on the samples, update them to reflect changes in the samples. Unless otherwise stated, sample programs are supplied in the SDFHSAMP library.

There were no changes to the sample programs in CICS TS 5.2.

The following changes were made in earlier CICS releases:

DFH0EPAC (COBOL) and DFH0STEP, event processing samples

The sample custom EP adapter is provided in the COBOL language. It is shipped as source code in the CICS SDFHSAMP library, and also as a load module.

- The source code and load module are named `DFH0EPAC`.
- 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 the `DFH0EPAC` program.
- The sample program `DFH0EPAC` formats most data types. However, as a COBOL language sample, `DFH0EPAC` cannot format binary floating point (BFP) or decimal floating point (DFP) items; in this case, `DFH0EPAC` fills the data area with asterisks (*).

The sample custom EP adapter demonstrates how a custom EP adapter handles synchronous and asynchronous emission events. This is achieved by honoring the `EPAP-RECOVER` flag setting in the `DFHEP.ADAPTPARM` container by checking whether the temporary storage queue is recoverable or not.

Your custom EP adapter programs must now also honor the `EPAP_RECOVER` flag in the DFHEP.ADAPTPARM container to support synchronous event emission.

DFH0STEP is changed to collect and print EPADAPTER statistics and to support the new command options for the **`INQUIRE CAPTURESPEC`** command.

The DFH0EPAC sample has been changed to set the default CICS temporary storage queue (TSQ) for system events to *userid*.SYSTEM. Your custom EP adapter programs must also be changed to define a default TSQ for system events.

DFH$APDT, adapter tracking sample

A new sample task-related user exit (TRUE) program, DFH$APDT, has been added. You can use the DFH$APDT sample TRUE to learn how to use adapter data fields for transaction tracking.

DFH$DB2, JDBC sample group

The JDBC samples CICSDataSource, CICSDataSourcePublish, CICSDataSourceRetract and CICSjdbcDataSource samples have been removed from zFS, and the corresponding resource definitions removed from the sample group DFH$DB2.

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DFH$DCTD, DFH$DCTR, and DFH$DCTS, destination control table samples

The sample programs associated with the DFHDCT macro, DFH$DCTD, DFH$DCTR, and DFH$DCTS, are no longer supplied by CICS, because the DFHDCT macro has been removed.

DFH$EJB and DFH$EJB2 samples

The EJB Hello World sample is removed from group DFH$EJB as part of the removal of support for EJB. The EJB Bank Account sample is removed from group DFH$EJB2 for the same reason.

DFH$IIOP

The IIOP Banking sample is removed from group DFH$IIOP as part of the removal for IIOP support.

DFH$PCTA, XPCTA global user exit program sample

This sample program tests whether an abend was caused by the application program trying to overwrite CICS-key storage while running in user key. It is now updated to include the ETDSA, GCDSA, and GUDSA.

DFHWLP JVM server samples

DFHWLP is a sample JVMSERVER resource definition that is in a group called DFH$WLP. It points to a sample JVM profile called DFHWLP that configures a JVM server to provide a web container for running servlets and JSP pages.

FILEA sample application programs for assembler language

The following sample application programs for assembler language are changed to AMODE(64) and use relative addressing:

- DFH$AALL
- DFH$ABRW
- DFH$ACOM
- DFH$AMNU
- DFH$AREN

The following sample application program for assembler language is changed to use relative addressing, but is AMODE(31) because it demonstrates the use of the HANDLE CONDITION LABEL command:

- DFH$AREP

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 237 lists messages and abend codes that have been removed, changed, and added for CICS Transaction Server for z/OS, Version 5 Release 2.

There were no other changes to problem determination in CICS Transaction Server for z/OS, Version 5 Release 2.

The following changes were made in earlier releases:

New component codes

The following component codes are added to support new functions in CICS Transaction Server:

Component code	Component keyword	Description
MP	MANAGEDPLAT	Managed platform domain

You can use the component codes to specify the following options:

- The level of standard and special tracing in each component. You specify standard and special tracing by any of the following methods:
  - The CETR transaction.
  - The **STNTRxx** and **SPCTRxx** system initialization parameters.
  - The **INQUIRE TRACETYPE** and **SET TRACETYPE** system programming commands. If a component keyword is present, you can use it instead of the component codes in these commands.
- The areas of CICS storage that you want to be included in a formatted dump and the amount of data that you want formatted.
- 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 the global trap exit DFHTRAP

The global trap exit DFHTRAP can be invoked when the CICS trace domain is called to write a trace entry. DFHTRAP is intended for use only with the guidance of IBM Service personnel.

DFHTRAP now runs in AMODE(64). It includes new fields that you use to trace data in 64-bit storage (above the bar). The DFHTRAP work area is now allocated in 64-bit storage.

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Chapter 18. Changes to security

When you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2, note these changes to security.

APAR PI28039 update

The default setting for the **ENCRYPTION** system initialization parameter, **ENCRYPTION=STRONG**, no longer allows the use of the SSL version 3.0 security protocol. The minimum security protocol allowed with **ENCRYPTION=STRONG** is now TLS version 1.0.

If you have clients that still require the SSL version 3.0 protocol, you can enable support for that protocol by specifying the system initialization parameter **ENCRYPTION=SSLV3** for the CICS region. SSL 3.0 should only be used for a migration period while clients that still require this protocol are upgraded. Any connections that require encryption automatically use the TLS protocol, unless the client specifically requires SSL 3.0.

Security for CICS bundles

For resources that are dynamically created by CICS bundles, no additional CICS command security checks and resource security checks take place for those resource types, either when the resources are dynamically created at bundle installation time, or when you manipulate the resources by making changes to the CICS bundle. You need authority only to perform the actions on the CICS bundle, or for bundles that are installed with applications and platforms, to perform the actions on the application or platform with which the CICS bundle was deployed. However, CICS command security and resource security for the individual resource types do apply when you inquire on the dynamically created resources, or if you manipulate the dynamically created resources directly.

If you used CICS bundles in earlier CICS releases, check the security permissions that you gave to users for those bundles. Depending on how you set up security for CICS bundles, users with authority to act on individual CICS bundles might now be able to act on new or existing resources that are dynamically created as part of the installation of a bundle. Ensure that the levels of authority for BUNDLE resources are still appropriate.

Permission to make applications and CICS bundles available or unavailable

Operators with UPDATE access for the CLOUD.APPLICATION.*context* security profile now have permission for the new actions to make applications that are deployed on platforms available or unavailable to users, which is required in addition to enabling or disabling them. In releases before CICS TS 5.2, the action of enabling or disabling an application also made it available or unavailable to users, so the new permission is still appropriate for the same operators.

The same situation applies to operators with UPDATE access for a security profile that specifies the BUNDLE resource type and the resource name $*, as described in

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Security for platforms and applications in Administering. These operators can make BUNDLE resources that are created for platforms and applications available and unavailable.

Stand-alone CICS bundles need to be made available or unavailable only if they contain application entry points. Operators with UPDATE access for the security profile for a stand-alone CICS bundle, which specifies the BUNDLE resource type and the name of the BUNDLE resource, can make the resource available or unavailable.

Security for programs declared as application entry points

If you apply security measures to individual PROGRAM resources, for applications that are deployed on platforms, secure the programs that are declared as application entry points, but do not secure other programs in the applications. The security settings that you specify for a program that is part of an application deployed on a platform apply to both public and private programs, and do not take into account the version of the application. Programs that are declared as an application entry point must have a unique PROGRAM resource name in your environment. However, if you secure programs that run at a lower level in the application, programs with the same names might be running in different applications, which can lead to unforeseen consequences. In this situation, a user might have permission to access a program that is declared as an application entry point, but not have permission to access a program that runs at a lower level in the application, because the security settings from another instance of the program name are in effect. Consider the security measures that you apply to a program that is declared as an application entry point program, as applying to the whole application.

Integrated support for SAML

In CICS TS for z/OS, Version 4.2 and CICS TS for z/OS, Version 5.1, support for Security Assertion Markup Language (SAML) was provided in the CICS Transaction Server for z/OS Feature Pack for Security Token Extensions. The functions of that feature pack are now incorporated into CICS itself. You cannot use the feature pack with CICS Version 5.2.

In addition, the following functions are added:

- Support for using a SAML token in a requester application
- Support for adding attributes to a validated SAML token, for use in a requester application
- Support for signing modified SAML tokens
- Support for using the transaction channel for SAML containers to enable verified SAML information to be available to the whole application without the need to restructure the application.
- Support for configuring the clock skew time to allow flexibility in the time validity of SAML tokens

The SAML output containers have been enhanced with additional information extracted from the SAML token.

The SAML IVP has been enhanced to support easier validation of customer defined tokens.

Support for Kerberos

Previously, support for Kerberos tokens was provided remotely by using a web service. You can now validate a Kerberos token with a local external security manager (ESM) by using the CICS API. For more information, see VERIFY TOKEN. If your ESM is RACF, support is provided for Kerberos Version 5 and Generic Security Services. For the Kerberos support level of other ESMs, refer to their documentation.

Support is provided for validating Kerberos tokens in inbound web service requests. Optionally, the target application can also be set to run under the user ID associated with the client principal in the Kerberos token. To use Kerberos token validation, set the mode of the <authentication> element to the new value `basic-kerberos`. For more information, see The <authentication> attribute.

Extended support for cryptographic standards

The enhancements to support NIST SP800-131A compliant cipher suites and certificates, which were supplied in APAR PM97207 for CICS TS for z/OS Version 5.1 are now incorporated into CICS itself. For more information, see Making your CICS TS system conformant with NIST SP800-131A.

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 Category 1 transactions. Also see the DFH$CAT1 CLIST, supplied in the SDFHSAMP library.

The new category 1 transactions are as follows:

- CEPF
- CFCR
- CISP
- CIS1
- CJLR
- CJSL
- CRST

Changes to command and resource security

New resource types, their resource identifiers, and associated commands are subject to command security checking and resource security checking.

No new resource types were added in CICS Transaction Server for z/OS, Version 5 Release 2.

The following changes were made in earlier releases:

Command security

Command security applies if CMDSEC(YES) is specified for the CICS region.

The following new CICS resource identifiers and associated commands are subject to command security checking:

Table 11. New CICS resource identifiers subject to command security checking

Resource identifier	Related CICS commands
EPADAPTERSET	**INQUIRE EPADAPTERSET** **SET EPADAPTERSET**
EPADAPTINSET	**INQUIRE EPADAPTINSET**

The new resource identifiers can be specified as RESID values when you specify the resource type SPCOMMAND on the QUERY SECURITY command.

The existing resource identifier SECURITY for defining resource profiles to RACF now includes the new EXEC CICS and CEMT PERFORM SSL REBUILD commands. They are subject to command security checking with RESOURCE_TYPE(SECURITY) and ACCESS (UPDATE).

Command security checking for DFH0STAT, sample statistics utility program

DFH0STAT uses the **INQUIRE TEMPSTORAGE** command, introduced in CICS TS for z/OS, Version 4.2. This command is subject to command security checking. If command security checking is active in a CICS region, user IDs that run DFH0STAT must have READ access to the **INQUIRE TEMPSTORAGE** command, through the RACF resource class that is specified on the **XCMD** system initialization parameter. Give access to user IDs that run the STAT transaction, and also to user IDs under which DFH0STAT is called during CICS shutdown by the PLTSD process.

Resource security

Resource security applies if RESSEC(YES) is specified for the CICS region.

The following new resource types are subject to CICS resource level security checking:

Table 12. New CICS resource types subject to resource security checking

Resource type	RACF-provided resource classes	Profile name
EPADAPTERSET	RCICSRES, WCICSRES	EPADAPTERSET.*name*

The new resource identifiers can be specified as RESTYPE values on the QUERY SECURITY command.

Security for platforms and applications

You can secure resources for applications that are deployed on platforms by creating RACF security profiles for CICSPlex SM to cover platforms and applications in a CICSplex.

Security for platforms and applications is set up in a similar way to security for other CICSPlex SM components. You control access to a specific set of views (and their associated action commands) by identifying the set in a security profile. With these security profiles, you can give users authority to install, enable or disable, make available or unavailable, inquire on, or discard platforms and applications, and ensure that unauthorized users cannot create and administer these resources.

When you give a user authority to perform an action on a platform or application, you also give them authority to perform the same action on the dynamically generated resources for the platform or application. For example, a user who has authority to enable an application also has authority to enable the CICS bundles for the application that were installed in CICS regions in all the platforms in the CICSplex. CICS command and resource security checks, and simulated CICS security checking in CICSPlex SM, are not carried out when you operate on CICS bundles through an application or platform.

You can secure a platform and its deployed applications by setting up security profiles with the following function and type combinations:

CLOUD.DEF.*context*
: This security profile covers the PLATDEF and APPLDEF resource tables, which contain the definitions for platforms and applications. *context* is the specific or generic name of the CICSplex that is covered by the security profile.

  Users with UPDATE access for this security profile can create, update, and remove definitions for platforms and applications in the CICSPlex SM data repository. Users with READ access can view those definitions in the CICSPlex SM data repository.

CLOUD.PLATFORM.*context*
: This security profile covers the installation of PLATDEF resources and operations on PLATFORM resources. It also allows users to view management parts (MGMTPART resources). *context* is the specific or generic name of the CICSplex that is covered by the security profile.

  Users with ALTER access for this security profile can install platforms in the CICSplex and discard them. (To install a platform, users also need READ access for the CLOUD.DEF profile that covers the PLATDEF resource.) Users with UPDATE access can enable and disable platforms. Users with UPDATE access can also add CICS regions to region types in the platform and remove CICS regions from region types in the platform. Users with READ access can view PLATFORM resources and MGMTPART resources. These permissions apply for all platforms that exist in the CICSplex.

CLOUD.APPLICATION.*context*
: This security profile covers the installation of APPLDEF resources and operations on APPLCTN resources. *context* is the specific or generic name of the CICSplex that is covered by the security profile.

  Users with ALTER access for this security profile can install applications in the CICSplex and discard them. (To install an application, users also need READ access for the CLOUD.DEF profile that covers the APPLDEF resource.) Users with UPDATE access can enable and disable applications and make them available or unavailable. Users with READ access can view APPLCTN resources. These permissions apply for all applications in all platforms that exist in the CICSplex. If you require different security permissions for certain applications, use a different CICSplex to host the platform where you deploy the application.

Note: These security profiles are only checked in the maintenance point CMAS. Security checks are reported by message EYUCR0009I in the EYULOG of the maintenance point CMAS. To receive message EYUCR0009I for violations you must set the CICSPlex SM system parameter (EYUPARM) **SECLOGMSG** to YES. For more information about **SECLOGMSG**, see CICSPlex SM system parameters in Installing.

Although the CLOUD security profiles cover actions on the dynamically generated resources for the platform or application, users may still carry out a limited set of actions directly on individual resources in the CICS regions where they are installed. CICS command and resource security checks, and simulated CICS security checking in CICSPlex SM, do apply when you perform an action directly on an individual CICS bundle, or a resource defined in a CICS bundle, that was created when you installed a platform or application.

If you apply security measures to individual PROGRAM resources, for applications that are deployed on platforms, secure the programs that are declared as application entry points, but do not secure other programs in the applications. The security settings that you specify for a program that is part of an application deployed on a platform apply to both public and private programs, and do not take into account the version of the application. Programs that are declared as an application entry point must have a unique PROGRAM resource name in your environment. However, if you secure programs that run at a lower level in the application, programs with the same names might be running in different applications, which can lead to unforeseen consequences. In this situation, a user might have permission to access a program that is declared as an application entry point, but not have permission to access a program that runs at a lower level in the application, because the security settings from another instance of the program name are in effect. Consider the security measures that you apply to a program that is declared as an application entry point program, as applying to the whole application.

If you used CICS bundles in earlier CICS releases, check the security permissions that you gave to users for those bundles. Depending on the way in which you set up security for CICS bundles, users with authority to take actions on individual CICS bundles might now be able to act on resources that are dynamically created as part of the installation of a bundle. Ensure that the levels of authority for BUNDLE resources are still appropriate.

Security updates to monitor RACF Event Notifications (ENF)

CICS now monitors for RACF type 71 Event Notifications (ENFs) that are sent when specific RACF commands affect the group authorization of a user. Notification of a change to the user ID overrides any setting that is specified in the **USRDELAY** system initialization parameter. Therefore, review your **USRDELAY** settings.

- For z/OS 1.11 or later, these RACF commands are **ALTUSER** with the REVOKE option, **CONNECT**, and **REMOVE**.
- For z/OS 1.13 with the PTF for APAR OA39486 applied, or later, these RACF commands are **ALTUSER** with the REVOKE option, **CONNECT**, **REMOVE**, **DELGROUP** and **DELUSER**.

This change does not apply to a user ID that is signed on to a local region (for example, a TOR that uses the CESN transaction to sign on). In this situation, CICS is not notified of an ENF 71 event code.

If you do not want CICS to monitor for RACF type 71 ENF events, that is, how CICS behaved in releases before CICS TS for z/OS, Version 4.1, you can use the new **RACFSYNC** system initialization parameter to specify this behavior. Use this parameter only under direction from IBM Service, and only as an aid to migration.

RACFSYNC={YES|NO|RACFDB2SYNC}

RACF sends a type 71 ENF signal to listeners when a **CONNECT**, **REMOVE**, or **REVOKE** command changes a user's resource authorization. When CICS receives a type 71 ENF event for a user ID, all cached user tokens for the user ID are invalidated, irrespective of the setting of the **USRDELAY** parameter. Subsequent requests from that user ID force a full RACF RACROUTE VERIFY request, which results in a refresh of the user's authorization level. User tokens for tasks that are currently running are not affected.

Note: Specify the **RACFSYNC=NO** parameter only under direction from IBM Service.

YES CICS listens for type 71 ENF events.

NO CICS does not listen for type 71 ENF events.

RACFDB2SYNC
CICS listens for type 71 ENF events. In addition to the function provided by specifying YES, CICS will also make DB2 threads for the associated userid issue a full signon when they are next reused.

Restrictions: You can specify the **RACFSYNC** parameter only in the system initialization table (SIT), the **PARM** parameter of the **EXEC PGM=DFHSIP** statement, or the SYSIN data set.

Changes to the EXEC CICS VERIFY PASSWORD and EXEC CICS VERIFY PHRASE commands

When you specify the new **SECVFYFREQ** system initialization parameter for the CICS region, CICS ensures that users who log on to CICS by a method that uses password verification, including the **EXEC CICS VERIFY PASSWORD** or **EXEC CICS VERIFY PHRASE** command, still have their records updated in RACF at least once a day.

The RACROUTE REQUEST=EXTRACT macro does not make RACF record the login as the last access for the user ID, or write user statistics for the user ID. User IDs that are only used with login processes involving password verification can therefore appear to be unused, and could be revoked.

If you specify the system initialization parameter **SECVFYFREQ=USRDELAY** for the CICS region, CICS enforces a full verification request at least once a day for each user ID that is used to log on to the CICS region. The full verification request using the RACROUTE REQUEST=VERIFYX macro makes RACF record the date and time of last access for the user ID, and write user statistics. The behavior of your applications is the same whether or not you specify the **SECVFYFREQ** system initialization parameter. CICS checks the user ID at user login and replaces the password verification request with a full verification request when necessary.

Because the full verification request has a higher processor cost and response time than password verification, you might notice a slight performance impact when you specify the **SECVFYFREQ** system initialization parameter. The extent of the performance impact depends on your setting for the **USRDELAY** system initialization parameter for the CICS region. When you specify **SECVFYFREQ**, CICS makes a full verification request for a user ID when the user logs on after the **USRDELAY** interval has expired. CICS also applies a maximum limit of one day between full verification requests at user login. If your **USRDELAY** parameter is set to less than 1440 minutes (1 day), a full verification request takes place at user login more frequently than once a day.

Part 2. Upgrading CICS Transaction Server

To upgrade your CICS regions to CICS Transaction Server for z/OS, Version 5 Release 2, 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.

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Chapter 19. 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 5 Release 2.

Important: Before you upgrade you must install the CICS TS for z/OS V5.2 - activation module or CICS TS for z/OS Value Unit Edition V5.2 - activation module for the version of CICS that you are going to use.

You must also add the SDFHLIC or SDFHVUE library in the STEPLIB of the CICS TS JCL. The SDFHLIC or SDFHVUE library must be APF-authorized. If you use coupling facility data table servers, temporary storage servers, region status servers, or named counter servers, you must also add the SDFHLIC or SDFHVUE library to the STEPLIB of the JCL for each of the servers.

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 5 Release 2 versions of the DFHRMUTL and DFHCCUTL utility programs and the sample jobs.
3. When you start the CICS region for the first time after 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.

For the instructions to set up and configure conversions supported through the operating system services, see z/OS Unicode Services User's Guide and Reference.

If z/OS conversion services are not enabled, CICS issues a message. If such a message is issued when starting a CICS region that is expected to use the z/OS conversion services, an IPL is necessary to enable these services.

If you do not need the z/OS conversion services, you can suppress that message.

To discover the status of z/OS conversion services after an IPL, use one of the following commands from an MVS console:

- `D UNI`

  This command shows whether z/OS conversion services were enabled.
- `D UNI,ALL`

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This command shows whether z/OS conversion services were enabled and which conversion the system supports.

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 153.

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.

```
//JOBNAME  JOB 1,userid,
//         NOTIFY=userid,CLASS=n,MSGLEVEL=(n,n),MSGCLASS=n
/*JOBPARM SYSAFF=sysid
//*  Remove Old Language Environment group
//CSDUP1   EXEC PGM=DFHCSDUP,REGION=2M,PARM='CSD(READWRITE)'
//STEPLIB  DD DSN=CICSTS52.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD DSN=CICSTS52.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=CICSTS52.CICS.SDFHLOAD,DISP=SHR
//DFHCSD   DD DSN=CICSTS52.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN    DD DSN=SYS1.ZOS113.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.

About this task

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.

Procedure

- 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.
- The safest way to upgrade your definitions 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.
- If the CICS region uses CICSPlex SM, manually upgrade any of the dynamically created CICSPlex SM resource definitions that you modified in your previous

release, using the equivalents in Version 5.2. The dynamically created resource definitions and their attributes are in the following members of the SEYUSAMP sample library:

- EYU$CDEF contains the default resource definitions for a CMAS.
- EYU$MDEF contains the default resource definitions for a MAS.
- EYU$WDEF contains the default resource definitions for a WUI server.

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

Program DFHD2EDF is now defined as CONCURRENCY(THREADSAFE). Therefore, DFH$CSDU contains the following command:

