

CICS Transaction Server for z/OS  
Version 4 Release 2



# Upgrading from CICS TS Version 4.1



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Version 4 Release 2



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**Note**

Before using this information and the product it supports, read the information in "Notices" on page 145.

This edition applies to Version 4 Release 2 of CICS Transaction Server for z/OS (product number 5655-S97) 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 4 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 4 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 4 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.

For information about all the processes for installing CICS Transaction Server, see Installing overview in the Installation Guide.

### Generalized trace facility (GTF)

To use CICS trace with GTF, you must have the PTF for APAR OA32611 applied to z/OS, Version 1 Release 11 or z/OS, Version 1 Release 12.

### Authorization routines

In z/OS, do not install SVCs or PC routines that return control to their caller in any authorized mode: that is, in supervisor state, system PSW key, or APF-authorized. Doing so is contrary to the z/OS Statement of Integrity.

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

---

## 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/J6.0.1_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 23, “Upgrading the Java environment,” on page 79.

---

## Value for the z/OS MEMLIMIT parameter

To provide sufficient 64-bit (above-the-bar) storage for a CICS TS for z/OS, Version 4.2 region, set the value for the z/OS **MEMLIMIT** parameter equal to or greater than 4 GB. The default value in z/OS for **MEMLIMIT** is 2 GB.

A CICS region requires at least 4 GB of 64-bit storage. You cannot start a CICS region with a **MEMLIMIT** value that is lower than 4 GB. If you attempt to do so, 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.

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. For more information, see Estimating, checking, and setting **MEMLIMIT** in the Performance Guide.

---

## 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 4.2 is 0670. This number is returned in the **RELEASE** parameter of the **INQUIRE SYSTEM** command.

The level number also appears in the alternative decimal form 6.7 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 DFHPD670.

---

## Chapter 2. Changes to system initialization parameters

In CICS Transaction Server for z/OS, Version 4 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.

---

## 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.

**CSDL SRNO**={1|number|NONE|NO}

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

**EDSALIM**={48M|number}

In CICS TS for z/OS, Version 4.2, the minimum value for the **EDSALIM** parameter has changed from 10 MB to 48 MB, and the default value has increased to 48 MB. If you created your SIT or CICS startup JCL using previously supplied defaults, or a value less than 48 MB, update them to use the new CICS-supplied defaults, or to an appropriate value.

The **EDSALIM** system initialization parameter specifies the upper limit of the total amount of storage within which CICS can allocate the individual extended dynamic storage areas (EDSAs) that reside in 31-bit (above-the-line) storage; that is, above 16 MB but below 2 GB.

**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 in 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. In CICS TS for z/OS, Version 4.2, the internal trace table can be in 64-bit (above-the-bar) storage.

CICS can obtain 64-bit (above-the-bar) storage, rather than 31-bit (above-the-line) storage for the internal trace table, depending on the version of the z/OS operating system, and whether the CICS region operates with transaction isolation. See CICS facilities that can use 64-bit storage in the Performance Guide.

When the internal trace table is in 64-bit storage, 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*}

In 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 4.2, 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.

- 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.

**TSMMAINLIMIT**={64M|*nnnnnM*|*nnG*}

**64M** The default setting in megabytes.

*nnnnnM*

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

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

For example, **TSMMAINLIMIT=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 **TSMMAINLIMIT** 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 **TSMMAINLIMIT** value might not provide sufficient storage, compared with the limit determined by the previous **EDSALIM** value. Therefore consider whether you need to increase the **TSMMAINLIMIT** value.



---

## Chapter 3. Changes to the application programming interface

CICS Transaction Server for z/OS, Version 4 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*.

### 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 4.2.

---

## 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.

### 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 4 Release 2 includes some new API commands that you can use to create application programs that use new CICS functions.

### **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 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.

DELETE COUNTER and DELETE DCOUNTER

DELETEDQ 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).

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 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).

---

### Obsolete resource definition attributes

Some individual attributes of existing resource definitions are now obsolete. If you have resource definitions that use these attributes, replace them as appropriate.

#### **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.

---

### Changed resource definition attributes

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

#### **PROGRAM resource definition: changed CONCURRENCY attribute**

The CONCURRENCY option of the PROGRAM resource now allows you to specify the new option REQUIRED.

---

### New resource definitions and new attributes

Some new resource definitions are available in CICS Transaction Server for z/OS, Version 4 Release 2, and some new individual attributes are added to existing resource definitions. You can use these new resource definitions and attributes to define support for new CICS functions.

#### **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 the Resource Definition Guide.

#### **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 the Resource Definition Guide.

#### **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 the Resource Definition Guide.

#### **TCPIP SERVICE 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 the Resource Definition Guide.

**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 the Resource Definition Guide.

**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 the Resource Definition Guide.

**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 the Resource Definition Guide.

---

## Changes to control tables (macro resource definition)

When upgrading to CICS Transaction Server for z/OS, Version 4 Release 2, reassemble all CICS control tables using the CICS TS 4.2 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 4 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.

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## Chapter 5. Changes to the system programming interface

CICS Transaction Server for z/OS, Version 4 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.

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### Obsolete options or values on SPI commands

These system programming interface command options or values are obsolete. Remove these options from your applications, because they represent functions that are no longer available, so the behavior of applications that use these options will change.

**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.

**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.

**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.

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## New options or values on SPI commands

A number of system programming interface commands have new options or new values for options.

### 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 LSRPOOLNUM 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.

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. If you set a value for this attribute, you cannot set a value for the JVMPROFILE attribute.

#### 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 using pooled JVMs operate like OPENAPI programs and use a J8 TCB if CICS key is set, and a J9 TCB if user key is set. 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 assembly 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. This 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.

REQUIRED is applicable to user application programs, PLT programs, and user-replaceable programs, and is the preferred option for Java programs.

## 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.

**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 hours, 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 the Internet Guide.

## 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. See Previous hop data characteristics for more information about previous hop data.

**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 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.

| **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 JVMPOOL

A new option PROFILEDIR is added:

### PROFILEDIR(*data-area*)

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

## INQUIRE 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:

| **EXPIRYINT(*data-area*)**

| Returns a fullword binary field giving the expiry interval, in hours, for  
| temporary storage queues matching this model. 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 shared  
| temporary storage queues, or temporary storage queues created by CICS.

| **INQUIRE TSQUEUE / TSQNAME**

A new option EXPIRYINT is added:

| **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.  
| 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.
- Temporary storage queues in shared temporary storage pools.

## 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 4 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.

### **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 4 Release 2**

INQUIRE CLASSCACHE  
INQUIRE JVM  
INQUIRE JVMPOOL  
INQUIRE JVMPROFILE  
PERFORM CLASSCACHE  
PERFORM JVMPOOL  
RESYNC ENTRYNAME  
SET CLASSCACHE  
SET JVMPOOL

---

## Chapter 6. Changes to CEMT

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

---

### Changed CEMT commands

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

#### 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 CLASSCACHE

A new option STARTTIME is added which replaces DATESTARTED and TIMESTARTED:

##### STARTTIME(*date time*)

Displays the date and time on which the current shared class cache was started. The format of the date depends on the value that you selected for the DATFORM system initialization parameter for your CICS region. The format of the time is hh:mm:ss.

#### INQUIRE EVENTBINDING

A new option EPADAPTER is added:

##### EPADAPTER(*value*)

Displays the 32-character name of an EP adapter.

#### 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 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 containing 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 TSMODEL

A new option EXPIRYINT is added:

### EXPIRYINT(*value*)

Displays the expiry interval, in hours, for temporary storage queues associated with this TS model. 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 shared temporary storage queues, or temporary storage queues created by CICS.

## INQUIRE TSQUEUE / TSQNAME

A new option EXPIRYINT is added:

### EXPIRYINT(*value*)

Displays the expiry interval, in hours, that is defined for the temporary storage queue in its TSMODEL resource definition. 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.
- Temporary storage queues in shared temporary storage pools.

## 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 GROUPPUR 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*.

### 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 7. 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 these external resource names.

### 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
CMLINK	CICSCMASToMASLink	CMAS to MAS link
CRESEVCS	CICSTopologyCaptureSpecification	Event Processing capture specification
CRESEPAD	CICSTopologyEPAdapter	Event processing adapter
CRESEVBD	CICSTopologyEventBinding	Event Binding in a CICS system
CRESEVSD	CICSTopologyCaptureSpecificationDataPredicate	CICS event capture specification data predicates
CRESEVSI	CICSTopologyCaptureSpecificationInformationSource	CICS event capture specification information sources
CRESEVSO	CICSTopologyCaptureSpecificationOptionPredicate	CICS event capture specification option predicates
CRESOSGB	CICSTopologyOSGiBundle	Topology data for OSGi bundles
CRESOSGS	CICSTopologyOSGiService	Topology data for OSGi services
EPADAPT	CICSEPAAdapter	CICS event processing adapter
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



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## Chapter 8. Changes to the CICS-supplied transactions

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

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### 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<sup>®</sup> Category 3 transaction.



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## Chapter 9. Additions to CICS RACF category 1 transactions

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

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

The new category 1 transactions are as follows:

- CEPF



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

CICS Transaction Server for z/OS, Version 4 Release 2 has changes to some existing global user exit programs and task-related user exit programs, and there are some new global user exit points. Check your existing global user exit programs against the changes summarized here.

### Reassembling global user exit programs

The CICS global user exit programming interface is product-sensitive, and depends on the facilities that are set up in your CICS system. It is advisable to reassemble global user exit programs for each CICS release.

Check the changes 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 your global user exit programs against the CICS Transaction Server for z/OS, Version 4 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, it depends on the combination of CICS releases, and whether the XPI call is a release-sensitive call, whether control is successfully transferred from the exit to the correct CICS module to handle that XPI 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.

*Table 1. 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 4.2	Yes	All currently supported CICS releases	Control transfers to the correct CICS module for the XPI call
CICS TS 4.2	No	Earlier than CICS TS 4.2	Unpredictable result
CICS TS 4.1	Yes	All currently supported CICS releases	Control transfers to the correct CICS module for the XPI call

Table 1. 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 4.1	No	CICS TS 4.2	Control transfers to the correct CICS module for the XPI call
Earlier than CICS TS 4.1	No	CICS TS 4.2	User exit fails

## Changes to global user exits

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

### Temporary storage exits domain exits: XTSQRIN, XTSQROUT, XTSP TIN, and XTSP TOUT

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, XTSP TIN, and XTSP TOUT check that the UEPTERM parameter is a non-zero value before trying to use it as an address.

XTSQRIN, XTSQROUT, XTSP TIN, and XTSP TOUT must be coded to threadsafe standards and declared threadsafe to get the benefits of threadsafe remote temporary storage queue support using an IPIC connection.

### 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.

### Changes to resource management installation and discard exit XRSINDI

The range of values in the 1-byte field addressed by the UEPIDTYP parameter now covers the installation and discarding of the following new resource types:

| **UEIDEPAD**

| An EPADAPTER resource.

| **UEIDOSGB**

| An OSGi bundle.

To see all of the resource types that are available to the XRSINDI exit, see Exit XRSINDI.

---

## **New global user exit points**

CICS Transaction Server for z/OS, Version 4 Release 2 includes some new global user exit points to help you customize new or existing CICS functions.

### **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**

There are changes to the ways in which task-related user exit programs can be used in CICS Transaction Server for z/OS, Version 4 Release 2.

### **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*.



---

## Chapter 11. Changes to user-replaceable programs

For each CICS release, you must reassemble all user-replaceable programs, whether or not you make any changes to them. Before reassembling the programs, check whether these changes to the user-replaceable program interface affect your own customized programs, and make any necessary changes. For example, there might be changes to the parameters passed to the programs or there might be new actions that the programs need to take. To help you to identify any code changes that are required, compare your customized programs with the sample code in the user-replaceable sample programs provided with this CICS release.

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

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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 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 has 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.

## DFHJVMAT, JVM options

DFHJVMAT is a user-replaceable program that you can use to override the options specified in a JVM profile. It can only be used for a single-use pooled JVM, and not for a continuous pooled JVM. The use of DFHJVMAT is not recommended for new development.

Only certain options in JVM profiles are available to DFHJVMAT. There are changes to the list of available options, as follows:

### CICS\_HOME

No longer available

## DFHJVMRO, Language Environment runtime options

The DFHJVMRO program contains changed options to support the 64-bit Language Environment runtime options. Update your programs to use the following 64-bit options:

Old option	New option
HEAP	HEAP64
LIBHEAP	LIBHEAP64
STACK	STACK64

## EYU9WRAM, dynamic routing program: EYURWCOM communication area

EYURWCOM is the communication area used by the dynamic routing user-replaceable module EYU9WRAM.

