

CICS Transaction Server for z/OS
6.1

Upgrading CICS TS for z/OS



Note

Before using this information and the product it supports, read the information in [Product Legal Notices](#).

This edition applies to the IBM® CICS® Transaction Server for z/OS®, Version 6 Release 1 (product number 5655-YA15655-BTA) and to all subsequent releases and modifications until otherwise indicated in new editions.

The IBM CICS Transaction Server for z/OS, Version 6 Release 1 may be referred to in the product and documentation as CICS Transaction Server for z/OS, 6.1 .

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Contents

About this PDF.....	V
Chapter 1. Upgrading.....	1
Chapter 2. Planning to upgrade.....	3
Chapter 3. Upgrading to the new release.....	11
Upgrading from CICS TS Developer Trial.....	12
Upgrading CICS Explorer.....	13
Upgrading CICSplex SM.....	13
Upgrading CICS regions.....	27
CSD compatibility between different CICS releases.....	34
Upgrading security.....	36
Upgrading the Java environment.....	38
Upgrading from end-of-service releases.....	39
Upgrading from Versions 5.1, 5.2, 5.3 and 5.4.....	39
Upgrading from CICS TS Version 4.....	47
Upgrading from CICS TS Version 3.....	55
Chapter 4. Post-upgrade tasks.....	69
Upgrading applications.....	69
Upgrading connections.....	72
Upgrading IPIC.....	72
Upgrading MRO.....	73
Upgrading connections with IBM MQ.....	75
Upgrading web services.....	77
Upgrading JSON web services.....	77
Upgrading SOAP web services.....	77
Chapter 5. Upgrading between releases with CICS continuous delivery.....	79
CICS continuous delivery features.....	79
Chapter 6. Explore upgrade scenarios.....	85
Upgrading CICS to use multiple releases concurrently.....	85
Upgrading CICS with a running workload.....	94
Chapter 7. Changes between releases.....	101
Changes to installing.....	103
Changes to security.....	104
Changes to RACF classes.....	107
Changes to CICS API.....	109
Changes to JCICS API.....	118
Changes to CICS support for application programming languages.....	122
Changes to CICS assistants.....	124
Changes to SIT parameters.....	127
Changes to JVM profiles.....	133
Changes to resource definitions.....	136
Changes to control tables.....	145
Changes to CICS SPI.....	147

Changes to CICS transactions.....	155
Changes to CEMT.....	160
Changes to CICS monitoring.....	165
Changes to CICS statistics.....	169
Changes to storage.....	175
Changes to CICS utilities.....	176
Changes to global user exits and task-related user exits.....	183
Changes to CICS XPI.....	184
Changes to CICS user-replaceable programs.....	185
Changes to messages and codes.....	185
Changes to samples.....	197
Changes to CICSplex SM.....	198
Changes to feature toggles.....	208
Changes to CICS policies.....	211
Changes to documentation.....	212
Summary of changes from end-of-service releases.....	214
Version 5.4.....	218
Version 5.3.....	251
Version 5.2.....	271
Version 5.1.....	283
Version 4.2.....	300
Version 4.1.....	310
Stabilization notices.....	324
Notices.....	327
Index.....	333

About this PDF

This PDF describes what's involved in upgrading your current environment to the new version of CICS Transaction Server for z/OS. It covers the upgrade from any supported version of CICS TS to the new version. This PDF is primarily aimed at application programmers and system programmers who need to understand the changes that are introduced between releases and plan the transition to a new release of CICS Transaction Server for z/OS.

This PDF:

- Introduces the considerations as you plan to upgrade
- Summarizes the changes that are introduced between releases of CICS Transaction Server for z/OS
- Lists the tasks that you must complete to upgrade your current environment to the new release of CICS Transaction Server for z/OS.

It focuses on the transition of what you have today in your CICS environment into the new release. After the upgrade, you probably want to exploit new features and capabilities that are provided in this release of CICS Transaction Server for z/OS. Information about these new features, and how to use them, is provided in the rest of the product documentation.

For details of the terms and notation used in this book, see [Conventions and terminology used in the CICS documentation](#) in IBM Documentation.

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Chapter 1. Upgrading

Upgrading is about moving what you have today to new capabilities, whether those are in a whole new release or supplied as service on your existing release. You can upgrade your whole environment, or you can run two versions concurrently. You can also apply new capabilities during a release, known as *continuous delivery*, by applying service that provides those capabilities. This section of the documentation explains what you need to do to migrate from your current release to a higher release. **This information applies to all currently supported releases of CICS TS. It also retains upgrading information relating to end-of-service releases, but be aware that it reflects changes only up to the date when a release was withdrawn from service (end-of-service).**

Advantages to upgrading

Typical CICS Transaction Server for z/OS (CICS TS) features being improved and made available with each release include:

- Improved capacity, performance, constraint relief, hardware exploitation, and better documentation
- Consumability and productivity improvements, such as an easier installation process, new off-line tools, and runtime improvements
- Removal of dependencies, such as those capabilities that were previously delivered in CICS TS SupportPacs and CICS TS Feature Packs being moved into CICS TS base code
- Better support for open standards, in particular relating to TCP/IP and web services

Having CICS at up-to-date release levels in your whole environment allows you to be ready when projects need new features, rather than waiting for projects to need new features and risking delay in those features while you implement an upgrade.

Approaching an upgrade

When you upgrade, you go through the following activities:

Activity	Find more information
Assess the new release or continuous delivery capability. During the system software maintenance cycle, you can selectively roll out discrete additions of functions that are made available through CICS continuous delivery, on specific CICS regions or across CICSplexes.	What's New and the Announcement letter. For features that are available on existing releases through service, see CICS continuous delivery features .
Set up the upgrade project, bringing together the team of stakeholders, understanding the drivers and constraints for your situation, and starting to build a plan of activities.	Planning to upgrade
Check the prerequisites of the new release and compatibility with other products that you use.	Planning to upgrade
Review your regions, applications, vendor products, and service levels, to identify the areas that are affected by the upgrade and to ensure that your plan has full coverage.	Planning to upgrade

Table 1. Activities in an upgrade project (continued)

Activity	Find more information
Assess the impact of changes to CICS on your configuration.	Changes between releases in Upgrading
Install the new version of CICS TS.	Installing
Upgrade your configuration.	Upgrading to the new release
Extend your newly-upgraded environment by starting to use the new capabilities of the release	What's New provides links to further documentation for each of the new features.

Chapter 2. Planning to upgrade

A significant part of the upgrade process is planning. This section summarizes the preparation that helps you to upgrade CICS Transaction Server for z/OS.

Preparation includes the following actions:

- Ensure that all the correct people are involved in the plan.
- Understand the drivers to upgrade, and the constraints on change, for your environment, and build this understanding into an upgrade strategy.
- Check prerequisites of the new release and its compatibility with other products that you use.
- Review your environment so that you can assess the impact of the new release and ensure that the plan for upgrade is complete.
- Understand what changed between releases of CICS TS.

Your plan is iterative. The project team refines a plan of action and builds a critical path of activities as it finds out more about the tasks that are involved and the impact of changing the release of CICS TS.

Actions

Action	Mandatory or optional?
Assess the new release or continuous delivery capability	Mandatory
Clarify the driving forces for upgrade	Optional, but recommended
Consider the cost of upgrade	Optional, but recommended
Consider the timing	Optional, but recommended
Build your upgrade project team	Optional, but recommended
Choose your edition of CICS Transaction Server for z/OS	Mandatory
Check hardware and software prerequisites as well as compatibility with other IBM products	Mandatory
Check downward compatibility with older releases of CICS	Mandatory
Check compatibility with your vendor products	Optional, but recommended
Review your applications	Optional, but recommended
Review your CICS regions	Mandatory
“Review the CSD compatibility between different CICS releases” on page 8	Optional, but recommended
Review the service level of CICS Transaction Server for z/OS	Optional, but recommended
Review the changes in CICS Transaction Server for z/OS	Optional, but recommended
Develop your upgrade strategy	Optional, but recommended

Assess the new release or continuous delivery capability

Review new or enhanced features that are delivered with the new release to help you identify the driving forces for upgrade and plan for your system capabilities. See [What's New](#) and the [Announcement letter](#). For features that are available on existing releases through service, see [“CICS continuous delivery features” on page 79](#).

Clarify the driving forces for upgrade

Clarify what motivations are driving the upgrade of CICS TS. Is it to keep current? Is it a desire to use a new capability? Is it an opportunity to upgrade only some of your regions, and use different releases for different business needs? Is it a requirement so that you can meet regulatory constraints? Is it a necessity as a result of the removal or announcement of stabilization of CICS TS features that you have to migrate to new solutions? Is it part of a bigger upgrade strategy? Your reasons affect both your choice of CICS release, and when and how you upgrade.

You can choose to run some of your regions at a newer level and leave some of them at your current level. This gives you flexibility to provide access to the latest features for some parts of your business, without having to plan an upgrade of the entire environment. See [“Upgrading CICS to use multiple releases concurrently”](#) on page 85 for an example.

Consider the cost of upgrade

The cost of upgrade includes but is not limited to:

- The cost of upgrading the level of operating system, to support the new release of CICS TS.
- The cost and risk of implementing prerequisite upgrade and maintenance of other tools and packages.
- The cost and risk associated with upgrading CICS TS, especially in the planning and execution of that update.
- Some new features require new configurations, or changes to existing configurations, applications, and even development processes within your organization.
- The cost of staff education and re-education.

Consider the timing

When you think about the schedule for upgrade, factor in your deadlines and key business dates, and any windows of change for the business infrastructure.

Build your upgrade project team

Upgrading is a collective effort. You must ensure that the key stakeholders are ready to support the project. Gather a team that includes the following roles:

- Your technical representatives from roles such as system programming, application programming, security, and operations
- Business representatives for the lines of business that are affected by the upgrade
- Input from vendors or Business Partners whose products work with CICS TS.

Choose your edition of CICS Transaction Server for z/OS

CICS Transaction Server for z/OS is provided in three editions: CICS Transaction Server (the base edition), Developer Trial to use for a limited trial, and Value Unit Edition to use to run specific workloads with a different pricing model. As part of your planning, choose which editions to use.

Base edition

This is the full edition of CICS Transaction Server for z/OS.

Developer Trial

This edition is a no-charge evaluation version. It does not start the single-version charge (SVC) clock. Use this edition to access and explore the new technology in the new release, without having to go through a full upgrade. You can upgrade from Developer Trial to either Value Unit Edition or the full product, without having to reinstall. There are some restrictions on this edition of the product; see [Developer Trial and Value Unit Edition](#) for details.

For information about what is involved in moving from Developer Trial to a full edition, see [Upgrading from Developer Trial](#).

Value Unit Edition

Consider this edition for eligible workloads, such as new Java™ workloads, that can qualify for a pricing model that is different from the full product. For more information about eligibility, see the CICS TS announcement letter on the [IBM Offering Information web page](#).

Check hardware and software prerequisites as well as compatibility with other IBM products

You can create a report that includes the requirements for your target release of CICS TS by entering the product name "CICS Transaction Server" and selecting the latest version on the [Detailed system requirements page](#). The report shows hardware, Hypervisor, and operating system requirements, and any requirements for supported software. You can choose to show only product releases, or include interim service fixes. The Supported Software report shows prerequisite levels for a broad range of IBM products, including development tools, Java, databases, application servers, messaging products, event management, and problem determination tools. Any requirements, such as APARs that are needed to make the software compatible, are listed in the notes or additional information in the report.

Ensure that the latest levels of service are applied to each IBM product listed. In some cases, a specific version of a product might be required to take advantage of new functions in CICS TS.

Product	Software Product Compatibility Reports - Detailed system requirements
CICS TS	<ul style="list-style-type: none">• 6.1• 5.6• 5.5
CICS TS Value Unit Edition	<ul style="list-style-type: none">• 6.1• 5.6• 5.5
CICS TS Developer Trial	<ul style="list-style-type: none">• 6.1• 5.6• 5.5
CICS TS build toolkit	<ul style="list-style-type: none">• 5.5
CICS Transaction Server resource builder	<ul style="list-style-type: none">• 1.0

Check downward compatibility with older releases of CICS

If you are running or plan to run multiple versions of CICS in the same z/OS LPAR, check that the target release is downward compatible with older releases that you are still running. For example, assuming that currently in your production z/OS LPAR, you have a CICS TS 5.5 SDFHLPA library in the MVS™ link pack area (LPA) and a CICS TS 5.5 version of the library SDFHLINK in the LNKLIST, can you use the CICS TS 6.1 libraries in the LINKLIST and LPA instead of the CICS TS 5.5 libraries?

You can run CICS TS 6.1 regions in parallel with older CICS regions within the same LPAR if the following conditions are met:

- Ensure that the eight [CICS LPA-required modules](#) that are installed in the LPA within the LPAR are from your CICS TS 6.1 libraries. These mandatory LPA modules are downward compatible and your older CICS TS systems will work with these modules.

The eight CICS LPA-required modules are listed below and are supplied in *hlq.SDFHLPA*:

DFHCSVC
DFHDSPEX
DFHDUMPX
DFHIRP
DFHSEN
DFHSSGC
DFHSSWT
DFH99SVC

Note: Although all LPA-required modules are compatible with earlier releases of CICS, LPA-eligible modules, which are listed in member DFH\$UMOD supplied in *hlq.SDFHSAMP*, are not required to be in the LPA, and are not guaranteed to be downward compatible. Therefore, they can be used only by the release of CICS to which they relate. For example, if you currently have the CICS TS 5.5 versions of LPA-eligible modules in the LPA, you must run with **LPA=YES** for your CICS TS 5.5 regions and **LPA=NO** for your CICS TS 6.1 regions. The **LPA** system initialization parameter applies only to the LPA-eligible modules and not to the eight LPA-required modules in SDFHLPA. If you have two releases, only one of them can specify **LPA=YES**. For more information, see [LPA-required and LPA-eligible modules](#).

- As for LINKLIST, except the modules for trace and dump formatting such as DFHPD*nnn*, DFHTG*nnn*, DFHTR*nnn*, DFHTT*nnn*), which are release dependent, the CICS TS 6.1 modules in SDFHLINK are compatible with earlier releases of CICS so they can be used with CICS TS 5.5 and earlier.

You should leave the release-dependent modules in the LINKLIST for use only with relevant CICS release. The last three numbers in a release-dependent module name indicate the release of CICS as follows:

740

CICS TS 6.1

730

CICS TS 5.6

720

CICS TS 5.5

710

CICS TS 5.4

700

CICS TS 5.3

690

CICS TS 5.2

For more information, see [CICS- and CICSplex SM-supplied modules required in the MVS linklist](#).

Check compatibility with your vendor products

When you assess a product for its compatibility with your target release, typically, it is in one of the following categories:

- It is supported without change on your target release.
- It requires a compatibility fix, either to CICS TS or to the product itself.
- It must be upgraded.

The IBM Business Partner products that are supported at each in-service CICS release are listed at [Business Partner Application Showcase](#). [ISVs and service providers](#) shows the software developers who indicate that their products support levels of z/OS. In addition to vendor compatibility with z/OS, you should always ask your vendor the following questions to determine if the vendor product is compatible with CICS:

- Does the current version of the vendor product support the target CICS release and version?

- Are any PTFs required in the vendor product or in CICS?
- Can a new version of vendor code be installed in current release?
- What actions (Hold actions) need to occur: for example, recompiling exits, or upgrade steps?

During the upgrade to a new release of CICS, z/OS, Db2®, IMS, or to a new IBM Z platform, if a problem is found with an IBM product, an APAR is likely to be created; if a problem is found with a vendor product, IBM Support often creates technical documents that include the problem description and a solution. See [Upgrading information for CICS when changing releases of CICS, z/OS, Db2 or IMS](#) to find these documents.

Review your applications

Upgrading can affect applications. The application programming interface or system programming interface might change between releases. There are often changes in the behavior of key resources. Some programs, such as installed CICS exits, almost always need to be recompiled for a new release. Other programs might benefit from a new version or being recompiled. Reviewing your applications helps you to answer the following questions:

- Which applications are hosted in this region?
- Which applications use these resources?
- Which applications are affected by this change?
- If I upgrade this region, which applications are affected?
- If I upgrade this application, which regions are affected?

CICS Interdependency Analyzer can help with application analysis.

For each application, create a checklist:

- Name
- Owners: business, development, and infrastructure
- Supplier: in-house or vendor
- Execution model: single region or multiple region
- Regions hosted
- Current release and target release
- Languages
- CICS components
- Resource definitions
- CICS exits
- Other products, applications, and services
- Automation
- Test suite: what testing is required before and after the upgrade?
- Offline and batch interactions

Review your CICS regions

You need to know what is running in each current CICS region. Ensure that you include all regions in your check, even regions that haven't been started for some time. If you chose to partially upgrade and use a mix of releases, review the implications of running CICS regions across mixed releases. You can use CICS Interdependency Analyzer to analyze regions.

- Check STEPLIB and DFHRPL libraries
- Check CSD lists. Check these lists against your running regions. Sometimes resources such as LIBRARY definitions are added dynamically.
- Check z/OS UNIX System Services and bundle definitions for application and platform resources.

- Check the CICSplex[®] SM configuration.
- Check CICS statistics and monitoring data: what transactions are running and which applications do they belong to?
- Does the application run across the TOR, AOR, FOR configuration of multiple regions? If so, consider the implications for transaction routing, function shipping, or DPL.

Review the CSD compatibility between different CICS releases

You can share the CICS system definition data set (CSD) between different CICS releases by using the appropriate compatibility groups. Review Table 4 on page 34 for the compatibility groups that are required when you migrate from one release to another.

Review the service level of CICS Transaction Server for z/OS

Organizations that are up-to-date with service typically encounter fewer problems during the upgrade process. Gather information about the service levels in your current environment. You might want to apply fixes and enhance your CICS capability with any new function that was delivered through service as part of CICS continuous delivery.

For a summary of the new function delivered through service in each release, see [“CICS continuous delivery features”](#) on page 79.

Review the changes in CICS Transaction Server for z/OS

A key part of upgrading is understanding the impact of changes from your current release. [Changes between releases](#) summarizes the changes to the externals of CICS TS across all in-service versions.

Develop your upgrade strategy

Consider whether you plan to upgrade all regions at the same time, or phase your upgrade. Assuming that minimum downtime is your goal, there are various ways to approach the upgrade.

Do you want to leave some regions running at your current release?

For example, you might have an application that cannot run on your target release of CICS TS. Alternatively, you might prefer to run some applications on a newer release and rapidly pick up new features for those applications, while leaving the rest of your environment in its current state. For an example of an upgrade that is based on this approach, see [“Upgrading CICS to use multiple releases concurrently”](#) on page 85.

Will a workload run while the upgrade takes place?

If this is your strategy, consider the following questions:

- Can your workload cope when the routing regions, target regions, or both are closed down for upgrading? Are alternative target regions available to run the work? Do the remaining routing and target regions have a sufficiently high value for the [MXT system initialization parameter](#) to manage the additional throughput?
- Does your environment contain an FOR? If so, when this is shut down for an upgrade, there will be no access to the files. Are the consequences of this loss of access fully understood?
- Does your environment have any QORs or regions that own Db2 or DBCTL connections (for example)? Are these regions single points of failure? What is the impact of closing these regions for upgrading?
- Will you prepare all the components for upgrade offline, before you take them down?
- How many CMASs for each release of CICS TS are active on your LPAR? During migration, new CMAS might be added temporarily. The CMAS range is 13 through 24, depending on the value you set for the z/OS **MAXCAD** parameter. For more information, see [Specifying each CMAS correctly in IEASYSxx](#).

- Are you aware of the potential impact of a phased migration on a running workload? For an example of an upgrade that is based on this approach, see [“Upgrading CICS with a running workload” on page 94.](#)

Chapter 3. Upgrading to the new release

This section of Upgrading documentation tells you how to migrate your CICS environment to a higher release, or from Developer Trial to another edition of CICS TS. **This information applies to all currently supported CICS TS releases.** Each topic covers a different aspect of a CICS configuration and summarizes the actions that you need to take to upgrade from one release to another. Tags indicate the versions to which an action applies.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instruction of each CICS configuration aspect. You can find additional upgrade actions for migrating from end-of-service releases in [“Upgrading from end-of-service releases” on page 39](#).

If you upgrade z/OS, Db2, or IMS, you want to know the impact of those upgrades on your release of CICS Transaction Server. IBM Support provides information about CICS-related changes for upgrades of z/OS, Db2, or IMS here: [CICS considerations when upgrading z/OS, DB2, and IMS](#).

Before you begin

To migrate your CICS environment to a higher release, you must review, at a minimum, the following CICS external changes that occur between releases before you proceed through the upgrade:

- [“Changes to installing” on page 103](#)
- [“Changes to security” on page 104](#)
- [“Changes to RACF classes” on page 107](#)
- [“Changes to SIT parameters” on page 127](#)

Upgrade procedures

You can follow the upgrade procedures in the order as presented below. However, the essential procedure to upgrade to a new release is covered in [“Upgrading CICSplex SM” on page 13](#) for CICSplex environments and in [“Upgrading CICS regions” on page 27](#) for non-CICSplex SM environments. Follow one of these procedures, depending on your configuration, to guide you through the release level upgrade.

It is recommended that you upgrade your CICS Explorer® to the latest release before you upgrade CICSplex SM environments or single CICS regions. This ensures that your CICS Explorer can support the target CICS release.

What to do next

After you have upgraded your CICS TS regions or CICSplex SM to the new release, you can proceed with upgrading CICS applications, connections and web services. These upgrade actions can be scheduled at a later, convenient time.

[“Upgrading applications” on page 69](#)

This information applies to all currently supported CICS TS releases, regardless of your current release and the target release. Existing applications typically continue to run in a later version of CICS.

[“Upgrading connections” on page 72](#)

This section tells you how to upgrade connections between CICS systems, and between CICS and other systems.

[“Upgrading web services” on page 77](#)

This section tells you how to upgrade the web services that you use in CICS Transaction Server for z/OS. These could be JSON or SOAP in CICS TS.

Upgrading from CICS TS Developer Trial

You can upgrade CICS regions from Developer Trial to a full version of CICS as the Monthly License Charge (MLC) base edition of CICS TS, **subject to your purchased entitlement**, without having to reinstall. **This information applies to all currently supported CICS TS releases.**

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instruction of each CICS configuration aspect. You can find additional upgrade actions for migrating from end-of-service releases in [“Upgrading from end-of-service releases” on page 39](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Install the activation module	Mandatory
All versions	Replace the SDFHDEV library	Mandatory
All versions	Start the CICS region	Mandatory

All versions Install the activation module

Install the activation module for either CICS TS or Value Unit Edition. For instructions, see [Installing the CICS TS activation module in Installing](#). You don't need to install the base module because you can use the libraries that you installed for Developer Trial.

All versions Replace the SDFHDEV library

Replace the SDFHDEV library in the STEPLIB of the CICS TS JCL for the CICS region with the SDFHLIC library for CICS TS, or with the SDFHVUE library for Value Unit Edition.

- The SDFHLIC or SDFHVUE library must be APF-authorized. For instructions, see [Authorizing the CICS and CICSplex SM libraries](#).
- If you use coupling facility data table servers, temporary storage servers, region status servers, or named counter servers, also add the SDFHLIC or SDFHVUE library to the STEPLIB of the JCL for each of the servers.

All versions Start the CICS region

Start the CICS region. To validate your installation, in the console view, read the initial active messages:

- Message [DFHTI0200](#) and message [DFHTI0201](#), which are issued when you start a Developer Trial region, should *not* be displayed.
- For Value Unit Edition, message [DFHTI0103](#) is issued if you are running Value Unit Edition.

Upgrading CICS Explorer

This section summarizes the actions you might need to upgrade CICS Explorer.

Upgrade actions

Your current CICS Explorer version	Action	Mandatory or optional?
All versions	Check compatibility of CICS Explorer	Mandatory
All versions	Back up your CICS Explorer workspace	Optional, but recommended
All versions	Upgrade or install a new copy of CICS Explorer	Mandatory

All versions **Check compatibility of CICS Explorer**

CICS Explorer is backwards compatible. To connect to CICS regions at CICS TS 6.1, you need CICS Explorer Fix Pack 5.5.22 or later, be it CICS Explorer for Aqua or CICS Explorer on Eclipse Marketplace. Note that some features in CICS TS 6.1 are only available in CICS Explorer Fix Pack 5.5.23 and later.

All versions **Back up your CICS Explorer workspace**

Before you upgrade or install a new copy of CICS Explorer, it is advisable to back up your CICS Explorer workspace. Between different versions of CICS Explorer, the workspace data format might change and backwards compatibility might not be possible.

For instructions, see [Taking a backup of the CICS Explorer workspace in the CICS Explorer product documentation](#).

All versions **Upgrade or install a new copy of CICS Explorer**

For instructions, see [Downloading and starting CICS Explorer in the CICS Explorer product documentation](#).

Upgrading CICSplex SM

This topic explains how to upgrade CICSplex SM. If you have CICSplex SM, upgrade CICSplex SM before you take action on the other areas of your CICS configuration. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.** If you don't have CICSplex SM, you can skip this topic.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instruction of each CICS configuration aspect. You can find additional upgrade actions for migrating from end-of-service releases in [“Upgrading from end-of-service releases”](#) on page 39.

Before you begin

It is recommended that you upgrade your CICS Explorer to the latest release before you upgrade CICSplex SM environments or single CICS regions. This ensures that your CICS Explorer can support the target CICS release. For detailed instructions, see [“Upgrading CICS Explorer”](#) on page 13.

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Check compatibility requirements for different levels of CICSplex SM	Mandatory
All versions	Back up your CICSplex SM configuration	Optional, but strongly recommended
All versions	Upgrade a maintenance point CMAS	Mandatory
All versions	Upgrade a WUI and the contents of the WUI server repository (EYUWREP)	Mandatory
All versions	Upgrade the CMCI to use the CMCI JVM server	Mandatory, unless you disable the feature
5.5	Upgrade the CMCI JVM server configuration	Mandatory, unless you disable the feature
All versions	Upgrade a non-maintenance point CMAS	Mandatory
All versions	Upgrade a CICSplex SM managed CICS system (MAS)	Mandatory
5.5	Migrate PLTPI to using CPSMCONN	Mandatory
All versions	Upgrade CICSplex SM API programs	Mandatory
All versions	Back out of a CICS upgrade (for CICSplex SM users only)	Mandatory only when backing out of an upgrade
All versions	Upgrade the region status server	Mandatory only for sysplex optimized workload users
All versions	Update consumers of Tivoli® NetView® SNA Generic Alerts	Mandatory only for Tivoli NetView users
All versions	Recompile your programs to match the current release of CICSplex SM	For programs that connect to a previous release of CICSplex SM only Optional, but strongly recommended
All versions	Rerun EYUJHIST to upgrade your CICSplex SM history data sets	Mandatory

All versions Check compatibility requirements for different levels of CICSplex SM

You can run this release of CICSplex SM and earlier releases concurrently, but you must take account of a number of conditions for compatibility.

PTFs

When you apply service to CICSplex SM, PTFs that are applied to the Environment Services System Services (ESSS) are not intended to be downward-compatible with earlier maintenance levels at the same release. This means that all CMASs, MASs, WUI Server regions, and API programs must run at the same maintenance level as the ESSS for their release. Otherwise, abends, data corruption, and unexpected results might occur. See [Designing your CICSplex SM environment](#) for more considerations about the configuration of CICSplex SM components. When you apply PTFs to CICSplex SM, you must follow all ++HOLD ACTION items that are associated with the SMP/E maintenance carefully.

CMAS

You can run a CMAS at Version 6.1 that connects to a CMAS running at a supported level of CICS TS. However:

- A CICS TS for z/OS, Version 6.1 CICSplex SM CMAS runs only in a CICS system at Version 6.1.
- In a CICSplex that consists of CMASs at the latest level and at one or more earlier levels, the maintenance point CMAS (MP CMAS) must be at the latest level. So, when a CICSplex contains CMASs at more than one level, the first CMAS that you upgrade to Version 6.1 must be the MP CMAS. See [“All versions Upgrade a maintenance point CMAS”](#) on page 17.
- You cannot view all resources of a CICS TS for z/OS, Version 6.1 region by using a CMAS that runs at an earlier release.
- If you intend to connect a CMAS at a lower level to a CMAS at a higher level, you need to apply the PTFs for the following APARs to each downlevel environment. The following table shows what APARs are required on a lower level CMAS to connect to the next higher level CMAS. For example, a V5.3 CMAS must have APAR PI81780 applied to connect to a V5.4, V5.5, or V5.6 CMAS; a V5.2 CMAS must have APARs PI52166 and PI53801 applied to connect to a V5.3 CMAS, and then have APAR PI81780 applied to connect to a V5.4, V5.5, or V5.6 CMAS.

Release of lower level CMAS	5.2	5.3	5.4	5.5	5.6	6.1
5.6	-	-	-	-	-	None
5.5	-	-	-	-	None	None
5.4	-	-	-	None	None	None
5.3	-	-	PI81780	None	None	None
5.2	-	PI52166 PI53801	PI81780	None	None	None
5.1	PI17725 PM98212	PI52166 PI53801	PI81780	None	None	None
4.2	PI17724	PI52165 PI53800	PI81778	None	None	None
4.1	PI17724	PI52165 PI53800	PI81778	None	None	None

MAS

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. For an MP CMAS at the latest release to communicate with a CICS region that runs an earlier release, the MP CMAS must be at the latest release. Connect the MP CMAS to the back-level MAS through a CMAS that runs the same level as the MAS. For example, a MAS running Version 5.3 is connected to a CMAS that

also runs Version 5.3. This CMAS is connected, in turn, to the MP CMAS that runs the latest level. Communication between the MP CMAS at the latest level and the back-level MAS is through the back-level CMAS to which the MP CMAS is connected.

CICS systems (MASs) running at a supported level of CICS TS can be connected to CICSplex SM Version 6.1. To be connected to CICSplex SM Version 6.1, CICS systems must use the CICSplex SM Version 6.1 MAS agent, so they must have the CICSplex SM Version 6.1 libraries in their CICS JCL.

The following table lists what CICS releases each in-service release level of the MAS agent supports.

Release level of MAS agent	Supported CICS releases
6.1	5.4, 5.5, 5.6, 6.1
5.6	5.2, 5.3, 5.4, 5.5, 5.6
5.5	5.1, 5.2, 5.3, 5.4, 5.5
5.4	4.1, 4.2, 5.1, 5.2, 5.3, 5.4
5.3	3.1, 3.2, 4.1, 4.2, 5.1, 5.2, 5.3
5.2	3.1, 3.2, 4.1, 4.2, 5.1, 5.2

If you use the API or WUI to manage MASs connected to a CMAS at an earlier release, make sure that the MASs are managed indirectly from the Version 6.1 CMAS:

- It is advisable to run WUI servers at the latest release. If they do not, they cannot be aware of any of the resources of the latest release. If you have a mix of releases, it is advisable to use only the WUI server at the latest release to define or alter resources.
- If you require access to the latest fields from the MAS that run the latest release, through a program that uses the CICSplex SM API, ensure that the API programs connect to a CMAS that runs the latest release. If the API programs connect to a CMAS that runs an earlier release, resource tables that contain new or updated fields for the new release are not returned to the API program.

WUI server

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 6.1 CMAS, if the CMAS participates in the management of the CICSplex. However, the WUI server cannot retrieve data about resource types that were not available in the earlier release.

To create any of the following CICSplex SM objects, you must use a WUI server that is running at the same CICSplex SM release level as the MP 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)

Similarly, if you use the API, EYU9XDBT or BATCHREP batched repository update facilities to create these objects, ensure that these facilities run at the same CICSplex SM release level as the MP CMAS.

Workload management

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 causes its associated CMAS to be the workload owner.

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.

All versions Back up your CICSplex SM configuration

It is strongly advisable to back up your JCL, CLISTs, CMAS data repositories, and WUI data repositories. If you need to abandon the upgrade, it is possible to return to the level of CICSplex SM that you had at the start of the upgrade by following the guidance in [“All versions Back out of a CICS upgrade” on page 25](#).

Note: Although it is advisable to keep backups of your CMAS data repositories, do not use the backup to back out the CMAS upgrade. Instead, reconfigure the upgraded data repository for the original release according to the guidance in [“All versions Back out of a CICS upgrade” on page 25](#). If you do not, CMASs might become isolated.

All versions Upgrade a maintenance point CMAS

You must upgrade your CICSplex SM CMAS to Version 6.1 at the same time as you upgrade the CICS system on which it runs. A CICSplex SM CMAS runs only in a CICS system of the same release level. During startup, the CMAS checks the CICS release level and stops with message EYUXL0142 if the release does not match.

In a CICSplex that consists of CMASs at the Version 6.1 level and at one or more earlier levels, the maintenance point CMAS (MP CMAS) must be at the Version 6.1 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 6.1 must be the MP CMAS. To upgrade the MP CMAS, use the following steps.

1. If the MP CMAS is running, stop it. You can continue to run a workload in the CICSplex while the MP CMAS is down. The running workload should not be affected by the absence of the MP CMAS, but do not change any definitions while the MP CMAS is down.
2. Upgrade the CICS modules to Version 6.1. For more information about dynamically updating DFHIRP, see [“Upgrading MRO” on page 73](#).
3. In the z/OS image that contains the CMAS, check that the IEASYSxx member of the SYS1.PARMLIB library that you use for z/OS initialization includes the **MAXCAD** and **NSYSLX** parameters, each with an appropriate value. [Specifying each CMAS correctly in IEASYSxx](#) explains what values are suitable. If you are running both a previous release and Version 6.1 of CICSplex SM, an Environment Services System Services (ESSS) space is started for each release, so you might need to modify the **NSYSLX** value.
4. Authorize the Version 6.1 libraries by adding them to the list of APF-authorized libraries in the appropriate PROGxx or IEAAPFxx member in SYS1.PARMLIB. See [Authorizing the CICS and CICSplex SM libraries](#).
5. Update the MVS linklist with the Version 6.1 modules that are required for CICS and CICSplex SM. See [Installing CICS-required modules in the MVS linklist](#).
6. Upgrade the CSD file that the CMAS uses with the Version 6.1 group of resource definitions and CICS startup group list. You do not need an additional upgrade that uses a release-dependent set of definitions for CICSplex SM. CICS supplies a job that is called DFHCOMDS in the XDFHINST library, which is created when you run DFHISTAR. This job assumes that a new CSD is created and initialized.

In many situations, you want to copy the CSD that the CMAS currently uses, and upgrade this copy, as shown in the following example job:

```
//DFHCSDUP JOB MSGCLASS=A, NOTIFY=&SYSUID, CLASS=A
//*
//* UPGRADE THE CSD
//*
//CSDADD1 EXEC PGM=DFHCSDUP, REGION=2000K, PARM='CSD(READWRITE)'
//SYSPRINT DD SYSOUT=A
//STEPLIB DD DISP=SHR, DSN=BLD.CICSDEV.INCCUR.SDFHLOAD
//DFHCSD DD DSN=CTSSVT.ZZAMIG.D111018.CMASZZA.BK.CSD, DISP=SHR
//SYSIN DD *
        UPGRADE REPLACE
/*
//
```

7. If you modified the default resource definitions for your earlier release, upgrade your modified resource definitions manually. CICSplex SM supplies these definitions in the EYU\$CDEF sample, which contains definitions for a CMAS. To upgrade your modified resource definitions manually, use the equivalents in the EYU\$CDEF sample for Version 6.1.

A good way to upgrade modified resource definitions is to copy the upgraded default resource definitions, then reapply your modifications. It is important to upgrade your modified definitions to ensure that they are defined correctly with non-default values for any new attributes. If you do not, CICS assigns default values to any new attributes, and these default values might be inappropriate for your requirements.

8. Use the EYU9XDUT utility to upgrade the data repository (EYUDREP data set) for the CMAS to Version 6.1. Be aware that you must upgrade the data repository file itself rather than a copy of the data repository. If you do not, CMAS isolation issues can occur when the CMAS is restarted at the new level. For information about how to upgrade the data repository, see [Creating the CICSplex SM data repository](#). 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 you upgrade 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 can be lost. This loss can lead to incorrect results, which can include other CMASs isolating themselves when they connect to this CMAS. After the upgrade, if you choose to roll back to the version that you upgraded from, use the EYU9XDUT utility with PARM=('TARGETVER=*original version number*') to roll back the upgraded data repository for the CMAS. If you do not, CMASs might become isolated.

9. Delete, redefine, and initialize the CICS local catalog and global catalog by using the DFHCUTL and the DFHRMUTL utility programs. If you used DFHISTAR to install CICS, it creates a library that is called XDFHINST. This library contains member DFHDEFDS, which creates the LCD and GCD files and initializes them. DFHDEFDS also creates other files that CICS requires, such as DFHTEMP, DFHINTRA, and DFHLRQ.
10. Check the CICSplex SM system parameters that are referenced by the EYUPARM DD statement. If the CASNAME system parameter is present, delete it. For more information, see [CICSplex SM system parameters](#).
11. Check that the CICS system initialization parameter **GRPLIST** references the CICS supplied default startup group list, DFHLIST, and any CSD groups that contain resource definitions that were modified.
12. Use an initial start procedure for the upgraded MP CMAS.

All versions Upgrade a WUI and the contents of the WUI server repository (EYUWREP)

A Web User Interface (WUI) 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 MP CMAS. WUI servers that are not yet upgraded to the same level as the MP CMAS can be used, but they might return unreliable results until you upgrade them.

A WUI server can connect only to a CMAS at the same release level. Before you upgrade a WUI server, you must upgrade the CMAS to which it connects, by using the instructions in [“All versions Upgrade a](#)

non-maintenance point CMAS” on page 22. If the CMAS to which the WUI server connects is not the MP CMAS, you must also upgrade the MP CMAS before you start the WUI server and the CMAS to which it connects. Upgrade the WUI server to Version 6.1 before you start any other MASs, so that it is ready to manage the upgraded MASs.

A CICS system that acts as a WUI server is a local MAS. However, when you upgrade a WUI server, you must upgrade both the CICSplex SM MAS agent and the CICS region to Version 6.1. In other MASs, you can upgrade only the CICSplex SM MAS agent, and you do not need to upgrade the CICS region.

As of CICS TS 5.6, the CMCI in the WUI region uses the CMCI JVM server by default. So after you upgrade the WUI server, you must upgrade the CMCI to use the CMCI JVM server unless it is already using the CMCI JVM server.

If you use CICS Explorer, after you upgrade the WUI server, upgrade CICS Explorer because it relies on the WUI server to return data. You can upgrade CICS Explorer at any time; see Upgrading CICS Explorer.

Use the following steps to upgrade the WUI server and the WUI server repository.

1. Create a new set of WUI files, or upgrade a copy of your existing WUI files to the latest release.

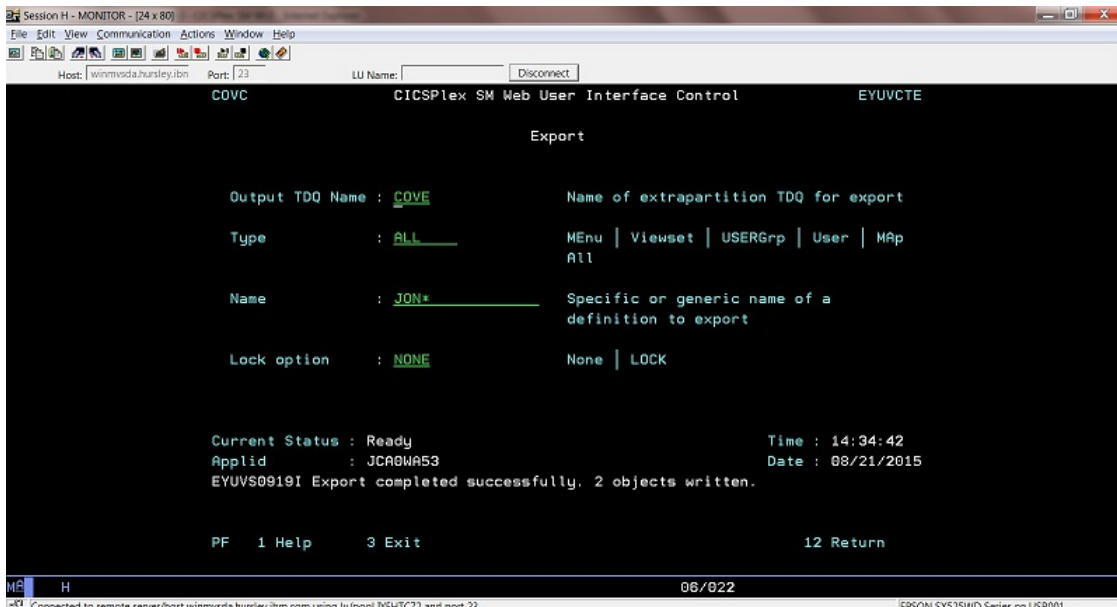
If you used DFHISTAR, the XDFHINST library that it creates contains member EYUWUIDS. When EYUWUIDS is run, it creates a new WUI Server repository (EYUWREP) and some new import (EYUCOVI) and export (EYUCOVE) files to use later if you tailored or used your own WUI view or menus. EYUWUIDS also creates the WUIs, the trace, dump, INTRA TD, LCD, GCD, LRQ, and CSD files.

2. If you copy your own files, the WUI Server Repository file (EYUWREP) must be created empty. It will be populated in a later step. If you tailored the WUI, for example with your own menus, views, or usergrps, to preserve these changes after the upgrade, export then reimport the artifacts from the current WUI. You can use the COVC transaction for the export and import. If you use only the IBM-supplied WUI menus and views, you can skip the rest of this step.

Using the EYUCOVE (export) data set that was previously created by EYUWUIDS, apply the COVE file to the WUI startup JCL for the WUI that you are exporting from. For example:

```
//EYUCOVI DD DSN=h1q.EYUCOVI,DISP=SHR
//EYUCOVE DD DSN=h1q.EYUCOVE,DISP=SHR
```

With the WUI running at the original version, you are ready to export to the EYUCOVE data set. Use the COVC transaction, by selecting the Export option. Specify COVE for the Output TDQ Name. For Type, specify MENU, VIEWSET, USERGRP, USER, or MAP, or specify ALL to extract all of your artifacts together. The following example exports all artifacts that begin with the characters JON* to COVE:



After the data is exported, you must import it later in the step [“Upgrade the contents of the Web User Interface server repository \(EYUWREP\)”](#) on page 21.

3. Authorize the Version 6.1 CICS and CICSplex SM libraries. See [Authorizing the CICS and CICSplex SM libraries](#).
4. If you use the link pack area (LPA), decide when you plan to replace the previous release modules in the LPA with the Version 6.1 modules. Every CICSplex SM module that is installed in the LPA can be used only by the release of CICSplex SM to which it relates.
 - a. If you put the Version 6.1 modules in the LPA immediately, change your previous release MASs to use the previous release modules from the STEPLIB and DFHRPL concatenations, instead of the LPA.
 - b. If you put the Version 6.1 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 6.1 modules from the STEPLIB and DFHRPL concatenations instead of the LPA, then change them to use the LPA when you replace the modules.

For more information, see [Controlling the use of modules from the LPA](#).

5. Upgrade the CSD file that the WUI uses with the Version 6.1 group of resource definitions and CICS startup group list. You do not need an additional upgrade that uses a release-dependent set of definitions for CICSplex SM. CICS supplies a job that is called DFHCOMDS in the XDFHINST library, which is created when you run DFHISTAR. This job assumes that a completely new CSD is created and initialized. In many situations, you want to copy the CSD that the WUI currently uses, and upgrade this copy, as shown in the following example job.

```
//DFHCSDUP JOB MSGCLASS=A,NOTIFY=&SYSUID,CLASS=A
//*
//* UPGRADE THE CSD
//*
//CSDADD1 EXEC PGM=DFHCSDUP,REGION=2000K,PARM='CSD(READWRITE)'
//SYSPRINT DD SYSOUT=A
//STEPLIB DD DISP=SHR,DSN=BLD.CICSDEV.INCCUR.SDFHLOAD
//DFHCSD DD DSN=CTSSVT.ZZAMIG.D111018.WUIZZA.CSD,DISP=SHR
//SYSIN DD *
        UPGRADE REPLACE
//*
//
```

6. If you modified 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 by using the equivalents in the EYU\$WDEF sample for Version 6.1.

A good way to upgrade modified resource definitions is to copy the Version 6.1 resource definitions and reapply your modifications. It is important to upgrade your modified definitions to ensure that they are defined correctly with non-default values for any new attributes. If you do not, CICS assigns default values to any new attributes, and these default values 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 6.1 names. For information about the MAS startup JCL, see [Changing startup JCL before starting a MAS](#).
8. Check that the CICS system initialization parameter **EDSALIM** is specified for the CICS region, and set it to a value of 800 MB. 800 MB is the default EDSALIM value for a CICS region in Version 5.1 and later. You can tune this value in a similar way to tuning CICS storage in a CMAS. You can specify system initialization parameters before startup in the following locations:
 - In the system initialization table that is specified in the DFHSITxx load module whose suffix (xx) is specified as a SIT= system initialization parameter.
 - In the PARM parameter of the EXEC PGM=DFHSIP statement.
 - In the SYSIN data set defined in the startup job stream.
9. Check that the CICS system initialization parameter **CPSMCONN=WUI** is specified for the CICS region. This system initialization parameter initializes the CICS region as a Web User Interface server and dynamically creates the required resource definitions for CICSplex SM.

10. Check that the CICS system initialization parameter **GRPLIST** references the following artifacts:
 - CICS-supplied default startup group list, DFHLIST
 - Any CSD groups that contain resource definitions that you modified
 - Lists of definitions for your own applications
11. Ensure that you deleted, redefined, and initialized the CICS local catalog and global catalog by using the DFHCCUTL and the DFHRMUTL utility programs.
12. If you use MAS history recording, define new history data sets by using the EYUJHIST sample job. If you prefer to upgrade your existing history data sets, you can also upgrade them by using the EYUJHIST sample job and the comments in this sample that provide upgrading instructions. 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.

Upgrade the contents of the Web User Interface server repository (EYUWREP)

Complete this task only if you tailored the WUI, for example, menus, views, and usergrps. If you use only the IBM-supplied menus and views, you can skip this task.

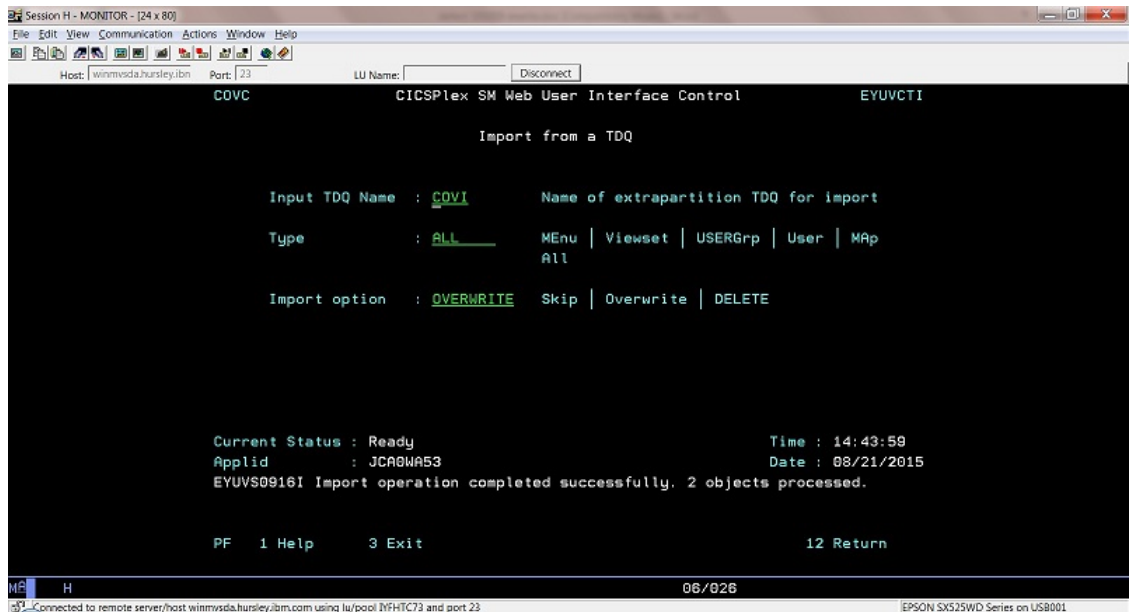
With each release of CICS, internal Web User Interface repository record versions might be incremented to enable the new features in view definitions. Therefore, if your existing Web User Interface repository contains customized view sets or menus, you must upgrade your view set and menu definitions.

In the previous steps to upgrade a WUI server, you used the COVC transaction to export your existing view set and menu definitions from the Web User Interface server repository to an export file. When you upgrade the Web User Interface server repository to Version 6.1, 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 change existing customized views and menus, but you can consider modifying or creating new view sets to include the new attributes and resources at the next release level.

1. Ensure that you completed the earlier [step](#) to export view set and menu definitions to the COVE file.
2. Amend the Version 6.1 WUI startup JCL so that the exported data set becomes the DD name that is used for the COVI (import) file. For example:

```
//EYUCOVI DD DSN=h1q.EYUCOVE,DISP=SHR
```

3. Start the Version 6.1 WUI.
4. Use the COVC `Import from` a `TDQ` option to import the view set and menu definitions from the COVI data set. Specify COVI for the `Input TDQ Name`. For `Type`, you can specify `MENU`, `VIEWSET`, `USERGRP`, `USER`, or `MAP`, or `ALL` to import all your artifacts together. Specify `OVERWRITE` for the `Import` option to harden the changes. The following example imports ALL changes from COVI:



All versions Upgrade the CMCI to use the CMCI JVM server

As of CICS TS 5.6, the CMCI interface uses the CMCI JVM server by default. The CMCI JVM server is controlled by the feature toggle `com.ibm.cics.cmci.jvmserver`. The default change means that if you don't specify it in your feature toggle configuration, the CMCI JVM server is enabled. It is possible to switch off the CMCI JVM server by setting `com.ibm.cics.cmci.jvmserver=false` in your feature toggle configuration. However, be aware that the feature toggle `com.ibm.cics.cmci.jvmserver` will be removed in a future release of CICS TS. Therefore, it is strongly recommended that you migrate to the CMCI JVM server as soon as possible.

To configure the CMCI JVM server for your CICSplex SM, follow the instructions in [Setting up CMCI with CICSplex SM](#).

5.5 Upgrade the CMCI JVM server configuration

If your WUI region is already using the CMCI JVM server, during your upgrade to a higher release of CICS TS, ensure that you give users access to authenticate with the CMCI JVM server, including the authority to use the CMCI. If you are using RACF, you must define the RACF EJBROLE profile `&PROFILE_PREFIX.CMCI.CMCIUSER` and give all CMCI users read access to this profile. For details, see [Configuring CMCI in a WUI region](#).

All versions Upgrade a non-maintenance point CMAS

You must upgrade your CICSplex SM CMAS to Version 6.1 at the same time as you upgrade the CICS system on which it runs. A CICSplex SM CMAS runs only in a CICS system of the same release level. During startup, the CMAS checks the CICS release level and stops with message EYUXL0142 if the release does not match.

You can upgrade a non-MP CMAS at the same time as the MP CMAS, or, if you are planning a phased migration, you can upgrade the non-MP CMAS later. If you run a workload during the upgrade, non-sysplex optimized workloads continue, but information about the region health might be unavailable while the CMAS is down. This unavailability can impact routing decisions during this time. For sysplex optimized workloads, region information should continue to be obtained from the coupling facility while the CMAS is down.

When you upgrade a non-MP CMAS, all the CICSplex records are removed from its data repository. The CMAS cannot connect to its MASSs, or join MASSs connected to other CMASs, until it reconnects to its MP CMAS, at which point its data repository is resynchronized for the CICSplex. Both the MP CMAS and non-MP CMAS issue EYULOG messages EYUCP0203I and EYUCP0204I. The data repository synchronization

is not complete until both CMASs issue both messages. Depending on the number of records in the CICSplex, the MP CMAS usually takes longer than the non-MP CMAS. In this situation, the time period between the two messages on the non-MP CMAS is short, but the time period between the two messages on the MP CMAS is longer.

To upgrade a non-MP CMAS, use the following steps:

- Check that the MP CMAS for the CICSplex is upgraded, restarted, and available in every CICSplex where the CMAS is a member. Remove the CMAS from any CICSplex where the MP CMAS is still at an earlier level. If the CMAS is started in a CICSplex that has an MP CMAS at an earlier level, message EYUCP0012E is issued. In an environment with multiple interconnecting CICSplexes, this message and message EYUTS0012E can be issued repeatedly.
- Take down each non-MP CMAS.
- Use the following steps 2 - 12 for each CMAS.
 1. Stop the non-MP CMAS.
 2. If you have not already done so as part of the MP CMAS upgrade, upgrade the CICS modules to Version 6.1. For more information about dynamically updating DFHIRP, see [Upgrading MRO](#).
 3. In the z/OS image that contains the CMAS, check that the IEASYSxx member of the SYS1.PARMLIB library that you use for z/OS initialization includes the **MAXCAD** and **NSYSLX** parameters, each with an appropriate value. See [Specifying each CMAS correctly in IEASYSxx](#) for suitable values. If you are running both a previous release and Version 6.1 of CICSplex SM, an Environment Services System Services (ESSS) space is started for each release, so you might need to modify the **NSYSLX** value.
 4. Authorize the Version 6.1 libraries by adding them to the list of APF-authorized libraries in the appropriate PROGxx or IEAAPFxx member in SYS1.PARMLIB. See [Authorizing the CICS and CICSplex SM libraries](#).
 5. If you have not already done so as part of the MP CMAS upgrade, update the MVS linklist with the Version 6.1 modules that are required for CICS and CICSplex SM. See [Installing CICS-required modules in the MVS linklist](#).
 6. If the non-MP CMAS uses a different CSD to the MP CMAS, upgrade the CSD file that the CMAS uses with the Version 6.1 group of resource definitions and CICS startup group list. You do not need an additional upgrade that uses a release-dependent set of definitions for CICSplex SM. CICS supplies a job that is called DFHCOMDS in the XDFHINST library, which is created when you run DFHISTAR. This job assumes that a completely new CSD is created and initialized. In many situations, you want to copy the CSD that the CMAS currently uses, and upgrade this copy, as shown in the following example job:

```
//DFHCSDUP JOB MSGCLASS=A,NOTIFY=&SYSUID,CLASS=A
//*
//* UPGRADE THE CSD
//*
//CSDADD1 EXEC PGM=DFHCSDUP,REGION=2000K,PARM='CSD(READWRITE) '
//SYSPRINT DD SYSOUT=A
//STEPLIB DD DISP=SHR,DSN=BLD.CICSDEV.INCCUR.SDFHLOAD
//DFHCSD DD DSN=CTSSVT.JCA.BANK1.CICS720.DFHCSD,DISP=SHR
//SYSIN DD *
        UPGRADE REPLACE
/*
//
```

7. If you modified the default resource definitions for your earlier release (these definitions are supplied by CICSplex SM in the EYU\$CDEF sample, which contains definitions for a CMAS), manually upgrade your modified resource definitions by using the equivalents in the EYU\$CDEF sample for Version 6.1.

A good way to upgrade modified resource definitions 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 non-default values for any new attributes. If you do not, CICS assigns default values to any new attributes, and these default values might be inappropriate for your requirements.

8. Use the EYU9XDUT utility to upgrade the data repository (EYUDREP data set) for the CMAS to Version 6.1. Be aware that you must upgrade the data repository file itself rather than a copy of the data

repository. If you do not, CMAS isolation issues can occur when the CMAS is restarted at the new level. For information about how to upgrade the data repository, see [Creating the CICSplex SM data repository](#). 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 you upgrade 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 can be lost. This loss can lead to incorrect results, which can include other CMASs isolating themselves when they connect to this CMAS. After the upgrade, if you choose to roll back to the version that you upgraded from, use the EYU9XDUT utility with PARM=('TARGETVER=*original version number*') to downgrade the upgraded data repository for the CMAS. If you do not, CMASs might become isolated.

9. Delete, redefine, and initialize the CICS local catalog and global catalog by using the DFHCCUTL and the DFHRMUTL utility programs. If you used DFHISTAR to install CICS, it creates a library that is called XDFHINST. This library contains member DFHDEFDS, which creates the LCD and GCD files and initializes them. DFHDEFDS also creates the other files that CICS requires, such as DFHTEMP, DFHINTRA, and DFHLRQ.
10. Check the CICSplex SM system parameters that are referenced by the EYUPARM DD statement. If the CASNAME system parameter is present, delete it. For more information, see [CICSplex SM system parameters](#).
11. Check that the CICS system initialization parameter GRPLIST references the CICS supplied default startup group list, DFHLIST, and any CSD groups that contain resource definitions that were modified.
12. Check that the MP CMAS for the CICSplex is running in every CICSplex where the CMAS is a member. Use an initial start procedure for the upgraded CMAS.
13. Allow the upgraded CMAS to synchronize repository with the other CMASs in the network. EYULOG messages EYUCP0203I and EYUCP0204I are issued when the repository synchronization begins and completes. Furthermore message EYUXD0004I is issued when the CICSplex import has been successful and CMAS processing continues to register the CICSplex with its subcomponents.

All versions Upgrade a CICSplex SM managed CICS system (MAS)

When you upgrade a CICSplex SM MAS to CICSplex SM Version 6.1, you might choose to upgrade only the CICSplex SM MAS agent. You do not need to upgrade the CICS region to Version 6.1 at the same time.

Before you upgrade a CICSplex SM MAS to CICSplex SM Version 6.1, you must upgrade the CICSplex SM CMAS to which it connects. You must also upgrade the Web User Interface server for the CICSplex.

1. If you use the link pack area (LPA), decide when you plan to replace the previous release modules in the LPA with the Version 6.1 modules. Every CICSplex SM module that is installed in the LPA can be used only by the release of CICSplex SM to which it relates.
 - a. If you put the Version 6.1 modules in the LPA immediately, change your previous release MASs to use the previous release modules from the STEPLIB and DFHRPL concatenations, instead of the LPA.
 - b. If you put the Version 6.1 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 6.1 modules from the STEPLIB and DFHRPL concatenations instead of the LPA, then change them to use the LPA when you replace the modules.

For more information, see [Controlling the use of modules from the LPA](#).

2. 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 6.1 SEYUAUTH and SEYULOAD library names. The Version 6.1 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 [Changing startup JCL before starting a MAS](#).
3. Check that the CICS system initialization parameter **EDSALIM** is specified for the CICS region, and set it to a value of 800 MB. 800 MB is the default **EDSALIM** value for a CICS region in Version 6.1. You can specify system initialization parameters before startup in the following locations:

- In the system initialization table that is specified in the DFHSITxx load module whose suffix (xx) is specified as a SIT= system initialization parameter.
 - In the PARM parameter of the EXEC PGM=DFHSIP statement.
 - In the SYSIN data set defined in the startup job stream.
4. If you use MAS history recording, define new history data sets by 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 and the comments in the sample that provide upgrading instructions. 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.
 5. If you also want to upgrade the CICS region to Version 6.1 now, you must upgrade the CSD for CICS as instructed. However, you do not need any additional upgrade to your CSD to obtain the resource definitions for CICSplex SM because all CICSplex SM resources are defined and installed dynamically.
 6. Before you can start the MAS at the latest level, you must still consider some more steps. See [“Upgrading CICS regions”](#) on page 27 for instructions to activate the license file, and to delete, define, and initialize global and local catalogs at the latest level. When you *are* ready to start the MAS, if you upgraded the CPSM code and the CICS code in the MAS, use an initial start procedure. If you upgraded the CPSM code but not the CICS code, you can use a cold or automatic start procedure. However, if a cold or initial start is not performed, then message EYUNX0013E may be issued.

5.5 Migrate PLTPI to using CPSMCONN

Support for using PLTPI to run the CICSplex SM PLT program directly has been removed as of CICS TS 5.6. You must migrate to using the [CPSMCONN](#) system initialization parameter.

[Back to top](#)

All versions Upgrade 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 6.1 MAS. You can either continue to access the data that is provided by the previous release or access the new data available from Version 6.1. For information about using API programs with different releases of CICSplex SM, see [Compatibility between releases of CICSplex SM](#).

If you modified your application programs to call EYU9XLOP using the EYUAWTRA COMMAREA, recompile and link-edit them using the latest version.

When you upgrade from a release earlier than CICS TS 5.2, the following EYUDA general values are added for the CICSplex SM API:

- AVAILABLE (778)
- UNAVAILABLE (779)
- SOMEAVAIL (780)

The number of records that are returned by CICSplex SM API programs querying the WLMAWTOR (Active routing regions) resource 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. Therefore, API programs that query WLMAWTOR have more records to process. The number to process depends on the end of unit-of-work count. Existing API applications are unaffected if the first record in the result set is treated as the only record.

All versions Back out of a CICS upgrade

If you experience issues with your upgrade, you might need to back out and reinstate the previous version. If you use CICSplex SM, in addition to reverting to the previous version, you must consider the following actions:

- Make sure that you return your data repository back to the way it was before the upgrade. Use the EYU9XDUT job with parameter **targetver** to reconfigure the data repository to the previous release for you. For more information, see [Creating the CICSplex SM data repository](#).

Note: If you use a backup of your data repository rather than reconfiguring it, you risk isolating your CMAS.

- If you reinstate to the previous release all the CMASes on your LPAR for the new release, you might want to terminate your ESSS address base. Terminating is not necessary if you are planning to IPL. For instructions, see [Stopping the ESSS \(TERMINATE\)](#).

All versions Upgrade the region status server (for sysplex optimized workload users only)

The region status server (RS server) is a standard CICS Coupling Facility Data Table (CFDT) server that is reserved for CICS region status recording and reporting. Any upgrade to the CFDT Server function also applies to the RS Server. To upgrade the RS Server, follow the advice in [“All versions Upgrade the CICS data sharing servers”](#) on page 28.

All versions Update consumers of Tivoli NetView SNA Generic Alerts (for Tivoli NetView users only)

When you upgrade to a new version of CICS TS, the GDS MSU segment for the CICS TS product identifier changes within SNA Generic Alerts generated by CICSplex SM.

"Product Set ID" (X'10') MS common subvector is a "Product ID" (X'11') common subvector that identifies the product as IBM Software (X'04'). It contains a "Product Number" (X'08') Product ID subfield that identifies the product number. See [“Changes to CICSplex SM”](#) on page 198 for the product numbers that are used in different versions of CICS Transaction Server for z/OS.

If you use Tivoli NetView automation processing routines based on SNA Generic Alert headers that identify the product identifier, you must update your automation table processing to check for the new version of CICS TS to continue to process the SNA Generic Alerts.

For information about routing alerts by using a Message Automation Table, see [Writing Automation Table Statements to Automate MSUs in Tivoli NetView for z/OS Automation Guide](#).

All versions Recompile your programs to match the current release of CICSplex SM

This information applies only to programs that connect to a previous release of CICSplex SM.

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 must 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 - 500,000 records. 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 by using the NAME key for a specific or generic program. In this case, CICSplex SM must 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.

All versions Rerun EYUJHIST to upgrade your CICSplex SM history data sets

The record size of EYUHIST* data sets often increases at higher release levels, as shown in Table 3 on page 27. You must rerun the EYUJHIST sample job to upgrade your CICSplex SM history data sets.

Release	Record size of EYUHIST* data sets
5.5	RECORDSIZE(3620 3624)
5.6	RECORDSIZE(3680 3684)
6.1	RECORDSIZE(3748 3752)

Upgrading CICS regions

This topic summarizes the actions to take to migrate any CICS region from one release to another. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instruction of each CICS configuration aspect. You can find additional upgrade actions for migrating from end-of-service releases in [“Upgrading from end-of-service releases”](#) on page 39.

Before you begin

It is recommended that you upgrade your CICS Explorer to the latest release before you upgrade CICSplex SM environments or single CICS regions. This ensures that your CICS Explorer can support the target CICS release. For detailed instructions, see [“Upgrading CICS Explorer”](#) on page 13.

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Upgrade the CICS data sharing servers	Recommended
All versions	Redefine and initialize the local and global catalogs	Mandatory
All versions	Enable z/OS conversion services	Optional
All versions	Upgrade the CSD	Mandatory
All versions	Upgrade user-modified, CICS-supplied resource definitions	Mandatory
All versions	Upgrade your copies of CICS-supplied resource definitions	Mandatory
All versions	Reassemble all your macro tables	Mandatory
All versions	Reassemble all Global User Exit programs that use XPI calls without the RELENSCALL parameter	Mandatory
All versions	“All versions Modify any Global User Exit programs that use XPI INQUIRE_PROGRAM or GET_NEXT_PROGRAM calls with certain equates” on page 30	Mandatory
All versions	Review DSA size limits	Mandatory
All versions	Review MEMLIMIT	Mandatory
All versions	Review program and transaction definitions	Mandatory
All versions	Review the system dump data set size	Mandatory

Your current version	Action	Mandatory or optional?
All versions	Review the use of MQCONN as a result of its change of impact	Mandatory
All versions	Review whether the prerequisite PTF is installed on your z/OS operating system for IBM Health Checker for z/OS	Mandatory
All versions	Migrate from CICS HTTP server plug-in to CICS Web Support	Mandatory
All versions	Migrate system events to CICS policy system rules	Recommended
All versions	Check DSA storage requirements	Mandatory
5.5	Migrate group-level feature toggle configuration files	Recommended

All versions Upgrade the CICS data sharing servers

You should periodically upgrade the three CICS data sharing servers: temporary storage, coupling facility data table, and named counter. Upgrade the data sharing servers before you upgrade the clients. As a result, a new server should always support old clients in a fully compatible way, including mixtures of client levels. Although upgrades are not a requirement if no functional changes were made in the new release of the product, it is still advisable to upgrade the shared data servers to the new release. After you upgrade the shared data servers, CICS can then be upgraded as a client of the servers.

All versions Redefine and initialize the local and global catalogs

For each CICS region, you must delete, redefine, and initialize the DFHLCD and DFHGCD data sets:

- Delete your existing data sets.
- Define and initialize new local and global catalogs, following the instructions in [Defining the global catalog](#) and [Defining the local catalog](#). Make sure that you use the DFHRMUTL and DFHCCUTL utility programs or the CICS-supplied JCL DFHDEFDS from your target version of CICS TS.
- Start the CICS regions with an initial start, by using the **START=INITIAL** parameter.

All versions Enable z/OS conversion services

Optionally, when you start to upgrade your regions, to obtain the benefits of z/OS conversion services for data conversion, enable the z/OS conversion services and install a conversion image that specifies the conversions that you want CICS to perform. For example, your system might require support for the conversion of UTF-8 or UTF-16 data to EBCDIC.

For the instructions to set up and configure conversions that are supported through the operating system services, see [z/OS Unicode Services User's Guide and Reference](#).

If z/OS conversion services are not enabled, CICS issues a message. If such a message is issued when you start a CICS region that is expected to use the z/OS conversion services, an IPL is necessary to enable these services. If you do not need the z/OS conversion services, you can suppress that message.

All versions Upgrade the CSD

If you have resource definitions in your CSD that support other IBM products, such as z/OS, you might also need to upgrade these definitions when you start the upgrade of your regions. If you need to share your upgraded CSD with different CICS releases, the CSD must be at the highest release, and compatibility groups must be specified in the correct order. For more information, especially if you use DFHLIST, see [“CSD compatibility between different CICS releases”](#) on page 34.

To upgrade the CSD, you have two alternatives:

1. Upgrade the CICS-supplied definitions in your CSD to the latest level. To do this upgrade, run the DFHCSDUP utility program with the UPGRADE command.

2. Define a new CSD by using DFHCSDUP INITIALIZE command.

All versions Upgrade user-modified, CICS-supplied resource definitions

If you modified any of the CICS-supplied resource definitions in your current release of CICS TS, you must upgrade them at the start of upgrading your regions. This action ensures that they are defined correctly with any new values or attributes.

To upgrade the CSD, you have two alternatives:

1. Confirm whether your CSD contains any user-modified, CICS-supplied resource 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 between the CICS-supplied definition and a user-modified version. If you copied and changed the name of a CICS-supplied definition, the SCAN command enables you to specify the changed name as an alias.
2. Copy the upgraded CICS-supplied definitions and reapply your modifications. This action is the safest way to upgrade your definitions and is necessary because the DFHCSDUP UPGRADE command does not operate on your own groups, or on CICS groups that you copied.
3. 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, by using the equivalents in Version 6.1. 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.

All versions Upgrade your copies of CICS-supplied resource definitions

When you start to upgrade your regions, if you copied any CICS-supplied resource definitions, you might need to change your copies to match the changes that are made to the supplied definitions for this release. DFHCSDUP UPGRADE does not operate on CICS groups that you copied. To help you, member DFH\$CSDU in library SDFHSAMP contains ALTER commands that you can apply by using the CSD utility program DFHCSDUP.

1. Review your resource definitions to determine whether you copied any CICS-supplied definitions.
2. Review DFH\$CSDU to determine whether the changes that it contains 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 with 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.

As an example, program DFHD2EDF is defined as CONCURRENCY(THREADSAFE). Therefore, DFH\$CSDU contains the following command:

```
ALTER PROGRAM(DFHD2EDF) GROUP(*) CONCURRENCY(THREADSAFE)
```

When you run DFHCSDUP, the attribute is added to the definitions of program DFHD2EDF in all groups. Other attributes that are not mentioned in DFH\$CSDU are unchanged.

All versions Reassemble all your macro tables

When you start to upgrade your regions, all your macro tables must be reassembled by using the macros that are supplied with the new release. During CICS initialization, CICS detects if a macro table is not reassembled, so issues a message DFHLD0110, or DFHFC0110 for File Control table (FCT), and CICS terminates.

All versions Reassemble all Global User Exit programs that are using XPI calls without the RELENSCALL parameter

Using the **RELENSCALL** parameter with XPI calls means that the XPI call executes successfully on all supported CICS releases. You can use this release-sensitive XPI call alternative with all XPI commands.

If your Global User Exit program uses XPI calls without the **RELENSCALL** parameter, the XPI calls must be reassembled against the CICS Version 6.1 libraries, because the assembled code only works on the CICS TS release for which it is assembled.

All versions Modify any Global User Exit programs that use XPI INQUIRE_PROGRAM or GET_NEXT_PROGRAM calls with certain equates

To support Instruction Execution Protection, the DFHPGISY LOCATION equates changed. If your GLUE makes XPI INQUIRE_PROGRAM or GET_NEXT_PROGRAM call and uses equates PGIS_CDSA, PGIS_SDSA, PGIS_ECDSA and PGIS_ESDSA, you must modify it to use the equates PGIS_PCDSA, PGIS_PUDSA, PGIS_EPCDSA, and PGIS_EPUDSA instead.

All versions Review DSA size limits

It is not advisable to set the size of individual dynamic storage areas (DSAs), and usually it is not necessary. However, it is possible to set the size of some DSAs by using the **CDSASZE**, **UDSASZE**, **RDSASZE**, **ECDSASZE**, **EUDSASZE**, **ESDSASZE**, and **ERDSASZE** system initialization parameters. For example, **CDSASZE** sets the size of the CICS dynamic storage area (CDSA), and **ECDSASZE** specifies the size of the extended CICS dynamic storage area (ECDSA). The default value for all 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 want to set DSA size limits, you must do so for each CICS region, as necessary. The limit of storage that is available for DSAs in 24-bit storage is specified by the **DSALIM** SIT parameter. Allow at least 256 KB for each DSA in 24-bit storage for which you have not set a size. The limit of storage available for DSAs in 31-bit storage is specified by the **EDSALIM** SIT parameter. Allow at least 1 MB for each DSA in 31-bit storage for which you have not set a size. You cannot set individual DSAs in 64-bit storage.

If you specify DSA size values that, in combination, do not allow sufficient space for the remaining DSAs, CICS fails to initialize.

All versions Review MEMLIMIT

Review your calculation of the value of the z/OS **MEMLIMIT** parameter to make sure that it provides sufficient 64-bit (above-the-bar) storage for the upgraded CICS region. For more information, see [Estimating and checking MEMLIMIT](#).

All versions Review program and transaction definitions

Defaults of the following resource attributes changed in CICS TS 5.4. This change will have a different impact on resources, depending on the way the resources are defined. Review your resource definitions to ensure that the specification of these new defaults is appropriate.