```
ALTER PROGRAM(DFHD2EDF) GROUP(*) CONCURRENCY(THREADSAFE)
```

When you run DFHCSDUP, the attribute is added to the definitions of program DFHD2EDF in all groups. Other attributes not mentioned in DFH$CSDU are unchanged.

DSA size limits

It is not advisable to set the size of individual dynamic storage areas (DSAs), and usually it is not necessary. However, it is possible to set the size of some DSAs by using the **CDSASZE**, **UDSASZE**, **RDSASZE**, **ECDSASZE**, **EUDSASZE**, **ESDSASZE**, and **ERDSASZE** system initialization parameters.

For example, **CDSASZE** sets the size of the CICS dynamic storage area (CDSA), and **ECDSASZE** specifies the size of the extended CICS dynamic storage area (ECDSA). The default value for these parameters is 0, indicating that the size of the DSA can change dynamically. If you specify a nonzero value, the DSA size is fixed.

If you specify DSA size values that in combination do not allow sufficient space for the remaining DSAs, CICS fails to initialize.

- The limit on the storage available for the DSAs in 24-bit storage (below 16 MB) is specified by the **DSALIM** system initialization parameter. You must allow at least 256K for each DSA in 24-bit storage for which you have not set a size.
- The limit on the storage available for the DSAs in 31-bit storage (above 16 MB but below 2 GB) is specified by the **EDSALIM** system initialization parameter. You must allow at least 1 MB for each DSA in 31-bit storage for which you have not set a size.

You cannot set the size of individual DSAs in 64-bit storage; that is, in the above-the-bar DSA (GDSA).

CSD compatibility between different CICS releases

You can share the CICS system definition data set (CSD) between different CICS releases by using the appropriate compatibility groups.

Most releases of CICS change 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. If you share the CSD between different CICS releases, these compatibility groups are needed to support earlier releases.

After you upgrade 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. Table 13 shows you which DFHCOMP*x* groups to include for each earlier release.

Do not attempt to share a CSD with a CICS region that is running at a higher release 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 4.1 region with a CSD that is upgraded to CICS TS 5.2, add the DFHCOMPG compatibility group, followed by the DFHCOMPF compatibility group, followed by the DFHCOMPE compatibility group, to the end of your group list.

Table 13. Required compatibility groups for earlier releases of CICS

	CICS TS 5.2 CSD	**CICS TS 5.1 CSD**	**CICS TS 4.2 CSD**	**CICS TS 4.1 CSD**	**CICS TS 3.2 CSD**	**CICS TS 3.1 CSD**
Shared with CICS TS 5.2	None	Do not share	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 5.1	DFHCOMPG	None	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 4.2	DFHCOMPG DFHCOMPF	DFHCOMPF	None	Do not share	Do not share	Do not share
Shared with CICS TS 4.1	DFHCOMPG DFHCOMPF DFHCOMPE	DFHCOMPF DFHCOMPE	DFHCOMPE	None	Do not share	Do not share
Shared with CICS TS 3.2	DFHCOMPG DFHCOMPF DFHCOMPE DFHCOMPD	DFHCOMPF DFHCOMPE DFHCOMPD	DFHCOMPE DFHCOMPD	DFHCOMPD	None	Do not share

Table 13. Required compatibility groups for earlier releases of CICS (continued)

	CICS TS 5.2 CSD	CICS TS 5.1 CSD	CICS TS 4.2 CSD	CICS TS 4.1 CSD	CICS TS 3.2 CSD	CICS TS 3.1 CSD
Shared with CICS TS 3.1	DFHCOMPG DFHCOMPF DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPF DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPD DFHCOMPC	DFHCOMPC	None

Compatibility group DFHCOMPG

Group DFHCOMPG is required for compatibility with CICS Transaction Server for z/OS, Version 5 Release 1.

Table 14. Contents of compatibility group DFHCOMPG

Resource type	Name
PROGRAM	DFHPGADX DFHPGAHX DFHPGALX DFHPGAOX DFHPIEP

Compatibility group DFHCOMPF

Group DFHCOMPF is required for compatibility with CICS Transaction Server for z/OS, Version 4 Release 2.

Table 15. Contents of compatibility group DFHCOMPF

Resource type	Name
FILE	DFHADEM
MAPSET	DFHADMS
PROFILE	DFHCICSI

Table 15. Contents of compatibility group DFHCOMPF (continued)

Resource type	Name
PROGRAM	DFHADDRM DFHADJR DFHADWB0 DFHADWM0 DFHADWM1 DFHADWM2 DFHADWM3 DFHADWM4 DFHADWM5 DFHADWM6 DFHADWT0 DFHADWT1 DFHADWT2 DFHADWT3 DFHADWT4 DFHADWT5 DFHCHS DFHDLLOD DFHD2EDF DFHEDFX DFHEIGDS DFHEITAB DFHEITBS DFHEITSZ DFHEJDNX DFHEJEP DFHEJITL DFHIIRRS DFHJVCVT DFHLETRU DFHPIVAL DFHSJGC DFHSJPI DFHSMTAB DFHXOPUS DFJCICS DFJCICSB DFJCZDTC DFJDESN DFJIIRP DFJIIRQ DFJ1ESN DFJ1ICS DFJ1ICSB DFJ1ZDTC

Table 15. Contents of compatibility group DFHCOMPF (continued)

Resource type	Name
TRANSACTION	CBAM CDFS CEHP CEHS CEJR CEMT CEOT CESF CESL CESN CEST CETR CIEP CIRP CIRR CJGC CJPI CLQ2 CLR2 CLS2 CLS3 CLS4 CMPX CMSG CPMI CQPI CQPO CREA CREC CRSQ CRSR CRSY CRTE CSAC CSHR CSMI CSM1 CSM2 CSM3 CSM5 CSNC CSSF CVMI CXCU CXRT

Compatibility group DFHCOMPE

Group DFHCOMPE is required for compatibility with CICS Transaction Server for z/OS, Version 4 Release 1.

Table 16. Contents of compatibility group DFHCOMPE

Resource type	Name
PROGRAM	DFHMIRS DFHCCNV DFHUCNV DSNTIAC DSNTIA1 DFHEDP DFHDBAT DFHDBUEX DFHPIEP

Compatibility group DFHCOMPD

Group DFHCOMPD is required for compatibility with CICS Transaction Server for z/OS, Version 3 Release 2.

Table 17. Contents of compatibility group DFHCOMPD

Resource type	Name
TDQUEUE	CPLD CPLI
PROGRAM	DFHPIVAL DFHSJJML IXMI33DA IXMI33D1 IXMI33IN IXMI33UC IXM4C56
TRANSACTION	CJMJ

Compatibility group DFHCOMPC

Group DFHCOMPC is required for compatibility with CICS Transaction Server for z/OS, Version 3 Release 1.

Table 18. Contents of compatibility group DFHCOMPC

Resource type	Name
PROGRAM	IXM4C53

Upgrading CICS Explorer

You must upgrade the CICS Explorer to Version 5.2 before you can connect to CICS regions at CICS TS Version 5.2. When you upgrade CICS Explorer you can use it to work with CICS TS 5.2 regions, and also with other CICS TS regions that are not yet upgraded.

For CICS Explorer Version 5.1.1 and later, you can use the facilities that the Eclipse platform provides to update your CICS Explorer, or other software, or add new software plug-ins, such as CICS Tools.

The update site for the CICS Explorer is already coded in the product. The site address is displayed on the Installed Software page in the Software Updates window. If you choose not to use the composite update site, you must specify the

address of your preferred update site, which can be either on your local workstation or a remote location. You can add multiple update sites, each containing one or more software downloads.

For CICS Explorer versions earlier than Version 5.1.1, you must install a new copy of CICS Explorer. You cannot upgrade in the way described earlier because earlier versions of CICS Explorer use a different version of Eclipse than CICS Explorer Version 5.1.1. Before you install the new copy of CICS Explorer, it is advisable to back up your CICS Explorer workspace so that you can restore the workspace to a previous version, if required.

For more information about upgrading CICS Explorer, see Updating and installing software in the CICS Explorer product documentation.

 Taking a backup of the CICS Explorer workspace in Installing

Chapter 20. Upgrading application programs

CICS translator support for pre-Language Environment compilers is withdrawn. Runtime support is provided for existing application programs that were developed using these compilers, except for OS/VS COBOL and OO COBOL programs, which do not have runtime support.

Withdrawal of support for pre-Language Environment compilers

CICS translator support is withdrawn for the following compilers:

- OS/VS COBOL (5740-CB1, 5740-LM1, and 5734-CB4)
- VS COBOL II (5668-958 and 5688-023)
- OS PL/I Version 1 (5734-PL1)
- OS PL/I Version 2 (5668-910 and 5668-909)
- SAA AD/Cycle C/370™ (5688-216)

For details of the compilers that are supported by CICS, see High-level language support in 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 compilers that conform to Language Environment:

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

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The CICS translators ignore these translator options and issue a return code 4 warning message.

Runtime support for programs developed using pre-Language Environment compilers

Although application program development support for 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 compilers that conforms to Language Environment.

Applications compiled and linked with pre-Language Environment compilers usually run successfully using the runtime support provided by Language Environment. These applications do not usually need to be recompiled or re-link-edited. If required, adjust Language Environment runtime options to allow these applications to run correctly. For more information, see the z/OS Language Environment Run-Time Application Migration Guide and the migration information for the language in use. 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.

Runtime libraries provided by Language Environment replace the runtime libraries that were provided with older compilers such as VS COBOL II, OS PL/I, and C/370. The runtime libraries provided with pre-Language Environment compilers are not supported. Language libraries, other than the Language Environment libraries, must not be present in your CICS startup JCL.

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 run 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.

Chapter 21. Upgrading file control

The use of VSAM nonshared resources (NSR) is not supported with transaction isolation, so if CICS writes to files where the VSAM data set associated with the file uses NSR, you must change your resource definitions to avoid receiving an AFDK abend. Also, the maximum number of LSR pools available in a CICS region is increased from 8 to 255.

VSAM nonshared resources (NSR)

If transaction isolation is active, and a program attempts to issue a file control write or update request against a file where the VSAM data set associated with the file uses VSAM nonshared resources (NSR), the program abends with the abend code AFDK. Requests to read or browse the file that do not attempt to update the file in any way do not result in an abend.

To avoid this situation, choose one of the following solutions:

- If the file requires transaction isolation, change the FILE resource definition so that the file uses either VSAM record-level sharing (RLS) or VSAM local shared resources (LSR). RLSACCESS(YES) specifies that CICS opens the file in RLS mode. LSRPOOLNUM(*number*) specifies the number of an LSR pool to be used by the VSAM data set associated with the file.
- If the file does not require transaction isolation, change the TRANSACTION resource definition to specify ISOLATE(NO). Setting this value causes the individual transaction to run without transaction isolation.

Increased number of LSR pools

LSR pools are an effective means to improve performance when accessing VSAM files, and increasing the number of pools provides a method of optimizing your system. In CICS TS for z/OS, Version 4.1 and earlier releases, you specified the number of the LSR (local shared resource) pool in FILE and LSRPOOL resource definitions using the LSRPOOLID attribute, which has values in the range 1 - 8. From CICS TS for z/OS, Version 4.2, the value specified for LSRPOOLID in existing FILE and LSRPOOL resource definitions is transferred to the new option LSRPOOLNUM, which has values in the range 1 - 255.

Existing programs that use the commands **EXEC CICS CREATE FILE**, **EXEC CICS CREATE LSRPOOL**, **EXEC CICS CSD DEFINE FILE**, **EXEC CICS CSD DEFINE LSRPOOL**, **EXEC CICS CSD ALTER FILE**, or **EXEC CICS CSD ALTER LSRPOOL** with the LSRPOOLID attribute continue to work correctly. CICS substitutes the value in LSRPOOLNUM for the value in LSRPOOLID when the command is run.

Batch jobs that use the CICS system definition utility program (DFHCSDUP) and issue the commands **ALTER FILE**, **DEFINE FILE**, **ALTER LSRPOOL**, or **DEFINE LSRPOOL** with the LSRPOOLID attribute continue to work correctly. When compatibility mode is used, CICS uses the value in the LSRPOOLID attribute as the number of LSR pools. When compatibility mode is not used, CICS substitutes the value in LSRPOOLNUM for the value in LSRPOOLID.

CICS TS for z/OS, Version 4.1 and earlier releases only recognize the LSRPOOLID attribute, which has values in the range 1 - 8. You can use the compatibility mode

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in CEDA and DFHCSDUP to set a value for LSRPOOLID if you are sharing the CSD with earlier releases of CICS. If you specify a value for LSRPOOLNUM, it is only used in CICS TS 5.2.

In CICSPlex SM Business Application Services (BAS), if you install a FILE or LSRPOOL definition that specifies an LSR pool number greater than 8 into CICS TS for z/OS, Version 4.1 or earlier, the default value of 1 is used. You can use CICSPlex SM to specify a number in the range 1 - 8.

Chapter 22. Upgrading Business Transaction Services (BTS)

When you upgrade your BTS environment to CICS Transaction Server for z/OS, Version 5 Release 2, you might need to migrate the DFHLRQ data set. Be aware that even if you are not explicitly making use of BTS services in your applications, it is possible that they are being exploited by vendor code or IBM-supplied products executing within your CICS environment.

Migrating the DFHLRQ data set

The local request queue data set 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 5.2 DFHLRQ data set with the contents of the DFHLRQ data set from your previous CICS release.

Be aware that even if you are not explicitly making use of BTS services in your applications, it is possible that they are being exploited by vendor code or IBM-supplied products executing within your CICS environment.

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.

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Chapter 23. 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.

If both CONNECTION resources and IPCONN resources are active in a CICS region, CICS searches for an IPIC connection first, so that when resources with the same name exist, the preference for an IPCONN resource can be maintained. However, if an IPCONN resource is not available, CICS attempts 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 Changes to resource definitions.

Table 19 and Table 20 on page 166 show 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 19. Selection behavior for IPCONN and CONNECTION resources with TOR and AOR communications

Version of CICS in TOR or routing region	Status of IPCONN resource	CICS TS 3.2 AOR			CICS TS 4.1 AOR			CICS TS 4.2, 5.1, or 5.2 AOR		
		DPL	Asynchronous processing and transaction routing	Enhanced Routing	DPL	Asynchronous processing and transaction routing	Enhanced Routing	DPL	Asynchronous processing and transaction routing	Enhanced Routing
CICS TS 3.2	Acquired	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	APPC or MRO connection	APPC or MRO connection
	Released	Request rejected	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.1	Acquired	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	IPIC connection	APPC or MRO connection	IPIC connection	IPIC connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.2, 5.1, or 5.2	Acquired	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	IPIC connection	APPC or MRO connection	IPIC connection	IPIC connection	IPIC connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

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Table 20. Selection behavior for IPCONN and CONNECTION resources with AOR and ROR communications

Version of CICS in the AOR	Status of IPCONN resource	CICS TS 3.2 or 4.1 ROR				CICS TS 4.2, 5.1, or 5.2 ROR			
		File control	Transient data	Temporary storage	DL/I	File control	Transient data	Temporary storage	DL/I
CICS TS 3.2	Acquired	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.1	Acquired	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.2, 5.1, or 5.2	Acquired	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	IPIC connection	IPIC connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Upgrading IPIC service transactions

In CICS Transaction Server for z/OS, Version 5 Release 1, the IPIC service transactions were redefined to run in CICS key. You must upgrade the CSD to the latest level of resource definitions, supplied with your release, to pick up the changes to the IPIC service task resource definitions. For more information about upgrading the CSD, see "Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions" on page 150.

Chapter 24. 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 5.2 DFHIRP module is compatible with earlier releases, and works with all releases of CICS. However, the CICS TS for z/OS, Version 5.2 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 3.2 DFHIRP can communicate with a CICS TS for z/OS, Version 5.2 DFHIRP across XCF/MRO, but the CICS regions running in the MVS with the CICS TS 3.2 DFHIRP cannot be later than CICS TS 3.2.

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 must 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. If you have a strategy whereby all users of DFHIRP on the z/OS image being upgraded can be quiesced, then you can use the dynamic LPA function to replace DFHIRP. Otherwise you must IPL MVS with the **CLPA** option. Failing to shut down all users of DFHIRP during the upgrade process can cause incompatibility between control blocks resulting in abends.

   To dynamically update DFHIRP perform the following steps:

   a. Quiesce all users of DFHIRP. For example, WebSphere EXCI, CTG EXCI, all CICS regions including any CMASs must either be shutdown or logged off from MRO/XM, and finally all other work using EXCI must be shut down.

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Important: The process described here does not include upgrading CICSPlex SM to the CICS TS 5.2 level. For more information, see Chapter 39, "Upgrading a CMAS," on page 227.

b. Update LPA modules DFHCVSC, DFHDSPEX, DFHUMPX, DFHIRP, DFHSSEN and DFHSVC99 using the dynamic LPA facility specifying the **ADD** verb.

c. Run the CICS TS 5.2 supplied utility DFHCSVCU to update the z/OS SVC table as documented in Running the DFHCSVCJ job.

d. Restart MRO by either setting IRC connected in all executing CICS regions or restarting the CICS regions.

e. As dynamic changes are discarded by an IPL, you must schedule an IPL for a convenient time to ensure that all dynamically applied changes have been correctly applied to the z/OS system libraries.

Important: If you do not follow these steps an IPL is required to shut everything down and use the new DFHIRP module.

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.

Increase to the limit on ECSA usage for MRO sessions

From CICS Transaction Server for z/OS, Version 5 Release 1, the limit on the amount of ECSA storage used for CICS multiregion operation (MRO) is increased.

CICS uses the ECSA for MRO to store control blocks only and not for data transfer. Before CICS Transaction Server for z/OS, Version 5 Release 1, when cross-memory facilities were used, usage of the ECSA by CICS was limited to 20 bytes per session, and 1 KB per address space participating in MRO. From CICS Transaction Server for z/OS, Version 5 Release 1, these limits on ECSA usage are increased to the following amounts:

- 40 bytes per session if IRC (interregion communication) is open, irrespective of whether the resource is acquired and inservice, or released
- 4 KB per address space participating in MRO

The increase in the limit takes effect when you install the new version of the DFHIRP module in the LPA.

In addition, the amount of storage used by CICS MRO for interregion buffers is detailed in the DFHIR3794 message issued to the CSMT destination at termination.

Chapter 25. Upgrading the Java environment

When you upgrade to a new CICS release, you might require changes to your JVM profiles and to other aspects of your Java environment. You might also require changes to your Java applications.

Earlier versions of Java

Java programs that ran under CICS Transaction Server for z/OS, Version 3 and CICS Transaction Server for z/OS, Version 4 can also run under CICS Transaction Server for z/OS, Version 5.

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 Java Standard Edition Products on z/OS.

To avoid potential problems with deprecated APIs, develop all new Java programs for CICS Transaction Server for z/OS, Version 5 Release 2 using an application development environment that supports the same version of Java as the environment used by CICS. You can run code compiled with an older version of Java in a new runtime environment, if the environment does not use APIs that are removed in the newer version of Java or CICS. For further details refer to the **Target Platform** setting when using the CICS Explorer SDK.

JVM profiles

If you already have JVM profiles that you set up in a previous CICS release, upgrade these profiles. 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. You must also compare your existing JVM profiles to the latest samples supplied with CICS. Changes to the JVM profile options are described in "Changes to options in JVM profiles" on page 171. A list of suitable options for this release is in JVM profiles: options and samples in Deploying. Use the new samples supplied with CICS Transaction Server for z/OS, Version 5 Release 2 to help you create new profiles, rather than upgrading your existing files.

Copy your JVM profiles to a new location on z/OS UNIX to use with the new CICS release then apply the required upgrades. 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.

Key changes to CICS support for Java applications

Check for changes that can affect your Java environment when you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2.

Be aware of the following significant changes that can affect your Java environment when you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2:

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- CICS uses the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 7 or Version 7 Release 1.
- The supported Axis2 version is changed to Axis2 V1.6.2 and its ⌂corequisite software.
- The Liberty Angel process must be started if you use the CICS Liberty security feature.
- Only one Liberty JVM server can be run per region with the CICS Liberty security feature enabled.
- The pooled JVM environment is not supported and has been removed from CICS. You must migrate your Java applications to run in a JVM server instead. You must also ensure your applications are threadsafe. For more information, see "Migrating Java applications using the CICS Explorer SDK" on page 176.
- CICS support for enterprise beans (Enterprise JavaBeans, or EJBs) and CICS support for the CORBA architecture (using stateless CORBA objects) are no longer provided in CICS Transaction Server. If you are running enterprise beans or stateless CORBA object applications in CICS in the pooled JVM environment, you must migrate your applications to run in the JVM server environment, and you must use standard functions of the IBM 64-bit SDK for z/OS, Java Technology Edition for intercommunication between components.
- CICS provides the JVM server runtime environment for Java applications that are threadsafe. The JVM server can handle multiple requests for Java applications concurrently in a single JVM, reducing the number of JVMs that are required in the CICS region. JVM servers can use class caches, but these class caches are not managed by CICS interfaces, such as the SPI and CEMT. For more information about the JVM server runtime environment see JVM server runtime environment in Getting started.
- All JVM servers run in a 64-bit environment. Although you can continue to use a supported SDK to build your Java applications, you must use the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 7 or Version 7 Release 1, to run your Java workloads. When you are upgrading CICS, you must perform the following steps to make sure your Java applications work in a 64-bit environment:
  - Ensure that CICS has enough memory available to run 64-bit JVMs; set a suitable value for the z/OS **MEMLIMIT** parameter before you start your CICS regions. You must allow for other CICS facilities that use 64-bit storage. For more information, see Estimating, checking, and setting MEMLIMIT in Improving performance.
  - Ensure that any Java Native Interface (JNI) code can run in a 64-bit environment. You might have to recompile or rewrite application code if it uses JNI. You must also check that any third-party products that have JNI can run in a 64-bit environment.
- The JCICS API packaging is changed; the `dfjcics.jar` and `dfjoutput.jar` files are replaced by a set of OSGi bundles that run in a JVM server.

  The following OSGi bundles are provided with CICS:

File name	OSGi bundle symbolic name	Description
`com.ibm.cics.samples.jar`	com.ibm.cics.samples	Samples for redirecting System.out and System.err. Replaces the `dfjoutput.jar` file.
`com.ibm.cics.server.jar`	com.ibm.cics.server	The JCICS API. Replaces the `dfjcics.jar` file.

File name	OSGi bundle symbolic name	Description
com.ibm.record.jar	com.ibm.record	The Java API for legacy programs that use IByteBuffer from the Java Record Framework that came with VisualAge. Previously in the dfjcics.jar file.

If you use classes from the JCICS API or the IByteBuffer class, you must import the relevant package into your OSGi bundle manifest when packaging a Java application as an OSGi bundle.

- You can no longer use OSGi bundles in a Liberty JVM server. A CICS bundle containing OSGi bundles resources will no longer deploy to a Liberty JVM server, and a Liberty JVM server will not enable if it has the OSGI_BUNDLES option in its JVM profile. OSGi bundles can only be deployed to a Liberty JVM server as part of an enterprise bundle archive (EBA), or as library bundles using the bundle repository of Liberty. You therefore cannot specify the DB2 `.jar` files in OSGI bundles. Instead, specify the <cicsts_jdbcDriver> element in the `server.xml` file.
- CICS applications running in an OSGi framework can use the JCICS API to create threads that start CICS tasks on T8 TCBs. These tasks can use JCICS to access CICS services. The CICSExecutorService class in JCICS provides an implementation of the Java ExecutorService interface. Use this class instead of the Thread.start() method.
- CICS has upgraded to support Version 4.3 of the OSGi Service Platform Release 4 specification. If you are upgrading OSGi applications, you must ensure they comply with this version of the specification.
- JCICS calls use the code page specified in the **LOCALCCSID** system initialization parameter to encode character data instead of the file encoding in the JVM. CICS supplies a JVM system property called **com.ibm.cics.jvmserver.override.ccsid** if you want to override this behavior and use a different code page. The restriction on using EBCDIC code pages for the **Dfile.encoding** property is lifted for OSGi JVM servers because JCICS uses the local CCSID in the CICS region.
- The CCI Connector for CICS is obsolete and is no longer available. If you have any Java applications that use this deprecated interface, you must change the application. You can use the JCICS Link() method in the Program class instead.

Changes to options in JVM profiles

When you upgrade to a new release of CICS TS, there are normally some changes to the options available in JVM profiles and to their possible or suggested settings.

The JVM server supports a variety of Java workloads. The following sample JVM profiles are supplied with CICS TS for z/OS, Version 5.2:

- DFHJVMAX.jvmprofile is a JVM profile that specifies the options for initializing the JVM server to support SOAP processing by Axis2 applications. Axis2 is an open source web services engine from the Apache foundation that supports a number of the web service specifications and provides a programming model to create Java applications that can run in Axis2.
- DFHJVMST.jvmprofile is a JVM profile that allows the JVM server to be configured for a Security Token Service.
- DFHOSGI.jvmprofile is a JVM profile that specifies the options for initializing the JVM server for Java applications that comply with the OSGi specification.

- DFHWLP.jvmprofile is a JVM profile to run workloads for the Liberty profile, a lightweight application server that can support JSP and servlet applications for developing modern web interfaces for CICS. Liberty profile servers must use a file encoding of ISO-8859-1 or UTF-8. The supplied sample profile DFHWLP is configured to use ISO-8859-1.

JVM profiles must have a file extension of `.jvmprofile`. The JVM server fails to enable if this extension is not present. The sample JVM profiles that are shipped with CICS TS for z/OS, Version 5.2 have this file extension.

When you upgrade to a new release of CICS TS, there are normally some changes to the options available in JVM profiles and to their possible or suggested settings. A good practice is to use the sample JVM profiles that are shipped with the new release, and reapply the customization that you made to those JVM profiles in previous releases. Using the latest JVM profiles ensures that you do not miss important updates to the options and their settings.

The obsolete, changed, and new options in JVM profiles are summarized here. For more details about the options, see JVM profiles: options and samples in Deploying .

Table 21. New options in JVM profiles

Option	Status	CICS and Java launcher action	Notes
com.ibm.cics.jvmserver.override.ccsid	New property	Sets code page for JCICS	Specifies the code page for JCICS calls. The default behavior is to use the code page in the **LOCALCCSID** system initialization parameter.
com.ibm.cics.jvmserver.wlp.autoconfigure	New property	Sets automatic configuration	Specifies whether CICS automatically configures the `server.xml` file for a Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.host	New property	Accepted	Specifies the host name for a web application that runs in the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.http.port	New property	Accepted	Specifies the HTTP port for the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.https.port	New property	Accepted	Specifies the HTTPS port for the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.name	New property	Accepted	Specifies the Liberty profile server name for the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.jdbc.driver.location	New property	Accepted	Specifies the location of the directory in zFS that contains the DB2 JDBC drivers.
JAVA_PIPELINE	For CICS sample profiles	Accepted	Adds the required JAR files to the class path for Java-based SOAP pipelines.
OSGI_BUNDLES	For CICS sample profiles	Accepted	Specifies a list of middleware OSGi bundles. Not supported in Liberty JVM server.

Table 21. New options in JVM profiles (continued)

Option	Status	CICS and Java launcher action	Notes
OSGI_FRAMEWORK_ TIMEOUT	For CICS sample profiles	Accepted	Specifies a timeout in seconds for the JVM server initialization and shutdown.
JNDI_REGISTRATION	For CICS sample profiles	Accepted	Specifies that the JNDI registration JAR files are automatically added to the JVM runtime environment.
SECURITY_TOKEN_SERVICE	For CICS sample profiles	Accepted	Controls whether the JVM server can use security tokens. This option must be set to `YES` for a JVM server to use security tokens. If this configuration option is set to `NO`, the JVM server is initialized as an OSGi JVM server and Security Token Service support is disabled for that JVM server. `SECURITY_TOKEN_SERVICE=YES` is not compatible with `JAVA_PIPELINE=YES`, which configures the JVM to support Axis2.
WSDL_VALIDATOR	For CICS sample profiles	Accepted	Enables validation for SOAP requests and responses against their definition and schema.
WLP_INSTALL_DIR	New in sample profiles	UNIX System Services environment variable set	Specifies the installation directory for the Liberty profile technology.
WLP_OUTPUT_DIR	New in sample profiles	UNIX System Services environment variable set	Specifies the output directory for the Liberty JVM server.
WLP_USER_DIR	New in sample profiles	UNIX System Services environment variable set	Specifies the directory that contains the configuration files for the Liberty JVM server.

Table 22. Changed and obsolete options in JVM profiles

Option	Status	CICS and Java launcher action	Replace with	Notes
-generate	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
CICS_HOME	Obsolete	Java launcher uses the value of the **USSHOME** system initialization parameter	**USSHOME** system initialization parameter	Do not specify.

Table 22. Changed and obsolete options in JVM profiles (continued)

Option	Status	CICS and Java launcher action	Replace with	Notes
DISPLAY_JAVA_ VERSION	Obsolete	Accepted	n/a	Shows JVM version in CICS MSGUSR log.
GC_HEAP_THRESHOLD	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
IDLE_TIMEOUT	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
OSGI_BUNDLES	Not supported in Liberty JVM server	Liberty JVM server does not enable with this option	n/a	Deploy OSGi bundles in a Liberty JVM server as part of an enterprise bundle archive (EBA) or as library bundles.
REUSE	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.

Changes to JVM profile symbols

&CONFIGROOT;
When you use this symbol in a JVM profile, the absolute path of the directory where the JVM profile is located is substituted at run time.

&JVMSERVER;
When you use this symbol in a JVM profile, the name of the JVMSERVER resource is substituted at run time. Use this symbol to create unique output or dump files for each JVM server.

&USSHOME;
When you use this symbol in a JVM profile, the symbol is replaced with the value of the **USSHOME** system initialization parameter. Use this symbol to automatically pick up the home directory for z/OS UNIX where CICS supplies its libraries for Java and the Liberty technology.

For information about the other supported JVM profile symbols, see JVM profiles: options and samples in Deploying.

Upgrading from IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6

If you are using the 31-bit version of Java 6, you must upgrade to the 64-bit Version 7 or Version 7 Release 1, because Java 6 and 31-bit versions of the JVM are no longer supported.

About this task

CICS runs Java applications using the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 7 or Version 7 Release 1. CICS supports only the 64-bit version of the SDK and not the 31-bit version.

Procedure

To upgrade your Java environment to Version 7 or Version 7 Release 1 of the 64-bit SDK, follow these steps:

1. Check your Java programs against the information at Java Standard Edition Products on z/OS, on the IBM Systems web site for compatibility issues between the IBM 64-bit SDK for z/OS Version 7 or Version 7 Release 1, and the IBM 31-bit SDK for z/OS V6.
2. Ensure that your applications are threadsafe, and repackage your JARs as OSGi bundles. Deploy the OSGi bundles within a CICS bundle to zFS, making sure that you specify the correct target JVMSERVER resource.
3. Download and install IBM 64-bit SDK for z/OS, Java Technology Edition, Version 7 or Version 7 Release 1 on your z/OS system. You can download the product, and find out more information about it, at Java Standard Edition Products on z/OS, on the IBM Systems web site.
4. Copy and edit the JVM profiles for your Java applications. Edit the options in the JVM profiles:
   a. Change the `JAVA_HOME` option to specify the location where you installed the IBM 64-bit SDK for z/OS Java Technology Edition. `/usr/lpp/java/J7.0_64/` is the default installation location for the product.
   b. Remove the `CICS_HOME` option from your profiles. This option is obsolete. CICS uses the **USSHOME** system initialization parameter instead.
   c. Check the results of your changes by comparing with another profile.
5. Give all your CICS regions the following access permissions on z/OS UNIX:
   - Read and execute access to the files for the IBM 64-bit SDK for z/OS installation.
   - Read access to your new JVM profiles and optional JVM properties files.
6. Set the **USSHOME** system initialization parameter in all the CICS regions that you are upgrading to specify the location of z/OS UNIX files.
7. Change the **JVMPROFILEDIR** system initialization parameter in all the CICS regions that you are upgrading to specify the directory on z/OS UNIX that contains the JVM profiles.
8. Set the **MEMLIMIT** parameter to ensure that there is enough storage for the 64-bit JVMs. You must allow for other CICS facilities that use 64-bit storage. For more information, see Estimating, checking, and setting MEMLIMIT in Improving performance.
9. When any other necessary upgrading tasks for the CICS regions are complete, start one region and run your Java workload in it as a test region:
   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 CICS Explorer to browse the JVMs in a CICS region, identify their JVM profiles, and see when they are allocated to a task.
   b. Check that the behavior of your application is the same.
10. If you encounter any problems see Troubleshooting Java applications in Troubleshooting and support.
11. Start the remaining upgraded CICS regions and use them for your Java workloads.

Results

Your Java workloads run using IBM 64-bit SDK for z/OS, Java Technology Edition, Version 7 or Version 7 Release 1.

What to do next

- When these steps to upgrade your existing Java workloads are complete, investigate moving your applications to run in a JVM server. The JVM server is the strategic runtime environment for Java applications in CICS. The JVM server can handle multiple requests for Java applications concurrently in a single JVM, saving on the number of JVMs that are required in the CICS region. For information about this runtime environment, see Java support in CICS in Getting started.
- You might want to perform additional tuning to ensure that your Java workloads are configured for optimal performance. For more information, see Improving Java performance in Improving performance.

Migrating Java applications using the CICS Explorer SDK

Because pooled JVMs are not supported, you must migrate your existing Java applications to run in a JVM server. The JVM server is a multithreaded environment that uses an OSGi framework, so you must ensure that your applications are threadsafe and comply with the OSGi specification. You can use the CICS Explorer SDK to repackage the applications as OSGi bundles and deploy them to run in a JVM server.

About this task

There are three possible ways to repackage a Java application as one or more OSGi bundles. Each option is explained in full detail in the SDK help, and is summarized in the following procedure.

Procedure

1. Check that the Java application is threadsafe. The IBM website developerWorks® has useful information about Java: http://www.ibm.com/developerworks/java/.
2. Check that the Java application does not use the System.exit() Java method. If this method is used, the JVM server and CICS both shut down.
3. Package the Java application as one or more OSGi bundles by either conversion, injection or wrapping, ready for running in the JVM server environment.

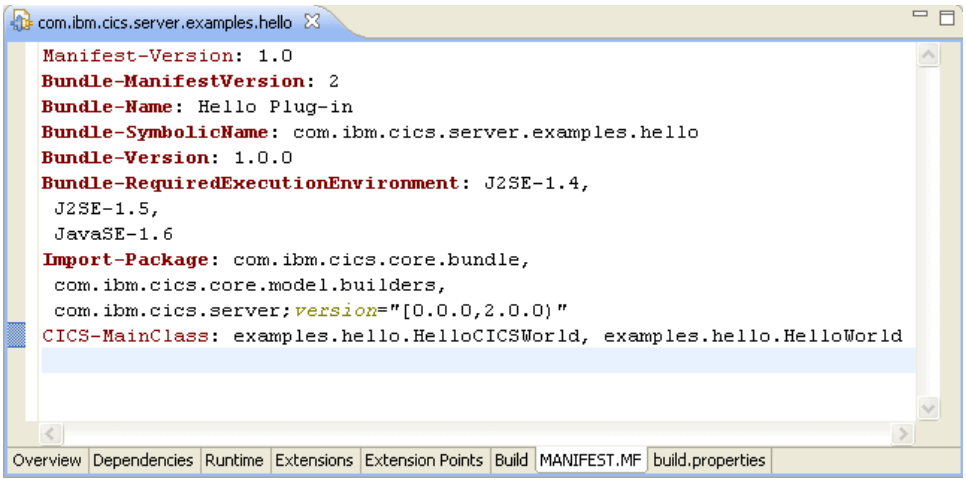
   Conversion
   If you already have an Eclipse Java project for the Java application, you can convert the project to an OSGi plug-in project. This method is the preferred best practice.

   Injection
   Create an OSGi plug-in project and import the contents of the existing JAR file. This method is useful when the application is already threadsafe and no refactoring or recompiling is required.

   Wrapping
   Create an OSGi plug-in project and import an existing binary JAR file. This method is useful in situations where there are licensing restrictions or where the binary file cannot be extracted.

4. Add the CICS-MainClass declaration to the project manifest. Right-click on the project name and select **PDE Tools** > **Open Manifest**.

   The following example is the manifest file from the CICS Hello Examples project. The sample contains two classes, HelloCICSWorld and HelloWorld, which are both declared in the manifest file in the CICS-MainClass declaration. You must add a CICS-MainClass declaration for each class used in your application.



5. Deploy the OSGi bundle in a CICS bundle to the zFS file system. Specify the target JVMSERVER resource in the plug-in resource file of the CICS bundle.

Results

The threadsafe Java application is packaged as one or more OSGi bundles, and is deployed as a CICS bundle to the zFS file system.

What to do next

The system programmer can create the CICS resources that are required to run the Java application in an OSGi JVM server.

Upgrading Java applications in a JVM server

If you are running Java applications in a JVM server, when you upgrade you must check whether the applications use IBM or vendor classes that are available in the JRE. The OSGi framework has stricter rules for loading classes and you might need to change your applications to run them in a JVM server in this release.

About this task

In previous releases, the OSGi framework was able to load IBM and vendor classes from the JRE as required by Java applications. However, in this release, the OSGi framework has stricter rules that control which classes can be loaded from the JRE.

Any package that is prefixed with `java` is loaded by the OSGi framework as required by the application. If an application uses an IBM or vendor package that is supplied with the JRE, such as `com.ibm.misc`, you must create a middleware OSGi bundle to make these classes available to the OSGi framework. If you do not

change the application, transactions abend with an AJ05 code and `java.lang.ClassNotFoundException` errors are written to the JVM server error log and CICS system log.

You do not need to complete these steps for the CICS Java classes, as the JCICS classes are automatically made available in the OSGi framework.

Procedure

1. Check whether your application depends on IBM or vendor classes in the supplied JRE.
2. For each IBM or vendor package that the application requires, create an OSGi bundle fragment to export the package. The following example shows what the manifest of the OSGi bundle fragment can contain:

   ```
   Manifest-Version: 1.0
   Bundle-ManifestVersion: 2
   Bundle-Name: Extension
   Bundle-SymbolicName: com.ibm.example.extension
   Bundle-Version: 1.0.0
   Bundle-Vendor: IBM
   Fragment-Host: system.bundle; extension:=framework
   Export-Package: com.ibm.misc
   Bundle-RequiredExecutionEnvironment: JavaSE-1.6
   ```

   The `Fragment-Host` defines that the OSGi bundle fragment extends the system bundle in the OSGi framework. The `Export-Package` lists the packages that are exported; in this example, the package beginning `com.ibm.misc` is exported. If you use Eclipse, ignore the error that is flagged.
3. Change the application to add an import for the exported package in the appropriate OSGi bundle manifest. Each OSGi bundle that requires a class from an IBM or vendor package must declare the package in the manifest.
4. Install the OSGi fragment bundle into the JVM server as a middleware bundle. Add the bundle to the `OSGI_BUNDLES` option in the JVM profile for the JVM server. Separate the middleware bundle from the application so that you can manage the lifecycle separately in CICS.
5. Restart the JVM server to pick up the OSGi fragment.
6. Deploy the updated application bundle to CICS.

Results

The OSGi bundle fragments are loaded when the OSGi framework is initialized. When the application is called, the application can access the IBM or vendor classes.

Chapter 26. 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, check your configuration and make any necessary changes.

When you upgrade to a new version or release of WebSphere MQ, ensure that you specify the new versions of the WebSphere MQ libraries in the STEPLIB and DFHRPL concatenations in your CICS procedure, replacing the previous versions of these libraries. The libraries are *thlqual*.SCSQAUTH, *thlqual*.SCSQCICS, and *thlqual*.SCSQLOAD, where *thlqual* is the high-level qualifier for the WebSphere MQ libraries. The SCSQAUTH library is included in both concatenations, but the SCSQLOAD library and the optional SCSQCICS library are included in the DFHRPL concatenation only. Include the WebSphere MQ libraries after the CICS libraries to ensure that the correct code is used.

Review availability of TCBs for CICS-WebSphere MQ connection

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.

CICS sets the limit for the number of TCBs in the pool of L8 and L9 mode open TCBs automatically. The limit is based on the maximum number of tasks (MXT or MAXTASKS) specified for the CICS region, using the following formula:

```
(2 * MXT Value) + 32
```

The availability of L8 TCBs within this limit is determined 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, 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.

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

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WebSphere MQ, see Common storage in the WebSphere MQ product documentation. For further information about storage and performance requirements in WebSphere MQ, including velocity goals for CICS regions, see Planning your storage and performance requirements in the WebSphere MQ product documentation.

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.

Support for WebSphere MQ Version 7 API calls

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.

Chapter 27. Upgrading the CICS DB2 connection

This information enables you to plan and carry out installation or upgrade procedures in the CICS DB2 environment.

CICS provides an attachment facility (the CICS DB2 adapter) that works with all supported releases of DB2. The CICS DB2 attachment facility is shipped with CICS Transaction Server and you must use this version of the attachment facility to connect a CICS region to DB2. Always use the correct attachment facility for the release of CICS under which a region is running.

With the group attach facility, instead of connecting to a specific DB2 subsystem, you can choose to connect to any one member of a data-sharing group of DB2 subsystems which is active on an MVS image. You can use a common DB2CONN resource, specifying a group ID, across multiple cloned AORs, and reconnect rapidly if the connection to DB2 fails. See Using the DB2 group attach facility for more information.

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Chapter 28. Upgrading CICS web support applications

CICS Transaction Server for z/OS, Version 5 Release 2 supports your existing CICS web support architecture for both web-aware and non-web-aware application programs. Existing web-aware application programs that send and receive HTTP messages can work unchanged, until you choose to upgrade them to take advantage of the enhancements described here.

- If you have a CICS region that has experienced performance problems due to long-lived persistent HTTP connections from web clients, you can now use the MAXPERSIST attribute in the TCPIPSERVICE resource definition for the port to limit the number of persistent connections that the CICS region accepts at any one time. An HTTP/1.1 server should normally allow persistent connections, so only set up connection throttling in a CICS region that has experienced performance problems for this reason. For more information about connection throttling, see How CICS web support handles persistent connections.

Implementing connection pooling for client HTTP connections

To activate connection pooling, your CICS web support or web services application programs must specify a URIMAP resource with the SOCKETCLOSE attribute on the **INVOKE SERVICE** or **WEB OPEN** command. For event processing, the HTTP EP adapter must use a URIMAP resource with the SOCKETCLOSE attribute.

About this task

Connection pooling can provide performance benefits where multiple invocations of CICS web support applications, web services applications, or the HTTP EP adapter make connection requests for a particular host and port, or where a web services application makes multiple requests and responses. Connection pooling does not enhance performance for a single invocation of a user-written CICS web support application, a single web services request and response, or a single event emission.

Connection pooling is specified by the SOCKETCLOSE attribute in a URIMAP resource with USAGE(CLIENT). SOCKETCLOSE defines if, and for how long, CICS keeps a client HTTP connection open after the CICS program has finished using it. After use, CICS checks the state of the connection and then places it in a pool in a dormant state. The dormant connection can be reused by the same application or by another application that connects to the same host and port.

For the client HTTP connections opened by your applications to be pooled after use, ensure that your applications handle the connections as described in the following procedure.

Procedure

1. When opening the client (outbound) HTTP connection, specify a URIMAP resource with the SOCKETCLOSE attribute set.
   - In CICS web support applications, you can specify a URIMAP resource on the **WEB OPEN** command to provide the URL for the connection. If you code the URL directly in the application, CICS does not access the URIMAP resource and the connection cannot be pooled after use.

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- In CICS web services applications that are service requesters, you can specify a URIMAP resource on the **INVOKE SERVICE** command to provide the URI of the web service. If you code the URL directly in the application, or if you use a URI from the web service description, CICS does not access the URIMAP resource.
- For the HTTP EP adapter, you specify a URIMAP resource in your event binding.

2. Ensure that CICS web support applications do not use the option CLOSESTATUS(CLOSE) on any of the **WEB SEND** or **WEB CONVERSE** commands that they issue. CLOSESTATUS(CLOSE) requests the server to close the connection, and closed connections cannot be pooled. Previously, the use of this option was suggested as best practice when the application sent its last request to the server, but it was not a required action.
3. Ensure that CICS web support applications issue the **WEB CLOSE** command when they have completed their use of the client HTTP connection. Previously, CICS closed the connection when the application issued this command. Now, the command notifies CICS that the application has finished using the connection. If connection pooling is in use, CICS leaves the connection open and places it in the pool after checking. If connection pooling is not in use, CICS closes the connection as before. In CICS web services applications, the **INVOKE SERVICE** command completes the application's use of the connection, so CICS web services applications do not need to issue any additional commands to complete their use of the connection.

What to do next

If your applications already use URIMAP resources when opening outbound connections, and your CICS web support applications issue the **WEB CLOSE** command and do not use the option CLOSESTATUS(CLOSE) on any commands, you do not need to make any changes to your applications to implement connection pooling. You can specify the SOCKETCLOSE attribute on the URIMAP resources that are already used by your CICS web support and web services applications and by the HTTP EP adapter. The session token used by CICS web support applications does not persist on a pooled connection, so your applications reuse a pooled connection in exactly the same way as they use a new connection.

If you do not currently use URIMAP resources for CICS web support and web services client requests, and you want to implement connection pooling, you must set up URIMAP resources for the relevant client requests, and change your applications to specify the URIMAP resources when opening the connections. Make sure CICS web support applications also issue the WEB CLOSE command and do not use the option CLOSESTATUS(CLOSE) on any commands. When you start to use URIMAP resources for client requests, in addition to enabling connection pooling, you enable systems administrators to manage any changes to the endpoint of the connection, and you do not need to recompile applications if the URI of a service provider changes.

Chapter 29. Upgrading SOAP web services

If you have used SOAP web services in earlier CICS releases, be aware of the following changes when you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2.

- WEBSERVICE resources can now be defined and packaged in CICS bundles. The resource is dynamically installed in the CICS region when you install the BUNDLE resource. You can import a web service binding file and a WSDL document or WSDL archive file to be packaged with the resource definition, and for a service provider you can include a PROGRAM definition in the bundle. You can also use an existing WEBSERVICE definition in a CICS bundle to generate related URIMAP resources and alias transactions.
- SOAP message validation is now performed in a JVM server. To enable SOAP message validation, you must set up a JVM server in the CICS region. JVM servers can run different workloads, and SOAP validation can run in a JVM server that is configured to support an OSGi framework or Axis2. SOAP validation cannot run in a Liberty JVM server.
- To enable SOAP message validation, the DFHPIVAL program must refer to a JVMSERVER resource. By default, the program uses the sample JVM server DFHJVMS. To change the JVM server, edit the DFHPIVAL definition in group DFHPIVAL.
- Connection pooling can provide performance benefits where a service requester application makes multiple requests and responses. When you implement connection pooling, CICS keeps the client HTTP connection open after the application finishes making its request and receiving its response. The application can reuse the connection to make further requests and responses, rather than opening a new connection each time. Connection pooling is specified on the URIMAP resource for a client HTTP connection, so the application must specify a URIMAP resource on the INVOKE SERVICE command. For more information about connection pooling, see “Implementing connection pooling for client HTTP connections” on page 183.
- A pipeline scan now produces a second URIMAP resource for each WSDL document that is present in the pickup directory. This URIMAP resource defines a URI that points to the location of the WSDL document. You can use this URI to publish WSDL documents so that external requesters can create web service applications.

Data mapping

SOAP web services are enhanced to provide additional data mapping.

CICS now provides data mapping to support COBOL OCCURS DEPENDING ON and OCCURS INDEXED BY clauses.

- The OCCURS DEPENDING ON clause is supported at a mapping level of 4.0 or higher. Complex OCCURS DEPENDING ON is not supported. This limitation means that OCCURS DEPENDING ON is only supported for the last field of a structure.
- The OCCURS INDEXED BY clause is supported at any mapping level.

CICS now provides support for transforming application data encoded in UTF-16 at a mapping level of 4.0 or higher.

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- You can enable this behavior by using language-specific data types for UTF-16 when you use the DFHLS2JS, DFHLS2SC, or DFHLS2WS assistants.
- You can enable this behavior by setting CCSID=1200 when you use the DFHJS2LS, DFHSC2LS, or DFHWS2LS assistants.

Chapter 30. Upgrading JSON web services

If you used JSON web services in earlier releases, be aware of the following changes when you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2.

In previous releases support for JSON web services was provided by CICS TS Feature Pack for Mobile Extensions. In CICS TS 5.2 this function is incorporated into CICS, therefore there is no longer a requirement to install the feature pack.

JSON web services are enhanced to provide additional data mapping.

CICS now provides data mapping to support COBOL OCCURS DEPENDING ON and OCCURS INDEXED BY clauses.

- The OCCURS DEPENDING ON clause is supported at a mapping level of 4.0 or higher. Complex OCCURS DEPENDING ON is not supported. This limitation means that OCCURS DEPENDING ON is only supported for the last field of a structure.
- The OCCURS INDEXED BY clause is supported at any mapping level.

CICS now provides support for transforming application data encoded in UTF-16 at a mapping level of 4.0 or higher.

- You can enable this behavior by using language-specific data types for UTF-16 when you use the DFHLS2JS, DFHLS2SC, or DFHLS2WS assistants.
- You can enable this behavior by setting CCSID=1200 when you use the DFHJS2LS, DFHSC2LS, or DFHWS2LS assistants.

Upgrading the JSON web services assistant

In previous releases, the JSON assistant batch jobs DFHJS2LS and DFHLS2JS were provided as part of CICS TS Feature Pack for Mobile Extensions. These functions are now incorporated into CICS TS, so you must change any JCL that calls the assistant.

Procedure

1. Change the JCL procedure library where DFHJS2LS or DFHLS2JS are located. In CICS TS 5.2, these batch jobs are in the `HLQ.XDFHINST` library.
2. Review the values of the symbolic parameters **`JAVADIR`**, **`PATHPREF`**, and **`USSDIR`**. In CICS TS 5.2, you might not need to specify them at all, as the DFHJS2LS and DFHLS2JS procedures are customized by DFHISTAR. For more information about these parameters, see DFHJS2LS: JSON schema to high-level language conversion for request-response services and DFHLS2JS: High-level language to JSON schema conversion for request-response services.

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Chapter 31. Upgrading SAML support

If you used Security Assertion Markup Language (SAML) support in earlier CICS releases, follow this procedure to upgrade to CICS Transaction Server for z/OS, Version 5 Release 2.

About this task

In previous releases, support for SAML was provided by CICS TS Feature Pack for Security Extensions V1.0. In CICS TS 5.2, this function is incorporated into CICS and the feature pack is not supported.

Procedure

1. Copy your STS configuration file to a new location on z/OS UNIX to use with the new CICS release.
2. Upgrade your `java.policy` file.
   a. If you are using a user `java.policy` file, copy it to a new location on z/OS UNIX to use with the new CICS release.
   b. Update the following rule to refer to the new CICS root directory.

      ```
      :// All permissions granted to CICS codesource protection domain
      grant codeBase "file://USSHOME//-" {
      permission java.security.AllPermission;
      };
      ```

      where *USSHOME* is the name and path of the root directory for CICS Transaction Server files on z/OS® UNIX.
   c. Remove the rule that applies to the feature pack files:

      ```
      grant codeBase "file:fp_dir-" {  permission java.security.AllPermission;
             };
      ```

      where *fp_dir* is the Feature Pack installation directory.
3. Upgrade your JVM profile by following the general instructions for upgrading JVM profiles, which are given in Chapter 25, “Upgrading the Java environment,” on page 169. Perform the following additional steps:
   a. Delete the CLASSPATH_SUFFIX line from your JVM server profile.
   b. If you are using a user `java.policy` file, update the java.security.policy property to refer to the new location of this file.
4. When no CICS instances are using it, uninstall the feature pack.

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Chapter 32. Upgrading platforms, applications, policies, and CICS bundles

If you have used platforms, applications, policies, and CICS bundles in CICS in earlier releases, be aware of the following changes when you upgrade to CICS Transaction Server for z/OS, Version 5 Release 2.

Requirements for application entry points and operation names

In CICS regions from CICS TS 5.2, applications that are deployed on platforms must have application entry points declared for all the resources that are an access point to the application. Application entry points are now used to control users' access to different versions of an application that is deployed on a platform. An application that defines a PROGRAM resource cannot be made available to callers in CICS TS 5.2 regions unless it declares an application entry point for that resource.

The resource for an application entry point does not have to be defined in the same CICS bundle as the application entry point. CICS adds the application operation to the specified resource when the application is installed. For PROGRAM resources that are declared as application entry points, the application entry point controls users' access to the program regardless of the location of the PROGRAM resource. However, for URIMAP resources that are declared as application entry points, the application entry point only controls access to the URIMAP resource if it is declared in the same CICS bundle where the URIMAP resource is defined.

You can declare an application entry point for a resource that is not defined in any CICS bundle, but already exists in the CICS regions where the bundle will be deployed. You can also declare an application entry point for a PROGRAM resource that can be autoinstalled in the CICS regions where the bundle will be deployed. When you install an application, if the resource targeted by an application entry point is not present and cannot be autoinstalled, the CICS bundle containing the declaration of the application entry point does not install and is marked with a warning.

CICS bundles that are installed as part of platform bundles, or added to a running platform, must not contain declarations of application entry points in the bundle manifest. Application entry points are not supported for CICS bundles installed directly on platforms, and CICS does not enable the application entry points in this situation, although the CICS bundle and its resources are installed. Standalone CICS bundles that are installed directly in CICS regions can contain declarations of application entry points to enable scoping of region level policies.

Application entry points only control users' access to the resources that are specified in the application entry points. If an application includes any public resources that are not named as application entry points, when the application is installed and enabled, these resources can be accessed by other applications installed on the platform or in the CICS region regardless of the availability status of the application. Private resources for an application version cannot be accessed by other applications.

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Each application entry point names an operation. For example, you could declare application entry points for create, read, update, or delete operations in the application. In CICS regions from CICS TS 5.2, an operation name must now be unique within an application. An application cannot be made available to callers in CICS TS 5.2 regions if it contains duplicate operation names. Operation names are case sensitive, so you may use operation names that are differentiated only by case, such as “browse” and “Browse”.

Making applications and CICS bundles available

A new availability status has been introduced for applications that are deployed on platforms, so that you can install and verify installation of an application version before making the application version available to users of the platform. Applications that are deployed on platforms therefore now require an additional step to make them available for users in CICS regions from CICS TS 5.2. After installing and enabling the application, you must perform the **Make Available** action in the CICS Explorer to make the application available to users.

You can make an installed application version available or unavailable in the Cloud Explorer view, or in the online application editor for installed applications. Making an application available makes the application entry points, and therefore the resources for the application, available to callers. For more details, see “Multi-versioning for applications deployed on platforms” on page 199.

Standalone CICS bundles must also be made available in CICS regions from CICS TS 5.2 if they contain application entry points. After installing and enabling the CICS bundle, you can perform the **Make Available** action in the CICS Explorer, or use the new AVAILSTATUS option on the **EXEC CICS SET BUNDLE** command to set the status of the CICS bundle to AVAILABLE.

Before you disable or discard an application that is deployed on a platform in CICS regions from CICS TS 5.2, you must perform the **Make Unavailable** action in the CICS Explorer. Before you disable or discard a standalone CICS bundle that contains application entry points, you must perform the **Make Unavailable** action in the CICS Explorer, or use the AVAILSTATUS option on the **EXEC CICS SET BUNDLE** command to set the status of the CICS bundle to UNAVAILABLE.

If your platform includes any CICS regions that are still at CICS TS 5.1, the **Make Available** and **Make Unavailable** actions are not required or supported for applications or standalone CICS bundles installed in those CICS regions. In CICS TS 5.1 regions, applications or standalone CICS bundles are assumed to be available when they have been enabled using the **Enable** action, and unavailable when they have been disabled using the **Disable** action, as was the case for all applications in CICS TS 5.1.

The availability status of an application version is not applied at the start of a CICS region that is defined as part of a platform, and it is not recovered during a restart of a CICS region. The CICS bundles for all application versions are in an unavailable state in a started or restarted CICS region. Use the Cloud Explorer view in the CICS Explorer to make the appropriate version of the application available.

CICS bundles that are deployed with platform bundles, or added to a platform, do not require the **Make Available** and **Make Unavailable** actions, because these actions are performed on the application entry points for applications.

Changes to resources defined in CICS bundles

You can now create resource definitions in CICS bundles for the additional CICS resource types FILE, JVMSERVER, PIPELINE, TCPIPSERVICE, and WEBSERVICE. You can issue commands to change the status of dynamically generated JVMSERVER and TCPIPSERVICE resources. A URIMAP resource defined in a CICS bundle can be specified as an application entry point to control access to the service that it provides.

You use new wizards in the CICS Explorer to define FILE, JVMSERVER, PIPELINE, TCPIPSERVICE, and WEBSERVICE resources in CICS bundles.

When you define resources in CICS bundles, they can be packaged, deployed, and managed as part of applications on a platform. You can also deploy the CICS bundles at the level of the platform, to provide services to all the applications on the platform, or you can install them as standalone CICS bundles in CICS regions that are not part of a platform.

The full list of CICS resource types for which you can create resource definitions in CICS bundles is as follows:

- FILE
- JVMSERVER
- LIBRARY
- PIPELINE
- PROGRAM
- TCPIPSERVICE
- TRANSACTION
- URIMAP
- WEBSERVICE

For the list of all artifacts that you can define and deploy in CICS bundles, including OSGi bundles and events, see Artifacts that can be deployed in bundles in Administering.

Some characteristics of CICS resources change because they are defined in a CICS bundle and dynamically created as part of a bundle deployment.

FILE resources

The following file types are supported for definition in CICS bundles:

- VSAM files (including files that refer to CICS-maintained, user-maintained, and coupling facility data tables, as well as files that refer to VSAM data sets)
- Remote VSAM files
- Remote BDAM files

The initial status of a FILE resource that is dynamically created from a CICS bundle is derived from the initial status of the CICS bundle that defines the resource. As a result, it is not possible to define a FILE resource with a STATUS of UNENABLED to inhibit the implicit opening of files by applications.

The PASSWORD attribute is not supported for dynamically created FILE resources.

JVMSERVER resources

For JVM servers that are packaged in CICS bundles, the JVM profiles are packaged with the resource definitions in the CICS bundles. You can therefore install the JVM server in any CICS region without needing to set up a JVM profile in the local JVM profile directory for the CICS region.

When creating a JVM server, you can create the JVM profile using sample templates for an OSGi JVM server, an Axis2 JVM server, or a Liberty JVM server, or import an existing JVM profile to the CICS bundle from elsewhere in the workspace or from the local file system.

The set of acceptable characters in the JVM profile name is more restricted when the JVMSERVER resource is defined in a CICS bundle. For details, see JVMSERVER attributes.

A JVM server that is defined in a CICS bundle must be installed and enabled before you install OSGi bundles or other application artifacts for Java applications that run in it. It is good practice to deploy a CICS bundle containing the definition for a JVMSERVER resource as part of a platform bundle, and to then deploy the CICS bundles containing OSGi bundles or other Java application artifacts as part of applications that are deployed on the platform. This architecture ensures that when the resources are first installed in a CICS region or if the CICS region is restarted, the JVM server and the Java application resources are installed and enabled in the correct order.

PIPELINE resources

For pipelines that are packaged in CICS bundles, the pipeline configuration files are also packaged with the resource definitions in the CICS bundles. You can create a pipeline configuration file using one of the CICS-supplied sample pipeline configuration files, or import an existing pipeline configuration file from the local file system.

If a PIPELINE resource is packaged in a CICS bundle, it should be deployed as part of a platform for hosting WEBSERVICE resources that are defined using CICS bundles. PIPELINE resources that are defined in CICS bundles can only be used with WEBSERVICE resources that are defined in CICS bundles or created dynamically by a pipeline scan. WEBSERVICE resources defined using the CICS CSD or BAS are not compatible with PIPELINE resources that are defined in CICS bundles.

A PIPELINE resource that is packaged in a CICS bundle must be installed and enabled before you install the WEBSERVICE resources that require it. It is good practice to deploy a CICS bundle containing the definition for a PIPELINE resource as part of a platform bundle, and to then deploy the CICS bundles containing WEBSERVICE resources as part of applications that are deployed on the platform. This architecture ensures that when the resources are first installed in a CICS region or if the CICS region is restarted, the PIPELINE resource and the WEBSERVICE resources are installed and enabled in the correct order.

A PIPELINE resource that is defined in a CICS bundle can specify a WSDIR attribute, but this is discouraged. The SHELF attribute is not used for PIPELINE resources that are defined in CICS bundles.

WEBSERVICE resources

For web services that are packaged in CICS bundles, you can import a web service binding file and a WSDL document or WSDL archive file to be packaged in the bundle along with the resource definition. To support the web service, you can use a WEBSERVICE definition packaged in a CICS bundle to generate a URIMAP definition in a separate bundle. You can also create an alias transaction for the URI map, and an optional URIMAP definition for WSDL discovery.

Web services that are packaged in CICS bundles have additional states of DISABLING and DISABLED, which do not apply to web services created using other methods. When disabling is in progress for a CICS bundle, WEBSERVICE resources defined in the bundle enter DISABLING state. Work that is currently executing is allowed to complete, but the web service does not accept new work. When the web service is no longer in use, the WEBSERVICE resource enters DISABLED state. Requests to a web service in DISABLING or DISABLED state are rejected and a SOAP fault, "Web service is not in service", is sent. If CICS is the web service requester, the INVOKE SERVICE command returns a RESP code of INVREQ and a RESP2 value of 8.

If the CICS bundle is enabled again, the WEBSERVICE resource returns to INSERVICE state. Otherwise, the WEBSERVICE resource can be discarded by discarding the CICS bundle. You can inquire on the state of a WEBSERVICE resource using the EXEC CICS or CEMT **INQUIRE WEBSERVICE** command, the CICSPlex SM web user interface, or the CICS Explorer, but you cannot set it manually.

Direct access to bundle resources

You can now issue commands to change the status of certain CICS resources that are defined in a CICS bundle and dynamically generated in the CICS region. With this function, in a situation that requires immediate removal of a resource, you can force completion of the disable process when the resources are still in use.

With the default disable process, FILE, JVMSERVER, and TCPIPSERVICE resources are not disabled until all the current tasks have finished using them. When these resources are defined in a CICS bundle, you must first disable the CICS bundle or the application with which it is deployed. If the disable process does not complete, because the resource is still in use, you can now take the following actions:

- For a JVMSERVER resource, if you want to disable the JVM server immediately and purge the tasks that are running in it, you can use the **SET JVMSERVER PURGE**, **FORCEPURGE**, or **KILL** command on the dynamically generated resource in the CICS region. You can also perform this action in CICS Explorer.
- For a TCPIPSERVICE resource, if you want to disable the service immediately and close all the connections, you can use the **SET TCPIPSERVICE IMMCLOSE** command on the dynamically generated resource in the CICS region. You can also perform this action in CICS Explorer.
- If you are experiencing a problem with disabling a CICS bundle that defines a FILE resource, you may issue the **EXEC CICS SET FILE DISABLED** or **EXEC CICS SET FILE CLOSED** command with the FORCE option, or the **CEMT SET FILE FORCECLOSE** command, against the dynamically generated resource, if this action is required. CICS also issues message DFHFC6043 when you have attempted to disable a file defined in a CICS bundle, but the file is still in use, or there is a retained lock on the file.

Follow the troubleshooting procedure in Diagnosing application errors to diagnose the problem and take suitable action.

The **EXEC CICS SET BUNDLE** command also has a new option AVAILSTATUS to make available or unavailable an individual CICS bundle that contains application entry points. This action is normally performed using the CICS Explorer at the level of the application that packages the CICS bundle, but you can use the command to operate directly on the individual CICS bundle.

URIMAP resources as application entry points

When you define a URIMAP resource in a CICS bundle, you can use an application entry point declaration to control users' access to the service provided by the URIMAP resource. For this function, declare the application entry point and define the URIMAP resource in the same CICS bundle. In this case, when you install and enable the application, the service provided by the URIMAP resource is not yet available to callers. When you choose to provide the service to users, you make the CICS bundle containing the application entry point and the URIMAP resource available using the CICS Explorer. This action makes the application entry point, and therefore the service provided by the URIMAP resource, available to callers.

If you do not want the application entry point to control access to the service provided by the URIMAP resource, declare the application entry point and define the URIMAP resource in different CICS bundles. You can also declare as an application entry point a URIMAP resource that is defined outside the application and declared as a dependency, or import, for the application. In either of these cases, the service becomes available to users as soon as you install and enable the URIMAP resource.

Private resources for application versions on platforms

When you define certain CICS resources in CICS bundles as part of an application installed on a platform, the resources are private to that version of that application. You can therefore install more than one resource of those types with the same name, at the same time.

This facility avoids resource name clashes between applications that were developed independently, but used the same resource names. The requirement for unique resource names for the supported CICS resources can be removed by managing the resources as part of applications deployed on a platform. You can use this process to assist with server consolidation.

For supported resource types, a CICS resource is private if the resource is defined in a CICS bundle that is packaged and installed as part of an application, either as part of the application bundle, or as part of the application binding. When you create a CICS resource in this way, the resource is not available to any other application or version installed on the platform, and it is not available to other applications in the CICS region. It can only be used by the version of the application where the resource is defined. These resources are known as private resources.

The following CICS resources are supported as private resources for applications:

- LIBRARY resources, which represent one or more data sets, known as dynamic program LIBRARY concatenations, from which program load modules can be loaded.

- POLICY resources, which represent one or more rules that manage the behavior of user tasks in CICS regions.
- PROGRAM resources, which represent an application program. A program that is auto-installed by a task for an application that is deployed on a platform is also private to that version of the application.

CICS resources of other resource types that are defined as part of applications, and CICS resources that are defined by any other methods, are publicly available for all tasks. These resources are known as public resources. In applications that have only a single version, private resources that are declared as application entry points become public resources when the application entry point is made available. For multi-versioned applications, if the application is the highest available version, a program that is declared as an application entry point is public. The programs that are declared as application entry points for the other versions of the same application are private.

If you do not want a resource of the supported resource types to be private, do not package the resource definition as part of an application. Instead, define the CICS resource using a standalone CICS bundle, a CICS bundle that is installed at the level of a platform, the CICS CSD, or the CICSPlex SM data repository. If an application requires the CICS resource to be available in the CICS region, add the resource as a dependency for the application or the application binding, in an <import> element of the bundle manifest.

Policies, which are not a CICS resource, have the same support as private resources when they are defined in a CICS bundle that is deployed as part of an application. You can therefore use policies with the same name in different applications and application versions.

Managing private resources in CICS bundles

When you make changes to an application, you use the CICS Explorer to modify the relevant elements of the application that are packaged in CICS bundles, apply a new version number to those CICS bundles to identify the change, and then reversion and reinstall the application. You leave any unmodified CICS bundles at the same version number as before, because CICS manages the process of multiple installations of CICS bundles with the same ID and version number.

Reinstallation of unmodified CICS bundles is only available for CICS bundles that are installed as part of an application deployed on a platform. Standalone CICS bundles cannot be reinstalled if they are already installed with the same ID and version, or in the case of CICS bundles created in releases before CICS TS 5.1, installed with no ID and version. However, the same CICS bundle can be installed in CICS regions as a standalone CICS bundle, and also installed and reinstalled as part of one or more applications deployed on a platform.

Special CICS messages are issued when actions such as installing and discarding are performed on private resources. The messages provide the same information as for the corresponding actions on public resources of that type, but they also state the platform, application, and application version to which the private resource applies, so that you can audit or troubleshoot the actions in the relevant context.

To view the private resources for each installed version of an application, use the CICS Explorer. In the online application editor, you can view the private resources and the application entry points for the application by resource type, and filter them by CICS region or by CICS bundle to help locate particular resources. You

can also view the DD names that z/OS has generated for the LIBRARY concatenation of data sets for private LIBRARY resources.

You can inquire on or browse private resources using the **EXEC CICS INQUIRE** system programming command for the resource type. By default, CICS searches for the resources that are available to the program where the **EXEC CICS INQUIRE** command is issued. You can also choose to browse private resources for a specified application.

To support private resources in CICSPlex SM's real-time analysis (RTA) function, you must specify the application context parameters PLATFORM, APPLICATION, APPLMAJORVER, APPLMINORVER and APPLMICROVER in the evaluation definition (EVALDEF) for the resource. For instructions to create and maintain real-time analysis definitions using user-defined CICSPlex SM WUI views and resource objects, see Real-time analysis.

CICS produces separate statistics records for private resources. A statistics record for a private resource has information about the application for which the resource was defined. The statistics DSECTs and DFHSTUP reports for public program and library resources have corresponding DSECTs and DFHSTUP reports for private resources. Programs that are declared as application entry points are identified and reported in both the public and private statistics, because, while the entry point is publicly accessible, it is also part of the application.

Private LIBRARY resources in CICS bundles

LIBRARY resources represent one or more data sets, known as dynamic program LIBRARY concatenations, from which program load modules can be loaded. The LIBRARY resource is supported as a private resource for an application version. Each version of an application should include at least one private LIBRARY resource representing the version-specific data sets containing the load modules for the application.

If any of the private LIBRARY concatenations for an application are disabled, because the CICS bundle that defines the relevant LIBRARY resource is disabled, CICS does not search any other private LIBRARY concatenations, or any public LIBRARY concatenations that are defined for the whole CICS region. All subsequent program loads by the application therefore fail until the CICS bundle that defines the LIBRARY resource is enabled.

For a private LIBRARY resource that is defined in a CICS bundle that is packaged and installed as part of an application bundle or application binding bundle, the name of the LIBRARY resource is not used as the DD name for the LIBRARY concatenation of data sets. Instead, CICS requests a unique DD name for the LIBRARY concatenation of data sets when the application is installed on the platform. The resource name can therefore be the same as LIBRARY names used elsewhere in the installation, or by different versions of the application. CICS issues message DFHLD0518 to state the DD name that z/OS has generated for the LIBRARY concatenation. You can also view the data set names for an installed application in the CICS Explorer.

Private PROGRAM resources in CICS bundles

A PROGRAM resource represents a program load module that is stored in the program library. The PROGRAM resource is supported as a private resource for an