The following EYURWCOM tokens are new:

### 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 are changed:

- **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 are new:

#### **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.



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## Chapter 12. Changes to CICS utilities

Changes to CICS utilities in CICS Transaction Server for z/OS, Version 4 Release 2 relate to new, changed, or obsolete CICS functions. The existing utility programs DFHCSDUP, DFHSTUP, and DFH0STAT support new resources, and the trace formatting utility program DFHTUxxx and IPCS dump exit routine DFHPDxxx support new resources and are renamed for the release.

### **DFH0STAT, sample statistics utility program**

DFH0STAT, the sample statistics utility program, produces additional statistics reports for new resource types.

### **DFHCSDUP, CSD utility program**

The CSD utility program supports all the new and changed resource types and attributes. See Chapter 4, “Changes to resource definitions,” on page 13 for details of all the changes to CSD resource definitions that are supported by DFHCSDUP.

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

### **DFHPD670, IPCS dump exit routine**

The dump formatting utility program is renamed to DFHPD670. Always ensure that you use the dump formatting program with the correct level number for the release of CICS TS that created the dump data set that you are formatting.

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

### **DFHSTUP, statistics formatting utility program**

The statistics formatting utility program formats additional statistics reports for new and updated resource types. See Chapter 14, “Changes to statistics,” on page 55 for information about new keywords available on the SELECT TYPE and IGNORE TYPE parameters.

### **DFHTU670, trace formatting utility program**

The trace formatting utility program is renamed to DFHTU670. Always ensure that you use the trace program with the correct level number for the release of CICS TS that created the trace data set that you are formatting.

The program formats trace entries written by the new domains and functions. The new identifiers that you can specify to DFHTU670 on the **TYPETR** parameter for

these functional areas are the same as the CETR trace component codes.

---

## Chapter 13. 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 2960 bytes. The length does not take into account any user data that you add or any system-defined data fields that you exclude by using a monitoring control table (MCT).
- The offsets have changed for a number of the default CICS dictionary entries in the dictionary data sections of CICS monitoring SMF 110 records.

---

### New monitoring data fields

A number of new data fields are added in the performance class data, identity class data, transaction resource class data, and exception class data produced by CICS monitoring.

#### 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 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.

### **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.

| **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.

**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 4 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 4 Release 2, DFH\$MOLS can process SMF 110 monitoring data records for the following supported releases:

- 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.



---

## Chapter 14. Changes to statistics

CICS statistics records contain changes because of new domains or because of enhancements to CICS. New statistics types are added and some statistics types have new or changed fields. You might have to recompile application programs using the changed DSECTs.

### New statistics types

Table 2. New statistics types

Copybook	Functional area
DFHEPRDS	EP adapter resource statistics

### Changed statistics types

Table 3. Changed statistics types

Copybook	Functional area
DFHECGDS	EVENTBINDING global statistics
DFHEPGDS	Event processing global statistics
DFHPGRDS	The JVM program statistics
DFHSJSDS	JVMSERVER resource statistics
DFHSMSDS	Storage manager statistics
DFHSORDS	TCP/IP service resource statistics
DFHTSGDS	Temporary storage global statistics
DFHWRBDS	URIMAP resource statistics

New or changed statistics types might increase the amount of statistics data that is written to the MVS systems management facility (SMF). To avoid any problems caused by multiple CICS regions writing increased interval statistics to the SMF at the same time, you can use the DFH\$STED sample utility program. This program varies the statistics interval occurrence time for each CICS region. For more information, see Stagger end-of-day time sample utility program (DFH\$STED) in the *CICS Operations and Utilities Guide*.

### New values in DFHSTIDS (statistics record identifiers)

The new DSECTs 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 value for CICS Transaction Server for z/OS, Version 4 Release 2 is as follows:

STIEPR 144 DFHEPRDS EPADAPTERs (Resource) id

## The statistics formatting utility program, DFHSTUP

The statistics formatting utility program now formats additional statistics reports for the new statistics. You can code new resource types on the SELECT TYPE and IGNORE TYPE parameters using these keywords:

- EPADAPTER

## CEMT and EXEC CICS statistics commands

You can retrieve all the new statistics described in this topic using the **EXEC CICS EXTRACT STATISTICS** command, the **EXEC CICS PERFORM STATISTICS RECORD** command, and the **CEMT PERFORM STATISTICS** command.

The list of resources supported by the **EXEC CICS COLLECT STATISTICS** command is now closed. All new resources introduced from CICS Transaction Server for z/OS, Version 3 Release 1 onwards are supported by the **EXEC CICS EXTRACT STATISTICS** command, which operates in the same way.

---

## Chapter 15. Changes to sample programs

CICS Transaction Server for z/OS, Version 4 Release 2 has a number of changes to the samples provided to demonstrate the use of different CICS functions. Unless otherwise stated, sample programs are supplied in the SDFHSAMP library.

### 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 CICSTS42.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.

### DFHOSGI, DFHJVMAX, and DFHAXRO, JVM server samples

DFHOSGI is a JVM profile file that specifies the options for initializing the JVM server, including the 64-bit options, for OSGi applications. The JVMSERVER resource defines the name of the JVM profile. Its location is determined by the **JVMPROFILEDIR** system initialization parameter.

DFHJVMAX is a JVM profile file that specifies the options for initializing the JVM server, including the 64-bit options, for Axis2 applications. The JVMSERVER resource defines the name of the JVM profile. Its location is determined by the **JVMPROFILEDIR** system initialization parameter.

DFHAXRO is a sample program that provides default values for configuring the 64-bit Language Environment enclave of a JVM server. Modify and recompile this program to change the Language Environment enclave for a JVM server. The JVMSERVER resource defines the name of the program that controls the options for the Language Environment enclave. Each JVM server can use a different

version of the runtime options if required. The program must be in the *hlq.SDFHLOAD* library.

### **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.

---

## Chapter 16. 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 121 lists messages and abend codes that have been removed, changed, and added for CICS Transaction Server for z/OS, Version 4 Release 2.

### **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.



---

## Part 2. Upgrading CICS Transaction Server

To upgrade your CICS regions to CICS Transaction Server for z/OS, Version 4 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 17. Upgrade procedures for all CICS regions

Complete these tasks when you upgrade any CICS Transaction Server region to CICS Transaction Server for z/OS, Version 4 Release 2.

---

### Redefining and initializing the local and global catalogs

When you upgrade to a new CICS release, delete, redefine, and initialize the CICS local catalog and global catalog.

#### Procedure

1. Delete your existing local catalog and global catalog.
2. Define and initialize new local and global catalogs, following the instructions in the *CICS System Definition Guide*. When you initialize the catalogs, make sure that you use the CICS Transaction Server for z/OS, Version 4 Release 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 information on how to set up and configure conversions supported through the operating system services, see *z/OS Support for Unicode: Using Conversion Services*.

If z/OS conversion services are not enabled, CICS issues a message. You can suppress that message if you do not need these services. If the message is encountered when starting a CICS region that is expected to make use of these services, an IPL is necessary to enable the z/OS conversion services.

To discover the status of z/OS conversion services after an IPL, use one of these commands from an MVS console:

#### **D UNI**

To show whether z/OS conversion services were enabled.

#### **D UNI,ALL**

To show whether z/OS conversion services were enabled and which conversions are supported by the system.

If you want to enter the command from SDSF, add a / to the beginning of the command.

---

## Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions

Upgrade the CICS-supplied resource definitions using the UPGRADE function of the CSD utility program DFHCSDUP. If you have resource definitions in your CSD that support other IBM products, such as z/OS, you might need to upgrade these also.

### About this task

If you need to share your upgraded CSD with different CICS releases, see “CSD compatibility between different CICS releases” on page 67.

### 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<sup>®</sup> resource definitions are not at the correct z/OS level, you should delete and replace the CSD group containing these. The Language Environment resource definitions are in the SCEESAMP library in member CEECCSD. “Sample job for additional CSD modification” has an example job to delete and replace the CSD group containing these.

### Sample job for additional CSD modification

If you need to upgrade the Language Environment resource definitions in your CSD, you can use a job like this.

```

//CSDUPGRD JOB 1,WALSH,MSGCLASS=A,MSGLEVEL=(1,1),
//      CLASS=A,NOTIFY=BELL
/*JOBPARM SYSAFF=MV26
/* Remove Old Language Environment group
//CSDUP1 EXEC PGM=DFHCSDUP,REGION=2M,PARM='CSD(READWRITE) '
//STEPLIB DD DSN=CICSTS42.CICS.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS42.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=CICSTS42.CICS.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS42.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD DSN=SYS1.ZOS111.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 4.2. 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

JVMPROFILE(DFHJVMCD) is added to the definition of program DFHADJR. Therefore, DFH\$CSDU contains the following command:

```
ALTER PROGRAM(DFHADJR) GROUP(*) JVMPROFILE(DFHJVMCD)
```

When you run DFHCSDUP, the attribute is added to the definitions of program DFHADJR in all groups. Other attributes are unchanged.

---

## DSA size limits

Setting the size of individual dynamic storage areas (DSAs) is not usually necessary and is not recommended. However, you can set the size of some of the DSAs using the system initialization parameters CDSASZE, UDSASZE, SDSASZE, RDSASZE, ECDSASZE, EUDSASZE, ESDSASZE, and ERDSASZE.

For example, CDSASZE sets the size of the CDSA, and ECDSASZE specifies the size of the 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 is specified by the EDSALIM and DSALIM system initialization parameters. You must allow at least 1 MB for each DSA in 31-bit storage (above the

line) for which you have not set a size, and 256K for each DSA in 24-bit storage (below the line) for which you have not set a size.

## CSD compatibility between different CICS releases

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, which are needed to support earlier releases if you share the CSD between different levels of CICS.

When you have upgraded a CSD, if you plan to share the CSD with earlier releases of CICS, include the appropriate DFHCOMPx compatibility groups in your startup group list to provide the required support for earlier releases. Table 4 shows you which DFHCOMPx groups you must include for the earlier releases. Do not attempt to share a CSD with a CICS region running at a higher level than the CSD.

You must install the compatibility groups in the correct order, as shown in the table. For example, to run a CICS TS 3.2 region, with the CSD upgraded to CICS TS 4.2, append the compatibility groups DFHCOMPE followed by DFHCOMPD at the end of your group list.

Table 4. Required compatibility groups for earlier releases of CICS

	CICS TS 4.2 CSD	CICS TS 4.1 CSD	CICS TS 3.2 CSD	CICS TS 3.1 CSD
Shared with CICS TS 4.2	None	Do not share	Do not share	Do not share
Shared with CICS TS 4.1	DFHCOMPE	None	Do not share	Do not share
Shared with CICS TS 3.2	DFHCOMPE DFHCOMPD	DFHCOMPD	None	Do not share
Shared with CICS TS 3.1	DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPD DFHCOMPC	DFHCOMPC	None

### Compatibility group DFHCOMPE

Group DFHCOMPE is required for compatibility with release CICS TS 4.1.

Table 5. Contents of compatibility group DFHCOMPE

Resource type	Name
PIPELINE	DFHWSATP DFHWSATR

### Compatibility group DFHCOMPD

Group DFHCOMPD is required for compatibility with release CICS TS 3.2.

Table 6. Contents of compatibility group DFHCOMPD

Resource type	Name
TDQUEUE	CPLI CPLD
PIPELINE	DFHWSATP DFHWSATR
PROGRAM	DFHSJJML DFHPIVAL IXM4C56 IXMI33UC IXMI33DA IXMI33D1 IXMI33IN

Table 6. Contents of compatibility group DFHCOMPD (continued)

Resource type	Name
TRANSACTION	CJMJ

## Compatibility group DFHCOMPC

Group DFHCOMPC is required for compatibility with release CICS TS 3.1.

Table 7. Contents of compatibility group DFHCOMPC

Resource type	Name
PIPELINE	DFHWSATP DFHWSATR

---

## Chapter 18. 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<sup>®</sup> C/370<sup>™</sup> (5688-216)

For details of the compilers that are supported by CICS, see High-level language support.

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

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. See the *z/OS Language Environment Run-Time Application Migration Guide*, and the *Compiler and Run-Time Migration Guide* for the language in use, for further information. Because pre-Language Environment compilers are not Language Environment-conforming, programs compiled by these compilers cannot take advantage of all Language Environment facilities in a CICS region.

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 OS/VS COBOL**

Runtime support for OS/VS COBOL programs is withdrawn. If you try to use an OS/VS COBOL program, CICS issues the abend code ALIK, abnormally terminates the task, and disables the program.

## **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.

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## Chapter 19. 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

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 4.2.

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.

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## Chapter 20. Upgrading Business Transaction Services (BTS)

When you upgrade your BTS environment to CICS Transaction Server for z/OS, Version 4 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 4.2 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.



## Chapter 21. 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 Chapter 4, "Changes to resource definitions," on page 13.

Table 8 and Table 9 on page 76 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 8. 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 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	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

Table 9. 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 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							
	Released	APPC or MRO connection							
CICS TS 4.1	Acquired	APPC or MRO connection							
	Released	APPC or MRO connection							
CICS TS 4.2	Acquired	APPC or MRO connection	IPIC connection	IPIC connection	IPIC connection	APPC or MRO connection			
	Released	APPC or MRO connection							

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## Chapter 22. Upgrading multiregion operation (MRO)

To upgrade CICS multiregion operation (MRO) support, install the latest DFHIRP and DFHCSVC modules in the MVS link pack area (LPA) and carry out tests.

### About this task

For MRO, the interregion communication program DFHIRP is installed in the link pack area (LPA). The CICS TS for z/OS, Version 4.2 DFHIRP module is compatible with earlier releases, and works with all releases of CICS. However, the CICS TS for z/OS, Version 4.2 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<sup>®</sup>, 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 4.2 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 SVC Parm table. If the new DFHCSVC has to coexist with an older version, rename one of them so that both versions can be installed in the LPA. However, coexistence is not recommended or necessary: DFHCSVC is compatible with earlier releases and the latest CICS TS version supports all the earlier releases of CICS.
2. Test the new SVC on stand-alone CICS regions, without using any MRO. You can do this running the CICS IVP, DFHIVPOL.
3. Install the CICS interregion communication program, DFHIRP, in a suitable LPA library, and IPL MVS with the CLPA option. Do not use the dynamic LPA function to replace DFHIRP for upgrading between releases, because you might cause incompatibility between control blocks, resulting in abend situations.
4. Test your production MRO CICS regions, under your existing release of CICS, but using the new SVC number and the new DFHIRP. For this test, run without any logon or bind-time security checking: that is, do not define any RACF FACILITY class profiles.
5. Define the required DFHAPPL.*applid* profiles in the RACF FACILITY general resource class. When the profiles are ready for all the MRO regions, test the

production regions again with the new SVC and DFHIRP, this time using the FACILITY class profiles for logon and bind-time security checking.

6. If the production MRO regions successfully log on to the new IRP with the new SVC, and bind-time security checking works successfully, use the new DFHIRP and SVC for the production regions.
7. With the production regions running successfully under the CICS SVC and IRP, you can initialize and test some CICS Transaction Server regions using MRO. These test regions can coexist in the same MVS image as the production regions, all using the same SVC and IRP.

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## Chapter 23. 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 and enterprise beans.

### Earlier versions of Java

Java programs that ran under CICS Transaction Server for z/OS, Version 3 can also run under CICS Transaction Server for z/OS, Version 4.

When you upgrade from one version of Java to another, check for compatibility issues between the Java APIs, and compatibility issues specific to the IBM SDK for z/OS. You can find this information at Java Standard Edition Products on z/OS, on the IBM Systems web site (<http://www.ibm.com/systems/z/os/zos/tools/java/>).

To avoid potential problems with deprecated APIs, develop all new Java programs for CICS Transaction Server for z/OS, Version 4 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 have been removed in the newer version of Java.

### 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, and compare your existing JVM profiles to the latest CICS-supplied samples. Changes to the JVM profile options are described in “Changes to options in JVM profiles” on page 81. A list of suitable options for this release is in *Java Applications in CICS*. Use the new samples supplied with CICS Transaction Server for z/OS, Version 4 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, and make the changes that are required to upgrade them. 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.

The JVM profiles DFHJVMAX, DFHOSGI, DFHJVMPR, and DFHJMCD must always be available to CICS and configured so that they can be used in your CICS region. *Java Applications in CICS* tells you how to configure JVM profiles.

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## Key changes to CICS support for Java applications

You must be aware of significant changes that can affect your Java environment when you upgrade to CICS Transaction Server for z/OS, Version 4 Release 2.

- All JVMs 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 6.0.1, 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. To do this, 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 the Performance Guide.
  - 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.
- CICS provides two runtime environments for Java applications. The pool of JVMs still provides support for Java applications. These JVMs are called *pooled JVMs*. However, you can move your applications to run in a JVM server if they are threadsafe. 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. 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 these runtime environments, see JVM servers and pooled JVMs in Java Applications in CICS.
- The JVM server can run different Java workloads. A JVM server can either run Java applications that comply with the OSGi specification or use Axis2 for SOAP processing. 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. Two sample JVM profiles are supplied, DFHOSGI and DFHJVMAX. DFHOSGI configures the JVM server to support OSGi and DFHJVMAX configures the JVM server to support SOAP processing using Axis2.
- The JCICS API packaging has changed. The `dfjcics.jar` and `dfjoutput.jar` files have been replaced by a set of OSGi bundles that can run in both a JVM server and pooled JVMs. Any existing Java applications that use JCICS can continue to run in pooled JVMs without requiring recompilation. However, if you want to change your Java applications, you must change the class path to use the new JAR files before recompiling the application.

The following OSGi bundles are provided with CICS:

File name	OSGi bundle symbolic name	Description
<code>com.ibm.cics.samples.jar</code>	<code>com.ibm.cics.samples</code>	Samples for redirecting System.out and System.err. Replaces the <code>dfjoutput.jar</code> file.
<code>com.ibm.cics.server.jar</code>	<code>com.ibm.cics.server</code>	The JCICS API. Replaces the <code>dfjcics.jar</code> file.
<code>com.ibm.record.jar</code>	<code>com.ibm.record</code>	The Java API for legacy programs that use IByteBuffer from the Java Record Framework that came with VisualAge. Previously in the <code>dfjcics.jar</code> file.

You must import the `com.ibm.cics.server.jar` and `com.ibm.record.jar` files for existing Java applications.

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## Changes to options in JVM profiles

A reference for changes to options in JVM profiles.

Table 10. Changed options in JVM profiles

Option	Status	CICS and Java launcher action	Replace with	Notes
CICS_HOME	Obsolete	Java launcher uses the value of the USSHOME system initialization parameter	USSHOME system initialization parameter	Do not specify. CICS issues message DFHSJ0527 if found.
JAVA_PIPELINE	New for CICS sample profiles	Accepted	n/a	Adds the required JAR files to the class path for Java-based SOAP pipelines. Used only in JVM servers.
OSGI_BUNDLES	New for CICS sample profiles	Accepted	n/a	Specifies a list of middleware OSGi bundles. Used only in JVM servers.
OSGI_FRAMEWORK_TIMEOUT	New for CICS sample profiles	Accepted	n/a	Specifies a timeout in seconds for the JVM server initialization and shutdown. Used only in JVM servers.

### New symbol &JVMSERVER;

When you use the &JVMSERVER; 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.

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## 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 6.0.1 version, because the 31-bit version is no longer supported.

### About this task

CICS runs Java applications using the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 6.0.1. CICS supports only the 64-bit version of the SDK and not the 31-bit version.

### Procedure

To upgrade your Java environment to Version 6.0.1 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 V6.0.1, and the IBM 31-bit SDK for z/OS V6.
2. Check that any Java programs that use the Java Native Interface (JNI), including vendor products, can run using the 64-bit version of the SDK.

3. Download and install the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 6.0.1 on your z/OS system. You can download the product, and find out more information about it, at 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 Version 6.0.1 of the IBM 64-bit SDK for z/OS, Java Technology Edition. `/usr/lpp/java/J6.0.1_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. To check the results of your changes, you can compare your JVM profiles with the sample JVM profile DFHJVMPR.
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, V6.0.1 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 the Performance Guide.
9. When you have completed any other necessary upgrading tasks for the CICS regions, 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<sup>®</sup> to browse the JVMs in a CICS region, identify their JVM profiles, and see when they are allocated to a task.
  - b. Confirm that the shared class cache (if used) has been started successfully. You can view the status of the shared class cache and the number of JVMs that are using it using the CICS Explorer.