Resources	New attribute defaults
Program definition	DATALOCATION(ANY)

Resources	New attribute defaults
Transaction definition	SPURGE(YES) TASKDATALOC(ANY) TPURGE(YES)

Resources that are already defined through CEDA, CICSplex SM BAS, DFHCSDUP, or a bundle are unaffected, but new definitions will default to the new value.

Resources that are installed through the **EXEC CICS CREATE** command will use the new default.

For program autoinstall, the default model program DFHPGAPG now specifies DATALOCATION (ANY) . If you do not specify DATALOCATION in a program autoinstall exit, nor do you specify your own program to be used as a model in the exit, review whether the specification of DATALOCATION (ANY) is appropriate. If not, choose one of the following ways to prevent DATALOCATION from defaulting to ANY:

- Specify the name of your own program to be used as the model in an autoinstall exit.
- Copy the definition of DFHPGAPG to your own group and alter the DATALOCATION setting. Ensure that the definition is installed after group DFHPGAIP.

Only AMODE(24) programs need to use DATALOCATION (BELOW) . CICS issues a DFHPG0104 warning message when it loads an AMODE(24) program that is defined with DATALOCATION (ANY) . Specify DATALOCATION (BELOW) explicitly for definitions of AMODE(24) programs instead of using the default value.

Only transactions that run AMODE(24) programs need to use TASKDATALOC (BELOW) . CICS abends transactions with an AEZC abend code if an AMODE(24) program is run under a transaction that runs with TASKDATALOC (ANY) . Specify TASKDATALOC (BELOW) explicitly when you define transactions that run AMODE(24) programs instead of using the default value.

All versions Review the use of MQCONN

The introduction of the MQMONITOR resource in CICS TS 5.4 enhanced the control and security that is associated with IBM MQ connections. CICS now differentiates between the user ID under which the transaction that is monitoring the IBM MQ queue runs (the MONUSERID) and the user ID under which the initiated transactions run. All these have significant implications on MQ resources.

MQINI(DFHMQINI) replaced with MQMONITOR(DFHQMINI)

The MQINI(DFHMQINI) resource dynamically created by CICS when an MQCONN resource definition with the **INITQNAME** parameter set to the name of an MQ queue is installed has been replaced with a dynamically created MQMONITOR resource DFHQMINI.

DFHQMINI uses either the PLTPI user or, if not available, the region user ID as the **MONUSERID** value, and uses the default CICS user as the **USERID** value.

User ID changes to CKTI

As is mentioned earlier, CICS now differentiates between the user ID under which the transaction monitoring the MQ queue runs and the user ID under which the initiated transactions run. This has implications for any dynamically created resources.

CICS TS 5.3 or earlier	CICS TS 5.4 or later
Resource name: MQINI(DFHMQINI)	Resource name: MQMONITOR(DFHQMINI)
Transaction: CKTI	Transaction: CKTI
Default user ID for CKTI: Either of <ul style="list-style-type: none"> • CICS region user ID • PLTPIUSR 	Default user ID for CKTI: Either of <ul style="list-style-type: none"> • CICS region user ID • PLTPIUSR

CICS TS 5.3 or earlier	CICS TS 5.4 or later
<p>The CKTI transaction runs under the authority of the transaction that initiated the CKTI instance.</p> <p>The CKTI transaction uses the authority of the transaction that initiated the CKTI instance also for starting the transaction associated with the IBM MQ application queue (IBM MQ Process name).</p>	<p>The CKTI transaction runs under the authority of the DFHQMINI MONUSERID, which is either the CICS region user ID, or the PLTPI user ID if specified.</p> <p>CKTI uses the DFHQMINI USERID, which is set to the CICS default user ID, for starting the required application transaction.</p>

The user ID changes are required to remove a security exposure where potentially unauthorized user IDs could be used.

To avoid a change in the user that is associated with the transactions that are started by the initiation queue, you must:

- Remove the INITQNAME from the MQCONN resource definition
- Create an MQMONITOR resource with the following attributes:
 - MONUSERID and USERID attributes set to the appropriate userIDs
 - QNAME to match the INITQNAME that was previously specified in the MQCONN resource definition.

If you have concerns about the default settings of MQMONITOR DFHMQINI (for example, migrating to DFHMQINI proves more complicated than anticipated), it's possible to install a user-defined MQMONITOR resource with the name of DFHMQINI. This gives you the flexibility in setting the AUTOSTART, STATUS, MONUSERID and USERID attributes to user-defined values so as to be backward compatible, thus making migration easier. The TRANSACTION attribute must be CKTI.

All versions Review the system dump data set size

CICS supports dumping of multiple address spaces and data spaces on the **SET SYSDUMPCODE** command. Certain system dump codes, such as LG0772 and SO0113, are added to the CICS system dump code table during CICS initialization by the user replaceable module DFHSYDMP if the PLTPI SIT parameter has a value other than NO. More dump codes might be added to the table in the future.

As a result, more data might be dumped during a system dump. Therefore, increase the system dump data set size to ensure that sufficient storage is allocated to contain dumped data.

All versions Review whether the prerequisite PTF is installed on your z/OS for IBM Health Checker for z/OS

You can check your CICS configuration with IBM Health Checker for z/OS. CICS TS supports health checker rules that define best practices for CICS system configuration. This capability requires that the following PTF is installed on your z/OS operating system:

- For z/OS V2.1: UA91584
- For z/OS V2.2: UA91583

All versions Migrate from CICS HTTP server plug-in to CICS Web Support

The IBM HTTP server on z/OS has changed and is now based on Apache technology. As a result of this change, the CICS HTTP server plug-in capability no longer works and has been withdrawn. If you are using the CICS HTTP server plug-in, you must migrate that workload to using the CICS Web Support.

To migrate the Service definitions from the `http.conf` file, perform the following steps:

1. Define a TCPIP SERVICE with PROTOCOL(HTTP) and a PORTNUMBER that has been allocated for CICS to use. If CICS can receive large HTTP requests (greater than 32K), you will have to set a suitable value for MAXDATALEN. You can use the default values for all other attributes. Install the TCPIP SERVICE in

the CICS region (or the set of cloned regions) that will process the HTTP requests that come through the HTTP server.

2. Create a set of URIMAP definitions to match all of the CICS related Service directives in the `httpd.conf` file. For example, the Service directives that are listed in [Figure 1 on page 33](#) are represented by the set of URIMAPs in [Figure 2 on page 33](#).

```
Service /app1/* dfhwbapi.so:DFHService/applid/CICS/APP1/APP1PROG
Service /app2/* dfhwbapi.so:DFHService/applid/CICS/APP2/APP2PROG
Service /app3/* dfhwbapi.so:DFHService/applid/APP3CONV/APP3/APP3PROG
```

Figure 1. Service directives

```
URIMAP(APP1) USAGE(SERVER) SCHEME(HTTP) HOST(*) PATH(/app1/*) TRANSACTION(APP1)
PROGRAM(APP1PROG)
URIMAP(APP2) USAGE(SERVER) SCHEME(HTTP) HOST(*) PATH(/app2/*) TRANSACTION(APP2)
PROGRAM(APP2PROG)
URIMAP(APP3) USAGE(SERVER) SCHEME(HTTP) HOST(*) PATH(/app3/*) TRANSACTION(APP3)
PROGRAM(APP3PROG) CONVERTER(APP3CONV)
```

Figure 2. URIMAPs representing Service directives listed in the preceding figure

3. Update the `httpd.conf` file and change the Service directives to be ProxyPass directives. For example, the Service directives that are listed in [Figure 1 on page 33](#) are represented by the following set of ProxyPass directives:

```
ProxyPass "/app1/" "http://cicshostname:cicsport/app1/"
ProxyPass "/app2/" "http://cicshostname:cicsport/app2/"
ProxyPass "/app3/" "http://cicshostname:cicsport/app3/"
```

Note: The **applid** is no longer used to route requests to the required CICS region. If requests need to be handled by specific regions, each region will need its own TCPIP SERVICE and PORTNUMBER, and the ProxyPass rule must use the **cicsport** that matches the required backend CICS region.

All versions Migrate system events to CICS policy system rules

Support for system events is deprecated and may be removed in a future release of CICS TS. While system events can still be defined and installed in CICS TS, you are recommended to migrate to policy system rules. Support for application events is unaffected and remains strategic.

Policy system rules provide functional equivalence and map one to one to the system events supported in CICS TS 5.3, but with much simpler configuration, and they support four possible actions:

- Issue a CICS message
- Emit a CICS event
- Reject **EXEC CICS** request
- Set z/OS WLM health open status (which requires CICS TS 5.6 or later)

A CICS message may be sufficient for your needs and system rules with this action are simple to adopt, avoiding the complexity that comes with supporting an event consumer. The CICS message could also be used with your existing automation products to trigger further automated actions. However, if you wish to perform further analysis on the ‘event’ using tools such as IBM Decision Manager or IBM Operational Decision Manager, or if you wish to start a CICS task to perform some automated action, then the event action will be required. For the event action, you can define items of static data to be emitted with any policy event and specify user-defined names for the policy events.

For more information about policy system rules, see [Policy system rules](#).

You can use CICS Explorer to define policy rules. For more information, see [CICS Explorer product documentation](#).

All versions Check DSA storage requirements

To allow some programs to run in storage that is not protected from instruction execution, there are new DSAs and some subpools have moved (see [Changes to storage](#) and [Instruction execution protection](#)). The new DSAs are used even if instruction execution protection is not available or is not requested and the distribution of storage is changed, even if instruction execution protection is not active. Be aware of the following and review your environment accordingly:

- Depending on the attributes of the program, CICS loads the program into one of the four new DSAs or into the RDSA or ERDSA. Where storage might have been allocated from the CSDA or ESDA, it can now be allocated from the PCDSA or EPCDSA. Where storage might have been allocated from the SDSA or ESDSA, it can now be allocated from the PUDSA or EPUDSA. See [CICS dynamic storage areas \(DSAs\)](#) for information about the settings that determine in which DSA a program runs.
- The ETDSA is removed and any storage that was allocated from this DSA is now allocated from the ECDSA.
- Although IEP does not increase the amount of storage used within a CICS region, the changed distribution of storage within the CICS DSAs makes it likely that more DSA storage is required. If the CICS region is close to its DSA limits and these limits cannot be increased, it is advisable to run load tests on the region before switching any production regions to CICS TS 6.1.
- When programs that are loaded into the CDSA and SDSA are deleted, this frees up space in these DSAs. This is not the case when programs are deleted from the PCDSA and PUDSA. A new DSA extent must be freed before any storage from the PCDSA and PUDSA can be reallocated to another DSA.

5.5 Migrate group-level feature toggle configuration files

From CICS TS 5.6, the group-level feature toggle configuration files have been deprecated. Their use will be removed in a future release of CICS TS. No messages will refer to the group-level feature toggles unless they are specified.

You should migrate to using the common configuration files or the region-specific configuration files. For instructions, see [Specifying feature toggles](#).

CSD compatibility between different CICS releases

You can share the CICS system definition data set (CSD) between different CICS releases by using the appropriate compatibility groups. This section shows the compatibility groups that are required when you migrate from one release to another.

Most releases of CICS change the CICS-supplied groups of resource definitions that are included in the DFHLIST group list. The old versions of the CICS resource definitions are retained in compatibility groups. If you share the CSD between different CICS releases, these compatibility groups are needed to support earlier releases.

After you upgrade a CSD, if you plan to share the CSD with earlier releases of CICS, include the appropriate DFHCOMPx compatibility groups in your startup group list. [Table 4 on page 34](#) shows you which DFHCOMPx groups to include for each earlier release.

Do not attempt to share a CSD with a CICS region that is running at a higher release level than the CSD.

You must install the compatibility groups in the correct order, as shown in the table. For example, to run a CICS TS 5.2 region with a CSD that is upgraded to CICS TS 5.5, add the DFHCOMPPI compatibility group, followed by the DFHCOMPH compatibility group, to the end of your group list.

	CICS TS 6.1 CSD	CICS TS 5.6 CSD	CICS TS 5.5 CSD	CICS TS 5.4 CSD	CICS TS 5.3 CSD	CICS TS 5.2 CSD
Shared with CICS TS 6.1	None	Do not share	Do not share	Do not share	Do not share	Do not share

Table 4. Required compatibility groups for earlier releases of CICS (continued)

	CICS TS 6.1 CSD	CICS TS 5.6 CSD	CICS TS 5.5 CSD	CICS TS 5.4 CSD	CICS TS 5.3 CSD	CICS TS 5.2 CSD
Shared with CICS TS 5.6	DFHCOMPJ	None	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 5.5	DFHCOMPJ	None	None	Do not share	Do not share	Do not share
Shared with CICS TS 5.4	DFHCOMPJ	None	None	None	Do not share	Do not share
Shared with CICS TS 5.3	DFHCOMPJ DFHCOMPI	DFHCOMPI	DFHCOMPI	DFHCOMPI	None	Do not share
Shared with CICS TS 5.2	DFHCOMPJ DFHCOMPI DFHCOMPH	DFHCOMPI DFHCOMPH	DFHCOMPI DFHCOMPH	DFHCOMPI DFHCOMPH	DFHCOMPH	None

Compatibility group DFHCOMPJ

Group DFHCOMPJ is required for compatibility with CICS TS 5.6, 5.5 and 5.4.

Table 5. Contents of compatibility group DFHCOMPJ

Resource type	Name
TRANSACTION	CATR
TRANSACTION	CCIN
TRANSACTION	CDBT
TRANSACTION	CIEP
TRANSACTION	CLS3
TRANSACTION	CLS4
TRANSACTION	CMPX
TRANSACTION	CPSS
TRANSACTION	CQPI
TRANSACTION	CQPO
TRANSACTION	CQRY
TRANSACTION	CRSR
TRANSACTION	CSAC
TRANSACTION	CSCY
TRANSACTION	CSPG
TRANSACTION	CSPK
TRANSACTION	CSPP
TRANSACTION	CSPS

<i>Table 5. Contents of compatibility group DFHCOMPJ (continued)</i>	
Resource type	Name
TRANSACTION	CSRK
TRANSACTION	CSRS
TRANSACTION	CSSF
TRANSACTION	CXRT

Compatibility group DFHCOMPI

Group DFHCOMPI is required for compatibility with CICS TS 5.3.

<i>Table 6. Contents of compatibility group DFHCOMPI</i>	
Resource type	Name
PROGRAM	DFHPGAPG
PROGRAM	DFHWBUN

Compatibility group DFHCOMPH

Group DFHCOMPH is required for compatibility with CICS TS 5.2.

<i>Table 7. Contents of compatibility group DFHCOMPH</i>	
Resource type	Name
PROGRAM	DFHSFP

Upgrading security

This topic summarizes the actions that relate to security when you migrate from one release of CICS to another. Any actions that are shown as optional are strongly advised because they are security enhancements. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

All information refers to RACF. If you use a different external security manager, refer to the documentation of that product. It is assumed that you have the system initialization parameter **SEC** set to YES.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instruction of each CICS configuration aspect. You can find additional upgrade actions for migrating from end-of-service releases in [“Upgrading from end-of-service releases” on page 39](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Review requirements to enable TLS 1.3	Mandatory if you plan to enable TLS 1.3
All versions	Review the impact of extensions to command and resource security checks	Mandatory
All versions	Define new Category 2 transactions to RACF	Mandatory

Your current version	Action	Mandatory or optional?
All versions	Migrate from APPC PEM	Mandatory if you want to support authentication with password phrases
5.4 5.5	Review external security settings for CMCI	Mandatory if you use the CMCI

All versions Review requirements to enable TLS 1.3

CICS introduces support for TLS 1.3 including the parameter **MAXTLSLEVEL**, removes the parameter **ENCRYPTION**, and requires ciphers to use the XML definition formats. You must review the steps that are needed to complete [migration to the TLS 1.3 feature](#).

All versions Review the impact of extensions to command and resource security checks

Command security applies if the **XCMD** system initialization parameter is specified (that is, not set to NO) for the CICS region. Resource security applies if any of the **Xnnn** SIT parameters is specified for the CICS region. Releases of CICS extend the resource types, their resource identifiers, and associated commands that are subject to command security checking and resource security checking. Check the resources and commands that are changed.

All versions Define new Category 2 transactions to RACF

Category 2 transactions are initiated by CICS users or are associated with CICS users. You must define these transactions to RACF, and authorize users or groups of users to use them. Sample CLIST DFH\$CAT2 is provided to assist with this. For a list of CICS transactions that are Category 1, see [All supplied transactions and associated security categories](#).

All versions Migrate from APPC PEM

Support for CICS Advanced Program-to-Program Communications (APPC) Password Expiration Management (PEM) is stabilized. The APPC PEM server does not support password phrases. To support authentication with password phrases when using CICS Transaction Gateway, you must migrate from APPC to IP interconnectivity (IPIC) and change your application code to use a current External Security Interface (ESI) API such as **CICS_VerifyPassword** and **CICS_ChangePassword** as described in the [CICS Transaction Gateway for Multiplatforms product documentation](#). Information about APPC PEM can be found in previous versions of CICS TS documentation, for example [APPC password expiration management](#).

[Back to top](#)

[Back to top](#)

5.4 5.5 Review external security settings for CMCI

The GraphQL API, CICS bundle deployment API, and user of MFA in the CICS Explorer require the CMCI JVM server. In 5.6 regions, this is enabled by default in regions that use the CMCI. In 5.5 regions, this is off by default. In 5.4 regions, this is enabled by APAR PI87691. If you installed and implemented the change in APAR PI87691, no action is required for 5.4.

If you disable the CMCI JVM server by using the feature toggle, no further action is required, but the GraphQL API, CICS bundle deployment API, and user of MFA in the CICS Explorer will not be available.

If you use the CMCI JVM server, you must define additional security profiles to maintain operation of the CMCI API. You can use the sample CLIST EYU\$CMCI in SEYUSAMP, which includes sample RACF profiles. For more information, see Step 11 in [Configuring a WUI region to use the CMCI JVM server](#).

Additionally, if you want to set up the CICS bundle deployment API, which allows Java developers to deploy CICS bundles by using the Gradle or Maven plug-in, you need to define additional security settings. You can use the sample CLIST EYU\$BUND to define the required RACF profiles. For more information, see Step 3 in [Configuring the CMCI JVM server for the CICS bundle deployment API](#).

Upgrading the Java environment

If you run Java applications in CICS, whether OSGi, Axis2, or Liberty, you have some changes to make when you upgrade your version of CICS. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

Before you start upgrading the Java environment, first upgrade the CICS regions, as described in [“Upgrading CICS regions”](#) on page 27.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instruction of each CICS configuration aspect. You can find additional upgrade actions for migrating from end-of-service releases in [“Upgrading from end-of-service releases”](#) on page 39.

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Check your programs for deprecated APIs	Optional, but recommended
All versions	Review your JVM profiles for new settings	Mandatory

All versions Check your programs for deprecated APIs

The following CICS JCICS APIs have been deprecated or removed:

- In Version 5.3, JCICS class library methods `Program.xctl()`, `xctl(byte[] CA)` and `xctl(Channel chan)` are removed. A Java developer switching their target platform to Version 5.3 will see an Eclipse error saying the methods do not exist, and the application will not compile. An application compiled against a target platform for a previous version of CICS will result in a Java runtime exception.
- In Version 5.2, JCICS class library methods `Program.xctl()`, `xctl(byte[] CA)`, and `xctl(Channel chan)` are deprecated. A Java developer switching their target platform to Version 5.2 will see an Eclipse warning marker saying the method is deprecated. The application will successfully compile and run.
- In Version 5.1, the CCI Connector for CICS is obsolete and is no longer available. If you have any Java applications that use this deprecated interface, you must change the application. You can use the `JCICS.Link()` method in the `Program` class instead.
- In Version 5.1, CICS applications that run in an OSGi framework can use the JCICS API to create threads that start CICS tasks on T8 TCBS. These tasks can use JCICS to access CICS services. The `CICSExecutorService` class in JCICS provides an implementation of the `Java ExecutorService` interface. Use this class instead of the `Thread.start()` method.

In addition to CICS JCICS APIs, check your programs for deprecated or removed Java APIs. For more information, see [Migrating applications to new Java versions](#).

To avoid potential problems with deprecated APIs, develop all new Java programs for the latest release of CICS using an application development environment that supports the same version of Java as the environment used by CICS. If the older environment does not use APIs that are removed in the newer

version of Java or CICS, you can still run code that was compiled with an older version of Java in the new runtime environment. For details, refer to the **Target Platform** setting when you use the IBM CICS SDK for Java.

All versions Review your JVM profiles for new settings

Settings in JVM profiles change from release-to-release so you must upgrade all your JVM profiles. A good practice is to use the sample JVM profiles that come with the latest release, and reapply any customization that you made to those JVM profiles in previous releases.

Note:

- From CICS TS 5.3, the default location of output files is relative to the directory structure `WORK_DIR/<applid>/<jvmserver>` rather than `WORK_DIR`. The default output file names, previously prefixed with `<applid>.<jvmserver>`, are no longer prefixed.
- From CICS TS 5.2, all JVM profiles located on zFS must have a `.jvmprofile` suffix.

For more information about the sample profiles, see [JVM profile validation and properties CICS](#). For a summary of the changes to the JVM profiles, see [“Changes to JVM profiles”](#) on page 133.

Upgrading from end-of-service releases

CICS TS 3.1, 3.2, 4.1, 4.2, 5.1, 5.2, 5.3, and 5.4 are withdrawn from support. When you upgrade from an end-of-service release, you should follow the same migration process as you do for upgrade from any in-service release, but there are additional migration considerations and actions that are specific to your current end-of-service release.

Upgrading from Versions 5.1, 5.2, 5.3 and 5.4

CICS TS 5.1, 5.2, 5.3 and 5.4 are withdrawn from support. This section summarizes the actions that you must take to upgrade from any of these versions if you are under extended contract.

See the lists of changes in CICS TS 5.1, 5.2, 5.3 and 5.4 here: [“Summary of changes from end-of-service releases”](#) on page 214.

Upgrade requirement	Actions
Upgrading CICSplex SM	Follow the instructions in “Upgrading CICSplex SM” on page 13 and “Upgrading CICSplex SM: additional considerations for upgrading from an end-of-service release” on page 40.
Upgrading CICS Explorer	Follow the instructions in “Upgrading CICS Explorer” on page 13.
Upgrading CICS regions	Follow the instructions in “Upgrading CICS regions” on page 27 and “Upgrading regions: additional considerations for upgrading from an end-of-service release” on page 40.
Upgrading security	Follow the instructions in “Upgrading security” on page 36 and “Upgrading security: additional considerations for upgrading from an end-of-service release” on page 42.
Upgrading the Java environment	Follow the instructions in “Upgrading the Java environment” on page 38 and “Upgrading Java: additional considerations for upgrading from an end-of-service release” on page 45.
Upgrading applications	Follow the instructions in “Upgrading applications” on page 69.
Upgrading applications, platforms, and bundles	Follow the instructions in “Upgrading applications, platforms, and bundles from CICS TS 5.1, 5.2 or 5.3” on page 45.
Upgrading connections	Follow the instructions in “Upgrading connections” on page 72.

Table 8. Upgrade considerations for Versions 5.1, 5.2, 5.3, and 5.4 (continued)

Upgrade requirement	Actions
Upgrading web services	Follow the instructions in “Upgrading web services” on page 77 and “Upgrading JSON web services: additional considerations for upgrading from an end-of-service release” on page 47 and “Upgrading SOAP web services: additional considerations for upgrading from an end-of-service release” on page 47.

Upgrading CICSplex SM: additional considerations for upgrading from an end-of-service release

In addition to the actions described in “Upgrading CICSplex SM” on page 13, you must do the following:

- 5.2 5.3 5.4 Migrate PLTPI to using CPSMCONN. (Mandatory)

Support for using PLTPI to run the CICSplex SM PLT program directly has been removed as of CICS TS 5.6. You must migrate to using the [CPSMCONN](#) system initialization parameter.

- 5.4 Upgrade the CMCI JVM server configuration. (Mandatory, unless you disable the feature)

If your WUI region is already using the CMCI JVM server, during your upgrade to a higher release of CICS TS, ensure that you give users access to authenticate with the CMCI JVM server, including the authority to use the CMCI. If you are using RACF, you must define the RACF EJBROLE profile &PROFILE_PREFIX.CMCI.CMCIUSER and give all CMCI users read access to this profile. For details, see [Configuring CMCI in a WUI region](#).

Upgrading regions: additional considerations for upgrading from an end-of-service release

In addition to the actions described in “Upgrading CICS regions” on page 27, you must do the following:

- 5.1 Migrate the DFHLRQ data set. (Mandatory)

If outstanding BTS activities for BTS processes exist in CICS, you migrate the contents of your local request queue data set, DFHLRQ. You can use a utility such as IDCAMS COPY to update the new data set with the contents of the DFHLRQ data set from your current release. You must apply this to each CICS region, as necessary.

- 5.1 5.2 5.3 Upgrade programs that process policy events. (Mandatory)

The order of the capture data items in policy events changed in CICS TS 5.4. Therefore, you must upgrade any programs that process policy events as follows:

- Recompile any program that processes CFE format policy events that are emitted by the IBM MQ Queue, TD Queue, or TS Queue EP adapters.
- Modify any program that is started by the Transaction Start EP adapter, or any custom EP adapter, to change the container names that are referenced in the source to pick up each capture data item. The following table lists the changes to the container names for each capture data item in CICS TS 5.4 and later releases:

Capture data item name	Container name in previous releases	Container name in CICS TS 5.4 onwards
policy_name	DFHEP.DATA.00001	DFHEP.DATA.00006
rule_name	DFHEP.DATA.00002	DFHEP.DATA.00007
rule_type	DFHEP.DATA.00003	DFHEP.DATA.00009
rule_category	DFHEP.DATA.00004	DFHEP.DATA.00022
rule_operator	DFHEP.DATA.00005	DFHEP.DATA.00023

Capture data item name	Container name in previous releases	Container name in CICS TS 5.4 onwards
rule_threshold	DFHEP.DATA.00006	DFHEP.DATA.00024
current_count	DFHEP.DATA.00007	DFHEP.DATA.00025
platform_name	DFHEP.DATA.00008	DFHEP.DATA.00016
application_name	DFHEP.DATA.00009	DFHEP.DATA.00017
application_version_major	DFHEP.DATA.00010	DFHEP.DATA.00018
application_version_minor	DFHEP.DATA.00011	DFHEP.DATA.00019
application_version_micro	DFHEP.DATA.00012	DFHEP.DATA.00020
operation	DFHEP.DATA.00013	DFHEP.DATA.00021
bundle_name	DFHEP.DATA.00014	DFHEP.DATA.00010
bundle_version_major	DFHEP.DATA.00015	DFHEP.DATA.00011
bundle_version_minor	DFHEP.DATA.00016	DFHEP.DATA.00012
bundle_version_micro	DFHEP.DATA.00017	DFHEP.DATA.00013
bundle_id	DFHEP.DATA.00018	DFHEP.DATA.00014
task_id	DFHEP.DATA.00019	DFHEP.DATA.00002
transaction_id	DFHEP.DATA.00020	DFHEP.DATA.00003
user_id	DFHEP.DATA.00021	DFHEP.DATA.00004
program_name	DFHEP.DATA.00022	DFHEP.DATA.00005
policy_user_tag	DFHEP.DATA.00023	DFHEP.DATA.00015
version	DFHEP.DATA.00024	DFHEP.DATA.00001
rule_group	DFHEP.DATA.00025	DFHEP.DATA.00008

For more information about the capture data items, see [Data captured for a policy event](#).

- 5.1 5.2 5.3 5.4 Make the source code of any required PLTs available to CICS at run time. (Mandatory)

CICS support for PLTs (Program List Tables) is changed in CICS TS 5.5. CICS is no longer able to process assembled PLTs. After PLTs are coded, it is not required to assemble the tables before use. Attempts to assemble a PLT will cause the DFHPLT macro to issue return code 8.

As a result of this change, you must ensure that the source code of any required PLTs are available to CICS at run time, and this includes any copy members referenced by the source. To achieve this, you can either place the source in a PARMLIB member that is part of the IPL PARMLIB concatenation, or add a DD card that specifies the PLT source location into the CICS JCL.

The source dataset should have the same attributes as that of a PARMLIB namely:

- It must be a PDS or PDSE.
- It must have a fixed block format.
- It must have a record length of 80.
- It must have a BLKSIZE which is a multiple of 80.

The DD statement should be of the form: `//DFHTABLE DD DSN=pds name ,DISP=SHR.`

Alternatively DFHTABLE can reference a concatenation of partitioned data sets.

Ensure CICS has READ access to data sets in PARMLIB or DFHTABLE concatenations.

Note that PLTs should still be coded using DFHPLT macro calls.

- 5.2 5.3 5.4 Review MAXPROCSYS and MAXPROCUSER. (Mandatory)

As of CICS TS 5.5, CICS now manages the release of USS processes from X8, X9, L8, and L9 TCBs when the TCB is released from the CICS task and returned to the relevant CICS dispatcher pool of open TCBs. The termination of removed processes is asynchronous, so such processes will continue to be counted against **MAXPROCSYS** momentarily. Review **MAXPROCSYS** and **MAXPROCUSER** to ensure that the LPAR has sufficient capacity. See [The SYS1.PARMLIB\(BPXPRMxx\) parameters](#).

- 5.1 5.2 5.3 Re-run the DFHIHFS0 job. (Optional)

As of CICS TS 5.4, in support for the feature toggle capability, the DFHIHFS0 job has been changed to create an empty `featuretoggle.properties` file in the `dfhconfig` directory. If a region at 5.4 or later is initialized without any `featuretoggle.properties` file, messages DFHPA1951I and DFHPA1959I are issued during startup. If you are upgrading from a release earlier than 5.4, you should rerun the DFHIHFS0 job to avoid these informational messages.

- 5.4 Migrate group-level feature toggle configuration files. (Recommended)

From CICS TS 5.6, the group-level feature toggle configuration files have been deprecated. Their use will be removed in a future release of CICS TS. No messages will refer to the group-level feature toggles unless they are specified.

You should migrate to using the common configuration files or the region-specific configuration files. For instructions, see [Specifying feature toggles](#).

Upgrading security: additional considerations for upgrading from an end-of-service release

In addition to the actions described in [“Upgrading security”](#) on page 36, you must do the following:

- 5.1 Review the impact of extensions to command and resource security checks. (Mandatory)

Command security applies if `CMDSEC(YES)` is specified for the CICS region. Resource security applies if `RESSEC(YES)` is specified for the CICS region. Releases of CICS extend the resource types, their resource identifiers, and associated commands that are subject to command security checking and resource security checking. Check the resources and commands that are changed.

- 5.1 Reconfigure to use SAML support in the base product. (Mandatory, if you are using SAML support)

In previous releases, support for SAML was provided by CICS TS Feature Pack for Security Extensions V1.0. From CICS TS 5.2, this function is incorporated into CICS and the feature pack is not supported.

1. Copy your STS configuration file to a new location on z/OS UNIX to use with the new CICS release.
2. Upgrade your `java.policy` file.
 - a. If you are using a user `java.policy` file, copy it to a new location on z/OS UNIX to use with the new CICS release.
 - b. Update the following rule to refer to the new CICS root directory.

```
:// All permissions granted to CICS codesource protection domain
grant codeBase "file://USSHOME/-" {
  permission java.security.AllPermission;
};
```

where `USSHOME` is the name and path of the root directory for CICS Transaction Server files on z/OS® UNIX.

3. Remove the rule that applies to the feature pack files:

```
grant codeBase "file:fp_dir-" { permission java.security.AllPermission;
};
```

where `fp_dir` is the Feature Pack installation directory.

4. Upgrade your JVM profile. Perform the following additional steps:

- a. Delete the CLASSPATH_SUFFIX line from your JVM server profile.
 - b. If you are using a user java.policy file, update the java.security.policy property to refer to the new location of this file.
5. When no CICS instances are using it, uninstall the feature pack.
- 5.1 Check security permissions on CICS bundles. (Optional, if you use bundles)

For resources that are dynamically created by CICS bundles, no additional CICS command security checks and resource security checks take place for those resource types, either when the resources are dynamically created at bundle installation time, or when you manipulate the resources by making changes to the CICS bundle. You need authority only to perform the actions on the CICS bundle, or for bundles that are installed with applications and platforms, to perform the actions on the application or platform with which the CICS bundle was deployed. However, CICS command security and resource security for the individual resource types do apply when you inquire on the dynamically created resources, or if you manipulate the dynamically- created resources directly.

If you used CICS bundles in earlier CICS releases, check the security permissions that you gave to users for those bundles. Depending on how you set up security for CICS bundles, users with authority to act on individual CICS bundles might now be able to act on new or existing resources that are dynamically created as part of the installation of a bundle. Ensure that the levels of authority for BUNDLE resources are still appropriate.

- 5.1 Adapt applications to changed ESM output from VERIFY PASSWORD. (Mandatory if you have not applied APAR PI21866)

When you issue the **EXEC CICS VERIFY PASSWORD** command, CICS enforces the revoked status of a user ID or a user's group connection. The method that CICS uses to verify the password is more efficient, but you might notice changes to the output that is produced when verification takes place. CICS attempts to verify a password by using a RACROUTE REQUEST=EXTRACT request to RACF. If the password cannot be verified by using this method, CICS uses a RACROUTE REQUEST=VERIFYX request. Before CICS Transaction Server for z/OS, Version 3 Release 1, CICS always used the RACROUTE REQUEST=VERIFYX request, which is more expensive.

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

- ESMRESP and ESMREASON codes are not supplied by RACF for the new method of verifying a password by using a RACROUTE REQUEST=EXTRACT call. These codes are produced only if CICS needs to use the RACROUTE REQUEST=VERIFYX call. Your application programs must always check the EIBRESP and EIBRESP2 values that are returned by the EXEC CICS VERIFY PASSWORD command and not rely on the ESMRESP and ESMREASON codes.
 - Message ICH70002I is not produced by the external security manager for the new method of verifying a password. The message is produced only if CICS needs to use the RACROUTE REQUEST=VERIFYX call. The SETR PASSWORD(WARN(nn)) option must also be active in RACF for the message to be produced. Your application programs must therefore not rely on receiving this message.
- 5.2 5.3 5.4 Migrate to using CICS surrogate user checking in JCL job submissions. (Optional)

Protection for JCL jobs that are submitted to the internal reader by using spool commands is provided by surrogate user checking.

Protection for JCL jobs that are submitted through the TDQ is provided by resource security on the TDQ. Additional protection is provided by surrogate user checking if the USER parameter is specified on the JOB card.

In releases earlier than CICS TS 5.5, all JCL jobs submitted from CICS run under the region user ID. This might not be desirable if the job needs to access resources owned by a different user ID. In particular, many jobs should run only under the user ID of the signed-on user. It is possible to specify a password on the JOB card for a job to run under a different user ID. This is not advised.

Migrate to using CICS surrogate user checking to secure JCL job submissions. There are two options:

- **Option 1:** Jobs still run under the region user ID, but only with authorisation.
- **Option 2:** Jobs submitted by some or all applications run under the user ID of the signed-on user.

In either case, it is necessary to have a profile for the region user ID in the JESSPOOL class to give the region user ID authority to submit jobs for the job user IDs, regardless of whether CICS surrogate user checking is active or not.

Option 1: Migrate to a configuration where jobs still run under the region user ID, but only with authorization

1. Identify application code that uses **SPOOLWRITE** and submits jobs without a USER option on the JCL.
2. Identify the group of users who are allowed to run these applications.
3. Define surrogate checks to allow only this group of users to submit JCL under the region user ID.
4. Configure the following feature toggle:

```
com.ibm.cics.spool.surrogate.check=true
```

5. Test the new configuration.

Option 2: Migrate to a configuration where jobs submitted by some or all applications run under the user ID of the signed-on user

1. Identify application code that uses **SPOOLWRITE** and submits jobs without a USER option on the JCL.
2. If some applications must submit JCL under the region user ID, add USER=&SYSUID to the JOB statement.
3. Identify the group of users who are allowed to run these applications.
4. Define surrogate checks to allow only this group of users to submit JCL under the region user ID.
5. Identify the group of users who are allowed to run the other applications that submit jobs without a USER option on the JCL. It is assumed that these will need to run under the user ID of the signed-on user, and have the authority to do so.
6. Define surrogate checks to allow the region user ID to submit jobs on behalf of these users.
7. Configure the following feature toggles:

```
com.ibm.cics.spool.surrogate.check=true
com.ibm.cics.spool.defaultjobuser=TASK
```

8. Test the new configuration.

What application changes are needed

Applications that use **WRITEQ TD** to submit jobs without a USER option do not need any application change. They need RACF definitions only if you specify JOBUSERID on the TDQ definition.

You need to define additional surrogate checks, or change an application if it specifies a USER option on the JOB card, with a user ID different from the signed-on user ID.

Learn more details in [Security for submitting a JCL job to the internal reader](#).

- 5.2 5.3 5.4 Specify the **KERBEROSUSER** SIT parameter for regions that use the Kerberos service. (Mandatory if you use Kerberos and you have not installed APAR PI85443.)

If you installed and implemented the change in APAR PI85443, no action is required.

From CICS TS 5.5, the Kerberos service must be enabled by setting the **KERBEROSUSER** SIT parameter. If **KERBEROSUSER** is not specified, the region does not support the Kerberos service. On 5.2, 5.3 and 5.4, this capability is provided with APAR PI85443.

In CICS TS 5.2, 5.3, or 5.4, if **KERBEROSUSER** is not specified, the default is to use the CICS region user ID to be associated with the Kerberos service principal. Therefore, when you upgrade a CICS region that

uses the Kerberos service to CICS TS 5.5 or higher, you must specify the **KERBEROSUSER** SIT parameter for the region to identify a user ID that is associated with the Kerberos service principal.

Upgrading Java: additional considerations for upgrading from an end-of-service release

In addition to the actions described in “Upgrading the Java environment” on page 38, you must do the following:

- 5.1 If you use the CICS Liberty security feature, check whether you need to start the Liberty angel process. (Mandatory)
- 5.1 Import classes from JCICS API or Filibusterer (Mandatory)

The JCICS API packaging is changed; the `dfjcics.jar` and `dfjoutput.jar` files are replaced by a set of OSGi bundles that run in a JVM server. If you use classes from the JCICS API or the `IByteBuffer` class, you must import the relevant package into your OSGi bundle manifest when you package a Java application as an OSGi bundle. 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 <code>System.out</code> and <code>System.err</code> . 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 <code>IByteBuffer</code> from the Java Record Framework that came with VisualAge®. Previously in the <code>dfjcics.jar</code> file.

- 5.1 If you use the CICS Liberty security feature and do not use autoconfigure, define your own SAF registry. (Mandatory)

The Liberty profile server uses a user registry to authenticate a user and retrieve information about users and groups to perform security-related operations, including authentication and authorization. Unless you are using the new distributed identity feature, you must define the System Authorization Facility (SAF) registry as follows:

```
<safRegistry id="saf"/>
```

If you are using autoconfigure, this is defined for you.

- 5.2 If you use the `_EDC` option to set the `UMASK` that applies when `JVMSERVER` files are created, migrate to using the `_DFH_UMASK` option in the JVM profile. (Mandatory)

If at CICS TS 5.2 you use the `_EDC` option to set the UNIX System Services process `UMASK` that applies when `JVMSERVER` files are created, you must remove it and code a `_DFH_UMASK` option in the JVM profile when you migrate to CICS TS 5.3 or higher.

Upgrading applications, platforms, and bundles from CICS TS 5.1, 5.2 or 5.3

You must do the following:

- 5.1 Declare application entry points for PROGRAM and LIBRARY resources. (Mandatory)

From CICS TS 5.2, applications that are deployed on platforms must declare application entry points for all the resources, such as PROGRAM or LIBRARY resources, that are access points to the application. Application entry points control users' access to different versions of an application that is deployed on a platform. An application that defines a PROGRAM or LIBRARY resource cannot be made available to

callers in regions later than CICS TS 5.2 regions unless it declares an application entry point for that resource.

Application entry points only control users' access to the resources that are specified in the application entry points. If an application includes any public resources that are not named as application entry points, when the application is installed and enabled, these resources can be accessed by other applications that are installed on the platform or in the CICS region, regardless of the availability status of the application. Private resources for an application version cannot be accessed by other applications.

For information about declaring application entry points, see [Defining application entry points in the CICS Explorer product documentation](#).

- 5.1 Make applications and CICS bundles available. (Mandatory)

From CICS TS 5.2, for applications that are deployed on platforms, you can install and verify the installation of an application version before you make the application version available to users of the platform. As a consequence, you must take an additional step to make available the applications that are deployed on platforms in CICS regions from CICS TS 5.2. After you install and enable the application, perform the **Make Available** action in the CICS Explorer to make the application available to users. You can make an installed application version available or unavailable in the Cloud Explorer view, or in the application descriptor editor for installed applications.

From CICS TS 5.2, stand-alone CICS bundles that contain application entry points must also be made available. After you install and enable the CICS bundle, you set the CICS bundle to available. To do this, perform the **Make Available** action in the CICS Explorer, or use the AVAILSTATUS option on the **EXEC CICS SET BUNDLE** command. CICS bundles that are deployed with platform bundles, or added to a platform, do not require the **Make Available** and **Make Unavailable** actions because these actions are performed on the application entry points for applications.

Before you disable or discard an application that is deployed on a platform in CICS regions from CICS TS 5.2, you must perform the **Make Unavailable** action in the CICS Explorer. Before you disable or discard a stand-alone CICS bundle that contains application entry points, you must perform the **Make Unavailable** action in the CICS Explorer, or use the AVAILSTATUS option on the **EXEC CICS SET BUNDLE** command to set the status of the CICS bundle to UNAVAILABLE.

- 5.1 Ensure that operation names are unique. (Mandatory)

Each application entry point names an operation. For example, you can declare application entry points for create, read, update, or delete operations in the application. In CICS regions from CICS TS 5.2, an operation name must now be unique within an application. An application cannot be made available to callers in regions later than CICS TS 5.2 if it contains duplicate operation names. Operation names are case-sensitive, so you can use operation names that are differentiated only by case, such as "browse" and "Browse".

- 5.2 If your application has URIMAP resource and URIMAP entry point in different CICS bundles, review the change in availability. (Optional)

If you have applications where the URIMAP resource and URIMAP entry point are in different CICS bundles in the application, you might want to take action to control the availability of the URIMAP resource.

In CICS TS 5.2, the availability of the application does not restrict the work that comes in through the enabled URIMAP resource. So, you can apply or remove the application context by making the application available and unavailable, without affecting the work that runs through the URIMAP. In CICS TS 5.3, the URIMAP resource adheres to the application availability. So, work stops coming through the URIMAP resource when the application is made unavailable.

This behavior is appropriate for most situations. However, if you want to preserve the CICS TS 5.2 behavior of the URIMAP resource that is defined as an entry point (that is, it does not change its availability in line with the availability of the application), then define the URIMAP resource outside the CICS application.

Upgrading JSON web services: additional considerations for upgrading from an end-of-service release

In addition to the actions described in [“Upgrading JSON web services”](#) on page 77, you must do the following:

- 5.1 Change the JCL that calls the JSON assistant. (Mandatory)

In previous releases, the JSON assistant batch jobs DFHJS2LS and DFHLS2JS were provided as part of CICS TS Feature Pack for Mobile Extensions. These functions are now incorporated into CICS TS, so you must change any JCL that calls the assistant.

1. Change the JCL procedure library where DFHJS2LS or DFHLS2JS are located. From CICS TS 5.2, these batch jobs are in the HLQ.XDFHINST library.
2. Review the values of the symbolic parameters **JAVADIR**, **PATHPREF**, and **USSDIR**. From CICS TS 5.2, you might not need to specify them at all because the DFHJS2LS and DFHLS2JS procedures are customized by DFHISTAR. For more information about these parameters, see [DFHJS2LS: JSON schema to high-level language conversion for request-response services](#) and [DFHLS2JS: High-level language to JSON schema conversion for request-response services](#).

- 5.3 Use the **EXEC CICS TRANSFORM** command to parse and generate JSON. (Optional)

Consider using the **EXEC CICS TRANSFORM** command to parse and generate JSON, rather than linking to DFHJSON. The **EXEC CICS TRANSFORM** command is extended to transform both XML and JSON data, removing the requirement to link to a separate program to provide this capability, or to configure a JVM server for JSON transformation. For more information about the command, see [Transforming JSON to application data by using the TRANSFORM JSOINTODATA API command](#).

Upgrading SOAP web services: additional considerations for upgrading from an end-of-service release

In addition to the actions described in [“Upgrading SOAP web services”](#) on page 77, you must do the following:

- 5.1 Package WEBSERVICE resources in CICS bundles. (Optional)

WEBSERVICE resources can now be defined and packaged in CICS bundles. The resource is dynamically installed in the CICS region when you install the BUNDLE resource. You can import a web service binding file and a WSDL document or WSDL archive file to be packaged with the resource definition, and for a service provider you can include a PROGRAM definition in the bundle. You can also use an existing WEBSERVICE definition in a CICS bundle to generate related URIMAP resources and alias transactions. For more information, see [Characteristics of resources in CICS bundles](#).

Upgrading from CICS TS Version 4

CICS TS Version 4.1 and Version 4.2 are withdrawn from support. This section summarizes the actions that you must take to upgrade from this version if you are under extended contract.

See the lists of changes in CICS TS 4.1 and 4.2 here: [“Summary of changes from end-of-service releases”](#) on page 214.

Upgrade requirement	Actions
Upgrading CICSplex SM	Follow the instructions in “Upgrading CICSplex SM” on page 13.
Upgrading CICS Explorer	Follow the instructions in “Upgrading CICS Explorer” on page 13.
Upgrading CICS regions	Follow the instructions in “Upgrading CICS regions” on page 27 and Upgrading regions: Additional considerations for upgrading from CICS TS Version 4

Table 9. Upgrade considerations for Version 4 (continued)

Upgrade requirement	Actions
Upgrading security	Follow the instructions in “Upgrading security” on page 36 and Upgrading security: Additional considerations for upgrading from CICS TS Version 4 .
Upgrading file control	Follow the instructions in “Upgrading file control from CICS TS Version 4” on page 50.
Upgrading the Java environment	Follow the instructions in “Upgrading the Java environment” on page 38 and Upgrading Java: Additional considerations for upgrading from CICS TS Version 4 .
Upgrading applications	Follow the instructions in “Upgrading applications” on page 69.
Upgrading connections	Follow the instructions in “Upgrading connections” on page 72 and additional considerations for upgrading from CICS TS Version 4: <ul style="list-style-type: none"> • For IPIC connections • For IBM MQ
Upgrading web services	Follow the instructions in “Upgrading web services” on page 77 and additional considerations for upgrading from CICS TS Version 4: <ul style="list-style-type: none"> • For JSON web services • For SOAP web services

4.1 4.2 Upgrading regions: Additional considerations for upgrading from CICS TS Version 4

In addition to the actions described in [“Upgrading CICS regions”](#) on page 27, you must do the following:

- APF-authorize the CICS activation modules:

CICS TS V5 introduced activation modules for each edition: base, Developer Trial, and Value Unit Edition. At the start of upgrading your regions, you must:

- AFP-authorize the SDFHLIC or SDFHVUE library.
- Add the SDFHLIC or SDFHVUE library in the STEPLIB of the CICS TS JCL.
- If you use coupling facility data table servers, temporary storage servers, region status servers, or named counter-servers, also add the SDFHLIC or SDFHVUE library to the STEPLIB of the JCL for each of the servers.

- Migrate the DFHLRQ data set:

If outstanding BTS activities for BTS processes exist in CICS, you migrate the contents of your local request queue data set, DFHLRQ. You can use a utility such as IDCAMS COPY to update the new data set with the contents of the DFHLRQ data set from your current release. You must apply this to each CICS region, as necessary.

4.1 4.2 Upgrading security: Additional considerations for upgrading from CICS TS Version 4

In addition to the actions described in [“Upgrading security”](#) on page 36, you must do the following:

4.2 Reconfigure to use SAML support in the base product.

In previous releases, support for SAML was provided by CICS TS Feature Pack for Security Extensions V1.0. From CICS TS 5.2, this function is incorporated into CICS and the feature pack is not supported.

1. Copy your STS configuration file to a new location on z/OS UNIX to use with the new CICS release.

2. Upgrade your `java.policy` file.

- a. If you are using a user `java.policy` file, copy it to a new location on z/OS UNIX to use with the new CICS release.
- b. Update the following rule to refer to the new CICS root directory.

```
:// All permissions granted to CICS codesource protection domain
grant codeBase "file://USSHOME/" {
  permission java.security.AllPermission;
};
```

where *USSHOME* is the name and path of the root directory for CICS Transaction Server files on z/OS UNIX.

3. Remove the rule that applies to the feature pack files:

```
grant codeBase "file:fp_dir-" { permission java.security.AllPermission;
};
```

where *fp_dir* is the Feature Pack installation directory.

4. Upgrade your JVM profile. Perform the following additional steps:

- a. Delete the `CLASSPATH_SUFFIX` line from your JVM server profile.
- b. If you are using a user `java.policy` file, update the `java.security.policy` property to refer to the new location of this file.

5. When no CICS instances are using it, uninstall the feature pack.

4.2 Review the impact of extensions to command and resource security checks.

Command security applies if `CMDSEC(YES)` is specified for the CICS region. Resource security applies if `RESSEC(YES)` is specified for the CICS region. Releases of CICS extend the resource types, their resource identifiers, and associated commands that are subject to command security checking and resource security checking. Check the resources and commands that are changed.

4.1 4.2 Check security permissions on CICS bundles:

For resources that are dynamically created by CICS bundles, no additional CICS command security checks and resource security checks take place for those resource types, either when the resources are dynamically created at bundle installation time, or when you manipulate the resources by making changes to the CICS bundle. You need authority only to perform the actions on the CICS bundle, or for bundles that are installed with applications and platforms, to perform the actions on the application or platform with which the CICS bundle was deployed. However, CICS command security and resource security for the individual resource types do apply when you inquire on the dynamically created resources, or if you manipulate the dynamically- created resources directly.

If you used CICS bundles in earlier CICS releases, check the security permissions that you gave to users for those bundles. Depending on how you set up security for CICS bundles, users with authority to act on individual CICS bundles might now be able to act on new or existing resources that are dynamically created as part of the installation of a bundle. Ensure that the levels of authority for `BUNDLE` resources are still appropriate.

4.1 4.2 Adapt applications to changed ESM output from **VERIFY PASSWORD**:

This action applies to CICS TS Version 4.1 and to Version 4.2 only if you have not applied APAR PI21865.

When you issue the **EXEC CICS VERIFY PASSWORD** command, CICS enforces the revoked status of a user ID or a user's group connection. The method that CICS uses to verify the password is more efficient, but you might notice changes to the output that is produced when verification takes place. CICS attempts to verify a password by using a `RACROUTE REQUEST=EXTRACT` request to RACF. If the password cannot be verified by using this method, CICS uses a `RACROUTE REQUEST=VERIFYX` request. Before CICS Transaction Server for z/OS, Version 3 Release 1, CICS always used the `RACROUTE REQUEST=VERIFYX` request, which is more expensive.

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

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

Upgrading file control from CICS TS Version 4

- 4.1 4.2 Change file and transaction resource definitions:

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.

- 4.1 Adapt to changes in LSR pool settings:

Before CICS TS for z/OS, Version 4.2, you specified the number of the LSR (local shared resource) pool in FILE and LSRPOOL resource definitions by using the LSRPOOLID attribute, which has values in the range 1 - 8. From CICS TS for z/OS, Version 4.2, the value that is 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.

If you share a CSD

Releases up to Version 4.2 only recognize LSRPOOLID, so, if you share a CSD with earlier releases of CICS, use the compatibility mode in CEDA and DFHCSDUP to set a value for LSRPOOLID. If you specify a value for LSRPOOLNUM, it is used only in this release.

If you use BAS to install a file or LSR pool definition

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.

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 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.

4.1 4.2 Upgrading Java: Additional considerations for upgrading from CICS TS Version 4

In addition to the actions described in [“Upgrading the Java environment”](#) on page 38, you must do the following:

- Upgrade the IBM SDK for z/OS :

CICS runs Java applications that use the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 8. CICS supports only the 64-bit version of the SDK and not the 31-bit version. If you are using an earlier version, such as Java Version 1.4.2, Version 5, or Version 6, or any 31-bit version, you must replace this version with a supported version.

Download and install the IBM 64-bit SDK for z/OS, Java Technology Edition, Version 8 from [Java Standard Edition Products on z/OS](#), then make the necessary changes in your CICS environment. If you encounter problems see [Troubleshooting Java applications](#).

1. Check that any Java programs that use the Java Native Interface (JNI), including vendor products, can run with the 64-bit version of the SDK.
2. Ensure that your applications are threadsafe, and repackage your JARs as OSGi bundles. Deploy the OSGi bundles within a CICS bundle to zFS, making sure that you specify the correct target JVMSERVER resource. For more information see [JVM server runtime environment](#).

- If you have not already migrated to OSGi, change your Java applications to run in a JVM server:

Because pooled JVMs are not supported, you must migrate your existing Java applications to run in a JVM server. The JVM server is a multithreaded environment that uses an OSGi framework, so you must ensure that your applications are threadsafe and comply with the OSGi specification. You can use the IBM CICS SDK for Java to repackage the applications as OSGi bundles and deploy them to run in a JVM server.

There are three possible ways to repackage a Java application as one or more OSGi bundles. Each option is explained in full detail in the SDK help, and is summarized in the following procedure.

1. Check that the Java application is threadsafe. The IBM [developerWorks Java development](#) website has useful information about Java:
2. Check that the Java application does not use the `System.exit()` Java method. If this method is used, the JVM server will be disabled and restarted,
3. Package the Java application as one or more OSGi bundles by either conversion, injection or wrapping, ready for running in the JVM server environment.

Conversion

If you already have an Eclipse Java project for the Java application, you can convert the project to an OSGi plug-in project. This method is the preferred best practice.

Injection

Create an OSGi plug-in project and import the contents of the existing JAR file. This method is useful when the application is already threadsafe and no refactoring or recompiling is required.

Wrapping

Create an OSGi plug-in project and import an existing binary JAR file. This method is useful in situations where there are licensing restrictions or where the binary file cannot be extracted.

4. Add the CICS-MainClass declaration to the project manifest. Right-click the project name and select **PDE Tools > Open Manifest**. You must add a CICS-MainClass declaration for each class that is used in your application.

The following example is the manifest file from the CICS Hello Examples project. The sample contains two classes, `HelloCICSWorld` and `HelloWorld`, which are both declared in the manifest file in the CICS-MainClass declaration. You must add a CICS-MainClass declaration for each class that is used in your application.

5. Deploy the OSGi bundle in a CICS bundle to the zFS file system. Specify the target JVMSERVER resource in the plug-in resource file of the CICS bundle.

- Check whether applications that run in a JVM server depend on IBM or vendor classes in the supplied JRE:

If you are running Java applications in a JVM server, check whether the applications use IBM or vendor classes that are available in the JRE. The OSGi framework has stricter rules for loading classes from the JRE, and you might need to change your applications to run them in a JVM server in this release.

You do not need to do this for the CICS Java classes, as the JCICS classes are automatically made available in the OSGi framework.

Any package that is prefixed with `java` is loaded by the OSGi framework as required by the application. If an application uses an IBM or vendor package that is supplied with the JRE, such as `org.xml.sax`, you can follow the procedure outlined below to make these classes available. If you do not change the application, transactions abend with an AJ05 code and `java.lang.ClassNotFoundException` errors are written to the JVM server error log and CICS system log.

1. Change the application to add an import for the exported package in the appropriate OSGi bundle manifest. Each OSGi bundle that requires a class from an IBM or vendor package must declare the package in the manifest.
2. If you still receive the `java.lang.ClassNotFoundException` exception for the vendor or JRE package, then you must extend the JVM property `org.osgi.framework.system.packages.extra` to contain your required package, for example:

```
-Dorg.osgi.framework.system.packages.extra=org.xml.sax,org.xml.sax.helpers
```

3. Restart the JVM server to pick up the properties change.
4. Deploy the updated application bundle to CICS.

Note:

From Version 5.3 the preferred way to declare your applications use of JRE packages is to use the **system packages extra** property with an explicit `Import` statement in the manifest of the application, in favor of adding packages to `bootdelegation`.

These packages were previously available without an import statement:

- `org.ietf.jgss`
- `org.omg.*`
- `org.w3c.*`
- `org.xml.*`

- Check that **MEMLIMIT** allows sufficient storage for 64-bit JVMs:

Set the value for the z/OS **MEMLIMIT** parameter equal to or greater than 6 GB. The default value in z/OS for **MEMLIMIT** is 2 GB.

CICS requires a **MEMLIMIT** value of 10 GB; any additional use by applications or JVMs should be allowed for with a larger value of **MEMLIMIT**. If you attempt to start a CICS region with a **MEMLIMIT** value that is less than 10 GB, message DFHSM0602 is issued, a system dump with the dump code **KERNDUMP** is produced, and CICS terminates.

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

- Change applications that use EJBs or stateless CORBA objects:

CICS support for enterprise beans (Enterprise JavaBeans, or EJBs) and CICS support for the CORBA architecture (using stateless CORBA objects) are no longer provided in CICS Transaction Server. If you are running enterprise beans or stateless CORBA object applications in CICS in the pooled JVM environment, you must migrate your applications to run in the JVM server environment, and you must use standard functions of the IBM 64-bit SDK for z/OS, Java Technology Edition for intercommunication between components.

4.1 4.2 Upgrading IPIC connections: Additional considerations for upgrading from CICS TS Version 4

In addition to the actions described in [“Upgrading IPIC”](#) on page 72, you must do the following:

- Upgrade CSD to pick up changes to IPIC service definitions:

In CICS Transaction Server for z/OS, Version 5 Release 1, the IPIC service transactions were redefined to run in CICS key. You must upgrade the CSD to the latest level of resource definitions, supplied with your release, to pick up the changes to the IPIC service task resource definitions. See [“All versions Upgrade the CSD”](#) on page 28.

4.1 4.2 Upgrading connections to IBM MQ: Additional considerations for upgrading from CICS TS Version 4

In addition to the actions described in [“Upgrading connections with IBM MQ”](#) on page 75, you must do the following:

- Exploit new WebSphere® MQ Version 7 API calls:

New or changed CICS applications that use the new API calls in WebSphere MQ Version 7 must be link-edited with the WebSphere MQ API stub modules that are shipped with CICS .

The new API calls are MQBUFMH, MQCB, MQCTL, MQCRTMH, MQDLTMH, MQDLTMP, MQINQMP, MQMHBUF, MQSETMP, MQSTAT, MQSUB, and MQSUBRQ. These Version 7 API calls are only supported in CICS when you use the stubs shipped with CICS , not the stubs shipped with WebSphere MQ. New and existing CICS applications that do not use the Version 7 API calls can use the stubs shipped with CICS or WebSphere MQ.

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

- Replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources:

To complement the existing MQCONN resource, CICS TS 5.4 introduced the [MQMONITOR](#) resource definition and new EXEC CICS and CEMT commands for the CICS-WebSphere MQ monitor.

Before CICS TS 5.4, you cannot start more than one instance of CKTI against the same initiation queue from a single CICS subsystem. When the IBM MQ connection is disconnected and then reconnected, CKTI has to be manually restarted. The new MQMONITOR resource provides a better mechanism for managing instances of CKTI transactions. It is recommended that you replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources. The benefits are as follows:

- You can have more than one MQMONITOR resource monitoring an MQ initiation queue. Any number of MQMONITOR resources can be defined and installed in a CICS region.
- An MQMONITOR can be configured to start the associated transaction (for example, CKTI) automatically when the MQ connection is established. Using the MQMONITOR resource removes the need to use the CKQC transaction to start and stop monitors manually.
- Configuration options include the ability to specify a transaction ID to be used by the monitor, the user ID under which a monitor task runs, and the user ID to be used by the monitor to start the application tasks if an alternative user ID is not provided by the application. These options allow better security controls.

Follow [Setting up an MQMONITOR resource for the CICS-MQ bridge](#) to define and install an MQMONITOR for monitoring an MQ initiation queue.

You can use new **EXEC CICS** and **CEMT** commands to work with the MQMONITOR resource definition. You can also use the **SET MQMONITOR** command to start and stop a CICS-WebSphere MQ monitor, as an alternative to issuing CKQC commands.

- Replace existing mechanisms for managing instances of CKBR transactions with MQMONITOR resources:

The recommended method of controlling the CICS-WebSphere MQ bridge transaction CKBR is to use an [MQMONITOR](#) resource. Doing so allows the bridge to automatically restart when the connection to the WebSphere MQ manager is established.

Follow [this procedure](#) to set up an MQMONITOR for the CICS-WebSphere MQ bridge.

4.1 4.2 Upgrading JSON web services: Additional considerations for upgrading from CICS TS Version 4

You must do the following:

- Change the JCL that calls the JSON assistant:

In previous releases, the JSON assistant batch jobs DFHJS2LS and DFHLS2JS were provided as part of CICS TS Feature Pack for Mobile Extensions. These functions are now incorporated into CICS TS, so you must change any JCL that calls the assistant.

1. Change the JCL procedure library where DFHJS2LS or DFHLS2JS are located. From CICS TS 5.2, these batch jobs are in the HLQ.XDFHINST library.
2. Review the values of the symbolic parameters **JAVADIR**, **PATHPREF**, and **USSDIR**. From CICS TS 5.2, you might not need to specify them at all because the DFHJS2LS and DFHLS2JS procedures are customized by DFHISTAR. For more information about these parameters, see [DFHJS2LS: JSON schema to high-level language conversion for request-response services](#) and [DFHLS2JS: High-level language to JSON schema conversion for request-response services](#).

- Exploit the data mapping of COBOL OCCURS clauses:

CICS now provides data mapping to support COBOL OCCURS DEPENDING ON and OCCURS INDEXED BY clauses.

- The OCCURS DEPENDING ON clause is supported at a mapping level of 4.0 or higher. Complex OCCURS DEPENDING ON is not supported. This limitation means that OCCURS DEPENDING ON is only supported for the last field of a structure.
- The OCCURS INDEXED BY clause is supported at any mapping level.

- Enable the transformation of UTF-16 data:

CICS now provides support for transforming application data that is encoded in UTF-16 at a mapping level of 4.0 or higher.

- You can enable this behavior by using language-specific data types for UTF-16 when you use the DFHLS2JS, DFHLS2SC, or DFHLS2WS assistants.
- You can enable this behavior by setting CCSID=1200 when you use the DFHJS2LS, DFHSC2LS, or DFHWS2LS assistants.

Upgrading SOAP web services: Additional considerations for upgrading from CICS TS Version 4

You must do the following:

- 4.1 4.2 Enable SOAP message validation in a JVM server:

SOAP message validation is now performed in a JVM server. To enable SOAP message validation, you must set up a JVM server in the CICS region. JVM servers can run different workloads, and SOAP validation can run in a JVM server that is configured to support an OSGi framework or Axis2. SOAP validation cannot run in a Liberty JVM server.

The DFHPIVAL program must refer to a JVMSERVER resource. By default, the program uses the sample JVM server, DFHJVMS. To change the JVM server, edit the DFHPIVAL definition in group DFHPIVAL.

- 4.1 4.2 Package WEBSERVICE resources in CICS bundles:

WEBSERVICE resources can now be defined and packaged in CICS bundles. The resource is dynamically installed in the CICS region when you install the BUNDLE resource. You can import a web service binding file and a WSDL document or WSDL archive file to be packaged with the resource definition, and for a service provider you can include a PROGRAM definition in the bundle. You can also use an existing WEBSERVICE definition in a CICS bundle to generate related URIMAP resources and alias transactions.

- 4.1 4.2 Exploit the data mapping of COBOL OCCURS clauses:

CICS now provides data mapping to support COBOL OCCURS DEPENDING ON and OCCURS INDEXED BY clauses.

- The OCCURS DEPENDING ON clause is supported at a mapping level of 4.0 or higher. Complex OCCURS DEPENDING ON is not supported. This limitation means that OCCURS DEPENDING ON is only supported for the last field of a structure.
- The OCCURS INDEXED BY clause is supported at any mapping level.

- 4.1 4.2 Enable the transformation of UTF-16 data:

CICS now provides support for transforming application data that is encoded in UTF-16 at a mapping level of 4.0 or higher.

- You can enable this behavior by using language-specific data types for UTF-16 when you use the DFHLS2JS, DFHLS2SC, or DFHLS2WS assistants.
- You can enable this behavior by setting CCSID=1200 when you use the DFHJS2LS, DFHSC2LS, or DFHWS2LS assistants.

- 4.1 Exploit connection pooling for performance benefits:

Connection pooling can provide performance benefits where a service requester application makes multiple requests and responses. When you implement connection pooling, CICS keeps the client HTTP connection open after the application finishes making its request and receiving its response. The application can reuse the connection to make further requests and responses, rather than opening a new connection each time. Connection pooling is specified on the URIMAP resource for a client HTTP connection, so the application must specify a URIMAP resource on the INVOKE SERVICE command.

- 4.1 Exploit the additional URIMAP resource from a pipeline scan:

A pipeline scan 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.

Upgrading from CICS TS Version 3

CICS TS 3.1 and 3.2 are withdrawn from support. This section summarizes the actions that you must take to upgrade from one of these releases if you are under extended contract.

See the lists of changes in CICS TS 3.2 here: [“Summary of changes from end-of-service releases”](#) on page 214.

Upgrade requirement	Actions
Upgrading CICS Explorer	Follow the instructions in “Upgrading CICS Explorer” on page 13.
Upgrading CICSplex SM	Follow the instructions in “Upgrading CICSplex SM” on page 13 and Upgrading CICSplex SM: considerations for upgrading from CICS TS 3.1 .
Upgrading CICS regions	Follow the instructions in “Upgrading CICS regions” on page 27 and “3.1 3.2 Upgrading regions: considerations for upgrading from CICS TS Version 3” on page 57.

Table 10. Upgrade considerations for Version 3 (continued)

Upgrade requirement	Actions
Upgrading security	Follow the instructions in “Upgrading security” on page 36 and Upgrading security: considerations for upgrading from CICS TS Version 3 .
Upgrading the Java environment	Follow the instructions in “Upgrading the Java environment” on page 38
Upgrading applications	Follow the instructions in “Upgrading applications” on page 69 and Upgrading applications: considerations for upgrading from CICS TS 3.1
Upgrading connections	Follow the instructions in “Upgrading connections” on page 72 and “3.1 Upgrading MRO: considerations for upgrading from CICS TS 3.1” on page 59 and Upgrading connections to IBM MQ: considerations for upgrading from CICS TS Version 3 .
Upgrading web services	Follow the instructions in “Upgrading web services” on page 77 and Upgrading SOAP web services: considerations for upgrading from CICS TS Version 3 and Upgrading ATOM feeds from SupportPac CA8K .

3.1 Upgrading CICSplex SM: considerations for upgrading from CICS TS 3.1

In addition to the actions described in [“Upgrading CICSplex SM”](#) on page 13, you must do the following:

- Replace a CAS with a WUI:

If you still use CAS (coordinating address space), replace it with a WUI server at CICS TS 3.1. Then, when you upgrade the maintenance point CMAS, upgrade the back-level WUI to the new release.

- Delete previous CICSplex SM release definitions from CSD files:

If you are upgrading from CICS TS for z/OS, Version 3.1 or an earlier release, when you successfully upgrade all your systems to CICSplex SM Version 6.1, delete the definitions for previous versions and releases from the CSD of each CMAS and MAS.

From CICS TS for z/OS, Version 3.2 onwards, the CICS resource definitions for CICSplex SM are created dynamically, so you no longer need to delete those definitions after the upgrade.

1. Issue the DFHCSDUP UPGRADE command and specify module EYU9Rxxx, where xxx is the release number for the previous release; for example, EYU9R310 for 3.1. This module is supplied in CICSTS61.CPSM.SEYULOAD. For example:

```
//CSDUP EXEC PGM=DFHCSDUP
//STEPLIB DD DSN=cics.index.SDFHLOAD,DISP=SHR
// DD DSN=cpsm.index.SEYULOAD,DISP=SHR
//DFHCSD DD DSN=cics.dfhcsd,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
UPGRADE USING(EYU9Rxxx)
/*
```

When this JCL is run, EYU9Rxxx attempts to delete all the groups and group lists for that CICSplex SM version from the CSD. However, because not all of the items that the job attempts to delete are defined in the CSD, DFHCSDUP gives a return code of 04.

2. Use the DFHCSDUP SYSPRINT output to check the results of the deletions. The output lists the items that were deleted and the items that were not found.

3.1 3.2 Upgrading regions: considerations for upgrading from CICS TS Version 3

In addition to the actions described in [“Upgrading CICS regions”](#) on page 27, you must do the following:

- APF-authorize the CICS activation modules:
CICS TS 5.2 introduced activation modules for each edition: base, Developer Trial, and Value Unit Edition. At the start of upgrading your regions, you must:
 - AFP-authorize the SDFHLIC or SDFHVUE library.
 - Add the SDFHLIC or SDFHVUE library in the STEPLIB of the CICS TS JCL.
 - If you use coupling facility data table servers, temporary storage servers, region status servers, or named counter-servers, also add the SDFHLIC or SDFHVUE library to the STEPLIB of the JCL for each of the servers.
- Migrate the DFHLRQ data set:
If outstanding BTS activities for BTS processes exist in CICS, you migrate the contents of your local request queue data set, DFHLRQ. You can use a utility such as IDCAMS COPY to update the new data set with the contents of the DFHLRQ data set from your current release. You must apply this to each CICS region, as necessary.
- After you upgrade a CSD, if you plan to share the CSD with CICS TS 3.2, include the DFHCOMPDP compatibility group in addition to the compatibility groups listed in [“CSD compatibility between different CICS releases”](#) on page 34.

<i>Table 11. Contents of compatibility group DFHCOMPDP</i>	
Resource type	Name
TDQUEUE	CPLD CPLI
PROGRAM	DFHPIVAL DFHSJJML IXMI33DA IXMI33D1 IXMI33IN IXMI33UC IXM4C56
TRANSACTION	CJMJ

3.1 3.2 Upgrading security: considerations for upgrading from CICS TS Version 3

In addition to the actions described in [“Upgrading security”](#) on page 36, you must do the following:

- Check Db2 signon exits and resources:
If you use RACF for some or all of the security checking in your Db2 address space, the circumstances in which CICS passes the RACF access control environment element (ACEE) to Db2 have changed.
In previous releases, the ACEE was passed to Db2 only when AUTHTYPE(USERID) or AUTHTYPE(GROUP) was specified for a DB2CONN or a DB2ENTRY resource. This behavior is unchanged, but, in addition, CICS now passes the address of the ACEE to Db2 when you specify AUTHTYPE(SIGN), and the SIGNID attribute specifies the CICS region user ID. This change makes it possible for Db2 to use RACF security when you use the CICS region user ID to control access to Db2. However, you must verify that your existing resource definitions do not introduce this changed behavior unexpectedly. You must also check any Db2 signon exits to ensure that they operate as expected when the CICS region ACEE is passed to Db2.
- Review the setting on USRDELAY:

From CICS TS for z/OS, Version 4.1, CICS monitors for RACF type 71 Event Notifications (ENFs) that are sent when specific RACF commands affect the group authorization of a user. Notification of a change to the user ID overrides any setting that is specified in the USRDELAY system initialization parameter. Therefore, review your **USRDELAY** settings. For z/OS 1.13 with the PTF for APAR OA39486 applied, or later, these RACF commands are **ALTUSER** with the REVOKE option, **CONNECT**, **REMOVE**, **DELGROUP** and **DELUSER**.

This change does not apply to a user ID that is signed on to a local region (for example, a TOR that uses the CESN transaction to sign on). In this situation, CICS is not notified of an ENF 71 event code.

If you do not want CICS to monitor for RACF type 71 ENF events, you can use the RACFSYNC system initialization parameter to specify this behavior. Use this parameter only under direction from IBM Service, and only as an aid to migration.

- Adapt applications to changed ESM output from VERIFY PASSWORD:

When you issue the **EXEC CICS VERIFY PASSWORD** command, CICS enforces the revoked status of a user ID or a user's group connection. The method that CICS uses to verify the password is more efficient, but you might notice changes to the output that is produced when verification takes place. CICS attempts to verify a password by using a RACROUTE REQUEST=EXTRACT request to the external security manager. If the password cannot be verified by using this method, CICS uses a RACROUTE REQUEST=VERIFYX request. Before CICS Transaction Server for z/OS, Version 3 Release 1, CICS always used the RACROUTE REQUEST=VERIFYX request, which is more expensive.

