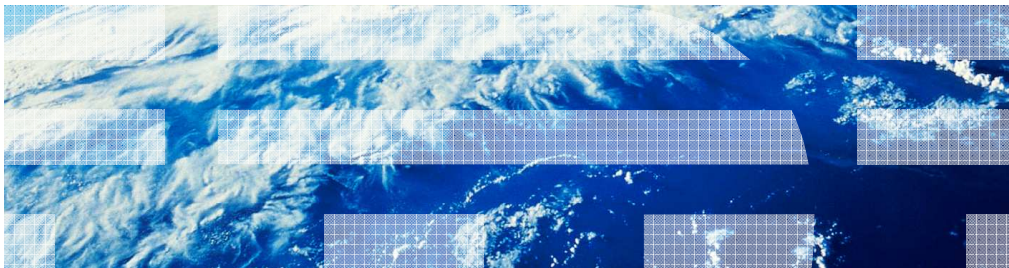


## CICS Transaction Server for z/OS V4.2

Everything you need to know about upgrading – part 1



Systems and servers

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CICS Transaction Server for z/OS (CICS TS) is a modern, dependable, cost-effective application platform. It is designed to start mixed language application workloads, supporting both modern and traditional programming languages and models. Its extensive data communication services, and its foundations in service-oriented architecture (SOA), provide unparalleled connectivity and scalability. As a result, CICS TS fits naturally into a smart infrastructure that is needed for a flexible, global enterprise.

CICS TS Version 4.2 builds upon the new and enhanced scalabilities delivered in Version 4.1, to enable customers to compete in the marketplace, comply with standards and regulations, and control their IT processes. CICS TS 4.2 delivers technical innovation and significant business value in five main focus areas, satisfying in excess of fifty customer and user group enhancement requests. The result is a powerful new release with a huge amount of value for all stakeholders, delivering a smarter transaction processing experience for CICS users and their customers in turn.

## Agenda

- CICS Transaction Server Version 4.2 elements
- General external changes
  - Resource definition
  - Application and systems programming interfaces
  - Global user exits
  - Monitoring and statistics
- Summary

Upgrading to CICS Transaction Server Version 4.2 is split into two modules. This module is part one and describes the changes to externals including resource definition, application and system programming interfaces, global user exits, monitoring, and statistics and more. Part two of upgrading includes statements of direction, software prerequisites, the upgrading process, and where you can get more information.

## CICS Transaction Server Version 4.2 elements

- CICS TS 4.2
  - CICS 0670
  - Service flow runtime now shipped with CICS TS 4.2
- CICSplex SM 4.2
- REXX
  - Development system
  - Runtime facility
  - REXX common for z/OS
- Available by download
  - [CICS Explorer V1.1](#)
  - [CICS Information Center V4.2](#)
- CICS Application Migration Aid V1.1 is no longer provided as an element in CICS TS 4.2

The base CICS element of CICS TS 4.2 is CICS Version 6.7. The CICSplex SM element is CICSplex SM Version 4.2. Other elements of CICS TS 4.2, that were previously available as separate IBM products, are CICS REXX runtime facility, CICS REXX development system, and CICS REXX common for z/OS.

CICS TS 4.2 is shipped with CICS Service Flow Runtime, previously only available as a separately orderable feature. It allows the deployment of CICS business services (or service flows) created by the Service Flow Modeler component of IBM Rational Developer for System z, Version 7.5 or later. The Service Flow Runtime capability of CICS TS 4.2 is fully compatible with IBM CICS Service Flow Feature Version 3.2. Customers upgrading to CICS TS 4.2 might use the integrated support for business services in this release as a direct replacement for IBM CICS Service Flow Feature Version 3.2.

CICS Application Migration Aid Version 1.1 is no longer provided as a separate element of CICS TS 4.2.

## Changes to installation procedures

- JAVADIR parameter
  - Default value has changed in the installation procedures
  - java/J6.0.1\_64
- Release levels
  - INQUIRE SYSTEM RELEASE returns 0670
  - Utility programs suffixed with 670
    - For example DFHPD670
- STEPLIB concatenation
  - SEYUAUTH **must** be in the concatenation even if CPSM is not used

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. 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.