  - c. Check that the behavior of your application is the same.
  - d. If you are using class sharing, check that the amount of storage specified for the shared class cache (by the **JVMCCSIZE** system initialization parameter) and for the individual JVMs (in the JVM profiles) is right for the new mix of items stored in each location. Compiled classes produced by just-in-time (JIT) compilation are now stored in individual JVMs, not in the shared class cache.
10. If you encounter any problems in the test CICS region, make these checks:
  - a. Check that your SDK installation was successful, that you gave the CICS region the correct permissions to access it, and that the `JAVA_HOME` option in your JVM profiles correctly specifies the Version 6.0.1 64-bit SDK installation. If you try to start a JVM using a profile that specifies the wrong SDK, CICS issues message DFHSJ0900 and abend ASJJ occurs. Abend ASJJ also occurs if CICS cannot access the Java directory or if the installation appears to be invalid.

- b. Check that the directory specified by the **JVMPROFILEDIR** system initialization parameter is the directory containing the correct JVM profiles and that the CICS region has permissions to access this directory and the files.
  - c. If you cannot start the shared class cache, check that the JVM profile DFHJVMCD is available in the directory specified by the **JVMPROFILEDIR** system initialization parameter. Ensure that the profile is set up correctly for your CICS region and specifies the correct **JAVA\_HOME** value. CICS uses this JVM profile to initialize and terminate the shared class cache.
  - d. Check that you have correctly addressed any Java compatibility issues.
  - e. Adjust the size of the shared class cache or the storage specified in the JVM profiles, as appropriate for your new storage use. Use the **PERFORM CLASSCACHE** command to phase in a new, larger, or smaller shared class cache while CICS is running. You can set the **JVMCCSIZE** system initialization parameter to specify the new size permanently. To change the maximum size of the storage heap for a JVM, increase or decrease the value of the **-Xmx** option in the JVM profile. Use the **PERFORM JVMPOOL** command to stop and restart the pooled JVMs that use the changed profile.
11. Start the remaining upgraded CICS regions and use them for your Java workloads.

## Results

Your Java workloads run using the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 6.0.1.

## What to do next

- When you have completed these steps to upgrade your existing Java workloads to run in pooled JVMs, 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 *JVM servers and pooled JVMs in Java Applications in CICS*.
- 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 Java Applications in CICS*.



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## Chapter 24. Upgrading the CICS-WebSphere MQ connection

If you use the CICS-WebSphere MQ adapter, bridge, trigger monitor, or API crossing exit to connect CICS to WebSphere MQ, you must make some changes to your configuration.

### **Review availability of TCBs for CICS-WebSphere MQ connection (MAXOPENTCBS setting)**

Before CICS TS for z/OS, Version 3.2, a CICS region used a pool of eight subtask TCBs to connect to WebSphere MQ queue managers. The subtask TCBs were not owned by the CICS tasks that made the requests to connect to WebSphere MQ. When a subtask TCB returned the results of a request to a CICS task, the subtask TCB became available for other CICS tasks that needed to connect to WebSphere MQ.

From CICS TS for z/OS, Version 3.2, a CICS region uses open TCBs in L8 mode to connect to WebSphere MQ queue managers. When a CICS task makes a request to connect to WebSphere MQ, it obtains an L8 TCB from the pool in the CICS region, and keeps the L8 TCB from the time it is allocated to the end of the task. Even if the CICS task switches back to run on the QR TCB or makes no further requests to connect to WebSphere MQ, the L8 TCB is not released until the CICS task ends. Each concurrent CICS task that connects to WebSphere MQ therefore requires one L8 TCB for the duration of the task.

The availability of L8 TCBs in the pool is determined by the setting for the MAXOPENTCBS system initialization parameter, and by the number of other CICS tasks that are using L8 or L9 TCBs, such as CICS applications that connect to DB2. A CICS task is allowed at most one L8 TCB, which the task can use for any purpose that requires an L8 TCB. For example, a task that connected to both WebSphere MQ and DB2 would use only one L8 TCB. Within the overall limit set for the TCB pool by MAXOPENTCBS, there is no specific limit on the number of L8 TCBs that are allocated for CICS tasks that connect to WebSphere MQ queue managers; these tasks can potentially occupy all of the available L8 TCBs in the pool.

When you upgrade from a release earlier than CICS TS for z/OS, Version 3.2, it is important to review your setting for the MAXOPENTCBS system initialization parameter to ensure that enough L8 TCBs are available to provide one for each concurrent CICS task that connects to WebSphere MQ, and to leave sufficient L8 and L9 TCBs available for the other users of these TCBs in the CICS region. For guidance on reviewing your setting for the MAXOPENTCBS system initialization parameter, see MAXOPENTCBS in the Performance Guide. It is helpful to review the MAXOPENTCBS setting each time you upgrade to a new CICS release.

CICS tasks that connect to WebSphere MQ require storage in the WebSphere MQ subsystem. When you upgrade from a release earlier than CICS TS for z/OS, Version 3.2, or when the peak number of concurrent CICS tasks that connect to WebSphere MQ changes, review the use of common storage in the WebSphere MQ subsystem. For information about common storage and connections from CICS to WebSphere MQ, see Common storage in the WebSphere MQ 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 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.

The WebSphere MQ queue manager must be at WebSphere MQ Version 7.0.1 or higher to support these API calls in the CICS environment. In WebSphere MQ Version 7.0.1, you must apply the PTFs for APARs PK97364 and PK97972.

If you use the new Version 7 API calls MQCB and MQCTL for asynchronous message consumption by CICS applications, you must code your program using information given in the CICS documentation, in addition to the WebSphere MQ programming documentation. The requirements for asynchronous message consumption in a CICS environment are listed in "Asynchronous message consumption and callback routines" in the CICS integration with WebSphere MQ documentation.

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## Chapter 25. Upgrading CICS web support applications

CICS Transaction Server for z/OS, Version 4 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.

- 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 26. Upgrading CICS web services

If you have used CICS web services in earlier releases, be aware of the following changes when you upgrade to CICS Transaction Server for z/OS, Version 4 Release 2.

- 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 has finished 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 87.
- 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.



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## Chapter 27. Security updates to monitor RACF Event Notifications (ENF)

CICS now monitors for RACF type 71 Event Notifications (ENF) that is issued when a CONNECT or REMOVE command has affected a RACF user profile, or a user ID is revoked using the REVOKE option on the **ALTUSER** command. With z/OS 1.11, RACF issues an ENF 71 event code and CICS is notified immediately, overriding any setting you have specified in the USRDELAY system initialization parameter.

If you are using RACF with a z/OS 1.11 system, review your USRDELAY settings.



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## Chapter 28. 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.

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### 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.

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### 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 4 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.

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### Upgrading TS queue EP adapter formats

The temporary storage queue (TSQ) EP adapter now supports common base event, common base event REST, and WebSphere Business Events (WBE) XML event formats, 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.

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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 87.

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## 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.

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## 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 29. Changes to CICSplex SM views and resource tables

These changes affect CICSplex SM views, resource tables, and Business Application Services definition objects.

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### 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.

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### 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 11. Changed CICSplex SM views

Changed CICS resource type or function	Corresponding CICSplex SM views that have changed
Client HTTP connections	<ol style="list-style-type: none"><li>1. CICS operations views &gt; TCP/IP service operations views &gt; URI maps</li><li>2. Administration views &gt; Basic CICS resource administration views &gt; Resource definitions &gt; URI mapping definitions</li></ol>
Dynamic storage areas: additional fields for 64-bit storage	CICS operations > CICS region operations views > Dynamic storage area global
Event processing: assured events	<ol style="list-style-type: none"><li>1. CICS operations views &gt; Application operations views &gt; Event processing</li><li>2. CICS operations views &gt; Application operations views &gt; Event binding</li><li>3. CICS operations views &gt; Application operations views &gt; Event capture specifications</li><li>4. CICS operations views &gt; Task operations views &gt; Completed tasks</li><li>5. CICS operations views &gt; Task operations views &gt; Active tasks</li></ol>
Event processing: capture specifications	CICS operations views > Application operations views > Event capture specifications
Event processing: system events	<ol style="list-style-type: none"><li>1. CICS operations views &gt; Application operations views &gt; Event processing</li><li>2. CICS operations views &gt; Application operations views &gt; Event capture specifications</li></ol>

Table 11. Changed CICSplex SM views (continued)

Changed CICS resource type or function	Corresponding CICSplex SM views that have changed
JVM servers	1. CICS operations views > Enterprise Java component operations views > JVM servers
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
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

## 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:

- BUNDPART
- CICSSTOR
- EVCSPEC
- EVNTBIND
- EVNTGBL
- HTASK
- JVMSERV
- LIBRARY
- TASK
- TCPDEF
- TCPIPS
- TRANGRP
- TSMDEF
- TSMODEL
- TSQGBL

- TSQNAME
- TSQSHR
- TSQUEUE
- URIMAP
- URIMPDEF
- WLMATAFF
- WLMATGRP
- WLMAWORK
- WLMAWTOR
- WLMSPEC

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## New CICSplex SM views and resource tables

These new CICSplex SM views and resource tables support CICS resource types and functions.

*Table 12. New CICSplex SM views and resource tables*

Resource type or function	CICSplex SM views	CICSplex SM resource tables
Data predicates for a capture specification	<b>CICS operations views &gt; Application operations views &gt; Event capture specification data predicates</b>	CRESEVSD, EVCSDATA
Event processing adapter	<b>CICS operations views &gt; Application operations views &gt; Event processing adapter</b>	CRESEPAD, EPADAPT
Information sources for a capture specification	<b>CICS operations views &gt; Application operations views &gt; Event capture specification information sources</b>	CRESEVSI, EVCSINFO
Option predicates for a capture specification	<b>CICS operations views &gt; Application operations views &gt; Event capture specification option predicates</b>	CRESEVSO, EVCSOPT
OSGi bundles	Not applicable	CRESOSGB, OSGIBUND
OSGi services	Not applicable	CRESOSGS, OSGISERV



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## Chapter 30. 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 4 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 4.2 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 4.2 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 31. Conditions for running CICSplex SM Version 4.2 and earlier releases concurrently

You can run CICSplex SM Version 4.2 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 4.2 is the CICSplex SM element of CICS Transaction Server for z/OS, Version 4 Release 2.

You can run CICSplex SM 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 4.2. However, in CICS TS for z/OS, Version 4.2, a CICSplex SM CMAS will run only in a CICS system at Version 4.2.

CICS systems (MASs) running the following supported CICS releases can be connected to CICSplex SM 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 4.2, CICS systems must use the CICSplex SM Version 4.2 MAS agent, so they must have the CICSplex SM Version 4.2 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 DFHMSMR, 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 4.2 CMAS, so that the older CICS systems are indirectly connected to the Version 4.2 CMAS.

The following conditions apply to environments in which CICSplex SM Version 4.2 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.
- A CMAS running at Version 4.2 can be connected to a CMAS running at Version 4.1, Version 3.2, or Version 3.1.

- In a CICSplex that consists of CMASs at the Version 4.2 level and at one or more earlier levels, the maintenance point CMAS must be at the Version 4.2 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 4.2 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 4.2 CMAS:
  - All WUI servers must connect to the Version 4.2 CMAS.
  - All API programs must run in such a way that they are connected to the Version 4.2 CMAS. This requirement applies only if the API program accesses new fields or later-level CICS systems. If the API program connects to a lower level CMAS, any resource tables that contain new or updated fields for the new release are not returned to the API program connected to the lower release level CMAS.