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

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

3.1 Upgrading applications: considerations for upgrading from CICS TS 3.1

In addition to the actions described in [“Upgrading applications”](#) on page 69, you must do the following:

- Review startup JCL for unsupported language libraries:

CICS translator support for pre-Language Environment® compilers is withdrawn. Runtime support is provided for existing application programs that were developed with these compilers, except for OS/VS COBOL and OO COBOL programs, which do not have runtime support. For details of the compilers that are supported by CICS, see [Changes to CICS support for application programming languages](#).

The following JCL procedures that were supplied in earlier releases for translating, compiling, and link-editing with 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	Integrated translator	EXCI	EXCI with integrated translator
C	DFHYITDL	DFHZITDL (without XPLINK) DFHZITFL (with XPLINK)	DFHYXTDL	DFHZXTDL (without XPLINK)
C++	DFHYITEL	DFHZITEL (without XPLINK) DFHZITGL (with XPLINK)	DFHYXTEL	DFHZXTEL (without XPLINK)
COBOL	DFHYITVL	DFHZITCL	DFHYXTVL	DFHZXTCL
PL/I	DFHYITPL	DFHZITPL	DFHYXTPL	DFHZXTPL

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.

- Replace any OO COBOL applications:

You cannot use COBOL class definitions and methods (object-oriented COBOL). This restriction includes both Java classes and COBOL classes.

Modules that use 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.

- Runtime support for programs developed with pre-Language Environment compilers:

Applications that are compiled and linked with pre-Language Environment compilers usually run successfully with the runtime support that is provided by Language Environment. These applications do not usually need to be recompiled or relink-edited. If required, adjust Language Environment runtime options to allow these applications to run correctly. For more information, see the [z/OS Language Environment Runtime Application Migration Guide](#) and the migration information for the language in use. Because pre-Language Environment compilers are not Language Environment-conforming, programs that are compiled by these compilers cannot take advantage of all Language Environment facilities in a CICS region.

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 with these old compilers. However, to apply maintenance to these application programs, use one of the supported compilers that conforms to Language Environment.

Runtime libraries that are 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 that are 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.

3.1 Upgrading MRO: considerations for upgrading from CICS TS 3.1

In addition to the actions described in [“Upgrading MRO” on page 73](#), you must do the following:

- Upgrade to multiple XCF groups:

If you are not constrained by the limit of 2047 members of an XCF group, you do not need to take any action. You can continue to use the default DFHIR000 XCF group and you do not have to specify DFHIR000 explicitly on the XCFGROUP parameter of the system initialization table and DFHXCOPT EXCI table. If you are constrained, you can split your CICS regions into related XCF groups. For recommendations about how to configure XCF/MRO, see [Cross-system multiregion operation \(XCF/MRO\)](#).

From 3.2 onwards, although a CICS region can still join only one XCF group, that group does not have to be DFHIR000. Although each group is still limited to 2047 members, an absolute limit no longer applies to the number of CICS regions that a sysplex can support. The effective limit of 2047 CICS regions that a single sysplex can support is lifted.

3.1 3.2 Upgrading connections to IBM MQ: considerations for upgrading from CICS TS Version 3

In addition to the actions described in [“Upgrading connections with IBM MQ”](#) on page 75, you must do the following:

- Review availability of TCBs for CICS-WebSphere MQ connection:

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

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

CICS sets the limit for the number of TCBs in the pool of L8 and L9 mode open TCBs automatically. The limit is based on the maximum number of tasks (MXT or MAXTASKS) specified for the CICS region, using the following formula:

$$(2 * \text{MXT Value}) + 32$$

The availability of L8 TCBs within this limit is determined by the number of other CICS tasks that are using L8 or L9 TCBs, such as CICS applications that connect to Db2. A CICS task is allowed at most one L8 TCB, which the task can use for any purpose that requires an L8 TCB. For example, a task that connected to both WebSphere MQ and Db2 would use only one L8 TCB. Within the overall limit set for the TCB pool, there is no specific limit on the number of L8 TCBs that are allocated for CICS tasks that connect to WebSphere MQ queue managers; these tasks can potentially occupy all of the available L8 TCBs in the pool.

- Review use of common storage in the WebSphere MQ subsystem:

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 IBM MQ documentation](#).

- Increase the value of CTHREAD (WebSphere MQ V6 only):

If CICS is connecting to WebSphere MQ 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 6, you can change the value of CTHREAD using the WebSphere MQ SET SYSTEM command. From WebSphere MQ 7, the CTHREAD parameter cannot be adjusted in WebSphere MQ.

- Adapt to the move of CICS-WebSphere MQ components from MQ to CICS:

In CICS TS 3.2., the CICS-WebSphere MQ adapter, bridge, trigger monitor and API crossing exit moved from WebSphere MQ to CICS . You must take the following actions to use the CICS-WebSphere MQ connection components in their new location:

- If you are using WebSphere MQ 6, apply the PTF for APAR PK42616 to WebSphere MQ to police the use of the correct adapter. This PTF is not required if you are using WebSphere MQ 7.
- If you do not share your CSD with earlier releases of CICS , you can remove the existing groups CSQCAT1 and CSQCKB, which contain CSQCxxx definitions, from your CSD.
- If you do share your CSD with earlier CICS releases, ensure that CSQCAT1 and CSQCKB are not installed for CICS TS 4 or CICS TS 3.2. You must also delete the CKQQ TDQUEUE from group CSQCAT1. For CICS TS releases earlier than CICS TS 3.2, install the CSQCAT1 and CSQCKB groups as part of a group list, after installing DFHLIST. This overrides group DFHMQ and correctly installs the required definitions.
- Place the WebSphere MQ libraries after the CICS libraries in the CICS STEPLIB and DFHRPL concatenation of the CICS procedure, to ensure the correct adapter, trigger monitor and bridge code is used.
- Unlike WebSphere MQ, CICS does not support uppercase English. If you want to use uppercase English for your CICS-WebSphere MQ components, you must ensure that ASSIGN NATLANGINUSE returns E (US English), and the system initialization parameter is set to MSGCASE=UPPER . This allows the uppercase English mapset to be used.
- CICS supplies the program definition for CSQCAPX in group DFHMQ with the parameter CONCURRENCY(THREADSAFE). Specify CONCURRENCY(THREADSAFE) when you define your exit program and any programs that your exit program calls and use only threadsafe CICS commands within the exit. You should also examine any existing API crossing exits to ensure that their logic is threadsafe.
- CICS-WebSphere MQ messages are changed from the format CSQCxxx to DFHMQ0xxx. Ensure that your message retrieval applications cope with this change.
- All trace entries produced by the CICS-WebSphere MQ components now use the CICS trace domain. If you have user tracing enabled for WebSphere MQ tracing only, you can turn off user tracing, saving the overhead of application trace.
- If you want the CICS-WebSphere MQ connection to start automatically at CICS start up, add the system initialization parameter **MQCONN** to the system initialization table.

Some additional functional changes do not require any action:

- Modules are renamed to use CICS naming conventions, except for all WebSphere MQ stubs and exits. The names for these have been preserved so that existing JCL works, and you are not required to re-link-edit applications, unless you modify them to use the new API calls that were added in 7 of WebSphere MQ.
 - CSQCCOPEN, CSQCCLOS, CSQCGET, CSQCPUT1, and CSQCINQ are shipped unchanged, and are all entry points into DFHMQSTB, which is loaded from SDFHLOAD.
 - There are two new transient data queues, CMQM and CKQQ, both defined in group DFHDCTG. CMQM logs all CICS-WebSphere MQ messages issued by the CICS-WebSphere MQ adapter, trigger monitor and bridge. CKQQ logs all messages relating to CICS-WebSphere MQ connection and disconnection.
 - WebSphere MQ statistics can now be reset during the life of a CICS execution. This means that when you use the **CKQC DISPLAY** commands, you see only active CICS-WebSphere MQ threads, so numbers can go down or reduce to zero.
- Replace DFHMQPRM with MQCONN resource definition:

To support WebSphere MQ queue-sharing groups, CICS TS 4.1 introduced the MQCONN resource definition and new EXEC CICS and CEMT commands for the CICS-WebSphere MQ connection.

Before CICS TS 4.1, you used the DFHMQPRM operand of the CICS system initialization parameter INITPARM to specify a default WebSphere MQ queue manager name and initiation queue name for

the CICS-WebSphere MQ connection. (The DFHMQPRM operand was called CSQCPARM before CICS TS 3.2.) An example of this statement is as follows:

```
INITPARM=(DFHMQPRM='SN=CSQ1,IQ=CICS01.INITQ')
```

You can no longer use the INITPARM system initialization parameter to specify these defaults. If the DFHMQPRM or CSQCPARM operand is present on INITPARM, you must remove it. CICS issues a warning message if the DFHMQPRM operand is present on INITPARM when you start the CICS-WebSphere MQ connection, and defaults specified there are not applied to the CICS-WebSphere MQ connection. The INITPARM system initialization parameter itself is still valid with other operands.

You must now set up an MQCONN resource definition for the CICS region to provide defaults for the connection between CICS and WebSphere MQ. You must install the MQCONN resource definition before you start the connection. The defaults that you specify in the MQCONN resource definition apply when you use the CKQC transaction from the CICS-WebSphere MQ adapter control panels or call it from the CICS command line or a CICS application. CICS uses the defaults when you use the MQCONN system initialization parameter to specify that CICS starts a connection to WebSphere MQ automatically during initialization. This example MQCONN resource definition can replace the example INITPARM statement shown previously:

```
MQconn      : MQDEF1
Group       : MQDEFNS
DEscription ==>
Mqname      ==> CSQ1
Resyncmember ==> Yes           Yes | No
Initqname   ==> CICS01.INITQ
```

You can specify either a WebSphere MQ queue-sharing group as a default in the MQCONN resource definition, or the name of a single queue manager. To use a WebSphere MQ queue-sharing group, the CICS SVC for CICS TS 4.1 or a higher level must be active for the CICS region. When you install a new level of the CICS SVC, an IPL is required to activate it. Message DFHMQ0325 is issued if a CICS region attempts to connect to a WebSphere MQ queue-sharing group when the CICS TS 4.1 or higher level CICS SVC is not active, and a system dump is taken with the dump code DFHAP0002 and the severe error code X'A0C6'.

You can use new EXEC CICS and CEMT commands to work with the MQCONN resource definition. You can also use the SET MQCONN command to start and stop the CICS-WebSphere MQ connection, as an alternative to issuing CKQC START or STOP commands.

- Review how applications control the CICS-WebSphere MQ connection:

You can upgrade your application to specify a queue-sharing group, or use the new SET MQCONN command to control the CICS-WebSphere MQ connection instead of linking to another program. The changes are optional but, if you choose not to use SET MQCONN, you might experience new results, depending on the parameters that are used by the application:

Specifying a queue-sharing group: in the parameter list that your application passes to DFHMQQCN (or CSQCQCON), the CONNSSN parameter maps to the MQNAME attribute in the installed MQCONN definition. You can therefore now use this parameter to specify either the name of a WebSphere MQ queue-sharing group, or the name of a single WebSphere MQ queue manager.

Replacing EXEC CICS LINK to DFHMQQCN with SET MQCONN: you can start the CICS-WebSphere MQ connection from an application by issuing an **EXEC CICS LINK** command to link to program DFHMQQCN (or CSQCQCON, which is retained for compatibility) and passing a set of parameters. However, if you continue to use this method of starting the CICS-WebSphere MQ connection, you might experience some new results depending on the parameters that you use in the application. If you upgrade your application to use the new SET MQCONN command to control the CICS-WebSphere MQ connection, you can avoid these results. The results are:

CONNSSN parameter

If your application uses the CONNSSN parameter to specify the name of a WebSphere MQ queue manager for the connection, CICS connects to this queue manager as before. In addition, your setting for the MQNAME attribute in the installed MQCONN definition is replaced with the name of

the queue manager that you specified on the command. If you want to revert to the original queue manager or queue-sharing group, set MQNAME in the resource definition again.

CONNIQ parameter

If your application uses the CONNIQ parameter to specify the name of the default initiation queue for the connection, CICS uses that initiation queue name, and the INITQNAME attribute in the installed MQINI resource definition is replaced with the name of the initiation queue that you specified on the command. (MQINI is an implicit resource definition that CICS installs when you install the MQCONN resource definition.)

INITP parameter

If your application uses the INITP parameter, which specifies that the default settings are used, these default settings are now taken from the installed MQCONN resource definition, and not from the INITPARM system initialization parameter. The INITP parameter is therefore now known as MQDEF. When MQDEF is set to Y, the setting from the MQCONN resource definition applies as follows:

- If the MQCONN resource definition specifies the name of a WebSphere MQ queue manager in the MQNAME attribute, CICS connects to that queue manager.
- If the MQCONN resource definition specifies a WebSphere MQ queue-sharing group in the MQNAME attribute, CICS connects to any active member of that group. In the event of reconnection, CICS might either connect to the same queue manager or to a different queue manager, depending on the setting for the RESYNCMEMBER attribute in the MQCONN resource definition. You might need to modify your application to take this new behavior into account.

To stop the CICS-WebSphere MQ connection, you can use either **EXEC CICS SET MQCONN NOTCONNECTED** or continue to issue **EXEC CICS LINK** to program DFHMQDSC (or CSQCDSC, which is retained for compatibility). The results of this operation remain unchanged.

If you want to enable or disable the CICS-WebSphere MQ API-crossing exit while the connection is active, you must still link to the adapter reset program, DFHMQRS (or CSQCRST, which is retained for compatibility).

3.1 3.2 Upgrading SOAP web services: considerations for upgrading from CICS TS Version 3

In addition to the actions described in [“Upgrading SOAP web services”](#) on page 77, you must do the following:

- Check that your region size can accommodate the increased memory that is needed for DFHWS2LS and DFHL2WS:

The web services assistant batch jobs DFHWS2LS and DFHLS2WS require memory to create web service binding files. Since this release, the amount of memory that is required increased to allow the web services assistants to process large and complex web service descriptions.

The region size must now be at least 300 MB, although some documents might require 400 MB. Either increase the region size, or set the region size to 0M.

If you redeploy your existing web services in a CICS TS 6.1 region, the regenerated web service binding files are slightly larger.

- Enable MTOM/XOP support in a pipeline:

MTOM/XOP support is provided as an optional set of elements in the pipeline configuration file. There are some considerations before you enable a pipeline to take advantage of the MTOM/XOP support:

- If you use your own application handler instead of the default that is provided by CICS web services support, the pipeline processes MTOM messages in compatibility mode. If you want the pipeline to process MTOM messages in direct mode, specify DFHPITP as the application handler in your pipeline configuration file.

- If you use the default CICS web services application handler, the pipeline processes MTOM messages in direct mode. Ensure that your message handlers can still run successfully when they process containers that hold XOP documents and binary attachments.
- Configure the attribute `send_mtom="yes"` in a provider pipeline configuration file only when you are sure that all of your web service requesters can receive MTOM messages. The default value is `send_mtom="same"`, so that MTOM messages are only sent when an MTOM message is received.
- Consider using zAAP:

The performance of XML parsing in CICS improved with the introduction of the IBM z/OS XML System Services (XMLSS) parser, which can be accessed directly from CICS. The XMLSS parser uses above-the-bar storage, so there is more below-the-bar storage available for user programs. The XMLSS parser also allows XML parsing to be offloaded to an IBM z Systems® Application Assist Processor (zAAP). The zAAP-eligible proportion of the infrastructure for a web service is small, but if zAAP capacity is available, then using this capacity can reduce the cost of hosting web services in CICS.

For more information on zAAP, see the IBM Redbooks® publication [IBM Redbooks: zSeries Application Assist Processor \(zAAP\) Implementation](#).

- Check that SOAP messages are well-formed:

Improvements in the XML parsing of SOAP messages mean that CICS rejects some malformed SOAP messages that were tolerated in previous releases.

For more information on XML parsing in z/OS, see [z/OS XML System Services User's Guide and Reference](#).

- Adapt to the changed namespace prefix of WS-Addressing elements:

Web Services Atomic Transactions (WS-AT) use Web Services Addressing (WS-Addressing) elements in their SOAP headers. The default namespace prefix for these WS-Addressing elements that are changed from `wsa` to `cicswsa`.

3.1 3.2 Upgrading ATOM feeds from SupportPac CA8K

If you set up Atom feeds with the CA8K SupportPac in CICS TS for z/OS, Version 3.1 or CICS TS for z/OS, Version 3.2, you can use them unchanged in this release, or you can upgrade them to use the support for Atom feeds that is included in CICS TS.

CICS TS for z/OS, Version 6.1 supports Atom feeds that were set up with the CA8K SupportPac. If you do not want to upgrade your Atom feed yet, you must retain all the resources unchanged, and continue to use the PIPELINE resource support instead of the new ATOMSERVICE resource.

When you upgrade Atom feeds from the CA8K SupportPac, you can continue to use your service routines after some modifications. However, you must replace most of the supporting resources, such as pipeline configuration files, with their CICS TS for z/OS, Version 6.1 replacements, such as Atom configuration files. You can use the CICS Explorer to set up the resources that you need for an Atom feed in this release.

[Table 1](#) summarizes the resources that are used for an Atom feed with the CA8K SupportPac, and how they are reused or replaced in CICS TS support for Atom feeds.

<i>Table 12. Reusing CA8K SupportPac resources</i>	
SupportPac CA8K resource	CICS TS for z/OS, Version 6.1 usage
URIMAP resource (samples DFH\$W2U1 and DFH\$W2V1)	Can be reused, with change from USAGE(PIPELINE) to USAGE(ATOM), or CICS creates a URIMAP resource automatically when you use the CICS Explorer to set up the resources for your Atom feed

Table 12. Reusing CA8K SupportPac resources (continued)

SupportPac CA8K resource	CICS TS for z/OS, Version 6.1 usage
PIPELINE resource (samples DFH\$W2F1 and DFH\$W2Q1)	Replace with ATOMSERVICE resource; CICS creates an ATOMSERVICE resource automatically when you use the CICS Explorer to set up the resources for your Atom feed
Pipeline configuration file	Replace with Atom configuration file
Terminal handler parameter list in pipeline configuration file	Most elements can be reused in Atom configuration file, except <cics:layout> element with DFDL, which is no longer required (the XML binding now describes the structure of the resource)
Message handler program (samples DFH\$W2FD and DFH\$W2SD)	No longer required; CICS performs this processing
Service routine (samples DFH\$W2TS and DFH0W2FA)	Can be reused, with some modifications. The sample service routine DFH0W2F1 is an updated version of DFH0W2FA, and a new sample service routine DFH\$W2S1 is provided
Resource Layout Mapping structure	Replace with XML binding
CICS resource that contains Atom feed data (such as temporary storage queue)	Can be reused unchanged

You must take the following upgrade actions:

- Modify your service routine:
 1. Rename the ATOMPARAMETERS container to DFHATOMPARGS.
 2. Rename the ATOMCONTENT container to DFHATOMCONTENT.
 3. If you used the optional containers ATOMTITLE and ATOMSUMMARY, rename these containers to DFHATOMTITLE and DFHATOMSUMMARY. If you used the optional container ATOMSUBTITLE, discard this container, as subtitles are not valid for an Atom entry, only for an Atom feed.
 4. Replace the references to the copybooks that mapped the parameters passed in the ATOMPARAMETERS container, with the copybooks that map the DFHATOMPARGS container, as follows:

Copybook	Replace with
DFH\$W2PD for Assembler	DFHW2APD
DFH0W2PO for COBOL	DFHW2APO
DFH\$W2PL for PL/I	DFHW2APL
DFH\$W2PH for C	DFHW2APH

The parameters in the container are listed in DFHATOMPARGS container.

The following parameters from the list in SupportPac CA8K are no longer used:

- ATMP_RLM**, which pointed to the Resource Layout Mapping structure
- ATMP_KEY_FLD**
- ATMP_SUBTITLE_FLD**

A number of new parameters are added in the DFHATOMPARGS container, and there are also some new bit values in **ATMP_OPTIONS**.

- Replace the references to the copybooks that contained the constant definitions that are referenced by the copybooks for the ATOMPAREMETERS container, with the copybooks that contain the new constant definitions, as follows:

Copybook	Replace with
DFH\$W2CD for assembler	DFHW2CND
DFH0W2CO for COBOL	DFHW2CNO
DFH\$W2CL for PL/I	DFHW2CNL
DFH\$W2CH for C	DFHW2CNH

- Check the instructions in [Writing a program to supply Atom entry data](#) to see whether you want to make any additional modifications to your service routine to take advantage of new features. You might want to use some of the additional containers and parameters that are available for returning data.

- Recompile the modules for the service routine.

- Produce an XML binding:

Use the CICS XML assistant program DFHLS2SC to produce an XML binding for the resource that contains the data for your Atom feed.

The XML binding replaces the <cics:layout> element in the pipeline configuration file, and also the Resource Layout Mapping structure. To create an XML binding, you must have a high-level language structure, or copybook, in COBOL, C, C++, or PL/I, that describes the structure of the records in the resource. For instructions to use DFHLS2SC, see [Generating mappings from language structures](#).

- Deploy a bundle project:

Follow the instructions in [Setting up an Atom feed](#) to use the CICS Explorer to set up and deploy a bundle project for an Atom feed.

You create an Atom configuration file in the bundle project. You can edit the Atom configuration file to reuse most of the elements from your terminal handler parameter list. If you edit the Atom configuration file with an XML editor or a text editor, make sure that you follow the new nesting structure for those elements in the Atom configuration file. The elements that you can reuse from your terminal handler parameter list are as follows:

- Reuse the <cics:resource> element, which specifies the name and type of the CICS resource that provides the data for the feed.
- Reuse the <cics:fieldnames> element, which specifies the fields in your CICS resource that provide metadata for the Atom entries. Rename the "id" attribute as "atomid". Some new attributes are also available for this element in the Atom configuration file.
- Reuse the <atom:feed> element and its child elements, which specify metadata for the Atom feed.
- Reuse the <atom:entry> element and its child elements, which specify metadata and name the resource that provides the content for the Atom entries.

The <cics:layout> element, which described the CICS resource in the Data File Descriptor Language (DFDL), is no longer required.

When you deploy the bundle project to your CICS region and install the BUNDLE resource, CICS creates ATOMSERVICE and URIMAP resources that you can use for your Atom feed.

- Modify your URIMAP resource:

If you want to use your existing URIMAP resource for your Atom feed instead of the one that CICS created, modify your existing resource to point to the ATOMSERVICE resource in place of a PIPELINE resource.

- Change USAGE(PIPELINE) to USAGE(ATOM).
- Delete the PIPELINE attribute.

3. Add the ATOMSERVICE attribute, specifying the name of the ATOMSERVICE resource that CICS created when you installed the BUNDLE resource.
4. Change the TRANSACTION attribute to specify CW2A, the default alias transaction for Atom feeds, or another alias transaction that runs DFHW2A, the W2 domain alias program. [Creating an alias transaction for an Atom feed](#) explains how to set up an alternative alias transaction.

Chapter 4. Post-upgrade tasks

After you have upgraded your CICS TS regions or CICSplex SM to the new release, you can proceed with upgrading CICS applications, connections and web services. These upgrade actions can be scheduled at a later, convenient time. In the instructions provided in this section, tags indicate the versions to which an action applies.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases”](#) on page 39.

Upgrading applications

This information applies to all currently supported CICS TS releases, regardless of your current release and the target release. Existing applications typically continue to run in a later version of CICS.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases”](#) on page 39.

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Modify routing programs to tolerate channels	Mandatory
All versions	Modify routing programs to update the DYRDCYN field in the DFHDYPDS copybook to support daisy-chaining of non-terminal START requests	Mandatory if you are using a user-written routing program
All versions	Modify applications that rely on the order in which containers are returned	Mandatory
All versions	Modify applications that access Db2 special registers	Optional, if your applications access Db2 at Db2 12 with APAR PH31447 or higher
All versions	Modify applications that use Db2 held cursors	Optional
All versions	Migrate from the stand-alone CICS translator to the integrated CICS translator	Optional for COBOL programs
All versions	Modify all Java applications that call previously deprecated methods which have now been removed	Mandatory
All versions	Modify all Java applications that access previously deprecated data holder fields which have now been made private.	Mandatory

All versions [Modify routing programs to tolerate channels](#)

If you use a user-written dynamic routing program or distributed routing program for workload management, rather than CICSplex SM, you must modify your program to handle the new values that it might be passed in the DYRLEVEL, DYRTYPE, and DYRVER fields of the DFHDYPDS communications

area. This modification is required even if you do not intend to implement channels and containers in your own applications.

All versions Modify routing programs to update the DYRDCYN field in the DFHDYPDS copybook to support daisy-chaining of non-terminal START requests

If you are using a user-written distributed routing program to daisy chain non-terminal **START** requests over APPC connections, you must change the program to put the value Y into the DYRDCYN field (which replaces DYRFILL1 field) in the DFHDYPDS copybook.

If daisy-chaining is supported by a non-terminal **START** request, CICS passes the originator's data, which is contained in the DYRUSER field in DFHDYPDS, unchanged to the local instance of the distributed routing, and sets the DYRDCYN field to N. It is the responsibility of the distributed routing program to decide whether to continue daisy-chaining of the **START** request and update the contents of fields DYRDCYN and DYRUSER accordingly. You must ensure that your dynamic routing program performs appropriate workload routing and that unpredictable routing does not take place.

For more information, see [Dynamic Routing](#) and [Telling CICS whether daisy-chaining of non-terminal-related START requests is supported](#).

All versions Modify applications that rely on the order in which containers are returned

A container performance improvement introduced in CICS TS 5.5 changes the order in which containers are returned. It is important to be aware that the order in which containers are returned is undefined and might change. Therefore, applications should not rely on the order in which containers are returned.

If an existing application has been written in such a way as to rely on the order in which containers are returned, you should modify the application to ensure that it does not rely on the order of returned containers.

If circumstances prevent you from modifying applications as instructed above, it is possible to disable this performance improvement and revert to pre-5.5 ordering of returned containers, by setting the following feature toggle:

```
com.ibm.cics.container.hash=false
```



Attention: You must restart the region for this feature toggle to take effect.

All versions Modify applications that access Db2 special registers

In CICS TS 5.4 through 5.6 with APAR PH30252 and in CICS TS 6.1 or later, the CICS Db2 attachment facility has been enhanced to pass adapter data to Db2.

The Db2 special register CURRENT CLIENT_ACCTNG normally returns an empty string for CICS Db2 applications. However, when ACCOUNTREC(UOW) or ACCOUNTREC(TASK) is set on the DB2CONN or DB2ENTRY definition, the special register returns the accounting correlation token passed to Db2, which is a derivative of the LU6.2 unit of work ID (UOWID). At Db2 12 with APAR PH31447 or higher, this has changed so that for CICS tasks that have adapter data present in the CICS origin data (see [Adapter tracking](#)), when ACCOUNTREC(UOW) or ACCOUNTREC(TASK) is in effect, the adapter data is passed as an accounting string to Db2. For these tasks, the Db2 special register CURRENT CLIENT_APPLNAME returns the origin data adapter ID instead of the first eight bytes of the thread correlation ID, and the Db2 special register CURRENT CLIENT_ACCTNG returns the origin adapter data1, data2 and data3 fields instead of the accounting correlation token.

All versions Modify applications that use Db2 held cursors

The following configuration enables CICS to pass an XID to Db2 and instruct Db2 to share locks between multiple threads in the same unit of work (UOW):

- For CICS TS 5.5 and 5.6, the feature toggle `com.ibm.cics.db2.sharelocks=true` is enabled in a CICS region (see [Changes to feature toggles](#)).
- For CICS TS 6.1 and later, `SHARELOCKS(YES)` is specified on a `DB2ENTRY` definition.

This means that at the start of each UOW the CICS Db2 attachment facility issues a signon call to Db2. The signon call closes cursors, so held cursors are not held across syncpoints. A subsequent fetch for a previously held cursor will result in a `SQLCODE` of `-501` to be returned. Therefore, you must modify applications that use held cursors. Applications must reposition cursors after a syncpoint. See [Db2 SQL programming: Held and non-held cursors](#).

In addition, for CICS to pass an `XID` to Db2, CICS first queries MVS RRS to determine if there is a global unit of work with a matching `LU6.2 UOWID`. The query for a global unit of work involves issuing an `ATRQUERY` request with a `sysplex` scope. Ensure that auditing of successful access to RRS system management functions is not enabled with the `MVSADMIN.RRS.COMMANDS.**` profile in the `FACILITY` class; otherwise, an excessive number of `SMF 80` records will be produced. For more information, see [ATRQUERY — Obtain RRS Information in z/OS MVS Programming: Resource Recovery](#).

All versions (COBOL only) Migrate from the separate CICS translator to the integrated CICS translator

The separate CICS translator has not been updated for newer COBOL language such as floating comment delimiters, `JSON GENERATE` and `JSON PARSE`, and compiler directives. To use the latest features of the COBOL compiler, use the integrated CICS translator.

When you migrate COBOL applications to use the integrated CICS translator:

1. Delete the separate translation step from the compile process.
2. Change the `XOPTS` translator option to the CICS compiler option and delimit the suboptions with quotes or apostrophes.
3. Move all `CBL/PROCESS` statements to the first lines of the source program. The integrated CICS translator does not accept comment lines preceding a `CBL/PROCESS` statement. The source program must conform to Enterprise COBOL rules.
4. Check if you have nested programs that redefine `DFHCOMMAREA`. The integrated translator will not generate declarations of `DFHCOMMAREA` or `DFHEIBLK` in nested programs. COBOL programs that depend on these generated declarations within nested programs require source changes.

Follow the [migration instructions](#) in the *Enterprise COBOL for z/OS Migration Guide*.

All versions Modify all Java applications that call previously deprecated methods which have now been removed

Several methods across several classes, which were previously deprecated, have now been removed. Applications that use these methods will no longer work at this release and must be changed prior to upgrading. Applications that are not changed fail with `Caused by: java.lang.NoSuchMethodError` errors at runtime following the upgrade.

All versions Modify all Java applications that access previously deprecated data holder fields which have now been made private.

Several classes (data holder classes) which are used to represent the data for several CICS objects (such as `Commarea`, `TSQ Item`, `File record` etc) have been changed. The data fields representing those objects, which were previously deprecated are now private. Those data fields should be accessed using the appropriate getter and setter methods available on all of these classes, for example:

```
public static void main(CommAreaHolder cah)
{
    System.out.println("Commarea = " + cah.value);
}
```

Should be changed to

```

public static void main(CommAreaHolder cah)
{
    System.out.println(("Commarea = " + cah.getValue()));
}
}

```

Applications which are not changed will see one of two runtime errors similar to the following examples

Caused by: java.lang.NoSuchFieldError: com/ibm/cics/server/DataHolder.value

Caused by: java.lang.IllegalAccessError: Class com/ibm/test/Test illegally accessing "package private" member of class com/ibm/cics/server/CommAreaHolder
at com.ibm.test.Test.main(Test.java:13)

Upgrading connections

This section tells you how to upgrade connections between CICS systems, and between CICS and other systems.

Upgrading IPIC

This topic tells you how to upgrade IPIC connections between CICS systems when you migrate from one release of CICS to another. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases”](#) on page 39.

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Review selection behavior for IPCONN and CONNECTION resources across releases of CICS	Mandatory

All versions **Review selection behavior for IPCONN and CONNECTION resources across releases 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 with the CONNECTION resource. An IPIC connection is defined with 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 by using a CONNECTION resource. If the request fails, a SYSID error is returned to the application that scheduled the request. For more information about how IPIC overrides default connections, see [Changes to resources](#).

[Table 13 on page 73](#) and [Table 14 on page 73](#) 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 13. 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 5.1 to 6.1 AOR		
		DPL	Asynchronous processing and transaction routing	Enhanced Routing
CICS TS 5.1 to 6.1	Acquired	IPIC connection	IPIC connection	IPIC connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Table 14. Selection behavior for IPCONN and CONNECTION resources with AOR and ROR communications

Version of CICS in the AOR	Status of IPCONN resource	CICS TS 5.1 to 6.1 ROR			
		File control	Transient data	Temporary storage	DL/I
CICS TS 5.1 to 6.1	Acquired	IPIC connection	IPIC connection	IPIC connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Upgrading MRO

This topic tells you about the changes that you need to make to MRO connections when you migrate from one release of CICS to another. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

These steps assume that RACF is your external security manager (ESM).

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases”](#) on page 39.

Upgrade actions

Table 15 on page 73 lists the actions you must perform when upgrading to a higher CICS release, regardless of your current release and the target release. The sections that describe these actions in detail are tagged with

Table 16 on page 73 lists the actions that depend on your current release and your target release. The sections that describe version-dependent actions in detail also lay out the applicable current-target pairs.

Table 15. Common actions

Action	Mandatory or optional?
“Install and test DFHCSVC” on page 74	Mandatory
“Install and test DFHIRP” on page 74	Mandatory
“Define DFHAPPL.applid profiles in the RACF FACILITY class” on page 74	Optional
“Test MRO” on page 75	Optional

Table 16. Version-dependent actions

Your current version	Your target version	Action	Mandatory or optional?
5.5 or earlier	5.6 or later	“Evaluate your use of COMMAREAs used for DPL requests over MRO connections” on page 75	Mandatory, if you have a mixed environment

Install and test DFHCSVC

All versions

Install the CICS SVC routine, DFHCSVC, in the LPA, and specify a new CICS SVC number for this routine in the MVS SVCPARM table. Co-existence is not recommended or necessary: DFHCSVC is compatible with earlier releases and the latest CICS TS version supports all the earlier releases of CICS. If, however, the new DFHCSVC must coexist with an older version, rename one of them so that both versions can be installed in the LPA. Test the new SVC on stand-alone CICS regions, without using any MRO. You can do this running the CICS IVP, DFHIVPOL.

Find information about installing DFHCSVC here: [Installing CICS modules in the MVS link pack area in Installing](#).

Install and test DFHIRP

All versions

For MRO, the interregion communication program DFHIRP is installed in the link pack area (LPA). The CICS TS for z/OS, Version 6.1 DFHIRP module is compatible with earlier releases, and works with all releases of CICS. DFHIRP can be used only from the LPA. So, in a z/OS image you can have only one version of the module that is named DFHIRP and this version must be at the *highest* release level of the CICS regions that run in that z/OS image.

In a Parallel Sysplex®, where MRO communication between MVS images is through XCF/MRO, the DFHIRP programs that are 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 5.5 DFHIRP can communicate with a CICS TS for z/OS, Version 6.1 DFHIRP across XCF/MRO, but the CICS regions that run in the MVS with the CICS TS 5.5 DFHIRP cannot be later than CICS TS 5.5.

Install the CICS interregion communication program, DFHIRP, in a suitable LPA library. If your strategy is to quiesce all users of DFHIRP on the z/OS image that is being upgraded, you can use the dynamic LPA function to replace DFHIRP. To update DFHIRP dynamically, perform the steps below. If you do not follow these steps, you must IPL MVS with the **CLPA** option. Failing to shut down all users of DFHIRP during the upgrade process can cause incompatibility between control blocks and result in abends.

1. Quiesce all users of DFHIRP. For example, WebSphere EXCI, CTG EXCI, all CICS regions, including any CMASs, must either be shutdown or logged off from MRO/XM. All other work that uses EXCI must be shut down.

Important: The process described here does not include upgrading CICSplex SM to the CICS TS 6.1 level. For more information, see [“All versions Upgrade a maintenance point CMAS”](#) on page 17.

2. Update LPA modules DFHCSVC, DFHDSPEX, DFHDUMPX, DFHIRP, DFHSSN and DFH99SVC with the dynamic LPA facility. Specify the **ADD** verb.
3. Run the CICS TS 6.1 supplied utility DFHCSVCU to update the z/OS SVC table as documented in [Running the DFHCSVCJ job](#).
4. Restart MRO by either setting IRC connected in all running CICS regions or restarting the CICS regions.
5. Dynamic changes are discarded by an IPL, so you must schedule an IPL for a convenient time to ensure that all dynamically-applied changes are correctly applied to the z/OS system libraries.

Test your production MRO CICS regions, under your existing release of CICS, but use 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.

Define DFHAPPL.applid profiles in the RACF FACILITY class

All versions

You can define the DFHAPPL.applid profiles in the RACF FACILITY general resource class to control access to the CICS APPLID. When the profiles are ready for all the MRO regions, test the production

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

Any CICS region without a specific DFHAPPL.applid profile, or applicable generic profile, permits all logon and connect requests. For more information, see [MRO connection \(bind-time\) security](#).

Evaluate your use of COMMAREAs used for DPL requests over MRO connections

This action depends on your current release and your target release.

Your current release: 5.5 or earlier

Your target release: 5.6 or later

As of CICS TS 5.6, COMMAREAs greater than 24 KB are supported for DPL requests over MRO connections. However, the use of COMMAREAs that is larger than 24 KB for DPL requests over MRO connections requires that both regions are at Version 5.6 or later. At Version 5.6 and higher, a COMMAREA that is greater than 24KB is shipped using the DFHTRANSACTION channel. Complication might arise if you have a mixed environment that has regions at Version 5.6 or later as well as regions at Version 5.5 or earlier. Issues might occur when passing a COMMAREA larger than 24 KB; if the target region is at Version 5.5 or earlier, an abend (for example, AXGE) will occur. In this case, you can disable the capability by specifying the following feature toggle:

```
com.ibm.cics.dpl.32kcommarea=false
```

The feature toggle means that the COMMAREAs used for DPL requests over MRO connections must not exceed 24 KB, as in CICS TS 5.5 or earlier.

Important: When all regions in your environment are at Version 5.6 or later, you should remove this feature toggle or re-enable the capability by specifying `com.ibm.cics.dpl.32kcommarea=true`.

Test MRO

All versions

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. When the production regions run successfully under the CICS SVC and IRP, you can initialize and test some CICS TS regions with MRO. These test regions can coexist in the same z/OS image as the production regions, all using the same SVC and IRP.

Upgrading connections with IBM MQ

If you use the CICS-MQ adapter, bridge, trigger monitor, or API crossing exit to connect CICS to IBM MQ, you have some changes to make when you upgrade your version of CICS. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases”](#) on page 39.

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Specify the new versions of IBM MQ libraries in the STEPLIB and DFHRPL concatenation	Mandatory
All versions	Replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources	Optional

Your current version	Action	Mandatory or optional?
All versions	Replace existing mechanisms for managing instances of CKBR transactions with MQMONITOR resources	Optional

All versions Specify the new versions of IBM MQ libraries in the STEPLIB and DFHRPL concatenation

You must replace the existing versions of the IBM MQ libraries with the new ones in the STEPLIB and DFHRPL concatenation in your CICS procedure. The libraries are *thlqual.SCSQAUTH*, *thlqual.SCSQCICS*, and *thlqual.SCSQLOAD*, where *thlqual* is the high-level qualifier for the IBM MQ libraries. The SCSQAUTH library is included in both concatenations, but the SCSQLOAD library and the optional SCSQCICS library are included in the DFHRPL concatenation only. Include the IBM MQ libraries after the CICS libraries to ensure that the correct code is used.

All versions Replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources

To complement the existing MQCONN resource, CICS TS 5.4 introduced the [MQMONITOR](#) resource definition and new EXEC CICS and CEMT commands for the CICS-MQ monitor.

Before CICS TS 5.4, you cannot start more than one instance of CKTI against the same initiation queue from a single CICS subsystem. When the IBM MQ connection is disconnected and then reconnected, CKTI has to be manually restarted.

The new MQMONITOR resource provides a better mechanism for managing instances of CKTI transactions. It is recommended that you replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources. The benefits are as follows:

- You can have more than one MQMONITOR resource monitoring an MQ initiation queue. Any number of MQMONITOR resources can be defined and installed in a CICS region.
- An MQMONITOR can be configured to start the associated transaction (for example, CKTI) automatically when the MQ connection is established. Using the MQMONITOR resource removes the need to use the CKQC transaction to start and stop monitors manually.
- Configuration options include the ability to specify a transaction ID to be used by the monitor, the user ID under which a monitor task runs, and the user ID to be used by the monitor to start the application tasks if an alternative user ID is not provided by the application. These options allow better security controls.

Follow [Setting up an MQMONITOR resource for the CICS-MQ bridge](#) to define and install an MQMONITOR for monitoring an MQ initiation queue.

You can use new **EXEC CICS** and **CEMT** commands to work with the MQMONITOR resource definition. You can also use the **SET MQMONITOR** command to start and stop a CICS MQ monitor, as an alternative to issuing CKQC commands.

All versions Replace existing mechanisms for managing instances of CKBR transactions with MQMONITOR resources

The recommended method of controlling the CICS-MQ bridge transaction CKBR is to use an [MQMONITOR](#) resource. Doing so allows the bridge to automatically restart when the connection to the IBM MQ manager is established.

Follow [this procedure](#) to set up an MQMONITOR for the CICS-MQ bridge.

Upgrading web services

This section tells you how to upgrade the web services that you use in CICS Transaction Server for z/OS. These could be JSON or SOAP in CICS TS.

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases” on page 39](#).

Upgrading JSON web services

If you use JSON web services, you have some changes to make when you upgrade your version of CICS. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases” on page 39](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Take advantage of non-Java support for JSON web services	Optional

All versions [Take advantage of non-Java support for JSON web services](#)

From CICS TS 5.3, the processing of JSON messages in CICS regions without any Java configuration is supported. Therefore, you do not need to configure and install a JVM server. Performance and throughput for many workloads is better than when a JVM server is used to process JSON messages.

To set up CICS as a non-Java JSON service provider, you must configure a provider pipeline that uses the CICS-supplied program DFHPIJT as the terminal handler. For detailed instructions, see [Creating the CICS infrastructure for a non-Java JSON service provider](#).

Upgrading SOAP web services

If you use SOAP web services, you have some changes to make when you upgrade your version of CICS. **This information applies to all currently supported CICS TS releases, regardless of your current release and the target release.**

If you are upgrading from an end-of-service release, you might need to take additional actions that are relevant to your current, end-of-service release, along with the actions summarized in the upgrade instructions provided below. For details, see [“Upgrading from end-of-service releases” on page 39](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All versions	Consider migrating JAX-WS applications from the Axis2 environment to a Liberty JVM server	Optional

All versions [Consider migrating JAX-WS applications from the Axis2 environment to a Liberty JVM server](#)

If you have JAX-WS applications that are hosted within the Axis2 environment, consider redeploying them as JAX-WS applications within a Liberty JVM server. JVM servers that are configured for Axis2 cannot be used for any other purpose, whereas Liberty JVM servers provide a more efficient use of resources

because the same JVM can host several types of workload. JAX-WS is part of the Java EE 7 Full Platform capability that is supported by Liberty. For more information, see [Java applications in a Liberty JVM server](#).

Chapter 5. Upgrading between releases with CICS continuous delivery

CICS continuous delivery provides new functions, capabilities, and technologies between product releases through the service channel or as separate downloads. To take advantage of such additional functions, apply the service APARs.

You can choose to deploy the function on specific CICS regions or across CICSplexes. You can also implement the function on lower-level CICS systems, if supported. Some features are further controlled by the selective use of feature toggles.

Upgrade actions

Your current CICS version	Action
All versions	Decide which features to apply from the list in “CICS continuous delivery features” on page 79 .

CICS continuous delivery features

CICS continuous delivery offers you opportunities to use new functions, capabilities, and technologies by applying service rather than upgrading. This section summarizes availability of continuous delivery features by supported releases of CICS TS.

Maintenance to WebSphere Application Server Liberty is delivered through fix packs periodically. For your convenience, this section also lists service APARs that CICS has released to bring its embedded Liberty JVM server to the latest WebSphere Application Server Liberty fix pack level.

Use the following tables to plan for additions of function to your CICS environment. A brief introduction is included for some features.

Note: Features are listed in chronological order, with the most recent additions at the bottom.

Feature listings

- [“Features for Java, OSGi, and Liberty”](#) on [page 79](#)
 - [CICS Liberty features](#)
 - [Other features](#)
- [Fixes for WebSphere Application Server Liberty](#)
- [“Features for CICS web services”](#) on [page 81](#)
- [“Features for CICS policies”](#) on [page 82](#)
- [“Features for CICS security”](#) on [page 82](#)
- [“All other continuous delivery features”](#) on [page 82](#)

Learn more about the features

To learn more about any of the continuous delivery features, see [What's New](#) for your CICS release, or click the link provided with the APAR to view the APAR details in the [IBM Support Portal](#).

Features for Java, OSGi, and Liberty

CICS Liberty features

[Table 17 on page 80](#) shows by release additions of CICS Liberty features through continuous delivery. Some Liberty features are made available to in-service CICS releases with CICS APARs that bring CICS-embedded Liberty JVM server to the latest WebSphere Application Server Liberty fix pack level.

Table 17. Continuous delivery for Liberty features, by release of CICS Transaction Server for z/OS

CICS Liberty feature	5.5	5.6	6.1
adminCenter-1.0	PH08321	BASE	BASE
beanValidation-2.0 cdi-2.0 javaee-8.0 javaMail-1.6 jaxrs-2.1 jsf-2.3 jsonb-1.0 jsonp-1.1 servlet-4.0 webProfile-8.0	PH15017	BASE	BASE
microProfile-1.3 microProfile-1.4 microProfile-2.0 microProfile-2.1 microProfile-2.2 microProfile-3.0 microProfile-3.2 microProfile-4.0 microProfile-4.1		BASE	BASE

To view the complete list of CICS Liberty features that are supported by your CICS release, follow these links:

- [6.1](#)
- [5.6](#)
- [5.5](#)

[Back to top](#)

Other features

Table 18. Other continuous delivery features for Java, OSGi, and Liberty, by release of CICS Transaction Server for z/OS

Feature	5.5	5.6	6.1
New JVM server profile option com.ibm.cics.jvmserver.trace.specification Use this option to filter package and class trace from the JVM server.	PH11496	BASE	BASE
Support for EXEC CICS LINK to a Spring Boot application running in a Liberty JVM server You can add the @CICSProgram annotation to a method on a Spring bean. When the application is started in Liberty, a CICS program definition is dynamically created. Then, the Spring Boot application can be invoked by any CICS program through an EXEC CICS LINK call.	PH14856	BASE	BASE
Support for Java EE 8 Full Platform in integrated-mode Liberty in CICS By using the embedded version of IBM WebSphere® Liberty (Liberty), CICS TS supports applications that are written to the Java Enterprise Edition (EE) 8 Full Platform specification in integrated mode. Java EE 8 includes many new and enhanced APIs, such as JSON processing, RESTful web services, authentication by using custom identity stores, and JavaMail.	PH15017	BASE	BASE
Support for Jakarta EE 8 Platform The Jakarta EE 8 full platform technologies and specifications are an evolution of Java EE 8, allowing developers and applications to easily transition from Java EE to Jakarta EE.	-	BASE	BASE

Table 18. Other continuous delivery features for Java, OSGi, and Liberty, by release of CICS Transaction Server for z/OS (continued)

Feature	5.5	5.6	6.1
<applicationManager autoExpand="true"/> is applied as a default Liberty configuration setting but is not visible in server.xml. This setting causes application file archives to be automatically expanded into the <code>\${server.config.dir}/apps</code> directory on first use. This avoids expansion of file archives into the Liberty work area on server startup, reducing zFS file I/O and making more efficient use of the Java shared class cache. If you wish to override this setting and switch it off, then you should place the XML element: <code><applicationManager autoExpand="false"/></code> in your <code>server.xml</code> file.	PH28793	PH28793	REMOVED

[Back to top](#)

Fixes for WebSphere Application Server Liberty

Table 19 on page 81 shows all the CICS APARs that provide support for Liberty fix packs. Only some of these fix packs enable new Liberty features; the others are simply ongoing maintenance. If the fix pack enables new Liberty features in CICS, these features are listed in [Table 17 on page 80](#).

Complete fixes for WebSphere Application Server Liberty: See [IBM Support: Recommended updates for WebSphere Application Server](#) for a complete listing of all the fixes for Liberty with the latest fixes at the top.

Table 19. Fixes for WebSphere Application Server Liberty, by release of CICS Transaction Server for z/OS

IBM WebSphere Liberty fix pack version	5.5	5.6	6.1
18.0.0.3	PH05401	BASE	BASE
18.0.0.4	PH07871	BASE	BASE
19.0.0.3	PH09600	BASE	BASE
19.0.0.6	PH13560	BASE	BASE
19.0.0.9	PH16415	BASE	BASE
19.0.0.12	PH19704	BASE	BASE
20.0.0.3	PH21613	BASE	BASE
20.0.0.6	PH25960	PH25960	BASE
20.0.0.9	PH28793	PH28793	BASE
20.0.0.12	PH31589	PH31589	BASE
21.0.0.3	PH33137	PH33137	BASE
21.0.0.6	PH37946	PH37946	BASE
21.0.0.9	PH39936	PH39936	BASE
21.0.0.12	PH42501	PH42501	BASE
22.0.0.3	PH44531	PH44531	BASE
22.0.0.6	PH46518	PH46518	PH46518
22.0.0.9	PH49182	PH49182	PH49182

[Back to top](#)

Features for CICS web services

Table 20. Continuous delivery features for CICS web services, by release of CICS Transaction Server for z/OS

Feature	5.5	5.6	6.1
Support for HTTP OPTIONS handler program	PH16992	BASE	BASE
Enabling multiple client URIMAPs that point to the same endpoint	PH44683	PH44683	BASE

[Back to top](#)

Features for CICS policies

Table 21. Continuous delivery features for CICS policies, by release of CICS Transaction Server for z/OS

Feature	5.5	5.6	6.1
System rules: DBCTL connection status IBM MQ connection status Pipeline enable status You must use CICS Explorer for Aqua 3.2 (Fix Pack 5.5.0.3) or later to define these system rules.	PH07632	BASE	BASE
Ability to specify Transaction ID and User ID conditions for policy task rules	PH26145	PH26145	BASE
New policy task rule type, container storage	-	PH29187	BASE
New policy system rule type, transaction dump threshold	-	PH34348	BASE
New option to set the WLMHEALTH time interval is supported by the Set z/OS WLM health open status system rule action	-	-	PH58295

[Back to top](#)

Features for CICS security

Table 22. Continuous delivery features for CICS security, by release of CICS Transaction Server for z/OS

Feature	5.5	5.6	6.1
Ability to use defaultciphers.xml for outbound web requests A new feature toggle <code>com.ibm.cics.web.defaultcipherfile</code> is provided to allow outbound web requests to use a default cipher file. See Default cipher file for outbound web requests .	PH45703	PH38091	BASE
Key rings can be shared more easily between regions You can share a key ring owned by one region user ID with another region by granting that other region authority to use the key ring. As a result, the KEYRING SIT parameter now accepts more formats of key ring names. See KEYRING system initialization parameter .	PH49253	PH49253	PH49261

[Back to top](#)

All other continuous delivery features

Table 23. All other continuous delivery features, by release of CICS Transaction Server for z/OS

Feature	5.5	5.6	6.1
REXX for CICS enhancements Support for REXX for CICS internal tracing, a new online help utility, and REXX for CICS documentation updates in the CICS TS 5.1 and later product documentation.	OA56111 , OA56806 , and OA56807 .	BASE	BASE
New replication log record Replication logging in support of GDPS® Continuous Availability is enhanced to log a REDO record when an application issues an UNLOCK command following a read-update command, or a series of write-massinsert commands. It allows replication products to cater more efficiently for non-RLS applications, which, in the absence of browse for update support, issue read-update requests against all records in a file, but update very few and unlock most records.	PH09381	BASE	BASE
New feature toggle <code>com.ibm.cics.rls.delete.ridfld</code> to help you with RLS migration When this feature is enabled, you can issue a DELETE command with the RIDFLD option for a single record without causing AFCG abends.	PH07596	BASE	BASE
Support for IBM SDK for Node.js - z/OS, V12.0	PH18618	BASE	BASE

Table 23. All other continuous delivery features, by release of CICS Transaction Server for z/OS (continued)

Feature	5.5	5.6	6.1
<p>SNI now supported in CICS TS communications with an HTTP server over TLS connections</p> <p>CICS TS now supports the use of the Server Name Indication (SNI) extension as defined in Internet Engineering Task Force RFC 6066. With this enhancement, CICS TS, when acting as an HTTP client, can use a TLS connection to a virtual host where the server supports multiple virtual hosts using a single IP address.</p> <p>No configuration change is required in CICS TS. CICS TS supports SNI if it is supported by the HTTP server.</p>	PH20063	BASE	BASE
<p>CICS capability of exploiting IBM z/OS Workload Interaction Correlator</p> <p>Hardware and system requirements: IBM z/OS Workload Interaction Correlator requires IBM z14[®] or z15[®] hardware and is provided in PTFs for APAR OA57165 for z/OS in V2R3 and V2R4.</p>	PH16392	BASE	BASE
<p>CICS-MQ trigger monitor and CICS-MQ bridge improvements</p> <p>CKTI now handles abends produced when starting user transactions. If an abend occurs when the CKTI transaction attempts to start the user transaction, rather than terminating, CKTI will now send the trigger message to the dead-letter queue, and trigger monitor processing continues.</p> <p>CKTI and CKBR now handle temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKTI and CKBR will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transactions will then terminate.</p>	PH22136	BASE	BASE
<p>Enhanced capability for monitoring shared pool TS queue usage</p> <p>This enhancement makes it easier for you to monitor capacity usage change for shared pool TS queues. When the percentage of entries or elements in use in a pool structure reaches a specified threshold, DFHXQ0422 or DFHXQ0423 is issued. When the percentage of entries or elements in use drops below a threshold, DFHXQ0420 or DFHXQ0421 is issued.</p>	-	PH28145	BASE
<p>Capability for monitoring auxiliary temporary storage usage</p> <p>You are now alerted when auxiliary temporary storage data set usage is approaching a high percentage of its capacity so that you have time to free up storage before the auxiliary temporary storage becomes full.</p> <p>CICS issues message DFHTS1316 when 75% or more of the maximum auxiliary temporary storage is in use, and message DFHTS1317 when storage usage falls below 70% of the maximum auxiliary temporary storage.</p>	-	PH28145	BASE
<p>Enhanced adapter tracking for CICS Db2 applications</p> <p>The CICS Db2 attachment facility is enhanced to pass adapter data to Db2. If a CICS task that is accessing Db2 has adapter data in the CICS origin data, the adapter ID is passed as appl - longname and the adapter data is passed as an accounting-string. Db2 writes the data in its SMF accounting records and the data is also available online through the Db2 special registers CURRENT CLIENT_APPLNAME and CURRENT CLIENT_ACCTNG. This capability requires Db2 12 with APAR PH31447 or higher.</p>	PH30252	PH30252	BASE
<p>Overriding resource definitions</p> <p>You can provide a consistent approach to the creation of certain resources by applying environment-specific overrides through a resource overrides file. You can override the resource definition for any supported resource type that can be defined by using resource definition online (RDO). You specify the required overrides in a resource overrides file that is loaded during CICS startup. The overrides are applied when CICS resources are installed.</p> <p>This support is intended for infrequent system-wide changes to tailor the resources for a specific CICS environment.</p>	-	PH30590	BASE
<p>Support for passing XID to Db2</p>	PH39766	PH39766	PH47996

[Back to top](#)

Chapter 6. Explore upgrade scenarios

This section gives examples of upgrade scenarios.

Upgrading CICS to use multiple releases concurrently

This scenario illustrates how you can run some of your regions at one release of CICS TS and other regions at another release of CICS TS. Doing this gives you the flexibility to offer newer features to some parts of the business, while maintaining continuity in other parts.

Examples of where a multi-release environment could be used include:

- Allowing Java application developers to take advantage of new features in CICS Liberty as they become available, without disrupting the core infrastructure.
- Allowing a subset of regions to exploit functions in CICS, for example, in CICS TS 5.4:
 - Using WLM Health in regions where HTTP requests are received from a Virtual IP Address (VIPA).
 - Additional MQ capability and security provided by MQ monitors
 - **EXEC CICS** API for asynchronous processing.
- Maintaining a dependency on a specific version of CICS for certain applications or tools, without hindering the adoption of new function elsewhere in the environment.

In all these examples, the aim is to upgrade only a part of an existing environment, maintaining the continuity and availability of that existing environment.

About this scenario

The scenario in this section covers two of these examples of multi-release operation:

1. Providing Java application developers with access to the most up-to-date Liberty features, while leaving the rest of the environment at the existing release of CICS TS.

In this example, part of an application runs in a Liberty JVM server in dedicated Liberty-owning regions (LORs). This part of the application is accessed directly through HTTP and connects to existing business logic through Distributed Program Link (DPL) over MRO. High availability and load balancing for the Liberty part of the application is achieved by using port sharing and Sysplex Distributor. CICSplex SM Workload Management (WLM) is used to load balance calls to the COBOL part of the application that runs in the existing application-owning regions (AORs).

2. Providing application developers with access to the **EXEC CICS** API for asynchronous processing that is provided in CICS TS 5.4, while leaving the rest of the environment at the existing release of CICS TS.

In this example, the new applications need to continue to interact with existing applications. To avoid impact on the existing environment, new application-owning regions will be added to the existing configuration. Work is directed dynamically to the appropriate region using CICSplex SM Workload Management.

In both cases, this section assumes that

- Changes are made on an LPAR-by-LPAR basis, while maintaining availability of the existing workload.
- The CICS and CICSplex SM agent code will be maintained at the same CICS TS release within a CICS region.
- All CICS regions use a single, shared CSD.
- You have checked the requirements for running existing applications and tools on the new release of CICS. (See [Chapter 2, “Planning to upgrade,” on page 3](#) for details of what to check.)

In outline, the scenario has these steps:

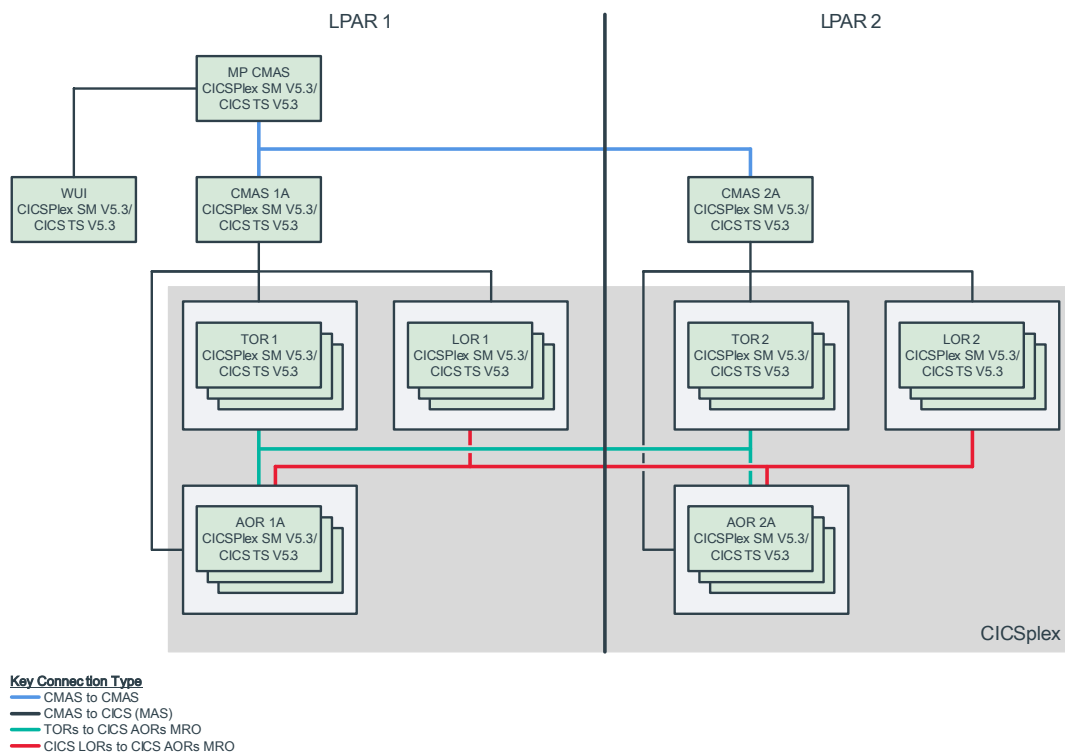
1. Upgrade CICS Explorer to the new release.

2. Upgrade LPAR 1 to the new release:
 - a. Update the CICS SVC, LPA, and CSD
 - b. Upgrade the CICSplex SM topology
3. For the example of providing access to up-to-date Liberty only, upgrade the Liberty-owning regions on LPAR 1.
4. For the example of providing access to the asynchronous API only, introduce new application-owning regions on LPAR 1.
5. Upgrade LPAR 2 to the new release:
 - a. Update the CICS SVC, LPA, and CSD
 - b. Upgrade the CICSplex SM topology
6. For the example of providing access to up-to-date Liberty only, upgrade the Liberty-owning regions on LPAR 2.
7. For the example of providing access to the asynchronous API only, introduce new application-owning regions on LPAR 2.

Initial configuration

The diagram shows the set up of the two LPARs at the start of these examples.

The initial configuration



All regions are running CICS TS for z/OS 5.3, with a single, shared CICS system definition file (CSD). The environment consists of a single CICSplex to manage all the CICS regions.

There are two logical partitions (LPARs):

LPAR 1 is running CICS TS for z/OS and CICSplex SM 5.3. It has:

- One Maintenance Point (MP) CMAS for the CICSplex. The MP CMAS is connected to the CMAS regions that are assigned to manage the CICSplex on LPAR 1 and LPAR 2. Only the Web User Interface (WUI) server region is connected to the MP CMAS.

- One non-Maintenance Point CICSplex SM address space (shown as CMAS 1A in the diagram). This CMAS connects to the MP CMAS and the CMAS on LPAR 2. This CMAS is assigned to manage the CICSplex defined in the MP CMAS. All CICS regions on LPAR 1 are connected to this CMAS.
- One Web User Interface (WUI) server. The WUI server connects directly to the MP CMAS.
- A group of terminal-owning regions (TORs). These regions are linked to application-owning regions (AORs) on LPAR 1 and LPAR 2 using MRO connections.
- A group of Liberty-owning regions (LORs). These regions are linked to AORs on LPAR 1 and LPAR 2 using MRO connections.
- A group of application-owning regions (AORs). These regions are linked to terminal-owning regions (TORs) and Liberty-owning regions (LORs) on LPAR 1 and LPAR 2.

LPAR 2 is also running CICS TS for z/OS and CICSplex SM 5.3. It has:

- One non-Maintenance Point CICSplex SM address spaces ((shown as CMAS 2A in the diagram). This CMAS is connected to the MP CMAS and to the CMAS on LPAR 1. This CMAS is assigned to manage the CICSplex defined in the MP CMAS. All CICS regions on LPAR 2 are connected to the CMAS.
- A group of terminal-owning regions (TORs). These regions are linked to application-owning regions (AORs) on LPAR 1 and LPAR 2 using MRO connections.
- A group of Liberty-owning regions (LORs). These regions are linked to AORs on LPAR 1 and LPAR 2 using MRO connections.
- A group of application-owning regions (AORs). These regions are linked to terminal-owning regions (TORs) and Liberty-owning regions (LORs) on LPAR 1 and LPAR 2.

Both sets of TORs are defined with the same z/OS Communications Server generic resource. This means that, when the regions are shut down on one LPAR, the work transfers to the regions on the second LPAR. CICSplex SM can pass work that comes in to a TOR to any available AOR. This means that, each TOR connects to every AOR.

All Liberty-owning regions (LORs) receive work using Sysplex Distributor and port-sharing.

The CICSplex has a Workload Management Specification with a default "rule" which routes work from the terminal-owning regions and Liberty-owning regions to the application-owning regions. This means that, when the regions are shut down on one LPAR, the work transfers to the regions on the second LPAR.

Back up any data sets that you need to retain

Before you start any upgrade, you should back up any data sets that you need to retain. These data sets include CICS system definition data sets (CSDs), CICSplex SM data repositories, and exported WUI repositories.

Although we recommend that you keep a back-up of your CMAS data repositories, if you later need to back out the upgrade, you should use the EYU9XDUT job to reset the repository. See [“Upgrading CICSplex SM”](#) on page 13 for details.

Upgrade the CICS Explorer

Upgrade the CICS Explorer to a version that supports the target new release: in this example, CICS TS 5.4.

Upgrade the first LPAR

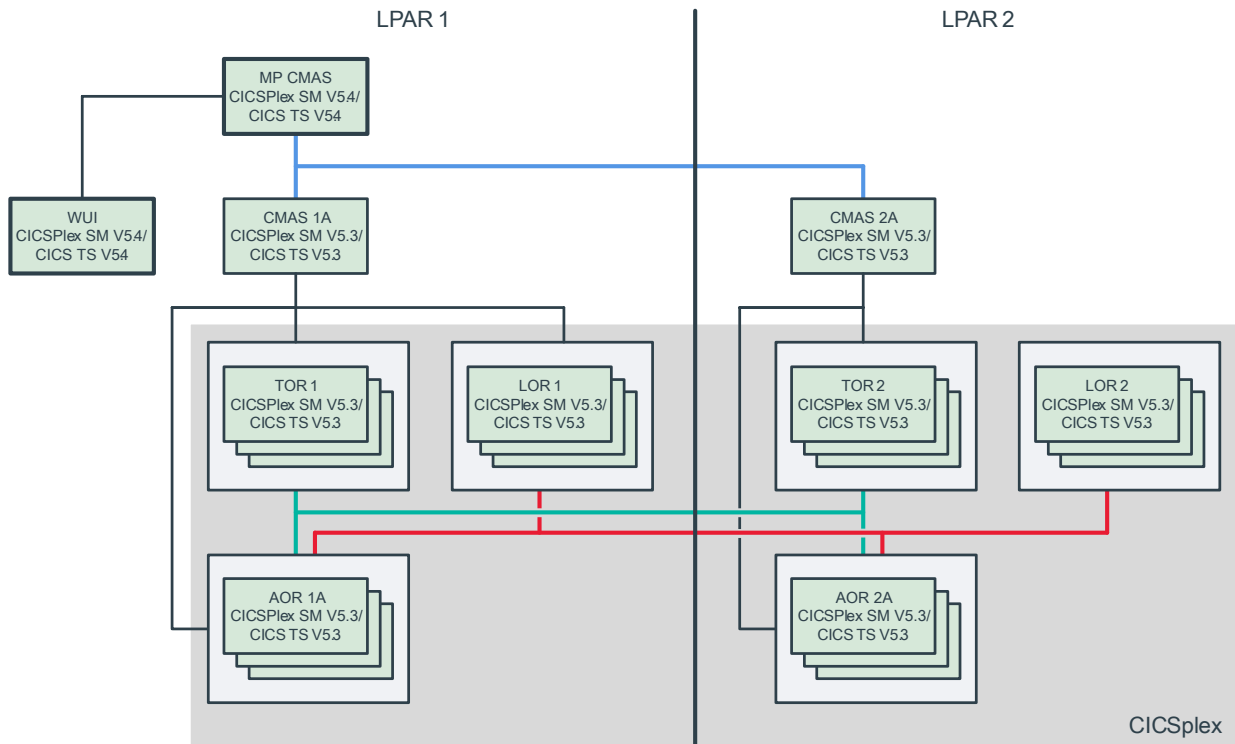
In this section, you upgrade one LPAR completely, then start the upgrade on the second LPAR. Start with the LPAR on which the MP CMAS is running. If you are not running a WUI server, ignore the steps that refer to it.

1. Dynamically update the CICS SVC while CICS is running. Use the same SVC number as the CICS TS 5.3 SVC, but replace it with the CICS TS 5.4 SVC. The highest-level CICS SVC is backwards-compatible. You need to do this because all CICS regions that are communicating by using MRO on the same LPAR must use the same SVC, and because CICS does not start with a down-level SVC.

2. Ensure interregion communication (IRC) is closed on every system on the LPAR, including batch jobs and any potential users of EXCI.
3. Dynamically update the LPA modules while the interregion communication (IRC) is closed.
4. Re-open interregion communication (IRC) in the active CICS regions on LPAR 1 and confirm that the CICS connections have been acquired.
5. Upgrade the CSD. Ensure that all GRPLISTS that are used by the CICS regions on either LPAR include the required CSD compatibility groups (see [CICS-supplied compatibility groups](#) for details).
6. Shut down the MP CMAS, upgrade it and restart.
7. Shut down the WUI, upgrade it and restart.
8. Check that the CICSplex is working:
 - Check that the unmodified CICS TS 5.3 CMASs have reconnected to the upgraded CICS TS 5.4 MP CMAS.
 - Check that the CICS Explorer and WUI server are correctly showing the active CICS TS 5.3 CICS regions
9. Create a new CICS TS 5.4 CMAS and start it.
10. Use the CICS Explorer or WUI to create CMAS-to-CMAS definitions (CMTCMDEF) from the existing CMAS regions to the new CMAS.
11. Use the CICSplex SM EYU9XDBT utility to create a batch job to define CMAS-to-CMAS definitions from the new CMAS to the existing CMASs. You can use the CICSplex SM sample EYUJXBT2 as a template for the commands.
12. Assign the new CMAS to manage the CICSplex:
 - In the CICS Explorer SM Administration perspective, use the CICSplex definitions view to right-click on the CICSplex and select **Assign to CMAS**.
 - Use the CICS Explorer or WUI to confirm that the new CMAS is listed as an Active CMAS in the CICSplex view.

The diagram shows the configuration on LPAR 1 after step 8.

LPAR 1 is partially upgraded. The MP CMAS and WUI have been upgraded and verified but the new CMAS that runs V5.4 is not yet in place.



Upgrade Liberty regions on LPAR 1

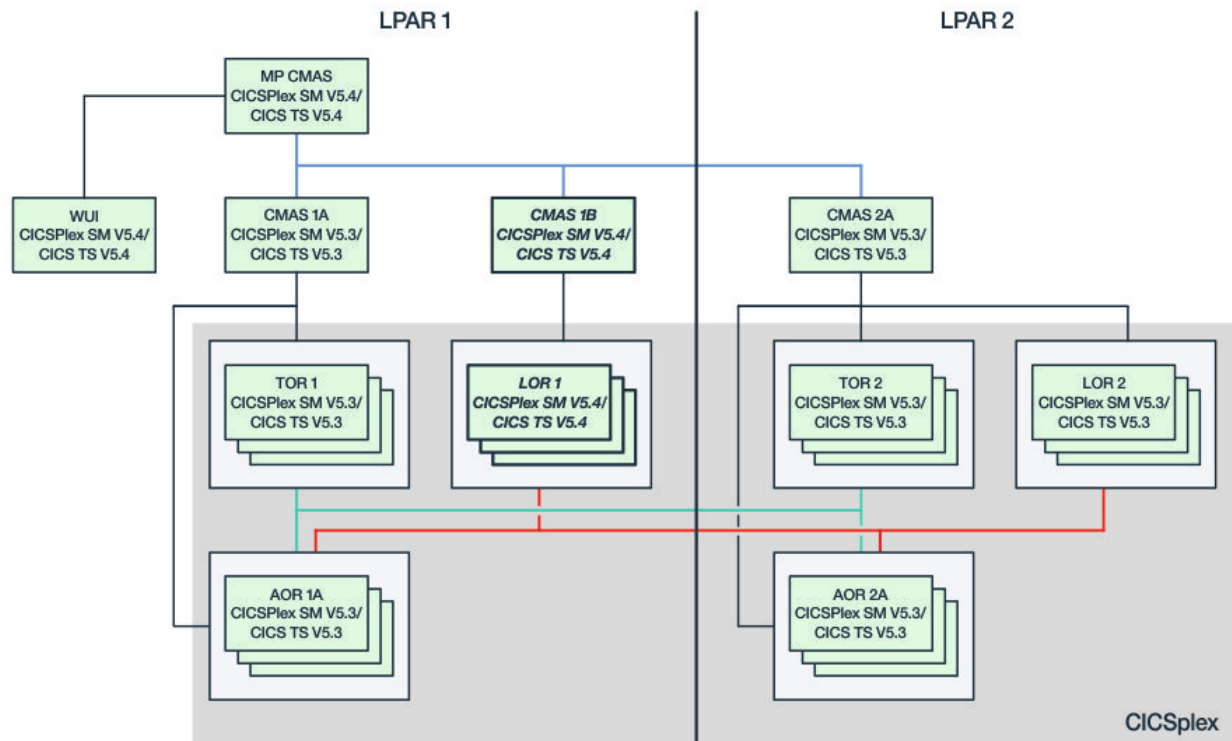
The steps in this section are required only for the example of providing Java application developers with access to the most up-to-date Liberty features, while leaving the rest of the environment at the existing release of CICS TS.