application version. A program that is auto-installed by a task for an application that is deployed on a platform is also private to that version of the application.

Only one copy of each version of each program is loaded in CICS storage. Before loading a private program, CICS checks whether that version of the program has already been loaded from the same data set (PDS or PDSE) with a matching PROGRAM resource definition. If so, CICS uses the existing copy. The following rules therefore apply when you are reusing PROGRAM resource names:

- Multiple applications that are intended to share the same program loaded from the same PDS or PDSE must use the same attributes in the PROGRAM resource definition.
- If multiple applications use the same name for different program resources, each application must load the programs from a different data set (PDS or PDSE).

If you specify **RELOAD=YES** in the PROGRAM resource definition for a private program, its behavior for program loading changes to be the same as for a public program. A program control link, load, or XCTL request brings a fresh copy of the program into storage. RELOAD(YES) programs cannot be reused, and they cannot be shared by multiple applications. Each of the program copies must be removed from storage explicitly, using a storage control FREEMAIN request, when it is no longer required and before the transaction terminates.

If a program that is required by an application is not found in the private program directory for the application, CICS searches the public program directory.

Programs that are declared as an application entry point must have a unique PROGRAM resource name in your environment. To enable these programs to be called from outside the application, they must be public resources. When you make an application available that contains an application entry point for a private PROGRAM resource, the PROGRAM resource that is named as the application entry point changes from a private resource to a public resource. Only one instance of a public resource with a particular name can exist in a CICS region. The PROGRAM resource therefore cannot have the same name as a public program that is installed in the CICS region, or the same name as a public program that is defined as an application entry point by a different installed application. However, multiple versions of the same PROGRAM resource defined as an application entry point can be installed for multiple versions of the same application, because CICS manages the promotion of PROGRAM resources to public status for the versions of an application.

Multi-versioning for applications deployed on platforms

You can now install and manage multiple versions of an application at the same time on the same platform instance. New versions of an application can be deployed to the platform without the need to disable or remove the previous version. When you have installed and enabled a version of an application, you take an additional step to make it available to users.

Applications deployed on platforms that use the CICS resources that are supported as private resources, in combination with other resources designed for applications and with imported resources, are eligible for multi-versioning. The following resources are supported as part of multi-versioned applications:

- PROGRAM resources defined in CICS bundles that are part of the application
- LIBRARY resources defined in CICS bundles that are part of the application
- Policies

- Statements of application entry points
- Any resource that is defined as a dependency, or import, for the application

For more details about the CICS resources that are supported as private resources, see Private resources for application versions in Configuring.

Other resources may be involved with multi-versioned applications if you manage the resources appropriately to avoid resource name clashes between different versions of the application. For example, a URIMAP resource that is part of an application can be renamed when packaging and installing a new version of the application. Or an application can be architected so that a resource not supported for multi-versioning is managed outside the application, but declared as a dependency, or import, for the application. For resources that are, or could be, used by different applications, such as JVMSERVER resources, deploy and manage the resource at the level of the platform, where it can be used by any version of any application deployed on the platform.

Applications that are eligible for multi-versioning benefit from more sophisticated management capabilities:

- You can install multiple versions of the application, at the same time, on the same platform instance.
- New versions of an application can be deployed to the platform and phased in without the need to remove the previous versions.
- You can install and verify installation of an application version before making the application version available to users of the platform.
- Users can be moved over to a new version of the application without a break in service, and quickly moved back to another version if necessary.
- Programs that are not aware of multi-versioning automatically link to the highest version of the application that you have made available on the platform.
- Programs can exploit multi-versioning by invoking any available version of the application using the INVOKE APPLICATION command.

You control users' access to the resources in a multi-versioned application by declaring application entry points. PROGRAM and URIMAP resources can be declared as application entry points, which can be set as available or unavailable to users. With application entry points, you can install the application and its resources in the CICS regions in the platform, then enable them to verify the installation. When you choose to provide the service to users, you make the application entry points, and therefore the resources that they control for the application, available to callers.

You can use the CICS Cloud perspective in the CICS Explorer to view, update, and remove all the versions of an application that are deployed on a platform. You can open an installed application version in the online application editor to view more details about it, including the private resources and application entry points for the application. You can make available or unavailable, enable or disable, and install or discard an installed application version in the Cloud Explorer view, and you can also modify its state in the online application editor for installed applications.

Application context enhancements

You can now use the application context of the current application set onto the task instead of the initial application context of the first application set onto the task.

A task may pass through one or more applications as it executes. Each task can have up to two application contexts associated with it at any time:

- The **initial** application context of a task is used for monitoring and measuring how much resource an application or a particular application operation is using across CICS regions and multiple tasks. The initial application context can be used when applying a policy to tasks that are part of an application, to define threshold conditions to manage the behavior of the tasks. The initial application context can be inherited from an invoking task, or set when the task first passes through an application entry point.
- The **current** application context of a task is used for loading private libraries and WLM user exits. The current application context can be queried using XPI, SPI, and API calls. The current application context changes each time the task passes through an application entry point.

The initial or current application context can be used with the transaction tracking capability in the CICS Explorer to quickly identify and diagnose application-related problems. Both the initial and the current application contexts are propagated from task to task.

The behaviour when a CICS TRANSACTION names an initial program that is an entry point, is changed from CICS TS 5.1. When issuing EXEC CICS START TRANSACTION, where the initial program named on the started transaction is an entry point, the application context is not passed from the issuing task to the newly started task.

The TASK base table and the HTASK base tables contain the initial application context values, the TASKASSC base table contains the current application context values.

The behavior of the EXEC CICS INQUIRE ASSOCIATION, EXEC CICS ASSIGN, and XPI - INQUIRE_APP_CONTEXT commands are changed to refer to the current application context. You can also use the new JCICS Task.getApplicationContext() method to return the current application context.

For more information, see Application context in Product overview.

New policy rule types and rule items

Some new policy rule types and rule items are available to help you manage the run time behavior of your CICS applications and platforms.

New policy rule types

The following new policy rule types are now available to take an automatic action if a specified threshold is exceeded:

Table 23. New policy rule types

New policy rule type	Policy rule items
Start request Used to define a threshold for the number of **EXEC CICS START** requests issued by a user task.	**START command** The **START** command rule item allows a user to define a threshold for the number of **EXEC CICS START** requests issued by a user task.

Table 23. New policy rule types (continued)

New policy rule type	Policy rule items
Syncpoint request Used to define a threshold for the number of **EXEC CICS SYNCPOINT** and **SYNCPOINT ROLLBACK** requests issued by a user task.	**SYNCPOINT command** The **SYNCPOINT** command rule item allows a user to define a threshold for the number of **EXEC CICS SYNCPOINT** and **SYNCPOINT ROLLBACK** requests issued by a user task.
TD Queue request Used to define a threshold for the number of **EXEC CICS READQ** and **WRITEQ TD** requests issued by a user task.	**READQ TD command** The **READQ TD** command rule item allows a user to define a threshold for the number of **EXEC CICS READQ TD** requests issued by a user task to either intrapartition or extrapartition transient data queues. **WRITEQ TD command** The **WRITEQ TD** command rule item allows a user to define a threshold for the number of **EXEC CICS WRITEQ TD** requests issued by a user task to either intrapartition or extrapartition transient data queues.
TS Queue bytes Used to define a threshold for the amount of data written to temporary storage by **EXEC CICS WRITEQ TS** requests issued by a user task.	**WRITEQ TS command** The **WRITEQ TS** command rule item allows a user to define a threshold for the total amount of data that is written to both auxiliary and main temporary storage queues by a user task. **WRITEQ TS auxiliary command** The **WRITEQ TS** auxiliary command rule item allows a user to define a threshold for the total amount of data that is written to auxiliary temporary storage queues by a user task. **WRITEQ TS main command** The **WRITEQ TS** main command rule item allows a user to define a threshold for the total amount of data that is written to main temporary storage queues by a user task.

Table 23. New policy rule types (continued)

New policy rule type	Policy rule items
TS Queue request Used to define a threshold for the number of **EXEC CICS READQ** and **WRITEQ TS** requests issued by a user task.	**READQ TS command** The **READQ TS** command rule item allows a user to define a threshold for the number of **EXEC CICS READQ TS** requests issued by a user task to both auxiliary and main temporary storage queues. **WRITEQ TS command** The **WRITEQ TS** command rule item allows a user to define a threshold for the number of **EXEC CICS WRITEQ TS** requests issued by a user task to both auxiliary and main temporary storage queues. **WRITEQ TS auxiliary command** The **WRITEQ TS auxiliary** command rule item allows a user to define a threshold for the number of **WRITEQ TS** requests issued by a user task to auxiliary temporary storage queues. **WRITEQ TS main command** The **WRITEQ TS main** command rule item allows a user to define a threshold for the number of **WRITEQ TS** requests issued by a user task to main temporary storage queues.

New policy rule items for existing policy rule types

The following new policy rule items are available for existing policy rule types:

Table 24. New policy rule items

Policy rule type	New policy rule items
Time	**Elapsed limit** Used to define a threshold for a user task's elapsed time.

For more information about policies, see Policies in Product overview.

Chapter 33. Upgrading event processing

When you upgrade to a new CICS release, you are likely to require changes to your event processing environment. You might also require changes to your event processing applications and monitoring tools.

New events for Atom feeds and WebSphere MQ bridge

Application programmers can now request that events be emitted when files and temporary storage queues are accessed by Atom feeds or when programs are linked to through the CICS-WebSphere MQ bridge.

Upgrading event processing data types

You can filter, capture, and create CICS event processing events with additional, commonly used data types.

- COBOL zoned decimal numbers with options SIGN SEPARATE and SIGN LEADING.
- Floating point numbers.
- Null-terminated strings.

For a complete list of the data types that are supported, see Information Sources tab.

Application and hardware considerations

No action is required if you do not plan to use the additional data types that are provided for CICS Transaction Server for z/OS, Version 5 Release 2. However, to get the benefit of the additional data types, some action is required.

Benefitting from the additional data types for event processing requires that you update:

- Existing event bindings, or create new event bindings, to specify the additional data types.
- Custom EP adapters, if applicable.
- Event consumers, as needed.

You must have the corresponding hardware floating point unit to use binary or decimal floating point.

Upgrading TS queue EP adapter formats

The temporary storage queue (TSQ) EP adapter now supports common base event format, common base event REST format, and WebSphere Business Events (XML) format, in addition to the CICS flattened event (CFE) format.

For information about these event formats and how to work with them, see Event processing formats in Getting started.

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Upgrading the HTTP EP adapter to use connection pooling

Connection pooling can provide performance benefits for the HTTP EP adapter. When you implement connection pooling, CICS keeps the client HTTP connection open after the HTTP EP adapter has emitted the business event. The HTTP EP adapter can reuse the client HTTP connection to emit further events, rather than opening a new connection each time.

To implement connection pooling, add the SOCKETCLOSE attribute to the URIMAP resources that the HTTP EP adapter uses to open connections to an HTTP/1.1 compliant server. The URIMAP resources are named in the EP adapter configuration in the event bindings for your events. You do not need to make any changes to the event bindings. Choose a suitable setting for the SOCKETCLOSE attribute depending on the frequency with which the HTTP EP adapter emits events.

For more information about implementing connection pooling, see "Implementing connection pooling for client HTTP connections" on page 183.

Upgrading to use the INQUIRE CAPTURESPEC command improvements

Using the INQUIRE CAPTURESPEC command, you can now determine information about the context and primary predicate filters that are set for a given capture specification.

New options for the **INQUIRE CAPTURESPEC** command mean that you can determine information about any primary predicate or application context filters that are enabled for a given capture specification. To benefit from the improvements to the **INQUIRE CAPTURESPEC** command, you must update your existing applications or write new applications. However, no action is required if you do not plan to benefit from the additional capability to inquire about capture specifications using filters. See INQUIRE CAPTURESPEC for a complete list of options for the INQUIRE CAPTURESPEC command.

You can also determine how many application command options, application data predicates, and information sources there are for a given capture specification. Details about the predicates and information sources that are defined for a given capture specification can be seen by using the new **INQUIRE CAPDATAPRED**, **INQUIRE CAPOPTPRED**, and **INQUIRE CAPINFOSRCE** commands.

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.

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Chapter 34. Changes to CICSPlex SM installation and definition

Changes to CICSPlex SM installation, initialization parameters, resource definition, or setup are summarized here.

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 CICSPlex SM system parameters in CICS Transaction Server for z/OS, Version 4 Release 2

MASTASKPROT={YES | NO}

The **MASTASKPROT** system initialization parameter was available as a PTF for CICS TS for z/OS, Version 4.2. It controls whether the CICSPlex SM API, Web User Interface (WUI), and CICS Management Client Interface (CMCI) are allowed to perform actions or set attribute values for CICSPlex SM MAS agent tasks with transaction IDs COIE, COI0, CONA, or CONL.

If NO is specified, users of the CICSPlex SM API, WUI, and CMCI are allowed to FORCEPURGE or modify attribute values for CICSPlex SM MAS agent tasks.

If YES is specified, CICSPlex SM validates the transaction ID of all tasks before allowing actions to be performed, or attribute values to be modified for active tasks.

Changes to the EYU9XDBT utility for CMAS and CICSplex definition

EYU9XDBT, the CICSPlex SM data repository utility program, has enhanced functional and reporting capability.

EYU9XDBT enables you to export and import complete CICSPlex SM data repository backups, at the level of a CMAS or a CICSplex context. The following enhancements complete this capability:

- Relationships between CMASes and CICSplex definitions can now be exported from one CMAS and re-imported to a new CMAS, retaining the CPLXCMAS associations.
- Relationships between RTA, Monitor, and Workload specifications and the CICS regions with which they are associated now have their creation modes retained when imported to a new CICSplex. Previously, INHERIT relationships between a WLM Specification (WLMSPEC), RTA Specification (RTASPEC), or Monitor Specification (MONSPEC) and a CICS region were converted to EXPLICIT relationships when they were imported to a new CICSplex. INHERIT relationships can only occur when you associate these specifications with a CICS system group (CSYSGRP). EYU9XDBT now ignores any link records in an import that specify an INHERIT relationship between these specifications and a

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CICS region, and automatically restores the correct INHERIT relationships when the link records for the parent CSYSGRP are imported.

EYU9XDBT also reports more summary data for each command processed. In addition to the existing Command Execution Summary and Data Repository Access Summary reports, EYU9XDBT now provides a command execution summary by resource type. For example, the new data might show that 2 CICSplex objects were defined, or 3 WLMSPEC records were imported.

Change to generic alert structures used by CICSPlex SM

When you upgrade to a new version of CICS TS, 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. In CICS Transaction Server for z/OS, Version 5, this product number has changed to 5655Y04.

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.
- In CICS Transaction Server for z/OS, Version 4, the product number was 5655S97.

Chapter 35. Changes to CICSPlex SM views and resource tables

These changes affect CICSPlex SM views, resource tables, and Business Application Services definition objects.

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 **CICS region operations views > Dynamic storage area global - CICSSTOR**, the fields **Number of GCDSA cushion releases** and **Cushion limit** are displayed as "Not applicable" for regions from CICS Transaction Server for z/OS, Version 4 Release 2. The corresponding SMSATBCUSHRE and SMSATBCUSHLI attributes in the CICSSTOR resource table return "Not applicable" for regions from CICS Transaction Server for z/OS, Version 4 Release 2.

Changed CICSPlex SM views and resource tables

A number of changed CICSPlex SM views and resource tables now support new or changed CICS resource types and functions.

Changed CICSPlex SM views

Table 25. Changed CICSPlex SM views

Changed CICS resource type or function	**Corresponding CICSPlex SM views that have changed**
CICS monitoring: new fields added or obsolete fields made invalid in new releases	1. **CICS operations views** > **Task operations views** > **Active tasks** 2. **CICS operations views** > **Task operations views** > **Completed tasks** 3. **Monitoring views** > **Transaction monitoring views** > **Local or dynamic**
CICS system: changed MAXTASKS input value	**CICS operations views** > **CICS region operations views** > **CICS regions**
Client HTTP connections	1. **CICS operations views** > **TCP/IP service operations views** > **URI maps** 2. **Administration views** > **Basic CICS resource administration views** > **Resource definitions** > **URI mapping definitions**
Domain subpool storage: GUDSA and GSDSA are now supported	**CICS operations** > **CICS region operations views** > **Domain subpool**
Dynamic storage areas: GUDSA and GSDSA are now supported	**CICS operations** > **CICS region operations views** > **Dynamic storage areas**
Dynamic storage areas: GUDSA and GSDSA are now supported	**CICS operations** > **CICS region operations views** > **Dynamic storage area global**

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Table 25. Changed CICSPlex SM views (continued)

Changed CICS resource type or function	Corresponding CICSPlex SM views that have changed
Event processing: assured events	1. **CICS operations views > Application operations views > Event processing** 2. **CICS operations views > Application operations views > Event binding** 3. **CICS operations views > Application operations views > Event capture specifications** 4. **CICS operations views > Task operations views > Completed tasks** 5. **CICS operations views > Task operations views > Active tasks**
Event processing: capture specifications	**CICS operations views > Application operations views > Event capture specifications**
Event processing: EP adapter sets	**CICS operations views > Application operations views > Event binding**
Event processing: system events	1. **CICS operations views > Application operations views > Event processing** 2. **CICS operations views > Application operations views > Event capture specifications**
JVMs: withdrawal of pooled JVMs	1. **CICS operations views > CICS region operations views > CICS regions** 2. **Monitoring views > Transaction monitoring views > Local or dynamic** 3. **CICS operations views > Task operations views > Active tasks** 4. **CICS operations views > Task operations views > Completed tasks**
JVM servers	1. **CICS operations views > Enterprise Java component operations views > JVM servers**
Loader information: RO TCB load fields	1. **CICS operations views > CICS region operations views > Loader information** 2. **CICS operations views > CICS region operations views > Loader by dynamic storage area**
MVS workload manager statistics	**CICS operations views > CICS region operations views > MVS workload management**
Platform and region type details	**SM Administration Views > System Group Definitions**
SSL connections: SSL rebuild and cipher identification	1. **CICS operations views > CICS region operations views > CICS regions** 2. **CICS operations views > Task operations views > Active tasks** 3. **CICS operations views > Task operations views > Completed tasks**
Task storage: GCDSA and GUDSA are now supported	**CICS operations > CICS region operations views > Task subpool**
TCP/IP	**CICS operations views > TCP/IP service operations views > TCP/IP services**
TCPIPSERVICE resource definition attributes	**Administration views > Basic CICS resource administration views > Resource definitions > TCP/IP service definitions**

Table 25. Changed CICSPlex SM views (continued)

Changed CICS resource type or function	Corresponding CICSPlex SM views that have changed
Temporary storage queues: automatic deletion	1. **Administration views > CICS resource definitions > Temporary storage model definitions** 2. **CICS operations views > Temporary storage queue (TSQ) operations views > Temporary storage queues, Shared queues, Temporary storage queues, Models**
Temporary storage queues: limit for main storage	**CICS operations views > Temporary storage queue (TSQ) operations views > Global temporary storage statistics**
Dynamic workload management improvements	1. **Active workload views > Active workloads** 2. **Active workload views > Transaction groups** 3. **Active workload views > Transaction group affinities** 4. **Active workload views > Active routing regions** 5. **Administration views > Workload manager administration views > Specifications** 6. **Administration views > Workload manager administration views > Transaction group definitions**
WEBSERVICE resources in CICS bundles	1. **CICS operations views > TCP/IP service operations views > Web services**

Changed CICSPlex SM resource tables

Review the following resource tables for possible effects on any RTA evaluation definitions (EVALDEF) or CICSPlex SM API programs that you are using:

- APACTV
- APPLCTN
- BUNDLE
- BUNDPART
- CICSDSA
- CICSRGN
- CICSSTOR
- CMAS
- CRESBUND
- CSYSDEF
- CSYSGRP
- DB2CDEF
- DOMSPOOL
- DSPPOOL
- EMSTATUS
- EVCSPEC
- EVNTBIND
- EVNTGBL
- HTASK
- JVMSERV

- LIBDSN
- LIBRARY
- LOADACT
- LOADER
- MCICSRGN
- MGMTPART
- MLOCTRAN
- MVSWLM
- PIPELINE
- PROGRAM
- RTAACTV
- TASK
- TASKASSC
- TCPDEF
- TCPIPS
- TRANGRP
- TSKSPOOL
- TSMDEF
- TSMODEL
- TSQGBL
- TSQNAME
- TSQSHR
- TSQUEUE
- URIMAP
- URIMPDEF
- WEBSERV
- WLMATAFF
- WLMATGRP
- WLMAWORK
- WLMAWTOR
- WLMSPEC

New CICSPlex SM views and resource tables

New CICSPlex SM views and resource tables support CICS resource types and functions.

The following new CICSPlex SM views and resource tables were added in earlier releases:

New views and resource tables by functional area

Table 26. New CICSPlex SM views and resource tables

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
Applications	Not applicable	APPLCTN
Application definitions	Not applicable	APPLDEF

Table 26. New CICSPlex SM views and resource tables (continued)

Resource type or function	CICSPlex SM views	CICSPlex SM resource tables
Data predicates for a capture specification	**CICS operations views** > **Application operations views** > **Event capture specification data predicates**	EVCSDATA
Event processing adapter	**CICS operations views** > **Application operations views** > **Event processing adapter**	CRESEPAD, EPADAPT
Event processing adapter sets	Not applicable	EPADSET
Event processing adapters in an event processing adapter set	Not applicable	EPAINSET
Information sources for a capture specification	**CICS operations views** > **Application operations views** > **Event capture specification information sources**	EVCSINFO
Installed analysis definitions associated with an analysis point specification	**Real Time Analysis (RTA) views** > **Installed analysis definitions associated with an analysis point specification**	APACTV
Management parts	Not applicable	MGMTPART
Option predicates for a capture specification	**CICS operations views** > **Application operations views** > **Event capture specification option predicates**	EVCSOPT
OSGi bundles	Not applicable	OSGIBUND
OSGi services	Not applicable	OSGISERV
Platforms	Not applicable	PLATFORM
Platform definitions	Not applicable	PLATDEF
Policy rule information	Not applicable	RULE
Real Time Analysis (RTA) installed analysis and status definitions	**Real Time Analysis (RTA) views** > **Real Time Analysis (RTA) installed analysis and status definitions**	RTAACTV
Topology base table for event processing adapter sets resource table	Not applicable	CRESEPAS

Chapter 36. 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 run times 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.

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Part 4. Upgrading CICSPlex SM

To upgrade CICSPlex SM to the CICS Transaction Server for z/OS, Version 5 Release 2 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 5.2 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 5.2 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.

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Chapter 37. Conditions for running CICSPlex SM Version 5.2 and earlier releases concurrently

You can run CICSPlex SM Version 5.2 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 5.2 is the CICSPlex SM element of CICS Transaction Server for z/OS, Version 5 Release 2.

You can run CICSPlex SM Version 5.2, Version 5.1, Version 4.2, Version 4.1, Version 3.2, and Version 3.1 at the same time, with interconnected CMASs at different levels. The ability to do this allows gradual upgrading of the environment to Version 5.2. However, in CICS TS for z/OS, Version 5.2, a CICSPlex SM CMAS will run only in a CICS system at Version 5.2.

CICS systems (MASs) running the following supported CICS releases can be connected to CICSPlex SM Version 5.2:

- CICS TS for z/OS, Version 5.2
- CICS TS for z/OS, Version 5.1
- CICS TS for z/OS, Version 4.2
- CICS TS for z/OS, Version 4.1
- CICS TS for z/OS, Version 3.2
- CICS TS for z/OS, Version 3.1

To be connected to CICSPlex SM Version 5.2, CICS systems must use the CICSPlex SM Version 5.2 MAS agent, so they must have the CICSPlex SM Version 5.2 libraries in their CICS JCL. For a CICS system running CICS TS for z/OS, Version 3.1, you must also apply the compatibility APAR PK17360 to the CICS system.

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 SM to 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 5.2 CMAS, so that the older CICS systems are indirectly connected to the Version 5.2 CMAS.

The following conditions apply to environments in which CICSPlex SM Version 5.2 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.

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- A CMAS running at Version 5.2 can be connected to a CMAS running at Version 5.2, Version 5.1, Version 4.2, Version 4.1, Version 3.2, or Version 3.1.
- In a CICSplex that consists of CMASs at the Version 5.2 level and at one or more earlier levels, the maintenance point CMAS must be at the Version 5.2 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 5.2 must be the maintenance point.
- If you are using the API or Web User Interface to manage MASs connected to a CMAS at an earlier release, you must ensure that the MASs are managed indirectly from the Version 5.2 CMAS:
  - All WUI servers must connect to the Version 5.2 CMAS.
  - All API programs must run in such a way that they are connected to the Version 5.2 CMAS. This requirement applies only if the API program accesses new fields or later-level CICS systems. If the API program connects to an earlier-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 earlier release level CMAS.
- You cannot view all resources of a CICS TS for z/OS, Version 5.2 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 5.2 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.
- If you are using workload management, to use the unit of work (UOW) affinities introduced in CICS TS for z/OS, Version 4.2, the CMAS that owns the workload must be at the Version 4.2 level or later.

  Workload function is controlled by the CMAS that owns a workload. The workload owner is assigned to the CMAS that manages the first started TOR that causes the workload to be initialized. If the workload is not shown as ACTIVE, the first started TOR associated with the workload will cause its associated CMAS to be the workload owner. If the workload owning CMAS is

not at the Version 4.2 level or later, any UOW affinity definitions cannot be honored, which means that affinities will not be correctly created and obeyed, and will be denied to any other CMASs that subsequently join the workload, even if those CMASs are at the Version 4.2 level or later.

To ensure that UOW affinities can be exploited by a workload, ensure that the existing workload is cloned to a new name, and that any required UOW affinity definitions are applied to the new name. You must then ensure that the first TOR that is started for the new name is at the Version 4.2 level or later. This will cause UOW affinities to be honoured by any other region joining the workload name that is at the Version 4.2 level or later. If any regions that are at earlier release levels join the workload, they are not able to use the UOW affinity function, and must continue to make routing decisions on the basis of the standard workload routing algorithms.

If you believe that your defined UOW affinities are not being implemented, use the **System ID of workload owner** hyperlink in any of the WUI workload runtime views to determine the CICSPlex SM version of the workload owning CMAS. If the `CPSM version of CMAS` attribute is not at least at the 0420 level, the workload is not capable of exploiting any defined UOW affinities.

Chapter 38. 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 5.2 MAS.

You can either continue to access the data provided by the previous release or access the new data available from Version 5.2. For information about using API programs with different releases of CICSPlex SM, see the *CICSPlex System Manager Application Programming Guide*.

New EYUDA values

The following new EYUDA general values are added for the CICSPlex SM API:

- AVAILABLE (778)
- UNAVAILABLE (779)
- SOMEAVAIL (780)

WLMAWTOR additional storage requirements

The number of records returned by CICSPlex SM API programs querying the WLMAWTOR (Active routing regions) resource has increased because WLMAWTOR now includes extra statistical information about units of work as a result of the new key attribute RPTINGCMAS (Reporting CMAS name).

For each TOR in a workload, a WLMAWTOR record is returned from every CMAS that takes part in the workload; that is, every CMAS that manages a TOR in the workload. API programs querying WLMAWTOR, therefore, have more records to process, the number depending on the end of unit-of-work count. However existing API applications are unaffected if the first record in the result set is treated as the only record.

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Chapter 39. Upgrading a CMAS

You must upgrade your CICSPlex SM CMAS to Version 5.2 at the same time as you upgrade the CICS system on which it runs. A CICSPlex SM CMAS runs only in a CICS system of the same release level. During startup, the CMAS checks the CICS release level and stops with message EYUXL0142 if the release does not match.

Before you begin

In a CICSplex that consists of CMASs at the Version 5.2 level and at one or more earlier levels, the maintenance point CMAS must be at the Version 5.2 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 5.2 must be the maintenance point.

Before you upgrade a CMAS, check that the maintenance point CMAS for the CICSplex has been upgraded in every CICSplex where the CMAS is a member. Remove the CMAS from any CICSplex where the maintenance point CMAS is still at an earlier level. If the CMAS is started in a CICSplex that has a maintenance point CMAS at an earlier level, message EYUCP0012E is issued. In an environment with multiple interconnecting CICSplexes, this message and message EYUTS0012E can be issued repeatedly.

Note: When you upgrade a CMAS that is not a maintenance point CMAS, all of the CICSplex records are removed from its data repository. It cannot connect to its MASs, or join MASs connected to other CMASs, until it reconnects to its maintenance point, at which point its data repository is resynchronized for the CICSplex. Both the maintenance point and non-maintenance point issue EYULOG messages EYUCP0203I and EYUCP0204I. The data repository synchronize is not complete until both CMASs issue both messages. Depending upon the number of records in the CICSplex, the maintenance point usually takes longer than the non-maintenance point, and so the time between the two messages on the non-maintenance point is short, while the time between the two messages on the maintenance point is longer.

Procedure

1. If the CMAS is running, stop it and upgrade the CICS modules to Version 5.2. For more information about dynamically updating DFHIRP, see Chapter 24, “Upgrading multiregion operation (MRO),” on page 167.
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 an appropriate value. the *CICS Transaction Server for z/OS Installation Guide* explains what values are suitable. If you are running both a previous release and Version 5.2 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 5.2 libraries by adding them to the list of APF-authorized libraries in the appropriate PROGxx or IEAAPFxx member in SYS1.PARMLIB. See in the *CICS Transaction Server for z/OS Installation Guide*.
4. Update the MVS linklist with the Version 5.2 modules that are required for CICS and CICSPlex SM. See the *CICS Transaction Server for z/OS Installation Guide*.

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5. Upgrade the CSD file with the Version 5.2 group of resource definitions and CICS startup group list. See "Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions" on page 150. You do not need to carry out an additional upgrade using a release-dependent set of definitions for CICSPlex SM.
6. If you modified the default resource definitions for your earlier release, 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 5.2. The safest way 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. The default values might be inappropriate for your requirements.
7. Edit the JCL used to start the CMAS, changing the previous release of CICSPlex SM library names to the Version 5.2 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 5.2. 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. If after upgrading you choose to roll back to the version you upgraded from, use the EYU9XDUT utility to downgrade the upgraded data repository for the CMAS. Failure to do this could result in CMASs becoming isolated.
9. Delete, redefine, and initialize 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 were modified.
12. Verify that the maintenance point CMAS for the CICSplex is running in every CICSplex where the CMAS is a member, then perform a cold start of the upgraded CMAS. Allow the upgraded CMAS to perform repository synchronization with the other CMASs in the network. EYULOG messages EYUCP0203I and EYUCP0204I are issued when repository synchronization begins and completes. After repository synchronization is complete, you can proceed to upgrade the MAS regions that are connected to the CMAS.

Chapter 40. Upgrading a Web User Interface server

A 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. Web User Interface servers that have not yet been upgraded to the same level as the maintenance point CMAS can be used, but they might return unreliable results until you upgrade them.

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 to Version 5.2 before you start any other MASs, so that it is ready to manage the upgraded MASs.

A CICS system that acts as a Web User Interface server is a local MAS. However, when you upgrade a Web User Interface server, you must upgrade both the CICSPlex SM MAS agent and the CICS region to Version 5.2. In other MASs you may upgrade only the CICSPlex SM MAS agent, and you are not required to upgrade the CICS region.

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 shown in the following statements:

```
//DEFTS    JOB accounting info,name
//AUXTEMP  EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *
           DEFINE CLUSTER(NAME(CICSTS52.CICS.CNTL.CICSqualifier.DFHTEMP)-
                  RECORDSIZE(4089,4089)           -
                  RECORDS(200 200)                -
                  NONINDEXED                      -
                  CONTROLINTERVALSIZE(4096)       -
                  SHAREOPTIONS(2 3)               -
                  VOLUMES(volid))                 -
                DATA(NAME(CICSTS52.CICS.CNTL.CICSqualifier.DFHTEMP.DATA) -
                  UNIQUE)
/*
```

2. With your Web User Interface server still running at your current release, use the export function of the COVC transaction to export your existing view set and menu definitions from the Web User Interface server repository (EYUWREP) 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*. You will use this information when you upgrade the contents of the Web User Interface server repository in a later process.
3. Authorize the Version 5.2 CICS and CICSPlex SM libraries. See the *CICS Transaction Server for z/OS Installation Guide*.

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4. If you use the link pack area (LPA), decide when you will replace the previous release modules in the LPA with the Version 5.2 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 5.2 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 5.2 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 5.2 modules from the STEPLIB and DFHRPL concatenations instead of the LPA, then change them to use the LPA when you replace the modules.

   For more information, see the *CICS Transaction Server for z/OS Installation Guide*.
5. Upgrade the CSD file with the Version 5.2 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 150. 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 dynamically created resource definitions for your earlier release that were supplied by CICSPlex SM in the EYU$WDEF sample, manually upgrade your modified resource definitions using the equivalents in the EYU$WDEF sample for Version 5.2. The safest way to do this is to copy the Version 5.2 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 Web User Interface server, changing library names for the previous release of CICSPlex System Manager to the Version 5.2 names. For information about the MAS startup JCL, see the *CICS Transaction Server for z/OS Installation Guide*.
8. Verify that the CICS system initialization parameter **EDSALIM** is specified for the CICS region, and set it to a value of 800 MB. 800 MB is the default EDSALIM value for a CICS region in Version 5.1 and later. This value may be tuned by the user in a similar manner to tuning CICS storage in a CMAS. System initialization parameters can be specified before startup in the following locations:
   - In the system initialization table specified in the DFHSITxx load module whose suffix (xx) is specified as a SIT= system initialization parameter.
   - In the PARM parameter of the EXEC PGM=DFHSIP statement.
   - In the SYSIN data set defined in the startup job stream.
9. Verify that the CICS system initialization parameter **CPSMCONN=WUI** is specified for the CICS region. This system initialization parameter initializes the CICS region as a Web User Interface server and dynamically creates the required resource definitions for CICSPlex SM.
10. 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.

11. Ensure that you have deleted, redefined, and initialized the CICS local catalog and global catalog using the DFHCCUTL and the DFHRMUTL utility programs.
12. If you use MAS history recording, define new history data sets using the EYUJHIST sample job. If you prefer to upgrade your existing history data sets, you can also do this using the EYUJHIST sample job by 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.
13. Upgrade the contents of the Web User Interface server repository (EYUWREP). During this process you will start the Web User Interface server at Version 5.2. See "Upgrading the contents of the Web User Interface server repository (EYUWREP)" on page 232.

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 5.2 CMAS on the same z/OS image as the Web User Interface server.
2. Define CMAS to CMAS links between the new Version 5.2 CMAS and the maintenance point CMAS in the CICSplex where the Web User Interface server CMAS is connected.
3. Upgrade the maintenance point CMAS in the CICSplex to Version 5.2.
4. Assign the new Version 5.2 CMAS to the CICSplex.
5. Upgrade the Web User Interface server to Version 5.2 and, when you restart it, connect it to the Version 5.2 CMAS. If the Web User Interface server is configured to connect specifically to the original CMAS, you must change the configuration to connect to the Version 5.2 CMAS.
6. Upgrade the remaining MASs to Version 5.2 when required, and connect them to the Version 5.2 CMAS as you restart them. If the MASes are configured to connect specifically to the original CMAS, you must change their configuration to connect to the Version 5.2 CMAS.
7. When you have moved all the MASs to the Version 5.2 CMAS, you can remove the original CMAS from the CICSplex, and delete CMAS to CMAS links between the original CMAS and the other CMASes in the CICSplex.

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.

Before you begin

At the start of your upgrade of the Web User Interface server, when your Web User Interface server is still running at your current release, use the export function of the COVC transaction to export your existing view set and menu definitions from the Web User Interface server repository to an extrapartition transient data queue. This step is included in the upgrade instructions Chapter 40, "Upgrading a Web User Interface server," on page 229.

About this task

When you upgrade the Web User Interface server repository to CICS TS for z/OS, Version 5.2, you can import a view set and menu definitions from a previous release into your new 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.

Procedure

1. Create a new Web User Interface server repository using the JCL described in the *CICS Transaction Server for z/OS Installation Guide*.
2. Start the CICS TS for z/OS, Version 5.2 Web User Interface server using the new Web User Interface server repository.
3. 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.
4. 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 5.2 Web User Interface server and import them into a server repository of a previous release. However, any new attributes or resources that are new in this release are not accessible in previous releases. You can remove these attributes and view sets using the View Editor. For information about the View Editor, see the *CICSPlex System Manager Web User Interface Guide*.

Chapter 41. Upgrading a CICSPlex SM managed CICS system (MAS)

When you upgrade a CICSPlex SM MAS to CICSPlex SM Version 5.2, you might choose to upgrade only the CICSPlex SM MAS agent. You are not required to upgrade the CICS region to Version 5.2 at the same time.

Before you begin

Before you upgrade a CICSPlex SM MAS to CICSPlex SM Version 5.2, you must upgrade the CICSPlex SM CMAS to which it connects, following the instructions in Chapter 39, "Upgrading a CMAS," on page 227. You must also upgrade the Web User Interface server for the CICSplex, following the instructions in Chapter 40, "Upgrading a Web User Interface server," on page 229.

About this task

These steps explain how to upgrade the CICSPlex SM MAS agent in a CICS region to Version 5.2. For details of supported combinations of CICSPlex SM and CICS releases, see Chapter 37, "Conditions for running CICSPlex SM Version 5.2 and earlier releases concurrently," on page 221.

Procedure

1. If you use the link pack area (LPA), decide when you will replace the previous release modules in the LPA with the Version 5.2 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 5.2 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 5.2 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 5.2 modules from the STEPLIB and DFHRPL concatenations instead of the LPA, then change them to use the LPA when you replace the modules.

   For more information, see the *CICS Transaction Server for z/OS Installation Guide*.
2. 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 5.2. 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.
3. In the JCL that is used to start the MAS, replace the previous release SEYUAUTH library name in the STEPLIB concatenation, and the previous release SEYULOAD library name in the DFHRPL concatenation, with the Version 5.2 SEYUAUTH and SEYULOAD library names. The Version 5.2 SEYUAUTH library must be authorized for APF, which you did when you

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upgraded the CMAS, but the SEYULOAD library must not be authorized. For information about the MAS startup JCL, see the *CICS Transaction Server for z/OS Installation Guide*.

4. Verify that the CICS system initialization parameter **EDSALIM** is specified for the CICS region, and set it to a value of 800 MB. 800 MB is the default EDSALIM value for a CICS region in Version 5.2. System initialization parameters can be specified before startup in the following locations:
   - In the system initialization table specified in the DFHSITxx load module whose suffix (xx) is specified as a SIT= system initialization parameter.
   - In the PARM parameter of the EXEC PGM=DFHSIP statement.
   - In the SYSIN data set defined in the startup job stream.
5. Verify that the CICS system initialization parameter **CPSMCONN=LMAS** is specified for the CICS region. This system initialization parameter initializes the CICS region as a MAS and dynamically creates the required resource definitions for CICSPlex SM. If you made any modifications to the dynamically created resource definitions in your previous release, you must manually upgrade these using the equivalents in the EYU$MDEF sample for Version 5.2.
6. If you use MAS history recording, define new history data sets using the EYUJHIST sample job. If you prefer to upgrade your existing history data sets, you can also do this using the EYUJHIST sample job by 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.
7. Optional: If you also want to upgrade the CICS region to Version 5.2 at this time, follow the instructions in Chapter 19, "Upgrade procedures for all CICS regions," on page 149. You must upgrade the CSD for CICS as instructed, but you do not need to carry out any additional upgrade to your CSD to obtain the resource definitions for CICSPlex SM, because all CICSPlex SM resources are defined and installed dynamically.

Results

When you have completed this task, you can carry out a cold start of the MAS.

Chapter 42. Upgrading CICSPlex SM workload management

Changes to CICSPlex SM workload management, modules, application programs, or parameters are summarized here.

Changes to dynamic workload management

CICS TS 4.2 introduced a new type of CICS affinity associated with a UOW, and extended CICSPlex SM workload management (WLM) to manage these UOW affinities for DPL requests. The new affinity is restricted to programs that are dynamically linked. Programs with this type of affinity are routed to the same target region for the duration of a unit of work. These affinities are defined with an affinity relation of LOCKED and an affinity lifetime of UOW. To use the new UOW affinity with existing workloads you must restart the workloads at the CICS TS 4.2 level or later.

Changes to real-time analysis

From CICS TS 4.2, enhanced security is provided when running custom status probe definitions (STATDEFs). You can use the CICSPlex SM Real Time Analysis (RTA) component to write STATDEFs to report on conditions not covered by the RTA functions. The definition for a STATDEF now supports a user ID under which the STATDEF runs. You must ensure that the specified user ID on the START command for the STATDEF task has sufficient authority to access the required resources.

Changes to dynamic workload routing

For workload routing that uses the queue or goal algorithm to determine which target region processes the work in a workload, the weighting that is applied to certain connection types has changed. The weighting that is applied to IP connectivity (IPIC) connections is decreased so that this type of connection has higher priority relative to LU6.2 connections than in previous releases of CICS TS.

If you have routing and target regions that are connected with LU6.2 and other connection types, for example MRO, check that the change in routing behavior has not affected your workload flow. You can check the transaction execution statistics for any change in the percentage of dynamic transactions that are routed to LU6.2 linked target regions.

If workload flow is affected, consider the following approaches:

- Convert the LU6.2 links to a connection type with a higher priority, for example MRO.
- Use the link neutral queue or link neutral goal algorithm for workload routing.
- Use the task load threshold value for target regions that are not connected using LU6.2, so that there is less preference for these targets after their task loads reach their threshold percentages.
- Direct specific transactions to the LU6.2 linked target regions using the standard WLM workload separation function.

See Managing workloads. For information about the task load health threshold, see CICS system definitions - CSYSDEF.

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If a workload is imported from a CMAS running CICS TS 4.2 or later to a CMAS running a release earlier than CICS TS 4.2, the algorithm definition will be removed from active TRANGRPs in the workload imported into the CMAS running the earlier release. If another CMAS running CICS TS 4.2 or later imports the workload from this CMAS, the algorithm defined in the active TRANGRPs will revert to INHERIT. The routing algorithm used for transactions associated with active TRANGRPs will be inherited from the local active workload.

If a workload specifying LNGOAL or LNQUEUE is imported from a CMAS running CICS TS 4.2 or later to a CMAS running a release earlier than CICS TS 4.2, the routing algorithm used by the workload imported into the CMAS running the earlier release will revert to GOAL or QUEUE. If another CMAS running CICS TS 4.2 or later imports the workload from this CMAS, the original routing algorithm will not be restored. The routing algorithm for the workload will remain GOAL or QUEUE, and the routing algorithm specified in any active TRANGRPs will revert to INHERIT. The algorithm used for transactions associated with active TRANGRPs will be inherited from the local active workload.

The ability to define the link neutral routing algorithms for a transaction group must be used with caution until all CMASs which manage a workload are upgraded to run CICS TS 4.2 or later. TORs connected to different CMASs running CICS TS 4.2 or later might route work differently depending on whether the workload was, at any time, imported from a CMAS running an earlier release of CICS TS.

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 5 Release 2.

The DFHCMACD file is not updated by PTFs that are applied to CICS. For the latest message updates, see the descriptions in CICS messages in Reference -> Diagnostics. The CMAC transaction uses the DFHCMACD file to provide online descriptions of the CICS messages and codes.

Normalization of spaces in message text

From CICS Transaction Server for z/OS, Version 5 Release 1, CICS messages have been normalized to remove duplicate spaces from the text of a message and leave a single space. Spaces before and after the message text are also removed. If you have automated processes that depend on message text, check whether they are affected by this change, and modify them as necessary to match the normalized message output.

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Chapter 43. Deleted messages

These messages are deleted for CICS Transaction Server for z/OS, Version 5 Release 2. Where a range of message numbers is specified, all the message numbers in that range were previously issued and have now been deleted.

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

- DFHSJ0902
- DFHCZ0357 to DFHCZ0362

Messages deleted in CICS Transaction Server for z/OS, Version 5 Release 1

- DFHAD0201 to DFHAD0209
- DFHAD0210 to DFHAD0216
- DFHAD0231
- DFHAD0232
- DFHAD0261 to DFHAD0269
- DFHAD0270 to DFHAD0273
- DFHAM4921 to DFHAM4927
- DFHAP1217
- DFHCA4921 to DFHCA4927
- DFHEJ0101
- DFHEJ0102
- DFHEJ5001 to DFHEJ5009
- DFHEJ5010 to DFHEJ5019
- DFHEJ5020 to DFHEJ5029
- DFHEJ5030
- DFHEJ5031
- DFHEJ5036 to DFHEJ5039
- DFHEJ5040
- DFHEJ5041
- DFHEJ5043 to DFHEJ5049
- DFHEJ5050 to DFHEJ5059
- DFHEJ5060 to DFHEJ5062
- DFHEJ5101 to DFHEJ5109
- DFHEJ5110 to DFHEJ5114
- DFHEJ6000
- DFHEJ6001
- All DFHIInnnn messages, as follows:
- DFHII0001
- DFHII0002
- DFHII0004
- DFHII0100 to DFHII0109

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- DFHII0110
- DFHII0200 to DFHII0202
- DFHII0204 to DFHII0209
- DFHII0210
- DFHII0212 to DFHII0219
- DFHII0220 to DFHII0229
- DFHII0230 to DFHII0239
- DFHII0240 to DFHII0249
- DFHII0250 to DFHII0252
- DFHII0300
- DFHII0301
- DFHII0401
- DFHII0402
- DFHII0501
- DFHII0601 to DFHII0604
- DFHII1000 to DFHII1009
- DFHII1010 to DFHII1019
- DFHII1020 to DFHII1029
- DFHII1030 to DFHII1039
- DFHII1040
- DFHII1050
- DFHIS0003
- DFHIS0004
- DFHIS0006
- DFHIS1024
- DFHIS1038
- DFHIS1054
- All DFHMUnnnn messages, as follows:
- DFHMU0102 to DFHMU0109
- DFHMU0110 to DFHMU0119
- DFHMU0120 to DFHMU0129
- DFHMU0130 to DFHMU0139
- DFHMU0140 to DFHMU0149
- DFHMU0150 to DFHMU0159
- DFHMU0160
- DFHMU0162
- DFHMU0163
- DFHMU0165 to DFHMU0167
- DFHMU0169
- DFHMU0170
- DFHMU0171
- DFHMU0999
- DFHMV0001
- All DFHREGxx messages, as follows:
- DFHREG01 to DFHREG07

- DFHSI8444
- DFHSJ0206
- DFHSJ0501 to DFHSJ0503
- DFHSJ0505 to DFHSJ0509
- DFHSJ0510 to DFHSJ0512
- DFHSJ0514 to DFHSJ0518
- DFHSJ0521 to DFHSJ0529
- DFHSJ0530 to DFHSJ0539
- DFHSJ0540
- DFHSJ0900
- DFHTR0101
- DFHTR0102
- DFHWU4015
- DFHWU4023
- DFHWU4024
- EYUVC1228
- EYUVC1229
- EYUVS0025
- EYUVS0992

Messages deleted in CICS Transaction Server for z/OS, Version 4 Release 2

- DFHAP1600
- DFHAP1601
- DFHAP1602
- DFHAP1603
- DFHCA5161S
- DFHCA5274W
- DFHCA5292W
- DFHCA5603E
- DFHEC1010
- DFHEC4112
- DFHFC0112
- DFHSM0603
- DFHSN1150
- DFHSN1250

Chapter 44. Changed messages

These messages are changed for CICS Transaction Server for z/OS, Version 5 Release 2.

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

Table 27. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 2

Message number	Message text
DFHAM4952	*applid* The installation of standalone CICS bundle *resourcename* failed because its ID and version are a duplicate of a standalone CICS bundle that already exists.
DFHAP1903	*date time applid* CICS failed to write SPI audit message DFHAP1900.
DFHCA4952	*applid* The installation of standalone CICS bundle *resourcename* failed because its ID and version are a duplicate of a standalone CICS bundle that already exists.
DFHLD0503W	*date time applid termid tranid* Install of LIBRARY *libname* has failed to complete successfully, for reason: {*library not found.* | *dynamic allocation of data set failed.* | *concatenation of data sets failed.* | *open of library concatenation failed.* | *close of library concatenation failed.* | *deconcatenation of data sets failed.* | *de-allocation of data set failed.* | *mvs abend condition.* | *incompatible bundle set.* | *library not disabled.* | *insufficient storage.* | *library lock error.* | *library chain error.* | *catalog write failed.* | *catalog_delete failed.* | *unknown.*} Enablement status is Disabled.
DFHLD0513W	*date time applid termid tranid* Discard of LIBRARY *libname* has failed for reason: {*library not found.* | *dynamic allocation of data set failed.* | *concatenation of data sets failed.* | *open of library concatenation failed.* | *close of library concatenation failed.* | *deconcatenation of data sets failed.* | *de-allocation of data set failed.* | *mvs abend condition.* | *incompatible bundle set.* | *library not disabled.* | *insufficient storage.* | *library lock error.* | *library chain error.* | *catalog write failed.* | *catalog_delete failed.* | *unknown.*}
DFHLD0525W	*date time applid termid tranid* Attempt to set attributes or status of LIBRARY *libname* has failed for reason: {*library not found.* | *dynamic allocation of data set failed.* | *concatenation of data sets failed.* | *open of library concatenation failed.* | *close of library concatenation failed.* | *deconcatenation of data sets failed.* | *de-allocation of data set failed.* | *mvs abend condition.* | *incompatible bundle set.* | *library not disabled.* | *insufficient storage.* | *library lock error.* | *library chain error.* | *catalog write failed.* | *catalog_delete failed.* | *unknown.*}
DFHLD0850	*date time applid* BUNDLE *bundlename* has successfully installed LIBRARY *library* as {*Enabled* | *Disabled*}.
DFHMP2006	*date time applid* The CICS managed platform domain failed to create the policy *policyname* in BUNDLE resource *bundle* because the rule *rulename* { *has an invalid rule type* | *has an invalid condition name for rule type* | *has an invalid item name* | *has an invalid operator value* | *has an invalid storage unit* | *has an invalid count unit* | *has an invalid time unit* | *has an invalid abend code* | *has an invalid EP adapter name* | *has an invalid EP adapter set name* | *has a missing XML element*}: '*error_data*'.
DFHPA1909	*applid* DATA *data* IS INVALID FOR KEYWORD *keyword*. RESPECIFY KEYWORD AND DATA OR BYPASS BY TYPING '.END'.
DFHPG0304	*date time applid* BUNDLE *bundlename* has made the PROGRAM *programname* available as an entry point for operation *operationname* of application *applicationname*, version *majorversion.minorversion.microversion*, on platform *platformname*.
DFHPG0305	*date time applid* BUNDLE *bundlename* has made the PROGRAM *programname* unavailable as an entry point for application *applicationname*, version *majorversion.minorversion.microversion*, on platform *platformname*.

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Table 27. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
DFHPG0306	*date time applid* BUNDLE *bundlename* unable to enable PROGRAM *programname* as an entry point for operation *operationname* as {*the PROGRAM does not exist.* | *the PROGRAM failed to autoinstall.* | *an internal error occurred.* | *the PROGRAM name is invalid.* | *the named PROGRAM is remote.* | *the named resource is a MAPSET.* | *the named resource is a PARTITIONSET.* | *the PROGRAM has the same name as an existing public program.*}
DFHPI0516	*date time applid tranid* A request to the SAML security token service on JVM server *jvmserver* has failed because {*of an invalid token.* | *of a container error.* | *a required input container is missing.* | *the JVM server is not enabled.* | *the JVM server cannot be found.* | *the DFHSAML-FUNCTION container is not DATATYPE(CHAR).* | *the DFHSAML-TOKEN container is not found.* | *the DFHSAML-TOKEN container is not DATATYPE(CHAR).* | *the DFHSAML-JVM container is not DATATYPE(CHAR).* | *the DFHSAML-FILTER container is not DATATYPE(CHAR).* | *the DFHSAML-SIGNED container is not DATATYPE(CHAR).* | *of an error in parsing the token.* | *the DFHSAML-FILTER container has invalid data.* | *the DFHSAML-FUNCTION container has invalid data.* | *the DFHSAML-SIGNED container has invalid data.* | *the DFHSAML-OUTTOKEN container is not found.* | *the certificate in the token has expired.* | *the token is no longer valid.* | *the certificate in the token is not trusted* | *the DFHSAML-RESPONSE container cannot be found.* | *of an internal error.*}
DFHPI0914	*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 zFS 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* | *the WSBind file is incompatible with the LOCALCCSID* |*it is incompatible with a Bundle defined PIPELINE}* .
DFHPI1007	*DATE TIME APPLID TRANNUM {XML* | *JSON}* 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* | *MISSING_ATTRIBUTE* | *MIXED_CONTENT* | *MISSING_EQUALS_ATTR* | *MISSING_CLOSE_TAG_CHAR* | *MISSING_QUOTE_OR_APOSTROPHE* | *MISSING_END_QUOTE* | *DUPLICATE_ATTRIBUTE* | *MISMATCHED_TAGS* | *UNSUPPORTED_ENTITY* | *INVALID_UNICODE_DATA} error_qualifier*) for *{WEBSERVICE* | *XMLTRANSFORM* | *BUNDLE* | *EVENTBINDING* | *SCACOMPOSITE* | *JVMSERVER pipeline handler program* | *EPADAPTER* | *OSGIBUNDLE* | *PROGRAM* | *POLICY* | *EPADAPTERSET* | *APPLDEF* | *TRANSACTION* | *URIMAP* | *PLATDEF* | *LIBRARY* | *WARBUNDLE* | *EBABUNDLE* | *TCPIPSERVICE* | *JVMSERVER* | *FILE* | *PIPELINE* | *JSONTRANSFRM* | *TYPE UNKNOWN} resource_name*.
DFHPI1008	*DATE TIME APPLID TRANID TRANNUM {XML* | *JSON}* generation failed because of incorrect input (*{ARRAY_CONTAINER_TOO_SMALL* | *DATA_STRUCTURE_TOO_SMALL* | *ARRAY_TOO_LARGE* | *ARRAY_TOO_SMALL* | *CONTAINER_NOT_FOUND* | *CONTAINER_NOT_BIT* | *CONTAINER_NOT_CHAR* | *BAD_CHOICE_ENUM* | *LENGTH_TOO_LONG* | *LITTLE_ENDIAN_BOM* | *INVALID_UNICODE_DATA} error_qualifier*) for *{WEBSERVICE* | *XMLTRANSFORM* | *BUNDLE* | *EVENTBINDING* | *SCACOMPOSITE* | *JVMSERVER pipeline handler program* | *EPADAPTER* | *OSGIBUNDLE* | *PROGRAM* | *POLICY* | *EPADAPTERSET* | *APPLDEF* | *TRANSACTION* | *URIMAP* | *PLATDEF* | *LIBRARY* | *WARBUNDLE* | *EBABUNDLE* | *TCPIPSERVICE* | *JVMSERVER* | *FILE* | *PIPELINE* | *JSONTRANSFRM* | *TYPE UNKNOWN} resource_name*.

Table 27. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
DFHPI1009	*DATE TIME APPLID TRANNUM {XML | JSON}* to data transformation 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 | ABSTIME_INVALID}*) occurred when converting field *fieldname* for *{WEBSERVICE | XMLTRANSFORM | BUNDLE | EVENTBINDING | SCACOMPOSITE | JVMSERVER pipeline handler program | EPADAPTER | OSGIBUNDLE | PROGRAM | POLICY | EPADAPTERSET | APPLDEF | TRANSACTION | URIMAP | PLATDEF | LIBRARY | WARBUNDLE | EBABUNDLE | TCPIPSERVICE | JVMSERVER | FILE | PIPELINE | JSONTRANSFRM | TYPE UNKNOWN} resource_name*.
DFHPI1010	*DATE TIME APPLID TRANNUM {XML | JSON}* 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 | ABSTIME_INVALID}*) occurred when converting field *fieldname* for *{WEBSERVICE | XMLTRANSFORM | BUNDLE | EVENTBINDING | SCACOMPOSITE | JVMSERVER pipeline handler program | EPADAPTER | OSGIBUNDLE | PROGRAM | POLICY | EPADAPTERSET | APPLDEF | TRANSACTION | URIMAP | PLATDEF | LIBRARY | WARBUNDLE | EBABUNDLE | TCPIPSERVICE | JVMSERVER | FILE | PIPELINE | JSONTRANSFRM | TYPE UNKNOWN} resource_name*.
DFHRL0115 W	*date time applid tranid* The attempt to *{enable | disable | discard}* the BUNDLE *bundle_name* failed because one or more of its defined resources are *{in an ENABLED | in an UNUSABLE | not in a DISABLED}* state.
DFHRL0128 I	*date time applid userid* The CICS resource lifecycle manager has started to create BUNDLE *bundle_name* with bundle ID *bundle_id* and version *bundle_major_ver.bundle_minor_ver.bundle_micro_ver* for application *application_id* version *appl_major_ver.appl_minor_ver.appl_micro_ver* on platform *platform_id*.
DFHSJ0914 E	*date time applid userid* JVMSERVER *jvmserver* is installed as 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.the CJSL transaction could not be attached. | the CJSL ThreadJoiner class could not be created.}*
DFHSJ1105	*date time applid bundletype*BUNDLE *resname* from BUNDLE *bundlename* has been installed as {*Enabled* | *Disabled*}.
DFHWB0800	*date time applid* BUNDLE *bundlename* has successfully installed URIMAP *urimdef* as {*Enabled* | *Disabled*}.
DFHXM0600	*date time applid* BUNDLE *bundlename* has successfully installed TRANSACTION *trandef* as {*Enabled* | *Disabled*}.
EYUWI0020	*date time applid* WLM Routing initiated for workload(*ins#1*) in Routing Region(*ins#2*), CICSplex(*ins#3*).
EYUWI0021	*date time applid* WLM Routing initialization failed for workload(*workload*) in Routing Region(*region*), CICSplex(*plexname*).
EYUWI0080	*date time applid* WLM Workload *{query | analysis}* process for workload(*workload*), CICSplex(*plexname*) has been started *{- directed to CMAS (| - initiated by CMAS (} cmasname*).
EYUWI0081	*date time applid* WLM Workload *{analysis | build}* process for workload(*workload*) , CICSplex(*plexname*) has been completed *{- initiated by CMAS (} cmasname*).

Table 27. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
EYUWI0082	*date time applid* WLM Workload *{query | analysis}* process failed for workload(*workload*), CICSplex(*plexname*) *{- directed to CMAS (| - initiated by CMAS (} cmasname*).
EYUWI0083	*date time applid* WLM Query Workload has encountered an unknown *{object | command}* for workload(*workload*), CICSplex(*plexname*) during workload build process - *{object | command}* (*nn*) ignored.
EYUWI0084	*date time applid* WLM Query Workload was unable to locate object(*nn*), key(*type*), workload(*workload*), CICSplex(*plexname*), update ignored.
EYUWI0085	*date time applid* WLM Query Workload has detected a workload synchronization failure for workload(*workload*), CICSplex(*plexname*).
EYUWI0090	*date time applid* CMAS *ins#1* is unavailable for workload(*ins#2*), CICSplex(*ins#3*).
EYUWM0400	*date time applid* Workload *{Specification | Group | Definition}* (*name*) has been successfully installed for CICSplex(*plexname*), workload(*workload*) *{- initiated by CMAS (} cmasname*).
EYUWM0401	*date time applid* Workload *{Specification | Group | Definition}* (*name*) failed to install for CICSplex(*plexname*), workload(*workload*) *{- initiated by CMAS (| - initiated by join of router (} objectname*).
EYUWM0402	*date time applid* Workload *{Specification | Definition | Transaction Group}* (*name*) *{is not defined | has no transaction links | has an invalid scope specification}* for CICSplex(*plexname*), workload(*workload*).
EYUWM0420	*date time applid* Routing region (*sysname*) for CICSplex(*plexname*) has been joined to workload(*name*).
EYUWM0421	*date time applid* Routing region (*sysname*) for CICSplex(*plexname*) has been removed from workload(*name*).
EYUWM0422	*date time applid* Routing region (*sysname*) for CICSplex(*plexname*) already active in workload(*name*).
EYUWM0424	*date time applid* Target region (*sysname*) for CICSplex (*plexname*) has been activated in workload (*name*).
EYUWM0425	*date time applid* Target region (*sysname*) for CICSplex (*plexname*) has been terminated in workload (*name*).
EYUWM0426	*date time applid {Definition | Transaction Group | Transaction}* (*name*) already installed in workload(*name*) for CICSplex(*plexname*) - parameter ignored.
EYUWM0427	*date time applid* Parameters have been ignored during the installation of Workload *{Group | Definition}* (*name*) for CICSplex(*plexname*), workload(*workload*) *{- initiated by CMAS (} cmasname*).
EYUWM0428	*date time applid* WLMDEF (*defname1*) already installed in workload(*workloadname*) as (*defname2*) for CICSplex(*plexname*) - parameter ignored.
EYUWM0429	*date time applid* WLMDEFs (*defname1*) and (*defname2*) in workload(*workloadid*) for CICSplex(*plexname*) contain conflicting parameters. WLMDEF(*defname3*) is ignored.
EYUWM0430	*date time applid* Workload(*workloadid*) for CICSplex(*plexname*) transition to *type*: *sysname* at *sysplex reason*.
EYUWM0431	*date time applid* AOR (*name*) has failed activation for workload(*workloadid*), CICSplex(*plexname*) because it has the same APPLID(*applid*) as previously activated AOR(*name2*).
EYUWM0432	*date time applid* WLMDEF (*defname*) in workload(*workloadid*) cannot be processed for CICSplex(*plexname*) due to a CICS BTS Processtype specification.
EYUWM0433	*date time applid* TRANGRP (*trangrpname*) in workload(*workloadname*) cannot be processed for CICSplex(*plexname*) due to a CICS BTS Affinity specification.
EYUWM0503	*date time applid* Routing region (*name*), CICSplex(*plexname*) is running in Sysplex Optimized WLM state for workload(*workload*).

Table 27. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
EYUWM0504	*date time applid* Routing region (*name*), CICSplex(*plexname*) is not running in Sysplex Optimized WLM state for workload(*workload*).
EYUWM0505	*date time applid* Target region (*name*), CICSplex(*plexname*) is running in Sysplex Optimized WLM state.
EYUWM0506	*date time applid* Target region (*name*), CICSplex(*plexname*) is not running in Sysplex Optimized WLM state.
EYUWM0507	*date time applid* Routing region (*name*), CICSplex(*plexname*) optimization termination in workload(*workload*) reason: ({*RS server failure* | *Optimization disabled* | *RSPOOLID changed*}).
EYUWM0508	*date time applid* Target region (*name*), CICSplex(*plexname*) optimization termination reason: ({*RS server failure* | *Optimization disabled* | *RSPOOLID changed* | *Link to DFHRSFDL failed*}).

Messages changed in CICS Transaction Server for z/OS, Version 5 Release 1

Table 28. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 1

Message number	Message text
DFHAM4928	*applid* Install of *{TCPIPSERVICE | CORBASERVER | IPCONN | URIMAP} resourcename* failed because the specified certificate *{is expired | is not yet current | does not have a private key | is not trusted | is not found}*.
DFHCA4928	*date time applid tranid* Install of *{TCPIPSERVICE | CORBASERVER | IPCONN | URIMAP} resourcename* failed because the specified certificate is *{expired | not yet current | not owned by this CICS | not trusted | not found}*.
DFHEC1013	*date time applid* The CICS event capture component failed to create the EVENTBINDING resource *evbname* in BUNDLE *bundle* because {the LOCALCCSID SIT parameter is not supported | the event binding schema level is not supported | the event binding USERTAG is invalid | the EP adapter name is invalid | the EP adapterset name is invalid | of an invalid numeric filter value }: error_data.
DFHEP1001	*date time applid* EPADAPTER *adaptername* from BUNDLE *bundle* installed successfully.
DFHEP1002	*date time applid* EPADAPTER *adaptername* from BUNDLE *bundle* discarded successfully.
DFHEP1003	*date time applid* EPADAPTER *adaptername* from BUNDLE *bundle* installed successfully, replacing a previously installed version.
DFHME0006	*applid* Insufficient storage to satisfy GETMAIN (code *X'code'*) in module *modname*. MVS code *mvscode*.
DFHRL0113	*date time applid tranid* The CICS resource lifecycle 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. | The specified bundleVersion is not supported. | The specified bundleRelease is not supported. | The specified id contains invalid characters. | The specified bundleMajorVer is invalid. | The specified bundleMinorVer is invalid. | The specified bundleMicroVer is invalid. | Bundle ID mismatch. | Bundle version mismatch.}*