- You cannot view all resources of a CICS TS for z/OS, Version 4.2 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 4.2 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, in order to take advantage of the unit of work (UOW) affinities introduced in Version 4.2, you must ensure that the CMAS that owns the workload is at the Version 4.2 level.

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, 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.

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. This will cause UOW affinities to be honoured by any other Version 4.2 region joining the workload name. If any non-Version 4.2 regions join the workload, they will not be able to use the UOW affinity function, and will 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 quickly determine the CICSplex SM version of the workload owning CMAS. If the CPM version of CMAS attribute is not at least at the 0420 level, the workload will not be capable of exploiting any defined UOW affinities.



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## Chapter 32. Upgrading a CMAS

You must upgrade your CICSplex SM CMAS to Version 4.2 at the same time as you upgrade the CICS system on which it runs. A CICSplex SM CMAS will run only in a CICS system at the same release level. During startup, the CMAS checks the CICS release level and stops with message EYUXL0142 if the release does not match.

### Procedure

1. If the CMAS is running, stop it.
2. In the z/OS image that contains the CMAS, verify that the IEASYSxx member of the SYS1.PARMLIB library that you use for z/OS initialization includes the **MAXCAD** and **NSYSLX** parameters, with appropriate values. the *CICS Transaction Server for z/OS Installation Guide* explains what values are suitable. If you are running both a previous release and Version 4.2 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 4.2 libraries by adding them to the list of APF-authorized libraries in the appropriate PROGxx or IEAAPFxx member in SYS1.PARMLIB. For information about how to do this, see the *CICS Transaction Server for z/OS Installation Guide*.
4. Update the MVS linklist with the Version 4.2 modules that are required for CICS and CICSplex SM. For information about how to do this, see the *CICS Transaction Server for z/OS Installation Guide*.
5. Upgrade the CSD file with the Version 4.2 group of resource definitions and CICS startup group list. For information about how to do this, see “Upgrading the CSD for CICS-supplied and other IBM-supplied resource definitions” on page 64. You do not need to carry out an additional upgrade using a release-dependent set of definitions for CICSplex SM.
6. If you made any modifications to the default resource definitions for your earlier release that were supplied by CICSplex SM in the EYU\$CDEF sample (which contains definitions for a CMAS), manually upgrade your modified resource definitions using the equivalents in the EYU\$CDEF sample for Version 4.2. 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.
7. Edit the JCL used to start the CMAS, changing the previous release of CICSplex SM library names to the Version 4.2 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 4.2. 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.

9. Ensure that you have deleted, redefined, and initialized the CICS local catalog and global catalog using the DFHCCUTL and the DFHRMUTL utility programs.
10. Verify the CICSplex SM system parameters referenced by the EYUPARM DD statement. If the CASNAME system parameter is present, delete it. For information about these parameters, see the *CICS Transaction Server for z/OS Installation Guide*.
11. Verify that the CICS system initialization parameter GRPLIST references the CICS-supplied default startup group list, DFHLIST, and any CSD groups containing resource definitions that you have modified.

## **Results**

When you have completed all these steps, you can cold start the CMAS.

---

## Chapter 33. 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 4.2 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 4.2. 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(CICSTS42.CICS.CNTL.CICSqualifier.DFHTEMP)-
                           RECORDSIZE(4089,4089)           -
                           RECORDS(200 200)                -
                           NONINDEXED                      -
                           CONTROLINTERVALSIZE(4096)       -
                           SHAREOPTIONS(2 3)               -
                           VOLUMES(valid))                 -
                           DATA(NAME(CICSTS42.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*.
3. Authorize the Version 4.2 CICS and CICSplex SM libraries. See the *CICS Transaction Server for z/OS Installation Guide*.

4. If you use the link pack area (LPA), decide when you will replace the previous release modules in the LPA with the Version 4.2 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 4.2 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 4.2 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 4.2 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 4.2 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 64. 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 4.2. The safest way to do this is to copy the Version 4.2 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 4.2 names. For information about the MAS startup JCL, see the *CICS Transaction Server for z/OS Installation Guide*.
8. In the sequential data set or partitioned data set member identified by the CICS SYSIN statement, verify that the CICS system initialization parameter **EDSALIM** is included, and set it to a value of at least 50 MB. 50 MB is the minimum EDSALIM value required to start the MAS agent for Version 4.2.
9. In the sequential data set or partitioned data set member identified by the CICS SYSIN statement, verify that the CICS system initialization parameter **CPSMCONN=WUI** is included. 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. Ensure that you have deleted, redefined, and initialized the CICS local catalog and global catalog using the DFHCCUTL and the DFHRMUTL utility programs.
11. 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.
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 up the Web User Interface server at Version 4.2. See “Upgrading the contents of the Web User Interface server repository (EYUWREP).”

---

## Phased upgrade scenario for Web User Interface servers

If you have CICSplex SM Web User Interface servers connected to CMASs other than the maintenance point CMAS, which have many other MASs connected to them, you might not want to upgrade the other MASs at the same time as the CMAS. In that case, consider using this phased upgrade path.

### About this task

Assuming you are running the latest CICSplex SM maintenance levels, you can upgrade one LPAR at a time.

### Procedure

1. Define a new Version 4.2 CMAS on the same z/OS image as the Web User Interface server.
2. Connect the Version 4.2 CMAS to the CICSplex to which the Web User Interface server CMAS is connected. This CMAS will not become available for use until the maintenance point CMAS has been upgraded. If you see message EYUCP0022E at this time, take no action.
3. Upgrade the maintenance point CMAS to Version 4.2 and take down the Web User Interface server at the same time.
4. Upgrade the Web User Interface server to Version 4.2 and, when you restart it, connect it to the Version 4.2 CMAS. The Version 4.2 CMAS should now connect successfully to the Version 4.2 maintenance point CMAS.
5. Upgrade the remaining MASs when required, and connect them to the Version 4.2 CMAS as you restart them.
6. When you have moved all the MASs to the Version 4.2 CMAS, you can remove the original CMAS.

---

## Upgrading the contents of the Web User Interface server repository (EYUWREP)

With each release of CICS, internal Web User Interface repository record versions might be incremented to enable the new features in view definitions. For this reason, if your existing Web User Interface repository contains customized view sets or menus, you must upgrade your view set and menu definitions.

### 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 33, “Upgrading a Web User Interface server,” on page 111.

## About this task

When you upgrade the Web User Interface server repository to CICS TS for z/OS, Version 4.2, 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 4.2 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 4.2 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*.

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## Chapter 34. Upgrading a CICSplex SM managed CICS system (MAS)

When you upgrade a CICSplex SM MAS to CICSplex SM Version 4.2, you might choose to upgrade only the CICSplex SM MAS agent. You are not required to upgrade the CICS region to Version 4.2 at the same time.

### Before you begin

Before you upgrade a CICSplex SM MAS to CICSplex SM Version 4.2, you must upgrade the CICSplex SM CMAS to which it connects, following the instructions in Chapter 32, “Upgrading a CMAS,” on page 109. You must also upgrade the Web User Interface server for the CICSplex, following the instructions in Chapter 33, “Upgrading a Web User Interface server,” on page 111.

### About this task

These steps explain how to upgrade the CICSplex SM MAS agent in a CICS region to Version 4.2. For details of supported combinations of CICSplex SM and CICS releases, see Chapter 31, “Conditions for running CICSplex SM Version 4.2 and earlier releases concurrently,” on page 105.

### 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 4.2 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 4.2 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 4.2 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 4.2 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 4.2. 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 4.2 SEYUAUTH and SEYULOAD library names. The Version 4.2 SEYUAUTH library must be authorized for APF, which you did when you

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. In the sequential data set or partitioned data set member identified by the CICS SYSIN statement, verify that the CICS system initialization parameter **EDSALIM** is included, and set it to a value of at least 50 MB. 50 MB is the minimum EDSALIM value required to start the MAS agent for Version 4.2.
5. In the sequential data set or partitioned data set member identified by the CICS SYSIN statement, verify that the CICS system initialization parameter **CPSMCONN=LMAS** is included. 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 4.2.
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 4.2 at this time, follow the instructions in Chapter 17, "Upgrade procedures for all CICS regions," on page 63. 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 35. 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 introduces a new type of CICS affinity associated with a UOW, and extends 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 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 applied to certain connection types has changed. The weighting 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 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*.

### Changes to real-time analysis

CICS TS 4.2 now provides enhanced security 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.



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## Chapter 36. Upgrading CICSplex SM API programs

CICSplex SM API programs that were written to run in a MAS at a previous release can be run in a Version 4.2 MAS.

You can either continue to access the data provided by the previous release or access the new data available from Version 4.2. For information about using API programs with different releases of CICSplex SM, see the *CICSplex System Manager Application Programming Guide*.

### **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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## **Part 5. Changes to CICS messages and codes**

This section lists messages and abend codes that have been removed, changed, and added for CICS Transaction Server for z/OS, Version 4 Release 2.



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## Chapter 37. Deleted messages

These messages are deleted for CICS Transaction Server for z/OS, Version 4 Release 2.

### **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 38. Changed messages

These messages are changed for CICS Transaction Server for z/OS, Version 4 Release 2.

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2

Message number	Message text
DFHAM4843 W	<i>applid</i> GROUP/LIST name is internally locked to OPID <i>opid</i> APPLID <i>applid</i> .
DFHAM4868 W	<i>applid</i> The LSRPOOLNUM of the LSRPOOL <i>lsrname</i> in group <i>grpname</i> duplicates that of LSRPOOL <i>lsrname</i> in group <i>grpname</i>
DFHAM4943 E	<i>applid</i> The installation of {ATOMSERVICE} <i>resourcename</i> failed because the associated {CONFIGFILE   BINDFILE   URIMAP} is invalid.
DFHAM4944 W	<i>applid</i> JVMSERVER <i>resourcename</i> has been installed with fewer threads than requested on its definition.
EYUXD1024	<i>date time applid</i> Discovery of <i>booktype</i> (resource) suppressed by filter ( <i>filter</i> ).
DFHBR0412	<i>date time applid</i> Dynamic transaction routing program <i>prog</i> resource definition not found.
DFHCA4833 E	<i>date time applid tranid</i> A security error has occurred while attempting to install {TDQUEUE   URIMAP} <i>resourcename</i> . The definition has not been installed.
DFHCA4843 W	<i>date time applid tranid</i> GROUP/LIST name is internally locked to OPID <i>opid</i> APPLID <i>applid</i> .
Messages in the range DFHCA4800 - DFHCA4999	Where any of these messages did not include a transaction ID ( <i>tranid</i> ), this item has been added after the APPLID ( <i>applid</i> ).
DFHCA5120	<i>date time applid netname tranid csdtype</i> CSD opened; <i>ddname</i> : <i>ddname</i> - <i>dsname</i> : <i>dsname</i>
DFHCA5123	<i>date time applid netname tranid csdtype</i> CSD closed; <i>ddname</i> : <i>ddname</i> - <i>dsname</i> : <i>dsname</i>
DFHCA5540	<i>date time applid netname xxxxxx</i> value is greater than <i>yyyyyyy</i> value. The lower value takes precedence.
Messages in the range DFHCA5544 - DFHCA5634	Where any of these messages did not include a network identifier ( <i>netname</i> ) and transaction ID ( <i>tranid</i> ), these items have been added after the APPLID ( <i>applid</i> ).
DFHCE3503	Incorrect password length. Sign-on is terminated.
DFHCE3504	Incorrect new password length. Sign-on is terminated.
DFHDB2005	<i>date time applid</i> Transaction <i>tran</i> is not defined for CICS DB2.