In these steps, all Liberty-owning regions on the LPAR are stopped, upgraded, and restarted at the same time. An alternative sequence would be to do this on each region at a time.

1. Quiesce the Liberty-owning CICS regions on LPAR 1 and perform a shutdown, ensuring that it is stopped cleanly (see message [DFHRM0204](#)).
2. Upgrade the CICS region:
 - a. Remove any compatibility groups from the GRPLIST for the Liberty-owning regions.
 - b. Update the JCL to make sure that you use the CICS TS V5.4 data sets, licence, and UNIX System Services (USS).
 - c. Change the EYUPARMs to reference the CMASYSID of the new CMAS (shown as CMAS 1B in the diagram).
3. Restart the region with **START=INITIAL**. When you restart the region on LPAR 1, it runs on a newer JVM server and connects to the latest CICS TS V5.4 CMAS.
4. The workload initiates and runs.
5. Wait for 24 hours to confirm that the mixed mode is functioning.

The diagram shows the resulting configuration on LPAR 1.

The Liberty-owning regions in LPAR 1 are upgraded and restarted.



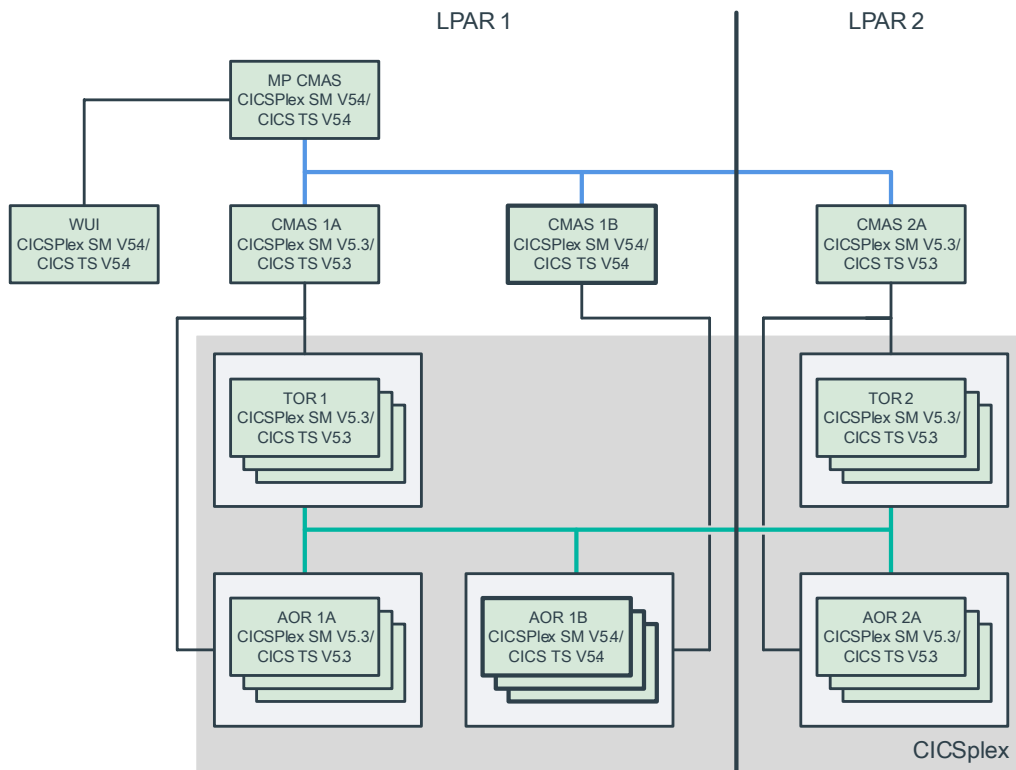
Introduce new application-owning regions on LPAR 1

The steps in this section are required only for the example of providing application developers with access to the EXEC CICS API for asynchronous processing that is provided in CICS TS 5.4, while leaving the rest of the environment at the existing release of CICS TS.

1. Define new application-owning regions on LPAR. These should be clones of the existing AOR regions.
 - a. Remove any compatibility groups from the GRPLIST for the regions.
 - b. Add the CSD resource definitions for the new asynchronous application resource definitions to the GRPLIST for the new regions.
 - c. Update the JCL to make sure that you use the CICS TS 5.4 data sets, license, and UNIX System Services (USS).
 - d. Change the EYUPARMs to reference the CMASYSID of the new CMAS.
2. Update the CICSplex Workload:
 - a. Define a new CICS System definition (CSYSDEF) for each new AOR required on both LPAR 1 and LPAR 2.
 - b. Define a new CICS Group (AOR2) in the CICSplex and add the new AORs to it.
 - c. Add the new CICS group as a sub-group to the existing AOR CICS group.
 - d. Create a new "routing rule" to route the new asynchronous application transactions to the new application-owning regions.
 - e. Install the new "routing rule" into the CICSplex.
3. Start the new AORs on LPAR 1.
4. Check that the new AORs on LPAR 1 are shown as active target regions under the new routing rule, when they become active.
5. Check that the existing workload is distributed across the previous and new AORs but that the new asynchronous application is routed only to the new CICS TS 5.4 AORs.

The diagram shows the resulting configuration on LPAR 1.

AORs at the latest release level are active in LPAR 1 and integrated with the CICSplex Workload.



Upgrade LPAR 2

1. Dynamically update the CICS SVC while CICS is running. Use the same SVC number as the CICS TS 5.3 SVC, but replace it with the CICS TS 5.4 SVC. The highest-level CICS SVC is backwards-compatible. You need to do this because all CICS regions that are communicating by using MRO on the same LPAR must use the same SVC, and because CICS does not start with a down-level SVC.
2. Ensure interregion communication (IRC) is closed on every system on the LPAR, including batch jobs and any potential users of EXCI.
3. Dynamically update the LPA modules while the interregion communication (IRC) is closed.
4. Re-open interregion communication (IRC) in the active CICS regions on LPAR 2 and confirm that the CICS connections have been acquired.
5. Create a new CICS TS 5.4 CMAS (shown as CMAS 2B in the diagram) and start it.
6. Use the CICS Explorer or WUI to create CMAS-to-CMAS definitions (CMTCMDEF) from the existing CMAS regions to the new CMAS.
7. Use the CICSplex SM EYU9XDBT utility to create a batch job to define CMAS-to-CMAS definitions from the new CMAS to the existing CMASs. You can use the CICSplex SM sample EYUJXBT2 as a template for the commands.
8. Use the CICS Explorer or WUI to confirm that the link between the existing MP CMAS and the new CMAS is active.
9. Assign the new CMAS to manage the CICSplex:
 - In the CICS Explorer SM Administration perspective, use the CICSplex definitions view to right-click on the CICSplex and select **Assign to CMAS**.
 - Use the CICS Explorer or WUI to confirm that the new CMAS is listed as an Active CMAS in the CICSplex view.

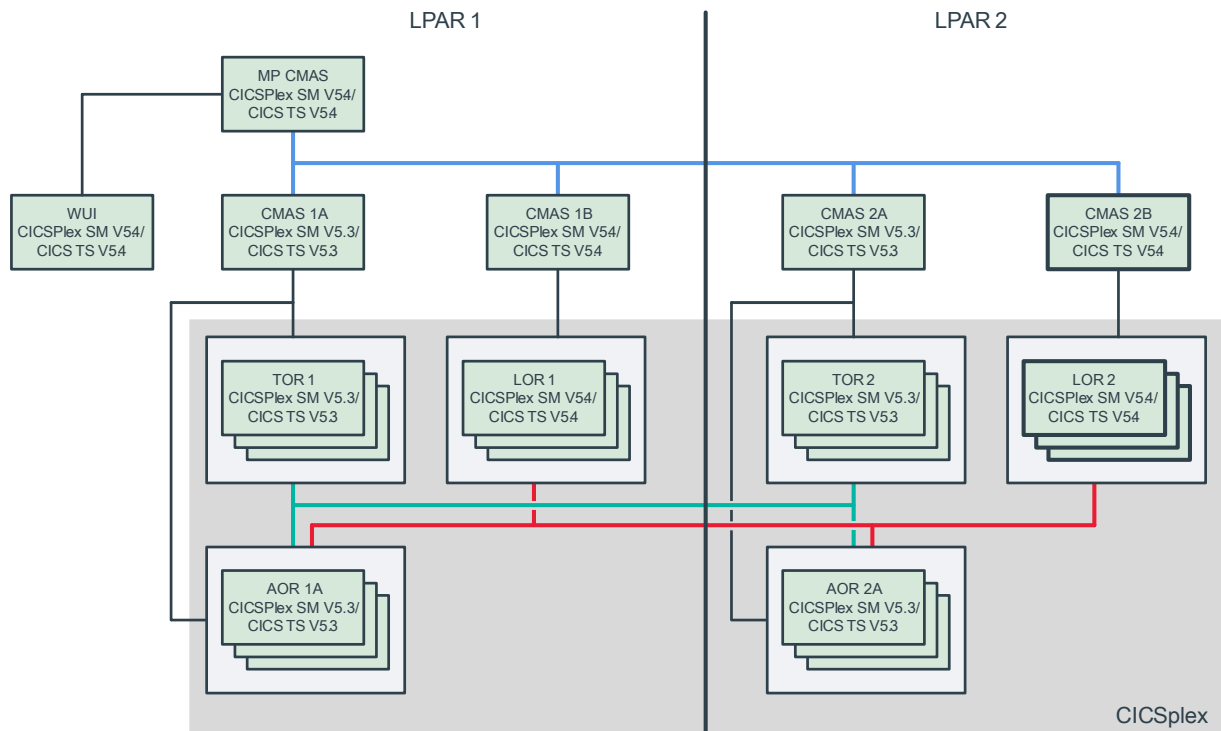
Upgrade the Liberty-owning regions on LPAR 2

The steps in this section are required only for the example of providing Java application developers with access to the most up-to-date Liberty features, while leaving the rest of the environment at the existing release of CICS TS.

1. Quiesce the Liberty-owning CICS regions on LPAR 1 and perform a Shutdown, ensuring that it is stopped cleanly (see [DFHRM0204](#)).
2. Upgrade the CICS region:
 - a. Remove any compatibility groups from the GRPLIST for the Liberty-owning regions
 - b. Update the JCL to make sure that you use the CICS TS 5.4 data sets, licence, and UNIX System Services (USS).
 - c. Change the EYUPARMS to reference the CMASYSID of the new CMAS.
3. Restart the region with **START=INITIAL**. When you restart the region on LPAR 1, it runs on a newer JVM server and connects to the latest CICS TS 5.4 CMAS.
4. The workload initiates and runs.

The diagram shows the resulting configuration on LPAR 2.

The LORs in LPAR 2 are running CICS TS 5.4.



Introduce new application-owning regions on LPAR 2

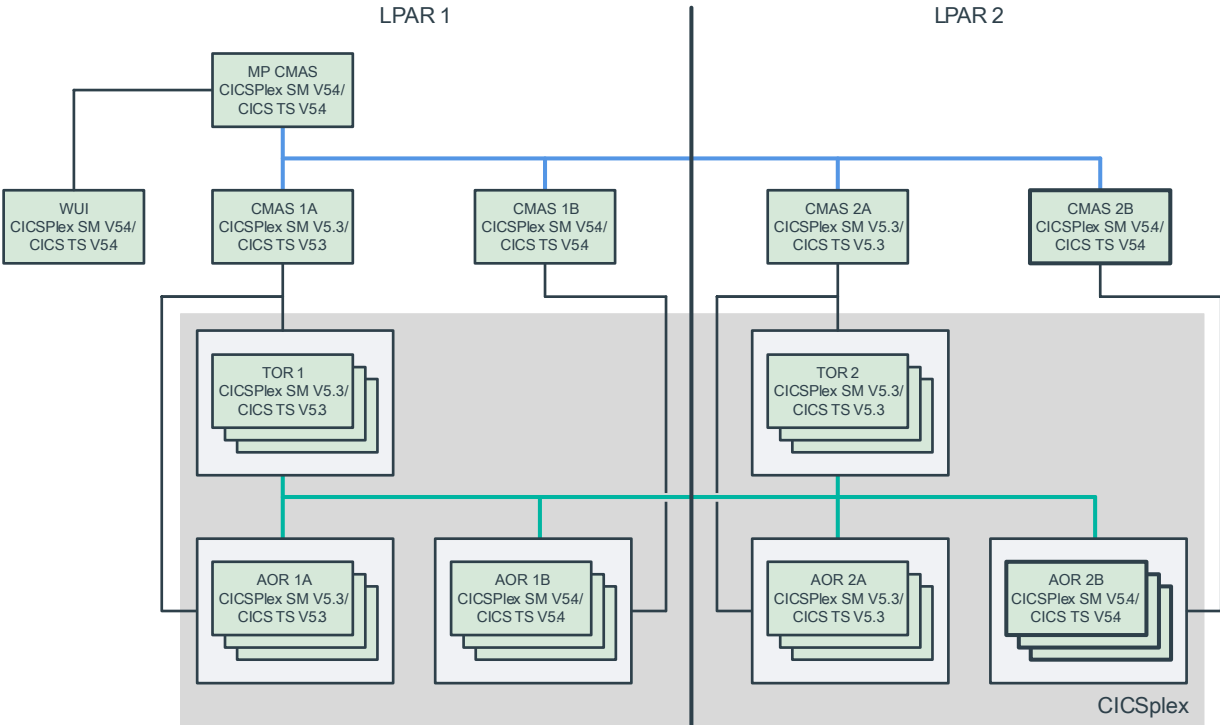
The steps in this section are required only for the example of providing application developers with access to the EXEC CICS API for asynchronous processing that is provided in CICS TS 5.4, while leaving the rest of the environment at the existing release of CICS TS.

1. Define new application-owning regions on LPAR 2. These should be clones of the existing AOR regions.
 - a. Remove any compatibility groups from the GRPLIST for the regions.
 - b. Add the CSD resource definitions for the new asynchronous application resource definitions to the GRPLIST for the new regions.

- c. Update the JCL to make sure that you use the CICS TS 5.4 data sets, license, and UNIX System Services (USS).
 - d. Change the EYUPARMs to reference the CMASSYSID of the new CMAS on LPAR 2.
2. Start the new AORs on LPAR 2.
 3. Check that the new AORs on LPAR 2 are shown as Active CICS regions.
 4. Check that the new AORs on LPAR 2 are shown as active target regions under the new routing rule, when they become active.
 5. Check that the existing workload is distributed across the previous and new AORs but that the new asynchronous application is routed only to the new CICS TS 5.4 AORs.

The diagram shows the resulting configuration on LPAR 2.

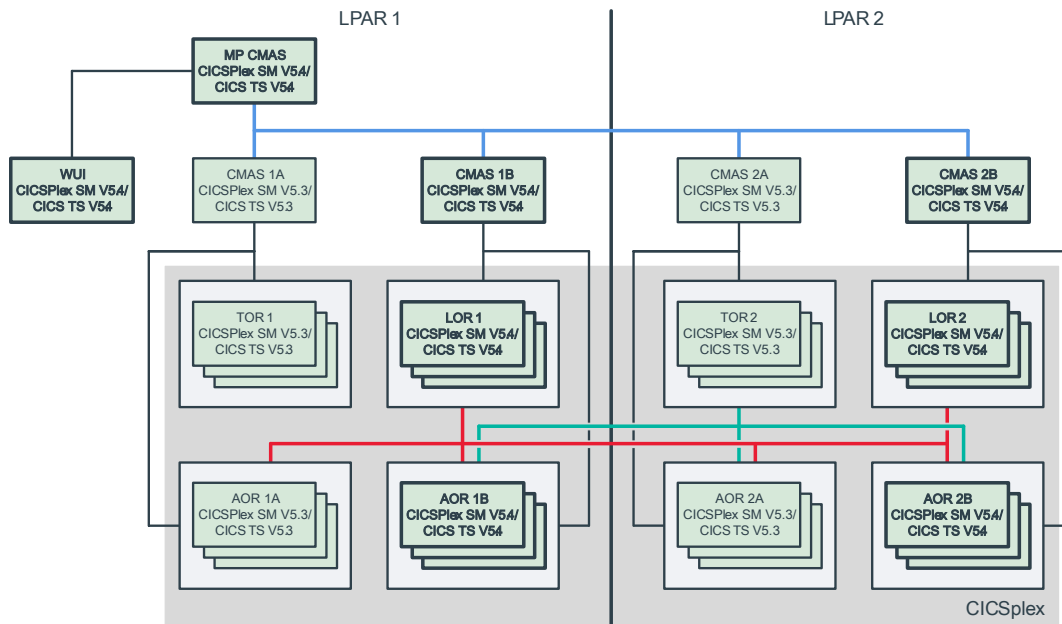
AORs at the latest release level are active in LPAR 2.



Final configuration

The diagram shows the final set up of the two LPARs that are used in this example.

The final configuration after upgrading to use multiple releases concurrently.



Some regions are running CICS TS for z/OS 5.3. Other regions are running CICS TS for z/OS 5.4. The environment consists of a single CICSplex to manage all the CICS regions.

Upgrading CICS with a running workload

The scenario uses the abilities of CICSplex SM to route work to any available target region, and to continue to route work, even when the maintenance point CMAS is offline. It is possible to upgrade only the CICSplex SM component and defer the upgrade of CICS. This scenario upgrades both at the same time.

One LPAR is upgraded first, then the other. In outline, the solution has these steps:

1. Shut down, upgrade and restart the maintenance point CMAS and WUI.
2. Quiesce each AOR as a workload target. When there are no longer running tasks, shut down and upgrade each AOR. Do not yet restart.
3. Deregister each TOR from generic VTAM®. When no terminals are connected for that TOR and no work remains for that TOR, shut down and upgrade the TOR. Do not yet restart.
4. Upgrade any remaining CMAS in the LPAR.
5. Restart all CMAS.
6. Restart all AORs.
7. Restart all TORs.
8. Repeat for the second LPAR.

Initial configuration

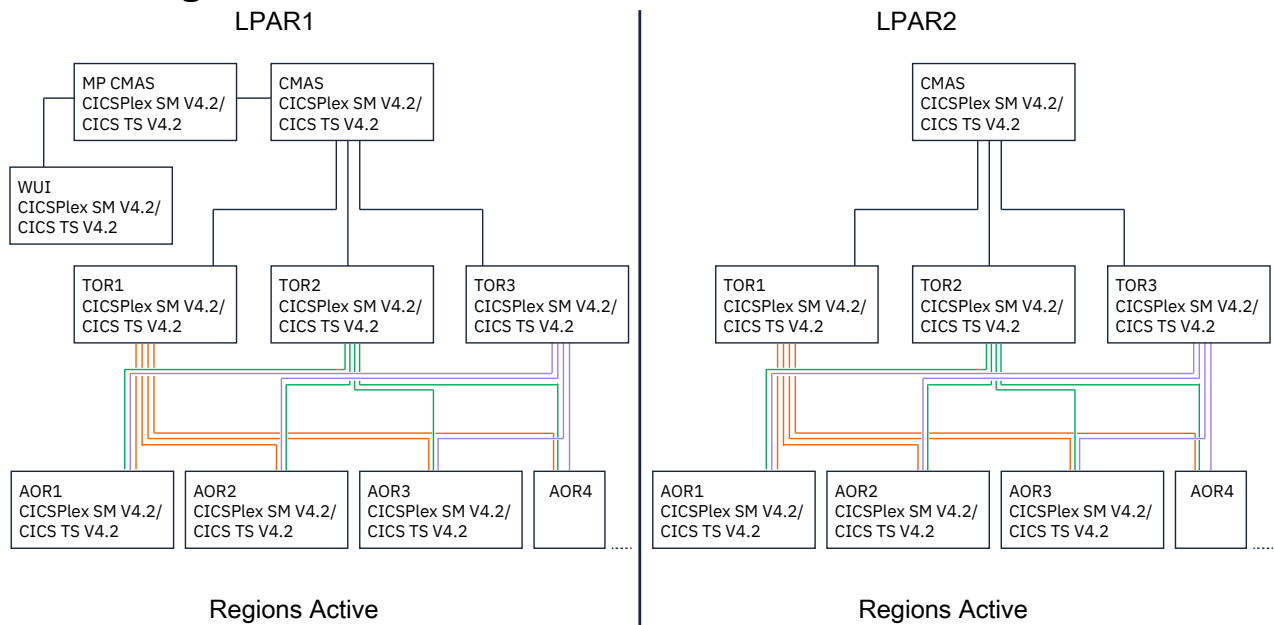


Figure 3. Initial configuration

To streamline the diagrams, connections between LPARs are not shown.

There are two logical partitions (LPARs), with a shared CICS system definition file (CSD):

LPAR 1 is running CICS TS for z/OS and CICSplex SM 4.2. It has:

- Two CICSplex SM address spaces (CMAS), one of which is the maintenance CMAS. The CMAS on this LPAR connects to both the maintenance point CMAS and the CMAS on LPAR 2.
- Three terminal-owning regions (TORs). These regions are linked to application-owning regions (AORs) in LPAR 2.
- A WUI server.
- Ten application-owning regions (AORs). These regions are linked to terminal-owning regions (TORs) in LPAR 2.

LPAR 2 is also running CICS TS for z/OS and CICSplex SM 4.2. It has:

- One CICSplex SM address space (CMAS). This CMAS connects to the two CMAS on LPAR 1.
- Three terminal-owning regions (TORs). These regions are linked to application-owning regions (AORs) in LPAR 1.
- Ten application-owning regions (AORs). These regions are linked to terminal-owning regions (TORs) in LPAR 1.

Both sets of TORs are defined with the same z/OS Communications Server generic resource. This means that, when the regions are shut down on one LPAR, the work should transfer to the regions on the second LPAR. CICSplex SM can pass work that comes in to a TOR to any available AOR. This means that, each TOR connects to every AOR.

Back up any data sets that you need to retain

Before you start any upgrade, you should back up any data sets that you need to retain. These data sets can include CICS system definition data sets (CSDs) and exported WUI repositories.

Upgrade the first LPAR

In this section, you upgrade one LPAR completely, then start the upgrade on the second LPAR. If you are not running a WUI server, ignore the steps that refer to it.

1. Shut down the maintenance point CMAS. For more details, see [Shutting down a CMAS](#). The CICS workload continues to run, even without the maintenance CMAS.
2. Upgrade both CICS TS for z/OS and CICSplex SM to the latest level.
3. If you have a WUI, shut down the WUI server and upgrade it to the latest level.
4. Start the maintenance point CMAS.
5. If you have a WUI, restart the WUI. In the WUI or CICS Explorer, you can see the CMAS and WUI at the latest level of CICS and CICSplex SM.

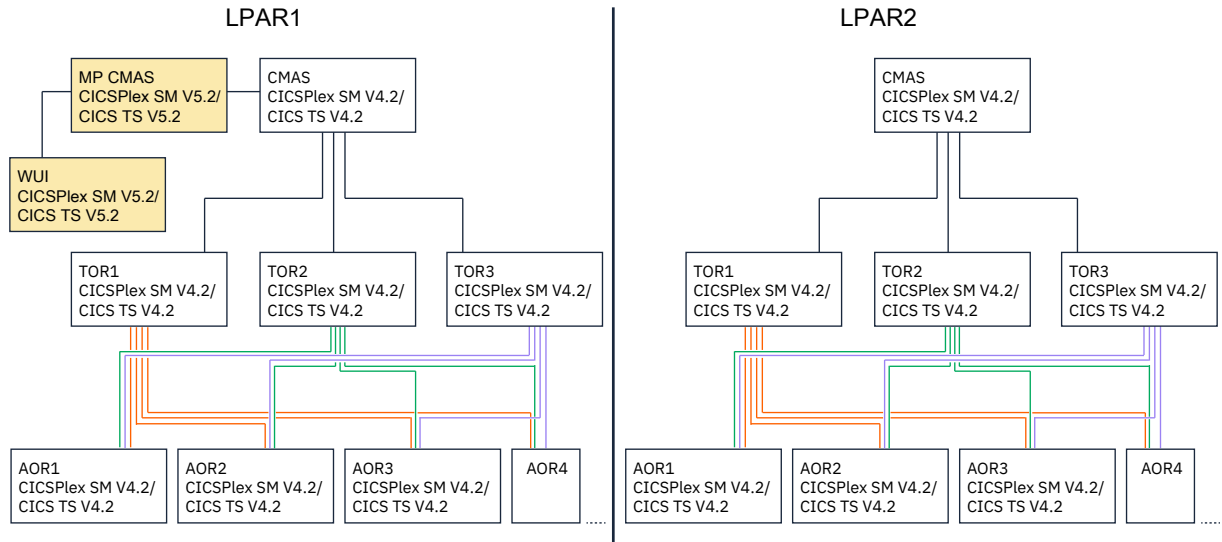


Figure 4. The outcome of the procedure so far: the CMAS and WUI are upgraded.

6. For each AOR:
 - a. Quiesce the AOR from the workload. Check that all work that was running in that region is complete. For details, see [Quiescing a target region in an active workload](#).
 - b. Shut down the AOR.
 - c. Upgrade the AOR to the latest levels of CICS and CICSplex SM. Do not restart the AOR.

The target regions are upgraded as shown in the diagram.

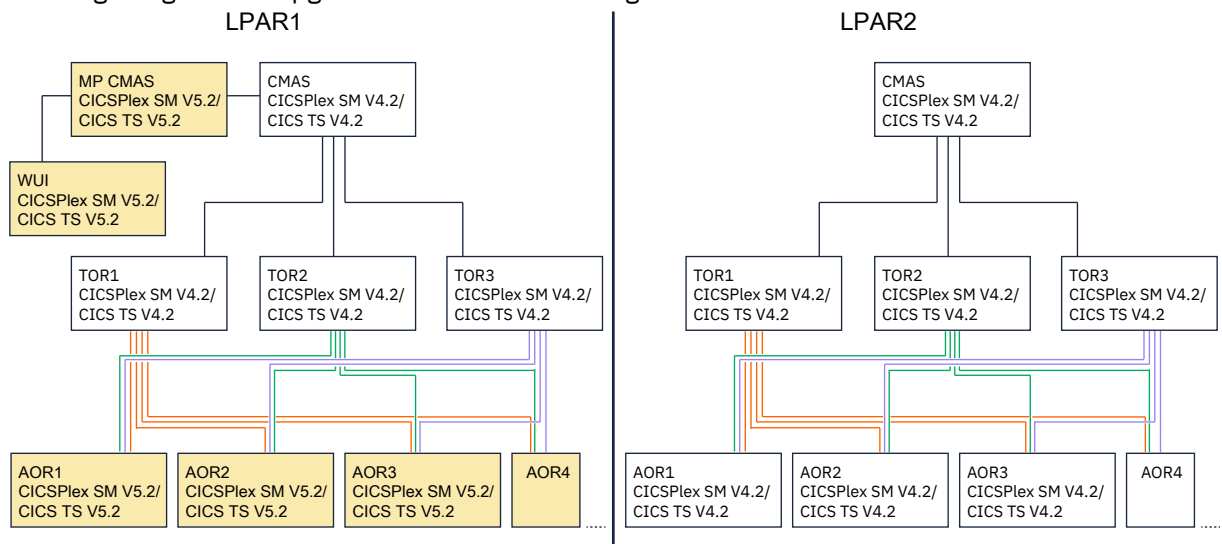


Figure 5. The outcome of the previous step: the AORs are upgraded.

7. For each TOR:

- a. Deregister the router as a VTAM generic resource (SET VTAM DEREGISTERED). Set close communications with VTAM (SET VTAM CLOSED), making the TOR unavailable to incoming work. For details, see [Removing a TOR from a generic resource](#).
- b. When all work that is running in the region is complete, close the TOR.
- c. Upgrade the TOR to the latest levels of CICS and CICSplex SM. Do not restart the TOR.

The routing regions are upgraded as shown in the diagram.

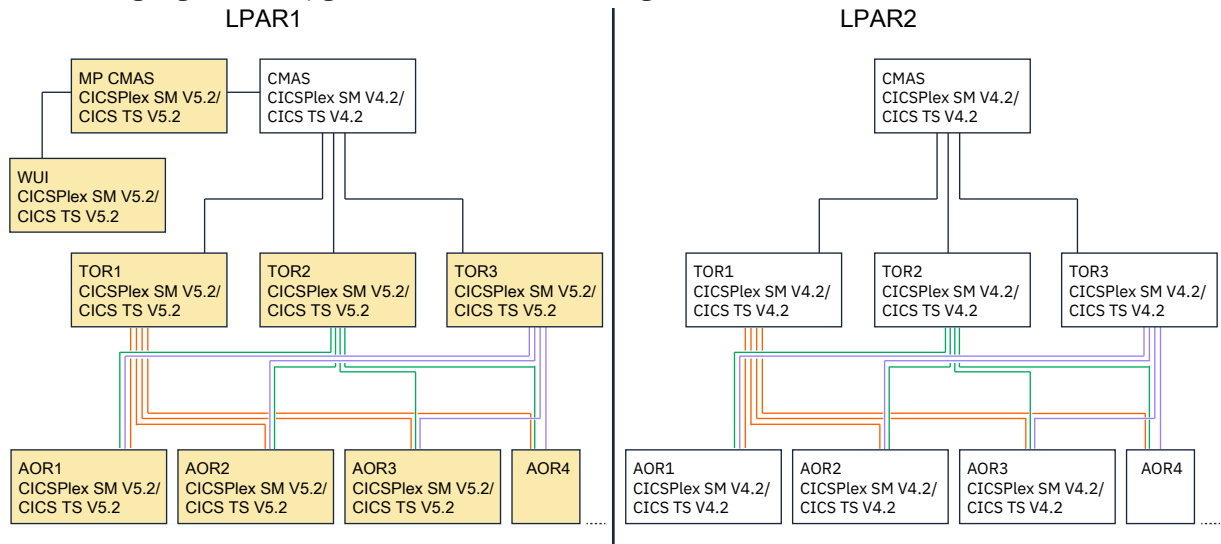


Figure 6. The outcome of the previous step: the TORs are upgraded.

8. Shut down any remaining CMAS.
9. Upgrade the remaining CMAS. You can see that only the maintenance point CMAS, and WUI if present, are running in this LPAR. The TORs and AORs are upgraded but are not yet started. The second LPAR is still fully active.

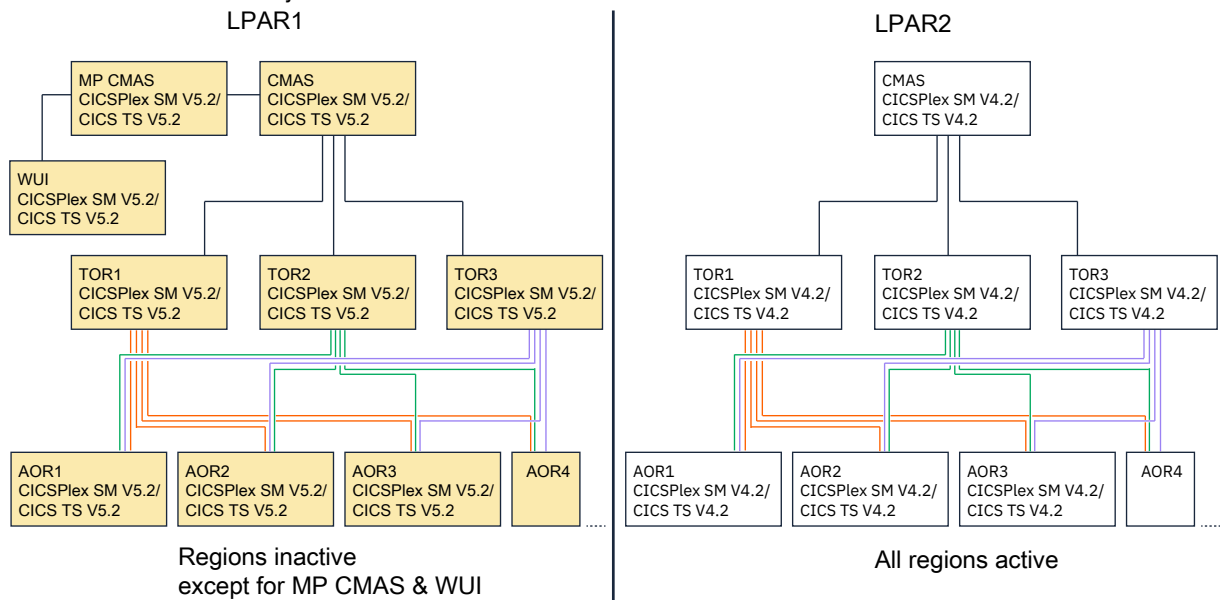


Figure 7. The outcome of the previous step: all elements are upgraded in LPAR 1 but not yet all started.

10. Restart the remaining CMAS. For details, see [Restarting a CMAS](#).
11. When the CMAS are active, restart each TOR.
12. Restart each AOR.

Work is coming into the routing regions on both LPARs. It is routed to target regions in both LPARs. You can now upgrade the second LPAR while the workload continues to run in the first one.

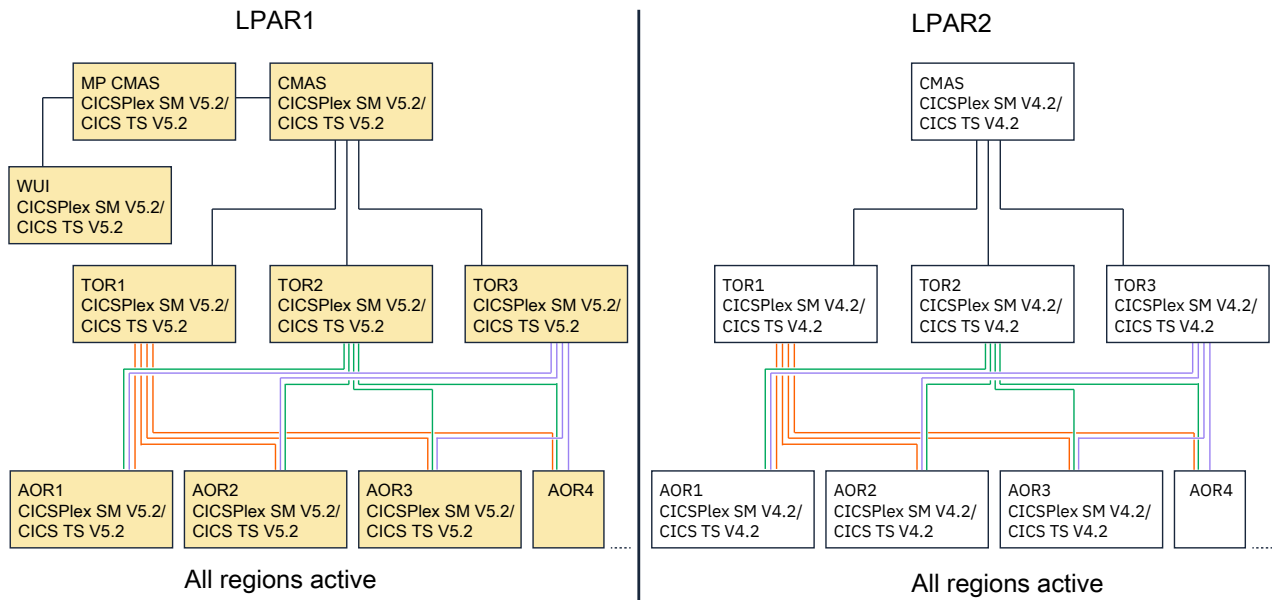


Figure 8. Upgrade is complete on LPAR 1

Upgrade the second LPAR

When work is flowing again in the first LPAR, you can upgrade the second one.

1. For each AOR:
 - a. Quiesce the AOR from the workload. Check that all work that was running in that region completed. For details, see [Quiescing a target region in an active workload](#).
 - b. Shut down the AOR.
 - c. Upgrade the AOR to the latest levels of CICS and CICSplex SM. Do not restart the AOR.
2. For each TOR:
 - a. Deregister the router as a VTAM generic resource (**SET VTAM DEREGISTERED**). Set close communications with VTAM (**SET VTAM CLOSED**), making the TOR unavailable to incoming work. For details, see [Quiescing a target region in an active workload](#).
 - b. When all work that is running in the region is complete, close the TOR.
 - c. Upgrade the TOR to the latest levels of CICS and CICSplex SM. Do not restart the TOR.
3. Upgrade the remaining CMAS.
4. Restart the remaining CMAS. For details, see [Restarting a CMAS](#).
5. When the CMAS is active, restart each TOR.
6. Restart each AOR.

Work is coming into the routing regions on both LPARs. It is routed to target regions in both LPARs.

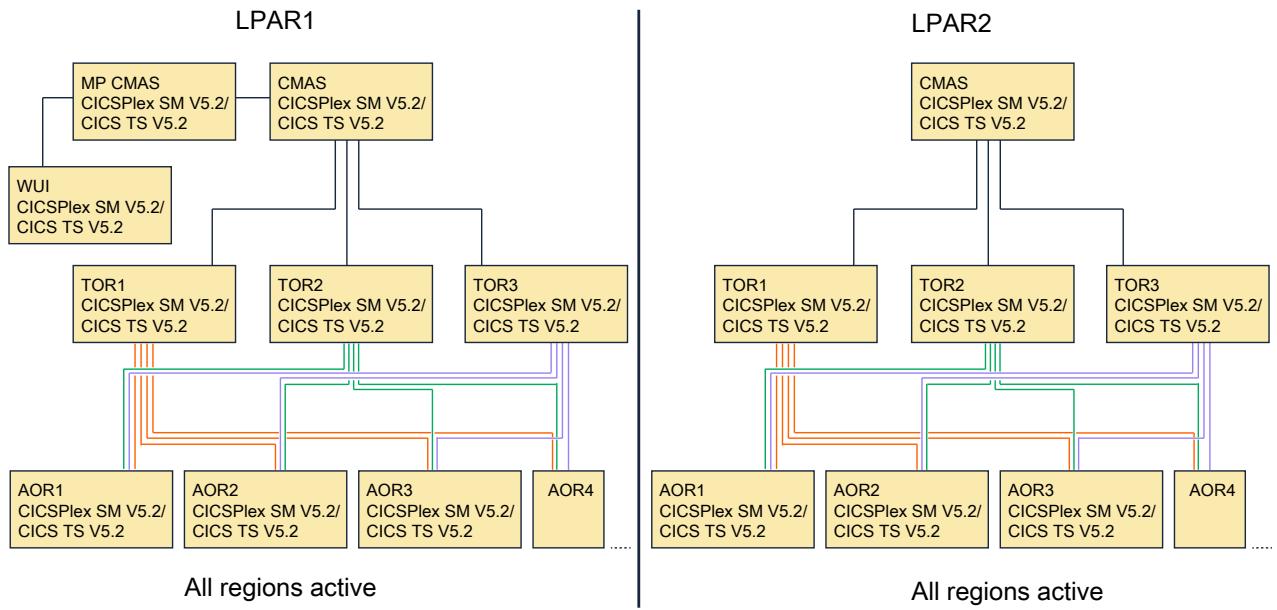


Figure 9. The upgrade is complete across both LPARs.

Chapter 7. Changes between releases

A key part of upgrading is understanding the impact of changes to CICS TS between versions or releases of the product. This section summarizes the changes between releases of CICS Transaction Server for z/OS.

[“Major areas of technology change, by release of CICS TS for z/OS” on page 101](#) summarizes the major technologies that were introduced, and the functions that were discontinued, in each release. Subsequent sections detail the changes to specific areas of CICS TS, such as installation, system initialization parameters, or CICS resources. If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases” on page 214](#).

For more information about these changes, see the CICS TS for z/OS What's New section for each release: [5.5](#), [5.6](#), and [This release](#).

Major areas of technology change, by release of CICS TS for z/OS

View new capabilities in major areas of technology change, by release of CICS TS. Version tags preceding list headings below indicate the version to which a list of technology change summaries applies.

CICS Transaction Server for z/OS, Version 6 Release 1

6.1 Enhanced developer productivity and experience

- Support for Java 11, Jakarta Enterprise Edition 9.1, and Eclipse MicroProfile 5.
- Java annotation now available to define methods to link to OSGi Java applications.
- Bundle deployment, multi-factor authentication (MFA), and advanced IBM CICS Explorer functions supported in single CICS regions.
- New support for Node.js version 16.
- Maintain CICS resource configuration with application source by using the CICS resource builder.

6.1 Improved security and compliance management

- Continuous enhancements to CICS support for Transportation Layer Security (TLS), including new support for TLS 1.3, additional TLS monitoring and statistics, the capability to safely change TLS protocols or ciphers, and simplified diagnosis of TLS security problems.
- New CICS health checks for IBM Health Checker for z/OS, and customization of CICS health checks.
- New protection to guard against executing code in data-only memory.
- Addition of MFA authentication sign-on from CICS Explorer to a single CICS region.
- Removal of the need of security definitions for category 1 transactions.
- Support for Application Transparent Transport Layer Security (AT-TLS) monitoring and statistics.
- Simplified diagnosis of sysplex-wide CICS security problems.
- New SMF 1154 type 80 record to simplify collection of compliance data for auditors.

6.1 Reduced cost of management

- Tagging of CICS regions to identify usage.
- Resource definition overrides functionality.
- Continuous enhancements to CICS policies, including introduction of new system rule types such as compound condition system rules and transaction dump threshold system rules, new ALL option for selected task rules, and enhanced support for policy statistics.
- Improved temporary storage expiry processing.

- Extended short on storage notification.
- Limit on concurrent TLS handshakes.
- Enhancements in support of Db2.
- Increased capacity of shared data tables.
- Enhanced CICS event processing support.
- Advanced CICS Explorer functions in single CICS regions.
- Enhanced performance monitoring, API, SPI, and diagnostics.
- Improved recovery for Logger failures.
- CICS installation using z/OSMF Software Management.
- Ability to use an alternate IBM WebSphere Application Server Liberty installation location.

6.1 Discontinued

- **CICS Java:** The previously deprecated JCICS methods `link(com.ibm.record.IByteBuffer)` and `link(com.ibm.record.IByteBuffer, com.ibm.record.IByteBuffer)` have been removed from the class `com.ibm.cics.server.Program`.
- **Security:** TLS 1.0
- **The debugging tools sockets interface:** As of Version 14.2, IBM z/OS Debugger supports only the TCP/IP Socket Interface for CICS; therefore, the debugging tools sockets interface provided by CICS TS is no longer used and thus stabilized.

For more information, see [“Stabilization notices” on page 324](#).

CICS Transaction Server for z/OS, Version 5 Release 6

5.6 Developer experience

- New support for Pivotal Spring Boot
- New support for Jakarta EE 8
- Enhanced CICS Java API
- New Maven Central libraries for CICS Java application development
- New plug-ins for Maven and Gradle to automate building CICS bundles
- New deployment API to simplify CICS bundle deployment during development
- New support for Node.js versions 12 and 14

5.6 Security

- Enhanced support for CICS TS as an HTTP client when using TLS
- Enhanced **VERIFY TOKEN** command to process JSON Web Tokens
- New CICS monitoring for security domain

5.6 Resilience

- Improved reporting and action for z/OS short-on-storage conditions
- Improved usage of BAS data space storage for large CICSplex environments
- Improved management of CICSplex System Manager data space usage
- Support for COMMAREAs up to 32 KB on distributed program links

5.6 Management

- New and enhanced system programming interfaces to assist with JVM server administration
- New Policy system rule types
- New z/OS workload management health policy action
- New support for IBM z/OS Workload Interaction Correlator

5.6 Discontinued

- The CICS TS utility DFHMSCAN, which scanned a load module library to identify programs that used CICS macros, is removed from this release of CICS TS and later.
- Support for Web Services Description Language (WSDL) 2.0 is stabilized and will be removed in a future release of CICS TS.
- Support for the JVMSERVER-based configuration option for the Web Services (WS) data transformation service is stabilized and will be removed in a future release of CICS TS. The JAVA_PIPELINE=YES JVMSERVER profile option should be avoided.
- Support for WS-Security infrastructure is stabilized.
- Support for CICS Service Flow Runtime for CICS TS is stabilized and will be removed in a future release of CICS TS.
- **CICS Java:** The CICS JVM debug plug-in mechanism has been removed.

For more information, see [“Stabilization notices” on page 324](#).

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

5.5 Management

- Enhancements to CICS Explorer to provide more capabilities, and simplify and improve the user experience.
- System management advancements to improve control and ownership.
- Support for inclusion of common configuration in JVM servers.

5.5 Security

- Enhanced security and resiliency of applications across all supported languages.

5.5 Language support features

- A new GraphQL API for querying system configuration and inter-resource relationships.
- Greater API and SPI control with the use of commands and keywords.
- Support for JavaScript Node.js applications.
- Support for multiple IBM WebSphere Liberty servers in the same CICS region connecting to a Liberty angel process.
- New option to wait for Liberty angel process to be ready.
- CICS bundle status reflects Liberty application status.

5.5 Discontinued

- The CICS TS utility DFHMSCAN, which scans a load module library to identify programs that use CICS macros, is stabilized and will be removed in a future release of CICS TS.

For more information, see [“Stabilization notices” on page 324](#).

Changes to installing

This section summarizes the changes to installation across supported releases of CICS TS for z/OS.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases” on page 214](#).

	5.4	5.5	5.6	6.1
DFHEITAB and DFHEITBS modules are not LPA eligible.		CHANGED with APAR PH29332	CHANGED with APAR PH29332	CHANGED
Removed the DFHIFTG1 and DFHIFTGS installation jobs.				REMOVED

Table 24. Changes to installing by release of CICS TS (continued)				
	5.4	5.5	5.6	6.1
Support for installing maintenance-supplied newest release CICS Type 3 SVC and DFHIRP modules. See Installing newest release CICS Type 3 SVC and DFHIRP modules supplied through maintenance .	CHANGED with APAR PH54814	CHANGED with APAR PH54814	CHANGED with APAR PH54814	CHANGED with APAR PH54840
Removed SDFHDL1.			REMOVED	
The Java components that were included within FMID JCI710D at CICS TS 5.4 are moved into the base FMID HCI7200.		CHANGED		
Removed distribution library ADFJMOD and removed library SDFJAUTH.		REMOVED		
DFHALLOC, DFHINST1 and DFHINSTA jobs have been changed to allocate the following PDSs with BLKSIZE=0 rather than the previous BLKSIZE=400: ADFHCOB ADFH370 ADFHPL1 SDFHCOB SDFH370 SDFHPL1		CHANGED		
The STEPLIB DD statement for the h1q.SDFJAUTH library in the CICS startup job stream must be removed.		CHANGED		
Optional job, DFHIFTGS, tags the text files in the CICS USSHOME directory with the correct coded character set.	NEW	CHANGED: You have to run this job if you want to use Node.js capabilities.		
MEMLIMIT must be set to 10 GB or greater.	CHANGED			
All source changes are now made by source replacement. Source updates will no longer be made.	CHANGED			
DFHALLOC and DFHINST3 jobs create the ADFHMOD, SDFHAUTH, and SDFHLOAD data sets as PDSEs. CICS now requires these data sets to be PDSEs.	CHANGED:			
In support for the feature toggle capability, the DFHIHFS0 job has been changed to create an empty <code>featuretoggle.properties</code> file in the <code>dfhconfig</code> directory.	CHANGED			

Changes to security

This section summarizes the changes that relate to security across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

For information about changes to RACF classes, see [Changes to RACF classes](#).

Changes to security across supported CICS TS releases are classified into the following security principles as described in [What does security mean in CICS?](#). Liberty related security changes are marked by a Liberty tag.

- [“Identification”](#) on page 105
- [“Authentication”](#) on page 105
- [“Authorization”](#) on page 105
- [“Integrity”](#) on page 106
- [“Confidentiality”](#) on page 106
- [“Auditing”](#) on page 106
- [“Performance”](#) on page 107
- [“Deprecated and removed”](#) on page 107

Identification

Change	5.4	5.5	5.6	6.1
<u>MQMONITOR MONUSERID</u>	NEW			
<u>KERBEROSUSER system initialization parameter</u>	NEW with APAR: PI85443	NEW		

Authentication

Change	5.4	5.5	5.6	6.1
<u>XPTKT system initialization parameter</u>	CHANGED: The default is changed from NO to YES.			
GROUPID on VERIFY PASSWORD and VERIFY PHRASE to support password or passphrase verification against supplied group ID		NEW		
<u>Kerberos mutual authentication</u>	NEW			
<u>VERIFY TOKEN support for JWT</u>			NEW	
<u>CICS Explorer support for MFA</u>	NEW with APAR: PI87691	NEW	CHANGED: ON by default	
New DISCONNECT option on GMTRANT for terminal sign-on security control		NEW: <u>Terminal sign-on security control introduced for CESN and CESL</u>	CHANGED: <u>Support extended to CESF</u>	
<u>New parameter GMEXITOPT on ASSIGN</u>				NEW
<u>Liberty oauth-2.0</u>	NEW with APAR: PI91554	NEW		
<u>Liberty JWT and OpenID Connect</u>	NEW with APAR: PI91554	NEW		
<u>Liberty Wait for angel at JVM server startup</u>	NEW with APAR: PI92676	NEW		
<u>Liberty Multiple Liberty servers per CICS region using an angel</u>	NEW with APAR: PI98174	NEW		
<u>Liberty Java EE 8 Security-1.0 API with JSR 375</u>		NEW with APAR: PH15017	NEW	

Authorization

Change	5.4	5.5	5.6	6.1
Security for job submission from SPOOL or TDQ commands		NEW: <u>Security for job submission from SPOOL or TDQ commands</u>		
<u>QUERY SECURITY USERID</u>		NEW		
<u>Check on region access to Category 1 transaction on start-up</u>		NEW		REMOVED
<u>Simplifying Category 1 transaction security</u>				NEW
<u>Improved security diagnosis capability for authorization failures</u>				NEW
<u>Controlling the API and SPI used by developers</u>		NEW		
<u>Control of HPO SIT override</u>		NEW		

Integrity

Change	5.4	5.5	5.6	6.1
CICS BMS 3270 intrusion detection service	CHANGED: Support for IBM z/OS Communications Server IDS			
Instruction Execution Protection (IEP) for dynamic storage areas (DSAs)				NEW

Confidentiality

Change	5.4	5.5	5.6	6.1
Providing support to update to TLS 1.3				NEW Requires minimum z/OS 2.4
MAXTLSLEVEL system initialization parameter				NEW
MINTLSLEVEL system initialization parameter		CHANGED: The default is changed from TLS10 to TLS12.		NEW OPTION: TLS13 REMOVED OPTIONS: TLS10 TLS10ONLY STABILIZED OPTION: TLS 1.1
KEYRING system initialization parameter		CHANGED with APAR PH49253: Accepts more formats of key ring names to allow use of key rings that are not owned by the region user ID.	CHANGED with APAR PH49253: Accepts more formats of key ring names to allow use of key rings that are not owned by the region user ID.	CHANGED with APAR PH49261: Accepts more formats of key ring names to allow use of key rings that are not owned by the region user ID.
CONFDATA system initialization parameter			CHANGED: The default is changed from SHOW to HIDE. The HIDE option replaces HIDE TC.	
SNI support in CICS TS communications with an HTTP server over TLS connections	NEW with APAR: PH20063	NEW with APAR: PH20063	NEW	
Default cipher file for outbound web requests		NEW with APAR: PH45703	NEW with APAR: PH38091	NEW
Simplifying changing TLS protocol levels or ciphers				NEW
Improved diagnostics for TLS security				NEW
Sets the minimum key size allowed during TLS handshakes	NEW with APAR: PH50175	NEW with APAR: PH50175	NEW with APAR: PH50175	NEW with APAR: PH51719

Auditing

Change	5.4	5.5	5.6	6.1
IBM Health Checker for z/OS support	NEW: Support for IBM Health Checker for z/OS			CHANGED: Enhanced support for seven health checker rules that define the best practices for CICS security.
Classifying CICS regions with region tagging				NEW

Change	5.4	5.5	5.6	6.1
Compliance data collection with SMF 1154 subtype 80 records				NEW: CICS regions can generate an SMF 1154 subtype 80 record in response to ENF86 triggered by the z/OSMF Compliance REST API.
Security domain statistics			NEW: Monitoring capability introduced for the security domain	

Performance

Change	5.4	5.5	5.6	6.1
Preset user ID on a terminal can share ACEE	NEW			
Performance improvement to QUERY SECURITY		NEW		

Deprecated and removed

Change	5.4	5.5	5.6	6.1
ENCRYPTION system initialization parameter				REMOVED
Numeric CIPHERS				DEPRECATED
EXCI SURROGCHK option	REMOVED with APAR: PH09898 Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.	REMOVED with APAR: PH09898 Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.	REMOVED: Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.	
SECVYFREQ system initialization parameter	REMOVED			
Removal of XSNE X global user exit				REMOVED

Changes to RACF classes

This section summarizes the changes that relate to RACF classes across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

For other security-related changes, see [Changes to security](#). For changes to transactions, see [Changes to CICS transactions](#).

Command	5.4	5.5	5.6	6.1
CREATE DUMPCODE			NEW: resource identifier DUMPCODE	
INQUIRE JVMENDPOINT SET JVMENDPOINT			NEW: resource identifier JVMENDPOINT	
CREATE MQMONITOR DISCARD MQMONITOR INQUIRE MONITOR SET MONITOR	NEW: resource identifier MQMON			

Table 33. Changes to RACF classes related to command security, by release of CICS TS. These changes are new resource identifiers for SPI commands. See CICS resources subject to command security checking and [Resource and command check cross-reference](#) for a list of all of the SPI commands and the RACF ACCESS required for each one. (continued)

Command	5.4	5.5	5.6	6.1
INQUIRE NODEJSAPP		NEW: resource identifier NODEJSAPP		
PERFORM JVMSERVER			NEW: resource identifier JVMSERVER ACCESS(UPDATE) is required for the command. ACCESS(UPDATE) is required for the named JVMSERVER resource identifier.	
SET PROGRAM	NEW: resource identifier REPLICATION. ACCESS(ALTER) is required for REPLICATION option.			
INQUIRE SYSDUMPCODE SET SYSDUMPCODE	NEW: resource identifier SYSDUMPCODE. ACCESS(CONTROL) is required for SET with JOBLIST option.			
INQUIRE WLMHEALTH SET WLMHEALTH	NEW: resource identifier WLMHEALTH. Requires APAR PI84397.			

Table 34. Changes to RACF classes related to CICS user IDs, by release of CICS TS

User ID	5.4	5.5	5.6	6.1
Default user ID			Default user no longer needs command authority for any CAT 3 CICS transactions. See Default user ID security definitions .	
Region user ID	Security for submitting a JCL job to the internal reader.			
KERBEROSUSER	NEW with APAR: PI85443	NEW SIT parameter KERBEROSUSER to specify the user ID associated with the Kerberos service principal for the CICS region.		

Table 35. Changes to other RACF classes by release of CICS TS

Class	Profile	5.4	5.5	5.6	6.1
FACILITY	DFHSIT.HPO		NEW: Control of HPO SIT override		
IDTDATA	JWT.applid.userid.SAF			NEW: support for JWT with RACF	
PTKTDATA	IRRPTAUTH.applid.userid	NEW XPTKT system initialization parameter			
SURROGAT	userid.DFHEXCI	NEW with APAR: PH09898	NEW with APAR: PH09898	NEW: surrogate user checking for EXCI	
SURROGAT	userid.DFHQUERY		NEW: Application-specific security (QUERY SECURITY)		
SURROGAT	userid.SUBMIT		NEW: security for submitting a JCL job to the internal reader		

Changes to CICS API

This section summarizes the changes to the CICS application interface of **EXEC CICS** commands across supported CICS releases. Use this information to plan the impact on applications of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases” on page 214](#).

Highlights of changes across supported releases of CICS TS

Table 36 on page 109 lists new and changed CICS API commands and macros in each supported CICS TS release.

The links provided for new commands take you to their reference information in the product documentation.

The links provided for changed commands and macros take you to the relevant tables below where brief descriptions of the changes are provided.

5.4	5.5	5.6	6.1
<p>NEW:</p> <ul style="list-style-type: none"> • FETCH ANY • FETCH CHILD • FREE CHILD • RUN TRANSID • TRANSFORM DATATOJSON • TRANSFORM JSONTODATA <p>NEW (EXCI):</p> <ul style="list-style-type: none"> • DELETE CHANNEL (EXCI) • DELETE CONTAINER (EXCI) • GET CONTAINER (EXCI) • MOVE CONTAINER (EXCI) • PUT CONTAINER (EXCI) <p>EXCI can issue these commands in batch.</p>	<p>NEW (EXCI):</p> <ul style="list-style-type: none"> • ENDBROWSE CONTAINER (EXCI) • GETNEXT CONTAINER (EXCI) • QUERY CHANNEL (EXCI) • STARTBROWSE CONTAINER (EXCI) 	<p>NEW: None</p>	<p>NEW:</p>

Table 36. Highlights of CICS API changes across supported releases of CICS TS (continued)

5.4	5.5	5.6	6.1
<p>CHANGED:</p> <ul style="list-style-type: none"> • “DEFINE COUNTER and DEFINE DDCOUNTER” on page 111 • “DELETE” on page 111 • “GET COUNTER and GET DDCOUNTER” on page 112 • “LINK (EXCI)” on page 112 • “QUERY COUNTER and QUERY DDCOUNTER” on page 113 • “READ” on page 113 • “READNEXT” on page 113 • “READPREV” on page 113 • “REQUEST ENCRYPTPTKT” on page 114 • “REWIND COUNTER and REWIND DDCOUNTER” on page 114 • “REWRITE” on page 114 • “UPDATE COUNTER and UPDATE DDCOUNTER” on page 115 • “VERIFY TOKEN” on page 116 • “WEB RECEIVE (Server)” on page 117 • “WEB SEND (Server)” on page 117 • “WRITE” on page 117 • “XCTL” on page 118 <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> • “CHANGE PASSWORD” on page 111 • “CHANGE PHRASE” on page 111 • “VERIFY PASSWORD” on page 116 • “VERIFY PHRASE” on page 116 	<p>CHANGED:</p> <ul style="list-style-type: none"> • “ASSIGN” on page 110 • “DELAY” on page 111 • “DELETE” on page 111 • “ENDDBR” on page 112 • “FREEMAIN” on page 112 • “FREEMAIN64” on page 112 • “GETNEXT CONTAINER (CHANNEL)” on page 112 • “QUERY SECURITY” on page 113 • “READ” on page 113 • “READNEXT” on page 113 • “READPREV” on page 113 • “RECEIVE” on page 113 • “RESETBR” on page 114 • “REWRITE” on page 114 • “SEND” on page 114 • “SPOOLWRITE” on page 114 • “START” on page 115 • “STARTBR” on page 115 • “STARTBROWSE CONTAINER (CHANNEL)” on page 115 • “VERIFY PASSWORD” on page 116 • “VERIFY PHRASE” on page 116 • “WEB CONVERSE” on page 116 • “WEB RECEIVE (Client)” on page 117 • “WEB SEND (Client)” on page 117 • “WRITE” on page 117 • “WRITEQ TD” on page 117 <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> • “CHANGE PASSWORD” on page 111 • “CHANGE PHRASE” on page 111 • “VERIFY PASSWORD” on page 116 • “VERIFY PHRASE” on page 116 • “WEB CONVERSE” on page 116 • “WEB SEND (Client)” on page 117 	<p>CHANGED:</p> <ul style="list-style-type: none"> • “VERIFY TOKEN” on page 116 • “WEB CONVERSE” on page 116 • “WEB SEND (Client)” on page 117 <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> • “CHANGE PASSWORD” on page 111 • “CHANGE PHRASE” on page 111 • “VERIFY PASSWORD” on page 116 • “VERIFY PHRASE” on page 116 • “VERIFY TOKEN” on page 116 • “WEB CONVERSE” on page 116 	<p>CHANGED:</p> <ul style="list-style-type: none"> • “ASSIGN” on page 110 • “CHANGE PASSWORD” on page 111 • “CHANGE PHRASE” on page 111 • “GETMAIN” on page 112 • “GETMAIN64” on page 112 • “START CHANNEL” on page 115 • “VERIFY PASSWORD” on page 116 • “VERIFY PHRASE” on page 116 • “WEB OPEN” on page 116 <p>DEPRECATED: CIPHERS option</p> <ul style="list-style-type: none"> • “WRITE OPERATOR” on page 117 • “DFHEIENT macro” on page 118

Changes to EXEC CICS commands and macros, by release of CICS TS

View changes by command or macro:

ASSIGN

5.4	5.5	5.6	6.1
	<p>NEW OPTIONS:</p> <ul style="list-style-type: none"> • LOCALCCSID • TNADDR • TNIPFAMILY • TNPORT 		<p>NEW OPTION:</p> <ul style="list-style-type: none"> • GMEXITOPT

Go back to [Highlights of changes across releases](#)

CHANGE PASSWORD

5.4	5.5	5.6	6.1
CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17 PH51378: New INVREQ with RESP2 value of 32.	CHANGED: New NOTAUTH with RESP2 value of 1 New NOTAUTH with RESP2 value of 17 CHANGED with APAR: PH51378: New INVREQ with RESP2 value of 32.

[Go back to Highlights of changes across releases](#)

CHANGE PHRASE

5.4	5.5	5.6	6.1
CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17 PH51378: New INVREQ with RESP2 value of 32.	CHANGED: New NOTAUTH with RESP2 value of 1 New NOTAUTH with RESP2 value of 17 CHANGED with APAR: PH51378: New INVREQ with RESP2 value of 32.

[Go back to Highlights of changes across releases](#)

DEFINE COUNTER and DEFINE DCOUNTER

5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none">NOSUSPEND			

[Go back to Highlights of changes across releases](#)

DELAY

5.4	5.5	5.6	6.1
	CHANGED: New condition NORMAL with RESP2 value 23		

[Go back to Highlights of changes across releases](#)

DELETE

5.4	5.5	5.6	6.1
CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

[Go back to Highlights of changes across releases](#)

DELETE COUNTER and DELETE DCOUNTER

5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none">NOSUSPEND			

[Go back to Highlights of changes across releases](#)

ENDBR

5.4	5.5	5.6	6.1
	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

FREEMAIN

5.4	5.5	5.6	6.1
	CHANGED: New INVREQ with RESP2 value of 3		

Go back to [Highlights of changes across releases](#)

FREEMAIN64

5.4	5.5	5.6	6.1
	CHANGED: New INVREQ with RESP2 value of 3		

Go back to [Highlights of changes across releases](#)

GET COUNTER and GET DCOUNTER

5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none">• NOSUSPEND			

Go back to [Highlights of changes across releases](#)

GETMAIN

5.4	5.5	5.6	6.1
			NEW OPTION: <ul style="list-style-type: none">• EXECUTABLE

Go back to [Highlights of changes across releases](#)

GETMAIN64

5.4	5.5	5.6	6.1
			NEW OPTION: <ul style="list-style-type: none">• EXECUTABLE

Go back to [Highlights of changes across releases](#)

GETNEXT CONTAINER (CHANNEL)

5.4	5.5	5.6	6.1
	CHANGED: The order in which containers are returned is changed.		

Go back to [Highlights of changes across releases](#)

LINK (EXCI)

5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none">• CHANNEL			

Go back to [Highlights of changes across releases](#)

QUERY COUNTER and QUERY DCOUNTER

5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none">NOSUSPEND			

Go back to [Highlights of changes across releases](#)

QUERY SECURITY

5.4	5.5	5.6	6.1
	CHANGED: Performance improvement. The number of TCB switches has been reduced if more than one access level is specified on the command. NEW OPTION: USERID		

Go back to [Highlights of changes across releases](#)

READ

5.4	5.5	5.6	6.1
CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

READNEXT

5.4	5.5	5.6	6.1
CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

READPREV

5.4	5.5	5.6	6.1
CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

RECEIVE

5.4	5.5	5.6	6.1
	CHANGED: The command behavior after a TERMERR condition is changed. Any action, other than a FREE, on the conversation that caused the TERMERR condition results in another TERMERR condition instead of an ATCV abend.		

Go back to [Highlights of changes across releases](#)

REQUEST ENCRYPTPTKT

5.4	5.5	5.6	6.1
CHANGED: <ul style="list-style-type: none">• New INVREQ with RESP2 value of 257• New NOTAUTH with RESP2 value of 260			

Go back to [Highlights of changes across releases](#)

RESETBR

5.4	5.5	5.6	6.1
	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

REWIND COUNTER and REWIND DCOUNTER

5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none">• NOSUSPEND			

Go back to [Highlights of changes across releases](#)

REWRITE

5.4	5.5	5.6	6.1
CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

SEND

5.4	5.5	5.6	6.1
	CHANGED: The command behavior after a TERMERR condition is changed. Any action, other than a FREE, on the conversation that caused the TERMERR condition results in another TERMERR condition instead of an ATCV abend.		

Go back to [Highlights of changes across releases](#)

SPOOLWRITE

5.4	5.5	5.6	6.1
	CHANGED: New NOTAUTH with RESP2 value of 1		

Go back to [Highlights of changes across releases](#)

START

5.4	5.5	5.6	6.1
	<p>CHANGED:</p> <ul style="list-style-type: none">• New condition INVREQ with RESP2 value 400• If the transaction to be started is defined as dynamic, the distributed router will be invoked only if a valid distributed routing program name is specified. If omitted, the DSRTPGM system initialization parameter assumes a value of NONE by default, and the distributed router is not invoked; while in previous releases the START command invoked the IBM-supplied routing program DFHDSRP. <p>If the transaction is defined with DYNAMIC(YES), then it is eligible for dynamic routing without the need to specify ROUTABLE(YES).</p>		

Go back to [Highlights of changes across releases](#)

START CHANNEL

5.4	5.5	5.6	6.1
			<p>NEW OPTIONS:</p> <ul style="list-style-type: none">• NOCHECK• PROTECT

Go back to [Highlights of changes across releases](#)

STARTBR

5.4	5.5	5.6	6.1
	<p>THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.</p>		

Go back to [Highlights of changes across releases](#)

STARTBROWSE CONTAINER (CHANNEL)

5.4	5.5	5.6	6.1
	<p>CHANGED: The order in which containers are returned is changed.</p>		

Go back to [Highlights of changes across releases](#)

UPDATE COUNTER and UPDATE DCOUNTER

5.4	5.5	5.6	6.1
<p>NEW OPTION:</p> <ul style="list-style-type: none">• NOSUSPEND			

Go back to [Highlights of changes across releases](#)

VERIFY PASSWORD

5.4	5.5	5.6	6.1
CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	NEW OPTION: GROUPID CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED: New NOTAUTH with RESP2 value of 1 New NOTAUTH with RESP2 value of 17

Go back to [Highlights of changes across releases](#)

VERIFY PHRASE

5.4	5.5	5.6	6.1
CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED: New option: GROUPID CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED with APAR: PH23078: New NOTAUTH with RESP2 value of 1 PH31270: New NOTAUTH with RESP2 value of 17	CHANGED: New NOTAUTH with RESP2 value of 1 New NOTAUTH with RESP2 value of 17

Go back to [Highlights of changes across releases](#)

VERIFY TOKEN

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • OUTTOKEN • OUTTOKENLEN 		CHANGED: Enhanced to support JSON Web Tokens (JWTs) provided by RACF.	

Go back to [Highlights of changes across releases](#)

WEB CONVERSE

5.4	5.5	5.6	6.1
	CHANGED: The body of an HTTP client request can be received into, and sent from, 64-bit (above-the-bar) storage. CHANGED with APAR PH25067: The PATCH method is supported.	CHANGED: The PATCH method is supported.	

Go back to [Highlights of changes across releases](#)

WEB OPEN

5.4	5.5	5.6	6.1
			CHANGED: WEB OPEN URIMAP uses the cached IP address and HTTP information obtained with the initial connection, for subsequent outbound web requests using the same URIMAP. DEPRECATED: CIPHERS option no longer allowed on new compiles. The CIPHERS option is deprecated for existing programs when MAXTLSLEVEL is TLS12 and ignored for existing programs when MAXTLSLEVEL is TLS13.

Go back to [Highlights of changes across releases](#)

WEB RECEIVE (Client)

5.4	5.5	5.6	6.1
	CHANGED: The body of an HTTP client request can be received into 64-bit storage.		

Go back to [Highlights of changes across releases](#)

WEB RECEIVE (Server)

5.4	5.5	5.6	6.1
CHANGED: The body of an HTTP server request can be received into 64-bit storage.			

Go back to [Highlights of changes across releases](#)

WEB SEND (Client)

5.4	5.5	5.6	6.1
	CHANGED: The body of an HTTP client response can be sent from 64-bit storage. CHANGED with APAR PH25067: The PATCH method is supported.	CHANGED: The PATCH method is supported.	

Go back to [Highlights of changes across releases](#)

WEB SEND (Server)

5.4	5.5	5.6	6.1
CHANGED: The body of an HTTP server response can be sent from 64-bit storage.			

Go back to [Highlights of changes across releases](#)

WRITE

5.4	5.5	5.6	6.1
CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.		

Go back to [Highlights of changes across releases](#)

WRITE OPERATOR

5.4	5.5	5.6	6.1
			NEW OPTION: CONSNAME CHANGED: New INVREQs with RESP2 values of 7 and 8 New ERROR with RESP2 value of 1

Go back to [Highlights of changes across releases](#)

WRITEQ TD

5.4	5.5	5.6	6.1
	CHANGED: New NOTAUTH with RESP2 value of 102		

Go back to [Highlights of changes across releases](#)

XCTL

5.4	5.5	5.6	6.1
CHANGED: New INVREQs with RESP2 values of 33 and 34.			

Go back to [Highlights of changes across releases](#)

DFHEIENT macro

5.4	5.5	5.6	6.1
			NEW OPTION: DATA_EXECUTABLE to request that dynamic storage is not protected from instruction execution.

Go back to [Highlights of changes across releases](#)

Changes to JCICS API

This section summarizes the changes to the packages, classes, and methods of the CICS Java class library (JCICS) API across supported CICS releases.

See also the list of deprecated packages, classes, fields, exceptions, and methods in *Deprecated JCICS API* of your CICS release:

- [6.1](#)
- [5.6](#)
- [5.5](#)
- [5.4](#)

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of changes across supported releases of CICS TS

[Table 37](#) on page 118 lists new, changed, deprecated, and removed classes in each supported CICS TS release.

The links provided take you to the relevant tables below where brief descriptions of the changes to specific classes are provided.

Table 37. Highlights of JCICS API changes across supported CICS TS releases			
5.4	5.5	5.6	6.1
CHANGED CLASS: NEW METHODS introduced to: <ul style="list-style-type: none"> • “AsyncService and AsyncServiceImpl” on page 119 • “ChildResponse” on page 119 • “Future<ChildResponse>” on page 120 • “Container” on page 120 			CHANGED CLASS: REMOVED METHODS from: <ul style="list-style-type: none"> • “Container” on page 120 • “Program” on page 120 • “Task” on page 120 • “CICSSecurityManager” on page 121 • “TerminalPrincipalFacility” on page 121 • “HTTPHeader” on page 121 • “IsCICS” on page 121 See Changes to externals in this release for more information.

Table 37. Highlights of JCICS API changes across supported CICS TS releases (continued)			
5.4	5.5	5.6	6.1
			REMOVED CLASS: <ul style="list-style-type: none"> AbendError ILongHolder TerminalPrincipalFacilityExtended UnknownCicsError

Changes to JCICS API by release of CICS TS

See changes by class:

- [“AsyncService and AsyncServiceImpl” on page 119](#)
- [“ChildResponse” on page 119](#)
- [“Container” on page 120](#)
- [“Future<ChildResponse>” on page 120](#)
- [“Program” on page 120](#)
- [“Task” on page 120](#)
- [“CICSSecurityManager” on page 121](#)
- [“TerminalPrincipalFacility” on page 121](#)
- [“HTTPHeader” on page 121](#)
- [“IsCICS” on page 121](#)

Note: Classes and methods that are removed in a particular release are already deprecated in a previous release.

See 6.1 JCICS Javadoc in full [here](#).