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 or 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 is also used 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. The level is also used as the suffix in module names such as DFHPD670.

SEYUAUTH must be in the STEPLIB concatenation list even if CICSplex SM is not being used. During initialization CICS will attempt to load the CICS and CPSM message tables.

## New and changed system initialization parameters

- New parameter, TSMMAINLIMIT={64M|nnnnnM|nnG}
  - Limit for main temporary storage
  - Cannot be greater than 25% of MEMLIMIT
- Changed parameters:

Parameter	Value	Description of change
CSDLSRNO	{1 number NONE NO}	The LSR pool number can now range from 1 to 255
EDSALIM	{48M number}	The default and minimum value changed from 10M to 48M
FCQRONLY	{YES NO}	Specify YES for MRO and ISC connections Specify NO for IPIC connections
TRTABSZ	{4096 number-of-kilobytes}	64-bit storage can be acquired
TRTRANSZ	{16  number-of-kilobytes}	64-bit storage is acquired

The new TSMMAINLIMIT 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 one – 32,768 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.

Values for some existing system initialization parameters have also changed to support new features in CICS. These are summarized in the table. You can use the CSDLSRNO system initialization parameter to now set up to a value of 255 for LSR pools. The EDSALIM parameter default and minimum value has changed from 10 MB to 48 MB.

Before CICS TS 4.2, you set the FCQRONLY system initialization parameter to YES to improve the performance of all file-owning regions. However, for file-owning regions in CICS TS 4.2, you must choose an appropriate setting for FCQRONLY.

For file-owning regions 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 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 file-owning regions 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 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.

The transaction dump and internal trace, as set by the TRTABSZ and TRTRANSZ system initialization parameters, can now acquire 64-bit storage.

## Obsolete and new resource definition

- Obsolete attribute LSRPOOLID in LSRPOOL resource definitions
  - Replaced by LSRPOOLNUM attribute
- New attributes by resource:

Resource	New attribute	Description
FILE	LSRPOOLNUM	Replaces LSRPOOLID
LSRPOOL	LSRPOOLNUM	Replaces LSRPOOLID
PROGRAM	JVMSERVER	Specifies the JVMSERVER to use to run this Java program
TCPIPSERVICE	MAXPERSIST	Specifies max number of persistent connections from web clients
TSMODEL	EXPIRYINT	Specifies the expiration time for an unreferenced TS queue (main or auxiliary)
URIMAP	SOCKETCLOSE	Specifies for how long, CICS keeps a client HTTP connection open for reuse
WEBSERVICE	ARCHIVEFILE	Specifies the archive file that contains the WSDL

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One attribute has been made obsolete in resource definition. 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.

The FILE and LSRPOOL resource definitions have a new LSRPOOLNUM attribute. This attribute specifies the identifier of the local shared resource pool. The value must be in the range 1 - 255.

The PROGRAM resource definition has a new JVMSERVER attribute. This attribute 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.

The TCPIPSERVICE resource definition has a new MAXPERSIST attribute. This attribute specifies the maximum number of persistent connections from web clients that the CICS region allows for this port at any one time.

The TSMODEL resource definition has a new EXPIRYINT attribute. This attribute specifies the expiry interval, in hours, for a local temporary storage queue that matches the temporary storage model.

The URIMAP resource definition has a new SOCKETCLOSE attribute. This attribute specifies if, and for how long, CICS keeps a client HTTP connection open for reuse after the CICS application has finished using it.

The WEBSERVICE resource definition has a new ARCHIVEFILE attribute. This attribute 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.

## Changes to resource definition and macro control tables

- Changed PROGRAM resource definition
  - CONCURRENCY attribute has new option of REQUIRED
- Macro Control Tables
  - Reassemble all tables against the CICS TS 4.2 libraries
  - CICS initialization will fail if you try and load an old version of DFHCNV (data conversion tables)

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

When upgrading to CICS TS 4.2, 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.