DFHDB2057	<i>date time applid tranid termid</i> Abend <i>abcode</i> in DFHD2EX1 - resource definition for dynamic plan exit p rogram <i>programe</i> was not found.
DFHDB2066	<i>date time applid tranid termid</i> Abend <i>abcode</i> in DFHD2EX1 - resource definition for dynamic plan exit p rogram <i>programe</i> defines the program as remote.
DFHEC1001	<i>date time applid</i> EVENTBINDING <i>evbname</i> from BUNDLE <i>bundle</i> installed successfully.
DFHEC1002	<i>date time applid</i> EVENTBINDING <i>evbname</i> from BUNDLE <i>bundle</i> discarded successfully.
DFHEC1003	<i>date time applid</i> The CICS event capture component failed to create the EVENTBINDING resource <i>evbname</i> in BUNDLE <i>bundle</i> 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	<i>date time applid</i> The CICS event capture component found an inconsistency in one or more values during install of EVENTBINDING <i>evbname</i> in BUNDLE <i>bundle</i> because the capture specification <i>capspec</i> {has an overlength formatPrecision in data item:   has an invalid formatlength in data item: } <i>dataItem</i> .

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHEC4007 E	<i>date time applid tranid</i> Transaction start EP adapter failed to emit an event to transaction <i>tranid</i> for event binding <i>evbname</i> . START TRANSID failed with response code <i>response</i> and reason code <i>reason</i> .
DFHEC4008	<i>date time applid tranid</i> TSQ EP adapter failed to emit an event to queue <i>queuename</i> for event binding <i>evbname</i> . WRITEQ TS returned with condition <i>resp</i> reason code <i>reason</i> .
DFHEC4009	<i>date time applid tranid</i> TSQ EP Adapter failed to emit an event to queue <i>queuename</i> for event binding <i>evbname</i> because the queue is not defined as recoverable.
DFHEC4111	<i>date time applid tranid</i> WebSphere MQ EP adapter failed to emit an event to queue <i>queue_name</i> for event binding <i>evbname</i> . WebSphere MQ function MQPUT1 returned with completion code <i>comp_code</i> .
DFHEC4117	<i>date time applid tranid</i> The WebSphere MQ EP adapter failed to emit an event for capture specification <i>csname</i> in event binding <i>evbname</i> to queue <i>queueName</i> . The event's size of <i>buffer_length</i> bytes exceeds the queue's maximum message length.
DFHEJ0101	<i>applid</i> Enterprise Java domain initialization has started.
DFHEP0114	<i>date time applid tranid</i> The EP adapter user ID of <i>adapter_userid</i> in event binding <i>evbname</i> is revoked, not valid, or not defined. Event discarded.
DFHEP0117	<i>applid</i> The EPADAPTER transaction ID <i>adapter_tranid</i> is disabled or undefined. An event from EVENTBINDING <i>evbname</i> has been discarded.
DFHEP0118	<i>applid</i> The EPADAPTER transaction ID <i>adapter_tranid</i> is remote. An event from EVENTBINDING <i>evbname</i> has been discarded.
DFHFC0202	<i>date time applid terminal userid tranid</i> Resource definition for FILE <i>filename</i> has been added.
DFHFC0203	<i>date time applid terminal userid tranid</i> Resource definition for FILE <i>filename</i> has been deleted.
DFHFC0204	<i>date time applid terminal userid tranid</i> Resource definition for FILE <i>filename</i> has been updated.
DFHFC0206	<i>date time applid terminal userid tranid</i> Resource definition for FILE <i>filename</i> has been added.
DFHFC0207	<i>date time applid terminal userid tranid</i> Resource definition for FILE <i>filename</i> has been deleted.
DFHFC0150	<i>date time applid termid tranid</i> An attempt to release locks for unit of work <i>X'uowid'</i> failed. VSAM return code <i>X'rrrr'</i> reason code <i>X'cccc'</i> .
DFHFC0151	<i>date time applid termid tranid</i> An attempt to retain locks for unit of work <i>X'uowid'</i> failed. VSAM return code <i>X'rrrr'</i> reason code <i>X'cccc'</i> .
DFHFC0152	<i>date time applid termid tranid</i> An attempt to retain locks for data set within unit of work <i>X'uowid'</i> failed. VSAM return code <i>X'rrrr'</i> reason code <i>X'cccc'</i> .
DFHFC0157	<i>applid tranid termid userid</i> An I/O error has occurred on base data set <i>dsname</i> accessed via file <i>filename</i> component code <i>X'code'</i> .
DFHFC0164	<i>date time applid tranid trannum termid userid</i> . A request has timed out waiting for an RLS lock. There are <i>nn</i> transactions or Transactional VSAM units of recovery holding this lock.
DFHFC0165	<i>date time applid tranid trannum termid userid</i> . Transaction <i>transid</i> ( <i>tasknum</i> ) unit of work <i>X'uowid'</i> running in job <i>jobname</i> with applid <i>applid2</i> in MVS <i>mosid</i> holds { <i>add to end lock</i>   <i>internal lock</i>   <i>exclusive lock on key</i>   <i>shared lock on key</i> } <i>X'keyid'</i> in data set <i>dsname</i> causing { <i>true</i>   <i>false</i> } contention.
DFHFC0166	<i>date time applid tranid termid userid</i> . VSAM RLS has detected a deadlock. There are <i>nn</i> transactions or Transactional VSAM units of recovery in the deadlock chain.
DFHFC0167	<i>date time applid tranid termid userid</i> . Transaction <i>transid</i> ( <i>tasknum</i> ) with unit of work id <i>X'uowid'</i> running in <i>jobname/applid2</i> in MVS <i>mosid</i> holds { <i>add to end lock</i>   <i>internal lock</i>   <i>exclusive lock on key</i>   <i>shared lock on key</i> } <i>X'key1'</i> on data set <i>dsname1</i> and is waiting for { <i>add to end lock</i>   <i>internal lock</i>   <i>exclusive lock on key</i>   <i>shared lock on key</i> } <i>X'key2'</i> on data set <i>dsname2</i> .

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHFC0168	<i>date time applid tranid trannum termid userid.</i> { An exclusive   A shared} lock on key X'keyid' in data set <i>dsname</i> is causing {true   false} contention but the owner of this lock is unknown.
DFHFC0169	<i>date time applid termid userid.</i> Transaction <i>tranid</i> with transaction number <i>trannum</i> encountered an RLS retained lock held on data set <i>dsname</i> by unit of work X'uwoid' within CICS with applid <i>applid2</i> .
DFHFC0174	<i>date time applid tranid trannum termid userid</i> A deadlock has occurred as a result of a lock promote failure. There are <i>nnn</i> transactions or Transactional VSAM units of recovery holding this lock.
DFHFC0175	<i>date time applid tranid trannum termid userid.</i> Transactional VSAM unit of recovery X'urid' running in job <i>jobname</i> on Transactional VSAM instance <i>TVSInstance</i> in MVS <i>mvsid</i> holds {add to end lock   internal lock   exclusive lock on key   shared lock on key }X'keyid' in data set <i>dsname</i> causing {true   false} contention.
DFHFC0177	<i>date time applid tranid termid userid.</i> Transactional VSAM unit of recovery id X'urid' running in <i>jobname/TVSInstance</i> in MVS <i>mvsid</i> holds {add to end lock   internal lock   exclusive lock on key   shared lock on key }X'key1' on data set <i>dsname1</i> and is waiting for {add to end lock   internal lock   exclusive lock on key   shared lock on key }X'key2' on data set <i>dsname2</i> .
DFHFC0179	<i>date time applid termid userid.</i> Transaction <i>tranid</i> with transaction number <i>trannum</i> encountered an RLS retained lock held on data set <i>dsname</i> by unit of recovery X'urid' within Transactional VSAM instance <i>TVSInstance</i> .
DFHFC0300	<i>applid (tranid termid)</i> purge deferred due to incomplete I/O operation on VSAM file ' <i>filename</i> '.
DFHFC0301	<i>applid (tranid termid)</i> purge deferred due to incomplete I/O operation on BDAM file ' <i>filename</i> '.
DFHFC0302	<i>applid (tranid termid)</i> CICS terminating. Failure while waiting for I/O operation on VSAM file ' <i>filename</i> '.
DFHFC0303	<i>applid (tranid termid)</i> CICS terminating. Failure while waiting for I/O operation on BDAM file ' <i>filename</i> '.
DFHFC0308	<i>applid tranid termid</i> Purge deferred due to incomplete I/O operation on VSAM RLS file <i>filename</i>
DFHFC0309	<i>applid tranid termid</i> Failure while waiting for I/O operation on VSAM RLS file <i>filename</i>
DFHFC0310	<i>applid tranid termid</i> Purge deferred due to incomplete I/O operation on the RLS control ACB.
DFHFC0311	<i>applid tranid termid</i> Failure waiting for I/O operation on the RLS control ACB.
DFHFC0951	<i>applid</i> {RLS   Non-RLS} OPEN of file <i>filename</i> failed. DSNAMES not available from JCL or resource definition. Module <i>module</i> .
DFHFC0979	<i>date time applid</i> LSR pool <i>n</i> parameters incomplete for file <i>filename</i> because the DSNAMES specified in the resource definition could not be found on the VSAM catalog. VSAM has returned code <i>rrrr</i> in R15.
DFHFC3010	<i>date time applid</i> Diagnostic information for unit of work X'local-uwoid' and file <i>filename</i> . Update was a {read-update   write-add} made by transaction <i>tranid</i> at terminal <i>termid</i> under task number <i>tasknum</i> . Key length <i>key-length</i> , data length <i>data-length</i> , base ESDS RBA X'base-RBA-or-zero', record key X'record-key'
DFHFC7130	<i>date time applid tranid trannum termid userid.</i> Unit of work X'uwoid' running in region <i>owner-applid</i> in MVS system <i>MVSid</i> holds a lock on key X'keyid' in coupling facility data table <i>tablename</i> in pool <i>CFDTPool</i> , which caused this request to wait.
DFHIR3789	<i>date time applid</i> SEND/RECEIVE mismatch between definitions for this system and system <i>sysid</i>

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHIS1035	<i>date time applid</i> 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 <i>ipconn</i> . Partner region does not support this function over IPIC.
DFHME0101	<i>applid</i> An error (code X'code') occurred while writing message <i>msgno</i> to transient data queue <i>queue</i> .
DFHME0503	THE CMAC FILE IS NOT DEFINED TO CICS.
DFHMQ0308 I	<i>date time applid</i> MQNAME <i>id</i> is stopped. Connect request deferred.
DFHMQ0309 E	<i>date time applid</i> Unable to connect using MQNAME <i>id</i> . MQCC= <i>mqcc</i> MQRC= <i>mqrc</i> .
DFHMQ0320 I	<i>date time applid</i> The CICS-MQ Adapter cannot find MQNAME <i>id</i> .
DFHMQ0749 E	<i>date time applid tranid trannum</i> Authentication error. EIBRESP= <i>resp</i> EIBRESP2= <i>resp2</i> Userid= <i>user-id</i> .
DFHPG0101	<i>date time applid terminal userid tranid</i> Resource definition for <i>progrname</i> has been added.
DFHPG0102	<i>date time applid terminal userid tranid</i> Resource definition for <i>progrname</i> has been deleted.
DFHPG0103	<i>date time applid terminal userid tranid</i> Resource definition for <i>progrname</i> has been replaced.
DFHPG0201	<i>date time applid terminal userid tranid</i> Program autoinstall exit <i>urmname</i> indicated that program <i>progrname</i> should not be installed.
DFHPG0209	<i>date time applid terminal userid tranid</i> Resource definition for <i>progrname</i> has been autoinstalled using model <i>modelname</i> .
DFHPG0210	<i>date time applid terminal userid tranid</i> Resource definition for <i>progrname</i> has been system autoinstalled.
DFHPI0400	<i>date time applid tranid</i> 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 an error with exit XWBAUTH   the URIMAP is disabled}. Problem occurred for URI <i>uri</i> .
DFHPI0403	<i>date time applid tranid</i> 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 <i>uri</i> .
DFHPI0720 E	<i>date time appliduserid</i> PIPELINE <i>pipeline</i> encountered an error in the configuration file <i>filename</i> at offset X'offset'. Found : <i>element_found</i> 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>   <jmsserver> tag within <cics_soap_1.n_handler_java>   <jmsserver>value</jmsserver>   <repository>value</repository>}. 
DFHPI0914	<i>date time applid userid</i> WEBSERVICE <i>WebService</i> is UNUSABLE because: {the WSBInd file was not found   CICS is not authorized to read the WSBInd file   there is insufficient storage to load the WSBInd file   the HFS read for the WSBInd file failed   writing the WSBInd file to the shelf failed   the PIPELINE is incompatible with this WEBSERVICE   the CPIR resolution transaction could not be attached   the direction of the PIPELINE can't be determined   the WSBInd file is corrupt   the WSBInd file has an invalid version number   the WSBInd file has an out of date version number   the WSBInd file product number was not recognized   the PIPELINE is not a SOAP PIPELINE   the PIPELINE does not support SOAP version 1.2   the PIPELINE is not configured for SOAP version 1.1   the WSBInd file is incompatible with the LOCALCCSID}.

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHPI0997	<i>date time applid tranid pipeline</i> 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}.
DFHPI1007	<i>date time applid trannum</i> XML to data transformation failed because of incorrect input ({XML_FORMAT_ERROR   UNEXPECTED_CONTENT   HEADER_FORMAT_ERROR   UNDEFINED_ELEMENT   UNDEFINED_NAME_SPACE   ARRAY_OVERFLOW   NAME_TOO_LONG   PREFIX_TOO_LONG   NAME_SPACE_TOO_LONG   UNEXPECTED_XOP_INCLUDE   XOP_INCLUDE_ERROR   DUPLICATE_CHOICE   MISSING_XSI_TYPE   UNKNOWN_XSI_TYPE   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   TYPE UNKNOWN} resource_name.
DFHPI1008	<i>date time applid trannum</i> XML 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   TYPE UNKNOWN} resource_name.
DFHPI1009	<i>date time applid trannum</i> XML 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   TYPE UNKNOWN} resource_name.
DFHPI1010	<i>date time applid trannum</i> XML 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   TYPE UNKNOWN} resource_name.
DFHPI9506	Parameter <i>parameter</i> exceeds the maximum valid length of <i>max</i> characters. The supplied value is <i>value</i> .
DFHRD0107	<i>date time applid terminal userid tranid</i> INSTALL LSRPOOL( <i>lsrname</i> )
DFHRL0103	<i>date time applid tranid</i> The CICS resource life-cycle manager failed to create the BUNDLE resource <i>bundle_name</i> because the manifest <i>manifest_file</i> specified in the bundle root directory {was not found.   is invalid.}
DFHRT4418	<i>date time applid</i> Abend <i>abcode</i> in <i>modname</i> - {Dynamic   Distributed} routing program resource definition not found.
DFHSJ0201	<i>date time applid</i> JVMProfile A call to CELQPIPI with function code INIT_SUB has failed. (Return code - X'rc' ).

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHSJ0202	<i>date time applid JVMProfile</i> A call to CELQPIPI with function code TERM has failed. (Return code - X'rc'). See the JVM's STDERR log for further details.
DFHSJ0203	<i>date time applid JVMProfile</i> A call to CELQPIPI with function code CALL_SUB has failed. (Return code - X'rc'). See the JVM's STDERR log for further details.