AsyncService and AsyncServiceImpl

Table 38. Changes to AsyncService and AsyncServiceImpl classes by release			
5.4	5.5	5.6	6.1
NEW METHODS: <ul style="list-style-type: none"> runTransactionId() getAny() freeChild() 			

Go back to [Highlights of changes across releases](#)

ChildResponse

Table 39. Changes to ChildResponse class by release			
5.4	5.5	5.6	6.1
NEW METHODS: <ul style="list-style-type: none"> getCompletionStatus() getAbendCode() getChannel() 			

Go back to [Highlights of changes across releases](#)

Future<ChildResponse>

Table 40. Changes to Future<ChildResponse> class by release			
5.4	5.5	5.6	6.1
NEW METHODS: <ul style="list-style-type: none"> get() isDone() 			

Go back to [Highlights of changes across releases](#)

Container

Table 41. Changes to Container class by release			
5.4	5.5	5.6	6.1
NEW METHOD: <ul style="list-style-type: none"> getDatatype() 			REMOVED METHOD: <ul style="list-style-type: none"> put(String stringData) See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

Program

Table 42. Changes to Program class by release			
5.4	5.5	5.6	6.1
			REMOVED METHODS: <ul style="list-style-type: none"> link(com.ibm.record.IByteBuffer) link(com.ibm.record.IByteBuffer, com.ibm.record.IByteBuffer) See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

Task

Table 43. Changes to Task class by release			
5.4	5.5	5.6	6.1
			REMOVED METHODS: <ul style="list-style-type: none"> disableTaskTrace() enableTaskTrace() See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

CICSSecurityManager

Table 44. Changes to CICSSecurityManager class by release			
5.4	5.5	5.6	6.1
			REMOVED METHODS: <ul style="list-style-type: none">• checkMultiCast(InetAddress, byte)• checkAwtEventQueueAccess()• checkMemberAccess(Class<?> theClass, int)• checkSystemClipboardAccess()• checkTopLevelWindow(Object window) See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

TerminalPrincipalFacility

Table 45. Changes to TerminalPrincipalFacility class by release			
5.4	5.5	5.6	6.1
			REMOVED METHOD: <ul style="list-style-type: none">• waitTerminal() See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

HTTPHeader

Table 46. Changes to Headteacher class by release			
5.4	5.5	5.6	6.1
			REMOVED METHOD: <ul style="list-style-type: none">• getHeader See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

IsCICS

Table 47. Changes to IsCICS class by release			
5.4	5.5	5.6	6.1
			NEW METHOD: <ul style="list-style-type: none">• getApiStatus (boolean lateBind) See Changes to externals in this release for more information.

Go back to [Highlights of changes across releases](#)

Changes to CICS support for application programming languages

This section lists application programming languages that are supported by the CICS run time and translator across in-service CICS releases. It also summarizes changes to the CICS translator across in-service CICS releases.

All COBOL, PL/I, and C/C++ compilers listed here can use the integrated CICS translator for CICS online programs and for batch programs using the External CICS Interface (EXCI) command level API.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Support overview	Listing of supported languages	The CICS translator
<ul style="list-style-type: none"> • “CICS support for application programming languages” on page 122 • “CICS support for compilers and application programming language versions that are withdrawn from service” on page 122 	<ul style="list-style-type: none"> • Assembler • COBOL • C/C++ • Java • Node.js • PL/I • REXX 	“Changes to the CICS translator, by release of CICS TS for z/OS” on page 124

CICS support for application programming languages

For details about CICS support for a specific application programming language and for changes in the CICS support in a specific release, refer to the language and compiler documentation.

For information about the availability and end of service dates for IBM application programming products, see [Software lifecycle information in IBM Support](#).

CICS support for compilers and application programming language versions that are withdrawn from service

Periodically, assemblers, compilers, and application programming language versions are withdrawn from service. This can happen within the supported lifetime of a CICS release. Although continued compatibility is not necessarily affected within CICS at this point, it is strongly recommended that you upgrade the level of your environments to use the in-service equivalents of such unsupported assemblers, compilers, or application programming language versions before their end of service dates. IBM does not guarantee that such unsupported environments will remain useable within the CICS release after this point.

Supported application programming languages and compilers, by release of CICS TS for z/OS

The following tables provide an overview of the releases of application programming languages and compilers that CICS TS for z/OS supports across in-service releases.

Assembler

Product name PID	5.4	5.5	5.6	6.1
High Level Assembler for MVS and VM and VSE 1.6 and later 5696-234	√	√	√	√

COBOL

Table 49. Support for Enterprise COBOL for z/OS, by release of CICS TS

Product name PID	5.4	5.5	5.6	6.1
Enterprise COBOL for z/OS 6.4 5655-EC6	✓	✓	✓	✓
Enterprise COBOL for z/OS 6.3 5655-EC6	✓	✓	✓	✓
Enterprise COBOL for z/OS 6.2 5655-EC6	✓	✓	✓	✓

C and C++

Table 50. Support for XL C/C++, by release of CICS TS

Product name PID	5.4	5.5	5.6	6.1
z/OS 2.4.1 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓
z/OS 2.4 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓
z/OS 2.3.1 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓
z/OS 2.3 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓

Java

The following versions of Java are required to run CICS Java applications, WebSphere Application Server Liberty, Axis2, web services validation, the CICS web services and XML assistants.

Table 51. Support for Java SDK, by release of CICS TS

Product name PID	5.4	5.5	5.6	6.1
IBM Semeru Runtime Certified Edition for z/OS, 11.0 5655-DGJ		✓ APAR PH47221	✓ APAR PH47221	✓
IBM 64-bit SDK for z/OS, Java Technology Edition, Version 8 5655-DGH	✓ APARs PI87695 and PI87181	✓	✓	✓

Node.js

Table 52. Support for IBM Open Enterprise SDK for Node.js, by release of CICS TS

Product name PID	5.4	5.5	5.6	6.1
IBM Open Enterprise SDK for Node.js, 18.0 5655-NOJ		✓ APAR PH30707	✓ APAR PH30707	✓
IBM Open Enterprise SDK for Node.js, 16.0 5655-NOE		✓ APAR PH30707	✓ APAR PH30707	✓

PL/I

Table 53. Support for Enterprise PL/I for z/OS, by release of CICS TS

Product name PID	5.4	5.5	5.6	6.1
Enterprise PL/I for z/OS 6.1 5655-PL6	✓	✓	✓	✓
Enterprise PL/I for z/OS 5.3 5655-PL5	✓	✓	✓	✓
Enterprise PL/I for z/OS 5.2 5655-PL5	✓	✓	✓	✓
Enterprise PL/I for z/OS 5.1 5655-PL5	✓	✓	✓	✓

REXX

Table 54. Support for REXX, by release of CICS TS

Product	5.4	5.5	5.6	6.1
REXX/CICS	✓	✓	✓	✓

Changes to the CICS translator, by release of CICS TS for z/OS

Table 55 on page 124 summarizes the changes to the integrated CICS translator that can be used for CICS applications, across supported CICS releases.

Table 55. Changes to the CICS translator, by release of CICS TS

5.4	5.5	5.6	6.1
	<p>WITHDRAWN: The CICS translator no longer inserts the COBOL LIB parameter into the CBL card when compiling COBOL programs.</p>		
	<p>CHANGED:</p> <p>The CICS translator can now process the restricted commands parmlib member DFHAPIR, which contains rules that identify restricted CICS API and SPI commands.</p> <p>The CICS translator attempts to read a DFHAPIR member and issues information messages indicating either that the member was not found or the parmlib in which the member was found.</p> <p>During translation, the translator detects whether source programs are using any of the restricted commands and keywords, and will generate warning or error messages in case of violation.</p> <p>Note that CICS already mandates that the SDFHLOAD library must not be APF-authorized. With this enhancement the CICS translator uses z/OS services to read the DFHAPIR member and use of those services will result in a U0101 abend if SDFHLOAD is APF-authorized.</p>		

Changes to CICS assistants

This section summarizes the changes to CICS assistants across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of changes across supported releases of CICS TS

All CICS assistants are enhanced with support for new mapping levels, as shown in [Table 56](#) on page 125.

5.4	5.5	5.6	6.1
NEW: Support for mapping level 4.1 NEW with APAR: Support for mapping levels 4.2 and 4.3	NEW: Support for mapping levels 4.2 and 4.3		

Changes to CICS assistants by release of CICS TS

View changes by assistant:

XML assistants	JSON assistants	Web services assistants
<ul style="list-style-type: none"> • DFHLS2SC • DFHSC2LS 	<ul style="list-style-type: none"> • DFHJS2LS • DFHLS2JS 	<ul style="list-style-type: none"> • DFHLS2WS • DFHWS2LS

DFHJS2LS

In addition to support for mapping levels as indicated in [Table 56](#) on page 125, [Table 57](#) on page 125 summarizes all the other enhancements to [DFHJS2LS](#), [JSON schema to high-level language conversion for linkable interface](#) across supported CICS TS releases.

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • DATA-SCREENING • DEFAULT-ARRAY-MAXITEMS • DEFAULT-FRACTION-DIGITS • FULL on WIDE-COMP3 • HYPHENS-AS-UNDERSCORES on MAPPING-OVERRIDES NEW OPTIONS with APAR: <ul style="list-style-type: none"> • ADDITIONAL-PROPERTIES-DEFAULT • ADDITIONAL-PROPERTIES-MAX • ADDITIONAL-PROPERTIES-SIZE 	NEW OPTIONS: <ul style="list-style-type: none"> • ADDITIONAL-PROPERTIES-DEFAULT • ADDITIONAL-PROPERTIES-MAX • ADDITIONAL-PROPERTIES-SIZE 	NEW OPTION: <ul style="list-style-type: none"> • PATHMAIN 	
	CHANGED: JSON schema to high-level language mapping now supports oneOf, anyOf, allOf and not keywords.		

DFHLS2JS

In addition to support for mapping levels as indicated in [Table 56](#) on page 125, [Table 58](#) on page 126 summarizes all the other enhancements to [DFHLS2JS](#), [High-level language to JSON schema conversion for linkable interface](#) across supported CICS TS releases.

Table 58. Changes to DFHLS2JS by release			
5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none"> DATA-SCREENING NEW OPTION with APAR: <ul style="list-style-type: none"> PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	NEW OPTION: <ul style="list-style-type: none"> PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	NEW OPTION: <ul style="list-style-type: none"> PATHMAIN 	

DFHLS2SC

In addition to support for mapping levels as indicated in Table 56 on page 125, Table 59 on page 126 summarizes all the other enhancements to DFHLS2SC, High-level language to XML schema conversion across supported CICS TS releases.

Table 59. Changes to DFHLS2SC by release			
5.4	5.5	5.6	6.1
NEW OPTION: <ul style="list-style-type: none"> DATA-SCREENING NEW OPTION with APAR: <ul style="list-style-type: none"> PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	NEW OPTION: <ul style="list-style-type: none"> PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	NEW OPTION: <ul style="list-style-type: none"> PATHMAIN 	

DFHLS2WS

In addition to support for mapping levels as indicated in Table 56 on page 125, Table 60 on page 126 summarizes all the other enhancements to DFHLS2WS, High-level language to WSDL conversion across supported CICS TS releases.

Table 60. Changes to DFHLS2WS by release			
5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> DATA-SCREENING PORT-NAME BINDING-NAME SERVICE-NAME NEW OPTION with APAR: <ul style="list-style-type: none"> PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	NEW OPTION: <ul style="list-style-type: none"> PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	NEW OPTION: <ul style="list-style-type: none"> PATHMAIN 	

DFHSC2LS

In addition to support for mapping levels as indicated in Table 56 on page 125, Table 61 on page 126 summarizes all the other enhancements to DFHSC2LS, XML schema to high-level language conversion across supported CICS TS releases.

Table 61. Changes to DFHSC2LS by release			
5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> DATA-SCREENING HYPHENS-AS-UNDERSCORES on MAPPING-OVERRIDES FULL on WIDE-COMP3 NEW OPTIONS with APAR: <ul style="list-style-type: none"> ADDITIONAL-PROPERTIES-DEFAULT ADDITIONAL-PROPERTIES-MAX ADDITIONAL-PROPERTIES-SIZE 	NEW OPTIONS: <ul style="list-style-type: none"> ADDITIONAL-PROPERTIES-DEFAULT ADDITIONAL-PROPERTIES-MAX ADDITIONAL-PROPERTIES-SIZE 	NEW OPTION: <ul style="list-style-type: none"> PATHMAIN 	

DFHWS2LS

In addition to support for mapping levels as indicated in Table 56 on page 125, Table 62 on page 127 summarizes all the other enhancements to [DFHWS2LS](#), WSDL to high-level language conversion across supported CICS TS releases.

5.4	5.5	5.6	6.1
<p>NEW OPTIONS:</p> <ul style="list-style-type: none"> DATA-SCREENING HYPHENS-AS-UNDERSCORES on MAPPING-OVERRIDES FULL on WIDE-COMP3 <p>NEW OPTIONS with APAR:</p> <ul style="list-style-type: none"> ADDITIONAL-PROPERTIES-DEFAULT ADDITIONAL-PROPERTIES-MAX ADDITIONAL-PROPERTIES-SIZE 	<p>NEW OPTIONS:</p> <ul style="list-style-type: none"> ADDITIONAL-PROPERTIES-DEFAULT ADDITIONAL-PROPERTIES-MAX ADDITIONAL-PROPERTIES-SIZE 	<p>NEW OPTION:</p> <ul style="list-style-type: none"> PATHMAIN 	
	<p>CHANGED with APAR PH21097: Updated to set the required Java properties to support use of SAF keyrings. See this information for guidance on how to use SSL parameters SSL - KEYSTORE and SSL - TRUSTSTORE for DFHWS2LS.</p>	<p>CHANGED with APAR PH21097: Updated to set the required Java properties to support use of SAF keyrings. See this information for guidance on how to use SSL parameters SSL - KEYSTORE and SSL - TRUSTSTORE for DFHWS2LS.</p>	

Changes to SIT parameters

This section summarizes the changes to the system initialization parameters across supported CICS TS releases.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of changes across supported releases of CICS TS

Table 63 on page 127 lists new, changed, deprecated or removed SIT parameters in each supported CICS TS release.

The links provided for new parameters take you to their reference information in the product documentation.

The links, if provided, for changed, deprecated, or removed parameters take you to the relevant tables below where brief descriptions of the changes are provided.

5.4	5.5	5.6	6.1
<p>NEW:</p> <ul style="list-style-type: none"> SNPRESET WLMHEALTH XPTKT <p>NEW with APAR:</p> <ul style="list-style-type: none"> KERBEROSUSER 	<p>NEW:</p> <ul style="list-style-type: none"> KERBEROSUSER 	<p>NEW:</p> <p>None</p>	<p>NEW:</p> <ul style="list-style-type: none"> EPCDSASZE EPUDSASZE MAXTLSLEVEL PCDSASZE PUDSASZE RESOVERRIDES SDTMEMLIMIT

Table 63. Highlights of SIT changes across supported CICS TS releases (continued)

5.4	5.5	5.6	6.1
CHANGED: <ul style="list-style-type: none"> • “EDSALIM” on page 130 • “ICVR” on page 130 • “MAXOPENTCBS” on page 131 • “MAXSSLTCBS” on page 131 • “MINTLSLEVEL” on page 131 • “RACFSYNC” on page 132 • “TCPIP” on page 132 	CHANGED: <ul style="list-style-type: none"> • “GMTRAN” on page 130 • “GNTRAN” on page 130 • “HPO” on page 130 • “MINTLSLEVEL” on page 131 • “PLTPI” on page 132 • “PLTSD” on page 132 • “USSHOME” on page 133 CHANGED with APAR: <ul style="list-style-type: none"> • “KEYRING” on page 131 	CHANGED: <ul style="list-style-type: none"> • “CMDSEC” on page 128 • “CONFDATA” on page 129 • “DUMP” on page 129 • “DUMPSW” on page 129 • “GMTRAN” on page 130 • “TRTABSZ” on page 133 • “TRTRANSZ” on page 133 CHANGED with APAR: <ul style="list-style-type: none"> • “CPSMCONN” on page 129 • “KEYRING” on page 131 	CHANGED: <ul style="list-style-type: none"> • “CPSMCONN” on page 129 • “DTRPGM” on page 129 • “MINTLSLEVEL” on page 131 CHANGED with APAR: <ul style="list-style-type: none"> • “KEYRING” on page 131
DEPRECATED: None	DEPRECATED: None	DEPRECATED: None	DEPRECATED: None
REMOVED: <ul style="list-style-type: none"> • “SECVFYFREQ” on page 132 	REMOVED: None	REMOVED: None	REMOVED: <ul style="list-style-type: none"> • ENCRYPTION

Changes to SIT parameters by release of CICS TS

View changes by parameter:

Index

A - I	J - R	S - Z
<ul style="list-style-type: none"> • “CMDSEC” on page 128 • “CONFDATA” on page 129 • “CPSMCONN” on page 129 • “DTRPGM” on page 129 • “DUMP” on page 129 • “DUMPSW” on page 129 • “EDSALIM” on page 130 • “GMTRAN” on page 130 • “GNTRAN” on page 130 • “HPO” on page 130 • “ICVR” on page 130 	<ul style="list-style-type: none"> • “KERBEROSUSER” on page 131 • “KEYRING” on page 131 • “MAXOPENTCBS” on page 131 • “MAXSSLTCBS” on page 131 • “MINTLSLEVEL” on page 131 • “PLTPI” on page 132 • “PLTSD” on page 132 • “RACFSYNC” on page 132 	<ul style="list-style-type: none"> • “TCPIP” on page 132 • “TRTABSZ” on page 133 • “TRTRANSZ” on page 133 • “USSHOME” on page 133

CMDSEC

Table 64. Changes to CMDSEC by release

5.4	5.5	5.6	6.1
		CHANGED: The ALWAYS option no longer affects category 3 transactions.	

[Back to Highlights of SIT changes across releases](#) or [the alphabetical index](#)

CONFDATA

5.4	5.5	5.6	6.1
		CHANGED: The default is changed to HIDE. The HIDE option replaces HIDE TC, which means that all transport data is subject to CONFDATA . If the deprecated CONFDATA=HIDE TC is specified in the SIT or in an override, CONFDATA=HIDE is assumed, and no message will be issued.	

Back to [Highlights of SIT changes across releases](#) or the [alphabetical index](#)

CPSMCONN

5.4	5.5	5.6	6.1
		CHANGED with APAR: New option SMSSJ initializes a single CICS region that is not part of a CICSplex as a CICS System Management Single Server (SMSS) and automatically creates a Liberty JVM server named EYUCMCIJ as the CMCI JVM server of the region.	NEW OPTION: SMSSJ CPSMCONN=SMSSJ initializes a single CICS region that is not part of a CICSplex as a CICS System Management Single Server (SMSS) and automatically creates a Liberty JVM server named EYUCMCIJ as the CMCI JVM server of the region.

Back to [Highlights of SIT changes across releases](#) or the [alphabetical index](#)

DTRPGM

5.4	5.5	5.6	6.1
			CHANGED: When DTRPGM=NONE is specified, no routing program is invoked. If you are using a routing program with the name of NONE, you must rename the program and change the DTRPGM setting accordingly.

Back to [Highlights of SIT changes across releases](#) or the [alphabetical index](#)

DUMP

5.4	5.5	5.6	6.1
		NEW OPTION: TABLEONLY Allows suppression of system dumps except for those that have an entry in the dump table that allow sdumps to be taken.	

Back to [Highlights of SIT changes across releases](#) or the [alphabetical index](#)

DUMPSW

5.4	5.5	5.6	6.1
		NEW OPTION: ALL Allows continuous switching between the two transaction dump data sets DFHDMPA and DFHDMPB.	

EDSALIM

Table 70. Changes to EDSALIM by release			
5.4	5.5	5.6	6.1
CHANGED: Minimum is changed to 64 MB.			

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

GMTRAN

Table 71. Changes to GMTRAN by release			
5.4	5.5	5.6	6.1
	NEW OPTIONS: EXIT or DISCONNECT Controls terminal disconnection by using PF3 or PF15 for CESN or CESL.	CHANGED: The DISCONNECT option is extended to the CICS-supplied sign-off transaction CESF, forcing the terminal session to be disconnected upon sign-off.	

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

GNTRAN

Table 72. Changes to GNTRAN by release			
5.4	5.5	5.6	6.1
	NEW OPTIONS: KEEP and DISCARD Specifies whether to keep a pseudo-conversation in use at a terminal that is the subject of a timeout sign-off.		

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

HPO

Table 73. Changes to HPO by release			
5.4	5.5	5.6	6.1
	CHANGED: HPO can now be specified in the PARM parameter on an EXEC PGM=DFHSIP statement or in the SYSIN data set.		

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

ICVR

Table 74. Changes to ICVR by release			
5.4	5.5	5.6	6.1
CHANGED: <ul style="list-style-type: none">Lower limit changed to 250Default value changed to 2000Sample table DFHSIT6\$ changed to specify ICVR=5000 instead of 20000			

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

KERBEROSUSER

Table 75. Changes to KERBEROSUSER by release			
5.4	5.5	5.6	6.1
NEW with APAR: The default is the region user ID.	NEW: Specifies the user ID associated with the Kerberos service principal for the CICS region. MADE OPTIONAL If this parameter is not specified, Kerberos is not supported.		

[Back to Highlights of SIT changes across releases](#) or [the alphabetical index](#)

KEYRING

Table 76. Changes to KEYRING by release			
5.4	5.5	5.6	6.1
	CHANGED with APAR PH49253: Accepts more formats of key ring names to allow use of key rings that are not owned by the region user ID.	CHANGED with APAR PH49253: Accepts more formats of key ring names to allow use of key rings that are not owned by the region user ID.	CHANGED with APAR PH49261: Accepts more formats of key ring names to allow use of key rings that are not owned by the region user ID.

[Back to Highlights of SIT changes across releases](#) or [the alphabetical index](#)

MAXOPENTCBS

Table 77. Changes to MAXOPENTCBS by release			
5.4	5.5	5.6	6.1
CHANGED: The minimum value is changed to 32.			

[Back to Highlights of SIT changes across releases](#) or [the alphabetical index](#)

MAXSSLTCBS

Table 78. Changes to MAXSSLTCBS by release			
5.4	5.5	5.6	6.1
CHANGED: <ul style="list-style-type: none"> Default value changed from 8 to 32. Sample table DFHSIT6\$ changed to specify MAXSSLTCBS=32 instead of 8. 			

[Back to Highlights of SIT changes across releases](#) or [the alphabetical index](#)

MINTLSLEVEL

Table 79. Changes to MINTLSLEVEL by release			
5.4	5.5	5.6	6.1
NEW OPTION: TLS100ONLY	CHANGED: Default value changed from TLS10 to TLS12.		NEW OPTION: TLS13 STABILIZED OPTION: TLS11 REMOVED OPTIONS: <ul style="list-style-type: none"> TLS10 TLS100ONLY

[Back to Highlights of SIT changes across releases](#) or [the alphabetical index](#)

PLTPI

Table 80. Changes to PLTPI by release			
5.4	5.5	5.6	6.1
	CHANGED: Allows specification of the full name of a program list table as an alternative to a suffix.		

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

PLTSD

Table 81. Changes to PLTSD by release			
5.4	5.5	5.6	6.1
	CHANGED: Allows specification of the full name of a program list table as an alternative to a suffix.		

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

RACFSYNC

Table 82. Changes to RACFSYNC by release			
5.4	5.5	5.6	6.1
REMOVED OPTION: RACFDB2SYNC Its functionality is included when RACFSYNC=YES is specified.			

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

SECVFYREQ

Table 83. Changes to SECVFYREQ by release			
5.4	5.5	5.6	6.1
REMOVED Note: CICS updates the last used time once a day for each user ID that is used on a CICS region.			

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

TCPIP

Table 84. Changes to TCPIP by release			
5.4	5.5	5.6	6.1
CHANGED: <ul style="list-style-type: none">• Default value changed from NO to YES.• Sample table DFHSIT6\$ changed to specify TCPIP=YES instead of NO.			

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

TRTABSZ

Table 85. Changes to TRTABSZ by release			
5.4	5.5	5.6	6.1
		CHANGED: Minimum changed to 1024 KB.	

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

TRTRANSZ

Table 86. Changes to TRTRANSZ by release			
5.4	5.5	5.6	6.1
		CHANGED: Minimum changed to 1024 KB.	

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

USSHOME

Table 87. Changes to USSHOME by release			
5.4	5.5	5.6	6.1
	REMOVED OPTION: NONE		

Back to [Highlights of SIT changes across releases](#) or [the alphabetical index](#)

Changes to JVM profiles

A summary of the changes to JVM profile options, across supported CICS TS releases.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Changes to options in JVM profiles by release of CICS TS

New, changed, and obsolete options in JVM profiles are summarized below, along with what type of JVM server they are compatible with. For more information about the options, see [JVM profile validation and properties CICS](#).

com.ibm.cics.jvmserver.cmci.bundles.dir

Specifies the bundles directory on zFS that stores the CICS bundles pushed to the API.

5.4	5.5	5.6	6.1
		NEW: Only for the CICS bundle deployment API in the CMCI JVM server.	

com.ibm.cics.jvmserver.cmci.deploy.timeout

Specifies the timeout limit for deploying a CICS bundle, in milliseconds. This includes the time for all bundle lifecycle actions, including disable, discard, install and enable.

5.4	5.5	5.6	6.1
		NEW: Only for the CICS bundle deployment API in the CMCI JVM server.	

com.ibm.cics.jvmserver.cmci.max.file.size

Specifies the maximum size allowed for the uploaded CICS bundle, in bytes.

5.4	5.5	5.6	6.1
		NEW: Only for the CICS bundle deployment API in the CMCI JVM server.	

com.ibm.cics.jvmserver.cmci.max.request.size

Specifies the maximum size allowed for a multipart or form-data request, in bytes.

5.4	5.5	5.6	6.1
		NEW: Only for the CICS bundle deployment API in the CMCI JVM server.	

com.ibm.cics.jvmserver.wlp.saf.profilePrefix

Specify the prefix for SAF profiles in the EJBROLE class.

5.4	5.5	5.6	6.1
		NEW: Only for the CMCI JVM server.	

_BPXK_DISABLE_SHLIB

5.4	5.5	5.6	6.1
	CHANGED: _BPXK_DISABLE_SHLIB=YES is the default.		

_DFH_UMASK

5.4	5.5	5.6	6.1
CHANGED: Applies for the lifetime of the JVM server, not only during startup.			

com.ibm.cics.jvmserver.cmci.user.agent.allow.list

5.4	5.5	5.6	6.1
NEW with APAR, compatible with: Liberty JVM server	NEW compatible with: Liberty JVM server		

com.ibm.cics.jvmserver.cmci.user.agent.allow.list.monitor.interval

5.4	5.5	5.6	6.1
NEW with APAR, compatible with: Liberty JVM server	NEW compatible with: Liberty JVM server		

com.ibm.cics.jvmserver.cmci.user.agent.allow.list.reject.text

5.4	5.5	5.6	6.1
	NEW compatible with: Liberty JVM server		

com.ibm.cics.jvmserver.trace.specification

5.4	5.5	5.6	6.1
NEW with APAR, compatible with: All JVM Environments	NEW with APAR, compatible with: All JVM Environments	NEW compatible with: All JVM Environments	

com.ibm.cics.jvmserver.wlp.xml.format

5.4	5.5	5.6	6.1
	NEW compatible with: Liberty JVM server		

com.ibm.ws.zos.core.angelName

5.4	5.5	5.6	6.1
	CHANGED: Specify a named angel process for the Liberty JVM server to connect to upon startup. Compatible with: Liberty JVM server		

com.ibm.ws.zos.core.angelRequired

5.4	5.5	5.6	6.1
	NEW compatible with: Liberty JVM server		

com.ibm.ws.zos.core.angelRequiredServices

5.4	5.5	5.6	6.1
		NEW with APAR, compatible with: Liberty JVM server	NEW compatible with: Liberty JVM server

LIBERTY_INCLUDE_XML

5.4	5.5	5.6	6.1
	NEW compatible with: Liberty JVM server		

PURGE_ESCALATION_TIMEOUT

5.4	5.5	5.6	6.1
NEW with APAR, compatible with: All JVM Environments	NEW with APAR, compatible with: All JVM Environments	NEW compatible with: All JVM Environments	

WLP_ZOS_PLATFORM

5.4	5.5	5.6	6.1
	DEPRECATED: Because multiple fully configured Liberty servers are now allowed in the same address space.	OBSOLETE: Multiple fully configured Liberty servers can be in the same address space.	

Changes to sample JVM profiles by release of CICS TS

New, changed, and obsolete JVM profiles are summarized below.

EYUCMCIJ.jvmprofile

The supplied sample profile for a CMCI JVM server in a WUI region.

5.4	5.5	5.6	6.1
		CHANGED with APAR: Only for the CMCI JVM server. This sample profile has been updated to add -Dcom.ibm.ws.zos.core.angelRequiredServices=SAFCRED,PRODMGR,ZOSAIO.	CHANGED: Only for the CMCI JVM server. This sample profile has been updated to add -Dcom.ibm.ws.zos.core.angelRequiredServices=SAFCRED,PRODMGR,ZOSAIO.

EYUSMSSJ.jvmprofile

The supplied sample profile for the CMCI JVM server in a single CICS region.

5.4	5.5	5.6	6.1
		NEW with APAR: Only for the CMCI JVM server.	NEW: Only for the CMCI JVM server.

Changes to resource definitions

This section summarizes the changes to the resource definitions and CICS-supplied resource definition groups across supported CICS TS releases. Use this information to plan the impact on resources of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Note: The REMOVED content in Table 90 on page 137 through Table 129 on page 145 have been moved to compatibility groups DFHCOMPxxx; previous versions of modified resources are also in the compatibility groups.

Highlights of changes across supported releases of CICS TS

Table 88 on page 136 lists new and changed resource definitions in each supported CICS TS release. The links take you to the tables that describe changes across releases by specific resource definitions.

Table 89 on page 137 lists new and changed CICS-supplied resource definition groups in each supported CICS TS release. The links take you to the tables that describe changes across releases by specific groups.

Table 130 on page 145 lists changes to compatibility groups across supported CICS TS releases.

5.4	5.5	5.6	6.1
<ul style="list-style-type: none">• “DB2CONN” on page 137• “MQCONN” on page 138• “MQINI(DFHMQINI)” on page 138 DEPRECATED• “MQMONITOR” on page 138 NEW• “PROGRAM” on page 138	<ul style="list-style-type: none">• “DB2CONN” on page 137• “TDQUEUE” on page 139• “TRANCLASS” on page 139• “TRANSACTION” on page 139	<ul style="list-style-type: none">• “DUMPCODE” on page 137 NEW• “MQMONITOR” on page 138• “TCPIPSERVICE” on page 138• “TRANSACTION” on page 139	<ul style="list-style-type: none">• “DB2ENTRY” on page 137• “TCPIPSERVICE” on page 138• “URIMAP” on page 139

Table 89. Highlights of changes to CICS resource definition groups across supported CICS TS releases

5.4	5.5	5.6	6.1
<ul style="list-style-type: none"> DFHCOMPI NEW "DFH\$EXCI" on page 140 "DFH\$NACT" on page 140 "DFHEDF" on page 141 "DFHEP" on page 141 "DFHLE" on page 142 NEW "DFHPGAIP" on page 143 "DFHWEB" on page 145 	None	<ul style="list-style-type: none"> "DFH\$STAT" on page 140 "DFHMQ" on page 143 "DFHWU" on page 145 	<ul style="list-style-type: none"> "DFH\$DB2" on page 140 "DFH\$SOT" on page 140 DFHCOMPJ NEW "DFHDBCTL" on page 141 "DFHJAVA" on page 142 "DFHOPER" on page 143 "DFHPIPE" on page 143 "DFHSECR" on page 144 NEW "DFHWSAT" on page 145

Changes to resource definitions by release of CICS TS

Table 90 on page 137 through Table 100 on page 139 describe changes to specific resource definitions, by release of CICS TS. These changes might affect user-defined resource definitions in user-defined groups.

Index

A - M	N - Z
<ul style="list-style-type: none"> "DB2CONN" on page 137 "DB2ENTRY" on page 137 "DUMPCODE" on page 137 "MQCONN" on page 138 "MQINI(DFHMQINI)" on page 138 "MQMONITOR" on page 138 	<ul style="list-style-type: none"> "PROGRAM" on page 138 "TCPIPSERVICE" on page 138 "TDQUEUE" on page 139 "TRANCLASS" on page 139 "TRANSACTION" on page 139

DB2CONN

Table 90. Changes to DB2CONN by release

5.4	5.5	5.6	6.1
CHANGED with APAR: PI98569: CICS now uses a command thread when CICS attempts to cancel a Db2 thread as part of purge or forcepurge processing of a CICS task.	CHANGED: CICS now uses a command thread when CICS attempts to cancel a Db2 thread as part of purge or forcepurge processing of a CICS task.		

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DB2ENTRY

Table 91. Changes to DB2ENTRY by release

5.4	5.5	5.6	6.1
			NEW ATTRIBUTE: SHARELOCKS (APAR PH47996 required)

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DUMPCODE

Table 92. Changes to DUMPCODE by release

5.4	5.5	5.6	6.1
		NEW: To define attributes for transaction dump codes and system dump codes	

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

MQCONN

Table 93. Changes to MQCONN by release			
5.4	5.5	5.6	6.1
CHANGED ATTRIBUTE: INITQNAME			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

MQINI(DFHMQINI)

Table 94. Changes to MQINI by release			
5.4	5.5	5.6	6.1
DEPRECATED: Replaced with MQMONITOR(DFHQMINI) See Review the use of MQCONN in Upgrading CICS regions for upgrade advice .			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

MQMONITOR

Table 95. Changes to MQMONITOR by release			
5.4	5.5	5.6	6.1
NEW: To define attributes for IBM MQ message consumers		CHANGED: One or more symbolic parameters, <i>&applid.</i> or <i>&APPLID.</i> , can be used anywhere in the QNAME value to identify the APPLID of a CICS region. Any user-defined character strings <i>&applid.</i> or <i>&APPLID.</i> will be replaced by the APPLID of the local region when the MQMONITOR is installed. This will facilitate generic use of this resource.	

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

PROGRAM

Table 96. Changes to PROGRAM by release			
5.4	5.5	5.6	6.1
CHANGED: The default value of DATALOCATION is changed from BELOW to ANY.			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

TCPIPSERVICE

Table 97. Changes to TCPIPSERVICE by release			
5.4	5.5	5.6	6.1
		NEW ATTRIBUTE: OPTIONSPGM	CHANGED: When PROTOCOL(HTTP) and SSL(YES) are specified, the TCPIPSERVICE attribute CIPHERS defaults to defaultciphers.xml.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

TDQUEUE

Table 98. Changes to TDQUEUE by release			
5.4	5.5	5.6	6.1
	NEW ATTRIBUTE: JOBUSERID		

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

TRANCLASS

Table 99. Changes to TRANCLASS by release			
5.4	5.5	5.6	6.1
	CHANGED: The set of allowed characters for a transaction class name is expanded to be the same as that supported for a transaction name.		

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

TRANSACTION

Table 100. Changes to TRANSACTION by release			
5.4	5.5	5.6	6.1
	CHANGED ATTRIBUTES: <ul style="list-style-type: none"> The default value of SPURGE and TPURGE is changed to YES. The default value of TASKDATALOC is changed to ANY. 	CHANGED: The set of allowed characters for a transaction class name is expanded to be the same as that supported for a transaction name.	

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

URIMAP

Table 101. Changes to URIMAP by release			
5.4	5.5	5.6	6.1
CHANGED with APAR PH44683: Added support for enabling multiple client URIMAPs that point to the same endpoint (that is, the same host, port and path) in a CICS region.	CHANGED with APAR PH44683: Added support for enabling multiple client URIMAPs that point to the same endpoint (that is, the same host, port and path) in a CICS region.	CHANGED with APAR PH44683: Added support for enabling multiple client URIMAPs that point to the same endpoint (that is, the same host, port and path) in a CICS region.	CHANGED: Added support for enabling multiple client URIMAPs that point to the same endpoint (that is, the same host, port and path) in a CICS region.

Changes to CICS-supplied resource definition groups by release of CICS TS

Table 102 on page 140 through Table 129 on page 145 describes changes to specific supplied resource definition groups, by release of CICS TS. It does not include compatibility groups DFHCOMPxxx. To view changes to compatibility groups by CICS TS release, see [Table 130 on page 145](#).

Index

Group name	Group name	Group name
<ul style="list-style-type: none"> “DFH\$DB2” on page 140 “DFH\$EXCI” on page 140 “DFH\$NACT” on page 140 “DFH\$SOT” on page 140 “DFH\$STAT” on page 140 “DFHBMS” on page 141 “DFHCLNT” on page 141 DFHCOMPI DFHCOMPI DFHCOMPJ 	<ul style="list-style-type: none"> “DFHHARDC” on page 142 “DFHDBCTL” on page 141 “DFHEP” on page 141 “DFHIPECI” on page 142 “DFHISC” on page 142 “DFHJAVA” on page 142 “DFHLE” on page 142 “DFHMQ” on page 143 “DFHOPER” on page 143 	<ul style="list-style-type: none"> “DFHPGAIP” on page 143 “DFHPSSGN” on page 143 “DFHRSEND” on page 144 “DFHSECR” on page 144 “DFHSPI” on page 144 “DFHSTAND” on page 144 “DFHVTAMP” on page 144 “DFHWEB” on page 145 “DFHWU” on page 145

DFH\$DB2

Table 102. Changes to DFH\$DB2 by release			
5.4	5.5	5.6	6.1
			CHANGED: DB2ENTRY definition has a new attribute SHARELOCKS and specifies SHARELOCKS(NO) by default.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFH\$EXCI

Table 103. Changes to DFH\$EXCI by release			
5.4	5.5	5.6	6.1
CHANGED: New program DFH\$AXNS			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFH\$NACT

Table 104. Changes to DFH\$NACT by release			
5.4	5.5	5.6	6.1
CHANGED: File ACCTNAM now specifies RECORDSIZE(80) and KEYLENGTH(18).			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFH\$SOT

Table 105. Changes to DFH\$SOT by release			
5.4	5.5	5.6	6.1
			CHANGED: The CIPHERS value for TCPIPSERVICE HTTPSSL is changed to defaulttciphers.xml.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFH\$STAT

Table 106. Changes to DFH\$STAT by release			
5.4	5.5	5.6	6.1
		CHANGED: New program DFH0QRCP New transaction QRCP	

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHBMS

Table 107. Changes to DFHBMS by release			
5.4	5.5	5.6	6.1
			CHANGED: Several transactions have been removed from this group. You no longer need to install these transactions since they are now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHCLNT

Table 108. Changes to DFHCLNT by release			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CCIN has been removed from this group. You no longer need to install this transaction since it is now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHDBCTL

Table 109. Changes to DFHDBCTL by release			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CDBT is changed from SPURGE(NO) to SPURGE(YES).

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHEDF

Table 110. Changes to DFHEDF by release			
5.4	5.5	5.6	6.1
CHANGED: New TRANCLASS definition: DFHEDFTO New transactions: CEDG and CEDY			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHEP

Table 111. Changes to DFHEP by release			
5.4	5.5	5.6	6.1
CHANGED: New program: DFHECEAQ New transaction: CEPR			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHHARDC

<i>Table 112. Changes to DFHHARDC by release</i>			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CSPP has been removed from this group. You no longer need to install this transaction since it is now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHIPECI

<i>Table 113. Changes to DFHIPECI by release</i>			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CIEP has been removed from this group. You no longer need to install this transaction since it is now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHISC

<i>Table 114. Changes to DFHISC by release</i>			
5.4	5.5	5.6	6.1
			CHANGED: Several transactions have been removed from this group. You no longer need to install these transactions since they are now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHJAVA

<i>Table 115. Changes to DFHJAVA by release</i>			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CJSA is changed from SHUTDOWN(DISABLED) to SHUTDOWN(ENABLED). Transaction CJSU is changed from SHUTDOWN(DISABLED) to SHUTDOWN(ENABLED).

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHLE

<i>Table 116. Changes to DFHLE by release</i>			
5.4	5.5	5.6	6.1
NEW GROUP			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHMQ

Table 117. Changes to DFHMQ by release			
5.4	5.5	5.6	6.1
		CHANGED: New tsmodel DFHCKBR	

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHOPER

Table 118. Changes to DFHOPER by release			
5.4	5.5	5.6	6.1
			CHANGED: New program DFHDMHT

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHPGAIP

Table 119. Changes to DFHPGAIP by release			
5.4	5.5	5.6	6.1
CHANGED: The default program for program autoinstall DFHPGAPG is changed from DATALOCATION(BELOW) to DATALOCATION(ANY).			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHPIPE

Table 120. Changes to DFHPIPE by release			
5.4	5.5	5.6	6.1
			CHANGED: DFHWSATH, DFHWSATR, DFHWSATX and DFHPIRS program definitions are moved to this group. You no longer need to install your own versions of these program definitions because DFHPIPE is part of DFHLIST. New transaction CPIW, a direct clone of CPIH, which is used to handle WS-AT protocol messages.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHPSSGN

Table 121. Changes to DFHPSSGN by release			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CPSS has been removed from this group. You no longer need to install this transaction since it is now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHRSEND

Table 122. Changes to DFHRSEND by release			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CSRS has been removed from this group. You no longer need to install this transaction since it is now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHSECR

Table 123. Changes to DFHSECR by release			
5.4	5.5	5.6	6.1
			NEW: New journal DFHSECR for security request recording

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHSPI

Table 124. Changes to DFHSPI by release			
5.4	5.5	5.6	6.1
			CHANGED: Transaction CATR has been removed from this group. You no longer need to install this transaction since it is now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHSTAND

Table 125. Changes to DFHSTAND by release			
5.4	5.5	5.6	6.1
			CHANGED: Several transactions have been removed from this group. You no longer need to install these transactions since they are now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHVTAMP

Table 126. Changes to DFHVTAMP by release			
5.4	5.5	5.6	6.1
			CHANGED: Several transactions have been removed from this group. You no longer need to install these transactions since they are now automatically installed.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHWEB

Table 127. Changes to DFHWEB by release			
5.4	5.5	5.6	6.1
CHANGED: Program removed: DFHWBC00 Program DFHWBUN now specifies CONCURRENCY(THREADSAFE).			

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHWSAT

Table 128. Changes to DFHWSAT by release			
5.4	5.5	5.6	6.1
			CHANGED: DFHWSATH, DFHWSATR, DFHWSATX and DFHPIRS program definitions are moved to group DFHPIPE. See also "DFHPIPE" on page 143. URIMAP DFHRSURI now specifies TRANSACTION(CPIW) instead of CPIH. This is the URIMAP used to match inbound WS-AT protocol messages.

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

DFHWU

Table 129. Changes to DFHWU by release			
5.4	5.5	5.6	6.1
		CHANGED: New transaction CWDP	

Back to [Highlights of resource definition changes across releases](#) or [Index](#).

Changes to compatibility groups DFHCOMPxxx by release of CICS TS

Table 130 on page 145 describes changes to compatibility groups DFHCOMPxxx, by release of CICS TS.

Table 130. Changes to compatibility groups DFHCOMPxxx by release				
Group	5.4	5.5	5.6	6.1
DFHCOMPI	NEW GROUP			
DFHCOMPJ				NEW GROUP

Changes to control tables

This section summarizes the changes to CICS control tables across supported CICS TS releases. For each CICS release, you must reassemble all tables by using the latest macros, even if there are no changes to the macros. From CICS TS 5.3 onwards, CICS checks during initialization whether the macro tables that it is loading have been reassembled, and if they have not been reassembled, message DFHLD0110 is issued and CICS terminates.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in ["Summary of changes from end-of-service releases"](#) on page 214.

Highlights of changes across supported releases of CICS TS

Table 131 on page 146 lists changed control tables in each supported CICS TS release. The links provided take you to the relevant tables below where brief descriptions of the changes are provided.

Table 131. Highlights of CICS control table changes across supported CICS TS releases			
5.4	5.5	5.6	6.1
<ul style="list-style-type: none"> • “DFHXCOPT” on page 147 	<ul style="list-style-type: none"> • “DFHMCT” on page 146 • “DFHPLT” on page 146 • “DFHXCOPT” on page 147 	<ul style="list-style-type: none"> • “DFHXCOPT” on page 147 	

Changes to control tables by release of CICS TS

View changes by control table:

DFHMCT

Table 132. Changes to DFHMCT by release			
5.4	5.5	5.6	6.1
	<p>CHANGED:</p> <ul style="list-style-type: none"> • New option URIMAP on DFHMCT TYPE=INITIAL, to set a limit for URIMAP transaction resource monitoring • New option WEBSERVC on DFHMCT TYPE=INITIAL, to set a limit for WEBSERVICE transaction resource monitoring 		

Back to [Highlights of CICS control table changes across releases](#)

DFHPLT

Table 133. Changes to DFHPLT by release			
5.4	5.5	5.6	6.1
	<p>CHANGED:</p> <p>Assembled PLTs are no longer processed by CICS. Instead CICS reads the source of the tables from PARMLIB or DFHTABLE and uses it to control PLT processing. This involves CICS issuing an MVS service call IEFPRMLB req=allocate from DFHAPT, which might result in information message IEF761I being issued. Ensure CICS has READ access to data sets in PARMLIB or DFHTABLE concatenations. For details, see Program list table (PLT).</p>		

Back to [Highlights of CICS control table changes across releases](#)

DFHXCOPT

Table 134. Changes to DFHXCOPT by release

5.4	5.5	5.6	6.1
<p>CHANGED:</p> <ul style="list-style-type: none"> The default for the CICSSVC parameter has changed from 0 to 216. New parameter LOCALCCSID The TRACE parameter has a new value of 3 to allow for level 3 tracing. <p>CHANGED with APAR PH09898: The EXCI SURROGCHK parameter has been removed. Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.</p>	<p>CHANGED with APAR PH09898: The EXCI SURROGCHK parameter has been removed. Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.</p>	<p>CHANGED:</p> <ul style="list-style-type: none"> The EXCI SURROGCHK parameter has been removed. Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility. The default for the CONFDATA parameter has changed to HIDE. The HIDE option replaces HIDE TC, which means that all transport data is subject to CONFDATA. If the deprecated CONFDATA=HIDE TC is specified in DFHXCOPT, CONFDATA=HIDE is assumed, and no message will be issued. 	

Back to [Highlights of CICS control table changes across releases](#)

For information about SIT parameters, see [Changes to SIT parameters](#).

Changes to CICS SPI

This section summarizes the changes to system programming interface commands across supported CICS releases.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of changes across supported releases of CICS TS

Table 135 on page 147 lists new, changed, or removed SPI commands in each supported CICS TS release.

The links that are provided for new commands take you to their reference information in the product documentation.

The links that are provided for changed commands take you to the relevant tables below where brief descriptions of the changes are provided.

Table 135. Highlights of CICS SPI changes across supported releases of CICS TS

5.4	5.5	5.6	6.1
<p>NEW:</p> <ul style="list-style-type: none"> CREATE MQMONITOR DISCARD MQMONITOR INQUIRE MQMONITOR INQUIRE WLMHEALTH SET MQMONITOR SET WLMHEALTH 	<p>NEW:</p> <ul style="list-style-type: none"> INQUIRE FEATUREKEY INQUIRE NODEJSAPP 	<p>NEW:</p> <ul style="list-style-type: none"> CREATE DUMPCODE PERFORM JVMSERVER 	<p>NEW:</p> <ul style="list-style-type: none"> INQUIRE POLICY INQUIRE POLICYRULE INQUIRE SECRECORDING INQUIRE STORAGE64 THREADSAFE INQUIRE TAG SET ASSOCIATION USERCORRDATA SET SECRECORDING SET TAGS REFRESH

Table 135. Highlights of CICS SPI changes across supported releases of CICS TS (continued)

5.4	5.5	5.6	6.1
<p>CHANGED:</p> <ul style="list-style-type: none"> “EXTRACT STATISTICS” on page 149 “INQUIRE ASSOCIATION” on page 149 “INQUIRE DSNNAME” on page 150 “INQUIRE EPADAPTER” on page 150 “INQUIRE PROGRAM” on page 150 “INQUIRE SYSDUMPCODE” on page 151 “INQUIRE WEBSERVICE” on page 152 “INQUIRE XMLTRANSFORM” on page 152 “PERFORM SHUTDOWN” on page 153 “PERFORM STATISTICS” on page 153 “SET BUNDLE” on page 153 “SET DISPATCHER” on page 153 “SET DSNNAME” on page 153 “SET PROGRAM” on page 154 “SET SYSDUMPCODE” on page 154 “SET SYSTEM” on page 154 “SET TRANSACTION” on page 155 <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> “INQUIRE ASSOCIATION” on page 149 “SET TASK” on page 154 	<p>CHANGED:</p> <ul style="list-style-type: none"> “EXTRACT STATISTICS” on page 149 INQUIRE CFDTPOOL THREADSAFE “INQUIRE CONNECTION” on page 149 “INQUIRE MONITOR” on page 150 “INQUIRE NETNAME” on page 150 “INQUIRE SYSTEM” on page 151 “INQUIRE TERMINAL” on page 152 “INQUIRE WEBSERVICE” on page 152 “INQUIRE XMLTRANSFORM” on page 152 “PERFORM SHUTDOWN” on page 153 “PERFORM STATISTICS” on page 153 “SET CONNECTION” on page 153 “SET MONITOR” on page 154 “SET TASK” on page 154 <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> “INQUIRE ASSOCIATION” on page 149 	<p>CHANGED:</p> <ul style="list-style-type: none"> “DISCARD TRANSACTION” on page 148 “EXTRACT STATISTICS” on page 149 “INQUIRE DUMPDS” on page 150 “INQUIRE SYSDUMPCODE” on page 151 “INQUIRE SYSTEM” on page 151 “INQUIRE TCPIPSERVICE” on page 152 “INQUIRE TRANDUMPCODE” on page 152 “INQUIRE TSQUEUE / TSQNAME” on page 152 “PERFORM STATISTICS” on page 153 “SET DUMPDS” on page 154 “SET SYSTEM” on page 154 “SET TRANSACTION” on page 155 <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> “INQUIRE ASSOCIATION” on page 149 	<p>CHANGED:</p> <ul style="list-style-type: none"> “CREATE DB2ENTRY” on page 148 “ENABLE PROGRAM” on page 149 “EXTRACT STATISTICS” on page 149 “INQUIRE ASSOCIATION” on page 149 “INQUIRE DB2ENTRY” on page 149 “INQUIRE FEATUREKEY” on page 150 “INQUIRE STORAGE” on page 151 “INQUIRE SUBPOOL” on page 151 “INQUIRE SYSTEM” on page 151 INQUIRE TASK “PERFORM STATISTICS” on page 153 “SET DB2ENTRY” on page 153 “SET SYSTEM” on page 154 SET TASK “SET TRANSACTION” on page 155
<p>REMOVED:</p> <ul style="list-style-type: none"> INQUIRE WLPSERVICE 			

Changes to CICS SPI commands by release of CICS TS

View changes by command:

CREATE DB2ENTRY

5.4	5.5	5.6	6.1
			NEW OPTION: SHARELOCKS

Go back to [Highlights of changes across releases](#)

DISCARD TRANSACTION

5.4	5.5	5.6	6.1
		<p>CHANGED:</p> <p>Transactions beginning with C can now be discarded as long as the name of the initial program does not begin with DFH, EYU, or CJx (where x is A through J).</p>	

Go back to [Highlights of changes across releases](#)

ENABLE PROGRAM

Table 136.

5.4	5.5	5.6	6.1
			NEW OPTIONS: <ul style="list-style-type: none"> • GAEXECUTABLE • TAEEXECUTABLE

Go back to [Highlights of changes across releases](#)

EXTRACT STATISTICS

Table 137.

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • ASYNCSERVICE • LASTRESETABS • MQMONITOR 	NEW OPTION: NODEJSAPP	NEW OPTIONS: <ul style="list-style-type: none"> • SECURITY • USER 	NEW OPTION: POLICY with new SUBRESTYPE option POLICYRULE

Go back to [Highlights of changes across releases](#)

INQUIRE ASSOCIATION

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • PTCOUNT • PTSTARTTIME • PTTASKID • PTTRANSID CHANGED with APAR PH42306: Enhanced support for Liberty. The association data user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.	CHANGED with APAR PH42306: Enhanced support for Liberty. The association data user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.	CHANGED with APAR PH42306: Enhanced support for Liberty. The association data user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.	CHANGED: Enhanced support for Liberty. The association data user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.

Go back to [Highlights of changes across releases](#)

INQUIRE CONNECTION

5.4	5.5	5.6	6.1
	NEW OPTION: AIDCOUNT CHANGED: CONNECTION (<i>data-value</i>) now accepts the name of the local system. New CVDA value DYNAMIC added to options CHANGEAGENT and INSTALLAGENT. New CVDA value NOTAPPLIC added to options ACCESSMETHOD and SERVSTATUS.		

Go back to [Highlights of changes across releases](#)

INQUIRE DB2ENTRY

5.4	5.5	5.6	6.1
			NEW OPTION: SHARELOCKS

Go back to [Highlights of changes across releases](#)

INQUIRE DSNAME

Table 138.

5.4	5.5	5.6	6.1
CHANGED: New CVDA, RREPL on AVAILABILITY option			

Go back to [Highlights of changes across releases](#)

INQUIRE DUMPDS

5.4	5.5	5.6	6.1
		CHANGED: New cvda SWITCHALL on SWITCHSTATUS option	

Go back to [Highlights of changes across releases](#)

INQUIRE EPADAPTER

5.4	5.5	5.6	6.1
CHANGED: New CVDA, DSIE on DATAFORMAT option. New CVDA, TDQUEUE on ADAPTERTYPE option.			

Go back to [Highlights of changes across releases](#)

INQUIRE FEATUREKEY

5.4	5.5	5.6	6.1
	NEW: Retrieves the value of a feature toggle.		NEW OPTION: FILEPATH

Go back to [Highlights of changes across releases](#)

INQUIRE MONITOR

5.4	5.5	5.6	6.1
	NEW OPTIONS: <ul style="list-style-type: none">• URIMAPLIMIT• WEBSERVLIMIT		

Go back to [Highlights of changes across releases](#)

INQUIRE NETNAME

5.4	5.5	5.6	6.1
	NEW OPTIONS: <ul style="list-style-type: none">• TNADDR• TNIPFAMILY• TNPORT		

Go back to [Highlights of changes across releases](#)

INQUIRE PROGRAM

5.4	5.5	5.6	6.1
NEW OPTION: REPLICATION CHANGED: New CVDA value, DYNAMIC on CHANGEAGENT and INSTALLAGENT			

Go back to [Highlights of changes across releases](#)

INQUIRE STORAGE

5.4	5.5	5.6	6.1
			CHANGED: New values PCSDSA, EPCDSA, PUDSA, and EPUDSA on the DSANAME option

Go back to [Highlights of changes across releases](#)

INQUIRE SUBPOOL

5.4	5.5	5.6	6.1
			CHANGED: New values PCSDSA, EPCDSA, PUDSA, and EPUDSA on the DSANAME option. ETDSA is removed.

Go back to [Highlights of changes across releases](#)

INQUIRE SYSDUMPCODE

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • DSPLIST • JOBLIST 		NEW OPTIONS: <ul style="list-style-type: none"> • CHANGEAGENT • CHANGEAGREL • CHANGETIME • CHANGEUSRID • DEFINESOURCE • DEFINETIME • INSTALLAGENT • INSTALLTIME • INSTALLUSRID 	

Go back to [Highlights of changes across releases](#)

INQUIRE SYSTEM

5.4	5.5	5.6	6.1
	NEW OPTIONS: <ul style="list-style-type: none"> • AIDCOUNT • LASTCOLDTIME • LASTEMERTIME • LASTINITTIME • LASTWARMTIME • PLTPIUSR 	CHANGED: New value TABLEONLY returned for DUMPING option	NEW OPTIONS: <ul style="list-style-type: none"> • EPCDSA • EPUDSA • PCSDSA • PUDSA • SDTMEMLIMIT • SRRTASKS REMOVED OPTION: ETDSA

Go back to [Highlights of changes across releases](#)

INQUIRE TASK

5.4	5.5	5.6	6.1
			CHANGED: New SRRSTATUS option to show the security request recording status of SRRACTIVE or SRRINACTIVE.

Go back to [Highlights of changes across releases](#)

INQUIRE TCIPSERVICE

5.4	5.5	5.6	6.1
		NEW OPTION: OPTIONSPGM	

Go back to [Highlights of changes across releases](#)

INQUIRE TERMINAL

5.4	5.5	5.6	6.1
	NEW OPTIONS: <ul style="list-style-type: none">• TNADDR• TNIPFAMILY• TNPORT		

Go back to [Highlights of changes across releases](#)

INQUIRE TRANDUMPCODE

5.4	5.5	5.6	6.1
		NEW OPTIONS: <ul style="list-style-type: none">• CHANGEAGENT• CHANGEAGREL• CHANGETIME• CHANGEUSRID• DEFINESOURCE• DEFINETIME• INSTALLAGENT• INSTALLTIME• INSTALLUSRID	

Go back to [Highlights of changes across releases](#)

INQUIRE TSQUEUE / TSQNAME

5.4	5.5	5.6	6.1
		NEW OPTION: TSMODEL	

Go back to [Highlights of changes across releases](#)

INQUIRE WEBSERVICE

5.4	5.5	5.6	6.1
CHANGED: MAPPINGLEVEL and MINRUNLEVEL now accept 4.1. CHANGED with APAR: MAPPINGLEVEL and MINRUNLEVEL now accept 4.2 and 4.3.	CHANGED: MAPPINGLEVEL and MINRUNLEVEL now accept 4.2 and 4.3.		

Go back to [Highlights of changes across releases](#)

INQUIRE XMLTRANSFORM

5.4	5.5	5.6	6.1
CHANGED: MAPPINGLEVEL and MINRUNLEVEL now accept 4.1. CHANGED with APAR: MAPPINGLEVEL and MINRUNLEVEL now accept 4.2 and 4.3	CHANGED: MAPPINGLEVEL and MINRUNLEVEL now accept 4.2 and 4.3		

Go back to [Highlights of changes across releases](#)

PERFORM SHUTDOWN

5.4	5.5	5.6	6.1
NEW OPTION: RESTART	NEW OPTION: PLTNAME		

Go back to [Highlights of changes across releases](#)

PERFORM STATISTICS

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • ASYNCSERVICE • MQMONITOR 	NEW OPTIONS: <ul style="list-style-type: none"> • NODEJSAPP • POLICY 	NEW OPTIONS: <ul style="list-style-type: none"> • SECURITY • USER 	NEW OPTION: CIPHER

Go back to [Highlights of changes across releases](#)

SET BUNDLE

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none"> • COPY • PHASEIN 			

Go back to [Highlights of changes across releases](#)

SET CONNECTION

5.4	5.5	5.6	6.1
	CHANGED: CONNECTION (<i>data-value</i>) now accepts the name of the local system. For the local system entry, the only valid options are CANCEL and FORCECANCEL.		

Go back to [Highlights of changes across releases](#)

SET DB2ENTRY

5.4	5.5	5.6	6.1
			NEW OPTION: SHARELOCKS CHANGED: New INVREQ RESP2 value of 20

Go back to [Highlights of changes across releases](#)

SET DISPATCHER

5.4	5.5	5.6	6.1
CHANGED: RUNAWAY option accepts a new, lower limit of 250.			

Go back to [Highlights of changes across releases](#)

SET DSNAME

5.4	5.5	5.6	6.1
CHANGED: New CVDA, RREPL on AVAILABILITY option			

Go back to [Highlights of changes across releases](#)

SET DUMPDS

5.4	5.5	5.6	6.1
		CHANGED: New CVDA, SWITCHALL on SWITCHSTATUS option	

Go back to [Highlights of changes across releases](#)

SET MONITOR

5.4	5.5	5.6	6.1
	NEW OPTIONS: <ul style="list-style-type: none">• URIMAPLIMIT• WEBSERVLIMIT		

Go back to [Highlights of changes across releases](#)

SET PROGRAM

5.4	5.5	5.6	6.1
NEW OPTION: REPLICATION			

Go back to [Highlights of changes across releases](#)

SET SYSDUMPCODE

5.4	5.5	5.6	6.1
NEW OPTIONS: <ul style="list-style-type: none">• DSPLIST• JOBLIST			

Go back to [Highlights of changes across releases](#)

SET SYSTEM

5.4	5.5	5.6	6.1
CHANGED: RUNAWAY option accepts a new, lower limit of 250.		CHANGED: New value TABLEONLY supported for DUMPING option.	NEW OPTION: SDTMEMLIMIT

Go back to [Highlights of changes across releases](#)

SET TASK

5.4	5.5	5.6	6.1
CHANGED with APAR PI98569: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.	CHANGED: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.		CHANGED: New SRRSTATUS option to set the security request recording status to SRRACTIVE or SRRINACTIVE.

Go back to [Highlights of changes across releases](#)

SET TRANSACTION

5.4	5.5	5.6	6.1
CHANGED: RUNAWAY option accepts a new, lower limit of 250.		CHANGED: Transactions beginning with C can now be set disabled as long as the name of the initial program does not begin with DFH, EYU, or CJx (where x is A through J).	

Go back to [Highlights of changes across releases](#)

SET XMLTRANSFORM

5.4	5.5	5.6	6.1
			CHANGED: New INVREQ RESP2 value of 8, indicating that the XML schema file for the XMLTRANSFORM cannot be found.

Go back to [Highlights of changes across releases](#)

Changes to CICS transactions

This section summarizes the changes to the CICS transactions across supported CICS releases.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

If there are changes to the category 2 transactions, you must rerun the DFH\$CAT2 CLIST provided in SDFHSAMP library.

For information about the changes to the CICS main terminal transaction CEMT, see [“Changes to CEMT”](#) on page 160.

Highlights of changes across supported releases of CICS TS

Table 139 on page 155 lists new and changed CICS-supplied transactions in each supported CICS TS release. The number following the transaction name indicates its security category. The links provided take you to the relevant tables below where brief descriptions of the changes are provided.

5.4	5.5	5.6	6.1
NEW: <ul style="list-style-type: none"> CEDG 2 CEDY 2 CEPR 2 CHCK 1 CPME 1 NEW with APAR: <ul style="list-style-type: none"> CFCT 1 	NEW: <ul style="list-style-type: none"> CDBE 1 CDBP 1 CFCT 1 CNJL 1 CNJW 2 CWGQ 2 	NEW: <ul style="list-style-type: none"> CJSS 1 CJXA 2 CQRC 1 CWDP 2 	NEW: <ul style="list-style-type: none"> CLGR 1 CPIW 2
CHANGED: <ul style="list-style-type: none"> CKTI 2 COHT, COIE, COIR, COIO, CONA, COND, CONH, CONL, CONM, COWC 1 CHANGED with APAR: <ul style="list-style-type: none"> CKBR 2 CKTI 2 	CHANGED: <ul style="list-style-type: none"> CDBF 2 CDBQ 2 CEMN 2 CHANGED with APAR: <ul style="list-style-type: none"> CKBR 2 CKTI 2 	CHANGED: <ul style="list-style-type: none"> CEDA, CEDB, CEDC 2 CESF 3 CKBR 2 CKTI 2 CSFE 2 	CHANGED: <ul style="list-style-type: none"> All Category 1 transactions: The RACF check to validate the CICS region user ID is entitled to run a Category 1 transaction is removed at this release. CDBT 2 CEPD 1 CJSA 2 CJSU 2

Changes to CICS transactions by release of CICS TS

View changes by transaction.

The program and CSD group for these transactions are shown in [List of CICS transactions](#).

CDBE

Security category: 1

5.4	5.5	5.6	6.1
	NEW		

CDBF

Security category: 2

5.4	5.5	5.6	6.1
Security category: 1	CHANGED to a Category 2 transaction		

CDBP

Security category: 1

5.4	5.5	5.6	6.1
	NEW		

CDBQ

Security category: 2

5.4	5.5	5.6	6.1
Security category: 1	CHANGED to a Category 2 transaction		

CDBT

Security category: 2

5.4	5.5	5.6	6.1
			CHANGED: The SPURGE attribute has been changed from SPURGE(NO) to SPURGE(YES).

CEDA, CEDB, CEDC

Security category: 2

5.4	5.5	5.6	6.1
		CHANGED: The dataset associated with the CSD for the local region is now displayed on the panel in format DSN=<dataset name>.	

CEDG

Security category: 2

5.4	5.5	5.6	6.1
NEW			

CEDY

Security category: 2

5.4	5.5	5.6	6.1
NEW			

CEMN

Security category: 2

5.4	5.5	5.6	6.1
	NEW OPTIONS to set URIMAP and WEBSERVICE resource limits		

CEPD

Security category: 1

5.4	5.5	5.6	6.1
			CHANGED: Enhanced to generate an SMF type 110 subtype 1 CICS monitoring record every 2000 events processed by CEPD tasks in the region.

CEPR

Security category: 2

5.4	5.5	5.6	6.1
NEW			

CESF

Security category: 3

5.4	5.5	5.6	6.1
		CHANGED: Now subject to the control of GMTRAN=(, DISCONNECT) so that the terminal session is disconnected upon sign-off.	

CFCT

Security category: 1

5.4	5.5	5.6	6.1
NEW with APAR PI97207	NEW		

CHCK

Security category: 1

5.4	5.5	5.6	6.1
NEW			

CJSA

Security category: 2

5.4	5.5	5.6	6.1
			CHANGED: The SHUTDOWN attribute has been changed from SHUTDOWN(DISABLED) to SHUTDOWN(ENABLED)

CJSS

Security category: 1

5.4	5.5	5.6	6.1
		NEW	

CJSU

Security category: 2

5.4	5.5	5.6	6.1
			CHANGED: The SHUTDOWN attribute has been changed from SHUTDOWN(DISABLED) to SHUTDOWN(ENABLED)

CJXA

Security category: 2

5.4	5.5	5.6	6.1
		NEW	

CKBR

Security category: 2

5.4	5.5	5.6	6.1
CHANGED with APAR PH22136: CKBR now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKBR will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.	CHANGED with APAR PH22136: CKBR now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKBR will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.	CHANGED: New parameter SMFMQGET, instructing CICS to write SMF type 110 records for MQGET requests issued by the CICS-MQ bridge. CKBR now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKBR will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.	

CKTI

Security category: 2

5.4	5.5	5.6	6.1
CHANGED: The default user ID for the CKTI transaction processing messages for resource MQINI(DFHMQINI) is changed to the value specified in either DFLTUSER or PLTPIUSR. CHANGED with APAR PH22136: CKTI now handles abends produced when starting user transactions. If an abend occurs when the CKTI transaction attempts to start the user transaction, rather than terminating, CKTI will now send the trigger message to the dead-letter queue, and trigger monitor processing continues. CKTI now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKTI will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.	CHANGED with APAR PH22136: CKTI now handles abends produced when starting user transactions. If an abend occurs when the CKTI transaction attempts to start the user transaction, rather than terminating, CKTI will now send the trigger message to the dead-letter queue, and trigger monitor processing continues. CKTI now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKTI will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.	CHANGED: CKTI now handles abends produced when starting user transactions. If an abend occurs when the CKTI transaction attempts to start the user transaction, rather than terminating, CKTI will now send the trigger message to the dead-letter queue, and trigger monitor processing continues. CKTI now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKTI will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.	

CLGR

Security category: 1

5.4	5.5	5.6	6.1
			NEW CICS user journal automatic recovery

CMPE

Security category: 1

5.4	5.5	5.6	6.1
NEW			

CNJL

Security category: 1

5.4	5.5	5.6	6.1
	NEW		

CNJW

Security category: 2

5.4	5.5	5.6	6.1
	NEW		

COHT, COIE, COIR, COIO, CONA, COND, CONH, CONL, CONM, COWC

Security category: 1

5.4	5.5	5.6	6.1
CHANGED to Category 1 transactions			

CPIW

Security category: 2

5.4	5.5	5.6	6.1
			<p>NEW</p> <p>A direct clone of CPIH used to handle WS-AT protocol messages.</p> <p>URIMAP DFHRSURI now specifies TRANSACTION(CPIW) instead of CPIH. If you are using a customized version of DFHRSURI that no longer specifies TRANSACTION(CPIH), no action is needed and you can continue to use your customized DFHRSURI unchanged.</p> <p>However, if the CSD is being shared with a back level region, and if the CICS-supplied DFHWSAT group has been installed (instead of a customized DFHRSURI), take one of the following actions:</p> <ul style="list-style-type: none"> • Make sure authority is given to run CPIW. • Install a customized version of DFHRSURI that specifies TRANSACTION(CPIH), ahead of the DFHWSAT group.

CQRC

Security category: 1

5.4	5.5	5.6	6.1
		NEW	

CSFE

Security category: 2

5.4	5.5	5.6	6.1
		CHANGED: CSFE has been enhanced to allow authorized users to change the CONFDATA settings.	

CWDP

Security category: 2

5.4	5.5	5.6	6.1
		NEW	

CWGQ

Security category: 2

5.4	5.5	5.6	6.1
	NEW		

Changes to CEMT

This section summarizes the changes to the CICS main terminal transaction, CEMT, across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

For information about changes to other transactions, see [“Changes to CICS transactions”](#) on page 155.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of CEMT changes across supported releases of CICS TS

[Table 140 on page 161](#) gives you a list of new, changed, deprecated, and removed CEMT commands in each supported CICS TS release.

The links provided for new CEMT commands take you to their reference information in the product documentation.

The links provided for the other, changed CEMT commands take you to the relevant tables below where brief descriptions of the changes are provided.

Table 140. Highlights of CEMT changes across supported releases of CICS TS

5.4	5.5	5.6	6.1
<ul style="list-style-type: none"> • CEMT DISCARD MQMONITOR NEW • CEMT INQUIRE DSNAME • CEMT INQUIRE EPADAPTER • CEMT INQUIRE MQINI • REMOVED: Replaced by CEMT INQUIRE MQMONITOR • CEMT INQUIRE MQMONITOR NEW • CEMT INQUIRE SYDUMPCODE • CEMT INQUIRE WLMHEALTH NEW • CEMT PERFORM SHUTDOWN • CEMT PERFORM STATISTICS • CEMT SET DISPATCHER • CEMT SET DSNAME • CEMT SET MQMONITOR NEW • CEMT SET SYDUMPCODE • CEMT SET SYSTEM • CEMT SET TASK • CEMT SET WLMHEALTH NEW 	<ul style="list-style-type: none"> • CEMT INQUIRE CONNECTION • CEMT INQUIRE MONITOR • CEMT INQUIRE NODEJSAPP NEW • CEMT INQUIRE SYSTEM • CEMT PERFORM SHUTDOWN • CEMT PERFORM STATISTICS • CEMT SET CONNECTION • CEMT SET MONITOR • CEMT SET TASK 	<ul style="list-style-type: none"> • CEMT INQUIRE DUMPDS • CEMT INQUIRE SYDUMPCODE • CEMT INQUIRE SYSTEM • CEMT INQUIRE TCPIPService • CEMT INQUIRE TRDUMPCODE • CEMT INQUIRE TSQUEUE / TSQNAME • CEMT PERFORM STATISTICS • CEMT SET DUMPDS • CEMT SET SYSTEM 	<ul style="list-style-type: none"> • CEMT INQUIRE DB2ENTRY • CEMT INQUIRE DSAS • CEMT INQUIRE SYSTEM • CEMT INQUIRE TASK • CEMT PERFORM STATISTICS • CEMT SET DB2ENTRY • CEMT SET DSAS • CEMT SET SYSTEM • CEMT SET TASK

Changes to CEMT by release of CICS TS

View changes by CEMT command:

CEMT DISCARD

5.4	5.5	5.6	6.1
NEW: CEMT DISCARD MQMONITOR			

[Back to Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE CONNECTION

5.4	5.5	5.6	6.1
	NEW OPTION: AIDCOUNT CHANGED: CONNECTION (<i>data-value</i>) now accepts the name of the local system.		

[Back to Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE DB2ENTRY

5.4	5.5	5.6	6.1
			NEW OPTION: SHARELOCKS

[Back to Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE DSAS

5.4	5.5	5.6	6.1
			NEW OPTIONS: PCDSASIZE, PUDSASIZE, EPCDSASIZE, EPUDSASIZE in support of Instruction Execution Protection. REMOVED OPTION: ETDSASIZE

[Back to Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE DSNAME

5.4	5.5	5.6	6.1
NEW OPTION: RREPL			

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE DUMPDS

5.4	5.5	5.6	6.1
		CHANGED: New value ALL for SWITCHSTATUS option	

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE EPADAPTER

5.4	5.5	5.6	6.1
CHANGED: Support added for the new DSIE XML format.			