## Obsolete SPI options

- LSRPOOLID is replaced by LSRPOOLNUM on:
  - CREATE LSRPOOL
  - CREATE FILE
  - INQUIRE FILE
  - SET FILE
- For compatibility
  - The LSRPOOLID value is transferred to LSRPOOLNUM

The system programming interface commands for LSR pools have obsolete options. 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.



## New CREATE SPI options

Command	New option
CREATE FILE	LSRPOOLNUM
CREATE LSRPOOL	LSRPOOL
CREATE MQCONN	New value GROUPTRESYNC is added to the RESYNCMEMBER option (Statement of direction)
CREATE PROGRAM	JVMSERVER New value REQUIRED is added to CONCURRENCY option
CREATE TCPIP SERVICE	MAXPERSIST
CREATE TSMODEL	EXPIRYINT
CREATE URIMAP	SOCKETCLOSE

New options have been added to the system programming interface for creating resources in CICS. These changes reflect the new attributes that have been added to resource definitions and are summarized in the table. The change to the CREATE MQCONN command can be used with the support for group units of recovery in WebSphere MQ for z/OS. See the statement of direction in part 2 of the upgrading module for more information.

## New INQUIRE SPI options (1 of 2)

Command	New option
INQUIRE ASSOCIATION	ODADPTRID, ODADPTRDATA1,ODADPTRDATA2, ODADPTRDATA3, PHAPPLID, PHCOUNT, PHNETWORKID, PHSTARTTIME, PHTASKID, PHTRANSID
INQUIRE ATOMSERVICE	URIMAP, XMLTRANSFORM
INQUIRE CAPTURESPEC	CURRPGM ,CURRPGMOP, CURRTRANID, CURRTRANIDOP, CURRUSERID, CURRUSERIDOP, NUMDATAPRED, NUMINFOSRCE, NUMOPTPRED, PRIMPRED, PRIMPREDOP
INQUIRE DB2CONN	REUSELIMIT
INQUIRE FILE	LSRPOOLNUM
INQUIRE IPCONN	MIRRORLIFE
INQUIRE EVENTBINDING	EPADAPER

New options have been added to the system programming interface for inquiring on resources in CICS. These options are summarized in the table. In particular, the INQUIRE ASSOCIATION command has new options that support transaction tracking. Also the INQUIRE CAPTURESPEC command has new options that support the enhancements to capture specifications for event processing.

## New INQUIRE SPI options (2 of 2)

Command	New option
INQUIRE JVMPOOL	PROFILEDIR
INQUIRE JVMSERVER	CURRENTHEAP, GCMODEL, INITHEAP, MAXHEAP, OCCUPANCY, PID
INQUIRE MQCONN	New value GROUPTRESYNC is added to the RESYNCMEMBER
INQUIRE PROGRAM	JVMSERVER New value REQUIRED is added to the CONCURRENCY option
INQUIRE TCPIP SERVICE	MAXPERSIST
INQUIRE TSQUEUE / TSQNAME	EXPIRYINT
INQUIRE URIMAP	SOCKETCLOSE SOCKPOOLSIZ
INQUIRE WEBSERVICE	ARCHIVEFILE

Continuing with the new options on the system programming interface INQUIRE commands, this table summarizes the remaining new options or new values on existing options. In particular, the INQUIRE JVMSERVER command has been extended to include more information about the JVM, including its memory usage, garbage collection policy, and heap occupancy.

## New SET SPI options

- SET FILE
  - A new option LSRPOOLNUM is added
- SET MQCONN
  - A new value GROUPTRESYNC is added to the RESYNCMEMBER

The system programming interface SET commands have also been extended. The SET FILE command has a new option to set the identifier for LSR pools. The SET MQCONN command has a new value on the RESYNCMEMBER option to use WebSphere MQ recovery.