DFHSJ0204	<i>date time applid JVMProfile</i> 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	<i>date time applid JVMProfile</i> 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	<i>date time applid</i> Deprecated option <i>option</i> found in JVM profile <i>jvmprof</i> will be ignored. The value of the USSHOME system initialization parameter will be used instead.
DFHSJ0535	<i>date time applid</i> The directory <i>directory</i> specified in the <i>parm</i> failed to open. The JVM cannot be started. Runtime error message is <i>errmsg</i> .
DFHSJ0536	<i>date time applid</i> Insufficient permission to access the directory <i>directory</i> specified in the <i>parm</i> . The JVM cannot be started.
DFHSJ0537	<i>date time applid</i> The version of CICS Java support in the directory <i>directory</i> specified in the <i>parm</i> is incorrect. The JVM cannot be started.
DFHSJ0904	<i>date time applid userid termid tranid program_name</i> Exception <i>exception</i> occurred creating object reference for class <i>className</i> .
DFHSJ0911	<i>date time applid userid</i> JVMSERVER <i>jvmserver</i> was not created because { <i>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.</i> }
DFHSJ1004	<i>date time applid userid</i> An exception has been thrown by the <i>method_name</i> method of class <i>classname</i> running in JVMSERVER <i>jvmserver</i> . Exception ' <i>exception</i> '.
DFHSJ1006 E	<i>date time applid userid</i> An attempt to attach to JVMSERVER <i>jvmserver</i> has failed because { <i>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.</i> }
DFHSO0102	<i>date time applid</i> A UNIX System Services Assembler Callable Service error (code X'code') has occurred on receipt of a severe TCP/IP return code; the TCPIPService <i>tcpipservice</i> on port <i>portnumber</i> at IP address <i>ipaddress</i> will be closed.
DFHSO0106	<i>date time applid</i> A UNIX System Services Callable Service error (code X'code') has occurred in module <i>modname</i>
DFHSO0111	<i>date time applid</i> Opening the TCPIPService <i>tcpipservice</i> has failed because the jobname of the region is not authorized to use the port number specified.
DFHSO0117	<i>applid</i> Unable to determine the TCP/IP host name. UNIX System Services return code X' <i>retcode</i> ', reason code X'rc'.

Table 13. Messages changed in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHSO0123	<i>date time applid</i> Return code <i>rc</i> 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: <i>peeraddr</i> , TCPIPService: <i>tcpipservice</i> .
DFHTC2536	<i>date time applid</i> 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	<i>applid</i> Open of queue <i>queue</i> failed. DSNNAME not available from JCL or resource definition. Module <i>module</i> .
DFHTD1217	<i>applid</i> Unable to install resource definition for transient data queue <i>xxxx</i> .
DFHTD1221	<i>applid</i> Transient data queue definitions not restored, <i>xxxx</i> failed
DFHTD1278	<i>applid</i> An error occurred during initialization of intrapartition queue <i>queuename</i> for userid <i>userid</i> . The queue has not been installed.
DFHUS0100	<i>applid</i> 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: <i>ddname</i> - DSNNAME: <i>dsname</i>
DFH5123	{Primary   Secondary} CSD closed; DDNAME: <i>ddname</i> - DSNNAME: <i>dsname</i>
DFH5124	Processing terminated. Corrupted CSD control record detected while closing {primary   secondary} CSD; DDNAME: <i>ddname</i>
DFH5125	Error occurred while closing the {primary   secondary} CSD. File is full; DDNAME: <i>ddname</i>
DFH5273	<i>resource object</i> is not in group <i>grpname</i> .
EYUWM0503	<i>date time applid</i> Routing region ( <i>name</i> ) is running in Sysplex Optimized WLM state.
EYUWM0504	<i>date time applid</i> Routing region ( <i>name</i> ) is not running in Sysplex Optimized WLM state.
EYUWM0505	<i>date time applid</i> Target region ( <i>name</i> ) is running in Sysplex Optimized WLM state.
EYUWM0506	<i>date time applid</i> Target region ( <i>name</i> ) is not running in Sysplex Optimized WLM state.
EYUXD1001	<i>date time applid</i> Parameter ( <i>parameter</i> ) is mandatory and is missing or blank.
EYUXD1009	<i>date time applid</i> Parameter ( <i>command</i> ) is not valid input.
EYUXD1024	<i>date time applid</i> Discovery of <i>booktype (resource)</i> suppressed by filter ( <i>filter</i> ).



## Chapter 39. New messages

These messages are new for CICS Transaction Server for z/OS, Version 4 Release 2.

### New messages in CICS Transaction Server for z/OS, Version 4 Release 2

Table 14. New messages in CICS Transaction Server for z/OS, Version 4 Release 2

Message number	Message text
DFHAM4807 E	<i>applid</i> Install failed for LSRPOOL with LSRPOOLID( <i>lsrpoolid</i> ). The MAXKEYLENGTH is less than 22 which is incorrect for use by the CSD.
DFHAP1605	<i>date time applid</i> A SIGABRT signal has been received by a JVM server. CICS will shut down immediately.
DFHCA4807	<i>date time applid tranid</i> Install failed for LSRPOOL with LSRPOOLNUM <i>lsrpoolnum</i> . The MAXKEYLENGTH is less than 22 which is incorrect for use by the CSD.
DFHCA5208	<i>date time applid netname tranid</i> Resource defined but no value was specified for xxxxxxxx. Ensure that the resource is updated.
DFHCA5209	<i>date time applid netname tranid</i> No command encountered. The input file might be empty.
DFHCE3554	You cannot mix passwords and password phrases in a change request.
DFHDH0300	<i>applid</i> File <i>filename</i> could not be opened ( <i>rrrr</i> ). Response <i>X'xxxx'</i> , Reason <i>X'yyyy'</i> .
DFHEC1011	<i>date time applid</i> The CICS event capture component failed to create the EVENTBINDING resource <i>evbname</i> in BUNDLE <i>bundle</i> because the capture specification <i>capspec</i> <i>filter predicate</i> could not be built.   <i>has an invalid name.</i>   <i>is a duplicate.</i> }
DFHEC1012	<i>date time applid</i> The CICS event capture component failed to create the EVENTBINDING resource <i>evbname</i> in BUNDLE <i>bundle</i> because the capture specification <i>capspec</i>   <i>has an invalid event name:</i>   <i>exceeds the maximum number of data items:</i>   <i>contains invalid capture data type, item number:</i>   <i>has an invalid business information name:</i>   <i>has an overlength formatPrecision in data item:</i>   <i>has an invalid captureDataPrecision in data item: }error_data.</i>
DFHEC1013	<i>date time applid</i> The CICS event capture component failed to create the EVENTBINDING resource <i>evbname</i> in BUNDLE <i>bundle</i> because the { <i>LOCALCCSID SIT parameter is not supported:</i>   <i>event binding schema level is not supported:</i>   <i>event binding USERTAG is invalid: }error_data.</i>
DFHEC1016	<i>date time applid</i> EVENTBINDING <i>evbname</i> from BUNDLE <i>bundle</i> installed successfully, replacing a previously installed version.
DFHEC1022	<i>date time applid</i> Event emission failed for EVENTBINDING <i>evbname</i> because the EPADAPTER <i>adapterName</i> is unavailable.
DFHEC1023	<i>date time applid</i> EVENTBINDING <i>evbname</i> which defines one or more system events references EPADAPTER <i>adapterName</i> which specifies transactional events. Transactional system events are not supported.
DFHEC1024	<i>date time applid</i> EVENTBINDING <i>evbname</i> which defines one or more system events references EPADAPTER <i>adapterName</i> which specifies synchronous event emission. Synchronous event emission is not supported for system events.
DFHEC1026	<i>applid</i> CEPF is stopping Event Processing after a severe error.
DFHEC3111	<i>date time applid</i> The decimal floating point facility (DFP) is not installed, but is required for capture specification <i>cs_name</i> in event binding <i>evb_name</i> .
DFHEC3112	<i>date time applid</i> The binary floating point facility (DFP) is not installed, but is required for capture specification <i>cs_name</i> in event binding <i>evb_name</i> .

Table 14. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHEC4006 E	<i>date time applid tranid</i> Transaction start EP adapter failed to emit an event to transaction <i>tranid</i> for event binding <i>evbname</i> . START TRANSID failed with response code <i>response</i> and reason code <i>reason</i> .
DFHEC4009	<i>date time applid tranid</i> TSQ EP Adapter failed to emit an event to queue <i>queuename</i> for event binding <i>evbname</i> because the queue is not defined as recoverable.
DFHEC4010	<i>date time applid tranid</i> TSQ EP Adapter failed to emit an event to queue <i>queuename</i> for event binding <i>evbname</i> because the queue is defined as recoverable.
DFHEC4113	<i>date time applid tranid</i> WebSphere MQ EP adapter failed to emit an event to queue <i>queue_name</i> for event binding <i>evbname</i> . WebSphere MQ function MQPUT1 returned with completion code <i>comp_code</i> .
DFHEC4118	<i>date time applid tranid</i> The TSQ EP adapter truncated an event for capture specification <i>csname</i> in event binding <i>evbname</i> to queue <i>queuename</i> . The event's size of <i>buffer_length</i> bytes exceeds the maximum length for TS queues.
DFHEC4119	<i>date time applid tranid</i> TSQ EP adapter failed to emit an event to queue <i>queuename</i> for event binding <i>evbname</i> . WRITEQ TS returned with condition <i>resp</i> reason code <i>reason</i> .
DFHEC4120	<i>date time applid tranid</i> The HTTP EP Adapter failed to emit event for capture specification <i>csname</i> in event binding <i>evbname</i> using URIMAP <i>urimap_name</i> . <i>function</i> returned with response code <i>resp</i> reason code <i>resp2</i> .
DFHEC4121	<i>date time applid tranid</i> The HTTP EP Adapter failed to emit an event for capture specification <i>csname</i> in event binding <i>evbname</i> using URIMAP <i>urimap_name</i> . Server responded with HTTP status code <i>http_status_code</i> .
DFHEC4122	<i>date time applid tranid</i> The HTTP EP Adapter failed to emit event for capture specification <i>csname</i> in event binding <i>evbname</i> using URIMAP <i>urimap_name</i> . <i>function</i> returned with response code <i>resp</i> reason code <i>resp2</i> .
DFHEC4123	<i>date time applid tranid</i> The HTTP EP Adapter failed to emit an event for capture specification <i>csname</i> in event binding <i>evbname</i> using URIMAP <i>urimap_name</i> . Server responded with HTTP status code <i>http_status_code</i> .
DFHEP0120	<i>date time applid tranid</i> The EP adapter transaction ID of <i>adapter_tranid</i> in event binding <i>evbname</i> is defined to start the wrong program for this type of adapter. Event discarded.
DFHEP0121	<i>date time applid</i> Synchronous event emission by EPADAPTER <i>epadapter</i> failed for an event from EVENTBINDING <i>evbname</i> . The UOW will be backed out.
DFHEP0122	<i>applid</i> The EPADAPTER transaction ID <i>adapter_tranid</i> is not enabled for use during CICS shutdown. An event from EVENTBINDING <i>evbname</i> has been discarded.
DFHEP0123	<i>applid</i> EP domain is quiescing but <i>adapter_tasks</i> EP adapter tasks are still active.
DFHEP1000	<i>date time applid</i> Invalid parameter list passed to EP domain module <i>modname</i> .
DFHEP1001	<i>date time applid</i> EPADAPTER <i>adaptername</i> from BUNDLE <i>bundle</i> installed successfully.
DFHEP1002	<i>date time applid</i> EPADAPTER <i>adaptername</i> from BUNDLE <i>bundle</i> discarded successfully.
DFHEP1003	<i>date time applid</i> EPADAPTER <i>epadapter</i> from BUNDLE <i>bundle</i> installed successfully, replacing a previously installed version.
DFHEP2001	<i>date time applid</i> The CICS event processing domain failed to create EP adapter resource <i>adapter</i> in BUNDLE <i>bundle</i> because the EP adapter, which is of type <i>adapterType</i> and emission mode <i>emitmodel</i> , <i>requires a program name.</i>   <i>, does not support transactional events.</i>   <i>, requires a transaction ID.</i>   <i>, is invalid or unrecognised.</i>   <i>, has an invalid or unsupported event format.</i>   <i>, has an unsupported combination of attributes.</i> }
DFHEP2002	<i>date time applid</i> The CICS event processing domain failed to create the EPADAPTER resource <i>adaptername</i> in BUNDLE <i>bundle</i> because { <i>the EP adapter name is invalid.</i>   <i>the XML data for the EP adapter could not be parsed.</i>   <i>the eventDispatcher is missing or invalid.</i>   <i>the configuration data is too long.</i>   <i>it is a duplicate of another EPADAPTER in the BUNDLE.</i> }

Table 14. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHEP2003	<i>date time applid</i> The CICS event processing domain failed to create the EP adapter resource <i>adaptername</i> in BUNDLE <i>bundle</i> because the {LOCALCCSID SIT parameter is not supported:   EP adapter schema level is not supported: } <i>error_data</i> .
DFHEP2005	<i>date time applid</i> The CICS event processing domain found an inconsistency in the advanced options during install of EP adapter <i>adaptername</i> with emission mode <i>emitmode</i> and type <i>adapterType</i> . The <i>option</i> option is ignored.
DFHIS1042	<i>date time applid</i> Transaction <i>tranid</i> not defined.
DFHIS3031 E	<i>date time applid</i> Transaction <i>tranid</i> failed to establish security for userid <i>userid</i> with IPCONN <i>ipconn</i> . SAF codes are (X' <i>safresp</i> ',X' <i>safreas</i> '), ESM codes are (X' <i>esmresp</i> ',X' <i>esmreas</i> ').
DFHIS3032 E	<i>date time applid</i> Transaction <i>tranid</i> using terminal <i>termid</i> failed to establish security for userid <i>userid</i> with IPCONN <i>ipconn</i> . SAF codes are (X' <i>safresp</i> ',X' <i>safreas</i> '), ESM codes are (X' <i>esmresp</i> ').
DFHME0103	<i>applid</i> Insufficient 64-bit storage to load module <i>modname</i> .
DFHME0213	<i>applid</i> Incorrect parameters used in call to DFHME64 for message <i>msgno</i> .
DFHME0215	<i>applid modname</i> Message module for language <i>language</i> not found. The default module <i>modnameb</i> is used.
DFHME0217	<i>applid</i> The Message User Exit point XMEOUT is unavailable for message <i>msgno</i> .
DFHME0218	<i>applid</i> An error has occurred when calling the Message User Exit for message <i>msgno</i> .
DFHME0220I	<i>applid</i> Message <i>msgno</i> has been rerouted to its original destination.
DFHME0222	<i>applid</i> The Message User Exit has returned invalid route code information for message number <i>msgno</i> .
DFHME0223	<i>applid</i> The Message User Exit has returned invalid TD queue information for message number <i>msgno</i> .
DFHME0225	<i>applid</i> The Message User Exit has returned an invalid return code <i>rc</i> for message <i>msgno</i> .
DFHME0232	<i>applid</i> The User's Message Exit program has failed while processing message <i>msgno</i> .
DFHME0237	<i>applid</i> Message <i>msgno</i> cannot be rerouted to a transient data destination by the message user exit XMEOUT.