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE MONITOR

5.4	5.5	5.6	6.1
	NEW OPTIONS: URIMAPLIMIT and WEBSERVLIMIT		

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE SYDUMPCODE

5.4	5.5	5.6	6.1
NEW OPTIONS: DSPLIST and JOBLIST		NEW OPTIONS: CHANGEAGENT, CHANGEAGREL, CHANGETIME, CHANGEUSRID, DEFINESOURCE, DEFINETIME, INSTALLAGENT, INSTALLTIME and INSTALLUSRID	

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE SYSTEM

5.4	5.5	5.6	6.1
	NEW OPTIONS: AIDCOUNT, LASTCOLDTIME, LASTEMERTIME, LASTINITTIME, LASTWARMTIME and PLTPIUSR CHANGED: The display now shows status fields in a single column split across multiple screens.	CHANGED: New value TABLEONLY returned for DUMPING option	NEW OPTION: SDTMEMLIMIT
			NEW OPTION: SRRTASKS

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE TASK

5.4	5.5	5.6	6.1
			NEW OPTION: SRRSTATUS

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE TCPIPSERVICE

5.4	5.5	5.6	6.1
		NEW OPTION: OPTIONSPGM	

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE TRDUMPCODE

5.4	5.5	5.6	6.1
		NEW OPTIONS: CHANGEAGENT, CHANGEAGREL, CHANGETIME, CHANGEUSRID, DEFINESOURCE, DEFINETIME, INSTALLAGENT, INSTALLTIME and INSTALLUSRID	

Back to [Highlights of CEMT changes across supported releases](#)

CEMT INQUIRE TSQUEUE / TSQNAME

5.4	5.5	5.6	6.1
		NEW OPTION: TSMODEL	

Back to [Highlights of CEMT changes across supported releases](#)

CEMT PERFORM SHUTDOWN

5.4	5.5	5.6	6.1
NEW OPTION: RESTART	NEW OPTION: PLTNAME		

Back to [Highlights of CEMT changes across supported releases](#)

CEMT PERFORM STATISTICS

5.4	5.5	5.6	6.1
NEW OPTIONS: MQMONITOR and ASYNCSERVICE	NEW OPTIONS: NODEJSAPP and POLICY	NEW OPTIONS: SECURITY and USER	NEW OPTION: CIPHER

Back to [Highlights of CEMT changes across supported releases](#)

CEMT SET CONNECTION

5.4	5.5	5.6	6.1
	CHANGED: CONNECTION (<i>data-value</i>) now accepts the name of the local system. For the local system entry, the only valid options are CANCEL and FORCECANCEL.		

Back to [Highlights of CEMT changes across supported releases](#)

CEMT SET DB2ENTRY

5.4	5.5	5.6	6.1
			NEW OPTION: SHARELOCKS

Back to [Highlights of CEMT changes across supported releases](#)

CEMT SET DISPATCHER

5.4	5.5	5.6	6.1
CHANGED: RUNAWAY option accepts a new lower limit of 250			

Back to [Highlights of CEMT changes across supported releases](#)

CEMT SET DSAS

5.4	5.5	5.6	6.1
			CHANGED: The DSAs that are covered by DSALIMIT and EDSALIMIT include the new DSAs that are never protected from instruction execution.

[Back to Highlights of CEMT changes across supported releases](#)

CEMT SET DSNAME

5.4	5.5	5.6	6.1
NEW OPTION: RREPL			

[Back to Highlights of CEMT changes across supported releases](#)

CEMT SET DUMPDS

5.4	5.5	5.6	6.1
		CHANGED: New value ALL for SWITCHSTATUS option	

[Back to Highlights of CEMT changes across supported releases](#)

CEMT SET MONITOR

5.4	5.5	5.6	6.1
	NEW OPTIONS: URIMAPLIMIT and WEBSERVLIMIT		

[Back to Highlights of CEMT changes across supported releases](#)

CEMT SET SYDUMPCODE

5.4	5.5	5.6	6.1
NEW OPTIONS: DSPLIST and JOBLIST			

[Back to Highlights of CEMT changes across supported releases](#)

CEMT SET SYSTEM

5.4	5.5	5.6	6.1
CHANGED: RUNAWAY option accepts a new, lower limit of 250.		CHANGED: New value TABLEONLY supported for DUMPING option.	NEW OPTION: SDTMEMLIMIT

[Back to Highlights of CEMT changes across supported releases](#)

CEMT SET TASK

5.4	5.5	5.6	6.1
CHANGED with APAR PI98569: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.	CHANGED: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.		NEW OPTION: SRRSTATUS

[Back to Highlights of CEMT changes across supported releases](#)

Changes to CICS monitoring

This section summarizes the changes to monitoring across supported CICS TS releases. It includes changes to performance class data, exception class data, transaction class data, identity class data, MCT and DFH\$MOLS. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases” on page 214](#).

Highlights of changes across supported releases of CICS TS

Table 141 on page 165 lists new and changed monitoring class data groups by release of CICS TS. The links take you to the relevant tables that describe changes to specific groups.

5.4	5.5	5.6	6.1
Performance class data <ul style="list-style-type: none"> • “DFHCICS” on page 166 • “DFHPROG” on page 166 • “DFHTASK” on page 167 	Performance class data <ul style="list-style-type: none"> • “DFHCICS” on page 166 • “DFH SOCK” on page 167 • “DFHWEBB” on page 167 • “DFHWEBC” on page 168 	Performance class data <ul style="list-style-type: none"> • “DFHCICS” on page 166 • “DFHTASK” on page 167 	Performance class data <ul style="list-style-type: none"> • “DFHCICS” on page 166 • “DFH SOCK” on page 167
Exception class data None	Exception class data None	Exception class data <ul style="list-style-type: none"> • “EXCMNPOL” on page 168 	Exception class data <ul style="list-style-type: none"> • “EXCMNPOL” on page 168 • “EXCMNWT” on page 168
Transaction resource class data <ul style="list-style-type: none"> • MNR_PTD_ATTACH_TIME NEW • MNR_PTD_COUNT NEW • MNR_PTD_TRANID NEW • MNR_PTD_TRANNUM NEW 	Transaction resource class data <ul style="list-style-type: none"> • MNR_URIMAP_CIPHER NEW • MNR_URIMAP_NAME NEW • MNR_URIMAP_WEBOPEN NEW • MNR_URIMAP_WEBRECV NEW • MNR_URIMAP_WEBSSEND NEW • MNR_WEBSVC_NAME NEW • MNR_WEBSVC_PIPE NEW • MNR_WEBSVC_INVK NEW 	Transaction resource class data None	Transaction resource class data <ul style="list-style-type: none"> • MNR_URIMAP_FLAG NEW • MNR_URIMAP_TLSSLVL NEW
Identity class data <ul style="list-style-type: none"> • MNI_PTD_ATTACH_TIME NEW • MNI_PTD_COUNT NEW • MNI_PTD_TRANID NEW • MNI_PTD_TRANNUM NEW 	Identity class data None	Identity class data None	Identity class data None

Changes to performance class data, by release of CICS TS

View changes by group:

- [“DFHCICS” on page 166](#)
- [“DFHPROG” on page 166](#)
- [“DFH SOCK” on page 167](#)
- [“DFHTASK” on page 167](#)
- [“DFHTEMP” on page 167](#)
- [“DFHWEBB” on page 167](#)
- [“DFHWEBC” on page 168](#)

DFHCICS

Table 142. Changes to performance class data in DFHCICS group by release

5.4	5.5	5.6	6.1
<p>NEW FIELDS:</p> <ul style="list-style-type: none"> MPSRACT MPSRECT PTCOUNT PTSTARTTIME PTTASKID PTTRANSID <p>CHANGED:</p> <ul style="list-style-type: none"> OTRANFLG field has new transaction origin type for asynchronous transactions: X'16' ASRUNTRAN <p>CHANGED with APAR:</p> <ul style="list-style-type: none"> APAR PH42306: Field 089 (USERID) is changed for Liberty such that the user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID. 	<p>CHANGED with APAR:</p> <ul style="list-style-type: none"> APAR PH42306: Field 089 (USERID) is changed for Liberty such that the user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID. 	<p>CHANGED with APAR:</p> <ul style="list-style-type: none"> APAR PH42306: Field 089 (USERID) is changed for Liberty such that the user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID. 	<p>CHANGED:</p> <ul style="list-style-type: none"> Enhanced to provide association data of DPL requests by EXCI clients. If a task was initiated by an EXCI client, in the performance record of the DPL request, field 374 (PHAPPLID) contains the EXCI job name, field 378 (PHCOUNT) contains a value of 1, and field 376 (PHTRANNO) has a value of 0. <p>The data is populated to transaction resource class data and identity class data.</p> <ul style="list-style-type: none"> Field 089 (USERID) is changed for Liberty such that the user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.

Go back to [Highlights of changes across supported releases](#).

DFHPROG

Table 143. Changes to performance class data in DFHPROG group

5.4	5.5	5.6	6.1
<p>CHANGED: The following abend codes are now written to the ABCODEO and ABCODEC monitoring fields:</p> <ul style="list-style-type: none"> ASPF ASPN ASPO ASPP ASPQ ASPR ASP1 ASP2 ASP3 ASP7 ASP8 			

Go back to [Highlights of changes across supported releases](#).

DFH SOCK

Table 144. Changes to performance class data in DFH SOCK group by release

5.4	5.5	5.6	6.1
	NEW FIELD: <ul style="list-style-type: none"> • SOCONMSG 		NEW FIELDS: <ul style="list-style-type: none"> • SOFLAG • SOTLSLVL CHANGED FIELDS: <ul style="list-style-type: none"> • SOCNPSCT is clarified as a data field that indicates the total number of requests made by the user task to create an outbound socket. • SONPSHWM is clarified as a data field that indicates the peak number of outbound sockets owned by the user task. REMOVED FIELDS: <ul style="list-style-type: none"> • SOCPST • SOPSHWM

Go back to [Highlights of changes across supported releases.](#)

DFHTASK

Table 145. Changes to performance class data in DFHTASK group by release

5.4	5.5	5.6	6.1
NEW FIELDS: <ul style="list-style-type: none"> • ASTOTCT • ASRUNCT • ASFTCHCT • ASFREECT • ASFTCHWT • ASRNATWT • LPARNAME CHANGED: <ul style="list-style-type: none"> • TRANFLAG field has new transaction origin type for asynchronous transactions: X'16' Asynchronous services domain (AS)-run transaction 		NEW FIELDS: <ul style="list-style-type: none"> • SMMVSSWT • XSVFYBAS • XSVFYJWT • XSVFYKER • XSVFYPWD 	

Go back to [Highlights of changes across supported releases.](#)

DFHTEMP

Table 146. Changes to performance class data in DFHTEMP group by release

5.4	5.5	5.6	6.1

Go back to [Highlights of changes across supported releases.](#)

DFHWEBB

Table 147. Changes to performance class data in DFHWEBB group by release

5.4	5.5	5.6	6.1
	NEW FIELDS: <ul style="list-style-type: none"> • WBURIOPN • WBURIRCV • WBURISND 		

Go back to [Highlights of changes across supported releases.](#)

DFHWEBC

Table 148. Changes to performance class data in DFHWEBC group by release			
5.4	5.5	5.6	6.1
	NEW FIELD: <ul style="list-style-type: none"> WBSVINVK 		

Go back to [Highlights of changes across supported releases.](#)

Changes to exception class data, by release of CICS TS

View changes to exception class data by exception type (EXCMNTYP):

EXCMNPOL

Table 149. Changes to EXCMNPOL exception class data by release			
5.4	5.5	5.6	6.1
		NEW TYPES with APAR: <ul style="list-style-type: none"> PH29187: Exception resource type CONTAINR PH34348: Exception resource type TRANDUMP 	NEW TYPES: <ul style="list-style-type: none"> Exception resource type CONTAINR Exception resource type TRANDUMP

Go back to [Highlights of changes across supported releases.](#)

EXCMNWT

Table 150. Changes to EXCMNWT exception class data by release			
5.4	5.5	5.6	6.1
			NEW TYPE: <ul style="list-style-type: none"> Exception resource type DSWC, which has possible EXCMNRID values of S8TLSHS and XSPSWVFY.

Go back to [Highlights of changes across supported releases.](#)

Changes to transaction resource class data, by release of CICS TS

View changes to transaction resource class data by group:

Table 151. Changes to transaction resource class data by release				
Group	5.4	5.5	5.6	6.1
MNR_PTD_ATTACH_TIME	NEW			
MNR_PTD_TRANNUM	NEW			
MNR_PTD_TRANID	NEW			
MNR_PTD_COUNT	NEW			
MNR_URIMAP_CIPHER		NEW		
MNR_URIMAP_FLAG				NEW
MNR_URIMAP_NAME		NEW		
MNR_URIMAP_TLSLVL				NEW
MNR_URIMAP_WEBOPEN		NEW		
MNR_URIMAP_WEBRECV		NEW		
MNR_URIMAP_WEBSSEND		NEW		

Table 151. Changes to transaction resource class data by release (continued)

Group	5.4	5.5	5.6	6.1
MNR_WEBSVC_NAME		NEW		
MNR_WEBSVC_PIPE		NEW		
MNR_WEBSVC_INVK		NEW		

Go back to [Highlights of changes across supported releases](#).

Changes to identity class data, by release of CICS TS

View changes to identity class data by group:

Table 152. Changes to identity class data by release

Group	5.4	5.5	5.6	6.1
MNI_PTD_ATTACH_TIME	NEW			
MNI_PTD_TRANNUM	NEW			
MNI_PTD_TRANID	NEW			
MNI_PTD_COUNT	NEW			

Go back to [Highlights of changes across supported releases](#).

Changes to CICS statistics

This section summarizes the changes to statistics across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

The changes are reflected in the reports produced by DFHSTUP, the statistics formatting utility program.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of changes across supported releases of CICS TS

Table 153 on page 169 lists new statistics types that are introduced and the statistics types that have new or changed fields in each supported CICS TS release.

The links provided in [Table 153 on page 169](#) take you to the relevant tables below where brief descriptions of the changes are provided.

Table 153. Highlights of statistics changes across supported releases of CICS TS

5.4	5.5	5.6	6.1
NEW: <ul style="list-style-type: none"> Asynchronous services IBM MQ monitor 	NEW: <ul style="list-style-type: none"> NODEJSAPP Policy 	NEW: <ul style="list-style-type: none"> Security domain 	NEW: <ul style="list-style-type: none"> Cipher
CHANGED: <ul style="list-style-type: none"> “TCP/IP” on page 172 “z/OS Communications Server (VTAM)” on page 175 	CHANGED: <ul style="list-style-type: none"> “CICS Db2” on page 170 “ISC/IRC system entry” on page 170 “Monitoring domain” on page 171 “Transaction” on page 174 	CHANGED: <ul style="list-style-type: none"> “Monitoring domain” on page 171 “Storage manager” on page 172 “TCP/IP” on page 172 “User domain” on page 175 	CHANGED: <ul style="list-style-type: none"> “CICS Db2” on page 170 “JVM server” on page 171 “TCP/IP” on page 172 “Temporary storage” on page 174 “Transaction” on page 174 “Transaction class” on page 174

Changes to CICS statistics by release of CICS TS

View changes by type:

Type	Type
<ul style="list-style-type: none"> • “CICS Db2” on page 170 • Ciphers • “ISC/IRC system entry” on page 170 • “JVM server” on page 171 • “Monitoring domain” on page 171 • “Storage manager” on page 172 	<ul style="list-style-type: none"> • “TCP/IP” on page 172 • “Temporary storage” on page 174 • “Transaction” on page 174 • “User domain” on page 175 • “z/OS Communications Server (VTAM)” on page 175

CICS Db2

Table 154. Changes to CICS Db2 statistics by release			
5.4	5.5	5.6	6.1
	Global statistics New field: D2G_TCB_PROTECTED_CURRENT Current number of connections with pthreads		Resource statistics New field: D2R_SHARELOCKS Share Locks

Go back to [Highlights of changes across releases](#) or [Index](#)

Ciphers

Table 155. Changes to cipher statistics by release			
5.4	5.5	5.6	6.1
			Resource statistics New fields: SOC_CIPHER SOC_TIMES_CICSTLS_INB_USED SOC_TIMES_CICSTLS_OUTB_USED SOC_TIMES_ATTLS_INB_USED SOC_TIMES_ATTLS_OUTB_USED

Go back to [Highlights of changes across releases](#) or [Index](#)

ISC/IRC system entry

Table 156. Changes to ISC/IRC system entry statistics by release			
5.4	5.5	5.6	6.1
	Resource statistics New field: A14EAHWM Peak aids in chain Changed fields: Automatic initiate descriptors statistics now report on the local system. A14EALL Aids in chain is changed from a half-word binary field to a full-word binary field. It is also moved and now follows field A14EMQPC in the statistics DSECT.		

Go back to [Highlights of changes across releases](#) or [Index](#)

JVM server

Table 157. Changes to JVM server statistics by release			
5.4	5.5	5.6	6.1
			JVMSEVER resource statistics New fields: SJS_JVMSEVER_CODE_CACHE_USED SJS_JVMSEVER_CODE_CACHE_ALLOC SJS_JVMSEVER_DATA_CACHE_USED SJS_JVMSEVER_DATA_CACHE_ALLOC SJS_JVMSEVER_CLASS_STRG_USED SJS_JVMSEVER_CLASS_STRG_ALLOC SJS_JVMSEVER_CLASSCACHE_SIZE SJS_JVMSEVER_CLASSCACHE_FREE

Go back to [Highlights of changes across releases](#) or [Index](#)

Monitoring domain

Table 158. Changes to Monitoring domain statistics by release			
5.4	5.5	5.6	6.1
	Global statistics New fields: MNGURIRL Urimap Resource Limit MNGWEBRL Webservice Resource Limit	Global statistics New fields: MNGRMI RMI Option MNGAPPNS Application naming MNGMCTNM MCT program name MNGFREQ Frequency	

Go back to [Highlights of changes across releases](#) or [Index](#)

Storage manager

Table 159. Changes to Storage manager statistics by release			
5.4	5.5	5.6	6.1
		<p>Global statistics</p> <p>New statistics provided respectively for MVS user region and extended user region storage, indicating:</p> <ul style="list-style-type: none"> The time the MVS monitor system task last sampled MVS storage State of the user region or the extended user region The current total amount of unallocated storage Low water mark of the total amount of unallocated storage The size of the current largest contiguous storage area available in unallocated storage Low water mark of the size of the largest contiguous storage area available in unallocated storage The time the last SOS condition was detected The time tasks waited because of the SOS or constrained state The current, peak, and total number of tasks that are waiting because of the SOS or constrained state 	

Go back to [Highlights of changes across releases](#) or [Index](#)

TCP/IP

Table 160. Changes to TCP/IP statistics by release			
5.4	5.5	5.6	6.1
<p>TCP/IP services resource statistics</p> <p>New fields that give a view of connection persistence for connections into a specific TCPIP SERVICE, show the effects of performance tuning for HTTP connections on a specific TCPIP SERVICE, and show the socket backlog and details on connections that are dropped</p>		<p>TCP/IP services resource statistics</p> <p>New field:</p> <p>TCPIP SERVICE OPTIONSPGM, indicating the name of the HTTP OPTIONS handler program</p>	

Table 160. Changes to TCP/IP statistics by release (continued)

5.4	5.5	5.6	6.1
<p>TCP/IP global statistics</p> <p>New fields that show the use of inbound and outbound sockets</p>			<p>TCP/IP global statistics</p> <p>New fields:</p> <p>The following fields shows the maximum, current and peak numbers of TLS handshakes running in parallel:</p> <p style="padding-left: 40px;">SOG_S8TLSHS_REQUESTS_MAX SOG_S8TLSHS_REQUESTS_CUR SOG_S8TLSHS_REQUESTS_PEA K</p> <p>The following fields shows the maximum, current and peak numbers of TLS handshakes in waiting:</p> <p style="padding-left: 40px;">SOG_S8TLSHS_WAITERS_MAX SOG_S8TLSHS_WAITERS_CUR SOG_S8TLSHS_WAITERS_PEA K</p> <p>The following fields show CICS-configured TLS protocol handshakes:</p> <p style="padding-left: 40px;">SOG_TIMES_CICSTLS11_INB_US ED SOG_TIMES_CICSTLS12_INB_US ED SOG_TIMES_CICSTLS13_INB_US ED SOG_TIMES_CICSTLSALL_INB_U SED SOG_TIMES_CICSTLS11_OUTB_ USED SOG_TIMES_CICSTLS12_OUTB_ USED SOG_TIMES_CICSTLS13_OUTB_ USED SOG_TIMES_CICSTLSALL_OUTB_ USED</p> <p>The following fields show AT-TLS protocol handshakes:</p> <p style="padding-left: 40px;">SOG_TIMES_ATSSL3_INB_USED SOG_TIMES_ATTLS10_INB_USE D SOG_TIMES_ATTLS11_INB_USE D SOG_TIMES_ATTLS12_INB_USE D SOG_TIMES_ATTLS13_INB_USE D SOG_TIMES_ATSSL3_OUTB_USE D SOG_TIMES_ATTLS10_OUTB_US ED SOG_TIMES_ATTLS11_OUTB_US ED SOG_TIMES_ATTLS12_OUTB_US ED SOG_TIMES_ATTLS13_OUTB_US ED</p> <p>The following fields show the totals number of CICS-configured TLS partial and abbreviated handshakes for inbound and outbound connections:</p> <p style="padding-left: 40px;">SOG_HANDSHAKES_FULL_INB SOG_HANDSHAKES_ABBREV_IN B SOG_HANDSHAKES_FULL_OUTB SOG_HANDSHAKES_ABBREV_O UTB</p>

Table 160. Changes to TCP/IP statistics by release (continued)			
5.4	5.5	5.6	6.1
			Changed fields: SOG_CURR_OUTB_SOCKETS - its DFHSTUP name is changed to Current number of outbound sockets . SOG_PEAK_OUTB_SOCKETS - its DFHSTUP name is changed to Peak number of outbound sockets .
			Removed fields: SOG_CURR_PERS_OUTB_SOCKETS SOG_PEAK_BOTH_OUTB_SOCKETS SOG_PEAK_PERS_OUTB_SOCKETS SOG_PERS_OUTBOUND_CREATED

Go back to [Highlights of changes across releases](#) or [Index](#)

Temporary storage

Table 161. Changes to Temporary storage statistics by release			
5.4	5.5	5.6	6.1
			Global statistics New fields: TSGASU Current aux. temp storage usage % TSGASUPK Peak aux. temp storage usage %

Go back to [Highlights of changes across releases](#) or [Index](#)

Transaction

Table 162. Changes to Transaction statistics by release			
5.4	5.5	5.6	6.1
	Transactions resource statistics New field: XMRAENDC Abend Count		Transactions resource statistics New field: XMR_PURGED_TRNCLS_THRESHOLD Purge Count

Go back to [Highlights of changes across releases](#) or [Index](#)

Transaction class

Table 163. Changes to Transaction class statistics by release			
5.4	5.5	5.6	6.1
			Transaction class resource statistics NEW FIELD: XMCGAMA, Last At MaxAct

Go back to [Highlights of changes across releases](#) or [Index](#)

User domain

Table 164. Changes to User domain statistics by release			
5.4	5.5	5.6	6.1
		Global statistics New fields: USGDESOF Delete count due to sign off USGDEENF Delete count due to ENF USGDRCUR Current instances in directory USGDRPK Peak instances in directory USGTOCUR Current instances in timeout USGTOPK Peak instances in timeout USGENFK ENF events matched USGENFUN ENF events not matched	

Go back to [Highlights of changes across releases](#) or [Index](#)

z/OS Communications Server (VTAM)

Table 165. Changes to z/OS Communications Server statistics by release of CICS TS			
5.4	5.5	5.6	6.1
Global statistics New fields added for the BMS 3270 validation program: A03BMVL BMS 3270 Validation (enablement indicator) A03BMIG Number of BMS 3270 Validation Failures Ignored A03BMLG Number of BMS 3270 Validation Failures Logged A03BMAB Number of BMS 3270 Validation Failures Abended			

Go back to [Highlights of changes across releases](#) or [Index](#)

Changes to storage

This section summarizes the changes to CICS storage, across supported CICS releases. Use this information to understand significant changes between one release and another.

Table 166. Changes to CICS storage by release of CICS Transaction Server for z/OS				
Storage area	5.4	5.5	5.6	6.1
ETDSA				REMOVED: any storage that was allocated from this DSA is now allocated from the ECDSA

Table 166. Changes to CICS storage by release of CICS Transaction Server for z/OS (continued)

Storage area	5.4	5.5	5.6	6.1
PCDSA, PUDSA, EPCDSA, and EPUDSA				NEW: to enable the allocation of storage that is not protected from instruction execution. These DSAs have new subpools and some subpools that have moved from the CSDA, SDSA and their equivalent extended DSAs. See CICS dynamic storage areas (DSAs) .
Subpools LDPGM, LDEPGM, LDRES, LDERES, LDNRS, LDENRS, LDNUC, and LDENUC				CHANGED: these subpools are now allocated in PCSDA, PUDSA, and their equivalent extended DSAs.
CDSA, SDSA, ECDSA, ESDSA locations				CHANGED: Loader Domain functions ACQUIRE_PROGRAM, RELEASE_PROGRAM, INQUIRE_PROGRAM, GET_NEXT_PROGRAM, GET_NEXT_INSTANCE, and IDENTIFY_PROGRAM return the location of the program to the caller. These locations changed; the CDSA becomes the PCDSA, the ECDSA becomes the EPCDSA, the SDSA becomes the PUDSA and the ESDSA becomes the EPUDSA. Although the names of the DSA equates have changed, the equate values have not changed.

Changes to CICS utilities

This section summarizes the changes to the CICS-supplied utilities across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Highlights of changes across supported releases of CICS TS

Table 167 on page 176 lists changed utilities in each supported CICS TS release. The links take you to the relevant tables that describe changes to specific utilities by release.

Note: Dump utilities DFHDXxxx and DFHPDxxx and the DFHTUxxx Trace utility print program are renamed with new release identifier every release, so they are not specifically listed in [Table 167 on page 176](#) unless they have other functional changes.

Table 167. Highlights of CICS utilities changes across supported CICS TS releases

5.4	5.5	5.6	6.1
<ul style="list-style-type: none"> • DFHOSTAT • DFHMNDUP • DFHSTUP 	<ul style="list-style-type: none"> • DFHOSTAT • DFHSTUP 	<ul style="list-style-type: none"> • DFHOSTAT • DFHSTUP 	<ul style="list-style-type: none"> • DFHOSTAT • “DFHEISUP” on page 180 • DFHSTUP

Changes to CICS utilities by release of CICS TS

View changes by utility.

DFH0STAT

Table 168 on page 177 summarizes changes to DFH0STAT, CICS sample statistics program by release of CICS TS.

Table 168. Changes to DFH0STAT by release			
5.4	5.5	5.6	6.1
<p>NEW REPORT: MQ monitors report</p>	<p>CHANGED: DFH0STAT reports on the local system entry.</p>	<p>NEW REPORTS: User report Security report MVS user region and extended user region storage report</p>	<p>NEW REPORT: Policy report</p>
<p>TCP/IP report and TCP/IP services report New fields added</p>	<p>Connections and Modenames report New field: A14EAHWM Peak aids in chain</p>	<p>TCP/IP services report New field: TCPIPSERVICE OPTIONSPGM</p>	<p>TCP/IP report New fields: SOG-S8TLSHS-REQUESTS-MAX SOG-S8TLSHS-REQUESTS-CUR SOG-S8TLSHS-REQUESTS-PEAK SOG-S8TLSHS-WAITERS-MAX SOG-S8TLSHS-WAITERS-CUR SOG-S8TLSHS-WAITERS-PEAK SOG-TIMES-CICSTLS11-INB-USED SOG-TIMES-CICSTLS12-INB-USED SOG-TIMES-CICSTLS13-INB-USED SOG-TIMES-CICSTLSALL-INB-USED SOG-TIMES-CICSTLS11-OUTB-USED SOG-TIMES-CICSTLS12-OUTB-USED SOG-TIMES-CICSTLS13-OUTB-USED SOG-TIMES-CICSTLSALL-OUTB-USED SOG-TIMES-ATSSL3-INB-USED SOG-TIMES-ATTLS10-INB-USED SOG-TIMES-ATTLS11-INB-USED SOG-TIMES-ATTLS12-INB-USED SOG-TIMES-ATTLS13-INB-USED SOG-TIMES-ATSSL3-OUTB-USED SOG-TIMES-ATTLS10-OUTB-USED SOG-TIMES-ATTLS11-OUTB-USED SOG-TIMES-ATTLS12-OUTB-USED SOG-TIMES-ATTLS13-OUTB-USED Changed fields: Current® number of outbound sockets: Its source field is changed to SOG-CURR-OUTB-SOCKETS. Peak number of outbound sockets: Its source field is changed to SOG-PEAK-OUTB-SOCKETS. Removed fields: SOG-CURR-PERS-OUTB-SOCKETS SOG-PEAK-BOTH-OUTB-SOCKETS SOG-PEAK-PERS-OUTB-SOCKETS SOG-PERS-OUTBOUND-CREATED</p>
	<p>Db2 Connection report New field: D2G-TCB-PROTECTED-CURRENT Current number of connections with pthreads</p>	<p>System status report New fields added to Monitoring section: Frequency MCT program name</p>	<p>Db2 Entries report New field: D2R-SHARELOCKS</p>

Table 168. Changes to DFHOSTAT by release (continued)

5.4	5.5	5.6	6.1
		<p>Storage above 16 MB report</p> <p>Removed fields:</p> <p>SMSMVSSTGREQWAITS SMSTIMEWAITMVS</p>	<p>Data Tables Storage report</p> <p>New fields:</p> <p>Entries + Index - Storage Allocated Entries + Index - Storage In-Use</p> <p>Removed fields:</p> <p>Total - Storage Allocated Total - Storage In-Use</p>
			<p>JVMSEVERs report</p> <p>New fields:</p> <p>JVMSEVER code cache memory used JVMSEVER code cache memory alloc JVMSEVER data cache memory used JVMSEVER data cache memory alloc JVMSEVER class storage memory used JVMSEVER class storage memory alloc JVMSEVER classcache size JVMSEVER classcache free</p>
			<p>Temporary Storage report</p> <p>New fields:</p> <p>TSGASU Current aux. temp storage usage % TSGASUPK Peak aux. temp storage usage %</p>
			<p>Transactions report</p> <p>New field XMR-PURGED-TRNCLS-THRESHOLD Purge Count</p>
			<p>Tranclass report</p> <p>New field XMCGAMA Last at Max Act</p>

Table 168. Changes to DFHOSTAT by release (continued)

5.4	5.5	5.6	6.1
			<p>Storage below 16 MB (24-bit storage) report</p> <p>New fields:</p> <ul style="list-style-type: none"> User Region limit established Current User Region storage unallocated Current free storage above User Region limit <p>Changed fields:</p> <ul style="list-style-type: none"> Private Area size below 16MB: the field name is changed from Private Area Region size below 16MB. Peak LSQA/SWA storage allocated (SYS): the field name is changed from Max LSQA/SWA storage allocated below 16MB (SYS) and its field description is updated accordingly. Peak User Region storage allocated (VIRT): the field name is changed from Max User storage allocated below 16MB (VIRT) and its field description is updated accordingly. <p>Removed fields:</p> <ul style="list-style-type: none"> Private Area Storage available below 16MB Region size established from REGION= parameter RTM System Use
			<p>Storage above 16 MB (31-bit storage) report</p> <p>New fields:</p> <ul style="list-style-type: none"> User Region limit established Current User Region storage unallocated Current free storage above User Region limit <p>Changed fields:</p> <ul style="list-style-type: none"> Private Area size above 16MB: the field name is changed from Private Area Region size above 16MB Peak LSQA/SWA storage allocated: the field name is changed from Max LSQA/SWA storage allocated above 16MB (SYS) and its field description is updated accordingly. Peak User Region storage allocated: the field name is changed from Max User storage allocated above 16MB (EXT) and its field description is updated accordingly. <p>Removed fields:</p> <ul style="list-style-type: none"> Private Area Storage available above 16MB
			<p>Storage above 2 GB (64-bit storage) report</p> <p>Removed fields:</p> <ul style="list-style-type: none"> MEMLIMIT minus allocated to Private Memory Objects MEMLIMIT minus usable within Private Memory Objects

Back to [Highlights of changes across releases](#)

DFHEISUP

Table 169 on page 180 summarizes changes to DFHEISUP, Load module scanner by release of CICS TS.

Table 169. Changes to DFHEISUP by release			
5.4	5.5	5.6	6.1
			CHANGED: DFHEISUP is changed to be RMODE(ANY) instead of RMODE(24). This change allows DFHEISUP to use 31-bit virtual storage (above 16 MB but below 2 GB).

[Back to Highlights of changes across releases](#)

DFHMNDUP

Table 170 on page 180 summarizes changes to DFHMNDUP, Monitoring dictionary utility program by release of CICS TS.

Table 170. Changes to DFHMNDUP by release			
5.4	5.5	5.6	6.1
CHANGED: Specifying a 2 digit year on the DATE and JOBDATE control parameters now defines a date in the twenty-first century.			

[Back to Highlights of changes across releases](#)

Dump utilities DFHPDxxx

Table 171 on page 180 summarizes changes to Dump utilities DFHPDxxx by release of CICS TS.

Dump utilities DFHPDxxx are renamed with new release identifier every release, so this is not specifically stated again in Table 171 on page 180.

Table 171. Changes to DFHPDxxx by release			
5.4	5.5	5.6	6.1
CHANGED: Changes to formatting of DFHMQINI CICS MQINI and EXCI dump		CHANGED: The TRS KE_NUM parameter enhanced to format out the most recent trace entries information for the specified task.	

[Back to Highlights of changes across releases](#)

DFHSTUP

Table 172 on page 181 summarizes changes to DFHSTUP, CICS statistics utility program by release of CICS TS.

Table 172. Changes to DFHSTUP by release

5.4	5.5	5.6	6.1
<p>NEW TYPE: IBM MQ monitor</p> <p>CHANGED: New option MQMONITOR on SELECT TYPE and IGNORE TYPE control parameters Specifying a 2 digit year on the DATE control parameter now defines a date in the twenty-first century.</p>	<p>CHANGED: DFHSTUP reports on the local system entry.</p>	<p>NEW TYPE: Security domain</p> <p>CHANGED: New option SECURITY added to SELECT TYPE and IGNORE TYPE control parameters.</p>	
<p>TCP/IP global and service statistics New fields added</p>	<p>CICS Db2 global statistics New field: D2G_TCB_PROTECTED_CURRENT Current number of connections with pthreads</p>	<p>Dispatcher domain statistics The CICS TCB Mode Statistics has been enhanced to print the QR TCB CPU Dispatch Ratio.</p>	<p>Cipher statistics New fields: SOC_CIPHER SOC_TIMES_CICSTLS_INB_USED SOC_TIMES_CICSTLS_OUTB_USED SOC_TIMES_ATTLS_INB_USED SOC_TIMES_ATTLS_OUTB_USED</p>
	<p>ISC/IRC system entry resource statistics New field: A14EAHWM Peak aids in chain</p>	<p>Monitoring domain statistics New fields: MNGRMI RMI Option MNGAPPNS Application naming MNGMCTNM MCT program name MNGFREQ Frequency</p>	<p>CICS Db2 resource statistics New field: D2R_SHARELOCKS</p>
	<p>Monitoring domain statistics New fields: MNGURIRL Urimap Resource Limit MNGWEBRL Webservice Resource Limit</p>	<p>Storage manager statistics New fields added to global statistics, indicating user region and extended user region storage: The time the MVS monitor system task last sampled MVS storage State of the user region or the extended user region The current total amount of unallocated storage Low water mark of the total amount of unallocated storage The size of the current largest contiguous storage area available in unallocated storage Low water mark of the size of the largest contiguous storage area available in unallocated storage The time the last SOS condition was detected The time tasks waited because of the SOS or constrained state The current, peak, and total number of tasks that are waiting because of the SOS or constrained state</p>	<p>JVMSERVER resource statistics New fields: SJS_JVMSERVER_CODE_CACHE_USED SJS_JVMSERVER_CODE_CACHE_ALLOC SJS_JVMSERVER_DATA_CACHE_USED SJS_JVMSERVER_DATA_CACHE_ALLOC SJS_JVMSERVER_CLASS_STRG_USED SJS_JVMSERVER_CLASS_STRG_ALLOC SJS_JVMSERVER_CLASSCACHE_SIZE SJS_JVMSERVER_CLASSCACHE_FREE</p>

Table 172. Changes to DFHSTUP by release (continued)

5.4	5.5	5.6	6.1
		<p>TCP/IP resource statistics</p> <p>New field:</p> <p>Name of the HTTP OPTIONS handler program (OPTIONSPGM)</p>	<p>TCP/IP global statistics</p> <p>New fields showing TLS handshakes running in parallel:</p> <p>SOG_S8TLSHS_REQUESTS_MAX SOG_S8TLSHS_REQUESTS_CUR SOG_S8TLSHS_REQUESTS_PEAK</p> <p>New fields showing TLS handshakes in waiting:</p> <p>SOG_S8TLSHS_WAITERS_MAX SOG_S8TLSHS_WAITERS_CUR SOG_S8TLSHS_WAITERS_PEAK</p> <p>New fields showing TLS protocol handshakes:</p> <p>SOG_TIMES_CICSTLS11_INB_USED SOG_TIMES_CICSTLS12_INB_USED SOG_TIMES_CICSTLS13_INB_USED SOG_TIMES_CICSTLSALL_INB_USED SOG_TIMES_CICSTLS11_OUTB_USED SOG_TIMES_CICSTLS12_OUTB_USED SOG_TIMES_CICSTLS13_OUTB_USED SOG_TIMES_CICSTLSALL_OUTB_USED SOG_TIMES_ATSSL3_INB_USED SOG_TIMES_ATTLS10_INB_USED SOG_TIMES_ATTLS11_INB_USED SOG_TIMES_ATTLS12_INB_USED SOG_TIMES_ATTLS13_INB_USED SOG_TIMES_ATSSL3_OUTB_USED SOG_TIMES_ATTLS10_OUTB_USED SOG_TIMES_ATTLS11_OUTB_USED SOG_TIMES_ATTLS12_OUTB_USED SOG_TIMES_ATTLS13_OUTB_USED</p> <p>Changed fields:</p> <p>SOG_CURR_OUTB_SOCKETS: Its DFHSTUP name is changed to Current number of outbound sockets.</p> <p>SOG_PEAK_OUTB_SOCKETS: Its DFHSTUP name is changed to Peak number of outbound sockets.</p> <p>Removed fields:</p> <p>SOG_CURR_PERS_OUTB_SOCKETS SOG_PEAK_BOTH_OUTB_SOCKETS SOG_PEAK_PERS_OUTB_SOCKETS SOG_PERS_OUTBOUND_CREATED</p>
		<p>User domain statistics</p> <p>New fields:</p> <p>USGDESOF USGDEENF USGDRCUR USGDRPK USGTOCUR USGTOPK USGENFK USGENFUN</p>	<p>Temporary storage global statistics</p> <p>New fields:</p> <p>TSGASU Current aux. temp storage usage % TSGASUPK Peak aux. temp storage usage %</p>
			<p>Transactions resource statistics</p> <p>New field:</p> <p>XMR_PURGED_TRNCLS_THRESHOLD, Purge Count</p>

Table 172. Changes to DFHSTUP by release (continued)			
5.4	5.5	5.6	6.1
			Transaction class resource statistics New field: XMCGAMA, Last at MaxAct Transaction class summary resource statistics New fields: First at Max Act Last at Max Act

Back to [Highlights of changes across releases](#)

Changes to global user exits and task-related user exits

This section summarizes the changes to user exits across supported CICS releases. It covers GLUEs and changes to the TCB indicators in DFHUEPAR. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Table 173. Changes to global user exits by release of CICS TS				
Global user exit	5.4	5.5	5.6	6.1
XSNEEX				REMOVED
XDTAD		CHANGED: Exit programs must be made threadsafe and enabled at the exit point as threadsafe; otherwise, excessive TCB switching will occur for CFDT requests running on open TCBs.		
XDUCLSE			CHANGED: UERCSWCH return code has no effect if DUMPSW=ALL is already set. DUMPSW=ALL means that dump data sets will always switch.	
XDUREQ	CHANGED: New parameters UEPDLISI and UEPJLISI			
XDUREQC	CHANGED: New parameters UEPDLISO and UEPJLISO			
XFCFROUT		CHANGED: UEP_FC_SYSID addresses an area containing blanks if no SYSID is specified on the command or no SYSID is set by the XFCFRIN exit. Previously UEP_FC_SYSID was zero for this case.		
XPCFTCH		CHANGED: New field on UEPPCDS parameter, PCUE_INVOKING_PROGRAM_NAME		
XRSINDI	CHANGED: New value UEIDMQMN for UEPIDTYP parameter		CHANGED: New value UEIDDMPC for UEPIDTYP parameter	

Changes to CICS XPI

This section summarizes the changes to the exit programming interface across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases” on page 214](#).

Reassembling global user exit programs

The CICS global user exit programming interface is sensitive to both the release of CICS and settings in CICS. Even if there are no changes to the externals of the programming interface, changes to the internal workings of CICS can affect structures that are used by the CICS global user exit programming interface. As a consequence, you should reassemble global user exit programs for each CICS release.

Effect of multiple releases on user exits

A global user exit or task-related user exit might be assembled by using CICS libraries from one CICS release and make an XPI call on a system that runs a different CICS release. In this situation, successful transfer of control from the exit to the correct CICS module to handle that XPI call depends on the combination of CICS releases that are used to assemble the call and to make the call, and on whether the XPI call itself is release-sensitive. Release-sensitive XPI calls are available only from Version 4.1.

Table 174 on page 184 shows the effect of different combinations of CICS release and the release-sensitivity of the call.

Table 174. User exits with different CICS releases

CICS release of the libraries that are used to assemble the XPI call	Release-sensitive XPI call? (from V4.1 only)	CICS system that the XPI call is made on	Result
5.2, 5.1, 4.2, or 4.1	Yes	Any supported CICS release	Control transfers to the correct CICS module for the XPI call
5.2, 5.1, 4.2	No	5.2, 5.1, 4.2	Control transfers to the correct CICS module for the XPI call
5.2, 5.1, 4.2	No	4.1, 3.2, 3.1	Unpredictable result
4.1	No	5.2, 5.1, 4.2, or 4.1	Control transfers to the correct CICS module for the XPI call
4.1	No	3.2 or 3.1	Unpredictable result
3.2 or 3.1	No	5.2, 5.1, 4.2, or 4.1	Back-level XPI call detected, and user exit fails
3.2	No	3.2	Control transfers to the correct CICS module for the XPI call
3.2	No	3.1	Unpredictable result
3.1	No	3.2 or 3.1	Control transfers to the correct CICS module for the XPI call

Changes to the XPI functions

Table 175. Changes to CICS XPI by release of CICS TS

Functional area	5.4	5.5	5.6	6.1
Parameter domain		NEW: DFHPAIQX call INQUIRE_FEATUREKEY for feature toggles		CHANGED: New option FILEPATH added to DFHPAIQX call INQUIRE_FEATUREKEY

Table 175. Changes to CICS XPI by release of CICS TS (continued)

Functional area	5.4	5.5	5.6	6.1
Storage control				<p>NEW:</p> <p>EXECUTABLE option on GETMAIN call</p> <p>INQUIRE_TASK_STORAGE64 call</p> <p>ADDRESS64, ELEMENT_ADDRESS64, and ELEMENT_LENGTH64 options on INQUIRE_ELEMENT_LENGTH call</p> <p>CHANGED:</p> <p>DFHPGISY LOCATION equates that can be used on INQUIRE_PROGRAM or GET_NEXT_PROGRAM calls: PGIS_CDSA, PGIS_SDSA, PGIS_ECDSA and PGIS_ESDSA are replaced by PGIS_PCDSA, PGIS_PUDSA, PGIS_EPCDSA and PGIS_EPUDSA.</p>

Changes to CICS user-replaceable programs

This section summarizes the changes to user-replaceable programs across supported CICS releases. Use this information to plan the impact of upgrading from one release to another. For each CICS release, you must reassemble all user-replaceable programs, even if you have not changed them.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Table 176. Changes to user replaceable programs by release of CICS TS

Program	5.4	5.5	5.6	6.1
DFHBMSX	NEW			
DFHWBOPT	NEW with APAR	NEW with APAR	NEW	

Changes to messages and codes

This section summarizes the changes to messages and codes across supported CICS releases.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

As of 6.1, the words Version or Release or the abbreviations V or R are dropped from references to the CICS TS product name. This change applies to some message texts, but is not reflected in this summary of changes to messages and codes.

Some but not all CICS messages have a suffix letter. In output, a space might or might not be inserted before the message suffix. In CICS documentation, CICS messages are referenced with no space preceding the suffix letter (for example, DFHAM4971E).

Index

CICS messages	CICS messages	CICS messages	CICSplex SM messages	CICS codes
<ul style="list-style-type: none"> • “DFH52xx” on page 186 	<ul style="list-style-type: none"> • “DFHISnnnn” on page 189 	<ul style="list-style-type: none"> • “DFHSONnnnn” on page 193 	<ul style="list-style-type: none"> • “EYUBMnnnn” on page 195 	<ul style="list-style-type: none"> • AAxx • ABxx

CICS messages	CICS messages	CICS messages	CICSplex SM messages	CICS codes
<ul style="list-style-type: none"> • “DFH7xxx (DFHEXP)” on page 187 • “DFHAMnnnn” on page 187 • “DFHAPnnnn” on page 187 • “DFHASnnnn” on page 187 • “DFHCAnnnn” on page 188 • “DFHDBnnnn” on page 188 • “DFHDSnnnn” on page 188 • “DFHDUnnnn” on page 188 • “DFHECnnnn” on page 188 • “DFHEXnnnn” on page 188 • “DFHFCnnnn” on page 188 • “DFHHnnnn” on page 189 	<ul style="list-style-type: none"> • “DFHLGnnnn” on page 189 • “DFHMNnnnn” on page 189 • “DFHMPnnnn” on page 189 • “DFHMQnnnn” on page 190 • “DFHPAnnnn” on page 190 • “DFHPInnnn” on page 190 • “DFHRLnnnn” on page 190 • “DFHRMnnnn” on page 190 • “DFHRVnnnn” on page 191 • “DFHSInnnn” on page 191 • “DFHSJnnnn” on page 192 • “DFHSMnnnn” on page 192 • “DFHSNnnnn” on page 192 	<ul style="list-style-type: none"> • “DFHSRnnnn” on page 193 • “DFHTDnnnn” on page 193 • “DFHTFnnnn” on page 193 • “DFHTInnnn” on page 193 • “DFHTMnnnn” on page 193 • “DFHTPnnnn” on page 194 • “DFHTRnnnn” on page 194 • “DFHTSnnnn” on page 194 • “DFHWBnnnn” on page 194 • “DFHWUnnnn” on page 194 • “DFHXMnnnn” on page 194 • “DFHXQnnnn” on page 194 • “DFHXSnnnn” on page 195 • “DFHYMnnnn” on page 195 	<ul style="list-style-type: none"> • “EYUCPnnnn” on page 195 • “EYUCSnnnn” on page 196 • “EYUNXnnnn” on page 196 • “EYUPNnnnn” on page 196 • “EYUVCnnnn” on page 196 • “EYUVSnnnn” on page 196 • “EYUXCnnnn” on page 196 • “EYUXDnnnn” on page 196 • “EYUXEnnnn” on page 197 	<ul style="list-style-type: none"> • AExx • AIxx • AKxx • AMxx • ANxx • AXxx • 04xx

Changes to CICS messages by release of CICS TS

DFH52xx

5.4	5.5	5.6	6.1
CHANGED: DFH5275W			

DFH7xxx (DFHExP)

5.4	5.5	5.6	6.1	
	NEW: DFH7281 DFH7282 DFH7283 DFH7284 DFH7286 DFH7287 DFH7289 DFH7290		REMOVED: DFH7040 DFH7049 DFH7051 DFH7052 DFH7056 DFH7062 DFH7064 DFH7068 DFH7069 DFH7070 DFH7071 DFH7072 DFH7073 DFH7079 DFH7081 DFH7087 DFH7088 DFH7090 DFH7091 DFH7092	REMOVED: DFH7093 DFH7094 DFH7095 DFH7096 DFH7097 DFH7098 DFH7202 DFH7203 DFH7211 DFH7212 DFH7214 DFH7223 DFH7224 DFH7227 DFH7231 DFH7234 DFH7236 DFH7265 DFH7266

DFHAMnnnn

5.4	5.5	5.6	6.1
NEW: DFHAM4900W DFHAM4962E DFHAM4963E DFHAM4964W DFHAM4965E DFHAM4966E DFHAM4967E	CHANGED: DFHAM4852W	NEW with APAR PH30590: DFHAM4968I DFHAM4969E DFHAM4970I DFHAM4971E DFHAM4972E DFHAM4973E	NEW: DFHAM4968I DFHAM4969E DFHAM4970I DFHAM4971E DFHAM4972E DFHAM4973E

DFHAPnnnn

5.4	5.5	5.6	6.1
		NEW: DFHAP0605	NEW: DFHAP2001 DFHAP0007E

DFHASnnnn

5.4	5.5	5.6	6.1
NEW: DFHAS0001 DFHAS0002 DFHAS0004 DFHAS0100I DFHAS0101I			

DFHCAnnnn

5.4	5.5	5.6	6.1
NEW: DFHCA4900W DFHCA4962E DFHCA4963E DFHCA4964W DFHCA4965E DFHCA4966E DFHCA4967E CHANGED: DFHCA4865S	CHANGED: DFHCA4852W	NEW with APAR PH30590: DFHCA4968I DFHCA4969E DFHCA4970I DFHCA4972E DFHCA4973E	NEW: DFHCA4968I DFHCA4969E DFHCA4970I DFHCA4972E DFHCA4973E

DFHDBnnnn

5.4	5.5	5.6	6.1
		CHANGED: DFHDB8111E DFHDB8222	

DFHDSnnnn

5.4	5.5	5.6	6.1
		NEW: DFHDS0102I DFHDS0103I	

DFHDUnnnn

5.4	5.5	5.6	6.1
		NEW: DFHDU0311	NEW: DFHDU0104 DFHDU0105 DFHDU0106

DFHECnnnn

5.4	5.5	5.6	6.1
NEW: DFHEC4130 DFHEC4131 DFHEC4132 DFHEC4133 DFHEC4134 DFHEC4135			

DFHEXnnnn

5.4	5.5	5.6	6.1
NEW: DFHEX0400			

DFHFCnnnn

5.4	5.5	5.6	6.1
NEW with APAR PI97207: DFHFC6045 DFHFC6046	NEW: DFHFC6045 DFHFC6046		NEW: DFHFC0418 DFHFC0433 DFHFC0434

DFHHnnnn

5.4	5.5	5.6	6.1	
NEW: DFHH0001 DFHH0002 DFHH0003 DFHH0200 DFHH0301 DFHH0302 DFHH0303	CHANGED: DFHH0002		NEW: DFHH0401 DFHH0402 DFHH0403 DFHH0404 DFHH0405 DFHH0406 DFHH0407 DFHH0409 DFHH0410 DFHH0411 DFHH0412 DFHH0413 DFHH0414 DFHH0501 DFHH0502 DFHH0503 DFHH0504	NEW: DFHH0601 DFHH0602 DFHH0603 DFHH0701 DFHH0702 DFHH0703 DFHH0704 DFHH0705 DFHH0706 DFHH0707 NEW with APAR PH58623: DFHH0415 DFHH0506 DFHH0604 DFHH0709 DFHH0811

DFHISnnnn

5.4	5.5	5.6	6.1
	CHANGED: DFHIS1002	NEW with APAR PH52870: DFHIS2013	NEW with APAR PH53315: DFHIS2013

DFHLGnnnn

5.4	5.5	5.6	6.1
			NEW: DFHLG0515 DFHLG0516

DFHMNnnnn

5.4	5.5	5.6	6.1
NEW: DFHMN0011 DFHMN0115I			

DFHMPnnnn

5.4	5.5	5.6	6.1
NEW: DFHMP2014 DFHMP2015 DFHMP2016 DFHMP2017 DFHMP2020 DFHMP2021 DFHMP2022 DFHMP2023 DFHMP3009 DFHMP3010 DFHMP3011 DFHMP3012 NEW with APAR DFHMP2018 (PI88500)	CHANGED: DFHMP2004 DFHMP2006 CHANGED with APAR: DFHMP0002 (PI92806) DFHMP2006 (PI88500) DFHMP3009 (PI92806) DFHMP3010 (PI92806)	NEW: DFHMP2018 DFHMP3013 DFHMP3014 CHANGED: DFHMP0002 DFHMP2006 DFHMP3009 DFHMP3010	NEW: DFHMP3015 DFHMP3016 DFHMP3017 DFHMP3018 CHANGED: DFHMP2006

DFHMQnnnn

5.4	5.5	5.6	6.1
NEW: DFHMQ0370I DFHMQ0371I DFHMQ0390E DFHMQ0391I DFHMQ0392I New with APAR: DFHMQ0126I (PH22136) DFHMQ0127I (PH22136) DFHMQ0128I (PH22136) DFHMQ0795E (PH15075) DFHMQ0796I (PH22136)	New with APAR: DFHMQ0126I (PH22136) DFHMQ0127I (PH22136) DFHMQ0128I (PH22136) DFHMQ0795E (PH15075) DFHMQ0796I (PH22136)	NEW: DFHMQ0126I DFHMQ0127I DFHMQ0128I DFHMQ0393D DFHMQ0794I DFHMQ0795E DFHMQ0796I New with APAR: DFHMQ0797E (PH42282)	NEW: DFHMQ0224E New with APAR: DFHMQ0797E (PH47961) CHANGED: DFHMQ0107I DFHMQ0129E DFHMQ0700I DFHMQ0704E DFHMQ0713I DFHMQ0750E

DFHPAnnnn

5.4	5.5	5.6	6.1
NEW: DFHPA1950I DFHPA1951I DFHPA1952W DFHPA1953W DFHPA1954W DFHPA1955W DFHPA1956I DFHPA1957W DFHPA1958I		NEW with APAR PH30590: DFHPA2001E DFHPA2002I DFHPA2003E DFHPA2004E DFHPA2005E DFHPA2007E DFHPA2008E DFHPA2009E DFHPA2010E	NEW: DFHPA2001E DFHPA2002I DFHPA2003E DFHPA2004E DFHPA2005E DFHPA2007E DFHPA2008E DFHPA2009E DFHPA2011E REMOVED: DFHPA2010E

DFHPInnnn

5.4	5.5	5.6	6.1
			NEW: DFHPI0518

DFHRLnnnn

5.4	5.5	5.6	6.1
	NEW: DFHRL2105E		NEW with APAR PH58296: DFHRL0137I DFHRL0138W CHANGED: DFHRL2013I

DFHRMnnnn

5.4	5.5	5.6	6.1
NEW with APAR PH03691: DFHRM0240 DFHRM0241 DFHRM0242	NEW: DFHRM0316 DFHRM0317 NEW with APAR PH03691: DFHRM0240 DFHRM0241 DFHRM0242	NEW with APAR PH03691: DFHRM0240 DFHRM0241 DFHRM0242	NEW: DFHRM0240 DFHRM0241 DFHRM0242

DFHRVnnnn

5.4	5.5	5.6	6.1
		NEW with APAR PH30590: DFHRV0002 DFHRV1000E DFHRV1001E DFHRV1002E DFHRV1003E DFHRV1004E DFHRV1005E DFHRV1006E DFHRV1007E DFHRV1008E DFHRV1009E DFHRV1010E DFHRV1011E DFHRV1012E DFHRV1013E DFHRV1014E DFHRV1015E DFHRV1016W DFHRV1017E	NEW: DFHRV0002 DFHRV1000E DFHRV1001E DFHRV1002E DFHRV1003E DFHRV1004E DFHRV1005E DFHRV1006E DFHRV1007E DFHRV1008E DFHRV1009E DFHRV1010E DFHRV1011E DFHRV1012E DFHRV1013E DFHRV1014E DFHRV1015E DFHRV1016W DFHRV1017E

DFHSInnnn

5.4	5.5	5.6	6.1
NEW with APAR: DFHSI1591 (PI97207)	NEW: DFHSI1591	NEW with APAR PH30590: DFHSI1610 DFHSI1611 DFHSI1612	NEW: DFHSI1610 DFHSI1611 DFHSI1612 DFHSI1801

DFHSJnnnn

5.4	5.5	5.6	6.1
NEW: DFHSJ1204 DFHSJ1205 DFHSJ1206 DFHSJ1207 DFHSJ1208 NEW with APAR: DFHSJ0007 (PH24443) DFHSJ0008 (PH24443) DFHSJ0938 (PH22887) CHANGED with APAR: DFHSJ1007W (PH12280) DFHSJ1208 (P186767)	NEW: DFHSJ0006 DFHSJ1300 DFHSJ1301 DFHSJ1302 DFHSJ1303 DFHSJ1304E DFHSJ1305E DFHSJ1306E DFHSJ1307I DFHSJ1308I DFHSJ1400E DFHSJ1401E DFHSJ1402W DFHSJ1403W DFHSJ1404D DFHSJ1407W DFHSJ1408E DFHSJ1409I DFHSJ1410I DFHSJ1411I DFHSJ1412E DFHSJ1413E DFHSJ1414I NEW with APAR: DFHSJ0007 (PH24443) DFHSJ0008 (PH24443) DFHSJ0938 (PH22887) CHANGED: DFHSJ1201 DFHSJ1202 CHANGED with APAR: DFHSJ1007W (PH12280)	NEW: DFHSJ0007 DFHSJ0008 CHANGED: DFHSJ1007W	

DFHSMnnnn

5.4	5.5	5.6	6.1
	CHANGED: DFHSM0102	NEW: DFHSM0144W DFHSM0145I DFHSM0146W DFHSM0147I DFHSM0148I DFHSM0149W DFHSM0150I DFHSM0151W DFHSM0152I DFHSM0153I	NEW: DFHSM0136 DFHSM0160I DFHSM0161I REMOVED: DFHSM0137 DFHSM0138 DFHSM0139 DFHSM0140

DFHSNnnnn

5.4	5.5	5.6	6.1
		CHANGED: DFHSN1100	CHANGED: DFHSN1100 DFHSN1101 REMOVED: DFHSN1102

DFHSOnnnn

5.4	5.5	5.6	6.1
CHANGED: DFHSO1001	NEW with APAR PH40930: DFHSO0200I DFHSO0201I DFHSO0202I	NEW with APAR PH40930: DFHSO0200I DFHSO0201I DFHSO0202I	NEW: DFHSO0170A DFHSO0171A DFHSO0200I DFHSO0201I DFHSO0202I DFHSO0300 DFHSO0301 DFHSO0302 DFHSO0303 DFHSO0304 DFHSO0305 DFHSO0310 DFHSO0399 DFHSO0400 DFHSO0401 DFHSO0402 DFHSO0403 DFHSO0404 DFHSO0405 DFHSO0410 DFHSO0499

DFHSRnnnn

5.4	5.5	5.6	6.1
			NEW: DFHSR0623

DFHTDnnnn

5.4	5.5	5.6	6.1
	NEW: DFHTD0387D		

DFHTFnnnn

5.4	5.5	5.6	6.1
NEW: DFHTF0200 CHANGED with APAR: DFHTF0200 (PH25397)	CHANGED with APAR: DFHTF0200 (PH25397)		

DFHTInnnn

5.4	5.5	5.6	6.1
		REMOVED: DFHTI0102 CHANGED: DFHTI0103	

DFHTMnnnn

5.4	5.5	5.6	6.1
			NEW: DFHTM1721

DFHTPnnnn

5.4	5.5	5.6	6.1
		NEW with APAR PH43431: DFHTP4175	NEW with APAR PH43431: DFHTP4175

DFHTRnnnn

5.4	5.5	5.6	6.1
	NEW: DFHTR0120	NEW: DFHTR0125	

DFHTSnnnn

5.4	5.5	5.6	6.1
		NEW with APAR PH28145: DFHTS1316 DFHTS1317 PH40863: DFHTS1610	NEW: DFHTS1316 DFHTS1317 DFHTS1610

DFHWBnnnn

5.4	5.5	5.6	6.1
	NEW with APAR PH45703: DFHWB0112I	NEW: DFHWB0770 DFHWB0771 NEW with APAR PH38091: DFHWB0112I	NEW: DFHWB0112I CHANGED: DFHWB0763

DFHWUnnnn

5.4	5.5	5.6	6.1
NEW: DFHWU4033 CHANGED: DFHWU4302	NEW: DFHWU4303		

DFHXMnnnn

5.4	5.5	5.6	6.1
	NEW: DFHXM0612		

DFHXQnnnn

5.4	5.5	5.6	6.1
		NEW with APAR PH28145: DFHXQ0420I DFHXQ0421I DFHXQ0422I DFHXQ0423I	NEW: DFHXQ0420I DFHXQ0421I DFHXQ0422I DFHXQ0423I

DFHXSnnnn

5.4	5.5	5.6	6.1
	NEW: DFHXS1404 CHANGED: DFHXS1113 DFHXS1402		NEW: DFHXS0300W DFHXS0301W DFHXS0302W DFHXS0303W DFHXS0304W DFHXS0305I DFHXS1117 DFHXS1201 DFHXS1206 DFHXS1215 REMOVED: DFHXS1113 DFHXS1205 DFHXS1211 DFHXS1404

DFHYMnnnn

5.4	5.5	5.6	6.1
		NEW with APAR PH30590: DFHYM1000E DFHYM1001E DFHYM1002E DFHYM1003E DFHYM1004E DFHYM1005W DFHYM1006E DFHYM1007E DFHYM1008E DFHYM1009E DFHYM1010E DFHYM1011E DFHYM1012E DFHYM1013E DFHYM1014E DFHYM1015E DFHYM1016E DFHYM1017E DFHYM1018E DFHYM1019E DFHYM1020E DFHYM1021E DFHYM1022E DFHYM1023E	NEW: DFHYM1000E DFHYM1001E DFHYM1002E DFHYM1003E DFHYM1004E DFHYM1005W DFHYM1006E DFHYM1007E DFHYM1008E DFHYM1009E DFHYM1010E DFHYM1011E DFHYM1012E DFHYM1013E DFHYM1014E DFHYM1015E DFHYM1016E DFHYM1017E DFHYM1018E DFHYM1019E DFHYM1020E DFHYM1021E DFHYM1022E DFHYM1023E

Changes to CICSplex SM messages by release of CICS TS

EYUBMnnnn

5.4	5.5	5.6	6.1
NEW with APAR: EYUBM0349W	NEW: EYUBM0349W		

EYUCPnnnn

5.4	5.5	5.6	6.1
NEW with APAR: EYUCP0208E	NEW with APAR: EYUCP0208E	NEW: EYUCP0208E	

EYUCSnnnn

5.4	5.5	5.6	6.1
NEW with APAR: EYUCS0109I	NEW: EYUCS0109I		

EYUNXnnnn

5.4	5.5	5.6	6.1
CHANGED: <ul style="list-style-type: none"> • EYUNX0157E renamed to EYUXL0157E • EYUNX0158E renamed to EYUXL0158E • EYUNX0159E renamed to EYUXL0159E 		NEW with APAR: EYUNX0110W CHANGED with APAR: EYUNX0013E	NEW: EYUNX0110W CHANGED: EYUNX0013E

EYUPNnnnn

5.4	5.5	5.6	6.1
	CHANGED: EYUPN0005W		

EYUVCnnnn

5.4	5.5	5.6	6.1
NEW: EYUVC1031I EYUVC1030E REMOVED: EYUVC1003I EYUVC1004E EYUVC1005E EYUVC1006E			

EYUVSnnnn

5.4	5.5	5.6	6.1
NEW with APAR: EYUVS0215E EYUVS0216I EYUVS0218E EYUVS0219I EYUVS0220E EYUVS0223I	NEW: EYUVS0215E EYUVS0216I EYUVS0218E EYUVS0219I EYUVS0220E EYUVS0221E EYUVS0222I EYUVS0223I	CHANGED: EYUVS0219I EYUVS0221E EYUVS0222I REMOVED: EYUVS0218E	

EYUXCnnnn

5.4	5.5	5.6	6.1
NEW with APAR: EYUXC0026S EYUXC0027I	NEW: EYUXC0026S EYUXC0027I	NEW: EYUXC0028W	

EYUXDnnnn

5.4	5.5	5.6	6.1
			NEW: EYUXD0721I EYUXD0722I

EYUXEnnnn

5.4	5.5	5.6	6.1
NEW with APAR: EYUXE0038I EYUXE0039I EYUXE0040I EYUXE0041I EYUXE0042I EYUXE0043E EYUXE0044E EYUXE0045I EYUXE0046E EYUXE0047E CHANGED with APAR: EYUXE0023E	NEW: EYUXE0038I EYUXE0039I EYUXE0040I EYUXE0041I EYUXE0042I EYUXE0043E EYUXE0044E EYUXE0045I EYUXE0046E EYUXE0047E EYUXE0048E EYUXE0049E		

Changes to CICS codes by release of CICS TS

Table 177. Changes to CICS codes by release of CICS TS

Codes	5.4	5.5	5.6	6.1
AAxx	NEW: AASA			
ABxx	NEW: ABSX			
AExx	NEW: AEZ2			
AIxx			NEW with APAR: AITQ (PH51503)	NEW with APAR: AITQ (PH52991)
AKxx				NEW: AKES
AMxx	NEW: AMPC AMPD	NEW: AMQO	NEW with APAR: AMQT (PH42282)	NEW with APAR: AMQT (PH47961)
ANxx		NEW: ANJ1 ANJ2 ANJ3 ANJ4		
AXxx	NEW: AXSB		NEW: AXG1 AXG2 AXG3 AXG4	NEW: AXS1
04xx	NEW: 0416 0417 0418 0419			

Changes to samples

This section summarizes the changes to sample programs, sample resource definitions, sample service routines, and sample files across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Table 178. Changes to sample programs by release of CICS TS

Name	5.4	5.5	5.6	6.1
DFH\$DB2T			CHANGED: The TYPE within JOURNALMODEL is now specified as a CHAR(5) attribute.	
DFH\$FORA			CHANGED: Resources are now alphabetically ordered.	
DFH\$FORC			CHANGED: Resources are now alphabetically ordered and resource attributes that are COBOL reserved words are prefixed with RDO- .	
DFH\$FORP			CHANGED: Resources are now alphabetically ordered. Compiled version now supplied.	
DFH\$MOLS	CHANGED: Specifying a 2 digit year on the DATE control parameter now defines a date in the twenty-first century.	CHANGED: New options URIMAP and WEBSERV added to control statement RESOURCE.		CHANGED: UNLOAD supports DFHRMI fields in its output.
DFH\$UMOD	CHANGED: CICSplex SM module names updated in the sample			
DFHNJIVP		NEW		
DFHOQRCP			NEW: Associated with transaction QRCP. This sample program demonstrates how to obtain and calculate the QR TCB CPU / Dispatch ratio and display a message when the ratio is less than a specified percentage.	
DFHOSTEP	CHANGED: Changed to collect and print new asynchronous services statistics.			

Table 179. Changes to sample files by release of CICS TS

File name	5.4	5.5	5.6	6.1
/samples/cicstags/cicstags.yaml				NEW: Example of CICS region tagging file.
/security/ciphers/defaultciphers.xml				NEW: Example default ciphers file.
/security/ciphers/allvalidciphers.xml				NEW: Example list of all valid ciphers.

Changes to CICSplex SM

This section summarizes the changes to CICSplex SM across supported CICS releases. If you do not use CICSplex SM, you can ignore this topic.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

Area	Where changes are covered
“CICSplex SM installation and definition” on page 199	See Table 180 on page 199.

Area	Where changes are covered
“CICSplex SM configuration and initialization” on page 199	See Table 181 on page 199 for EYUPARM parameters. See Table 182 on page 199 for WUI server initialization parameters (WUIPARM). See Table 183 on page 200 for the CMCI.
“CICSplex SM behavior and operation” on page 200	See Table 184 on page 200 for CICSplex SM behavior. See Table 185 on page 200 for CICSplex SM workload management.
“CICSplex SM resources” on page 201	See Table 186 on page 201 for CICSplex SM resource tables.

CICSplex SM installation and definition

Table 180. Changes to CICSplex SM installation and definition, by release of CICS TS				
Change	5.4	5.5	5.6	6.1
Record size of CICSplex SM history data sets EYUHIST*	CHANGED to RECORDSIZE(3536 3540)	CHANGED to RECORDSIZE(3620 3624)	CHANGED to RECORDSIZE(3680 3684)	CHANGED to RECORDSIZE(3748 3752)
Support for using PLTPI to run the CICSplex SM PLT program directly has been removed.			REMOVED: You must migrate to using the CPSMCONN system initialization parameter.	
Removed support for CICS TS 4.2 or earlier		REMOVED: You must upgrade CICSplex SM or CICS regions in your CICSplex SM environments to CICS TS Version 5.x or higher.		

CICSplex SM configuration and initialization

Table 181. Changes to CICSplex SM EYUPARM parameters by release of CICS TS				
EYUPARM parameter	5.4	5.5	5.6	6.1
CACHEDSNUM For use under the direction of IBM Support.	NEW with APAR PH00673	NEW		
RESTART	NEW			

Table 182. Changes to CICSplex SM WUI server initialization parameters (WUIPARM), by release of CICS TS				
WUIPARM parameter	5.4	5.5	5.6	6.1
TCPIPHOSTNAME DEPRECATED: The hostname of the WUI server is the name of the host where the WUI is executing. TCPIPHOSTNAME is still required, but the value is ignored.	DEPRECATED with APAR PH47103	DEPRECATED with APAR PH47103	DEPRECATED with APAR PH47103	DEPRECATED with APAR PH48544
TCPIPHHTTPHOST DEPRECATED: The WUI uses relative URLs, and not embedded host names.	DEPRECATED with APAR PH47103	DEPRECATED with APAR PH47103	DEPRECATED with APAR PH47103	DEPRECATED with APAR PH48544

Table 182. Changes to CICSplex SM WUI server initialization parameters (WUIPARM), by release of CICS TS (continued)

WUIPARM parameter	5.4	5.5	5.6	6.1
TCPIPSSL	CHANGED with APAR PH194706: New value ATTLBASIC, to support Application Transparent Transport Layer Security (AT-TLS)	CHANGED: New value ATTLBASIC		

Table 183. Changes to CMCI, by release of CICS TS

Change	5.4	5.5	5.6	6.1
The CMCI interface now uses the CMCI JVM server by default.			CHANGED: If you have not upgraded to the CMCI JVM server, follow the upgrade instruction in Upgrading CICSplex SM .	

CICSplex SM behavior and operation

Table 184. Changes to CICSplex SM behavior, by release of CICS TS

Change	5.4	5.5	5.6	6.1
Tasks that are internally initiated by CICSplex SM in a MAS and that have transaction IDs beginning with the characters CO are changed to execute as CICS system tasks.	CHANGED			
The CICSplex SM BAS component is now able to use all available BAS data space storage by spreading large resource deployment lists for BAS across multiple data spaces instead of being constrained to a single data space. This feature is controlled by the feature toggle <code>com.ibm.cics.cpsm.bas.largelicplex</code> .	NEW with APAR PH19761: It is disabled by default.	NEW with APAR PH19761: It is disabled by default.	NEW Also changed with APAR PH26781: The default is changed from true to false.	
The MAS agent user ID is always the CICS region user ID. PLTPIUSR no longer matters in determining the MAS agent user ID.	CHANGED			

Table 185. Changes to CICSplex SM workload management, by release of CICS TS

Change	5.4	5.5	5.6	6.1
CICSplex SM workload management factors unallocated storage SOS conditions into its routing algorithm, in the same way as it does for CICS-managed storage SOS conditions.				CHANGED
Enhanced use of the regions z/OS WLM health value in CICSplex SM workload routing decisions		CHANGED		
Changes to CICSplex SM sysplex optimized workload routing behavior The default behavior of CICSplex SM workload management routing algorithms has been updated to increase the likelihood that work is routed to healthy, local target regions. This change applies only to the QUEUE and GOAL algorithms, not to the link neutral variants (LNQUEUE and Lngoal).	CHANGED with APAR PH30768	CHANGED with APAR PH30768	CHANGED with APAR PH30768	CHANGED
Change in reporting the routing load of empty target regions in CICSplex SM Standard CICSplex SM long running tasks are converted into CICS system tasks, thus invisible to routing load queries. As a result, in a scope containing CICS regions of different releases, more transactions are routed to the apparently less loaded target regions of CICS TS 5.4 or higher. Regions of CICS TS 5.4 or higher might appear to handle more dynamic traffic than regions in earlier releases, but the overall workload throughput is not affected.	CHANGED			

CICSplex SM resources

Table 186. Changes to CICSplex SM resource tables: Highlights of changes across supported releases of CICS TS. The links take you to the relevant tables that describe changes to specific resource tables.