Table 28. Messages changed in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
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 (IO_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 | there was a error with exit XWBAUTH | the URIMAP is disabled | there was a socket error (ADDRESS_IN_USE) | there was a socket error (ADDRESS_NOT_AVAILABLE) | there was a socket error (ALREADY_ASSOCIATED) | the connection was refused | there was a socket error (INVALID_OPTION) | there was a socket error (MAX_PORTS_REACHED) | there was a socket error (MISSING_OPTION) | there was a socket error (NEVER_ASSOCIATED) | there was a socket error (NO_CONNECTION) | there was a socket error (NO_SOCKET_AVAILABLE) | there was a socket error (NOT_PENDING) | there was a socket error (NOTIFIED) | there was a socket error (SCHEDULED) | there was a socket error (SOCKET_IN_USE) | there was a socket error (STATE_ERROR) | there was a socket error (TASK_CANCELLED) | there was a socket error (TCP_NOT_ACTIVE}*. Problem occurred for URI *URI* .
DHFSJ1100	*date time applid* An attempt to install the *bundletype* bundle with symbolic name *bundlename*, version *version* into JVM server *jvmserver* has failed with reason code *{ERROR_CODE_UNRECOGNIZED | JVMSERVER_NOT_FOUND | EXCEPTION_FROM_JVMSERVER | JVMSERVER_NOT_OSGI_ENABLED |INTERNAL_ERROR | DUPLICATE_OSGI_BUNDLE_FOUND | JVMSERVER_NOT_LIBERTY_SERVER}*.
DFHSJ1101	*date time applid* An attempt to enable the *bundletype* bundle with symbolic name *bundlename*, version *version* in JVM server *jvmserver* has failed with reason code *{ERROR_CODE_UNRECOGNIZED | EXCEPTION_FROM_JVMSERVER}*.
DFHSJ1102	*date time applid* An attempt to disable the *bundletype* bundle with symbolic name *bundlename*, version *version* in JVM server *jvmserver* has failed with reason code *{ERROR_CODE_UNRECOGNIZED | EXCEPTION_FROM_JVMSERVER}*.
DFHSJ1104	*date time applid* The *bundletype* bundle with symbolic name *bundlename*, version *version* has not been installed because the JVM server *jvmserver* is not enabled.
DFHSJ1106	*date time applid bundletype* BUNDLE *resname* from BUNDLE *bundlename* has been discarded.
DFHSM0602	*applid* Insufficient storage to allocate the minimum above the bar memory object.
DFHSR0622	*applid* An attempt to *{overwrite | access}* the *dsaname* has caused the following abend.
DFHTR0103	TRACE TABLE SIZE IS *nn*K.
DFHTS1605	*date time applid* Scan of temporary storage queues completed. *XXXX* temporary storage queues were scanned and *YYYY* were deleted.
DFHWU4001	The URI specified contains a PATH that exceeds the maximum allowable length of 256 bytes.
DFH7054IS	*xxxxxxxx* COMMAND IS NOT SUPPORTED AND IS NOT TRANSLATED.
DFH7089IE	'LABEL' OPTION IS NOT SUPPORTED AND IS IGNORED.
EYUNL0150W	Get Topology for resource *restype* failed, COMMAND=*cmdname* RESP=*respcode* RESP2=*resp2code*
EYUNL0151I	Get Topology for resource *restype* has zero data records
EYUNL0153W	Get Topology for resource *restype* is incomplete

Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2

Message number	Message text
DFHAM4843 W	*applid GROUP/LIST name* is internally locked to OPID *opid* APPLID *applid*.
DFHAM4868 W	*applid* The LSRPOOLNUM of the LSRPOOL *lsrname* in group *grpname* duplicates that of LSRPOOL *lsrname* in group *grpname*
DFHAM4943 E	*applid* The installation of *{ATOMSERVICE} resourcename* failed because the associated *{CONFIGFILE | BINDFILE | URIMAP}* is invalid.
DFHAM4944 W	*applid* JVMSERVER *resourcename* has been installed with fewer threads than requested on its definition.
EYUXD1024	*date time applid* Discovery of *booktype* (*resource*) suppressed by filter (*filter*).
DFHBR0412	*date time applid* Dynamic transaction routing program *prog* resource definition not found.
DFHCA4833 E	*date time applid tranid* A security error has occurred while attempting to install *{TDQUEUE | URIMAP} resourcename*. The definition has not been installed.
DFHCA4843 W	*date time applid tranid GROUP/LIST name* is internally locked to OPID *opid* APPLID *applid*.
Messages in the range DFHCA4800 - DFHCA4999	Where any of these messages did not include a transaction ID (*tranid*), this item has been added after the APPLID (*applid*).
DFHCA5120	*date time applid netname tranid csdtype* CSD opened; ddname: *ddname* - dsname: *dsname*
DFHCA5123	*date time applid netname tranid csdtype* CSD closed; ddname: *ddname* - dsname: *dsname*
DFHCA5540	*date time applid netname xxxxxxx* value is greater than *yyyyyyy* value. The lower value takes precedence.
Messages in the range DFHCA5544 - DFHCA5634	Where any of these messages did not include a network identifier (*netname*) and transaction ID (*tranid*), these items have been added after the APPLID (*applid*).
DFHCE3503	Incorrect password length. Sign-on is terminated.
DFHCE3504	Incorrect new password length. Sign-on is terminated.
DFHDB2005	*date time applid* Transaction *tran* is not defined for CICS DB2.
DFHDB2057	*date time applid tranid termid* Abend *abcode* in DFHD2EX1 - resource definition for dynamic plan exit p rogram *progname* was not found.
DFHDB2066	*date time applid tranid termid* Abend *abcode* in DFHD2EX1 - resource definition for dynamic plan exit p rogram *progname* defines the program as remote.
DFHEC1001	*date time applid* EVENTBINDING *evbname* from BUNDLE *bundle* installed successfully.
DFHEC1002	*date time applid* EVENTBINDING *evbname* from BUNDLE *bundle* discarded successfully.
DFHEC1003	*date time applid* The CICS event capture component failed to create the EVENTBINDING resource *evbname* in BUNDLE *bundle* because *{the event binding name is invalid. | XML data in the event binding could not be parsed. | the eventDispatcher is missing or invalid. | the EPADAPTER create failed. | the eventBinding is invalid. | there are no capture specifications. | the EVENTBINDING is a duplicate in the BUNDLE.}*
DFHEC1009	*date time applid* The CICS event capture component found an inconsistency in one or more values during install of EVENTBINDING *evbname* in BUNDLE *bundle* because the capture specification *capspec{has an overlength formatPrecision in data item: | has an invalid formatlength in data item: }dataItem*.
DFHEC4007 E	*date time applid tranid* Transaction start EP adapter failed to emit an event to transaction *tranid* for event binding *evbname*. START TRANSID failed with response code *response* and reason code *reason*.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHEC4008	*date time applid tranid* TSQ EP adapter failed to emit an event to queue *queuename* for event binding *evbname*. WRITEQ TS returned with condition *resp* reason code *reason*.
DFHEC4009	*date time applid tranid* TSQ EP Adapter failed to emit an event to queue *queuename* for event binding *evbname* because the queue is not defined as recoverable.
DFHEC4111	*date time applid tranid* WebSphere MQ EP adapter failed to emit an event to queue *queue_name* for event binding *evbname*. WebSphere MQ function MQPUT1 returned with completion code *comp_code*.
DFHEC4117	*date time applid tranid* The WebSphere MQ EP adapter failed to emit an event for capture specification *csname* in event binding *evbname* to queue *queueName*. The event's size of *buffer_length* bytes exceeds the queue's maximum message length.
DFHEJ0101	*applid* Enterprise Java domain initialization has started.
DFHEP0114	*date time applid tranid* The EP adapter user ID of *adapter_userid* in event binding *evbname* is revoked, not valid, or not defined. Event discarded.
DFHEP0117	*applid* The EPADAPTER transaction ID *adapter_tranid* is disabled or undefined. An event from EVENTBINDING *evbname* has been discarded.
DFHEP0118	*applid* The EPADAPTER transaction ID *adapter_tranid* is remote. An event from EVENTBINDING *evbname* has been discarded.
DFHFC0202	*date time applid terminal userid tranid* Resource definition for FILE *filename* has been added.
DFHFC0203	*date time applid terminal userid tranid* Resource definition for FILE *filename* has been deleted.
DFHFC0204	*date time applid terminal userid tranid* Resource definition for FILE *filename* has been updated.
DFHFC0206	*date time applid terminal userid tranid* Resource definition for FILE *filename* has been added.
DFHFC0207	*date time applid terminal userid tranid* Resource definition for FILE *filename* has been deleted.
DFHFC0150	*date time applid termid tranid* An attempt to release locks for unit of work *X'uowid'* failed. VSAM return code *X'rrrr'* reason code *X'cccc'*.
DFHFC0151	*date time applid termid tranid* An attempt to retain locks for unit of work *X'uowid'* failed. VSAM return code *X'rrrr'* reason code *X'cccc'*.
DFHFC0152	*date time applid termid tranid* An attempt to retain locks for data set within unit of work *X'uowid'* failed. VSAM return code *X'rrrr'* reason code *X'cccc'*.
DFHFC0157	*applid tranid termid userid* An I/O error has occurred on base data set *dsname* accessed via file *filename* component code *X'code'*.
DFHFC0164	*date time applid tranid trannum termid userid*. A request has timed out waiting for an RLS lock. There are *nn* transactions or Transactional VSAM units of recovery holding this lock.
DFHFC0165	*date time applid tranid trannum termid userid*. Transaction *transid* (*tasknum*) unit of work *X'uowid'* running in job *jobname* with applid *applid2* in MVS *mvsid* holds *{add to end lock | internal lock | exclusive lock on key | shared lock on key }X'keyid'* in data set *dsname* causing *{true | false}* contention.
DFHFC0166	*date time applid tranid termid userid*. VSAM RLS has detected a deadlock. There are *nn* transactions or Transactional VSAM units of recovery in the deadlock chain.
DFHFC0167	*date time applid tranid termid userid*. Transaction *transid(tasknum)* with unit of work id *X'uowid'* running in *jobname/applid2* in MVS *mvsid* holds *{add to end lock | internal lock | exclusive lock on key | shared lock on key }X'key1'* on data set *dsname1* and is waiting for *{add to end lock | internal lock | exclusive lock on key | shared lock on key }X'key2'* on data set *dsname2*.
DFHFC0168	*date time applid tranid trannum termid userid.{ An exclusive | A shared}* lock on key *X'keyid'* in data set *dsname* is causing *{true | false}* contention but the owner of this lock is unknown.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHFC0169	*date time applid termid userid*. Transaction *tranid* with transaction number *trannum* encountered an RLS retained lock held on data set *dsname* by unit of work *X'uowid'* within CICS with applid *applid2*.
DFHFC0174	*date time applid tranid trannum termid userid* A deadlock has occurred as a result of a lock promote failure. There are *nnn* transactions or Transactional VSAM units of recovery holding this lock.
DFHFC0175	*date time applid tranid trannum termid userid*. Transactional VSAM unit of recovery *X'urid'* running in job *jobname* on Transactional VSAM instance *TVSInstance* in MVS *mvsid* holds *{add to end lock | internal lock | exclusive lock on key | shared lock on key }X'keyid'* in data set *dsname* causing *{true | false}* contention.
DFHFC0177	*date time applid tranid termid userid*. Transactional VSAM unit of recovery id *X'urid'* running in *jobname/TVSInstance* in MVS *mvsid* holds *{add to end lock | internal lock | exclusive lock on key | shared lock on key }X'key1'* on data set *dsname1* and is waiting for *{add to end lock | internal lock | exclusive lock on key | shared lock on key }X'key2'* on data set *dsname2*.
DFHFC0179	*date time applid termid userid*. Transaction *tranid* with transaction number *trannum* encountered an RLS retained lock held on data set *dsname* by unit of recovery *X'urid'* within Transactional VSAM instance *TVSInstance*.
DFHFC0300	*applid* (*tranid termid*) purge deferred due to incomplete I/O operation on VSAM file '*filename*'.
DFHFC0301	*applid* (*tranid termid*) purge deferred due to incomplete I/O operation on BDAM file '*filename*'.
DFHFC0302	*applid* (*tranid termid*) CICS terminating. Failure while waiting for I/O operation on VSAM file '*filename*'.
DFHFC0303	*applid* (*tranid termid*) CICS terminating. Failure while waiting for I/O operation on BDAM file '*filename*'.
DFHFC0308	*applid tranid termid* Purge deferred due to incomplete I/O operation on VSAM RLS file *filename*
DFHFC0309	*applid tranid termid* Failure while waiting for I/O operation on VSAM RLS file *filename*
DFHFC0310	*applid tranid termid* Purge deferred due to incomplete I/O operation on the RLS control ACB.
DFHFC0311	*applid tranid termid* Failure waiting for I/O operation on the RLS control ACB.
DFHFC0951	*applid* {*RLS | Non-RLS*} OPEN of file *filename* failed. DSNAME not available from JCL or resource definition. Module *module*.
DFHFC0979	*date time applid* LSR pool *n* parameters incomplete for file *filename* because the DSNAME specified in the resource definition could not be found on the VSAM catalog. VSAM has returned code *rrrr* in R15.
DFHFC3010	*date time applid* Diagnostic information for unit of work *X'local-uowid'* and file *filename*. Update was a *{read-update | write-add}* made by transaction *tranid* at terminal *termid* under task number *tasknum*. Key length *key-length*, data length *data-length*, base ESDS RBA *X'base-RBA-or-zero'*, record key *X'record-key'*
DFHFC7130	*date time applid tranid trannum termid userid*. Unit of work *X'uowid'* running in region *owner-applid* in MVS system *MVSid* holds a lock on key *X'keyid'* in coupling facility data table *tablename* in pool *CFDTpool*, which caused this request to wait.
DFHIR3789	*date time applid* SEND/RECEIVE mismatch between definitions for this system and system *sysid*
DFHIS1035	*date time applid* Unable to send *{a START | a CANCEL | a transaction routing | an enhanced routing | a file control | a transient data | a temporary storage}* request using IPCONN *ipconn*. Partner region does not support this function over IPIC.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHME0101	*applid* An error (code *X'code'*) occurred while writing message *msgno* to transient data queue *queue*.
DFHME0503	THE CMAC FILE IS NOT DEFINED TO CICS.
DFHMQ0308 I	*date time applid* MQNAME *id* is stopped. Connect request deferred.
DFHMQ0309 E	*date time applid* Unable to connect using MQNAME *id*. MQCC=*mqcc* MQRC=*mqrc*.
DFHMQ0320 I	*date time applid* The CICS-MQ Adapter cannot find MQNAME *id*.
DFHMQ0749 E	*date time applid tranid trannum* Authentication error. EIBRESP=*resp* EIBRESP2=*resp2* Userid=*user-id*.
DFHPG0101	*date time applid terminal userid tranid* Resource definition for *progname* has been added.
DFHPG0102	*date time applid terminal userid tranid* Resource definition for *progname* has been deleted.
DFHPG0103	*date time applid terminal userid tranid* Resource definition for *progname* has been replaced.
DFHPG0201	*date time applid terminal userid tranid* Program autoinstall exit *urmname* indicated that program *progname* should not be installed.
DFHPG0209	*date time applid terminal userid tranid* Resource definition for *progname* has been autoinstalled using model *modelname*.
DFHPG0210	*date time applid terminal userid tranid* Resource definition for *progname* has been system autoinstalled.
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* | *there was a error with exit XWBAUTH* | *the URIMAP is disabled*}. Problem occurred for URI *uri*.
DFHPI0403	*date time applid tranid* The CICS pipeline HTTP transport mechanism failed to receive a response because {*the socket receive was timed out* | *the task was purged*}. Problem occurred for URI *uri*.
DFHPI0720 E	*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> | / | <localname>value</localname> | <namespace>value</namespace> | a tag that is valid within <service_handler_list> | <jvmserver> tag within <cics_soap_1.n_handler_java> | <jvmserver>value</jvmserver> | <repository>value</repository>}*.
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 | failure to send response to WS-Addressing endpoint}*.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHPI1007	*date time applid trannum {XML | JSON}* 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 | MISSING_ATTRIBUTE | MIXED_CONTENT | MISSING_EQUALS_ATTR | MISSING_CLOSE_TAG_CHAR | MISSING_QUOTE_OR_APOSTROPHE | MISSING_END_QUOTE | DUPLICATE_ATTRIBUTE | MISMATCHED_TAGS | UNSUPPORTED_ENTITY} error_qualifier* for *{WEBSERVICE | XMLTRANSFORM | BUNDLE | EVENTBINDING | SCACOMPOSITE | JVMSERVER pipeline handler program | EPADAPTER | OSGIBUNDLE | JSONTRANSFRM | TYPE UNKNOWN} resource_name*.
DFHPI1008	*date time applid trannum {XML | JSON}* generation failed because of incorrect input *{ARRAY_CONTAINER_TOO_SMALL | DATA_STRUCTURE_TOO_SMALL | ARRAY_TOO_LARGE | ARRAY_TOO_SMALL | CONTAINER_NOT_FOUND | CONTAINER_NOT_BIT | CONTAINER_NOT_CHAR | BAD_CHOICE_ENUM | LENGTH_TOO_LONG} error_qualifier* for *{WEBSERVICE | XMLTRANSFORM | BUNDLE | EVENTBINDING | SCACOMPOSITE | JVMSERVER pipeline handler program | EPADAPTER | JSONTRANSFRM | TYPE UNKNOWN} resource_name*.
DFHPI1009	*date time applid trannum {XML | JSON}* to data transformation 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 | ABSTIME_INVALID}* occurred when converting field *fieldname* for *{WEBSERVICE | XMLTRANSFORM | BUNDLE | EVENTBINDING | SCACOMPOSITE | JVMSERVER pipeline handler program | EPADAPTER | JSONTRANSFRM | TYPE UNKNOWN} resource_name*.
DFHPI1010	*date time applid trannum {XML | JSON}* 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 | ABSTIME_INVALID}* occurred when converting field *fieldname* for *{WEBSERVICE | XMLTRANSFORM | BUNDLE | EVENTBINDING | SCACOMPOSITE | JVMSERVER pipeline handler program | EPADAPTER | JSONTRANSFRM | TYPE UNKNOWN} resource_name*.
DFHPI9506	Parameter *parameter* exceeds the maximum valid length of *max* characters. The supplied value is *value*.
DFHPI9523E	An unexpected error occurred whilst processing file *file*. The problem is: *value*.
DFHRD0107	*date time applid terminal userid tranid* INSTALL LSRPOOL(*lsrname*)
DFHRL0103	*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. | is invalid.}*
DFHRT4418	*date time applid* Abend *abcode* in *modname* - *{Dynamic | Distributed}* routing program resource definition not found.
DFHSJ0201	*date time applid JVMProfile* A call to CELQPIPI with function code INIT_SUB has failed. (Return code - *X'rc'*).
DFHSJ0202	*date time applid JVMProfile* A call to CELQPIPI 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 CELQPIPI with function code CALL_SUB has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHSJ0204	*date time applid JVMProfile* A call to CELQPIPI 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 CELQPIPI with function code CALL_SUB has failed. (Return code - *X'rc'*). See the JVM's STDERR log for further details.
DFHSJ0534	*date time applid* Deprecated option *option* found in JVM profile *jvmprof* will be ignored. The value of the USSHOME system initialization parameter will be used instead.
DFHSJ0535	*date time applid* The directory *directory* specified in the *parm* failed to open. The JVM cannot be started. Runtime error message is *errmsg*.
DFHSJ0536	*date time applid* Insufficient permission to access the directory *directory* specified in the *parm*. The JVM cannot be started.
DFHSJ0537	*date time applid* The version of CICS Java support in the directory *directory* specified in the *parm* is incorrect. The JVM cannot be started.
DFHSJ0904	*date time applid userid termid tranid program_name* Exception *exception* occurred creating object reference for class *className*.
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. | it is a duplicate of one that already exists.}*
DFHSJ1004	*date time applid userid* An exception has been thrown by the *method_name* method of class *classname* running in JVMSERVER *jvmserver*. Exception *'exception'*.
DFHSJ1006 E	*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}*.
DFHSO0102	*date time applid* A UNIX System Services Assembler Callable Service error (code *X'code'*) has occurred on receipt of a severe TCP/IP return code; the TCPIPSERVICE *tcpipservice* on port *portnumber* at IP address *ipaddress* will be closed.
DFHSO0106	*date time applid* A UNIX System Services Callable Service error (code *X'code'*) has occurred in module *modname*
DFHSO0111	*date time applid* Opening the TCPIPSERVICE *tcpipservice* has failed because the jobname of the region is not authorized to use the port number specified.
DFHSO0117	*applid* Unable to determine the TCP/IP host name. UNIX System Services return code *X'retcode'*, reason code *X'rc'*.

Table 29. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
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*.
DFHTC2536	*date time applid* Link to DFHTEP from DFHTACP failed because *{module DFHTEP is not AMODE 31 | module DFHTEP could not be loaded | there is no resource definition for program DFHTEP}*.
DFHTD0252	*applid* Open of queue *queue* failed. DSNAME not available from JCL or resource definition. Module *module*.
DFHTD1217	*applid* Unable to install resource definition for transient data queue *xxxx*.
DFHTD1221	*applid* Transient data queue definitions not restored, *xxxx* failed
DFHTD1278	*applid* An error occurred during initialization of intrapartition queue *queuename* for userid *userid*. The queue has not been installed.
DFHUS0100	*applid* CICS is unable to listen for ENF event 71. Changing a user's RACF attributes will only take effect after the USRDELAY timeout.
DFH5120	*{Primary | Secondary}* CSD opened; DDNAME: *ddname* - DSNAME: *dsname*
DFH5123	*{Primary | Secondary}* CSD closed; DDNAME: *ddname* - DSNAME: *dsname*
DFH5124	Processing terminated. Corrupted CSD control record detected while closing *{primary | secondary}* CSD; DDNAME: *ddname*
DFH5125	Error occurred while closing the *{primary | secondary}* CSD. File is full; DDNAME: *ddname*
DFH5273	*resource object* is not in group *grpname*.
EYUWM0503	*date time applid* Routing region (*name*) is running in Sysplex Optimized WLM state.
EYUWM0504	*date time applid* Routing region (*name*) is not running in Sysplex Optimized WLM state.
EYUWM0505	*date time applid* Target region (*name*) is running in Sysplex Optimized WLM state.
EYUWM0506	*date time applid* Target region (*name*) is not running in Sysplex Optimized WLM state.
EYUXD1001	*date time applid* Parameter (*parameter*) is mandatory and is missing or blank.
EYUXD1009	*date time applid* Parameter (*command*) is not valid input.
EYUXD1024	*date time applid* Discovery of *booktype* (*resource*) suppressed by filter (*filter*).

Chapter 45. New messages

These messages are new for CICS Transaction Server for z/OS, Version 5 Release 2.

Table 30. New messages in CICS Transaction Server for z/OS, Version 5 Release 2

Message number	Message text
DFHFC0600	*date time applid* BUNDLE *bundlename* has successfully installed FILE *filename* as {*Enabled* | *Disabled*}.
DFHFC6042	*datetime applid* Attempt to discard file *filename* failed.
DFHFC6043	*datetime applid* Attempt to disable bundle *bundlename* failed because file *filename* has retained locks or is in use.
DFHKE0007	*applid* Licence module DFHSIVT not found.
DFHLD0508I	*date time applid termid tranid* LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* is being installed with status *{Enabled | Disabled}*.
DFHLD0509I	*date time applid termid tranid* Install of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* has completed successfully. Enablement status is *{Enabled | Disabled}*.
DFHLD0510I	*date time applid* Details for LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname*, ranking: *ranking*, enablement status: *{Enabled | Disabled}*.
DFHLD0514W	*date time applid termid tranid* Install of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname*, has failed to complete successfully, for reason: {*library not found.* | *dynamic allocation of data set failed.* | *concatenation of data sets failed.* | *open of library concatenation failed.* | *close of library concatenation failed.* | *deconcatenation of data sets failed.* | *de-allocation of data set failed.* | *mvs abend condition.* | *incompatible bundle set.* | *library not disabled.* | *insufficient storage.* | *library lock error.* | *library chain error.* | *catalog write failed.* | *catalog_delete failed.* | *unknown.*} Enablement status is Disabled.
DFHLD0515E	*date time applid termid tranid* Install of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname*, has failed because a LIBRARY of that name is already installed.
DFHLD0516I	*date time applid termid tranid* LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* has been successfully discarded.
DFHLD0517W	*date time applid termid tranid* Discard of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* has failed for reason: {*library not found.* | *dynamic allocation of data set failed.* | *concatenation of data sets failed.* | *open of library concatenation failed.* | *close of library concatenation failed.* | *deconcatenation of data sets failed.* | *de-allocation of data set failed.* | *mvs abend condition.* | *incompatible bundle set.* | *library not disabled.* | *insufficient storage.* | *library lock error.* | *library chain error.* | *catalog write failed.* | *catalog_delete failed.* | *unknown.*}
DFHLD0518I	*date time applid termid tranid* LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* has been assigned a DD name of *ddname*.
DFHLD0526I	*date time applid termid tranid* LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* has been enabled.
DFHLD0527I	*date time applid termid tranid* LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* has been disabled.

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Table 30. New messages in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
DFHLD0528W	*date time applid termid tranid* Attempt to set attributes or status of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* has failed for reason: {*library not found.* | *dynamic allocation of data set failed.* | *concatenation of data sets failed.* | *open of library concatenation failed.* | *close of library concatenation failed.* | *deconcatenation of data sets failed.* | *de-allocation of data set failed.* | *mvs abend condition.* | *incompatible bundle set.* | *library not disabled.* | *insufficient storage.* | *library lock error.* | *library chain error.* | *catalog write failed.* | *catalog_delete failed.* | *unknown.*}
DFHLD0557I	*date time applid* Current LIBRARY search order for platform *platformname*, application *applicationname*, version *majorversion.minorversion.microversion* follows.
DFHLD0558I	*date time applid* Current LIBRARY search order for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* is empty.
DFHLD0733	*applid* Install of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* encountered an error. The LIBRARY is installed but disabled.
DFHLD0734	*applid* Install of LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* encountered an error. The LIBRARY is installed as disabled.
DFHLD0735	*applid* Attempt to install or enable LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* will be delayed because data set *dsname* is being recalled.
DFHLD0736	*applid* Attempt to enable LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* encountered an error. The LIBRARY is disabled.
DFHLD0737	*applid* Disable processing for LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* encountered an error.
DFHLD0738	*applid* Dynamic allocation of data set *dsname* for LIBRARY *libname* for application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* failed. DYNALLOC return codes: *X'rrrr'*, *X'cccc'*, *X'dddd'*.
DFHLD0739	*applid* Dynamic concatenation of data sets for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* failed. DYNALLOC return codes: *X'rrrr'*, *X'cccc'*, *X'dddd'*.
DFHLD0740	*APPLID* Open of DD for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* failed.
DFHLD0741	*applid* Dynamic unallocation of data set *dsname* for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* failed. DYNALLOC return codes: *X'cccc'*, *X'rrrr'*, *X'dddd'*.
DFHLD0742	*applid* Dynamic deconcatenation of data sets for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* failed. DYNALLOC return codes: *X'rrrr'*, *X'cccc'*, *X'dddd'*.
DFHLD0743	*applid* Close of DD for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* failed.
DFHLD0744	*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* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname*.
DFHLD0745	*APPLID* Data set *dsname* could not be allocated for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* 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'*

Table 30. New messages in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
DFHLD0746	*APPLID* Data set *dsname* could not be allocated for LIBRARY *libname* of application *applicationname*, version *majorversion.minorversion.microversion* on platform *platformname* because it is not valid for a dynamic LIBRARY. Reason: *{not DASD volume | not partitioned organization | record format is not set to unspecified}*.
DFHMP1007	*date time applid* Policy *policyname* from BUNDLE resource *bundle* successfully enabled.
DFHMP1008	*date time applid* Policy *policyname* from BUNDLE resource *bundle* successfully disabled.
DFHMP2013	*date time applid* The CICS managed platform domain failed to create the policy scope for operation *operation* defined in BUNDLE resource *bundle* because the policy name *policyname* is invalid. The BUNDLE resources was installed with a scope of platform(*platformname*), application(*applicationname*), and version(*majorversion.minorversion.microversion*).
DFHMQ0793	Check for associated messages to determine if the WebSphere MQ message was reprocessed or moved to another queue. Previous messages may explain why the remote system was unable to commit.
DFHPG0111	*date time applid terminal userid tranid* Resource definition for *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* has been added.
DFHPG0112	*date time applid terminal userid tranid* Resource definition for *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* has been deleted.
DFHPG0113	*date time applid terminal userid tranid* An application entry point for operation *operationname* of application *applicationname*, version *majorversion.minorversion.microversion*, on platform *platformname* has been set disabled and unavailable because PROGRAM *programname* has been replaced.
DFHPG0221	*date time applid terminal userid tranid* Program autoinstall exit *urmname* indicated that program *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* should not be installed.
DFHPG0224	*date time applid terminal userid tranid* Autoinstall for program *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* failed. Program autoinstall model *modelname* is not defined.
DFHPG0226	*date time applid terminal userid tranid* Autoinstall for program *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* failed. Programs starting with "DFH" cannot be defined as remote programs.
DFHPG0227	*date time applid terminal userid tranid* Autoinstall for program *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* failed. The program name is not valid.
DFHPG0228	*date time applid terminal userid tranid* Autoinstall for program *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* failed.
DFHPG0229	*date time applid terminal userid tranid* Resource definition for *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* has been autoinstalled using model *modelname*.
DFHPG0230	*date time applid terminal userid tranid* Resource definition for *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* has been system autoinstalled.
DFHPG0231	*date time applid terminal userid tranid* Autoinstall for program *progname* in application *applicationname*, version *majorversion.minorversion.microversion* of platform *platformname* failed. Program autoinstall model *modelname* is disabled.

Table 30. New messages in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
DFHPG0308	*date time applid* BUNDLE *bundlename* has associated an application entry point for operation *operationname* of application *applicationname*, version *majorversion.minorversion.microversion*, on platform *platformname* with PROGRAM *programname*
DFHPG0309	*date time applid* BUNDLE *bundlename* has disassociated an application entry point for operation *operationname* of application *applicationname*, version *majorversion.minorversion.microversion*, on platform *platformname* with PROGRAM *programname*.
DFHPG0310	*date time applid* BUNDLE *bundlename* unable to make available PROGRAM *programname* as an application entry point for operation *operationname* of application *applicationname*, version *majorversion.minorversion.microversion*, on platform *platformname* as {*the PROGRAM name is invalid.* | *the PROGRAM does not exist.* | *the PROGRAM has the same name as an existing public PROGRAM.* | *the operation is not unique within the application.* | *an internal error occurred.*}
DFHPG0311	*date time applid* BUNDLE *bundlename* has made the PROGRAM *programname* available as an entry point for operation *operationname*
DFHPG0312	*date time applid* BUNDLE *bundlename* has associated an application entry point for operation *operationname* with PROGRAM *programname*
DFHPG0500	*date time applid* The public version of the application entry point program *programname* for operation *operationname* of application *applicationname* on platform *platformname* is version *majorversion.minorversion.microversion*.
DFHPG0501	*date time applid* The public version of the application entry point program *programname* for operation *operationname* of application *applicationname* on platform *platformname* has changed from version *majorversion. minorversion. microversion* to version *majorversion.minorversion.microversion*.
DFHPG0502	*date time applid* All versions of the application entry point program *programname* for operation *operationname* of application *applicationname* on platform *platformname* are now unavailable.
DFHPI0200	*date time applid* BUNDLE *bundlename* has successfully installed PIPELINE *pipeline* in the {*Disabled state. Enabling process initiated* | *Disabled state*}.
DFHPI0201	*date time applid* BUNDLE *bundlename* has failed to install PIPELINE *pipeline* because {*the definition is invalid* | *of an installation failure* | *an internal error occurred*}.
DFHPI0202	*date time applid* PIPELINE name was not specified or is too long in BUNDLE *bundlename*.
DFHPI0203	CONFIGFILE *path* in PIPELINE *pipelinename* is too long in BUNDLE *bundlename*.