DFHME0240	<i>applid</i> CICSplex SM messages cannot be issued because the English message table <i>modname</i> cannot be found.
DFHML0101	<i>date time applid tranid</i> Call to z/OS XML System Services parser for function <i>function</i> failed with return code X' <i>return_code</i> ' and reason code X' <i>reason_code</i> ' at data offset X' <i>error_offset</i> '.
DFHMQ2065	<i>date time applid</i> Resynchronization outstanding for queue manager <i>qmgr</i> after CICS-MQ group attach has connected to queue-sharing group <i>qsg</i> .
DFHMQ2066	<i>date time applid</i> Resynchronization outstanding for queue-sharing group <i>qsg</i> after CICS-MQ group attach has connected to queue manager <i>qmgr</i> .
DFHPI0603 I	<i>date time applid</i> The CICS SOAP handler has received an unexpected HTTP GET for URI <i>Uri</i> .
DFHPI0728 E	<i>date time applid userid</i> PIPELINE <i>pipeline</i> encountered an error in the configuration file <i>filename</i> for the pipeline. The repository Axis2 configuration file <i>element</i> cannot be accessed by CICS.
DFHPI0729 E	<i>date time applid userid</i> PIPELINE <i>pipeline</i> encountered an error in the pipeline configuration file <i>filename</i> at offset X' <i>offset</i> '. The CICS Java SOAP handler cannot be an intermediate message handler.
DFHPI0734 E	<i>date time applid</i> Error ' <i>exception</i> ' occurred whilst configuring PIPELINE <i>pipeline</i> within a JVMSERVER.

Table 14. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHPI0735 E	<i>date time applid</i> Error exception occurred whilst configuring WEBSERVICE <i>webservice</i> within a JVMSERVER.
DFHPI0736 E	<i>date time applid</i> PIPELINE <i>pipeline</i> encountered an error in the configuration file <i>filename</i> for the pipeline. The file has both <apphandler> and <apphandler_class> elements specified. You may only specify one of these elements.
DFHPI0905 E	<i>date time applid userid</i> WEBSERVICE <i>WebService</i> within PIPELINE <i>Pipeline</i> cannot check for archive file because the WSDL name <i>Name</i> is too long.
DFHPI0906 E	<i>date time applid userid</i> WEBSERVICE <i>WebService</i> within PIPELINE <i>Pipeline</i> cannot generate URIMAP for WSDL discovery because URI <i>Uri</i> is too long.
DFHPI9049 E	Array <i>name</i> occurs <i>occurs</i> times. The largest supported value is <i>max</i> .
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 <i>structureName</i> is ignored for container <i>containerName</i> as the container is defined as type 'char'.
DFHPI9687 W	Unexpected text <i>text</i> found in columns <i>start_column</i> to <i>end_column</i> . Text is ignored.
DFHPI9688 E	Unexpected End of Line condition encountered for line ' <i>line</i> ' of file <i>filename</i> .
DFHRL0122 E	<i>applid</i> The CICS resource life-cycle manager failed to re-create the resource <i>resource_name</i> for BUNDLE resource <i>bundle_name</i> .
DFHRT4424	<i>time applid</i> Use of EDF is not supported with IPIC communication to system <i>sysid</i> . The routing session is still active. To terminate the routing session type CANCEL.
DFHSJ0101I	<i>applid</i> The JVM (SJ) domain for Java has started initializing. Java is a trademark of Oracle and/or its affiliates.
DFHSJ0102I	<i>applid</i> SJ domain initialization has ended.
DFHSJ0103	<i>applid</i> SJ domain initialization has failed.
DFHSJ0210	<i>date time applid</i> An attempt to start a JVM for the JVMSERVER resource <i>jvmserver</i> 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	<i>date time applid</i> An exception has been thrown by the main method of a setup class, which was running in the JVM belonging to the JVMSERVER resource <i>jvmserver</i> .
DFHSJ0212	<i>date time applid</i> An error occurred while terminating the JVM belonging to the JVMSERVER resource <i>jvmserver</i> . Reason code {TERMINATION_CLASS_NOT_FOUND   ERROR_LOCATING_MAIN_METHOD   ERROR_CODE_UNRECOGNIZED   TERMINATION_CLASS_TIMED_OUT}.
DFHSJ0213	<i>date time applid</i> An exception has been thrown by the main method of a termination class, which was running in the JVM belonging to the JVMSERVER resource <i>jvmserver</i> .
DFHSJ0214	<i>date time applid</i> A class in a JVM Server has invoked System.exit(). CICS will shut down immediately.
DFHSJ0215	<i>date time applid</i> The JVM Server <i>jvmserver</i> failed to initialize the OSGi framework. The JVM will be terminated.
DFHSJ0540	<i>date time applid</i> The <b>USSHOME</b> System Initialization Parameter is set to NONE. CICS will attempt to use the value of CICS_HOME from the JVM profile <i>jvmprof</i> instead.
DFHSJ0541	<i>date time applid</i> The <b>USSHOME</b> System Initialization Parameter is set to NONE and CICS_HOME is not specified in the JVM profile <i>jvmprof</i> . The JVM cannot be started.

Table 14. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHSJ0542	<i>date time applid</i> Wildcard expansion of CLASSPATH_SUFFIX in the JVM profile <i>jvmprof</i> has resulted in a class path which is too long. Some elements of the class path might be missing.
DFHSJ0600 W	<i>date time applid userid termid tranid program name</i> 256 unclosed FileBrowse browse sessions exist for task <i>trannum</i> .
DFHSJ0919 I	<i>date time applid userid</i> JVMSERVER <i>jvmserver</i> is processing any queued OSGi bundles.
DFHSJ1007 W	<i>date time applid</i> JVMSERVER <i>jvmserver</i> is being disabled by CICS because it is in an inconsistent state.
DFHSJ1008 W	<i>date time applid</i> CICS is enabling JVMSERVER <i>jvmserver</i> after successfully disabling the resource.
DFHSJ1100	<i>date time applid</i> An attempt to install an OSGi bundle into JVM server <i>jvmserver</i> has failed. OSGi bundle symbolic name <i>OSGiBundle</i> , version <i>version</i> , reason code {ERROR_CODE_UNRECOGNIZED   JVMSERVER_NOT_FOUND   EXCEPTION_FROM_JVMSERVER   JVMSERVER_NOT_OSGI_ENABLED   INTERNAL_ERROR   DUPLICATE_OSGI_BUNDLE_FOUND}.
DFHSJ1101	<i>date time applid</i> An attempt to enable an OSGi bundle in JVM server <i>jvmserver</i> has failed. OSGi bundle symbolic name <i>OSGiBundle</i> , version <i>version</i> , reason code {ERROR_CODE_UNRECOGNIZED   EXCEPTION_FROM_JVMSERVER}.
DFHSJ1102	<i>date time applid</i> An attempt to disable an OSGi bundle in JVM server <i>jvmserver</i> has failed. OSGi bundle symbolic name <i>OSGiBundle</i> , version <i>version</i> , reason code {ERROR_CODE_UNRECOGNIZED   EXCEPTION_FROM_JVMSERVER}.
DFHSJ1104I W	<i>date time applid</i> The OSGi bundle has not been installed because the JVM server <i>jvmserver</i> is not enabled. OSGi bundle symbolic name <i>OSGiBundle</i> , version <i>version</i> .
DFHSJ1105	<i>date time applid</i> OSGIBUNDLE <i>resname</i> from BUNDLE <i>bundlename</i> has been installed.
DFHSJ1106	<i>date time applid</i> OSGIBUNDLE <i>resname</i> from BUNDLE <i>bundlename</i> has been discarded.
DFHSO0135	<i>applid</i> An attempt to create a socket has failed because the request has timed out.
DFHTD1290	<i>applid</i> Program DFHTDRP cannot be found.
DFHTM1718	<i>date time applid</i> About to link to user PLT program <i>progname</i> during the first stage of shutdown.
DFHTM1719	<i>date time applid</i> About to link to user PLT program <i>progname</i> during the second stage of shutdown.
DFHTR0119	<i>applid</i> 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	<i>applid</i> UNABLE TO BUILD TRACE CELL POOL IN 64-BIT STORAGE.
DFHTR1004	<i>applid</i> CICS system dump requested by global trap exit DFHTRAP in module <i>modname</i> . The dump will be taken whilst holding the trace lock.
DFHTS1601	<i>date time applid</i> Main temporary storage usage has reached <i>xx%</i> of TSMMAINLIMIT storage.
DFHTS1602	<i>date time applid</i> Main temporary storage has attempted to exceed the TSMMAINLIMIT storage limit.
DFHTS1603	<i>date time applid</i> The TSMMAINLIMIT storage limit has been changed from <i>xxxx</i> MB to <i>yyyy</i> MB.
DFHTS1604	<i>date time applid</i> Main temporary storage usage has fallen below 70% of TSMMAINLIMIT.
DFHTS1605	<i>date time applid</i> Scan of local temporary storage queues completed. <i>XXXX</i> local temporary storage queues were scanned and <i>YYYY</i> were deleted.
DFHTS1606	<i>date time applid</i> The TSMMAINLIMIT has been left unchanged at <i>xxxx</i> MB.

Table 14. New messages in CICS Transaction Server for z/OS, Version 4 Release 2 (continued)

Message number	Message text
DFHTS1607	<i>date time applid</i> An attempt to increase TSMAINLIMIT has failed. The TSMAINLIMIT setting has been left unchanged.
DFHTS1608	<i>applid</i> TS domain initialization has failed because an attempt was made to set TSMAINLIMIT to a value greater than 25% of MEMLIMIT.
DFHUS0300	<i>date time applid</i> An ICRX has been supplied without a realm for DNAME= <i>dname</i> .
DFHW20134	<i>date time applid</i> Configuration error for ATOMSERVICE <i>atomservice</i> . Version number <i>version</i> in the configuration file is not supported at this level of CICS.
DFHW20135	<i>date time applid</i> Configuration error for ATOMSERVICE <i>atomservice</i> . Attribute <i>attr1</i> on element <i>prefix:element</i> is not available at version <i>version</i> of the configuration file.
DFHW20136	<i>date time applid</i> Configuration error for ATOMSERVICE <i>atomservice</i> . Element <i>prefix1:element1</i> in element <i>prefix2:element2</i> is not available at version <i>version</i> of the configuration file.
DFHW20137	<i>date time applid</i> Install for ATOMSERVICE <i>atomservice</i> has failed because { <i>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</i> }.
DFHW20161	<i>date time applid</i> Referenced resource <i>resource</i> has a type that is not supported for delivering feeds. ATOMSERVICE <i>atomservice</i> has been disabled.
DFHWU0002	<i>applid</i> A severe error (code <i>X'code'</i> ) has occurred in module <i>modname</i> .
DFHWU0004	<i>applid</i> A possible loop has been detected at offset <i>X'offset'</i> in module <i>modname</i> .
DFHWU2100	<i>applid</i> Unable to link to program DFHWURP.
DFH5208	<i>date time applid netname tranid</i> Resource defined but no value was specified for <i>xxxxxxx</i> . Ensure that the resource is updated.
DFH5209	<i>date time applid netname tranid</i> 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	<i>date time applid</i> TRANGRP ( <i>trangrpid</i> ) in CICSplex ( <i>context</i> ) for Workload ( <i>workloadid</i> ) transition to <i>type: sysname</i> at <i>sysplex reason</i> .
EYUXL0119	Major Object loaded from <i>module</i>

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## Chapter 40. Deleted abend codes

These abend codes are discontinued in CICS Transaction Server for z/OS, Version 4 Release 2.

### **Deleted abend codes in CICS Transaction Server for z/OS, Version 4 Release 2**

No abend codes have been deleted.



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## Chapter 41. New abend codes

These abend codes are new for CICS Transaction Server for z/OS, Version 4 Release 2.

### 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.
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.



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## Part 6. Appendixes



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*CICS Transaction Server for z/OS What's New*, GC34-7192  
*CICS Transaction Server for z/OS Upgrading from CICS TS Version 3.1*, GC34-7188  
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*CICS Transaction Server for z/OS Upgrading from CICS TS Version 4.1*, GC34-7190  
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#### Access to CICS

*CICS Internet Guide*, SC34-7173  
*CICS Web Services Guide*, SC34-7191

#### Administration

*CICS System Definition Guide*, SC34-7185  
*CICS Customization Guide*, SC34-7161  
*CICS Resource Definition Guide*, SC34-7181  
*CICS Operations and Utilities Guide*, SC34-7213  
*CICS RACF Security Guide*, SC34-7179  
*CICS Supplied Transactions*, SC34-7184

#### Programming

*CICS Application Programming Guide*, SC34-7158  
*CICS Application Programming Reference*, SC34-7159  
*CICS System Programming Reference*, SC34-7186  
*CICS Front End Programming Interface User's Guide*, SC34-7169  
*CICS C++ OO Class Libraries*, SC34-7162  
*CICS Distributed Transaction Programming Guide*, SC34-7167  
*CICS Business Transaction Services*, SC34-7160  
*Java Applications in CICS*, SC34-7174

#### Diagnosis

*CICS Problem Determination Guide*, GC34-7178  
*CICS Performance Guide*, SC34-7177  
*CICS Messages and Codes Vol 1*, GC34-7175  
*CICS Messages and Codes Vol 2*, GC34-7176  
*CICS Diagnosis Reference*, GC34-7166  
*CICS Recovery and Restart Guide*, SC34-7180  
*CICS Data Areas*, GC34-7163  
*CICS Trace Entries*, SC34-7187  
*CICS Debugging Tools Interfaces Reference*, GC34-7165

#### Communication

*CICS Intercommunication Guide*, SC34-7172  
*CICS External Interfaces Guide*, SC34-7168

#### Databases

*CICS DB2 Guide*, SC34-7164  
*CICS IMS Database Control Guide*, SC34-7170

## CICSplex SM books for CICS Transaction Server for z/OS

### General

*CICSplex SM Concepts and Planning*, SC34-7196  
*CICSplex SM Web User Interface Guide*, SC34-7214

### Administration and Management

*CICSplex SM Administration*, SC34-7193  
*CICSplex SM Operations Views Reference*, SC34-7202  
*CICSplex SM Monitor Views Reference*, SC34-7200  
*CICSplex SM Managing Workloads*, SC34-7199  
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*CICSplex SM Managing Business Applications*, SC34-7197

### Programming

*CICSplex SM Application Programming Guide*, SC34-7194  
*CICSplex SM Application Programming Reference*, SC34-7195

### Diagnosis

*CICSplex SM Resource Tables Reference Vol 1*, SC34-7204  
*CICSplex SM Resource Tables Reference Vol 2*, SC34-7205  
*CICSplex SM Messages and Codes*, GC34-7201  
*CICSplex SM Problem Determination*, GC34-7203

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## Other CICS publications

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 4 Release 2.

*Designing and Programming CICS Applications*, SR23-9692  
*CICS Application Migration Aid Guide*, SC33-0768  
*CICS Family: API Structure*, SC33-1007  
*CICS Family: Client/Server Programming*, SC33-1435  
*CICS Family: Interproduct Communication*, SC34-6853  
*CICS Family: Communicating from CICS on System/390*, SC34-6854  
*CICS Transaction Gateway for z/OS Administration*, SC34-5528  
*CICS Family: General Information*, GC33-0155  
*CICS 4.1 Sample Applications Guide*, SC33-1173  
*CICS/ESA 3.3 XRF Guide*, SC33-0661

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## Accessibility

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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## Readers' Comments — We'd Like to Hear from You

CICS Transaction Server for z/OS  
Version 4 Release 2  
Upgrading from CICS TS Version 4.1

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