5.4	5.5	5.6	6.1
NEW: <ul style="list-style-type: none"> • “CRESMQMN resource table” on page 202 • “MQMON resource table” on page 204 • “MQMONDEF resource table” on page 205 • “MQMINGRP resource table” on page 205 	NEW: <ul style="list-style-type: none"> • “NODEJSAP resource table” on page 205 • “FEATURE resource table” on page 204 	NEW: None	NEW: None
CHANGED: <ul style="list-style-type: none"> • “CICSRGN resource table” on page 201 • “DSNAME resource table” on page 203 • “EPADAPT resource table” on page 204 • “HTASK resource table” on page 204 • “MVSWLM resource table” on page 205 • “WLMATARG resource table” on page 207 • “WLMAWAOR resource table” on page 208 	CHANGED: <ul style="list-style-type: none"> • “CICSRGN resource table” on page 201 • “CONNECT resource table” on page 202 • “DB2CONN resource table” on page 202 • “HTASK resource table” on page 204 • “MONITOR resource table” on page 204 • “RULE resource table” on page 205 • “TASK resource table” on page 206 • “TDQDEF resource table” on page 207 • “TERMNL resource table” on page 207 	CHANGED: <ul style="list-style-type: none"> • “CICSRGN resource table” on page 201 • “HTASK resource table” on page 204 • “RULE resource table” on page 205 • “SYSDUMP resource table” on page 206 • “TCPDEF resource table” on page 206 • “TASK resource table” on page 206 • “TRANDUMP resource table” on page 207 	CHANGED: <ul style="list-style-type: none"> • “CICSRGN resource table” on page 201 • “DB2EDEF resource table” on page 202 • “DB2ENTRY resource table” on page 203 • “DSNAME resource table” on page 203 DEPRECATED ACTIONS <ul style="list-style-type: none"> • “EMASSICK resource table” on page 203 • “EMASWELL resource table” on page 203 • “EMSTATUS resource table” on page 203 • “FEATURE resource table” on page 204 • “LOCTRAN resource table” on page 204 • “RULE resource table” on page 205 • “TCPGIBL resource table” on page 206 DEPRECATED ATTRIBUTES <ul style="list-style-type: none"> • “TRANCLAS resource table” on page 207
OBSOLETE: <ul style="list-style-type: none"> • “WLPSEVR resource table” on page 208 	OBSOLETE: None	OBSOLETE: None	OBSOLETE: None

In the following tables, the field name given is the field displayed in CICSplex SM views.

CICSRGN resource table

Related view: [CICS region \(CICSRGN\) view](#)

Table 187. Changes to CICS RGN resource table and its related view, by release of CICS TS

5.4	5.5	5.6	6.1
<p>CHANGED: New parameter RESTART supported on the PERFORM SHUTDOWN action.</p>	<p>CHANGED:</p> <ul style="list-style-type: none"> New field PLTPI user ID with resource table attribute name PLTPIUSR, indicating the user ID applicable to PLTPI processing. New field Last COLD start time with resource table attribute name LASTCOLDTIME New field Last EMERGENCY start time with resource table attribute name LASTEMERTIME New field Last INITIAL start time with resource table attribute name LASTINITTIME New field The time of the last warm start of the region that occurred since the last initial start with resource table attribute name LASTWARMTIME New field Number of AIDs with resource table attribute name AIDCOUNT, indicating the current number of automatic initiator descriptors that are in the AID chain for the local system. 	<p>CHANGED:</p> <ul style="list-style-type: none"> New SWITCHALL value for dump data set switch type (resource table attribute name DDSSTAT) New TABLEONLY value for system dump status (resource table attribute name SYSDUMP) 	<p>CHANGED: New field Maximum amount of Shared Data Table above the bar storage with resource table attribute SDTMEMLIMIT</p>

CONNECT resource table

Related view: ISC/MRO connections (CONNECT) view

Table 188. Changes to CONNECT resource table and its related view, by release of CICS TS

5.4	5.5	5.6	6.1
	<p>CHANGED:</p> <ul style="list-style-type: none"> New field AIDHWM, indicating the peak number of automatic initiator descriptors that were present in the AID chain. New field AIDSF, giving a full word version of the AIDS field. 		

CRESMQMN resource table

Related view: Not applicable

Table 189. Changes to CRESMQMN resource table, by release of CICS TS

5.4	5.5	5.6	6.1
<p>NEW</p> <p>A CICSplex SM Topology Manager object that describes an instance of a MQMONITOR definition in a CICS system.</p>			

DB2CONN resource table

Related view: DB2 connections (DB2CONN) view

Table 190. Changes to DB2CONN resource table and its related view, by release of CICS TS

5.4	5.5	5.6	6.1
	<p>CHANGED: New field Current number of connections with pthreads with resource attribute name TCBPROTCUR</p>		

DB2EDEF resource table

Related view: DB2 entry definition (DB2EDEF) view

Table 191. Changes to DB2EDEF resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: New field Sharelocks option with resource attribute name SHARELOCKS

DB2ENTRY resource table

Related view: DB2 entries (DB2ENTRY) view

Table 192. Changes to DB2ENTRY resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: New field Sharelocks option with resource attribute name SHARELOCKS

DSNAME resource table

Related view: Physical data sets for files (DSNAME) view

Table 193. Changes to DSNAME resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
CHANGED: New value RREPL for the AVAILABILITY attribute			REMOVED actions: QUIESE is replaced by QUIESCE. UNQUIESE is replaced by UNQUIESCE. IMMQUIESE is replaced by IMMQUIESCE.

EMASSICK resource table

Related view: Not applicable

Table 194. Changes to EMASSICK resource table, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: <ul style="list-style-type: none"> New values SOSMVS24, SOSMVS31 and SOSMVS64 added to SICKTYPE output valid values New resource table attributes SOSMVS24_TIM, SOSMVS31_TIM and SOSMVS64_TIM

EMASWELL resource table

Related view: Not applicable

Table 195. Changes to EMASWELL resource table, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: <ul style="list-style-type: none"> New values SOSMVS24, SOSMVS31 and SOSMVS64 added to SICKTYPE output valid values New resource table attributes SOSMVS24_TIM, SOSMVS31_TIM and SOSMVS64_TIM

EMSTATUS resource table

Related view: Not applicable

Table 196. Changes to EMSTATUS resource table, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: <ul style="list-style-type: none"> New values SOSMVS24, SOSMVS31 and SOSMVS64 added to SICKTYPE output valid values New resource table attributes SOSMVS24_TIM, SOSMVS31_TIM and SOSMVS64_TIM

EPADAPT resource table

Related view: [Event processing adapter \(EPADAPT\) view](#)

Table 197. Changes to EPADAPT resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
CHANGED: New value DSIE for DATAFORMAT attribute			

FEATURE resource table

Related view: Not applicable

Table 198. Changes to FEATURE resource table, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: New resource table attribute FILEPATH

HTASK resource table

Related view: [Completed tasks \(history\) \(HTASK\) view](#)

Table 199. Changes to HTASK resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
CHANGED: New attributes in HTASK for previous transaction tracking	CHANGED: New field Node.js Application name with resource table attribute name TMRNJAPN, indicating the Node.js application name from which the task was started.	CHANGED: New field MVS SOS wait time with resource table attribute name SMMVSSWT	

LOCTRAN resource table

Related view: [Local or dynamic transactions \(LOCTRAN\) view](#)

Table 200. Changes to LOCTRAN resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: New field The number of transaction purges at class threshold with resource table attribute name PURGECNT

MONITOR resource table

Related view: Not applicable

Table 201. Changes to MONITOR resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
	CHANGED: New attributes URIMAPLIMIT and WEBSEVLIMIT, indicating the limit set for transaction resource monitoring		

MQMON resource table

Related view: [WebSphere MQ monitor \(MQMON\) view](#)

Table 202. Changes to MQMON resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
NEW A CICS resource that describes an IBM MQ monitor in an active CICS system being managed by CICSplex SM.			

MQMONDEF resource table

Related view: [Websphere MQ Monitor definition \(MQMONDEF\) view](#)

Table 203. Changes to MQMONDEF resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
NEW CICS resource definition (BAS object) that describes an MQMONITOR resource.			

MQMINGRP resource table

Related view: Resource definitions in resource groups (RESINGRP) view

Table 204. Changes to MQMINGRP resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
NEW BAS definition that describes the membership of an MQMONITOR definition (MQMONDEF) in a resource group.			

MVSWLM resource table

Related view: [MVS workload management \(MVSWLM\) view](#)

Table 205. Changes to MVSWLM resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
CHANGED: New attributes added for z/OS WLM health support			

NODEJSAP resource table

Related view: Not applicable

Table 206. Changes to NODEJSAP resource table, by release of CICS TS			
5.4	5.5	5.6	6.1
	NEW Base table for Node.js applications		

RULE resource table

Related view: Not applicable

Table 207. Changes to RULE resource table, by release of CICS TS			
5.4	5.5	5.6	6.1
	CHANGED with APAR PH45119: <ul style="list-style-type: none"> Attributes COUNT and TIME are changed to indicate the values since the region started instead of within the current statistics interval. New resource table attributes COUNTSTAT and TIMESTAT 	CHANGED with APAR PH45119: <ul style="list-style-type: none"> Attributes COUNT and TIME are changed to indicate the values since the region started instead of within the current statistics interval. New resource table attributes COUNTSTAT and TIMESTAT 	CHANGED: <ul style="list-style-type: none"> Attributes COUNT and TIME are changed to indicate the values since the region started instead of within the current statistics interval. New resource table attributes COUNTSTAT and TIMESTAT

Table 207. Changes to RULE resource table, by release of CICS TS (continued)			
5.4	5.5	5.6	6.1
		CHANGED with APAR PH34348: New value transactionDump added to RULETYPE	CHANGED: New value transactionDump added to RULETYPE
		CHANGED with APAR PH29187: New value containerstorage added to RULETYPE field	CHANGED: New value containerstorage added to RULETYPE field
		CHANGED: <ul style="list-style-type: none"> • New resource table attribute OPENSTATUS • New value WLMHEALTH added to ACTION • New values dbctlConnection, mqConnection and pipelineEnable added to RULETYPE 	

SYSDUMP resource table

Related view: [CICS system dump code \(SYSDUMP\) view](#)

Table 208. Changes to SYSDUMP resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
		CHANGED: New resource signature values for system dump codes	

TASK resource table

Related view: [Active tasks \(TASK\) view](#)

Table 209. Changes to TASK resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
	CHANGED: New field Node.js Application name with resource table attribute name TMRNJAPN, indicating the Node.js application name from which the task was started.	CHANGED: New field MVS SOS wait time with resource table attribute name SMMVSSWT	

TCPDEF resource table

Related view: [TCP/IP service definitions \(TCPDEF\) view](#)

Table 210. Changes to TCPIPGBL resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
		CHANGED: New field HTTP OPTIONS handler program with resource attribute name OPTIONSPGM	

TCPIPGBL resource table

Related view: [TCP/IP global statistics \(TCPIPGBL\) view](#)

Table 211. Changes to TCPIPGBL resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
			DEPRECATED attributes but retained for compatibility: CPERSOCKETS with CICS field name SOG_CURR_PERS_OUTB_SOCKETS POUTSCKSBOTH with CICS field name SOG_PEAK_BOTH_OUTB_SOCKETS PPERSOCKETS with CICS field name SOG_PEAK_PERS_OUTB_SOCKETS OUTSOCKSPERS with CICS field name SOG_PERS_OUTBOUND_CREATED

TDQDEF resource table

Related view: [Transient data queue definitions \(TDQDEF\) view](#)

Table 212. Changes to TDQDEF resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
	CHANGED: New field Default job user ID for jobs to JES internal rdr with resource table attribute name JOBUSERID		

TERMNL resource table

Related view: [Terminals \(TERMNL\) view](#)

Table 213. Changes to TERMNL resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
	CHANGED: New attributes indicating IP addresses of TN3270 clients: Field Client TN3270 IPv4 or IPv6 address with resource table attribute name TNADDR Field Address format of the TNADDR option with resource table attribute name TNIPFAMILY Field Port number with resource table attribute name TNPORT		

TRANCLAS resource table

Related view: [Transaction class \(TRANCLAS\) view](#)

Table 214. Changes to TRANCLAS resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
			CHANGED: New field Last time maximum active transactions reached with resource table attribute name LASTATMAX

TRANDUMP resource table

Related view: [CICS transaction dump codes \(TRANDUMP\) view](#)

Table 215. Changes to TRANDUMP resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
		CHANGED: New resource signature values for transaction dump codes	

TRNCLDEF resource table

Related view: [Transaction class definition \(TRNCLDEF\) view](#)

Table 216. Changes to TRNCLDEF resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1

WLMATARG resource table

Related view: [Target regions in an active workload \(WLMATARG\) view](#)

Table 217. Changes to WLMATARG resource table and its related view, by release of CICS TS			
5.4	5.5	5.6	6.1
CHANGED: New attributes added for z/OS WLM health support			

WLMAWAOR resource table

Related view: Target regions in an active workload (WLMAWAOR) view

Table 218. Changes to WLMAWAOR resource table and its related view, by release of CICS TS

5.4	5.5	5.6	6.1
CHANGED: New attributes added for z/OS WLM health support			

WLPSEPV resource table

Related view: Not applicable

Table 219. Changes to WLPSEPV resource table, by release of CICS TS

5.4	5.5	5.6	6.1
OBSOLETE A GET operation on the WLPSEPV resource table returns NOTFOUND.			

Changes to feature toggles

Feature toggling is supported from CICS TS 5.4. This section summarizes changes to feature toggles across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

For a list of available feature toggles and their capabilities in a particular CICS TS release, refer to the system management reference in the product documentation; for example, for 6.1, see [Feature toggles](#).

For configuration information, see [Specifying feature toggles](#).

Processing and configuration of feature toggles

5.4	5.5	5.6	6.1
		DEPRECATED: Group-level feature toggle configuration, which will be removed in a future release. CHANGED: You can now implement region-level feature toggle configurations.	

Feature toggle

com.ibm.cics.bms.ids={true|false}

5.4	5.5	5.6	6.1
NEW			

com.ibm.cics.cmci.jvmserver={true|false}

5.4	5.5	5.6	6.1
NEW with APAR: PI87691 and default of <u>false</u> .	NEW with default of <u>false</u> .	CHANGED: The default is changed to <u>true</u> . If you have not upgraded to the CMCI JVM server, follow the upgrade instruction in Upgrading CICSplex SM .	

com.ibm.cics.container.hash={true|false}

5.4	5.5	5.6	6.1
	NEW		REMOVED Hashing always used.

com.ibm.cics.cpsm.bas.largecicsplex={true|false}

5.4	5.5	5.6	6.1
NEW with APAR: PH19761 with default of <u>true</u>	NEW with APAR: PH19761 with default of <u>true</u>	NEW CHANGED with APAR: PH26781: The default is changed to <u>false</u> .	CHANGED: The default is changed to <u>false</u> .

com.ibm.cics.cpsm.wlm.botrsupd.enabled={true|false}

5.4	5.5	5.6	6.1
NEW with APAR: PH14812	NEW with APAR: PH14812	NEW with APAR: PH14812	NEW

com.ibm.cics.cpsm.wlm.surgeserisist={true|false}

5.4	5.5	5.6	6.1
NEW with APAR: PH30768	NEW with APAR: PH30768	NEW with APAR: PH30768	NEW

com.ibm.cics.db2.origindata={true|false}

5.4	5.5	5.6	6.1
NEW with APAR: PH49408	NEW with APAR: PH49408	NEW with APAR: PH49408	NEW with APAR: PH52668

com.ibm.cics.db2.sharelocks={true|false}

5.4	5.5	5.6	6.1
	NEW with APAR: PH39766	NEW with APAR: PH39766	REMOVED Replaced by the DB2ENTRY attribute SHARELOCKS.

com.ibm.cics.dpl.32kcommarea={true|false}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.ds.freeussprocesses={true|false}

5.4	5.5	5.6	6.1
	NEW with APAR: PH27111	NEW with APAR: PH27111	NEW with APAR: PH56193

com.ibm.cics.http.options.handler={program_name}

5.4	5.5	5.6	6.1
NEW with APAR: PH16992	NEW with APAR: PH16992	REMOVED You can specify the name of the HTTP Options handler program in the OPTIONSPGM attribute of the TCPIPSERVICE resource definition.	

com.ibm.cics.mvssm.mon.interval={0|60,1-60}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.mvssm.sos24.minavailable.contiguous={32,1-1024}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.mvssm.sos24.minavailable.total={64,1-1024}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.mvssm.sos31.minavailable.contiguous={64,1-16384}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.mvssm.sos31.minavailable.total={128,1-16384}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.mvssm.sos.wait={true|false}

5.4	5.5	5.6	6.1
		NEW	

com.ibm.cics.resourceoverrides.file={name.yaml}

5.4	5.5	5.6	6.1
		NEW with APAR: PH30590	REMOVED Replaced by RESOVERRIDES system initialization parameter.

com.ibm.cics.rls.delete.ridfld={true|false}

5.4	5.5	5.6	6.1
NEW with APAR: PH07596	NEW with APAR: PH07596	NEW	

com.ibm.cics.sm.iep={true|false}

5.4	5.5	5.6	6.1
			NEW

com.ibm.cics.spool.defaultjobuser={region|task}

5.4	5.5	5.6	6.1
	NEW		

com.ibm.cics.spool.surrogate.check={true|false}

5.4	5.5	5.6	6.1
	NEW		

com.ibm.cics.tls.minimumkeystrength={1024|2048}

5.4	5.5	5.6	6.1
NEW with APAR: PH50175	NEW with APAR: PH50175	NEW with APAR: PH50175	NEW with APAR: PH51719

com.ibm.cics.web.defaultcipherfile={true|false}

5.4	5.5	5.6	6.1
	NEW with APAR: PH45703	NEW with APAR: PH38091	NEW

Changes to CICS policies

This section summarizes changes to CICS policies across in-service CICS releases.

If you are upgrading from an end-of-service release, you can find information about the changes that are relevant to those releases in [“Summary of changes from end-of-service releases”](#) on page 214.

CICS policies bring together the following two features introduced in earlier CICS TS releases:

- System events, which are now superseded by policy system rules

The policy system rule capability was initially introduced in CICS TS 5.4 and made available to earlier CICS TS Version 5 releases by service.

- CICS policy task threshold rules, which are renamed to policy task rules following the introduction of policy system rules in CICS TS 5.4

System rule	5.4	5.5	5.6	6.1
All system rules Support for rule action Set z/OS WLM health open status			NEW	CHANGED with APAR PH58295: New option to change the WLMHEALTH time interval
All system rules Support for static data capture items and event names for policy events	NEW with APAR PI88500	NEW		
AID threshold		NEW		
Bundle available status	NEW with APAR PI92806	NEW		
Bundle enable status	NEW with APAR PI92806	NEW		
Compound condition				NEW
Db2 connection status	NEW			
DBCTL connection status		NEW with APAR PH07632	NEW	
File open status	NEW			
File enable status	NEW			
IBM MQ connection status		NEW with APAR PH07632	NEW	
IPIC connection status	NEW with APAR PI92806	NEW		
Message	NEW			
MRO connection status	NEW with APAR PI92806	NEW		
Pipeline enable status		NEW with APAR PH07632	NEW	
Program enable status	NEW with APAR PI92806	NEW		
Transaction abend	NEW			CHANGED: The name of the program to which the unhandled transaction abend occurred is now captured and contained in container DFHEP.DATA.00005.
Transaction class tasks	NEW			

Table 220. Changes to policy system rules by release of CICS TS (continued)				
System rule	5.4	5.5	5.6	6.1
Transaction dump threshold			NEW with APAR PH34348	NEW
User tasks	NEW			

Table 221. Changes to policy task rules by release of CICS TS				
Task rule	5.4	5.5	5.6	6.1
All task rules	RENAMED: CICS policy task threshold rules are renamed to policy task rules.			
All task rules Support for setting Transaction ID and User ID conditions for task rules	NEW with APAR PH26145	NEW with APAR PH26145	NEW with APAR PH26145	NEW
All task rules Support for static data capture items and event names for policy events	NEW with APAR PI88500	NEW		
Container storage			NEW with APAR PH29187	NEW
File requests				CHANGED: New option ALL
Storage allocation				CHANGED: New option ALL
Storage requests				CHANGED: New option ALL
TD queue requests				CHANGED: New option ALL
TS queue requests				CHANGED: New option ALL

Changes to documentation

This section summarizes the changes to the organization or deliverables of CICS documentation, across supported CICS releases. Use this information to understand significant documentation changes between one release and another.

Table 222. Changes to documentation by release of CICS Transaction Server for z/OS				
Area of documentation	5.4	5.5	5.6	6.1
Offline documentation	CHANGED: IBM Knowledge Center-Customer Installed (KC-CI) is replaced by IBM Documentation Offline. NEW: IBM Documentation Offline is now automatically translated.	CHANGED: IBM Knowledge Center-Customer Installed (KC-CI) is replaced by IBM Documentation Offline. NEW: IBM Documentation Offline is now automatically translated.	CHANGED: IBM Knowledge Center-Customer Installed (KC-CI) is replaced by IBM Documentation Offline. NEW: IBM Documentation Offline is now automatically translated.	CHANGED: IBM Knowledge Center-Customer Installed (KC-CI) is replaced by IBM Documentation Offline. NEW: IBM Documentation Offline is now automatically translated.
	NEW: IBM Documentation is now automatically translated.	NEW: IBM Documentation is now automatically translated.	NEW: IBM Documentation is now automatically translated.	CHANGED: IBM Knowledge Center renamed to IBM Documentation NEW: IBM Documentation is now automatically translated.

Table 222. Changes to documentation by release of CICS Transaction Server for z/OS (continued)

Area of documentation	5.4	5.5	5.6	6.1
Upgrading			<p>NEW: Changes to security section to summarize changes to CICS security, including changes to RACF classes.</p> <p>NEW: Stabilization notices section to summarize technologies that are stabilized in CICS.</p>	
What documentation is available?				
CICS Explorer	<p>CHANGED: CICS Explorer documentation is published independently from the CICS TS documentation.</p>			
Fundamentals				<p>NEW: How it works: CICS storage</p> <p>CHANGED after general availability:</p> <p>The reference topics about CICS subpools in CICS DSAs, previously contained in How it works: CICS storage, are moved to System management reference. See Reference: CICS subpools in CICS DSAs.</p>
Performance			<p>NEW: the CICS V5 Performance Report, previously published as an IBM Redbook (SG24-8298) is now included in the CICS documentation online and in PDF.</p>	

Table 222. Changes to documentation by release of CICS Transaction Server for z/OS (continued)

Area of documentation	5.4	5.5	5.6	6.1
PDFs	<p>CHANGED: the way that PDFs are structured and delivered:</p> <ul style="list-style-type: none"> • PDFs are delivered in IBM Documentation, not in IBM Publications Center. • PDFs no longer have manual numbers. • PDFs have descriptive filenames instead of codes. • Many PDFs are restructured and renamed. See Documentation in PDF for details. <p>STABILIZED: the following PDFs are no longer produced.</p> <ul style="list-style-type: none"> • <i>Business Transaction Services</i> • <i>CICSplex SM Managing Resource Use</i> • <i>CICSplex SM Web User Interface Guide</i> • <i>Debugging Tools Interfaces Reference</i> • <i>Diagnosis Reference</i> • <i>Distributed Transaction Programming Guide</i> • <i>External Interfaces Guide</i> • <i>Front End Programming Interface User's Guide</i> • <i>Internet Guide</i> • <i>Trace Entries</i> 	<p>NEW:</p> <ul style="list-style-type: none"> • <i>Using Node.js with CICS</i> • <i>Using IBM MQ with CICS</i> • <i>REXX for CICS TS User Guide and Reference</i> • <i>CICSplex SM CMCI REST API Reference</i> • <i>Using CICS Service Flow Runtime</i> 	<p>STABILIZED: the following PDF is no longer produced.</p> <ul style="list-style-type: none"> • <i>Using CICS Service Flow Runtime</i> 	<p>CHANGED:</p> <ul style="list-style-type: none"> • <i>Configuring CICS TS for z/OS</i> <p>The Configuring REXX section has been removed from this PDF. This information is contained in <i>REXX for CICS TS User Guide and Reference</i>.</p> <p>STABILIZED: the following PDF is no longer produced.</p> <ul style="list-style-type: none"> • <i>RACF Security Guide</i>
z/OS Connect embedded in CICS			References removed from the documentation.	
CICS TS Feature Pack for Dynamic Scripting V2.0				References removed from the documentation.
Scenario: Using business events to analyze application trends				Removed from the documentation.

Summary of changes from end-of-service releases

This section summarizes the changes that were made to CICS externals and interfaces in 4.1, 4.2, 5.1, 5.2, 5.3 and 5.4. Use this information, in conjunction with the summaries of changes in later versions, to plan the impact on applications of upgrading from these versions. This information is here to support migration, during periods of extended service, from releases of CICS TS that have been generally withdrawn from service.

For more information about these changes, see the What's New information for [4.1](#), [4.2](#), [5.1](#), [5.2](#), [5.3](#), and [5.4](#).

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

Overview of release changes

Table 223. Major areas of technology change by end-of-service release		
Release	New	Discontinued
5.4	<p>Applications</p> <ul style="list-style-type: none"> Asynchronous EXEC CICS API to extend programming language capabilities. API extensions for improved interoperability with batch applications. Enhancements to web services support. Decision Server Insights event format. <p>Liberty</p> <ul style="list-style-type: none"> Support for applications written to the Java EE 7 Full Platform specification Ability for a CICS program to invoke a Java EE application running in a Liberty JVM server <p>Management</p> <ul style="list-style-type: none"> System autoinstall of program definitions for LE. Enhanced management for applications that use IBM MQ. Extended control of VSAM data set access in support of GDPS Continuous Availability. Support for the z/OS Workload Manager Health API. Feature toggles to enable new features selectively. Extensions to statistics and dump capabilities <p>Policies</p> <ul style="list-style-type: none"> Support for system rules New asynchronous requests task rule <p>Security</p> <ul style="list-style-type: none"> Support for Kerberos mutual authentication. CICS makes a RACF check by default before generating a PassTicket. 3270 IDS. IBM Health Checker for z/OS checks New transactions for debugging applications in production 	<p>Management</p> <ul style="list-style-type: none"> System events (deprecated). CICSplex SM Real-Time Analysis (RTA) (stabilized). <p>For more information, see “Stabilization notices” on page 324.</p>

Table 223. Major areas of technology change by end-of-service release (continued)

Release	New	Discontinued
5.3	<p>First-class applications Transaction resources as application entry points, channel delete, and recovery of application availability status</p> <p>Java IBM MQ classes for JMS, document constructor, and simplified log management</p> <p>Liberty CDI, local JMX connector and REST JMX connector, EJB Lite, managed beans, MongoDB, Monitor, OSGi console, database session persistence, LINK and START commands support invoking Java applications in Liberty, Java EE 7 Web profile, Java batch, Standard mode Liberty, Java EE messaging (JMS) and IBM MQ as a JMS provider</p> <p>Type 2 <code>cicsts_dataSource</code> and <code>cicsts:jdbc-1.0</code> are deprecated. You can use Liberty <code>dataSource</code> instead. For access to Db2 through CICS you can now use the default <code>dataSource</code> element for type 2 connectivity rather than the customized <code>cicsts_dataSource</code>.</p> <p>The <code>wab-1.0</code> feature was added to <code>cicsts:core-1.0</code> and <code>cicsts:standard-1.0</code> as it is used internally by CICS. As a result, all OSGi bundles with a Web-Context root will be treated by Liberty as web applications, and installed as such.</p> <p>Management New policy thresholds, transaction tracking for CICS-MQ bridge, DFHCSDUP COPY and LIST</p> <p>Performance and scaling Threadsafe commands, System z9[®] exploitation, tuning of HTTP connections</p> <p>Policies Enhancements to task rules</p> <p>With APAR PI83667: Support for system rules, policy threshold rules renamed to policy task rules, policy thresholds renamed to policy conditions</p> <p>Security AT-TLS, SIGNON TOKEN, REQUEST PASSTICKET, HTTP TRACE inactive by default</p>	<p>Management PASSWORD attribute on FILE resource, ACTJVMTCBS and MAXJVMTCBS on INQUIRE and SET DISPATCHER commands</p> <p>Security SSLV3 support</p>
5.2	<p>First-class applications Multi-versioning</p> <p>Liberty JAX-WS, JDBC type 4, JTA</p> <p>Multiple editions CICS Transaction Server, Value Unit Edition, Developer Trial</p> <p>Policies Enhancements to task rules</p> <p>With APAR PI83667: Support for system rules, policy threshold rules renamed to policy task rules, policy thresholds renamed to policy conditions</p> <p>Security SAML and Kerberos support, TLS 1.2 enforcement, and NIST-SP800-131a conformance</p>	

Table 223. Major areas of technology change by end-of-service release (continued)

Release	New	Discontinued
5.1	<p>Automation for application deployment CICS TS build toolkit, DFHDPLOY utility, CICS TS plug-in for IBM UrbanCode® Deploy</p> <p>Events Emission of events to multiple EP adapters</p> <p>First-class applications and platforms Container support for DPL bridge</p> <p>Java 64-bit Java, Java 7.0, Java 7.1, Java 8, and Feature Pack for Mobile Extensions</p> <p>Liberty Support for Java servlets and JSPs</p> <p>Management 2000 MXT, and TD threadsafe</p> <p>Policies Support for task rules</p> <p>With APAR PI83667: Support for system rules, policy threshold rules renamed to policy task rules, policy thresholds renamed to policy conditions</p>	<p>Integration DCE support</p> <p>Java EJB and CORBA support, JVM pool support, CCI Connector for CICS</p> <p>Management Message edit utility, DFHMEU</p>
4.2	<p>Connectivity Axis2 web services, web services offload, and HTTP and IP extensions</p> <p>Events System events, assured events, and lifecycle management</p> <p>Java Java 7, multi-threaded server, and OSGi packaging and management</p> <p>Management Transaction tracking, workload management, and password phrases</p> <p>Scaling Threadsafe enhancements, optimized threadsafe, and 64-bit exploitation</p>	<p>Events CICS Events for WebSphere Business Events SupportPac CB11</p>
4.1	<p>Application support Application bundles, application components, Java 6</p> <p>Integration Events, Atom feeds, web services standards, integration support for IBM WebSphere Service Registry and Repository, transaction routing over IPIC, IPV6, and identity propagation</p> <p>Management CICS Explorer, RESTful API, improved WUI browser, optimized workload management, IBM MQ group attach, governance and SPI for resources, CICS monitoring improvements, and Discovery Library Adapter for CICS</p> <p>Performance and scaling XML system service parsing, JVM server runtime environment, and wild-branch diagnostic improvements</p>	<p>Java IBM SDK for z/OS JTE V1.4.2 and V1.5.0</p> <p>Management DFHCSDUP MIGRATE command, CICSplex SM WLMLOADCOUNT and WLMLOADTHRESH EYUPARMS</p>
3.2	<p>CICS application connectivity and reuse WSDL 2.0, MTOM/XOP, WSDL 1.1 and SOAP 1.2, improved data mapping for web services, customized pipelines, Web Services Trust Language, IP connectivity, enhanced WEB support capabilities, security enhancements for web support, and optimized data conversion</p> <p>CICS service management Dynamic program library, MVS WLM additional statistics, PLT-enabled GLUE thread-safe support, storage above 2GB, ESDS extended addressing, increased precision for monitoring, SMF compression, IBM WebSphere MQ V7 support, XCF group limit relief, and JVM enhancements</p> <p>CICS service improvements CICSplex® SM installation integrated into CICS , EYU9XDBT utility, and significant CICS WUI enhancements</p>	<ul style="list-style-type: none"> • CICSplex SM TSO interface • Resetable mode in JVMS • Earlier release support in DFH\$MOLS • DFHLSCU utility

Changes to externals in CICS TS 5.4

CICS TS 5.4 changes a number of externals, including commands, transactions, resources, system initialization parameters, messages, trace and user exits.

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

For application programmers	For system programmers
“Changes to the CICS API” on page 219	“Changes to installing” on page 218
“Changes to resource definitions” on page 221	“Changes to resource definitions” on page 221
“Changes to the CICS utilities” on page 222	“Changes to the CICS utilities” on page 222
“Changes to the CICS assistants” on page 223	“Changes to messages and codes” on page 225
“Changes to messages and codes” on page 225	“Changes to compiler support” on page 237
“Changes to documentation” on page 250	“Changes to SIT parameters” on page 238
	“Changes to JVM profiles” on page 238
	“Changes to control tables” on page 239
	“Changes to CICS SPI” on page 239
	“Changes to CICS-supplied transactions” on page 241
	“Changes to CICS monitoring” on page 242
	“Changes to statistics” on page 243
	“Changes to user-replaceable programs” on page 244
	“Changes to global user exits and task-related user exits” on page 245
	“Changes to samples” on page 244
	“Changes to toggle-enabled features” on page 244
	“Changes to security” on page 245
	“Changes to CICSplex SM resource tables” on page 248
	“Changes to CICSplex SM system parameters” on page 248
	“Changes to CICSplex SM WUI server initialization parameters” on page 249
	“Changes to CICSplex SM” on page 249
	“Changes to documentation” on page 250

Changes to installing

- All source changes are now made by source replacement. Source updates are no longer made.
- New optional job, DFHIFTGS, tags the text files in the CICS USSHOME directory with the correct coded character set. The highest expected return code is 0.
- The DFHALLOC and DFHINST3 jobs have been changed to create the ADFHMOD, SDFHAUTH, and SDFHLOAD data sets as PDSEs. CICS now requires these data sets to be PDSEs.

- In support for the feature toggle capability, the DFHIHFS0 job has been changed to create an empty `featuretoggle.properties` file in the `dfhconfig` directory.
- MEMLIMIT must be set to 10 GB or greater.
- **SERVICE APAR PH39798:** Support for installing maintenance-supplied newest release CICS Type 3 SVC and DFHIRP modules. See [Installing newest release CICS Type 3 SVC and DFHIRP modules supplied through maintenance.](#)

Changes to the CICS API

<i>Table 224. Changes to EXEC CICS commands in CICS TS 5.4</i>	
API	CICS TS 5.4
<ul style="list-style-type: none"> • DEFINE COUNTER and DEFINE DCOUNTER • DELETE COUNTER and DELETE DCOUNTER • GET COUNTER and GET DCOUNTER • QUERY COUNTER and QUERY DCOUNTER • REWIND COUNTER and REWIND DCOUNTER • UPDATE COUNTER and UPDATE DCOUNTER 	CHANGED: New option: NOSUSPEND
FETCH ANY	NEW: Used by a parent task to inquire on the status of any completed child task.
FETCH CHILD	NEW: Used by a parent task to inquire on the status a specific child task.
FREE CHILD	NEW: Used by a parent task to free a specified child token.
REQUEST ENCRYPTPTKT	CHANGED: <ul style="list-style-type: none"> • New INVREQ with RESP2 value 257, which indicates that the associated kerberos token originated from a system that does not support message confidentiality. • New NOTAUTH with RESP2 value 260, which indicates that the external security manager does not authorize a request to generate a PassTicket for this region.
RUN TRANSID	NEW: To initiate a local child transaction that runs asynchronously with the parent transaction.
TRANSFORM DATATOJSON	NEW: To convert application data to JSON.
TRANSFORM JSONTODATA	NEW: To convert JSON to application data.
VERIFY TOKEN	CHANGED: New options OUTTOKEN and OUTTOKENLEN
XCTL	CHANGED: New INVREQ with RESP2 value 33 when a public program issues XCTL to another program that is an application entry point. New INVREQ with RESP2 value 34 when a program with an application context issues XCTL to a public program.

Table 224. Changes to **EXEC CICS** commands in CICS TS 5.4 (continued)

API	CICS TS 5.4
<ul style="list-style-type: none"> • DELETE • READ • READNEXT • READPREV • REWRITE • WRITE 	<p>CHANGED: New INVREQ with RESP2 value 57, issued when a non-REPLICATOR program attempted to update a VSAM data set that has an AVAILABILITY state of RREPL</p>
LINK (EXCI)	<p>CHANGED: New option CHANNEL to support passing a CHANNEL with its set of containers</p>
<ul style="list-style-type: none"> • DELETE CHANNEL (EXCI) • DELETE CONTAINER (EXCI) • GET CONTAINER (EXCI) • MOVE CONTAINER (EXCI) • PUT CONTAINER (EXCI) 	<p>NEW: EXCI can issue these commands in batch.</p>
<ul style="list-style-type: none"> • WEB RECEIVE (Server) • WEB SEND (Server) 	<p>CHANGED: The WEB RECEIVE command is enhanced to allow the body of an HTTP server request to be received into 64-bit (above-the-bar) storage. The WEB SEND command is enhanced to allow the body of an HTTP server response to be sent from above-the-bar storage.</p>
<ul style="list-style-type: none"> • CHANGE PASSWORD • CHANGE PHRASE • VERIFY PASSWORD • VERIFY PHRASE 	<p>SERVICE CHANGED with APAR:</p> <ul style="list-style-type: none"> • APAR PH23078: New NOTAUTH with RESP2 value of 1, indicating one or more required password or password phrase fields are blank. • APAR PH31270: New NOTAUTH with RESP2 value of 17, indicating that the USERID is not authorized to use the application.

Table 225. Changes to JCICS API in CICS TS 5.4

Class	Method	CICS TS 5.4
AsyncService (interface) AsyncServiceImpl	runTransactionId() getAny() freeChild()	<p>NEW: to start an asynchronous child task.</p> <p>NEW: to fetch the results of any completed child task.</p> <p>NEW: to free a specified child task.</p>
ChildResponse (interface)	getCompletionStatus() getAbendCode() getChannel()	<p>NEW: returns the completion status of a child task.</p> <p>NEW: returns the abend code of a child task.</p> <p>NEW: returns the channel from a child task.</p>
Future<ChildResponse>	get() isDone()	<p>NEW: to fetch the results of a completed child task.</p> <p>NEW: checks if a child task has finished.</p>
Container	getDatatype()	<p>NEW: to return the data type of a container.</p>

Changes to resource definitions

Table 226. Changes to resource definitions in CICS TS 5.4	
Resource	CICS TS 5.4
DB2CONN	SERVICE CHANGED (APAR PI98569): A command thread is now used by CICS when CICS attempts to cancel a Db2 thread as part of purge or forcepurge processing of a CICS task.
MQCONN	CHANGED: INITQNAME attribute allows use of a symbolic parameter, <i>&APPLID.</i> , to identify the APPLID of a CICS region
MQMONITOR	NEW: to define MQ monitors such as trigger monitors, MQ bridge monitors, and user-written monitors
PROGRAM	CHANGED: <ul style="list-style-type: none"> The default value of the DATALOCATION attribute is now ANY to reduce the 24-bit storage usage for better CICS system resilience Attribute JVMCLASS changed to support invoking a calling applications in a Liberty JVM server
TRANSACTION	CHANGED: <ul style="list-style-type: none"> RUNAWAY attribute accepts a new, lower limit of 250. The default value of SPURGE and TPURGE is changed to YES. The default value of TASKDATALOC is changed to ANY.
URIMAP	SERVICE CHANGED (APAR PH44683): Added support for enabling multiple client URIMAPs that point to the same endpoint (that is, the same host, port and path) in a CICS region.
MQINI(DFHMQINI)	DEPRECATED: Replaced with MQMONITOR(DFHQMINI). See Review the use of MQCONN in Upgrading CICS regions for upgrade advice.

Table 227. Changes to CICS resource definition groups in CICS TS 5.4	
Group	CICS TS 5.4
DFH\$EXCI	CHANGED: New program DFH\$AXNS
DFH\$NACT	CHANGED: File ACCTNAM now specifies RECORDSIZE(80) and KEYLENGTH(18).
DFHCOMPI	NEW
DFHEDF	CHANGED: <ul style="list-style-type: none"> New TRANCLASS definition DFHEDFTO New transactions: CEDG and CEDY
DFHEP	CHANGED: <ul style="list-style-type: none"> New program DFHECEAQ New transaction CEPR
DFHLE	NEW
DFHPGAIP	CHANGED: The default program for program autoinstall DFHPGAPG is changed from DATALOCATION(BELOW) to DATALOCATION(ANY).
DFHWEB	CHANGED: <ul style="list-style-type: none"> Program removed: DFHWBC00 Program DFHWBUN now specifies CONCURRENCY(THREADSAFE).
DFHCOMPI	NEW COMPATIBILITY GROUP

Changes to the CICS utilities

<i>Table 228. Changes to CICS-supplied utilities in CICS TS 5.4</i>	
Utility	CICS TS 5.4
<u>DFHMNDUP</u>	CHANGED: Specifying a 2 digit year on the DATE and JOBDATE control parameters now defines a date in the twenty-first century.
DFHPDxxx	<p>CHANGED:</p> <ul style="list-style-type: none"> • Renamed with new release identifier. • Formatting of the DFHMQINI CICS MQINI control block has been replaced by formatting the DFHMQMNT CICS MQMONITOR control block. • Formatting of an EXCI dump has been enhanced as follows: <ul style="list-style-type: none"> – A PG section is added to format channels and containers control blocks. – The KE section is enhanced to format a 64 bit PSW and registers. – The LD section lists the new modules added for EXCI channels and containers support.
<u>DFH\$MOLS</u>	CHANGED: Specifying a 2 digit year on the DATE control parameter now defines a date in the twenty-first century.
<u>DFHSTUP</u>	<p>CHANGED: Specifying a 2 digit year on the DATE control parameter now defines a date in the twenty-first century.</p> <p>NEW: option MQMONITOR on SELECT TYPE and IGNORE TYPE control parameters</p>

Changes to the CICS assistants

Table 229. Changes to the CICS web services assistants, XML assistants, and JSON assistants in CICS TS 5.4	
Assistant	CICS TS 5.4
DFHJS2LS	<p>CHANGED:</p> <ul style="list-style-type: none"> • New parameter DEFAULT-ARRAY-MAXITEMS • New option, HYPHENS-AS-UNDERSCORES, on MAPPING-OVERRIDES • New option, FULL, on WIDE-COMP3 • Support for mapping level 4.1 <p>SERVICE CHANGED (APAR PI86039): Added support for mapping level 4.2.</p> <ul style="list-style-type: none"> • MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.2. • New parameters: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. <p>SERVICE CHANGED (APAR PI88519): Added support for mapping level 4.3. MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.3.</p> <p>SERVICE CHANGED (APAR PI91555): JSON schema to high-level language mapping now supports oneOf, anyOf, allOf and not keywords.</p>
DFHLS2JS	<p>CHANGED: Support for mapping level 4.1</p> <p>SERVICE CHANGED (APAR PI86039): MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.2.</p> <p>SERVICE CHANGED (APAR PI88519): Added support for mapping level 4.3. MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.3.</p> <p>SERVICE CHANGED (APAR PI95139): The TRUNCATE-NULL-ARRAY-VALUES parameter has a new option PACKEDZERO, which instructs the assistant to treat a positive signed packed decimal zero (0x0C), a negative signed packed decimal zero (0x0D), or an unsigned packed decimal zero (0x0F) as empty.</p>
DFHLS2SC	<p>CHANGED: Support for mapping level 4.1</p> <p>SERVICE CHANGED (APAR PI86039): MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.2.</p> <p>SERVICE CHANGED (APAR PI95139): The TRUNCATE-NULL-ARRAY-VALUES parameter has a new option PACKEDZERO, which instructs the assistant to treat a positive signed packed decimal zero (0x0C), a negative signed packed decimal zero (0x0D), or an unsigned packed decimal zero (0x0F) as empty.</p>

Table 229. Changes to the CICS web services assistants, XML assistants, and JSON assistants in CICS TS 5.4 (continued)

Assistant	CICS TS 5.4
<p>DFHLS2WS</p>	<p>CHANGED:</p> <ul style="list-style-type: none"> • New parameters, PORT-NAME, BINDING-NAME, and SERVICE-NAME • Support for mapping level 4.1 <p>SERVICE CHANGED (APAR PI86039): MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.2.</p> <p>SERVICE CHANGED (APAR PI88519): Added support for mapping level 4.3. MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.3.</p> <p>SERVICE CHANGED (APAR PI95139): The TRUNCATE-NULL-ARRAY-VALUES parameter has a new option PACKEDZERO, which instructs the assistant to treat a positive signed packed decimal zero (0x0C), a negative signed packed decimal zero (0x0D), or an unsigned packed decimal zero (0x0F) as empty.</p>
<p>DFHSC2LS</p>	<p>CHANGED:</p> <ul style="list-style-type: none"> • New option, HYPHENS-AS-UNDERScores, on MAPPING-OVERRIDES • New option, FULL, on WIDE-COMP3 • Support for mapping level 4.1 <p>SERVICE CHANGED (APAR PI86039): Added support for mapping level 4.2.</p> <ul style="list-style-type: none"> • MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.2. <p>• New parameters: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE.</p> <p>SERVICE CHANGED (APAR PI88519): Added support for mapping level 4.3. MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.3.</p>

Table 229. Changes to the CICS web services assistants, XML assistants, and JSON assistants in CICS TS 5.4 (continued)

Assistant	CICS TS 5.4
DFHWS2LS	<p>CHANGED:</p> <ul style="list-style-type: none"> • New parameters, PORT-NAME, BINDING-NAME, and SERVICE-NAME • New option, FULL, on WIDE-COMP3 • Support for mapping level 4.1 <p>SERVICE CHANGED (APAR PI86039): Added support for mapping level 4.2.</p> <ul style="list-style-type: none"> • MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.2. • New parameters: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. <p>SERVICE CHANGED (APAR PI88519): Added support for mapping level 4.3. MAPPING-LEVEL and MINIMUM-RUNTIME-LEVEL now accept 4.3.</p>

Changes to messages and codes

Table 230. Changes to messages in CICS TS 5.4

New messages	Changed messages	Removed messages
	<ul style="list-style-type: none"> • DFH5275 is issued as a warning instead of an error. Its severity indicator is changed from E to W. 	

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHAM4900 indicates an attempt to install an obsolete group. • DFHAM4962 indicates that an attempt to install an MQ monitor failed because an MQ monitor with the same name is already installed and is in use. • DFHAM4963 indicates that an attempt to install an MQ monitor failed because no MQCONN is installed in the CICS system. • DFHAM4964 indicates an attempt to install an obsolete group as part of a list. • DFHAM4965 indicates that an attempt to install the MQMONITOR resource failed because a value for MONUSERID was not specified. • DFHAM4966 indicates that an attempt to install the MQMONITOR resource failed because the current user is not a surrogate of MONUSERID. • DFHAM4967 indicates that obsolete LE definitions installed from a CEE group were installed and CICS will terminate. • DFHAS0001 indicates that an abend occurred. • DFHAS0002 indicates that a severe error occurred. • DFHAS0004 indicates that a possible loop was detected. • DFHAS0100 indicates that the asynchronous services domain initialization started. • DFHAS0101 indicates that the asynchronous services domain initialization ended. 		

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHCA4900 indicates an attempt to install an obsolete group. • DFHCA4962 indicates that an attempt to install the MQMONITOR resource failed because an MQMONITOR resource with the same name is already installed and is in use. • DFHCA4963 indicates that an attempt to install the MQMONITOR resource failed because no MQCONN is installed in the CICS system. • DFHCA4964 indicates an attempt to install an obsolete group as part of a list. • DFHCA4965 indicates that an attempt to install the MQMONITOR resource failed because a value for MONUSERID was not specified. • DFHCA4966 indicates that an attempt to install the MQMONITOR resource failed because the current user is not a surrogate of MONUSERID. • DFHCA4967 indicates that obsolete LE definitions installed from a CEE group were installed and CICS will terminate. • DFHEX0400 indicates that a PUT container request from an EXCI job was rejected because total storage allocated for the channel will exceed 5% of the MEMLIMIT value for the EXCI job. • SERVICE DFHFC6045 (APAR PI97207) indicates that an invalid interval value was specified for transaction CFCT. • SERVICE DFHFC6046 (APAR PI97207) indicates that CICS has detected that a VSAM file that is defined with the LOGREPLICATE attribute was opened. 		

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHH0001 indicates that potential security issues were identified in the access to the CEDA transaction. • DFHH0002 indicates that potential security issues were identified in the configuration of the spool. • DFHH0003 indicates that potential security issues were identified in the configuration of TDQs that are defined to the internal reader. • DFHH0200 indicates that CICS health checker rules cannot run because of error. • DFHH0301 indicates that no potential security issues were identified in the configuration of CEDA. • DFHH0302 indicates that no potential security issues were identified in the configuration of the spool. • DFHH0303 indicates that no potential security issues were identified in the configuration of TDQs that are defined to the internal reader. 		

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHMP2014 indicates an attempt to install a policy scope in a stand-alone bundle that duplicates an existing policy scope for the same operation. • DFHMP2015 indicates that an attempt to install a policy scope in a stand-alone bundle failed because the referenced policy is undefined. • DFHMP2016 indicates that an attempt to install a policy scope in a stand-alone bundle failed because the policy name that was specified has an invalid length. • DFHMP2017 indicates that an attempt to install a policy in a stand-alone bundle failed because it duplicates an existing policy with region scope. • SERVICE DFHMP2018 (APAR PI88500) indicates that an invalid name or value was specified for a static data item in a policy rule. • DFHMP2020 and DFHMP2021 indicate that an attempt to create a system policy in the BUNDLE resource failed as a result of an invalid predicate. • DFHMP2022 indicates that an attempt to create a system policy in the BUNDLE resource failed because the policy was not installed into only a stand-alone CICS region or a CICS platform. • DFHMP2023 indicates that an attempt to restrict the scope of a policy that defines system rules by using a policy scope failed. • DFHMP3009 indicates that a system rule defined in a policy that is installed in a single region is triggered. • DFHMP3010 indicates that a system rule defined in a policy that is installed on a platform is triggered. 	<ul style="list-style-type: none"> • SERVICE DFHMP0002 (APAR PI92806) is issued for errors that occurred in DFHMPST. • DFHMP2004 is no longer used to report BASESCOPE errors. • SERVICE DFHMP2006 (APAR PI88500) is issued also if an event name contains invalid characters. • SERVICE DFHMP3009 (APAR PI92806) emits application context information for programs or bundles when a program enable status rule, bundle available status rule, or bundle enable status rule is triggered for a program or bundle deployed with a CICS application. • SERVICE DFHMP3010 (APAR PI92806) emits application context information for programs or bundles when a program enable status rule, bundle available status rule, or bundle enable status rule is triggered for a program or bundle deployed with a CICS application. 	

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none">• DFHMP3011 indicates that emission of policy events was suspended because event processing status is STOPPED.• DFHMP3012 indicates that emission of policy events was resumed after event processing is restarted.		

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • SERVICE DFHMQ0126 (APAR PH22136) indicates that a temporary error occurred when a CKTI trigger monitor attempted to issue an MQOPEN of an initiation queue. The trigger monitor will retry in one minute. • SERVICE DFHMQ0127 (APAR PH22136) indicates that a temporary error occurred when a CKTI trigger monitor attempted to issue an MQGET from an initiation queue. The trigger monitor will retry in one minute. • SERVICE DFHMQ0128 (APAR PH22136) indicates that following a temporary error, a CKTI trigger monitor has resumed normal processing. • DFHMQ0370 indicates the maximum number of MQGET calls that an MQMONITOR can issue per second because the region's z/OS WLM health value is less than 100. • DFHMQ0371 indicates that there is no longer a restriction on the number of MQGET calls that MQMONITORS can issue per second. • DFHMQ0390 indicates that a request to start an MQMONITOR failed. • DFHMQ0391 indicates that a request to start the specified MQMONITOR was processed. • DFHMQ0392 indicates that a request to stop the specified MQMONITOR was processed. • SERVICE DFHMQ0795 (APAR PH15075) indicates that the CICS-MQ bridge has retrieved a message that has been previously marked and the mark browse interval has expired. • SERVICE DFHMQ0796 (APAR PH22136) indicates that following a temporary error, a CKBR bridge monitor has resumed normal processing. 		

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHPA1950 indicates an attempt to read a feature toggle file. • DFHPA1951 indicates that a feature toggle file was not found during CICS system initialization. • DFHPA1952 indicates that a feature toggle file was found but could not be opened during CICS system initialization. • DFHPA1953 indicates that a feature toggle file was opened but could not be read during CICS system initialization. • DFHPA1954 indicates formatting errors in a feature toggle file. • DFHPA1955 indicates that processing of a feature toggle file failed because of insufficient storage. • DFHPA1956 indicates that a feature toggle file was not applied during CICS system initialization. • DFHPA1957 indicates the feature toggles that will be used in a CICS region. • DFHPA1958 indicates that the feature toggle file does not contain any feature toggles. • SERVICE DFHRM0240 (APAR PH03691) indicates the local log name that is set during CICS initialization and sent to a remote system when CICS establishes an APPC or IRC connection. • SERVICE DFHRM0241 (APAR PH03691) indicates a log name that has been set for an APPC or IRC connection. • SERVICE DFHRM0242 (APAR PH03691) indicates a log name that has been deleted for an APPC or IRC connection. • SERVICE DFHSI1591 (APAR PI97207) indicates that an attempt to attach transaction CFCT failed and that CICS is terminated with a dump. 		

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • SERVICE DFHSJ0007 (APAR PH24443) indicates that an unexpected signal has been received by the JVM server. • SERVICE DFHSJ0008 (APAR PH24443) indicates that the JVM server has unexpectedly terminated and is now in an unusable state. • SERVICE DFHSJ0938 (APAR PH22887) indicates that the JVM server failed to start. • DFHSJ1204 indicates that while installing an application in a Liberty JVM server, CICS did not register a linkable service because the same program name as another linkable service was specified. • DFHSJ1205 indicates that while installing an application in a Liberty JVM server, CICS did not register a linkable service because the same program name as another linkable service was specified. • DFHSJ1206 indicates an attempt to link to an application in a Liberty JVM server failed and provides a reason code. • DFHSJ1207 indicates an attempt to link to a program in a Liberty JVM server failed because no linkable service is defined for this program name. • DFHSJ1208 indicates that while installing an application in a Liberty JVM server, an existing PROGRAM definition is installed for the program that is not suitable for use with a linkable service, and indicates the reason why. • SERVICE DFHSJ1400 (APAR PI92676) indicates that the Liberty JVM server failed to start because no default Liberty angel process is available. 	<ul style="list-style-type: none"> • SERVICE DFHSJ1007 (APAR PH12280) is updated to reflect changed system action when CICS detects that an abend has left a JVM in an inconsistent state. • SERVICE DFHSJ1208 (APAR PI86767) indicates that while installing an application in a Liberty JVM server, an existing PROGRAM definition is installed for the program that is not suitable for use with a linkable service, and indicates the reason why. 	

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • SERVICE DFHSJ1401 (APAR PI92676) indicates that the Liberty JVM server failed to start because the named Liberty angel process is unavailable. • SERVICE DFHSJ1402 (APAR PI92676) indicates that no default Liberty angel process is available, and CICS will verify the availability of the Liberty angel process again in 30 seconds. After five retries, the operator is given the option to continue trying or to disable the JVMSERVER resource. • SERVICE DFHSJ1403 (APAR PI92676) indicates that the named Liberty angel process is unavailable, and CICS will verify the availability of the Liberty angel process again in 30 seconds. After five retries, the operator is given the option to continue trying or to disable the JVMSERVER resource. • SERVICE DFHSJ1404 (APAR PI92676) is issued after five unsuccessful attempts by CICS to verify that a running Liberty angel process is available for Liberty JVM server startup. It prompts the operator to decide whether to continue waiting for the Liberty angel process to be available or to disable the JVMSERVER resource. <ul style="list-style-type: none"> • DFHTF0200 indicates that the 3270 datastream received from a terminal emulator client attempted to override a protected field. <ul style="list-style-type: none"> • DFHWU4033 indicates that multiple OVERRIDEWARNINGCOUNT expressions were found in the URI. 	<ul style="list-style-type: none"> • DFHSO1001 includes new error codes to identify NMI errors when CICS attempts to obtain TCIPSERVICE resource statistics. <ul style="list-style-type: none"> • SERVICE DFHTF0200 (APAR PH25397) has been updated to explain how to correctly process the decimal field position that is returned with the message. <ul style="list-style-type: none"> • DFHWU4302 includes new information about using the OVERRIDEWARNINGCOUNT URI parameter to bypass the warning count limit. 	

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • SERVICE EYUBM0349W (APAR PH00907) indicates that the specified resource definition for the named CICSplex cannot be found in the data repository. • SERVICE EYUCPO208E (APAR PH17586) indicates that the delete and re-add of a CMAS failed. • SERVICE EYUCS0109I (APAR PH00375) indicates that the connection to the specified CMAS could not be completed. • EYUVC1030E indicates that an invalid user name or password was used. • EYUVC1031I indicates that you must enter a user name and password. This replaces message EYUVC1003 and partially replaces message EYUVC1002, both issued when the user ID or password were left blank. Message EYUVC1002 is still issued on WUIs where CICSplex SM Simulated Security is switched off. 	<ul style="list-style-type: none"> • EYUNX0157 is renamed to EYUXL0157. • EYUNX0158 is renamed to EYUXL0158. • EYUNX0159 is renamed to EYUXL0159. 	<ul style="list-style-type: none"> • EYUVC1003 is superseded by new message EYUVC1031I. • EYUVC1004 is superseded by new message EYUVC1030E. • EYUVC1005 is superseded by new message EYUVC1030E. • EYUVC1006 is superseded by new message EYUVC1030E.

Table 230. Changes to messages in CICS TS 5.4 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • SERVICE EYUVS0215E (APAR PI87691) indicates that an attempt to create the named JVM server failed. • SERVICE EYUVS0216I (APAR PI87691) indicates that the CMCI JVM server has been successfully installed. • SERVICE EYUVS0218E (APAR PI87691) indicates that the named CMCI JVM server has been installed but could not be enabled. • SERVICE EYUVS0219I (APAR PI87691) indicates that the named CMCI JVM server has been installed and enabled successfully for CMCI. • SERVICE EYUVS0220E (APAR PI87691) indicates that an attempt to disable and discard an existing CMCI JVM server failed. • SERVICE EYUVS0223I (APAR PH01554) indicates that the CICSplex SM WUI region is waiting for an installed CMCI JVM server to become enabled. 		

Table 231. Changes to abend codes in CICS TS 5.4

New abend codes	Changed abend codes	Removed abend codes
<ul style="list-style-type: none"> • AASA occurs when CICS detects an unexpected response from a call to the user domain during initialization of a child task. • ABSX occurs when CICS detects that a BMS protected field has been updated by the client. • AEZ2 occurs when the BUSY condition is not handled. • AMPC occurs when CICS detects an unexpected error in the deferred rule evaluation task CMPE. • AMPD occurs when an attempt is made to attach a CICS deferred rule evaluation task CMPE, but the transaction is not attached internally by CICS. • AXSB occurs when CICS detects that a system transaction has been started from a terminal. • 0416 occurs when DFHXCEIP receives an unexpected return code from DFHXCBAM when processing a channels and containers command. • 0417 occurs when a PUT container request from an EXCI job has been rejected because total storage allocated for the channel will exceed 5% of the MEMLIMIT value. • 0418 occurs when DFHXCBAM receives a purged response when processing a channels and containers command. • 0419 occurs when DFHXCBAM receives an unexpected response when processing a channels and containers command. 		

Changes to compiler support

Table 232. Changes to compiler support in CICS TS 5.4

Compiler	This release
Enterprise COBOL for z/OS	Support added for V6.1
Enterprise PL/I for z/OS	Support added for V5.1. V4.2 is withdrawn from service.

Table 232. Changes to compiler support in CICS TS 5.4 (continued)

Compiler	This release
z/OS V2.1 XL C/C++	V1.13 is withdrawn from service.

Changes to SIT parameters

Table 233. Changes to system initialization parameters in CICS TS 5.4

API	CICS TS 5.4
EDSALIM	CHANGED: The minimum value is changed to 64 MB.
ICVR	CHANGED: The minimum value is changed from 500 to 250. The default value is changed from 5000 to 2000.
KERBEROSUSER	SERVICE NEW (APAR PI85443): Specifies the user ID associated with the Kerberos service principal for the CICS region.
MAXOPENTCBS	CHANGED: The minimum value is changed from 1 to 32.
MAXSSLTCBS	CHANGED: The default value is changed from 8 to 32.
RACFSYNC	CHANGED: The RACFDB2SYNC option is removed and its functionality is included when RACFSYNC =YES is specified.
SECVFYFREQ	REMOVED: CICS updates the last used time once a day for each user ID that is used on a CICS region.
SNPRESET	NEW: Allows present userid terminals to have a single ACEE.
TCPIP	CHANGED: The default value is changed from NO to YES.
WLMHEALTH	NEW: Specifies the parameters to be used by CICS on z/OS WLM Health API calls.
XPTKT	NEW: Instructs CICS to perform a RACF check before it generates a PassTicket. The default value is changed from NO to YES.

Changes to JVM profiles

Table 234. Changes to JVM profiles in CICS TS 5.4

Option	CICS TS 5.4
_DFH_UMASK	CHANGED: Applies for the lifetime of the JVM server, not only during startup.
CICS_WLP_MODE	NEW: Choose the level of integration between CICS and Liberty.
com.ibm.cics.jvmserver.cmci.user.agent.allow.list	NEW with APAR, compatible with: Liberty JVM server
com.ibm.cics.jvmserver.cmci.user.agent.allow.list.monitor.interval	NEW with APAR, compatible with: Liberty JVM server
com.ibm.cics.jvmserver.trace.specification	NEW with APAR, compatible with: All JVM Environments
com.ibm.ws.zos.core.angelName	SERVICE CHANGED (APAR PI92676): Specify a named angel process for the Liberty JVM server to connect to upon startup.

<i>Table 234. Changes to JVM profiles in CICS TS 5.4 (continued)</i>	
Option	CICS TS 5.4
<u>com.ibm.ws.zos.core.angelRequired</u>	SERVICE NEW (APAR PI92676): Enforce the requirement to connect to the Liberty angel process when the Liberty JVM server is being enabled.
<u>PURGE_ESCALATION_TIMEOUT</u>	SERVICE NEW (APAR PH12280), compatible with: All JVM Environments New JVM server option to specify the interval between the disable actions that CICS performs when a JVM server encounters a TCB failure.

Changes to control tables

<i>Table 235. Changes to resource definitions in CICS TS 5.4</i>	
Resource	CICS TS 5.4
<u>DFHXCOPT</u>	CHANGED: <ul style="list-style-type: none"> • The default for the CICSSVC parameter has changed from 0 to 216. • New parameter LOCALCCSID, which specifies the default CCSID for the EXCI job. • The TRACE parameter has a new value of 3 to allow for level 3 tracing. SERVICE CHANGED with APAR: The EXCI SURROGCHK parameter has been removed. Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.

Changes to CICS SPI

<i>Table 236. Changes to the system programming interface commands in CICS TS 5.4</i>	
Command	CICS TS 5.4
<u>CREATE MQMONITOR</u>	NEW: To create an MQMONITOR resource in the CICS region
<u>DISCARD MQMONITOR</u>	NEW: To remove an installed MQMONITOR resource
<u>EXTRACT STATISTICS</u>	CHANGED: New options: ASYNCSERVICE, LASTRESETABS, and MQMONITOR
<u>INQUIRE ASSOCIATION</u>	CHANGED: New options for previous transaction data: PTCOUNT, PTSTARTTIME, PTTASKID, PTTRANSID SERVICE CHANGED (APAR PH42306): Enhanced support for Liberty. The association data user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.
<u>INQUIRE DSNAME</u>	CHANGED: New CVDA value RREPL on the AVAILABILITY option, which indicates that full access to the data set is restricted to replication programs; other programs have only read access
<u>INQUIRE EPADAPTER</u>	CHANGED: New CVDA's: DSIE on DATAFORMAT option and TDQUEUE on ADAPTERTYPE option

Table 236. Changes to the system programming interface commands in CICS TS 5.4 (continued)

Command	CICS TS 5.4
INQUIRE MQMONITOR	NEW: To inquire on the information about an MQMONITOR resource
INQUIRE PROGRAM	CHANGED: <ul style="list-style-type: none"> • New option REPLICATION, which indicates a replication program with full access to VSAM data sets in RREPL state • New CVDA value DYNAMIC on the CHANGEAGENT and INSTALLAGENT options, which indicates that the program was changed or installed due to an @CICSProgram annotation in a Liberty application
INQUIRE SYSDUMPCODE	CHANGED: New options: DSPLIST and JOBLIST
INQUIRE SYSTEM	CHANGED: New option REGIONUSERID to return the CICS region user ID
INQUIRE WEBSERVICE	CHANGED: MAPPINGLEVEL and MINRUNLEVEL now accept the value 4.1. SERVICE CHANGED (APAR PI86039): MAPPINGLEVEL and MINRUNLEVEL now accept the value 4.2. SERVICE CHANGED (APAR PI88519): MAPPINGLEVEL and MINRUNLEVEL now accept the value 4.3.
INQUIRE WLMHEALTH	NEW: To retrieve information about the z/OS WLM health indicators set for a CICS address space.
INQUIRE XMLTRANSFORM	CHANGED: MAPPINGLEVEL and MINRUNLEVEL now accept the value 4.1. SERVICE CHANGED (APAR PI86039): MAPPINGLEVEL and MINRUNLEVEL now accept the value 4.2. SERVICE CHANGED (APAR PI88519): MAPPINGLEVEL and MINRUNLEVEL now accept the value 4.3.
PERFORM SHUTDOWN	CHANGED: New option RESTART, to enable the MVS Automatic Restart Manager (ARM) to restart a CICS region if the region shuts down normally.
PERFORM STATISTICS RECORD	CHANGED: New options: ASYNCSERVICE and MQMONITOR
SET DISPATCHER	CHANGED: RUNAWAY option accepts a new, lower limit of 250
SET DSNAME	CHANGED: New CVDA value RREPL on the AVAILABILITY option, to allow only replication programs to have full access to a data set and other programs to have only read access
SET MQMONITOR	NEW: To enable or disable an MQMONITOR resource, and to start or stop and set automatic restart of the MQ monitor
SET PROGRAM	CHANGED: New option REPLICATION to specify a replication program and allow the program full access to VSAM data sets in RREPL state
SET SYSDUMPCODE	CHANGED: New options: DSPLIST and JOBLIST
SET SYSTEM	CHANGED: RUNAWAY option accepts a new, lower limit of 250

Table 236. Changes to the system programming interface commands in CICS TS 5.4 (continued)

Command	CICS TS 5.4
<u>SET TASK</u>	SERVICE CHANGED (APAR PI98569): CICS processing of a task purge is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.
<u>SET TRANSACTION</u>	CHANGED: RUNAWAY option accepts a new, lower limit of 250
<u>SET WLMHEALTH</u>	NEW: To change the z/OS WLM health value process settings of a CICS address space server.

Changes to CICS-supplied transactions

Table 237. Changes to CICS-supplied transactions in CICS TS 5.4

Transaction	CICS TS 5.4
<u>CEDG and CEDY</u>	NEW: Transactions CEDG and CEDY, read-only forms of CEDF and CEDX, are now available.
<u>CEMT - main terminal</u>	<p>CHANGED:</p> <ul style="list-style-type: none"> • Support added for DSIE XML format to INQUIRE EPADAPTER command • New commands: <u>CEMT DISCARD MQMONITOR</u>, <u>CEMT INQUIRE MQMONITOR</u>, <u>CEMT INQUIRE WLMHEALTH</u>, <u>CEMT SET MQMONITOR</u>, <u>CEMT SET WLMHEALTH</u> • CEMENT INQUIRE MQINI has been removed and replaced by CEMENT INQUIRE MQMONITOR • New options DSPLIST and JOBLIST on CEMENT INQUIRE SYDUMPCODE and CEMENT SET SYDUMPCODE commands • New option RESTART on the CEMENT PERFORM SHUTDOWN command • New option RREPL on the <u>CEMT INQUIRE DSNAME</u> and <u>CEMT SET DSNAME</u> commands • New options ASYNCSERVICE and MQMONITOR on the <u>CEMT PERFORM STATISTICS</u> command • RUNAWAY option on <u>CEMT SET DISPTACHER</u> and <u>CEMT SET SYSTEM</u> accepts a new lower, limit of 250 <p>SERVICE CHANGED (APAR PI98569): CEMENT SET TASK: CICS processing of a task purge is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.</p>
<u>CEPR</u>	NEW
<u>CFCT</u>	SERVICE NEW (APAR PI97207): Provides tie-up records for VSAM files to a replication log at specified intervals.
<u>CHCK</u>	NEW: Health Checker long running system task

Table 237. Changes to CICS-supplied transactions in CICS TS 5.4 (continued)

Transaction	CICS TS 5.4
CKBR	SERVICE CHANGED (APAR PH22136): CKBR now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKBR will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.
CKTI	CHANGED: CKTI now handles abends produced when starting user transactions. If an abend occurs when the CKTI transaction attempts to start the user transaction, rather than terminating, CKTI will now send the trigger message to the dead-letter queue, and trigger monitor processing continues. SERVICE CHANGED (APAR PH22136): CKTI now handles temporary errors that occur when issuing MQOPEN and MQGET requests. Rather than terminating, CKTI will retry every minute for up to an hour. If the error is not resolved after an hour, the monitor transaction will then terminate.
CMPE	NEW: Policy deferred rule evaluation task
COHT, COIE, COIR, COIO, CONA, COND, CONH, CONL, CONM, COWC	CHANGED to Category 1 transactions

Changes to CICS monitoring

Table 238. Changes to monitoring data in CICS TS 5.4

Data	CICS TS 5.4
<u>Performance class data in DFHPROG group</u>	CHANGED: The following abend codes are now written to the ABCODEO and ABCODEC monitoring fields: ASP ASPN ASPO ASPP ASPQ ASPR ASP1 ASP2 ASP3 ASP7 ASP8
<u>Performance data in group DFHCICS</u>	NEW FIELDS: MPSRACT, MPSRECT, PTSTART, PTTRANNO, PTTRAN, and PTCOUNT CHANGED: OTRANFLG field has new transaction origin type for asynchronous transactions: X'16' ASRUNTRAN SERVICE CHANGED (APAR PH42306): Field 089 (USERID) is changed for Liberty such that the user ID value now reflects the final user ID value used in secure Liberty transactions, instead of the initial user ID.