## New SPI commands

Command	Description
INQUIRE CAPDATAPRED	Retrieve information about an application data predicate
INQUIRE CAPINFOSRCE	Retrieve information about an information source
INQUIRE CAPOPTPRED	Retrieve information about an application command option predicate
INQUIRE EPADAPTER	Retrieve information about a specified event processing adapter
INQUIRE OSGIBUNDLE	Retrieve information about an OSGi bundle installed in a JVM server
INQUIRE OSGISERVICE	Retrieve information about OSGi services that are registered
INQUIRE TEMPSTORAGE	Retrieve information about storage used by TS queues
SET EPADAPTER	Set the status of an EP adapter to enabled or disabled
SET TEMPSTORAGE	Set the amount of storage that is available to TS queues

CICS TS 4.2 has new system programming interface commands. These commands are summarized in this table. The first three commands in the table relate to the enhancements to event processing and mean that you can inquire on capture specifications in much more detail. The INQUIRE EPADAPTER command also relates to the enhancements to event processing and retrieves information about a specified event processing adapter. The INQUIRE OSGIBUNDLE and INQUIRE OSGISERVICE commands retrieve information about OSGi bundles and services that are running in a JVM server. The INQUIRE TEMPSTORAGE command retrieves information about storage used by temporary storage queues in the CICS region. The SET EPADAPTER command sets the status of a specified event processing adapter to enabled or disabled. The SET TEMPSTORAGE command sets the amount of storage that is available to temporary storage queues in the CICS region.

## New CEMT commands

Command	Description
INQUIRE EPADAPTER	Retrieve information about an EP adapter
INQUIRE TEMPSTORAGE	Retrieve information about storage used by TS queues
SET EPADAPTER	Enable or disable an EP adapter
SET TEMPSTORAGE	Set the amount of storage that is available to TS queues

CICS TS 4.2 includes some new CEMT commands. The CEMT INQUIRE EPADAPTER command retrieves information about an event processing adapter. The CEMT INQUIRE TEMPSTORAGE command retrieves information about storage used by temporary storage queues in the CICS region. The CEMT SET EPADAPTER command enables or disables an event processing adapter. The CEMT SET TEMPSTORAGE command sets the amount of storage that is available to temporary storage queues in the CICS region.

## Changed CEMT commands (1 of 2)

CEMT command	Option
INQUIRE ATOMSERVICE	URIMAP, XMLTRANSFORM
INQUIRE CLASSCACHE	STARTTIME (replaces DATESTARTED and TIMESTARTED)
INQUIRE EVENTBINDING	EPADAPTER
INQUIRE EVENTPROCESS	SCHEMALEVEL
INQUIRE IPCONN	MIRRORLIFE
INQUIRE MQCONN	New value GROUPTRESYNC is added to the RESYNCMEMBER
INQUIRE PROGRAM	JVMSEVER The CONCURRENCY option has a new value of REQUIRED

Some existing CEMT commands have been updated to support new features in CICS TS 4.2 and these are summarized in the table.

## Changed CEMT commands (2 of 2)

Command	Option
INQUIRE TCPIPSERVICE	MAXPERSIST
INQUIRE TSMODEL	EXPIRYINT
INQUIRE TSQUEUE/TSQNAME	EXPIRYINT
INQUIRE URIMAP	SOCKETCLOSE, SOCKPOOLSIZE
INQUIRE WEBSERVICE	ARCHIVEFILE
SET MQCONN	New value GROUPTRESYNC is added to the RESYNCMEMBER

Continuing with the changes to CEMT commands, the commands in this table also have new options or option values.



## New supplied transactions

- CESL transaction
  - New transaction to sign on to CICS using a password or a password phrase
  - Supports both 3270, Sequential and Console devices
  - Does not support 40x12 size screens
  - CESN will remain unchanged
- CEPF category one transaction
  - Event processing deferred filtering task

CESL is a new supplied transaction that you can use to sign on to CICS using a password or a password phrase as authorization. With CESL, you can sign on to CICS with a password phrase of 9 to 100 characters or a standard password of up to eight characters. In other respects CESL operates in the same way as the CESN sign-on transaction. CESN does not support password phrases, but you can specify CESL as an alias for CESN. If you enter a password that is 9 to 100 characters, CESL treats the password as a password phrase. CESL is a category three transaction.

CEPF is a new category one transaction that is used by event processing in CICS.