DFHPI0204	*date time applid userid* PIPELINE *pipeline* is now ENABLED and is ready for use.
DFHPI0220	*date time applid* BUNDLE *bundlename* has successfully installed WEBSERVICE *webservice* in the {*Disabled state. Enabling process initiated* | *Disabled state*}.
DFHPI0221	*date time applid* BUNDLE *bundlename* has failed to install WEBSERVICE *webservice* because {the definition is invalid | of an installation failure | an internal error occurred}.
DFHPI0222	*date time applid* WEBSERVICE name was not specified or is too long in BUNDLE *bundlename*.
DFHPI9715E	Expected keyword '*keyword*' missing in line '*line*'.
DFHPI9716E	Field '*name*' not found for array '*array*'.
DFHPI9717E	Unsupported content found after OCCURS DEPENDING ON field '*name*'.
DFHPI9718E	Use of OCCURS DEPENDING ON requires use of DATA-TRUNCATION=ENABLED.
DFHPI9719E	Unsupported content found after group item '*name*' with OCCURS DEPENDING ON clause.
DFHPI9720E	Unsupported keyword “UNBOUNDED” found in an OCCURS clause.

Table 30. New messages in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
DFHPI9721W	The parameter CCSID=1200 is not supported when *assistant* is used.
DFHPI9722E	The parameter CHAR-MULTIPLIER=*value* is not supported in combination with CCSID=1200.
DFHPI9723E	UTF-16 is not supported when parameter LANG=PLI-OTHER is used.
DFHPI9724E	Type *type* requires a minimum mapping level of *required-mapping-level*, but mapping level *actual-mapping-level* was specified.
DFHRL0133	*date time applid tranid* The CICS resource lifecycle manager failed to create the BUNDLE resource *bundle_name* because the *path_name* definition file was empty.
DFHRL0134 I	*date time applid userid* The CICS resource lifecycle manager has started to create BUNDLE *bundle_name* with bundle ID *bundle_id* and version *bundle_major.ver.bundle_minor.ver.bundle_micro.ver* on platform *platform_id*.
DFHRL0135 E	*date time applid tranid* The CICS resource lifecycle manager failed to associate {*an entry point* | *a policy scope*} for *resource_type* resource *resource_name* in BUNDLE *bundle_name* because CICS does not support platform {*entry points.* | *policy scopes.*}
DFHSJ1200	*date time applid* BUNDLE *bundlename* has successfully installed JVMSERVER *jvmserver* {*in a Disabled state. Enabling process initiated* | *in a Disabled state*}.
DFHSJ1203	DISABLE request for JVMSERVER *jvmserver* has been rejected.
DFHSO0137	*date time applid* BUNDLE *bundlename* has successfully installed TCPIPSERVICE *tcpipservice* as {*Enabled* | *Disabled*}.
DFHSO0140	IMMCLOSE request for TCPIPSERVICE *tcpipservice* has been rejected.
DFHWB0803	*date time applid* HFSFILE path in URIMAP *urimap* is too long in BUNDLE *bundlename*.
DFHWB0804	*date time applid* BUNDLE *bundlename* failed to set URIMAP resource *urimap* as an application entry point because CICS does not support *{USAGE(CLIENT)|USAGE(ATOM)}* for this resource type.
DFHWB0805	*date time applid* BUNDLE *currentbundlename* was unable to set the URIMAP *resourcename* as an entry point because the resource is already defined as an entry point by BUNDLE *bundlename*.
DFHWB0806	*date time applid* BUNDLE *bundlename* has {*associated* | *disassociated*} an application entry point from application (*applicationname*), version *(majorversion.minorversion.microversion*) on platform (*platformname*) with URIMAP *urimapname*.
DFHWB0807	*date time applid* BUNDLE *bundlename* has made {*available* | *unavailable*} the application entry point for URIMAP *urimapname* with operation (*operationname*) for application (*applicationname*), version *(majorversion.minorversion.microversion*) on platform (*platformname*).
DFHWB0808	*date time applid* BUNDLE *bundlename* has failed to set URIMAP *urimapname* as an entry point because {*the URIMAP does not exist.* | *an internal error occurred.* | *the URIMAP resource name is invalid.* | *the URIMAP resource is already defined as an application entry point.*}
DFHWB1580	*date time applid userid* The availability status of URIMAP *urimap* has {*been set to available* | *been set to unavailable* | *reverted to none* } following a change to an application entry point.
EYUNL0152W	*date time applid* Get Topology for private resource *{UNKNOWN* | *PROGRAM* | *LIBRARY}* failed, COMMAND=*cmdname* RESP=*respcode* RESP2=*reasoncode*.
EYUPM007I	*date time applid* The *{RTADEF* | *STATDEF}* (*defname*) has been successfully deactivated manually for Context(*plexname*) Scope(*sysname*).
EYUPM008I	*date time applid* The *{RTADEF* | *STATDEF}* (*defname*) has been successfully reactivated manually for Context(*plexname*) Scope(*sysname*).
EYUPP007I	*date time applid* RTADEF (*defname*) for APSPEC(*specname*) has been successfully deactivated manually for Context(*plexname*) Scope(*sysname*).

Table 30. New messages in CICS Transaction Server for z/OS, Version 5 Release 2 (continued)

Message number	Message text
EYUPP008I	*date time applid* RTADEF (*defname*) for APSPEC(*specname*) has been successfully reactivated manually for Context(*plexname*) Scope(*sysname*).
EYUWI0011E	*date time applid* WLM warmstart AOR normalization could not complete for all AORSCOPEs in all workloads for CONTEXT (*plexname*).
EYUWI0012E	*date time applid* WLM warmstart AOR normalization could not complete for AORSCOPE (*csysgrp*) in all workloads for CONTEXT (*plexname*).
EYUXD0718E	EYUDREP does not contain a CMASDEF record. The upgrade process has been terminated.
EYUXD0719I	Non maintenance point CICSplex *nnnnn* records not converted.
EYUXD0720E	EYU9XDU1 MP plex list {getmain | freemain} failed. The upgrade process has been terminated.

Some of these new CICS messages are issued when actions such as installing and discarding are performed on private LIBRARY resources. The new messages provide the same information as for the corresponding actions on public LIBRARY resources, but they also state the platform, application, and application version to which the private LIBRARY resource applies, so that you can audit or troubleshoot the actions in the relevant context. Table 31 shows which new messages for private LIBRARY resources correspond to which existing CICS messages for public LIBRARY resources.

Table 31. Messages for private LIBRARY resources and public LIBRARY resources. Shows which new messages for private LIBRARY resources correspond to which existing CICS messages for public LIBRARY resources.

Public LIBRARY resource message (existing)	Private LIBRARY resource message (new)
DFHLD0501	DFHLD0508
DFHLD0502	DFHLD0509
DFHLD0505	DFHLD0510
DFHLD0503	DFHLD0514
DFHLD0504	DFHLD0515
DFHLD0505	DFHLD0510
DFHLD0512	DFHLD0516
DFHLD0513	DFHLD0517
DFHLD0523	DFHLD0526
DFHLD0524	DFHLD0527
DFHLD0525	DFHLD0528
DFHLD0710	DFHLD0733
DFHLD0711	DFHLD0734
DFHLD0712	DFHLD0735
DFHLD0713	DFHLD0736
DFHLD0715	DFHLD0737
DFHLD0720	DFHLD0738
DFHLD0721	DFHLD0739
DFHLD0722	DFHLD0740

Table 31. Messages for private LIBRARY resources and public LIBRARY resources (continued). Shows which new messages for private LIBRARY resources correspond to which existing CICS messages for public LIBRARY resources.

Public LIBRARY resource message (existing)	Private LIBRARY resource message (new)
DFHLD0723	DFHLD0741
DFHLD0724	DFHLD0742
DFHLD0725	DFHLD0743
DFHLD0730	DFHLD0744
DFHLD0731	DFHLD0745
DFHLD0732	DFHLD0746

New messages in CICS Transaction Server for z/OS, Version 5 Release 1

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1

Message number	Message text
DFHAM4947 E	*applid* The installation of *{BUNDLE} resourcename* failed because an unexpected resource error occurred.
DFHAM4948 E	*applid* Installation of *resourcetype* resources is not supported on this release. CICS Transaction Server Version *version.release* was the last release to support this type of resource.
DFHAM4949 E	*applid* Installation failed because *restype resname* has already been installed by a BUNDLE resource.
DFHAM4950 E	*applid* BUNDLE definition failed because *restype resname* has already been installed.
DFHAM4951 E	*applid* The installation of *{BUNDLE} resourcename* failed because the BASESCOPE attribute is invalid.
DFHAM4952 E	*applid* The installation of standalone CICS bundle *resourcename* failed because its ID and version are a duplicate of a standalone CICS bundle that already exists.
DFHAM4953 E	*applid* Installation failed because *restype resname* has already been loaded from a BUNDLE resource.
DFHAM4954 E	*applid* Install of *{TCPIPSERVICE | IPCONN | URIMAP} resourcename* failed because user does not have authority to access the specified certificate.
DFHAP1900	*datetimeapplid f_nameuser_idtransaction_id output_string* RESP(*exec_resp)*) RESP2(*exec_resp2)*).
DFHAP1901	*date time applid* SPI audit log is available.
DFHAP1902	*date time applid* SPI audit log is unavailable.
DFHAP1903	*date time applid* CICS failed to write SPI audit message DFHAP1900.
DFHCA4948 E	*date time applid tranid* Installation of *resourcetype* resources is not supported on this release. CICS Transaction Server Version *version.release* was the last release to support this type of resource.
DFHCA4949 E	*date time applid tranid* Installation failed because *restype resname* has already been installed by a BUNDLE resource.
DFHCA4950 E	*date time applid tranid* BUNDLE definition failed because *restype resname* has already been installed.
DFHCA4951 E	*datetimeapplid* The installation of *{BUNDLE} resourcename* failed because the BASESCOPE attribute is invalid.
DFHCA4953 E	*datetimeapplid* Installation failed because *restype resname* has already been loaded from a BUNDLE resource.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFHCC0107	DBDCCICS Local catalog data set is not initialized for this release of CICS.
DFHCS0001	No parameter specified on EXEC card.
DFHCS0002	Invalid SVC parameter specified, value *svcparm*.
DFHCS0003	Invalid SVC number specified, *svcnumber* is greater than 255.
DFHCS0004	Invalid SVC number specified, *svcnumber* is lower than 200.
DFHCS0005	Invalid module name specified, length *modlen* exceeds 8 characters.
DFHCS0006	The SVC type for SVC *svcnumber* is invalid.
DFHCS0007	Operator rejected request.
DFHEC1027	*date time applid* Event emission failed for EVENTBINDING *evbname* because the EPADAPTERSET *adaptersetName* is unavailable.
DFHEC1028	*date time applid* Event emission failed for EVENTBINDING *evbname* because the EPADAPTER *adapterName* specified in EPADAPTERSET *adaptersetName* is unavailable.
DFHEC1029	*date time applid* EVENTBINDING *evbname* defines one or more system events for EPADAPTER *adapterName* which specifies synchronous event emission and is referenced by EPADAPTERSET *adaptersetName*.
DFHEC1030	*date time applid* EVENTBINDING *evbname* defines one or more system events for EPADAPTER *adapterName* which specifies transactional events and is referenced by EPADAPTERSET *adaptersetName*.
DFHEC1031	*date time applid* Event emission failed for EVENTBINDING *evbname* because one or more EPADAPTERs in the EPADAPTERSET *adaptersetName* are invalid.
DFHEC1032	*date time applid* Event emission for EVENTBINDING *evbname* has been successful after a previous failure to emit an event through {EPADAPTER|EPADAPTERSET} *name*.
DFHEP1004	*date time applid* EPADAPTERSET *adaptersetname* from BUNDLE *bundle* installed successfully.
DFHEP1005	*date time applid* EPADAPTERSET *adaptersetname* from BUNDLE *bundle* discarded successfully.
DFHEP1006	*date time applid* EPADAPTERSET *adaptersetname* from BUNDLE *bundle* installed successfully, replacing a previously installed version.
DFHEP2006	*date time applid* The CICS event processing domain failed to create the EPADAPTERSET resource *adaptersetname* in BUNDLE *bundle* because {the EP adapterset name is invalid. | the XML data for the EP adapterset could not be parsed. | it is a duplicate of another EPADAPTERSET in the BUNDLE. | no EP adapter names are specified in the EP adapterset. | the EPADAPTER name has a duplicate in the EP adapterset. | an EPADAPTER name contained in the EP adapterset is invalid.}
DFHEP2007	*date time applid* The CICS event processing domain failed to create the EPADAPTERSET resource *adaptersetname* in BUNDLE *bundle* because { LOCALCCSID SIT parameter is not supported | EP adapterset schema level is not supported }.
DFHFC0543	*applid* Non-RLS OPEN of file *filename* failed. Log stream name attributes conflict with those on the VSAM data set. Base data set *dsname*
DFHFC0557	*applid* CICS is in the process of recovering data sets that require lost locks processing, *count* of *total* completed.
DFHFC6040 I	*datetime 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*.
DFHIS1050	*datetime applid* Heartbeat response timeout in IPCONN *ipconn*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFHIS1051	*datetime applid* IPCONN *ipconn* cannot be found.
DFHIS1052	*date time applid* Session error in IPCONN *ipconn*.
DFHIS2300	*date time applid* CICS IP connection heart beat initiated.
DFHIS2301	*date time applid* Unable to echo heart beat from IPCONN*ipconn*
DFHKE0217	*applid* SDUMPX request completed with a return code of X'04'. A complete or partial dump has been taken.
DFHLD0850	*date time applid* BUNDLE *bundlename* has successfully installed LIBRARY *library* as {*Enabled* | *Disabled*}.
DFHLD0851	BUNDLE *bundlename* has failed to install LIBRARY *library* because {the definition is invalid | of an installation failure | an internal error occurred}.
DFHLD0852	LIBRARY name was not specified or is too long in BUNDLE *bundlename*.
DFHMP0001	*applid* An abend (code *aaa/bbbb*) has occurred at offset *X'offset'* in module *modname*.
DFHMP0002	*applid* A severe error (code *X'code'*) occurred in module *modname*.
DFHMP0100I	*applid* Managed platform domain initialization started.
DFHMP0101I	*applid* Managed Platform domain initialization has ended.
DFHMP1000	*date time applid* Invalid parameter list passed to MP domain module *modname*.
DFHMP1001	*date time applid* Policy scope for operation *operation* for policy *policyname* in BUNDLE resource *bundle* successfully installed.
DFHMP1002	*date time applid* Policy scope for operation *operation* for policy *policyname* in BUNDLE resource *bundle* successfully discarded.
DFHMP1004	*date time applid* Policy *policyname* from BUNDLE resource *bundle* successfully installed.
DFHMP1005	*date time applid* Policy *policyname* from BUNDLE resource *bundle* successfully discarded.
DFHMP2003	*date time applid* The CICS managed platform domain failed to create the policy *policyname* in BUNDLE resource *bundle* because *{the policy name contains invalid characters. | the XML data for the policy could not be parsed.}*
DFHMP2004	*date time applid* The CICS managed platform domain failed to create policy *policyname* in BUNDLE resource *bundle* because the *{policy schema level is not supported | BASESCOPE prefix is invalid | BASESCOPE is incomplete | USERTAG contains invalid characters}*: '*error_data*'.
DFHMP2005	*date time applid* The CICS managed platform domain failed to create policy *policyname* in BUNDLE resource *bundle* because the rule *rulename { is a duplicate of another rule in the same policy. | contains invalid characters in its name. | has an event action but no EP adapter or adapter set name is specified.}*
DFHMP2006	*date time applid* The CICS managed platform domain failed to create the policy *policyname* in BUNDLE resource *bundle* because the rule *rulename { has an invalid rule type | has an invalid item name | has an invalid operator value | has an invalid storage unit | has an invalid count unit | has an invalid time unit | has an invalid abend code | has an invalid EP adapter name | has an invalid EP adapter set name}*: '*error_data*'.
DFHMP2007	*date time applid* The CICS managed platform domain failed to create the policy *policyname* in BUNDLE resource *bundle* because there are no rules defined by the policy.
DFHMP2008	*date time applid* The CICS managed platform domain failed to create the policy resource *policyname* in BUNDLE resource *bundle* because one of its rule name is not specified.
DFHMP2009	*date time applid* The CICS managed platform domain failed to create the policy *policyname* in BUNDLE resource *bundle* because the rule *rulename* specifies an invalid threshold value of *threshold*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFHMP2010	*date time applid* The CICS managed platform domain failed to create the policy scope for policy *policyname* defined in BUNDLE resource *bundle* because it duplicates an existing policy scope for the operation *operation* which was defined in BUNDLE resource *bundle*. Both BUNDLE resources have a scope of platform(*platformname*), application(*applicationname*), and version(*majorversion.minorversion.microversion*).
DFHMP2011	*date time applid* The CICS managed platform domain failed to create the policy scope for policy *policyname* defined in BUNDLE resource *bundle* because policy *policyname* is undefined. The bundle was installed with a scope of platform(*platformname*), application(*applicationname*), and version(*majorversion.minorversion.microversion*).
DFHMP2012	*date time applid* The CICS managed platform domain failed to create the policy *policyname* defined in BUNDLE resource *bundle* because it duplicates an existing policy with the same name and scope defined in BUNDLE resource *bundle*. Both BUNDLE resources have a scope of platform(*platformname*), application(*applicationname*), and version(*majorversion.minorversion.microversion*).
DFHMP3001	*date time applid* Task *trannum*(*tranid*) has exceeded a policy threshold. BundleId=*bundleid*, PolicyName=*policyname*, RuleName=*rulename*, RuleType=*ruletype*, Category=*category*, Threshold=*threshold* (Value=*value*, Unit=*unit*), CurrentCount=*currentcount*.
DFHMP3002	*date time applid* Task *trannum*(*tranid*) has exceeded a policy threshold and is abended with abend code *abcode*. BundleId=*bundleid*, PolicyName=*policyname*, RuleName=*rulename*, RuleType=*ruletype*, Category=*category*, Threshold=*threshold* (Value=*value*, Unit=*unit*), CurrentCount=*currentcount*
DFHMP3003	*date time applid* Task *trannum*(*tranid*) Event emission failed because the EPADAPTER resource *adaptername { is unavailable | specifies transactional events which are not supported | specifies synchronous event emission which is not supported}*. BundleId=*bundleid*, BundleName=*bundlename*, PolicyName=*policyname*, RuleName=*rulename*.
DFHMP3004	*date time applid* Task *trannum*(*tranid*) Event emission failed because the EPADAPTERSET resource *adaptersetname { is unavailable | has one or more adapters not available}*. BundleId=*bundleid*, BundleName=*bundlename*, PolicyName=*policyname*, RuleName=*rulename*.
DFHMP3005	*date time applid* Task *trannum*(*tranid*) Event emission failed because the EPADAPTER resource *adaptername* in the EPADAPTERSET *adaptersetname { is unavailable | specifies transactional events which are not supported | specifies synchronous event emission which is not supported}*. BundleId=*bundleid*, BundleName=*bundlename*, PolicyName=*policyname*, RuleName=*rulename*.
DFHMP3006	*date time applid* Event emission has been successful after a previous failure to emit an event through {EPADAPTER|EPADAPTERSET} *name*. BundleId=*bundleid*, BundleName=*bundlename*, PolicyName=*policyname*, RuleName=*rulename*.
DFHMQ0719 E	*date time applid tranid* Invalid request link type for DFHMQBP3.
DFHPG0300	*date time applid* BUNDLE *bundlename* has successfully installed PROGRAM *programname*.
DFHPG0301	*date time applid* BUNDLE *bundlename* has failed to install PROGRAM *programname* because *{the definition is invalid | of an installation failure | the program name cannot begin with 'DFH' | an internal error occurred}*.
DFHPG0302	*date time applid* Program name was not specified or is too long in BUNDLE *bundlename*.
DFHPG0303	*date time applid* BUNDLE *currentbundlename* was unable to set the PROGRAM *resourcename* as an entry point because the resource is already defined as an entry point by BUNDLE *bundlename*.
DFHPG0304	*date time applid* BUNDLE *bundlename* has set PROGRAM *programname* as an entry point with platform (*platformname*), application (*applicationname*), version (*majorversion.minorversion.microversion*), and operation (*operationname*).
DFHPG0305	*date time applid* BUNDLE *bundlename* has removed the entry point from PROGRAM *programname*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFHPG0306	*date time applid* BUNDLE *bundlename* has failed to set PROGRAM *programname* as an entry point because *{the PROGRAM does not exist. | the PROGRAM failed to autoinstall. | an internal error occurred. | the program name is invalid.}*
DFHPG0307	Install of PROGRAM *programname* has failed because a PROGRAM of that name has already been installed by a BUNDLE.
DFHPI0404	*date time applid tranid* A failure occurred in the CICS pipeline HTTP transport mechanism for PIPELINE *{pipeline_name | WEBSERVICE | webservice_name}*.
DFHRL0124 E	*date time applid tranid* The CICS resource lifecycle manager failed to create resource *resource_name* of type *type_name* for BUNDLE *bundle_name*.
DFHRL0125 I	*date time applid userid* BUNDLE resource *bundle_name* is being created with BUNDLEID *bundle_ID* and version *bundle_major_ver.bundle_minor_ver.bundle_micro_ver*.
DFHRL0126 I	*date time applid tranid* The import of resource *resource_name* of type *type_name* for BUNDLE resource *bundle_name* has changed to *{enabled | disabled}* state.
DFHRL0127 I	*date time applid tranid* The state of BUNDLE *bundle_name* has changed to *{enabled | disabled}* state.
DFHRL0128 I	*datetimeappliduserid* The CICS resource lifecycle manager has started to create BUNDLE *bundle_name* with bundle ID *bundle_id* and version *bundle_major_ver*. *bundle_minor_ver*. *bundle_micro_ver* for application *application_id* version *appl_major_ver*. *appl_minor_ver*. *appl_micro_ver* on platform *platform_id*.
DFHRL0129 E	*date time applid tranid* The CICS resource lifecycle manager failed to create BUNDLE *bundle_name* because the BASESCOPE attribute is invalid.
DFHRL0130	*date time applid userid tranid* BUNDLE definition for *bundlename* has been discarded.
DFHRL0131 E	*date time applid tranid* BUNDLE *bundle_name* failed to update the resource *resource_name* of type *resource_type* because CICS does not support *{entry points | policy scopes}* for this resource type.
DFHRL0132 I	*date time applid tranid* All defined resources for BUNDLE *bundle_name* are now in the *{enabled | disabled}* state.
DFHRM0100	*applid* Global catalog data set is not initialized for this release of CICS.
DFHRS0007 E	*applid* The RS domain long running task has terminated abnormally.
DFHSI1600	VTAM® High Performance Option is active.
DFHSI1601	VTAM High Performance Option activation failed.
DFHSJ0216	*Date time applid jvmserver* A call to CELQPIPI with function code INIT_SUB has failed. (Return code - *X'rc'*).
DFHSJ0921	*date time applid userid* A servlet request processed by JVMSERVER *jvmserver* failed to run because tranid *tranid* is disabled.
DFHSJ0922	*date time applid userid* A servlet request processed by JVMSERVER *jvmserver* failed to run because tranid *tranid* was not found.
DFHSJ0923	*date time applid userid* A servlet request processed by JVMSERVER *jvmserver* failed to run because URIMAP *urimap* is disabled.
DFHSM0137	*applid* The amount of MVS storage available to CICS is low.
DFHSM0138	*applid* The amount of MVS storage available to CICS is no longer low.
DFHSM0139	*applid* The amount of MVS storage available to CICS is critically low.
DFHSM0140	*applid* The amount of MVS storage available to CICS is no longer critically low.
DFHSO0136	*applid* A PERFORM SSL REBUILD command has completed successfully.
DFHTA0001	*applid* An abend (code *aaa/bbbb*) has occurred at offset *X'offset'* in module *modname*.
DFHTA0002	*applid* A severe error (code *X'code')* has occurred in module *modname*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFHTA0100I	*applid* TA domain initialization has started.
DFHTA0101I	*applid* TA domain initialization has ended.
DFHTI0102	*applid* CICS Transaction Server Value Unit Edition
DFHTI0103	*applid* CICS Transaction Server Value Unit Edition runs only on a zNALC LPAR
DFHTI0200	*applid* This is CICS Transaction Server Developer Trial which expires on *date*.
DFHTI0201	*applid* CICS Transaction Server Developer Trial failed to initialize. CICS Transaction Server Developer Trial expired on *date*.
DFHWB0800	*date time applid* BUNDLE *bundlename* has successfully installed URIMAP *urimdef* as {*Enabled* | *Disabled*}.
DFHWB0801	BUNDLE *bundlename* has failed to install URIMAP *urimap* because (the definition is invalid | of an installation failure | an internal error occurred).
DFHWB0802	URIMAP name was not specified or is too long in BUNDLE *bundlename*.
DFHXM0600	*date time applid* BUNDLE *bundlename* has successfully installed TRANSACTION *trandef* as {*Enabled* | *Disabled*}.
DFHXM0601	BUNDLE *bundlename* has failed to install TRANSACTION *trandef* because (the definition is invalid | of an installation failure | an internal error occurred).
DFHXM0602	Transaction name was not specified or is too long in BUNDLE *bundlename*.
DFHXM0603	*date time applid numICEs* scheduled tasks for Bundle installed TRANSACTION *trandef* have been cancelled.
DFH7040I W	EXEC COMMAND SHOULD BE TERMINATED BY 'END-EXEC'.
DFH7042I S	*xxxxxxxx* IS PERMITTED ONLY IN AMODE(64). COMMAND NOT TRANSLATED.
DFH7045I S	AT LEAST ONE OF 'ADDRESS', 'METADATA' OR 'REFPARMS' MUST BE SPECIFIED. COMMAND NOT TRANSLATED.
DFH7049I W	'*xxxxxxxx*' IS AN OBSOLETE OPTION. '*xxxxxxxx*' IS ASSUMED.
DFH7051I E	*xxxxxxxx* NAME LONGER THAN THE *xxxxxxxx* CHARACTERS ALLOWED.
DFH7052I S	*xxxxxxxx* OPTION MUST BE SPECIFIED. COMMAND NOT TRANSLATED.
DFH7056I E	REDUNDANT SPECIFICATION FOR *xxxxxxxx* OPTION IS IGNORED.
DFH7062I S	INCORRECT SYNTAX FOR EXEC COMMAND. COMMAND NOT TRANSLATED.
DFH7064I W	*INS#1* OPTION CONFLICTS WITH *INS#2* OPTION AND IS IGNORED.
DFH7068I S	*xxxxxxxx* OPTION MUST SPECIFY A DATA AREA NOT AN EXPRESSION OR CONSTANT. COMMAND NOT TRANSLATED.
DFH7069I S	*xxxxxxxx* OPTION IS NOT SUPPORTED AND IS IGNORED.
DFH7070I S	*xxxxxxxx* OPTION IS NOT SUPPORTED. COMMAND NOT TRANSLATED.
DFH7071I I	VALUE OF FIRST ARGUMENT IS: -*X*'*xxxxxxxx*'.
DFH7072I W	*xxxxxxxx* MAY CAUSE INTER-RELEASE INCOMPATIBILITIES.
DFH7073I W	FIELDS ACCESSED VIA THE CSA ADDRESS MAY CAUSE INTER-RELEASE INCOMPATIBILITIES.
DFH7079I W	ARGUMENT TO *xxxxxxxx* OPTION DOES NOT USE THE ADDRESS SPECIAL REGISTER.
DFH7081I S	RETURN CODE *xxxxxxxx* WHEN ATTEMPTING TO LOAD MODULE *xxxxxxxx*. SEE DESCRIPTION OF DOS LOAD MACRO WITH RET=YES OPERAND.
DFH7087I W	SHIFT-OUT CODE NOT FOLLOWED BY GRAPHIC QUOTE.
DFH7088I W	POSSIBLY INVALID ECGS LITERAL.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFH7090I E	*xxxxxxxx* ALREADY DEFINED. SPEC IS DROPPED.
DFH7091I E	*xxxxxxxx* INVALID UNDER CICS. SPEC IS DROPPED.
DFH7092I W	INVALID ENTRY IN POS. *xxxxxxxx*, *xxxxxxxx* IS ASSUMED.
DFH7093I E	INCORRECT *xxxxxxxx*. SPEC IS DROPPED.
DFH7094I E	*xxxxxxxx* SPECIFIED FOR NON-EXISTING *xxxxxxxx*. SPEC IS DROPPED.
DFH7095I E	*xxxxxxxx* INVALID FOR *xxxxxxxx*. SPEC IS DROPPED.
DFH7096I E	*xxxxxxxx* INVALID IN *xxxxxxxx*. SPEC IS DROPPED.
DFH7097I E	*xxxxxxxx* SPECIFIED WITHOUT *xxxxxxxx*. SPEC IS DROPPED.
DFH7098I E	MAXIMUM NUMBER OF *xxxxxxxx* EXCEEDED. SPEC IS DROPPED.
DFH7099I W	*xxxxxxxx* FOR FILE *xxxxxxxx* MISSING BUT REQUIRED.
DFH7100I E	INVALID FUNCTION-NAME *xxxxxxxx* IN RQDLI COMMAND. COMMAND IS NOT TRANSLATED.
DFH7101I S	TYPE OF APPLICATION NOT PROCESSED BY PROPER TRANSLATOR. TRANSLATION TERMINATED.
DFH7102I W	*xxxxxxxx* SPECIFICATION OF K-LINE FOR DB-FILE SPEC. NO PCB WILL BE GENERATED FOR THIS FILE.
DFH7103I E	COMMAND REFERENCES NONEXISTING FILE-NAME. FILE-NAME IS IGNORED.
DFH7104I W	INDICATOR REQUIRED IN POS. 56-57. '13' IS ASSUMED.
DFH7105I W	ONLY ONE K-LINE SUPPORTED FOR DB-FILE SPECS.
DFH7106I E	INVALID CONTINUATION OF AN- OR OR-LINES IN C-SPECS.
DFH7107I E	NO AN- OR OR-LINES ALLOWED WITH *xxxxxxxx* COMMAND. COMMAND REPLACED BY SINGLE OP-CODE *xxxxxxxx*.
DFH7108I E	*xxxxxxxx*. SPEC IS DROPPED.
DFH7109I E	ERROR WHEN READING SSL - END OF FILE FOUND BEFORE BOOK END.
DFH7110I U	EARLY END OF FILE ENCOUNTERED ON *xxxxxxxx*. TRANSLATION TERMINATED.
DFH7111I E	INCORRECT UPSI BIT SETTING. TRANSLATOR OUTPUT ROUTED TO SYSPCH.
DFH7112I U	DEVICE ASSIGNED TO *xxxxxxxx* INVALID. TRANSLATION TERMINATED.
DFH7113I E	ELIST COMMAND SPECIFIED WITHOUT ONE OR MORE SSA SPECIFICATIONS.
DFH7114I E	NO AUTOMATIC GENERATION OF *ENTRY PLIST POSSIBLE.
DFH7115I E	SINGLE OP-CODE *xxxxxxxx* INVALID. SPEC IS DROPPED.
DFH7116I S	INCORRECT *xxxxxxxx*. COMMAND NOT TRANSLATED.
DFH7202I S	INCORRECT SYNTAX IN ARGUMENT LIST FOR '*keyword*'.
DFH7203I U	PREPROCESSOR ERROR *err* IN MODULE *modname*.
DFH7211I U	INSUFFICIENT STORAGE TO LOAD MODULE '*modname*'. PLEASE RE-TRANSLATE IN LARGER PARTITION.
DFH7212I E	'*option*' CONFLICTS WITH OTHER KEYWORDS SPECIFIED ON STATEMENT.
DFH7214I E	'*option*' INVALID. REASON CODE = *reasoncode*.
DFH7223I E	A BLANK IS ASSUMED AFTER '*option*'.
DFH7224I E	NO *option1* IN '*option2*' OPERAND. OPERAND IGNORED.
DFH7227I E	INVALID SYNTAX FOR *option*. REASON GIVEN IN OTHER MESSAGE(S).
DFH7231I E	'*option1*' IS NOT VALID FOR *option2* AND IS IGNORED.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
DFH7234I S	UNABLE TO APPLY DEFAULT FOR KEYWORD 'FROMLENGTH'.
DFH7236I S	UNABLE TO APPLY DEFAULT FOR KEYWORD 'LENGTH'.
DFH7261 W	"*ins#1*" IS NO LONGER SUPPORTED BUT HAS BEEN TRANSLATED.
DFH7265I E	CHARACTER AT RIGHT MARGIN IMMEDIATELY FOLLOWS A SHIFT-IN CODE. A BLANK IS ASSUMED.
DFH7266I E	A DBCS CHARACTER CANNOT BEGIN AT THE RIGHT MARGIN. A BLANK IS ASSUMED.
DFH7280I E	A MANDATORY KEYWORD HAS BEEN OMITTED FROM AN EXEC CICS INQUIRE COMMAND. THE MISSING KEYWORD IS *keyword*.
EYUBM0500I E	*date time applid* APPLDEF *appldef* cannot find file *filename*.
EYUBM0501I E	*date time applid* APPLDEF *appldef* authorization error for file *filename*.
EYUBM0502I E	*date time applid* APPLDEF *appldef* empty file found *filename*.
EYUBM0503I E	*date time applid* APPLDEF *appldef* codepage conversion error for file *filename*.
EYUBM0504I E	*date time applid* APPLDEF *appldef* invalid XML found for file *filename*.
EYUBM0505I E	*date time applid* APPLDEF *appldef* mismatch detected between Application *application appversion* and the Binding for Application *binding bindversion*.
EYUBM0506I E	*date time applid* APPLDEF *appldef* contains an unbound Bundle with no deployment information *bundleid bundleversion*.
EYUBM0507I E	*date time applid* APPLDEF *appldef* invalid version number found for file *filename*. The maximum supported version is *version*.
EYUBM0508I E	*date time applid* APPLDEF *appldef parameter* not found at location *directory*.
EYUBM0509I E	*date time applid* APPLDEF *appldef* contains an unused binding for Bundle *bundleid bundleversion*.
EYUBM0510I E	*date time applid* APPLDEF *appldef* contains a reference to Bundle *bundleid* with a *version* number smaller than zero.
EYUBM0511I E	*date time applid* APPLDEF *appldef* contains Bundle *bundleid version* which is bound to an invalid region type *regionType* for PLATDEF *platdef*.
EYUBM0512I E	*date time applid* APPLDEF *appldef* contains an unexpected binding for platform *platform*. The expected platform is *expectedPlatform*.
EYUCL0202I I	*date time applid* Attempting to reconnect to CMAS sysid *sysid*.
EYUCW0109I I	*date time applid* Time zone offset from GMT computed based on CMAS time zone attributes.
EYUCW0110I I	*date time applid* Time zone offset from GMT computed based on TIMEZONE operand in SYS1.PARMLIB(CLOCKxx) or the Sysplex Timer.
EYUMM0608I E	*date time applid* Unsuccessful start for monitoring for Context(*context*) Scope(*scope*).
EYUNX0049E E	COND transaction has been issued from a terminal. EIBTRMID=*termid*, USERID=*userid*.
EYUPS0004I I	*date time applid* RTASAM long-running task terminated.
EYUTI0500I E	*date time applid* PLATDEF *platdef* cannot find file *filename*.
EYUTI0501I E	*date time applid* PLATDEF *platdef* authorization error for file *filename*.
EYUTI0502I E	*date time applid* PLATDEF *platdef* empty file found *filename*.
EYUTI0503I E	*date time applid* PLATDEF *platdef* codepage conversion error for file *filename*.
EYUTI0504I E	*date time applid* PLATDEF *platdef* invalid XML found for file *filename*.
EYUTI0506I E	*date time applid* PLATDEF *platdef* contains a bundle with no platform binding *bundleid bundleversion*.

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
EYUTI0507I E	*date time applid* PLATDEF *platdef* invalid version number found for file *filename*. The maximum supported version is *version*.
EYUTI0508I E	*date time applid* PLATDEF *platdef parameter* not found at location *directory*.
EYUTI0509I E	*date time applid* PLATDEF *platdef* contains an unused binding for Bundle *bundleid bundleversion*.
EYUTI0510I E	*date time applid* PLATDEF *platdef* contains a reference to Bundle *bundleid* with a *version* number smaller than zero.
EYUTS0027I I	*date time applid* Topology *{Add | Remove}* of Platform *pltname* initiated.
EYUTS0028I E	*date time applid* Topology *{Add | Remove}* of Platform *pltname* has failed.
EYUTS0029I I	*date time applid* Topology *{Add | Remove}* of Platform *pltname* complete.
EYUVC1209 E	Error formatting Kernel Error data.
EYUVC1218 E	This window is still busy with the previous request. Please try again.
EYUVC1242 E	The name of the map to be used is not available. If possible, the default map object will be used.
EYUVC1244 E	Map (*mapname*) has type (*namedmaptype*) but the map requested is for type (*requstedmaptype*). No map hyperlinks will be displayed.
EYUVC1259 I	Potential result set size is below the *n* warning threshold. Click Refresh to retry with different filters or OK to proceed.
EYUVC1260 E	Internal comparison operator value (*opervalue*) invalid.
EYUVC1292 I	Action (*action*) failed in *'cicsregion* '. *explanation*
EYUVE0226 E	View set for the wrong Object (*ViewsetObject*) entered. Enter a View set for the correct Object (*LinkObject*).
EYUVE0380 I	Last changed by (*userid*) at (*time*).
EYUVE0761 I	White space items cannot be deleted from two column detail forms.
EYUVE0901 I	No attribute grid will be displayed for this view.
EYUVE0902 E	Attribute grid must be given a caption. Please enter a caption.
EYUVE0905 I	Attribute grid must be given a caption. Please enter a caption.
EYUVE0906 E	No cell selected. Please select a cell.
EYUVE0907 E	You must select a column or row header to perform a 'Delete' or 'Insert'.
EYUVE0908 E	You cannot insert a column or a row before the column or row headers.
EYUVE0909 E	You cannot delete a column or row header.
EYUVE0910 E	You cannot delete any more rows from this attribute grid.