## Changed supplied transactions

- CEDF transaction
  - Changed to hide passwords or password phrases
  - CHANGE PASSWORD
  - CHANGE PHRASE
  - SIGNON
  - VERIFY PASSWORD
  - VERIFY PHRASE
  
- DFHMIRS is now threadsafe
  - Supplied definition is CONCURRENCY(THREADSAFE)
  - Switch to L8 made before TS and FC requests
  - Only requests function shipped over IPIC will run on an Open TCB
  - Review your DFHSIT specification
    - FCQRONLY

The CEDF transaction has changed to prevent the viewing of password phrases and standard passwords when debugging an application. When one of the listed EXEC CICS commands are issued by a transaction running under CEDF, the password or password phrase (and new password or password phrase, where applicable) is blanked out.

The supplied mirror program DFHMIRS, which is used by all mirror transactions, is now defined as threadsafe. For IPIC connections only, CICS runs the mirror program on an L8 open TCB whenever possible. For threadsafe applications that function ship commands to other CICS regions using IPIC, the resulting reduction in TCB switching improves the performance of the application compared to other intercommunication methods. To gain the performance improvement, you must set the FCQRONLY system initialization parameter to NO in the file-owning region.

## Global user exits

- Analyze all your global user exits
  - Ensure that they are THREADSAFE
  - Change their PROGRAM definitions to specify CONCURRENCY(THREADSAFE)
- All exits that use XPI calls **MUST** be reassembled

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. 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.

## New global user exits

- Event capture exit, XEPCAP
  - Invoked just before an event is captured by CICS

CICS has one new global user exit for event processing. The event capture exit is invoked just before an event is captured by CICS event processing. Use this exit to detect when events are captured.

## Changed global user exits

- UEPTERM (zero) affected by IPIC function shipping
  - XTSQRIN, XTSQROUT, XTSPTIN, and XTSPTOUT
  - XFCFRIN and XFCFROUT
- Exits that must be threadsafe
  - XTSQRIN, XTSQROUT, XTSPTIN, and XTSPTOUT
  - XFCFRIN and XFCFROUT, XISQUE
  - XDLIPRE, XDLIPOST
- XRSINDI installation and discard exit
  - UEPIDTYP parameter
    - UEIDEPAD: An EPADAPTER resource
    - UEIDOSGB: An OSGi bundle

The temporary storage exits domain exits have changed. The UEPTERM parameter is a zero value for temporary storage requests that have been function shipped over an IPIC connection. To use IPIC connections for temporary storage requests, ensure that XTSQRIN, XTSQROUT, XTSPTIN, and XTSPTOUT check that the UEPTERM parameter is a non-zero value before trying to use it as an address.

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

This also applies to the file control domain exits, XFCFRIN and XFCFROUT. 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.

The global user exit 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.

The resource management installation and discard exit XRSINDI has also been updated to support the new CICS resource types. The range of values in the 1-byte field addressed by the UEPIDTYP parameter now covers the installation and discarding of these new resource types, namely the EPADAPTER resource and the OSGIBUND resource.

## Changed task related user exits

- New context management parameters
  - Exit invoked a non-terminal-related EXEC CICS START command
  - Not invoked for terminal-related EXEC CICS START commands
- Allows origin data to be added to the task
- For details of the new fields:

[http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/topic/com.ibm.cics.ts.doc/dfha3/topics/dfha3\\_ewlm\\_parms.html](http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/topic/com.ibm.cics.ts.doc/dfha3/topics/dfha3_ewlm_parms.html)

New adapter fields have been added to the origin data in task-related user exits to support transaction tracking. If the context management bit in the schedule word is set for the current transaction, CICS context management calls the exit program whenever the transaction issues a non-terminal-related EXEC CICS START command. The exit program is not called for terminal-related EXEC CICS START commands. When called, the exit program is passed a parameter list, which is mapped by the DFHUECON DSECT. Details of the new fields can be found in the information center.

## Changed user-replaceable modules

URM	Change
Custom EP adapters	Must honor EPAP_RECOVER setting
DFHDSRP	New settings for UOW affinity
DFHDYP	Should be coded to threadsafe standards
DFHJVMAT	Only for pooled JVMs
DFHJVMRO	New 64-bit parameters for pooled JVMs
EYU9WRAM	New settings for UOW affinity
EYU9XLOP	New settings for UOW affinity

The user-replaceable modules listed in the table have changed. If you have custom event processing adapter programs, these programs must now honor the EPAP\_RECOVER setting in the DFHEP.ADAPTPARM container to support synchronous event emission. You must review your custom EP adapter programs and update them as required.

There are changes to the copybook DFHDYPDS that defines the communication area for the supplied sample distributed routing program, DFHDSRP. 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 supplied samples do.

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 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.

The DFHJVMRO program contains changed options to support the 64-bit Language Environment runtime options for pooled JVMs. Update your programs to use these 64-bit options.

The dynamic routing program EYU9WRAM uses the EYURWCOM communication area. There are changes to this communication area to support UOW affinities.

The dynamic routing program EYU9XLOP uses the EYURWTRA communication area. There are changes to this communication area to support UOW affinities.

## Monitoring and statistics

- Monitoring
  - Record size increases to 2960 bytes
- New monitoring data
  - Origin data
  - Previous hop data
  - Event data
- DFH\$MOLS
  - Support for new monitoring data fields
  - UNLOAD function only supported for CICS TS 3.2 and Version 4
- Statistics
  - Support for new EP adapter statistics
  - New Storage Manager reports for 64-bit

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 several of the default CICS dictionary entries in the dictionary data sections of CICS monitoring SMF 110 records. CICS also provides new monitoring data for transaction tracking and events.

The CICS TS 4.2 release of DFH\$MOLS processes monitoring data for earlier supported CICS releases, but the UNLOAD control statement has additional restrictions. DFH\$MOLS can process SMF 110 monitoring data records for CICS TS 4.2, 4.1, 3.2, and 3.1. 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 TS 3.2. 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.

CICS statistics have also been updated to include support for the EPADAPTER resource and the 64-bit enhancements.



## Sample programs

- DFH0EPAC
  - Sample to show handling of EPAP-RECOVER fields
- DFH0STEP
  - Changed to support the new INQUIRE CAPTURESPEC options
- DFHJVMAX
  - Shows how to specify JVM initialization options
- DFHAXR0
  - Shows how to set 64-bit JVM Language Environment values
- DFH\$APDT
  - Sample TRUE to show how to add origin data

Some sample programs that are supplied by CICS have also been updated. The DFH0EPAC program now honors the EPAP\_RECOVER flag. Your custom EP adapter programs must now 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.

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

DFHAXR0 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 SDFHLOAD library.

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.

## Changes to the application programming interface

- QUERY SECURITY
  - New EPADAPTER resource type
- SIGNON
  - Added options for password phrases
- WRITEQ TS
  - MAIN and AUX setting honored for IPIC function shipping
- CHANGE PHRASE
  - Change the password phrase
- VERIFY PHRASE
  - Verify the password phrase is valid

The application programming interface has also been enhanced to support new functions in CICS. The QUERY SECURITY command is changed to include a new resource type of EPADAPTER. The SIGNON command is changed to support password phrases and standard passwords.

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.

CICS TS 4.2 includes some new API commands that you can use to create application programs that use new CICS functions. The EXEC CICS CHANGE PHRASE command changes the password or password phrase recorded by an external security manager for a specified user ID. The EXEC CICS VERIFY PHRASE command verifies that a password or password phrase matches the password or password phrase recorded by an external security manager.

## Summary

- Installation
  - Similar to previous releases
  - Standard IBM procedure or DFHISTAR
- Upgrading
  - Application developers
    - Review Java programs and procedures
  - System programmers
    - Normal release process
    - Review all GLUEs, TRUEs, URM, and resource definitions

The installation of CICS TS 4.2 is similar to previous releases of the product. For application developers, review Java programs and procedures to understand the effect of 64-bit JVM support. For system programmers, the upgrade to CICS TS 4.2 is business as usual. Review all exits for parameter list changes and threadsafe applicability. Regions must be analyzed to determine if function removed in CICS TS 4.2 is being used and Independent Software Vendor (ISV) products must be reviewed to determine the correct release levels required to support CICS TS 4.2.

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