EYUVE0911 E	You cannot delete any more columns from this attribute grid.
EYUVE0915 I	Attribute grid deleted for view *viewname*.
EYUVE0920 E	Attribute not selected. Please select an attribute from the list.
EYUVE0921 I	Attribute grid cell contents defined.
EYUVE0925 I	Attribute grid row deleted.
EYUVE0926 I	Attribute grid column deleted.
EYUVE0930 I	Attribute grid cell contents changed.
EYUVE0936 I	Attribute grid cell contents edited.
EYUVE0940 I	Attribute grid cell title edited.
EYUVE1001 E	An unrecoverable editor error has occured (Screen number *screennumber*).

Table 32. New messages in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Message number	Message text
EYUVE1002 E	Invalid editor request (Screen number *screennumber*).
EYUVS0927 W	Import completed. No matching records found.
EYUVS0928 W	Export completed. No matching records found.
EYUWI0020I I	*date time applid* WLM Routing initiated for Workload(*ins#1*) in Routing Region(*ins#2*).
EYUWI0021I I	*date time applid* WLM Routing initialization failed for Workload(*workload*) in Routing Region(*region*).
EYUWI0090I I	*date time applid* CMAS *ins#1* is unavailable for workload *ins#2*.
EYUXL0020I I	*date time applid* ESSS connection in progress *{to CICSPLEX(|) plexname {) |) {for SYSID(|) sysname {) |)*
EYUXL0033I I	*date time applid* Attempting to PURGE TRANID(*tranid*), TASKID(*taskid*), METHOD(*method*), CALLER(*caller*).
EYUXM0002I I	*date time applid* Caller *caller* Compid *compid* SubCompid *subcomp* Message Number *msgnum*.
EYUXM0003I I	*date time applid* Variable *var1 var2*.
EYUXM0500I E	*date time applid* Component inactive.
EYUXM0501I E	*date time applid* Component message prototype table does not exist for Compid *compid*.
EYUXM0502I E	*date time applid* Caller *caller* has issued a message with a *{Compid | Class | Message Number | SubCompid} name* not defined.
EYUXM0503I E	*date time applid* Stack Overflow , message text not completed.
EYUXM0504I E	*date time applid* Premature UnStack issued , message text not completed.
EYUXU1457 I	Export is not supported for *ResourceType* records
EYUXZ0008 W	Filename *filename* is required, processing is terminated.
EYUXZ0100I I	*date time applid* MAS trace processing long running task started.
EYUXZ0101I I	*date time applid* MAS trace processing long running task terminated.
EYUXZ0102 E	*date time applid* MAS trace processing long running task terminated abnormally.

New messages in CICS Transaction Server for z/OS, Version 4 Release 2

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2

Message number	Message text
DFHAM4807 E	*applid* Install failed for LSRPOOL with LSRPOOLID(*lsrpoolid*). The MAXKEYLENGTH is less than 22 which is incorrect for use by the CSD.
DFHAP1605	*date time applid* A SIGABRT signal has been received by a JVM server. CICS will shut down immediately.
DFHCA4807	*date time applid tranid* Install failed for LSRPOOL with LSRPOOLNUM *lsrpoolnum*. The MAXKEYLENGTH is less than 22 which is incorrect for use by the CSD.
DFHCA5208	*date time applid netname tranid* Resource defined but no value was specified for *xxxxxxxx*. Ensure that the resource is updated.
DFHCA5209	*date time applid netname tranid* No command encountered. The input file might be empty.
DFHCE3554	You cannot mix passwords and password phrases in a change request.
DFHDH0300	*applid* File *filename* could not be opened (*rrrr*). Response *X'xxxx'*, Reason *X'yyyy'*.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHEC1011	*date time applid* The CICS event capture component failed to create the EVENTBINDING resource *evbname* in BUNDLE *bundle* because the capture specification *capspec{ filter predicate could not be built. | has an invalid name. | is a duplicate.}*
DFHEC1012	*date time applid* The CICS event capture component failed to create the EVENTBINDING resource *evbname* in BUNDLE *bundle* because the capture specification *capspec{ has an invalid event name: | exceeds the maximum number of data items: | contains invalid capture data type, item number: | has an invalid business information name: | has an overlength formatPrecision in data item: | has an invalid captureDataPrecision in data item: | has an invalid captureLength in data item: | has an invalid formatdataType in data item: | has an invalid formatLength in data item: | has an invalid captureDataType in data item: }error_data*.
DFHEC1013	*date time applid* The CICS event capture component failed to create the EVENTBINDING resource *evbname* in BUNDLE *bundle* because the *{LOCALCCSID SIT parameter is not supported: | event binding schema level is not supported: | event binding USERTAG is invalid: }error_data.*
DFHEC1016	*date time applid* EVENTBINDING *evbname* from BUNDLE *bundle* installed successfully, replacing a previously installed version.
DFHEC1022	*date time applid* Event emission failed for EVENTBINDING *evbname* because the EPADAPTER *adapterName* is unavailable.
DFHEC1023	*date time applid* EVENTBINDING *evbname* which defines one or more system events references EPADAPTER *adapterName* which specifies transactional events. Transactional system events are not supported.
DFHEC1024	*date time applid* EVENTBINDING *evbname* which defines one or more system events references EPADAPTER *adapterName* which specifies synchronous event emission. Synchronous event emission is not supported for system events.
DFHEC1026	*applid* CEPF is stopping Event Processing after a severe error.
DFHEC3111	*date time applid* The decimal floating point facility (DFP) is not installed, but is required for capture specification *cs_name* in event binding *evb_name*.
DFHEC3112	*date time applid* The binary floating point facility (DFP) is not installed, but is required for capture specification *cs_name* in event binding *evb_name*.
DFHEC4006 E	*date time applid tranid* Transaction start EP adapter failed to emit an event to transaction *tranid* for event binding *evbname*. START TRANSID failed with response code *response* and reason code *reason*.
DFHEC4009	*date time applid tranid* TSQ EP Adapter failed to emit an event to queue *queuename* for event binding *evbname* because the queue is not defined as recoverable.
DFHEC4010	*date time applid tranid* TSQ EP Adapter failed to emit an event to queue *queuename* for event binding *evbname* because the queue is defined as recoverable.
DFHEC4113	*date time applid tranid* WebSphere MQ EP adapter failed to emit an event to queue *queue_name* for event binding *evbname*. WebSphere MQ function MQPUT1 returned with completion code *comp_code*.
DFHEC4118	*date time applid tranid* The TSQ EP adapter truncated an event for capture specification *csname* in event binding *evbname* to queue *queuename*. The event's size of *buffer_length* bytes exceeds the maximum length for TS queues.
DFHEC4119	*date time applid tranid* TSQ EP adapter failed to emit an event to queue *queuename* for event binding *evbname*. WRITEQ TS returned with condition *resp* reason code *reason*.
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*.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
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*.
DFHEP0120	*date time applid tranid* The EP adapter transaction ID of *adapter_tranid* in event binding *evbname* is defined to start the wrong program for this type of adapter. Event discarded.
DFHEP0121	*date time applid* Synchronous event emission by EPADAPTER *epadapter* failed for an event from EVENTBINDING *evbname*. The UOW will be backed out.
DFHEP0122	*applid* The EPADAPTER transaction ID *adapter_tranid* is not enabled for use during CICS shutdown. An event from EVENTBINDING *evbname* has been discarded.
DFHEP0123	*applid* EP domain is quiescing but *adapter_tasks* EP adapter tasks are still active.
DFHEP1000	*date time applid* Invalid parameter list passed to EP domain module *modname*.
DFHEP1001	*date time applid* EPADAPTER *adaptername* from BUNDLE *bundle* installed successfully.
DFHEP1002	*date time applid* EPADAPTER *adaptername* from BUNDLE *bundle* discarded successfully.
DFHEP1003	*date time applid* EPADAPTER *epadapter* from BUNDLE *bundle* installed successfully, replacing a previously installed version.
DFHEP2001	*date time applid* The CICS event processing domain failed to create EP adapter 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. | the XML data for the EP adapter could not be parsed. | the eventDispatcher is missing or invalid. | the configuration data is too long. | it is a duplicate of another EPADAPTER in the BUNDLE.}*
DFHEP2003	*date time applid* The CICS event processing domain failed to create the EP adapter resource *adaptername* in BUNDLE *bundle* because the *{LOCALCCSID SIT parameter is not supported: | EP adapter schema level is not supported: }error_data*.
DFHEP2005	*date time applid* The CICS event processing domain found an inconsistency in the advanced options during install of EP adapter *adaptername* with emission mode *emitmode* and type *adapterType*. The *option* option is ignored.
DFHIS1042	*date time applid* Transaction *tranid* not defined.
DFHIS3031 E	*date time applid* Transaction *tranid* failed to establish security for userid *userid* with IPCONN *ipconn*. SAF codes are (*X'safresp'*,*X'safreas'*), ESM codes are (*X'esmresp'*,*X'esmreas'*).
DFHIS3032 E	*date time applid* Transaction *tranid* using terminal *termid* failed to establish security for userid *userid* with IPCONN *ipconn*. SAF codes are (*X'safresp'*,*X'safreas'*), ESM codes are (*X'esmresp'*).
DFHME0103	*applid* Insufficient 64-bit storage to load module *modname*.
DFHME0213	*applid* Incorrect parameters used in call to DFHME64 for message *msgno*.
DFHME0215	*applid modname* Message module for language *language* not found. The default module *modnameb* is used.
DFHME0217	*applid* The Message User Exit point XMEOUT is unavailable for message *msgno*.
DFHME0218	*applid* An error has occurred when calling the Message User Exit for message *msgno*.
DFHME0220I	*applid* Message *msgno* has been rerouted to its original destination.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHME0222	*applid* The Message User Exit has returned invalid route code information for message number *msgno*.
DFHME0223	*applid* The Message User Exit has returned invalid TD queue information for message number *msgno*.
DFHME0225	*applid* The Message User Exit has returned an invalid return code *rc* for message *msgno*.
DFHME0232	*applid* The User's Message Exit program has failed while processing message *msgno*.
DFHME0237	*applid* Message *msgno* cannot be rerouted to a transient data destination by the message user exit XMEOUT.
DFHME0240	*applid* CICSPlex SM messages cannot be issued because the English message table *modname* cannot be found.
DFHML0101	*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'* at data offset *X'error_offset'*.
DFHML0600	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* has been added.
DFHML0601	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* has been deleted.
DFHML0602	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* has been *{ENABLED | DISABLED}*.
DFHML0603	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* cannot be installed as a duplicate JSONTRANSFRM resource with the same name already exists.
DFHML0604	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* cannot be *{ENABLED | DISABLED | DISCARDED}* because it is in the *{ENABLING | ENABLED | DISABLING | DISABLED | DISCARDING | PERMANENTLY DISABLED | UNKNOWN}* state.
DFHML0605	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* has an unsupported runtime level.
DFHML0609	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* cannot be installed as one or more invalid characters exist in the resource name.
DFHML0610	*date time applid userid tranid* JSONTRANSFRM *jsontransfrm_name* for BUNDLE *owner_name* is incompatible with the LOCALCCSID.
DFHMQ2065	*date time applid* Resynchronization outstanding for queue manager *qmgr* after CICS-MQ group attach has connected to queue-sharing group *qsg*.
DFHMQ2066	*date time applid* Resynchronization outstanding for queue-sharing group *qsg* after CICS-MQ group attach has connected to queue manager *qmgr*.
DFHPA1949	*applid* CANCEL reply received. CICS is terminating.
DFHPI0603 I	*date time applid* The CICS SOAP handler has received an unexpected HTTP GET for URI *Uri*.
DFHPI0728 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The repository Axis2 configuration file *element* cannot be accessed by CICS.
DFHPI0729 E	*date time applid userid* PIPELINE *pipeline* encountered an error in the pipeline configuration file *filename* at offset *X'offset'*. The CICS Java SOAP handler cannot be an intermediate message handler.
DFHPI0734 E	*date time applid* Error '*exception*' occurred whilst configuring PIPELINE *pipeline* within a JVMSERVER.
DFHPI0735 E	*date time applid* Error *exception* occurred whilst configuring WEBSERVICE *webservice* within a JVMSERVER.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHPI0736 E	*date time applid* PIPELINE *pipeline* encountered an error in the configuration file *filename* for the pipeline. The file has both <apphandler> and <apphandler_class> elements specified. You may only specify one of these elements.
DFHPI0905 E	*date time applid userid* WEBSERVICE *WebService* within PIPELINE *Pipeline* cannot check for archive file because the WSDL name *Name* is too long.
DFHPI0906 E	*date time applid userid* WEBSERVICE *WebService* within PIPELINE *Pipeline* cannot generate URIMAP for WSDL discovery because URI *Uri* is too long.
DFHPI9049 E	Array *name* occurs *occurs* times. The largest supported value is *max*.
DFHPI9685 E	A language structure cannot be parsed. Please ensure that the statement terminator characters are correct and that any brackets are matched.
DFHPI9686 W	Structure *structureName* is ignored for container *containerName* as the container is defined as type 'char'.
DFHPI9687 W	Unexpected text *text* found in columns *start_column* to *end_column*. Text is ignored.
DFHPI9688 E	Unexpected End of Line condition encountered for line '*line*' of file *filename*.
DFHPI9691E	Invalid JSON schema. A JSON schema is a JSON document, and that document must be an object.
DFHPI9692E	Unsupported JSON schema. A JSON schema requires a "type" keyword with single string value.
DFHPI9693E	Invalid JSON schema. It contains an undefined JSON schema "type" of '*typevalue*'.
DFHPI9694E	Unsupported JSON schema. JSON schema "type" of '*typevalue*' is not supported.
DFHPI9695E	Unsupported JSON schema. A JSON schema "type" of "object" without a "properties" keyword is not supported.
DFHPI9696E	Invalid JSON schema. The value of "properties" keyword must be an object.
DFHPI9697E	Invalid JSON schema. The value of "required" keyword must be an array.
DFHPI9698E	Unsupported JSON schema. A JSON schema "type" of "array" without an "items" keyword is not supported.
DFHPI9699E	PICTURE strings are not supported for COMP-1 and COMP-2 fields. Problem found for field "*fieldName*".
DFHPI9700E	Unsupported JSON schema. A JSON schema "type" of "object" with an "additionalProperties" keyword is only supported with value false.
DFHPI9701E	Unsupported JSON schema. The JSON schema keyword '*keyword*' is not supported.
DFHPI9702E	Unsupported JSON schema. A JSON schema "type" of "array" with an "additionalItems" keyword is only supported with value false.
DFHPI9703E	Invalid JSON schema. The JSON schema keyword '*keyword*' requires the keyword '*required*' to be present.
DFHPI9704W	The JSON schema keyword '*keyword*' is not recognized and will be ignored.
DFHPI9705E	Invalid JSON schema. The JSON schema keyword "required" includes elements '*missing*' that are not in the "properties" keyword.
DFHPI9706E	Invalid JSON schema. The JSON schema keyword '*keyword*' for an array has a bad value.
DFHPI9707E	Invalid JSON schema. The JSON schema keywords "maximum" or "minimum" for an integer have a bad value.
DFHPI9708W	The JSON schema format '*format*' for "type" of '*type*' is not recognized and will be ignored.
DFHPI9709E	Invalid JSON schema. The JSON schema keywords "maxLength" or "minLength" for a string have a bad value.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHPI9710E	Invalid JSON schema. The JSON schema keywords '*keywords*' are not compatible with JSON schema "format" '*format*'.
DFHPI9711W	Possible bad integer read. The numeric value '*number*' is rounded to integer '*integer*'.
DFHPI9712W	For JSON schema "type" of "number" with "decimal" format, display is limited to 18 digits.
DFHPI9713E	For JSON schema "type" of "number" with "decimal" format, absolute values are limited to 1.0E19.
DFHPI9714E	Unsupported JSON schema. In element '*element*', the JSON schema 'type' of 'array' is not supported for 'items' keyword.'
DFHRL0122 E	*applid* The CICS resource life-cycle manager failed to re-create the resource *resource_name* for BUNDLE resource *bundle_name*.
DFHRT4424	*time applid* Use of EDF is not supported with IPIC communication to system *sysid*. The routing session is still active. To terminate the routing session type CANCEL.
DFHSJ0101I	*applid* The JVM (SJ) domain for Java has started initializing. Java is a trademark of Oracle and/or its affiliates.
DFHSJ0102I	*applid* SJ domain initialization has ended.
DFHSJ0103	*applid* SJ domain initialization has failed.
DFHSJ0210	*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}*.
DFHSJ0211	*date time applid* An exception has been thrown by the main method of a setup class, which was running in the JVM belonging to the JVMSERVER resource *jvmserver*.
DFHSJ0212	*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}*.
DFHSJ0213	*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*.
DFHSJ0214	*date time applid* A class in a JVM Server has invoked System.exit(). CICS will shut down immediately.
DFHSJ0215	*date time applid* The JVM Server *jvmserver* failed to initialize the OSGi framework. The JVM will be terminated.
DFHSJ0540	*date time applid* The **USSHOME** System Initialization Parameter is set to NONE. CICS will attempt to use the value of CICS_HOME from the JVM profile *jvmprof* instead.
DFHSJ0541	*date time applid* The **USSHOME** System Initialization Parameter is set to NONE and CICS_HOME is not specified in the JVM profile *jvmprof*. The JVM cannot be started.
DFHSJ0542	*date time applid* Wildcard expansion of CLASSPATH_SUFFIX in the JVM profile *jvmprof* has resulted in a class path which is too long. Some elements of the class path might be missing.
DFHSJ0600 W	*date time applid userid termid tranid program name* 256 unclosed FileBrowse browse sessions exist for task *trannum*.
DFHSJ0919 I	*date time applid userid* JVMSERVER *jvmserver* is processing any queued OSGi bundles.
DFHSJ1007 W	*date time applid* JVMSERVER *jvmserver* is being disabled by CICS because it is in an inconsistent state.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHSJ1008 W	*date time applid* CICS is enabling JVMSERVER *jvmserver* after successfully disabling the resource.
DFHSJ1100	*date time applid* An attempt to install an OSGi bundle into JVM server *jvmserver* has failed. OSGi bundle symbolic name *OSGibundle*, version *version*, reason code *{ERROR_CODE_UNRECOGNIZED | JVMSERVER_NOT_FOUND | EXCEPTION_FROM_JVMSERVER | JVMSERVER_NOT_OSGI_ENABLED | INTERNAL_ERROR | DUPLICATE_OSGI_BUNDLE_FOUND}*.
DFHSJ1101	*date time applid* An attempt to enable an OSGi bundle in JVM server *jvmserver* has failed. OSGi bundle symbolic name *OSGibundle*, version *version*, reason code *{ERROR_CODE_UNRECOGNIZED | EXCEPTION_FROM_JVMSERVER}*.
DFHSJ1102	*date time applid* An attempt to disable an OSGi bundle in JVM server *jvmserver* has failed. OSGi bundle symbolic name *OSGibundle*, version *version*, reason code *{ERROR_CODE_UNRECOGNIZED | EXCEPTION_FROM_JVMSERVER}*.
DFHSJ1104I W	*date time applid* The OSGi bundle has not been installed because the JVM server *jvmserver* is not enabled. OSGi bundle symbolic name *OSGibundle*, version *version*.
DFHSJ1105	*date time applid bundletype*BUNDLE *resname* from BUNDLE *bundlename* has been installed as {*Enabled* | *Disabled*}.
DFHSJ1106	*date time applid* OSGIBUNDLE *resname* from BUNDLE *bundlename* has been discarded.
DFHSO0135	*applid* An attempt to create a socket has failed because the request has timed out.
DFHTD1290	*applid* Program DFHTDRP cannot be found.
DFHTM1718	*date time applid* About to link to user PLT program *progname* during the first stage of shutdown.
DFHTM1719	*date time applid* About to link to user PLT program *progname* during the second stage of shutdown.
DFHTR0119	*applid* No DCB storage available for auxiliary trace data set. Auxiliary trace is inoperative.
DFHTR0122	STORAGE FOR INTERNAL TRACE TABLE NOT AVAILABLE - TRACE INOPERATIVE.
DFHTR0123	REQUESTED TRACE TABLE SIZE NOT AVAILABLE.
DFHTR0124	*applid* UNABLE TO BUILD TRACE CELL POOL IN 64-BIT STORAGE.
DFHTR1004	*applid* CICS system dump requested by global trap exit DFHTRAP in module *modname*. The dump will be taken whilst holding the trace lock.
DFHTS1601	*date time applid* Main temporary storage usage has reached *xx*% of TSMAINLIMIT storage.
DFHTS1602	*date time applid* Main temporary storage has attempted to exceed the TSMAINLIMIT storage limit.
DFHTS1603	*date time applid* The TSMAINLIMIT storage limit has been changed from *xxxx* MB to *yyyy* MB.
DFHTS1604	*date time applid* Main temporary storage usage has fallen below 70% of TSMAINLIMIT.
DFHTS1605	*date time applid* Scan of local temporary storage queues completed. *XXXX* local temporary storage queues were scanned and *YYYY* were deleted.
DFHTS1606	*date time applid* The TSMAINLIMIT has been left unchanged at *xxxx* MB.
DFHTS1607	*date time applid* An attempt to increase TSMAINLIMIT has failed. The TSMAINLIMIT setting has been left unchanged.
DFHTS1608	*applid* TS domain initialization has failed because an attempt was made to set TSMAINLIMIT to a value greater than 25% of MEMLIMIT.
DFHUS0300	*date time applid* An ICRX has been supplied without a realm for DNAME=*dname*.
DFHW20134	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Version number *version* in the configuration file is not supported at this level of CICS.

Table 33. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHW20135	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Attribute *attr1* on element *prefix*:*element* is not available at version *version* of the configuration file.
DFHW20136	*date time applid* Configuration error for ATOMSERVICE *atomservice*. Element *prefix1*:*element1* in element *prefix2*:*element2* is not available at version *version* of the configuration file.
DFHW20137	*date time applid* Install for ATOMSERVICE *atomservice* has failed because *{an ATOMSERVICE with the same name already exists | an authorization error occurred | of a problem with the ATOMSERVICE configuration file | the URIMAP could not be created | an unspecified error occurred}*.
DFHW20161	*date time applid* Referenced resource *resource* has a type that is not supported for delivering feeds. ATOMSERVICE *atomservice* has been disabled.
DFHWU0002	*applid* A severe error (code *X'code'*) has occurred in module *modname*.
DFHWU0004	*applid* A possible loop has been detected at offset *X'offset'* in module *modname*.
DFHWU2100	*applid* Unable to link to program DFHWURP.
DFH5208	*date time applid netname tranid* Resource defined but no value was specified for *xxxxxxxx*. Ensure that the resource is updated.
DFH5209	*date time applid netname tranid* No command encountered. The input file might be empty.
EYUVC1019	Passwords and password phrases cannot be mixed. Try again.
EYUVC1020	The external security manager interface has not been initialized. Sign-on request failed.
EYUVC1021	The external security manager is currently not accepting sign-on requests. Try again later.
EYUVC1023	Incorrect password length. Sign-on is terminated.
EYUVC1024	Incorrect new password length. Sign-on is terminated.
EYUVC1025	Incorrect user name length. Sign-on is terminated.
EYUVC1026	Incorrect group name length.
EYUVC1027	Invalid group name specified
EYUWM0439	*date time applid* TRANGRP (*trangrpid*) in CICSplex (*context*) for Workload (*workloadid*) transition to *type*: *sysname* at *sysplex reason*.
EYUXL0119	Major Object loaded from *module*

Chapter 46. Deleted abend codes

These abend codes are discontinued in CICS Transaction Server for z/OS, Version 5 Release 2.

Deleted abend codes in CICS Transaction Server for z/OS, Version 5 Release 2

No abend codes were deleted in CICS Transaction Server for z/OS, Version 5 Release 2.

The following abend codes were deleted in earlier releases:

Deleted abend codes in CICS Transaction Server for z/OS, Version 5 Release 1

Table 34. Deleted abend codes in CICS Transaction Server for z/OS, Version 5 Release 1

Abend code	Abend text
ABX9	A next BMS BRMQ vector in the input message passed to the formatter does not contain the mapname requested to answer a RECEIVE MAP request.
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).
AII1	An IIOP Request Receiver transaction (default CIRR) was started invalidly. This transaction can only be initiated internally by CICS.
AII2	The IIOP Request Receiver program DFHIIRR returned an exception which may have been caused by data received from the client.
AII3	An IIOP Request Receiver task has been purged.
AII4	The IIOP Request Receiver program DFHIIRR has returned a disaster response due to a call to another CICS program failing.
AII5	The IIOP Request Receiver stub program was invoked from the sockets domain. However the TCPIPSERVICE defined in RDO did not specify a PROTOCOL of IIOP.
AIIA	An error occurred in the IIOP Request Processor which prevented it from sending a reply to the Request Receiver.
AIID	The IIOP Request Processor attempted to use a CorbaServer that has been disabled or failed to initialize.
AIIP	An EJB was running in an OTS transaction and the timeout for this transaction was exceeded.
AIIT	The IIOP Request Processor timed out waiting for a request from a Request Receiver. It received a timed out notification from the RZ domain in response to a listen on the RequestStream of which it is the target.
AJAA	The CREA/CREC transaction could not allocate the shared memory it required. The transaction will free all allocated memory and issue this abend.
AJAB	The CREA/CREC transaction could not free the shared memory it allocated.
AJAC	The CREA/CREC transaction browses the installed REQUESTMODELs. An attempt to start or continue the browse of the REQUESTMODELs failed with an unexpected return code.
AJAD	The CREA/CREC transaction received an unexpected return code from an EXEC CICS call and could not continue.

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Table 34. Deleted abend codes in CICS Transaction Server for z/OS, Version 5 Release 1 (continued)

Abend code	Abend text
AJAE	The CREA/CREC transaction used the EXEC CICS SEND MAP call to display a BMS map. This call returned an expected return code.
AJAF	The CREA/CREC transaction used the EXEC CICS RECEIVE MAP call to receive data from a BMS map. This call returned an expected return code.
AJAG	The CREA/CREC transaction must be invoked using the transaction ID of 'CREA' or 'CREC'. You are not able to use another transaction ID to invoke DFHADDRM (the program invoked for the CREA/CREC transaction).
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.
ASJD	An attempt to load a DLL by SJ Domain has failed.
ASJE	An attempt to locate the Wrapper class has failed.
ASJF	An attempt to change the HFS working directory has failed.
ASJG	An attempt by SJ domain to fetch the user-replaceable module DFHJVMAT has failed.
ASJJ	The JAVA_HOME directory is inaccessible, does not exist, or contains a JVM which does not match the Java version requirements for this release of CICS.
ASJK	An attempt was made to attach transaction CJGC, but the transaction was not 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.
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.
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.
ASJ1	CICS attempted to initialize the Java environment for a task by issuing a JNI_CreateJavaVM call to the Java Native Interface. The call was not successful.
ASJ3	The CICS JVM interface invoked the JVM to find the main method of the CICS Wrapper class used to set up the operating environment before executing the user Java class. The JVM failed to find the main method of the CICS Wrapper class.
ASJ4	The SJ domain failed to build the argument list required to invoke the CICS Wrapper class used to set up the operating environment before executing the user Java class. This is possibly due to lack of free storage.
ASJ5	The CICS JVM interface invoked the CICS Wrapper class used to set up the operating environment before executing the user Java class. The Wrapper returned an exception.
ASJ6	The SJ domain issued a call to the kernel to ensure that CICS's ESTAE is the current ESTAE. This is required before calling CICS services from a native C environment which is running with Language Environment's ESTAE in effect. The call failed.
ASJ8	The SJ domain issued a call to the kernel to ensure that CICS's ESTAE is not the current ESTAE. This is required before calling the JVM as Language Environment's ESTAE is required to be in effect inside the JVM. The call failed.
ASRK	The AP domain recovery stub, DFHSR1, has been invoked to deal with a program check, operating system abend, or another error within a transaction environment. However, DFHSR1 has been unable to call the system recovery program, DFHSRP, because register 12, which should be pointing to the task control area (TCA), is null. This indicates that the caller of DFHSR1, has not set the address of the TCA..

Deleted abend codes in CICS Transaction Server for z/OS, Version 4 Release 2

No abend codes were deleted in this release.

Chapter 47. New abend codes

These abend codes are new for CICS Transaction Server for z/OS, Version 5 Release 2.

New abend codes in CICS Transaction Server for z/OS, Version 5 Release 2

Abend code	Abend text
AFDO	An attempt was made to attach a transaction specifying DFHFCRN as the program to be given control, but the transaction was not internally attached by CICS. DFHFCRN is for use by CICS system transaction CFCR. This transaction is used to disable a file defined in a CICS bundle.
AFDP	CICS failed to disable a file defined in a CICS bundle.
AXSE	The CICS security token service has been called without a channel.
AXSF	The CICS security token service encountered a severe error.
AXSG	The DFHSAML program is not running in CICS key.

New abend codes in CICS Transaction Server for z/OS, Version 5 Release 1

Abend code	Abend text
AALB	An error (INVALID, DISASTER or unexpected EXCEPTION response) has occurred on a call to the CICS/MQ Connection 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).
AEE0	An application that is executing in AMODE(64) called CICS using a stub program that does not support AMODE(64).
AEE1	AMODE(64) stub program not called in AMODE(64).
AEE2	The AMODE(64) initial command processor detected an error.
AEE3	AMODE(64) epilog DSA chain error.
AEZZ	INCOMPLETE condition not handled.
AFDN	A program has issued a file control request with an unrecognized request type.
AFDL	A file control update request was made but the task has already updated a file that uses a different replication log stream.
AINT	The indoubt testing tool issued a EXEC CICS ENABLE command to enable the indoubt testing tool task related user exit program DFHINTRU, and the command failed with a NOTAUTH response.
AINU	The indoubt testing tool issued a EXEC CICS ENABLE command to enable the indoubt testing tool task related user exit program DFHINTRU, and the command failed with an unexpected response.
AIPS	IP interconnectivity remote scheduler program DFHISRSP has been started invalidly, probably because a transaction id that refers to DFHISRSP, for example CISM, has been entered at a terminal. DFHISRSP must be started by CICS internal processes only.
AIPT	IP interconnectivity remote scheduler program DFHISRSP received an INVALID, DISASTER, or EXCEPTION response from its PROCESS_SCHEDULER 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.

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Abend code	Abend text
AIPU	For CICS 4.1 and later, IPCONN names that are longer than four characters are not supported in transaction routing between CICS regions.
AITO	DFHISPHP and DFHISPRP invalidly started from a terminal.
AMPB	A task has exceeded a policy threshold and the action defined is to abend the task.
APGD	The AMODE of the application and the stub program do not match.
APGE	The AMODE of the application and the stub program do not match.
AXFZ	The monitoring domain module, DFHMNAD, has returned a condition not expected by DFHXFX.

New abend codes in CICS Transaction Server for z/OS, Version 4 Release 2

Abend code	Abend text
ABRP	The bridge client is no longer available.
ACSO	An IPIC conversation failure occurred when an attach between CICS systems was issued.
ADDK	CICS failed to obtain or release a lock on either the Global Work Area (GWA) or the DBCTL Global Block (DGB) of the adapter.
AECE	An unexpected error occurred in the event processing deferred filtering task CEPF.
AECM	An attempt was made to attach a CICS event processing deferred filtering task CEPF, but the transaction was not attached internally by CICS.
AITN	An attempt to change the TCB DFHMIRS that was running on has failed.
AJST	Program DFHJSON was called using EXEC CICS LINK, but no channel was provided.
ASJ7	An error has caused the JVM server to receive a SIGABRT signal.
ASJS	A Java application running in a JVM server invoked the System.exit() method.

Part 6. Appendixes

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CICS IMS™ Database Control Guide, SC34-7278

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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 5 Release 2.

Designing and Programming CICS Applications, ISBN: 1-56592-676-5

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

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

You can perform most tasks required to set up, run, and maintain your CICS system in one of these ways:

- using a 3270 emulator logged on to CICS
- using a 3270 emulator logged on to TSO
- using a 3270 emulator as an MVS system console

IBM Personal Communications provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICS system.

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CICS Transaction Server for z/OS
Version 5 Release 2
Upgrading from CICS TS Version 4.1

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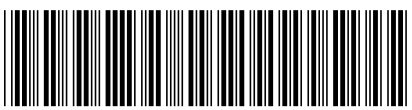
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