<i>Table 238. Changes to monitoring data in CICS TS 5.4 (continued)</i>	
Data	CICS TS 5.4
<u>Performance data in group DFHTASK</u>	<p>NEW FIELDS: ASTOTCT, ASRUNCT, ASFTCHCT, ASFREECT, ASFTCHWT, ASRNATWT, and LPARNAME</p> <p>CHANGED: TRANFLAG field has new transaction origin type for asynchronous transactions: X'16' Asynchronous services domain (AS)-run transaction</p>
<u>Transaction resource class data</u>	<p>NEW FIELDS: MNR_PTD_ATTACH_TIME, MNR_PTD_TRANNUM, MNR_PTD_TRANID, and MNR_PTD_COUNT</p>
<u>Identity class data</u>	<p>NEW FIELDS: MNI_PTD_ATTACH_TIME, MNI_PTD_TRANNUM, MNI_PTD_TRANID, and MNI_PTD_COUNT</p>

Changes to statistics

<i>Table 239. Changes to statistics in CICS TS 5.4</i>	
Statistics	CICS TS 5.4
<u>Asynchronous services statistics</u>	<p>NEW: Statistics are provided for asynchronous services.</p>
<u>TCP/IP global statistics</u>	<p>CHANGED: New fields added:</p> <ul style="list-style-type: none"> Current number of non-persistent inbound sockets (SOG_CURR_NPERS_INB_SOCKETS) Peak number of non-persistent inbound sockets (SOG_PEAK_NPERS_INB_SOCKETS) Peak number of persistent inbound sockets (SOG_PEAK_PERS_INB_SOCKETS) Total number of non-persistent inbound sockets created (SOG_NPERS_INB_SOCKETS_CREATED) Peak number of outbound sockets (SOG_PEAK_BOTH_OUTB_SOCKETS) Total number of times outbound sockets reused (SOG_TIMES_OUTB_REUSED) Total number of persistent outbound sockets created (SOG_PERS_OUTBOUND_CREATED)
<u>TCP/IP services statistics</u>	<p>CHANGED: New fields added:</p> <ul style="list-style-type: none"> Current Maximum Backlog (SOR_CURR_MAX_BACKLOG) Total Connections (SOR_TOTAL_CONNS) Requests processed (SOR_REQUESTS) Made non-persistent at MAXPERSIST (SOR_NONP_AT_MAXPERSIST) Disconnected after maximum uses (SOR_DISC_AT_MAX_USES) Made non-persistent at task limit (SOR_NONP_AT_TASK_LIMIT) Disconnected at task limit (SOR_DISC_AT_TASK_LIMIT) Current backlog (SOR_CURR_BACKLOG) Connections dropped (SOR_CONNS_DROPPED) Time connection last dropped (SOR_CONN_LAST_DROPPED)
<u>MQ monitor statistics</u>	<p>NEW: Statistics are provided for MQMONITOR resources.</p>

Table 239. Changes to statistics in CICS TS 5.4 (continued)

Statistics	CICS TS 5.4
z/OS Communications Server: Global statistics	CHANGED: New fields added: BMS 3270 Validation (A03BMVL) Number of BMS 3270 Validation Failures Abended (A03BMAB) Number of BMS 3270 Validation Failures Ignored (A03BMIG) Number of BMS 3270 Validation Failures Logged (A03BMLG)

Changes to user-replaceable programs

Table 240. Changes to the user-replaceable programs in CICS TS 5.4

Program	CICS TS 5.4
DFHBMSX	NEW: The DFHBMSX URM is called to enable 3270 data stream validation at CICS initialization. The URM is also called when a 3270 data stream validation error has been detected when issuing BMS RECEIVE MAP commands.
DFHWBOPT	SERVICE NEW (APAR PH16992): Handler program that can be invoked to process HTTP OPTIONS requests.

Changes to samples

Table 241. Changes to the samples provided with CICS in CICS TS 5.4

Sample	CICS TS 5.4
DFH\$MOLS	CHANGED: Specifying a 2 digit year on the DATE control parameter now defines a date in the twenty-first century.
DFH\$UMOD	CHANGED: CICSplex SM module names updated in the sample.
DFH0STEP	CHANGED: Changed to collect and print new asynchronous services statistics.

Changes to toggle-enabled features

Table 242. Changes to toggle-enabled features in CICS TS 5.4

Feature toggle	CICS TS 5.4
com.ibm.cics.bms.ids={true false}	NEW: Allows CICS® to detect if a 3270 emulator has invalidly modified a protected field generated by a BMS map. See Configuring the BMS 3270 Intrusion Detection Service .
com.ibm.cics.cmci.jvmserver={true false}	SERVICE NEW (APAR PI87691): Allows you to set up the CMCI without the CMCI JVM server.
com.ibm.cics.cpsm.bas.largecicsplex={true false}	SERVICE NEW (APAR PH19761): Allows you to constrain large resource deployments lists for BAS to a single data space instead of spreading across multiple data spaces.

Table 242. Changes to toggle-enabled features in CICS TS 5.4 (continued)

Feature toggle	CICS TS 5.4
com.ibm.cics.cpsm.wlm.botrsupd.enabled={ true false}	SERVICE NEW (APAR PH14812): Allows you to disable updates to the Coupling Facility when the task load falls below the lower tier threshold of the CICSplex SM tuning parameter, BOTRSUPD .
com.ibm.cics.cpsm.wlm.surgeresist={ true false }	SERVICE NEW (APAR PH30768): When applied to CICSplex SM WLM routing regions, this feature toggle takes effect for the QUEUE and GOAL WLM algorithms when using CICSplex SM sysplex optimized workload routing. It has no effect when applied to target regions. When the feature toggle is set to true, surges of extremely high frequency, short duration transactions can be mitigated by reducing the likelihood that recently selected target regions are reselected. Enabling this feature toggle increases the average routing cost per transaction, but restores the routing behavior of CICSplex SM before APAR PH30768 is applied.
com.ibm.cics.db2.origindata={ true false}	SERVICE NEW (APAR PH49408): Gives you the option to disable the passing of adapter origin data to Db2 for adapter tracking.
com.ibm.cics.http.options.handler={program_name}	SERVICE NEW (APAR PH16992): Allows you to specify the name of the HTTP Options handler program. See HTTP method reference for CICS web support .
com.ibm.cics.rls.delete.ridfld={ true false }	SERVICE NEW (APAR PH07596): Enables surrogate user checking for spool commands.
com.ibm.cics.tls.minimumkeystrength={ 1024 2048}	SERVICE NEW (APAR PH50175): Sets the minimum key size allowed during TLS handshakes.

Changes to global user exits and task-related user exits

Table 243. Changes to global user exits and task-related user exits in CICS TS 5.4

Exit	CICS TS 5.4
XDUREQ	CHANGED: New parameters UEPDLISI and UEPJLISI
XDUREQC	CHANGED: New parameters UEPDLISO and UEPJLISO
XRSINDI	CHANGED: New value UEIDMQMN for UEPIDTYP parameter

Changes to security

Table 244. Changes to security in CICS TS 5.4

Area	CICS TS 5.4
Identification	<ul style="list-style-type: none"> NEW: MQMONITOR MONUSERID NEW with APAR PI85443: KERBEROSUSER system initialization parameter

Table 244. Changes to security in CICS TS 5.4 (continued)

Area	CICS TS 5.4
Authentication	<ul style="list-style-type: none"> • CHANGED: The default of XPTKT system initialization parameter is changed from NO to YES. • NEW: Kerberos mutual authentication • NEW with APAR PI87691: CICS Explorer support for MFA • NEW with APAR PI91554: Liberty options <ul style="list-style-type: none"> oauth-2.0 JWT and OpenID Connect • NEW with APAR PI92676: Liberty <u>Wait for angel at JVM server startup</u> • NEW with APAR PI98174: Liberty <u>Multiple Liberty servers per CICS region using an angel</u>
Integrity	CHANGED: <u>Support for IBM z/OS Communications Server IDS</u>
Confidentiality	<ul style="list-style-type: none"> • NEW with APAR PH20063: SNI support in CICS TS communications with an HTTP server over TLS connections • NEW with APAR PH50175: <u>Sets the minimum key size allowed during TLS handshakes</u>
Auditing	NEW: <u>Support for IBM Health Checker for z/OS</u>
Performance	NEW: <u>Preset user ID on a terminal can share ACEE</u>
Deprecated and removed	<ul style="list-style-type: none"> • REMOVED: <u>SECVFYFREQ system initialization parameter</u> • REMOVED with APAR PH09898: Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.

Table 245. Changes to RACF classes related to command security in CICS TS 5.4. These changes are new resource identifiers for SPI commands. See CICS resources subject to command security checking and Resource and command check cross-reference for a list of all of the SPI commands and the RACF ACCESS required for each one.

Command	CICS TS 5.4
<u>CREATE MQMONITOR DISCARD MQMONITOR INQUIRE MONITOR SET MONITOR</u>	NEW: resource identifier MQMON
<u>SET PROGRAM</u>	NEW: resource identifier REPLICATION. ACCESS(ALTER) is required for REPLICATION option.
<u>INQUIRE SYSDUMPCODE SET SYSDUMPCODE</u>	NEW: resource identifier SYSDUMPCODE. ACCESS(CONTROL) is required for SET with JOBLIST option.
<u>INQUIRE WLMHEALTH SET WLMHEALTH</u>	NEW: resource identifier WLMHEALTH. Requires APAR PI84397.

Table 246. Changes to RACF classes related to CICS user IDs in CICS TS 5.4

User ID	CICS TS 5.4
Region user ID	CHANGED: Security for submitting a JCL job to the internal reader.
KERBEROSUSER	NEW with APAR: PI85443

Table 247. Changes to other RACF classes in CICS TS 5.4

Class	Profile	CICS TS 5.4
PTKTDATA	IRRPTAUTH.applid.userid	NEW XPTKT system initialization parameter

Table 247. Changes to other RACF classes in CICS TS 5.4 (continued)

Class	Profile	CICS TS 5.4
SURROGAT	userid.DFHEXCI	NEW with APAR: PH09898

Changes to CICS policies

Table 248. Changes to CICS policies in CICS TS 5.4

Change	CICS TS 5.4
All system rules Support for static data capture items and event names for policy events	NEW with APAR PI88500
Bundle available status system rule	NEW with APAR PI92806
Bundle enable status system rule	NEW with APAR PI92806
Db2 connection status system rule	NEW
File open status system rule	NEW
File enable status system rule	NEW
IPIC connection status system rule	NEW with APAR PI92806
Message system rule	NEW
MRO connection status system rule	NEW with APAR PI92806
Program enable status system rule	NEW with APAR PI92806
Transaction abend system rule	NEW
Transaction class tasks system rule	NEW
User tasks system rule	NEW
All task rules	RENAMED: CICS policy task threshold rules are renamed to policy task rules.
All task rules Support for setting Transaction ID and User ID conditions for task rules	NEW with APAR PH26145
All task rules Support for static data capture items and event names for policy events	NEW with APAR PI88500

Changes to CICSplex SM resource tables

<i>Table 249. Changes to the resource tables provided by CICSplex SM in 5.4</i>	
Resource table	5.4
CICSRGN	CHANGED: <ul style="list-style-type: none"> • new REGIONUSERID attribute • new RESTART parameter for the SHUTDOWN action
CRESMQMN	NEW: A CICSplex SM Topology Manager object that describes an instance of a MQMONITOR definition in a CICS system.
DB2CONN	CHANGED: New fields added: PPSIGNONS, PTCREATE
DB2ENTRY	CHANGED: New fields added: PSIGNONS, TCREATE
DSNAME	CHANGED: new value RREPL for AVAILABILITY
EPADAPT	CHANGED: new DSIE value for DATAFORMAT
HTASK	CHANGED: New fields added: ASTOTCT, ASRUNCT, ASFTCHCT, ASFREECT, ASFTCHWT, ASRNATWT, LPARNAME, MPSRECT, MPSRACT, PTCOUNT, PTTRAN, PTSTART, and PTTRANNO
MQMINGRP	NEW: resource table for MQMONITOR resource definitions in a resource group
MQMON	NEW: A CICS resource that describes an IBM MQ monitor in an active CICS system being managed by CICSplex SM.
MQMONDEF	NEW: resource table for MQMONITOR resource definitions
MVSWLM	CHANGED: New attributes added: MNGWLMAD, MNGWLMHL, MNGWLMHT, MNGWLMIN, and MNGWLMOS
TASK	CHANGED: New fields added: ASTOTCT, ASRUNCT, ASFTCHCT, ASFREECT, ASFTCHWT, ASRNATWT, LPARNAME, MPSRECT, and MPSRACT
TCPIPGBL	CHANGED: new fields added: CINSCKSNPERS, INSCKSNPERS, OUTSCKSREUSE, OUTSOCKSPERS, PINSCKSNPERS, PINSCKSPERS, and POUTSCKSBOTH
TCPIPS	CHANGED: new fields added: CMAXBACKLOG, CONNLASTDROP, CONNSDROPPED, CURRBACKLOG, DISCATTLIM, DISCATUSELIM, NPERSATMAXP, NPERSATTLIM, REQUESTS, and TOTALCONNS
WLMATARG	CHANGED: New WLMHLTH attribute
WLMAWAOR	CHANGED: New WLMHLTH attribute

Changes to CICSplex SM system parameters

<i>Table 250. Changes to the system parameters used by CICSplex SM in 5.4</i>	
System parameter	5.4
CACHEDSNUM	NEW with APAR PH00673: For use under the direction of IBM Support.
RESTART	NEW
STALLASYCNT	NEW: to enable the tracking and STALL detection of asynchronous tasks.

Table 250. Changes to the system parameters used by CICSplex SM in 5.4 (continued)

System parameter	5.4
STALLASYTSK	NEW: to enable the tracking and STALL detection of asynchronous tasks.

Changes to CICSplex SM WUI server initialization parameters

Table 251. Changes to the WUI server initialization parameters used by CICSplex SM in 5.4

WUIPARAM parameter	5.4
TCPIPHOSTNAME	<p>SERVICE DEPRECATED (APAR PH47103):</p> <p>The hostname of the WUI server is the name of the host where the WUI is executing. It is no longer set by the TCPIPHOSTNAME WUI initialization parameter. The WUI uses relative URLs, and not embedded host names.</p> <p>TCPIPHOSTNAME is still required, but the value is ignored. This parameter is retrained for compatibility and will be removed in a later release.</p>
TCPIPHTTPOST	<p>SERVICE DEPRECATED (APAR PH47103):</p> <p>The hostname of the WUI server is the name of the host where the WUI is executing. The WUI uses relative URLs, and not embedded host names.</p> <p>If a value is specified on TCPIPHTTPOST, it is ignored. This parameter is retrained for compatibility and will be removed in a later release.</p>
TCPIPSSL	<p>SERVICE CHANGED (APAR PI94706): New value ATTLSEBASIC, to support Application Transparent Transport Layer Security (AT-TLS).</p>

Changes to CICSplex SM

Change of behavior in reporting the routing load of empty target regions in CICSplex SM

Before CICS TS 5.4, a target region always has a non-zero routing load value because of the standard CICSplex SM long running tasks. In CICS TS 5.4, these tasks are invisible to routing load queries because they are converted into CICS system tasks. As a result, in a scope containing CICS regions of different releases, more transactions are routed to the apparently less loaded target regions of CICS TS 5.4. Regions of CICS TS 5.4 might appear to handle more dynamic traffic than regions in earlier releases, but the overall workload throughput is not affected.

Changes to CICSplex SM sysplex optimized workload routing behavior CHANGED with APAR PH30768

The default behavior of CICSplex SM workload management routing algorithms has been updated to increase the likelihood that work is routed to healthy, local target regions. This change applies only to the QUEUE and GOAL algorithms, not to the link neutral variants (LNQUEUE and LNGOAL).

Change in how the MAS agent user ID is determined

Beginning with CICS TS V5.4, the MAS agent user ID is always the CICS region user ID. PLTPIUSR no longer matters in determining the MAS agent user ID.

SERVICE Changes to CICSplex SM sysplex optimized workload routing behavior

(APAR PH30768) The default behavior of CICSplex SM workload management routing algorithms has been updated to increase the likelihood that work is routed to healthy, local target regions. This change applies only to the QUEUE and GOAL algorithms, not to the link neutral variants (LNQUEUE and LNGOAL).

Record size increase of EYUHIST* data sets

The record size of EYUHIST* data sets is increased from RECORDSIZE(3460 3464) to RECORDSIZE(3536 3540). The EYUJHIST sample is updated to reflect this change.

COxx tasks

Tasks that are internally initiated by CICSplex SM in a MAS and that have transaction IDs beginning with the characters CO are changed to execute as CICS system tasks.

CICSplex SM BAS

NEW with APAR PH19761: It is disabled by default.

The CICSplex SM BAS component is now able to use all available BAS data space storage by spreading large resource deployment lists for BAS across multiple data spaces instead of being constrained to a single data space. This feature is controlled by the feature toggle `com.ibm.cics.cpsm.bas.largecicsplex`.

Changes to documentation

Changes to PDF

CICS TS 5.4 made extensive changes to the organization of documentation in PDF and those changes are explained here. Some PDF manuals were renamed to reflect the terminology used in IBM Documentation. Some PDF manuals were reorganized to make them shorter and more modular, or to merge multiple volumes into one single volume. [Table 252 on page 250](#) shows the changes.

PDF	Change for CICS TS 5.4
Application Programming Guide	Renamed to <i>Developing CICS Applications</i> .
Application Programming Reference	Renamed to <i>API (EXEC CICS) Reference</i> .
CICSplex SM Resource Tables Reference	Combined into a single volume.
Customization Guide	<ul style="list-style-type: none">Renamed to <i>Developing CICS System Programs</i>.XPI reference section split into a separate PDF called <i>XPI Function Reference</i>.User exit reference section split into a separate PDF called <i>Global User Exit Reference</i>.
External Interfaces Guide	Information about EXCI split into a separate PDF called <i>Using EXCI with CICS</i> .
Installation Guide	Renamed to <i>Installing CICS TS for z/OS</i> .
Operations and Utilities Guide	<ul style="list-style-type: none">Renamed to <i>Administering CICS</i>.Utilities reference section split into a separate PDF called <i>Utilities Reference</i>.
Messages and Codes	<ul style="list-style-type: none">Codes split into a separate PDF called <i>CICS Codes</i>.Messages combined into a single volume.
Performance Guide	<ul style="list-style-type: none">Monitoring data reference section split into a separate PDF called <i>Monitoring Data Reference</i>.Statistics reference section split into a separate PDF called <i>Statistics Reference</i>.

<i>Table 252. Changes to name or organization of the PDF manuals at CICS TS 5.4 (continued)</i>	
PDF	Change for CICS TS 5.4
Problem Determination Guide	Renamed to <i>Troubleshooting CICS</i> .
Recovery and Restart Guide	Included in <i>Administering CICS</i> .
Resource Definition Guide	<ul style="list-style-type: none"> Guidance information is included in <i>Configuring CICS TS for z/OS</i>. Resource reference section split into a separate PDF called <i>Resource Reference</i>.
Supplied Transactions	<ul style="list-style-type: none"> Guidance information is included in <i>Administering CICS</i>. Renamed to <i>Supplied Transactions Reference</i>.
System Definition Guide	<ul style="list-style-type: none"> Renamed to <i>Configuring CICS TS for z/OS</i>. Parameter reference section split into a separate PDF called <i>System Initialization Parameter Reference</i>.

PDFs are delivered in IBM Documentation, not in IBM Publications Center.

PDFs no longer have manual numbers.

PDFs have descriptive filenames instead of codes.

The following PDFs are stabilized and no longer produced:

- *Business Transaction Services*
- *CICSplex SM Managing Resource Use*
- *CICSplex SM Web User Interface Guide*
- *Debugging Tools Interfaces Reference*
- *Diagnosis Reference*
- *Distributed Transaction Programming Guide*
- *External Interfaces Guide*
- *Front End Programming Interface User's Guide*
- *Internet Guide*
- *Trace Entries*

Online and offline documentation

- **NEW:** IBM Documentation Offline is now automatically translated.
- **CHANGED:** Upgrading information is provided in full in the latest CICS TS product documentation.

CICS Explorer

CHANGED: [CICS Explorer documentation](#) is published independently from the CICS TS documentation.

Changes to externals in CICS TS 5.3

CICS TS 5.3 changes a number of externals, including commands, transactions, resources, system initialization parameters, messages, trace and user exits.

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

- [“Changes to CICS API” on page 252](#)
- [“Changes to JCICS API” on page 253](#)
- [“Changes to resource definitions” on page 254](#)
- [“Changes to CICS utilities” on page 254](#)
- [“Changes to CICS assistants” on page 254](#)
- [“Changes to messages and codes” on page 255](#)
- [“Changes to installing” on page 262](#)
- [“Changes to security” on page 262](#)
- [“Changes to RACF classes” on page 263](#)
- [“Changes to CICS support for application programming languages” on page 263](#)
- [“Changes to SIT parameters” on page 264](#)
- [“Changes to JVM profiles” on page 264](#)
- [“Changes to control tables” on page 265](#)
- [“Changes to CICS SPI” on page 265](#)
- [“Changes to CICS-supplied transactions” on page 267](#)
- [“Changes to CICS monitoring” on page 267](#)
- [“Changes to statistics” on page 268](#)
- [“Changes to GLUEs and TRUEs” on page 268](#)
- [“Changes to XPI” on page 268](#)
- [“Changes to user-replaceable programs” on page 268](#)
- [“Changes to CICS policies” on page 269](#)
- [“Changes to dump” on page 269](#)
- [“Changes to samples” on page 269](#)
- [“Changes to CICSplex SM resource tables” on page 269](#)
- [“Changes to CICSplex SM WUI server initialization parameters” on page 270](#)
- [“Changes to documentation” on page 271](#)

Changes to CICS API

Table 253. Changes to EXEC CICS commands in CICS TS 5.3	
API	CICS TS 5.3
ASSIGN	CHANGED: New options ABOFFSET to return the offset of an abend, and INPUTMSGLEN to test for the length of a terminal input string, <i>before</i> you receive the input.
CHANGE PASSWORD	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PH23078: New NOTAUTH with RESP2 value of 1, indicating that the PASSWORD field, the NEWPASSWORD field, or both are blank. • APAR PH31270: New NOTAUTH with RESP2 value of 17, indicating that the USERID is not authorized to use the application.
CHANGE PHRASE	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PH23078: New NOTAUTH with RESP2 value of 1, indicating that the PHRASE field, the NEWPHRASE field, or both are blank. • APAR PH31270: New NOTAUTH with RESP2 value of 17, indicating that the USERID is not authorized to use the application.
DELETE CHANNEL	NEW
EXTRACT TCP/IP	CHANGED: New value, ATTLAWARE, on SSLTYPE parameter.
QUERY CHANNEL	NEW

Table 253. Changes to EXEC CICS commands in CICS TS 5.3 (continued)

API	CICS TS 5.3
REQUEST ENCRYPTPTKT	NEW SERVICE CHANGED (APAR PI60604): <ul style="list-style-type: none"> • New INVREQ with RESP2 value 257, which indicates that the associated kerberos token originated from a system that does not support message confidentiality. • New NOTAUTH with RESP2 value 260, which indicates that the external security manager does not authorize a request to generate a PassTicket for this region.
REQUEST PASSTICKET	NEW
READQ TD	CHANGED: The LENGERR condition is raised if an application specifies a negative LENGTH value.
SIGNON TOKEN	NEW
TRANSFORM DATATOJSON	SERVICE NEW (APAR PI54841): to convert application data to JSON.
TRANSFORM JSONTODATA	SERVICE NEW (APAR PI54841): to convert JSON to application data.
VERIFY PASSWORD	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PH23078: New NOTAUTH with RESP2 value of 1, indicating that the PASSWORD field is blank. • APAR PH31270: New NOTAUTH with RESP2 value of 17, indicating that the USERID is not authorized to use the application.
VERIFY PHRASE	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PH23078: New NOTAUTH with RESP2 value of 1, indicating that the PHRASE field is blank. • APAR PH31270: New NOTAUTH with RESP2 value of 17, indicating that the USERID is not authorized to use the application.
VERIFY TOKEN	CHANGED: ENCRYPTOKEN parameter returns a 4-byte encryption token when the TOKENTYPE is KERBEROS. SERVICE CHANGED (APAR PI56774): New options, OUTTOKEN and OUTTOKENLEN, are available.
WEB CONVERSE	CHANGED: New INVREQ with RESP2 value of 157, which indicates that CICS is unable to process an HTTP response because the HTTP headers in the response are longer than 4k.
WEB RECEIVE (Client)	CHANGED: New INVREQ with RESP2 value of 157, which indicates that CICS is unable to process an HTTP response because the HTTP headers in the response are longer than 4k.
WRITE	CHANGED: A CICS message is issued when an EXEC CICS WRITE command is issued to a shared data table fails because the data table is full.
WRITE OPERATOR	THREADSAFE
XCTL	CHANGED: New INVREQ with RESP2 value 32, which indicates that an XCTL command was issued from a program that would invoke an Enterprise Java application in a Liberty JVM server. This operation is not supported.

Changes to JCICS API

Table 254. Changes to JCICS API in CICS TS 5.3

Class/Interface	Method	CICS TS 5.3
AbendError		DEPRECATED
Channel	delete()	NEW: to delete a channel
Channel	getContainerCount()	NEW: to query a channel
Document	Document(byte[] docToken)	NEW CONSTRUCTOR: docToken, to use a document that was created in a COBOL program
CICSTransaction Runnable	getTranid()	NEW: allows a user to signify that the Runnable work should be run under a CICS transaction id of choice, rather than the default transaction id.
CICSTransaction Callable	getTranid()	NEW: allows a user to indicate that the Callable work should be run under a CICS transaction id of choice, rather than the default transaction id.
Program	xctl() xctl(byte[] CA) xctl(Channel chan)	REMOVED
UnknownCicsError		DEPRECATED

Changes to resource definitions

Table 255. Changes to resource definitions and resource groups in CICS TS 5.3	
Resource	CICS TS 5.3
DFHCSDUP COPY	NEW: to copy a single resource definition from one group to another
DFHCSDUP LIST	CHANGED: shows the maintenance level of the CSD
DB2CONN resources	SERVICE CHANGED (APAR PI98569): A command thread is now used by CICS when CICS attempts to cancel a Db2 thread as part of purge or forcepurge processing of a CICS task.
FILE resources	REMOVED: PASSWORD attribute is obsolete.
PACKAGESET resources	NEW: CICS application resource which represents a Db2 collection.
TCPIPSERVICE resources	CHANGED: ATTLAWARE option added to the SSLTYPE parameter.

Table 255. Changes to resource definitions and resource groups in CICS TS 5.3	
Resource group	This release
DFHDB2	CHANGED: Program DFHD2SPS added as part of PACKAGESET support.
DFHJAVA	CHANGED: New transaction CJSU
DFHSIGN	CHANGED: Program DFHSFP is changed from RESIDENT(YES) to RESIDENT(NO).

Table 256. Changes to compatibility groups in CICS TS 5.3	
Group	CICS TS 5.3
DFHCOMPH	NEW GROUP with APAR

Changes to CICS utilities

Table 257. Changes to CICS-supplied utilities in CICS TS 5.3	
Utility	CICS TS 5.3
DFHCSDUP	CHANGED: <ul style="list-style-type: none"> Report data sets produced by the LIST function of DFHCSDUP now include release information for the CSD New options: BEFORE and AFTER on ADD, resource type on COPY New command, COPY, to copy a single resource definition from one group to another.
Dump utilities (DFHDU 700 and DFHPD 700)	CHANGED: the name of the dump formatting utility changes every release in line with the level number for CICS. For this release, its name is DFHPD700.
CICS trace utility program, DFHTU 700	CHANGED: the name of the trace formatting utility changes every release in line with the level number for CICS. For this release, its name is DFHPDU700.
The DFH0IPCC migration utility	CHANGED: creates USERAUTH attribute on the IPCONN definition if a CONNECTION has ATTACHSEC values of LOCAL, IDENTIFY, or VERIFY.
DFHDPLOY	NEW: provides a set of commands that can be used in a script to deploy, undeploy, and set the state of CICS applications and CICS bundles.
EYU9XENF	CHANGED: shows the job ID or task ID or each connection to the ESSS, and the level of the ESSS program.

Changes to CICS assistants

Table 258. Changes to the CICS web services assistants, XML assistants, and JSON assistants in CICS TS 5.3	
Assistant	CICS TS 5.3
All	SERVICE NEW with APAR PI67641: Support for mapping level 4.1
DFHJS2LS	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> APAR PI57467. New option, HYPHENS-AS-UNDERSCORES, on MAPPING-OVERRIDES. APAR PI47466. New option, FULL, on WIDE-COMP3. APAR PI74752. New option DATA-SCREENING
DFHLS2JS	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> APAR PI74752. New option DATA-SCREENING APAR PI95139. New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES

Table 258. Changes to the CICS web services assistants, XML assistants, and JSON assistants in CICS TS 5.3 (continued)

Assistant	CICS TS 5.3
DFHLS2SC	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PI74752. New option DATA-SCREENING • APAR PI95139. New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES
DFHLS2WS	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PI74752. New option DATA-SCREENING • APAR PI95139. New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES
DFHSC2LS	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PI57467. New option, HYPHENS-AS-UNDERSCORES, on MAPPING-OVERRIDES. • APAR PI47466. New option, FULL, on WIDE-COMP3. • APAR PI74752. New option DATA-SCREENING
DFHWS2LS	SERVICE CHANGED with APAR: <ul style="list-style-type: none"> • APAR PI57467. New option, HYPHENS-AS-UNDERSCORES, on MAPPING-OVERRIDES. • APAR PI47466. New option, FULL, on WIDE-COMP3. • APAR PI74752. New option DATA-SCREENING

Changes to messages and codes

Table 259. Changes to messages and codes in CICS TS 5.3

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHAM4961 indicates that the installation of a JVM server has failed because the PROFILEDIR was too long. • DFHAP0006 indicates that an abend occurred at offset X. The module, application, version, and platform details are included. • DFHCA4961 indicates that the installation of the JVMSERVER resource failed because the PROFILEDIR specified is too long. 	<ul style="list-style-type: none"> • SERVICE DFH5275 (with APAR PI82179) is issued as a warning instead of an error. Its severity indicator is changed from E to W. • SERVICE DFHAM4865S • SERVICE DFHCA4865S 	<ul style="list-style-type: none"> • DFH7006, because the integrated translator can now be used with EXCI programs written in PL/I.

Table 259. Changes to messages and codes in CICS TS 5.3 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHDB2080 indicates that an abend has occurred in the set packageset program DFHD2SPS. • DFHDB2083 indicates that the set packageset program DFHD2SPS is disabled. • DFHDB2084 indicates that a link to the set packageset program DFHD2SPS failed. • DFHDB2087 indicates that a resource definition for the set packageset program DFHD2SPS was not found. • DFHDB2088 indicates that a fetch for the set packageset program DFHD2SPS failed. • DFHDB2089 indicates that the CICS-DB2® set packageset program issued an EXEC SQL SET CURRENT PACKAGESET command, which failed with an SQL code. • DFHDB8300 indicates that a CICS bundle has failed to install the PACKAGESET. • DFHDB8301 indicates that a CICS bundle has failed to install a PACKAGESET because the resource name was not specified or is more than 128 characters in length. • DFHDB8302 indicates that an abnormal end (abend) or program check has occurred in a module. This implies that there may be an error in the CICS code. Alternatively, unexpected data was input, or storage was overwritten. • DFHDB8303 indicates that a CICS bundle has successfully installed a named PACKAGESET on a named platform, as either enabled or disabled. • DFHDB8304 indicates that a CICS bundle has successfully installed the named PACKAGESET of a named application, version, and platform, as either enabled or disabled. • DFHDB8305 indicates that the named PACKAGESET on a named platform was enabled or disabled. • DFHDB8306 indicates that the named PACKAGESET of a named application, version, and platform was enabled or disabled. • DFHDB8307 indicates that the PACKAGESET on the named platform was discarded. • DFHDB8308 indicates that the PACKAGESET of the named application, version, and platform was discarded. • DFHDB8309 indicates that the CICS bundle has failed to install one PACKAGESET because another PACKAGESET is already installed on the platform. Only one PACKAGESET can be installed on a platform. • DFHDB8310 indicates that the CICS bundle failed to install one PACKAGESET because another PACKAGESET is already installed for the application, version, and platform. Only one PACKAGESET can be installed as part of an application. • DFHDB8311 indicates that the CICS bundle has failed to install a PACKAGESET. 	<ul style="list-style-type: none"> • DFHDB2003 now indicates which DB2 subsystem is already connected to. • DFHEC1013 now includes optional inserts when the value specified for the CICSEPSchemaVersion or CICSEPSchemaRelease attribute is invalid. • DFHEP2003 now includes optional inserts for when the value specified for the CICSEPSchemaVersion or CICSEPSchemaRelease attribute is invalid. • DFHEP2007 now includes optional inserts for when the value specified for the CICSEPSchemaVersion or CICSEPSchemaRelease attribute is invalid. 	

Table 259. Changes to messages and codes in CICS TS 5.3 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHFC0432 indicates that a data table request for a given file has failed because the table is full. The reason for it being full is included. Previously, this information was returned only on a NOSPACE condition on EXEC CICS WRITE. • DFHFC6044 indicates that a file in a bundle has moved to disabled status. • SERVICE DFHFC6045 (APAR PI97207) indicates that an invalid interval value was specified for transaction CFCT. • SERVICE DFHFC6046 (APAR PI97207) indicates that CICS has detected that a VSAM file that is defined with the LOGREPLICATE attribute was opened. • SERVICE DFHH0001 (with APAR PI76965) indicates that potential security issues were identified in the access to the CEDA transaction. • SERVICE DFHH0002 (with APAR PI76965) indicates that potential security issues were identified in the configuration of the spool. • SERVICE DFHH0003 (with APAR PI76965) indicates that potential security issues were identified in the configuration of TDQs that are defined to the internal reader. • SERVICE DFHH0200 (with APAR PI76965) indicates that CICS health checker rules cannot run because of an error. • SERVICE DFHH0301 (with APAR PI76965) indicates that no potential security issues were identified in the configuration of CEDA. • SERVICE DFHH0302 (with APAR PI76965) indicates no potential security issues were identified in the configuration of the spool. • SERVICE DFHH0303 (with APAR PI76965) indicates that no potential security issues were identified in the configuration of TDQs that are defined to the internal reader. • DFHKE0108 and DFHKE0109 indicate that CICS detected hardware earlier than IBM z9[®] during initialization. CICS initialization stops. • DFHLD0110 indicates a mismatch between the CICS release being started during initialization and the release of the CICS nucleus modules. CICS initialization stops. • DFHLD0519 indicates that the installation of LIBRARY failed because a LIBRARY of that name is already installed. The LIBRARY name is included. • SERVICE DFHMP2018 (with APAR PI88500) indicates that an invalid name or value was specified for a static data item in a policy rule. • DFHMP3007 and DFHMP3008 indicate that the task for operation of application version on platform exceeded a policy threshold. Details are included for transaction ID, operation, application, version, platform, bundle ID, policy name, rule name, rule type, category, threshold, and current count. • SERVICE DFHMP2018 • SERVICE DFHMP3009 • SERVICE DFHMP3010 • SERVICE DFHMP3011 • SERVICE DFHMP3012 	<ul style="list-style-type: none"> • DFHFC0952 has a formatting change, which might require an update to programs that read this CICS message. • DFHMP2003 now includes an optional insert when the length of the policy name is invalid. • DFHMP2004 now includes optional inserts if the value specified for the policySchemaVersion or policySchemaRelease attribute is invalid. • SERVICE DFHMP2006 (with APAR PI88500) is issued also if an event name contains invalid characters. 	

Table 259. Changes to messages and codes in CICS TS 5.3 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHM0245 indicates that the CICS-MQ Adapter is already active. • DFHM0793 indicates that you can check for associated messages to determine whether the WebSphere MQ message was reprocessed or moved to another queue. Previous messages might explain why the remote system could not commit. • DFHPG0114 indicates that an application entry point for operation was set because PROGRAM was replaced or deleted. • DFHPG0313 indicates that a PROGRAM was made unavailable as an application entry point for operation. • DFHPG0314 indicates an application entry point for an operation was disassociated with a PROGRAM. • DFHPG0503 indicates that the public version of the application entry point program for operation of the application has changed to a different version on a different platform. This supersedes the previous version on a previous platform. • SERVICE DFHRM0240 (APAR PH03691) indicates the local log name that is set during CICS initialization and sent to a remote system when CICS establishes an APPC or IRC connection. • SERVICE DFHRM0241 (APAR PH03691) indicates a log name that has been set for an APPC or IRC connection. • SERVICE DFHRM0242 (APAR PH03691) indicates a log name that has been deleted for an APPC or IRC connection. • SERVICE DFHSI1591 (APAR PI97207) indicates that an attempt to attach transaction CFCT failed and that CICS is terminated with a dump. 	<ul style="list-style-type: none"> • SERVICE DFHM0331I • SERVICE DFHM0334I • DFHPG0113 now returns more information about the status of the application entry point. The application entry point can be set as disabled and unavailable, or disabled. The program that was adopted by the application as a program entry point can be either replaced or deleted. • DFHPI0997 now identifies the web service that is in error. You can now use the message to identify which web service timed out, particularly when multiple services are defined in the requester pipeline. 	

Table 259. Changes to messages and codes in CICS TS 5.3 (continued)

New messages	Changed messages	Removed messages
<ul style="list-style-type: none"> • DFHSJ1107 indicates that a specific version of a bundle was enabled or disabled. • DFHSJ1108 indicates that an attempt to install a bundle into a jvmserver failed. • DFHSJ1109 indicates that an attempt to determine the highest semantic version of a bundle failed while processing a SET BUNDLE PHASEIN command. • DFHSJ1110 indicates that the phase in of a new version of a bundle completed successfully. • SERVICE DFHSJ1204 (with APAR PI63005) indicates that while installing an application in a Liberty JVM server, CICS registered a linkable service. • SERVICE DFHSJ1205 (with APAR PI63005) indicates that while installing an application in a Liberty JVM server, CICS did not register a linkable service because the same program name as another linkable service was specified. • SERVICE DFHSJ1206 (with APAR PI63005) indicates an attempt to link to an application in a Liberty JVM server failed and provides a reason code. • SERVICE DFHSJ1207 (with APAR PI63005) indicates an attempt to link to a program in a Liberty JVM server failed because no linkable service is defined for this program name. • SERVICE DFHSJ1208 (with APAR PI63005, changed with APAR PI86767) indicates that while installing an application in a Liberty JVM server, an existing PROGRAM definition is installed for the program that is not suitable for use with a linkable service, and indicates the reason why. • DFHSM0121 indicates that the RENTPGM parameter is set to PROTECT and, as a result, reentrant programs are loaded into read-only storage. Previously, a message was issued only if RENTPGM is set to NOPROTECT. • DFHS00147 indicates the TCP/IP listener task has received a connection from a client that is not secure. The TCPIPSERVICE is defined with SSL(ATTLSAWARE) so new connections must be secured by AT-TLS. • DFHSR0002 indicates that an abend occurred at offset X. The module, application, version and platform details are included. • SERVICE DFHTF0200 (with APAR PI54386) indicates that the 3270 datastream received from a terminal emulator client attempted to override a protected field. 	<ul style="list-style-type: none"> • DFHSJ0911 now returns an error in creating a JVM server if the PROFILEDIR is over the maximum length of 240 characters. • SERVICE DFHSJ1007 (with APAR PH12280) is updated to reflect changed system action when CICS detects that an abend has left a JVM in an inconsistent state. • DFHSJ1104 now specifies whether the OSGi bundle has not been installed or if it has not been enabled. • DFHSJ1105 now includes the bundle version. • SERVICE DFHSJ1208 <ul style="list-style-type: none"> • SERVICE DFHS00123 <ul style="list-style-type: none"> • SERVICE DFHTF0200 (APAR PH25397) has been updated to explain how to correctly process the decimal field position that is returned with the message. 	

Table 259. Changes to messages and codes in CICS TS 5.3 (continued)

New messages	Changed messages	Removed messages
<p>Four new messages show the status of CICS internal trace and GTF trace. These messages are shown whether the trace is stopped and started through system initialization parameter (INTTR and GTFTR), transaction (CETR and CEMT), or EXEC CICS command.</p> <ul style="list-style-type: none"> • DFHTR0130 indicates that internal trace is being started. DFHTR0140 GTF trace is being started. DFHTR0141 GTF trace was stopped. • DFHTR0131 indicates that internal trace was stopped. • DFHTR0140 indicates that GTF trace is being started. • DFHTR0141 indicates that GTF trace was stopped. • DFHTR3004 indicates that the auxiliary trace print program, DFHTU700, could not obtain the necessary storage to generate the trace summary table. The print job continues, but the trace summary table is not produced. • DFHWB0804 • DFHWB0805 • DFHWB0806 indicates that an application entry point for an operation was associated or disassociated with a URIMAP, and now includes the operation name as an insert. • DFHWB0807 • DFHWB0808 • DFHWB0809 indicates that an application entry point for an operation was associated or disassociated with a URIMAP. • DFHWB0810 indicates that a URIMAP was made available or unavailable as an application entry point for an operation. • DFHWB1580 • DFHWB1581 indicates that an application entry point for the operation of an application was set disabled and unavailable because URIMAP was deleted. The version and platform names are included. • DFHWB1582 indicates that an application entry point for the operation was set disabled and unavailable because URIMAP was deleted. 		

Table 259. Changes to messages and codes in CICS TS 5.3 (continued)

New messages	Changed messages	Removed messages
<p>A number of messages provide information about using transactions as application entry points:</p> <ul style="list-style-type: none"> • DFHXM0604 indicates that the specified application has set a transaction as an entry point because the resource is already defined as an entry point. • DFHXM0605 indicates that the specified application has set a transaction as an application entry point. • DFHXM0606 indicates that the application has removed the entry point from the transaction. • DFHXM0607 indicates that the transaction resource name is invalid. • DFHXM0608 indicates the availability status of a transaction after a change to an application entry point. • DFHXM0609 indicates that an application has changed the availability status of a transaction application entry point. • DFHXM0610 indicates that an application has changed the association of an application entry point from an application with a specified transaction. • DFHXM0611 indicates that an application entry point is unavailable because the specified transaction was deleted. • DFHXS1206 indicates the number of invalid attempts that preceded input of a valid password. The count of password failures is reset and CICS continues. • DFHXS1500 indicates that a PassTicket request failed because the request was not authorized by the external security manager. • SERVICE EYUBM0349W (APAR PH00907) indicates that the specified resource definition for the named CICSplex cannot be found in the data repository. • SERVICE EYUCP0208E (APAR PH17586) indicates that the delete and re-add of a CMAS failed. • SERVICE EYUXC0026S • SERVICE EYUXC0027I • SERVICE EYUXE0038I • SERVICE EYUXE0039I • SERVICE EYUXE0040I • SERVICE EYUXE0041I • SERVICE EYUXE0042I • SERVICE EYUXE0043E • SERVICE EYUXE0044E • SERVICE EYUXE0045I • SERVICE EYUXE0046E • SERVICE EYUXE0047E 	<ul style="list-style-type: none"> • SERVICE EYUXE0023E • EYUXL0905E now includes service level and prefix information. 	

Table 260. Changes to abend codes in CICS TS 5.3

New abend codes	Changed abend codes	Removed abend codes
<ul style="list-style-type: none"> • SERVICE ABSX (APAR PI54386) occurs when CICS detects that a BMS protected field was updated by the client. • AD31 occurs if an unexpected EXCEPTION response occurred on a local call to a directory manager (DD) domain to locate a PACKAGESET control block. • AD32 occurs when an error (INVALID or DISASTER response) has occurred on a local call to a directory manager (DD) domain to locate a PACKAGESET control block. • AD33 • AD35 occurs when the CICS-DB2 attachment facility fails to link to the set packageset program DFHD2SPS because it is disabled. • AD36 occurs when the CICS-DB2 attachment facility fails to link to the set packagset program DFHD2SPS because no program definition was found. • AD37 occurs when the CICS-DB2 attachment facility fails to link to the set packagset program DFHD2SPS because the program could not be loaded. • AD38 occurs when the CICS-DB2 attachment facility fails to link to the set packagset program DFHD2SPS because the program is defined as remote. • AD39 occurs when the CICS-DB2 attachment facility fails to link to the set packagset program DFHD2SPS. • AD4A occurs when the CICS-DB2 set packageset program issues a EXEC SQL SET CURRENT PACKAGESET command fail. • SERVICE AMPC • SERVICE AMPD • AWBD occurs if a web receive either received an exception response, or failed to authenticate the user. 		

Changes to installing

- CICS checks during initialization for the required level of hardware.
- CICS checks during initialization that no CICS nucleus module comes from an earlier release than the release that is currently being started. This has an impact if you are using IBM HourGlass see [DFHLD0110](#) during CICS TS 5.3 initialization when using HourGlass.
- You can place CICS DFHRPL libraries, such as SDFHLOAD, and dynamic program LIBRARY concatenations in the EAS of an EAV DASD volume.

Changes to security

Table 261. Changes to security in CICS TS 5.3

Area	CICS TS 5.3
TLS	<ul style="list-style-type: none"> • MINTLSLEVEL system initialization parameter: NEW • AT-TLS AWARE for inbound: NEW • SNI support in CICS TS communications with an HTTP server over TLS connections: NEW with APAR PH20063
PassTickets	<ul style="list-style-type: none"> • REQUEST PASSTICKET: NEW • XPKT system initialization parameter: NEW with APAR PI60653

Table 261. Changes to security in CICS TS 5.3 (continued)

Area	CICS TS 5.3
Kerberos	<ul style="list-style-type: none"> SIGNON for Kerberos: NEW KERBEROSUSER system initialization parameter: NEW with APAR PI85443 Kerberos mutual authentication: NEW with APAR PI56774
Other authentication changes	<ul style="list-style-type: none"> RACF KFDAES Support (R_Password): NEW
Performance	<ul style="list-style-type: none"> Preset user ID on a terminal can share ACEE: NEW with APAR PI85452
Audit	<ul style="list-style-type: none"> Support for IBM Health Checker for z/OS: NEW with APAR PI76965 DFHXS1206 has the number of invalid password attempts: NEW HTTPSERVERHDR system initialization parameter: NEW HTTPUSRAGENTHDR system initialization parameter: NEW
Enhanced protection	<ul style="list-style-type: none"> CICS BMS 3270 intrusion detection service: NEW with APAR PI51499
Customization	<ul style="list-style-type: none"> UEPSGTYP parameter passed to XSNON exit: NEW
Liberty	<ul style="list-style-type: none"> LDAP User Registry ldapRegistry-3.0: NEW cicsts:distributedIdentity-1.0: NEW oauth-2.0: NEW with APAR PI91554 JWT and OpenID Connect: NEW with APAR PI91554 Using the syncToOSThread function: NEW
Obsolete security-related options	<ul style="list-style-type: none"> ENCRYPTION system initialization parameter: DEPRECATED PASSWORD option on FILE definitions: REMOVED EXCI SURROGCHK option: REMOVED with APAR PH09898 Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility. HTTP TRACE: REMOVED

Changes to RACF classes

Table 262. Changes to RACF classes related to CICS user IDs in CICS TS 5.3

User ID	CICS TS 5.3
KERBEROSUSER	NEW with APAR PI85443

Table 263. Changes to other RACF classes in CICS TS 5.3

Class	Profile	CICS TS 5.3
PTKTDATA	IRRPTAUTH.applid.userid	NEW with APAR: PI60653
SURROGAT	userid.DFHEXCI	NEW with APAR: PH09898

Changes to CICS support for application programming languages

CICS TS 5.3 supports:

- **High Level Assembler for MVS and VM and VSE V1.6 and later**
5696-234
- **Enterprise COBOL for z/OS**
Versions 6.1, 6.2 and 6.3, 5655-EC6
Versions 5.1 and 5.2, 5655-W32
Version 4.2, 5655-S71
- **z/OS V2.1/V2.2/V2.3 XL C/C++**
5655-121, Optional feature of z/OS
- **z/OS V1.10/V1.11/V1.12/V1.13 XL C/C++**
5694-A01, Optional feature of z/OS

- **IBM 64-bit SDK for z/OS, Java Technology Edition**
Version 8, 5655-DGH
Version 7 Release 1, 5644-W44
Version 7, 5644-W44
- **Enterprise PL/I for z/OS**
Versions 5.1, 5.2, and 5.3, 5655-PL5
Version 4.5, 5655-W67
- **REXX/CICS**

Table 264. Changes to the CICS translator in CICS TS 5.3

Procedure	CICS TS 5.3
DFHZXTCL	NEW: Translates, compiles, and link-edits EXCI COBOL application programs using the integrated CICS translator.
DFHZXTDL	NEW: Translates, compiles, and link-edits EXCI C application programs using the integrated CICS translator.
DFHZXTEL	NEW: Translates, compiles, and link-edits EXCI C++ application programs using the integrated CICS translator.
DFHZXTPL	NEW: Translates, compiles, and link-edits EXCI PL/I application programs using the integrated CICS translator.

Changes to SIT parameters

Table 265. Changes to system initialization parameters in CICS TS 5.3

SIT	CICS TS 5.3
ENCRYPTION	DEPRECATED: Replaced by MINTLSLEVEL, although ENCRYPTION remains available for compatibility with previous releases. REMOVED OPTION: SSLV3
HTTPSERVERHDR	NEW: Sets the value for HTTP Server field
HTTPUSRAGENTHDR	NEW: Sets the value for HTTP User-Agent field
KERBEROSUSER	SERVICE NEW (APAR PI85443): Specifies the user ID associated with the Kerberos service principal for the CICS region. The default is the region user ID.
MINTLSLEVEL	NEW: Replaces ENCRYPTION. NEW OPTION with APAR: TLS100ONLY
NQRNL	NEW: Specifies that z/OS global resource serialization uses RNL processing for enqueue and dequeue requests from CICS.
SNPRESET	SERVICE NEW (APAR PI85452): Allows userid terminals that are associated with the same user ID to share a single ACEE.
SOTUNING	NEW: Controls the performance tuning for HTTP connections.
STGPROT	CHANGED: The default is changed to YES.
TRTABSZ	CHANGED: The default is increased to 12MB.
ENCRYPTOKEN	CHANGED: ENCRYPTOKEN parameter returns a 4-byte encryption token when the TOKENTYPE is KERBEROS.
XPTKT	SERVICE NEW (APAR PI60604): Instructs CICS to perform a RACF check before it generates a PassTicket. The default is NO.

Changes to JVM profiles

Table 266. Changes to JVM profiles in CICS TS 5.3

Option	CICS TS 5.3
<u>_DFH_UMASK</u>	NEW: Compatible with all types including the classpath JVM server
<u>CICS_WLP_MODE</u>	SERVICE NEW (APAR PI58375): Compatible with Liberty JVM server Choose the level of integration between CICS and Liberty.

Table 266. Changes to JVM profiles in CICS TS 5.3 (continued)	
Option	CICS TS 5.3
com.ibm.cics.jvmserver.unclassified.tranid	NEW compatible with: Liberty JVM server and OSGi JVM server Can be used to change the default transaction used for unclassified work run in a JVM server.
com.ibm.cics.jvmserver.unclassified.userid	NEW compatible with: Liberty JVM server and OSGi JVM server Can be used to change the default userid under which unclassified work is run in a JVM server.
com.ibm.cics.jvmserver.wlp.defaultapp	NEW: Instructs CICS to install a default application which can be used to verify that the server has installed and started correctly.
com.ibm.cics.jvmserver.wlp.jta.integration	NEW: Enables CICS JTA integration with Liberty, when Liberty JTA transactions are present.
com.ibm.cics.jvmserver.wlp.optimize.static.resources.extra	NEW: If <code>com.ibm.cics.jvmserver.wlp.optimize.static.resources=true</code> , then you can provide a custom list of extra static resources for optimization.
DISPLAY_JAVA_VERSION	CHANGED: This option now defaults to true.
JVMTRACE	CHANGED: default location changed from WORK_DIR to WORK_DIR/applid/jvmserver unless LOG_PATH_COMPATIBILITY=true
LOG_FILES_MAX	NEW: Allows you to specify how many JVM server log files should be retained in the USS filing system
LOG_PATH_COMPATIBILITY	NEW: The default value for this behavior is LOG_PATH_COMPATIBILITY=false which provides a consolidated log output behavior. When LOG_PATH_COMPATIBILITY=true , the JVMSERVER will revert to previous release behavior, which is not to consolidate log output.
OSGI_CONSOLE	NEW: adds the JARs necessary to attach and run an OSGi console to your OSGi framework in the JVMSERVER
PURGE_ESCALATION_TIMEOUT	SERVICE NEW (APAR PH12280), compatible with: All JVM Environments New JVM server option to specify the interval between the disable actions that CICS performs when a JVM server encounters a TCB failure.
STDOUT	CHANGED: default location changed from WORK_DIR to WORK_DIR/applid/jvmserver unless LOG_PATH_COMPATIBILITY=true
STDERR	CHANGED: default location changed from WORK_DIR to WORK_DIR/applid/jvmserver unless LOG_PATH_COMPATIBILITY=true
TZ	CHANGED: TZ setting is now respected for JVMSERVER timestamped files

Changes to control tables

Table 267. Changes to control tables in CICS TS 5.3	
Control table	CICS TS 5.3
DFHMCT TYPE=INITIAL	CHANGED: TSQUEUE option includes information about requests to shared temporary storage queues.
DFHMCT TYPE=RECORD	CHANGED: allows for the new DFHTEMP fields to count TS queue requests.
DFHXCOPT	SERVICE CHANGED with APAR: The EXCI SURROGCHK parameter has been removed. Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.

Changes to CICS SPI

Table 268. Changes to the system programming interface commands in CICS TS 5.3	
Command	CICS TS 5.3
<u>INQUIRE DISPATCHER</u>	OBsolete: ACTJVMTCBS and MAXJVMTCBS options
<u>INQUIRE ENQMODEL</u>	THREADSAFE
<u>INQUIRE EPADAPTER</u>	SERVICE CHANGED (APAR PI55134): New CVDA, DSIE on DATAFORMAT option.
<u>INQUIRE IPCONN</u>	CHANGED: The value in the PARTNER option on the INQUIRE IPCONN command is affected by the new system initialization parameter, HTTPUSRAGENTHDR.
<u>INQUIRE JOURNALMODEL</u>	THREADSAFE

Table 268. Changes to the system programming interface commands in CICS TS 5.3 (continued)

Command	CICS TS 5.3
<u>INQUIRE JOURNALNAME</u>	THREADSAFE
<u>INQUIRE JVMSERVER</u>	CHANGED: when running INQUIRE JVMSERVER on a JVM server with an instance of Liberty inside it, the baseline level of current thread count will not be 0, even if no threads are running. This is because threads are now pooled within Liberty for efficiency.
<u>INQUIRE PROGRAM</u>	SERVICE CHANGED (APAR PI63005): New CVDA value DYNAMIC on the CHANGEAGENT and INSTALLAGENT options, which indicates that the program was changed or installed due to an @CICSProgram annotation in a Liberty application
<u>INQUIRE REQID</u>	CHANGED: INTERVAL and TIME options are no longer mutually exclusive.
<u>INQUIRE RRMS</u>	THREADSAFE
<u>INQUIRE STORAGE</u>	THREADSAFE
<u>INQUIRE STREAMNAME</u>	THREADSAFE
<u>INQUIRE SUBPOOL</u>	THREADSAFE
<u>INQUIRE SYSTEM</u>	CHANGED: New value on CICSTSLEVEL to reflect latest version, release, or modification number. New value on RELEASE to reflect latest level of CICS code.
<u>INQUIRE TASK</u>	THREADSAFE
<u>INQUIRE TASK LIST</u>	THREADSAFE
<u>INQUIRE TCLASS</u>	THREADSAFE
<u>INQUIRE TCPIP</u>	THREADSAFE
<u>INQUIRE TCPIPSERVICE</u>	THREADSAFE
<u>INQUIRE TDQUEUE</u>	THREADSAFE
<u>INQUIRE TRANCLASS</u>	THREADSAFE
<u>INQUIRE TRANSACTION</u>	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM
<u>INQUIRE TSMODEL</u>	THREADSAFE
<u>INQUIRE TSPool</u>	THREADSAFE
<u>INQUIRE TSQUEUE/TSQNAME</u>	THREADSAFE
<u>INQUIRE UOW</u>	THREADSAFE
<u>INQUIRE UOWENQ</u>	THREADSAFE
<u>INQUIRE WEB</u>	THREADSAFE
<u>DISCARD ENQMODEL</u>	THREADSAFE
<u>DISCARD JOURNALMODEL</u>	THREADSAFE
<u>DISCARD JOURNALNAME</u>	THREADSAFE
<u>DISCARD TCPIPSERVICE</u>	THREADSAFE
<u>DISCARD TDQUEUE</u>	THREADSAFE
<u>DISCARD TRANSCCLASS</u>	THREADSAFE
<u>DISCARD TSMODEL</u>	THREADSAFE
<u>PERFORM SECURITY REBUILD</u>	THREADSAFE
<u>PERFORM SSL REBUILD</u>	THREADSAFE
<u>PERFORM STATISTICS RECORD</u>	OBSOLETE: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL options
<u>SET BUNDLE</u>	NEW: new COPY option to register a new version of an OSGi bundle with the OSGi framework to replace any version currently registered.
<u>SET BUNDLE PHASEIN</u>	CHANGED: New option: COPY
<u>SET DISPATCHER</u>	OBSOLETE: ACTJVMTCBS and MAXJVMTCBS options
<u>SET ENQMODEL</u>	THREADSAFE
<u>SET JOURNALNAME</u>	THREADSAFE

Table 268. Changes to the system programming interface commands in CICS TS 5.3 (continued)

Command	CICS TS 5.3
<u>SET TCLASS</u>	THREADSAFE
<u>SET TASK</u>	SERVICE CHANGED (APAR PI98569): CICS processing of a task purge is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.
<u>SET TCPIP</u>	THREADSAFE
<u>SET TCPIPSERVICE</u>	THREADSAFE
<u>SET TDQUEUE</u>	THREADSAFE
<u>SET TRANCLASS</u>	THREADSAFE
<u>SET TSQUEUE</u>	THREADSAFE
<u>SET UOW</u>	THREADSAFE
<u>SET WEB</u>	THREADSAFE

Changes to CICS-supplied transactions

Table 269. Changes to CICS-supplied transactions in CICS TS 5.3

Transaction	Security Category	CICS TS 5.3
CEMT	2	<ul style="list-style-type: none"> • SERVICE CHANGED (APAR PI55134): Support for DSIE XML format added to the CEMT INQUIRE EPADAPTER command. • CHANGED: New options added to the CEMT INQUIRE TRANSACTION command: APPLICATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER, OPERATION, PLATFORM, AVAILSTATUS • SERVICE CHANGED (APAR PI63005): The CMET INQUIRE PROGRAM command supports a new CVDA value, DYNAMIC on the CHANGEAGENT and INSTALLAGENT options, which indicates that the program was changed or installed due to an @CICSProgram annotation in a Liberty application. • CHANGED: New option PHASEIN added to CEMT SET BUNDLE. • SERVICE CHANGED (APAR PI98569): CEMENT SET TASK has been enhanced as follows: CICS processing of a task purge is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.
CFCT	1	SERVICE NEW (APAR PI97207): Provides tie-up records for VSAM files to a replication log at specified intervals.
CHCK	1	SERVICE NEW (APAR PI76965): Health Checker long running system task
CMPE	1	SERVICE NEW (APAR PI83667): Policy deferred rule evaluation task

Changes to CICS monitoring

Table 270. Changes to monitoring data in CICS TS 5.3

Data	CICS TS 5.3
Performance data in group DFHCICS	NEW: new field, NCGETCT, to count the number of EXEC CICS GET COUNTER and GET DCOUNTER requests issued by a task.
Performance data in group DFHTASK	<p>NEW: new field 429, DSAPHTWT, for the dispatcher to allocate pthread wait time.</p> <p>NEW: new fields to count the number of TS GET and TSS PUT requests issued by a user task</p> <p>CHANGED: field 044 (TSGETCT) counts the number of TS GET requests to either auxiliary or main temporary storage. Field 092 (TSTOTCT) includes the number of requests to shared TS queues, as counted in fields TSGETSCT (READQ shared) and TSPUTSCT (WRITEQ shared).</p>
Performance data in group DFHTEMP	<p>NEW FIELDS: TSGETSCT, TSPUTSCT</p> <p>CHANGED: TSTOTCT includes the count for the new TSGETSCT and TSPUTSCT fields.</p>

Table 270. Changes to monitoring data in CICS TS 5.3 (continued)

Data	CICS TS 5.3
Transaction resource class data	<p>CHANGED:</p> <ul style="list-style-type: none"> • All TS queues: The length of the transaction resource record is extended by 120 bytes for each TS queue. • MNR_TSQUEUE_GET, MNR_TSQUEUE_PUT and MNR_TSQUEUE_PUT_AUXQ: No longer count the number of GET and PUT requests to a shared TS queue. This is now done in the new fields MNR_TSQUEUE_GET_SHR and MNR_TSQUEUE_PUT_SHR. • MNR_TSQUEUE_GET_ITEML, MNR_TSQUEUE_PUT_ITEML and MNR_TSQUEUE_PUT_ITEML: No longer include the length of items written to a shared TS queue. This is now done in the new fields MNR_TSQUEUE_GET_SHR_ITEML and MNR_TSQUEUE_PUT_SHR_ITEML. • NEW FIELDS: MNR_TSQUEUE_GET_SHR, MNR_TSQUEUE_PUT_SHR, MNR_TSQUEUE_GET_SHR_ITEML and MNR_TSQUEUE_PUT_SHR_ITEML to count the number of TS GET and TS PUT requests issued by a user task, and to count the total length of all items got from, or written to, this shared TS queue.

Changes to statistics

Table 271. Changes to statistics in CICS TS 5.3

Statistics	CICS TS 5.3
Monitoring domain: global statistics	NEW FIELDS: MNGCPUT, MNGTONCP, and MNGOFLCP, to show the accumulated transaction CPU time for each completed transaction
Pipeline definition	NEW FIELD: PIPELINE_JSON_JAVA_PARSER, in Resource statistics, indicates the optimization attribute for a PIPELINE that uses a configuration file that contains a provider_pipeline_json element.
TCP/IP: global statistics	NEW FIELDS: to show the effects of performance tuning for HTTP connections
Transactions: resource statistics	NEW FIELD: XMR_TRAN_ENTRYPOINT identifies a transaction as an application entry point
Transient data: resource statistics - intrapartition transient data queues	NEW FIELD: TQRPNTM reports the peak depth of the transient data queue.
URIMAP definitions: global statistics	NEW: new field, WBG_URIMAP_DIRECT_ATTACH, reports the number of HTTP requests that are processed by direct alias attach instead of through the CWXN transaction.

Changes to GLUEs and TRUEs

Table 272. Changes to global user exits and task-related user exits in CICS TS 5.3

Exit	CICS TS 5.3
Message domain exit XMEOUT	CHANGED: Change to application version format affecting UEPINSA
XRSINDI	CHANGED: New values UEIDEARB and UEIDPKST for UEPIDTYP parameter New parameter UEPPLATTK
Exit XSNON	NEW: new parameter, UEPSGTYP, identifies if the SIGNON was by USERID or TOKEN.
Task manager TCB indicators in DFHUEPAR	CHANGED: UERTSOTR (T8 for Liberty threads)

Changes to XPI

Table 273. Changes to the exit programming interface in CICS TS 5.3

Functional area	Call	CICS TS 5.3
Program management	The BIND_CHANNEL call on DFHPGCHX	NEW to bind a channel to a task.
Monitoring	The SET_TRACKING_DATA call on DFHMNTDX	NEW to sets the transaction tracking origin data tag for the issuing task.

Changes to user-replaceable programs

Table 274. Changes to the user-replaceable programs in CICS TS 5.3

Program	CICS TS 5.3
DYRABNLC Distributed routing program	CHANGED: DYRABNLC is now set when connections are unavailable to Db2, IMS, IBM MQ, or VSAM RLS

<i>Table 274. Changes to the user-replaceable programs in CICS TS 5.3 (continued)</i>	
Program	CICS TS 5.3
DFHBMSX	SERVICE NEW (APAR PI54386): The DFHBMSX URM is called to enable 3270 data stream validation at CICS initialization. The URM is also called when a 3270 data stream validation error was detected when issuing BMS RECEIVE MAP commands.
DFHDSRP	CHANGED: New tokens in DFHDYPDS copybook: DYRCLOUD, DYRPLATFORM, DYRAPPLICATION, DYRAPPLVER, DYRAPPLMAJOR, DYRAPPLMINOR, DYRAPPLMICRO, and DYROPERATION DYRVER token is incremented by 1.

Changes to CICS policies

<i>Table 275. Changes to policy system rules in CICS TS 5.3</i>	
System rule	CICS TS 5.3
All system rules	NEW with APAR PI88500
Db2 connection status	NEW with APAR PI83667
File open status	NEW with APAR PI83667
File enable status	NEW with APAR PI83667
Message	NEW with APAR PI83667
Transaction abend	NEW with APAR PI83667
Transaction class tasks	NEW with APAR PI83667
User tasks	NEW with APAR PI83667

<i>Table 276. Changes to policy task rules in this release</i>	
Task rule	This release
All task rules	SERVICE NEW with APAR PI88500

Changes to dump

<i>Table 277. Changes to CICS dump in CICS TS 5.3</i>	
	CICS TS 5.3
Formatted system dump	NEW: the TK keyword allows you to include a summary table for all tasks, or a specified task, in a formatted system dump. A new module, DFHTKDUF, is added to the CICS-supplied sample system dump formatting program.

Changes to samples

<i>Table 278. Changes to the samples provided with CICS in CICS TS 5.3</i>	
Sample	CICS TS 5.3
DFH\$DPLY	NEW: Annotated DFHDPLY JCL to deploy, undeploy, and optionally set a sample bundle and application in a CICSplex. The sample is supplied in CICSTS53.CICS.SDFHSAMP.

Changes to CICSplex SM resource tables

<i>Table 279. Changes to the resource tables provided by CICSplex SM in CICS TS 5.3. There are also some changes to the help text to reflect changes to fields and options, or in response to feedback.</i>	
Resource table	CICS TS 5.3
ATTR	CHANGED: update to validity and not modifiable bit mappings for E700
BUNDLE	CHANGED: new PHASEIN action
CRESDB2P	NEW: Topology base table for Db2 packageset resource table
DB2PKGST	NEW: Db2 packagesets

Table 279. Changes to the resource tables provided by CICSplex SM in CICS TS 5.3. There are also some changes to the help text to reflect changes to fields and options, or in response to feedback. (continued)

Resource table	CICS TS 5.3
EPADAPT	SERVICE CHANGED (APAR PI55134): new DSIE value for DATAFORMAT CICSplex SM view: CICS operations views > Application operations views > Event processing adapter
ERMCDDB2P	NEW: CICSplex SM notification resource table for resource map events for Db2 packagesets
FILEDEF	CHANGED: PASSWORD field is obsolete
HTASK	CHANGED: Includes counts for requests to a named counter server New fields: TSGETSCNT, TSPUTSCNT, NCGETCNT, WBJSNRQL, WBJSNRPL and DSAPTHWT
JVMSERV	CHANGED: SRVTHRWTIME field data type changed to a store clock
LOCTRAN	CHANGED: new fields: APPLICATION, PLATFORM, OPERATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER and AVAILSTATUS fields
METAPARM	CHANGED: updated the validity bit mappings for E700
MONITOR	CHANGED: update MNGAUTRT and MNGPUTRT field data types to an interval timestamp delta. New fields: MNGCPUT, MNGTONCP and MNGOFLCP
OBJECT	CHANGED: updated the validity bit mappings for E700
OBJECT	CHANGED: updated the validity bit mappings for E700
PROGDEF	CHANGED: updated the JVMCLASS field for OSGi and Liberty
REMTAN	CHANGED: new fields: APPLICATION, PLATFORM, OPERATION, APPLMAJORVER, APPLMINORVER, APPLMICROVER and AVAILSTATUS
TASK	CHANGED: Includes counts for requests to a named counter server New fields: WBSRSPBL field. Added TSGETSCNT, TSPUTSCNT, NCGETCNT, WBJSNRQL, WBJSNRPL and DSAPTHWT
TASKASSC	CHANGED: new fields: ODSERVERPORT and ODCPIPS
TASKTSQ	CHANGED: new fields: TSQGETSHR, TSQPUTSHR, TSQPUTSHR and PUTSHRITEML
TCPIPGBL	CHANGED: new fields: SOTUNING, TIMATACCLIM, LTIMPAUSLIST, STOPPINGPERS, TIMSTOPPERS, LTIMSTOPPERS, TIMMNONPERS, TIMDISCATMAX and PAUSINGLIST
TCPIPS	CHANGED: new value ATTLAWARE on SSLTYPE
URIMAP	CHANGED: summary option for fields APPLICATION, PLATFORM and OPERATION changed to DIFF
URIMAPGBL	CHANGED: DRCTATTOUNT field
WLPSEV	NEW: Liberty JVM server LINK enabled services

Changes to CICSplex SM parameters

Table 280. Changes to CICSplex SM parameters in CICS TS 5.3

Parameter	CICS TS 5.3
CACHEDSNUM	SERVICE NEW with APAR PH00673: Specifies the number of data spaces that the CMAS creates for each CICSplex SM component. For use under the direction of IBM Support.

Changes to CICSplex SM WUI server initialization parameters

Table 281. Changes to the WUI server initialization parameters used by CICSplex SM in CICS TS 5.3

System parameter	CICS TS 5.3
CMCIAUTH	NEW: Specifies the settings for the CMCI TCPIP SERVICE AUTHENTICATE attribute.
CMCISSL	NEW: Specifies the settings for the CMCI TCPIP SERVICE SSL attribute.
TCPIPSSL	SERVICE CHANGED (APAR PI94706): New value ATTLBASIC, to support Application Transparent Transport Layer Security (AT-TLS).

Changes to documentation

Upgrading

CHANGED: Redesigned into a summary of changes and actions between releases.

STABILIZED PDFs

- *Upgrading from CICS TS Version 3.1*
- *Upgrading from CICS TS Version 3.2*
- *Upgrading from CICS TS Version 4.1*
- *Upgrading from CICS TS Version 4.2*
- *Upgrading from CICS TS Version 5.1*
- *Upgrading from CICS TS Version 5.2*

Changes to externals in CICS TS 5.2

CICS TS 5.2 changes a number of externals, including commands, transactions, resources, system initialization parameters, messages, trace and user exits.

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

- [“Changes to installing” on page 272](#)
- [“Changes to security” on page 272](#)
- [“Changes to RACF classes” on page 272](#)
- [“Changes to CICS API” on page 272](#)
- [“Changes to JCICS API” on page 273](#)
- [“Changes to resource definitions” on page 273](#)
- [“Changes to CICS utilities” on page 274](#)
- [“Changes to CICS assistants” on page 275](#)
- [“Changes to CICS support for application programming languages” on page 275](#)
- [“Changes to messages and codes” on page 275](#)
- [“Changes to SIT parameters” on page 278](#)
- [“Changes to JVM profiles” on page 278](#)
- [“Changes to control tables” on page 278](#)
- [“Changes to CICS SPI” on page 278](#)
- [“Changes to CICS-supplied transactions” on page 280](#)
- [“Changes to statistics” on page 281](#)
- [“Changes to CICS policies” on page 281](#)
- [“Changes to XPI” on page 282](#)
- [“Changes to GLUEs and TRUEs” on page 282](#)
- [“Changes to user-replaceable programs” on page 282](#)
- [“Changes to CICSplex SM views” on page 282](#)
- [“Changes to CICSplex SM resource tables” on page 282](#)
- [“Changes to CICSplex SM parameters” on page 282](#)
- [“Changes to CICSplex SM WUI server initialization parameters” on page 283](#)

Changes to installing

- CICS TS comprises a base component and an activation module that is specific to the offering of CICS TS. Both must be installed.
- CICS use of 64-bit storage has increased; therefore, MEMLIMIT might need to be increased to avoid CICS SOS Above the Bar.

Changes to security

Table 282. Changes to security in CICS TS 5.2	
Area	CICS TS 5.2
TLS	<ul style="list-style-type: none"> • TLS 1.2: NEW • NIST SP800-131A and FIPS: NEW
PassTickets	<ul style="list-style-type: none"> • XPTKT system initialization parameter: NEW with APAR PI60653
Kerberos	<ul style="list-style-type: none"> • Support for Kerberos: NEW • KERBEROSUSER system initialization parameter: NEW with APAR PI85443
Other authentication changes	<ul style="list-style-type: none"> • Support for SAML: NEW • RACF KFDAES Support (R_Password): NEW with APAR PI21866
Audit	<ul style="list-style-type: none"> • Support for IBM Health Checker for z/OS: NEW with APAR PI76965
Enhanced protection	<ul style="list-style-type: none"> • CICS BMS 3270 intrusion detection service: NEW with APAR PI51499
Liberty	<ul style="list-style-type: none"> • JAVA EE integration with CICS security: NEW
Obsolete security-related options	<ul style="list-style-type: none"> • EXCI SURROGCHK option: REMOVED with APAR PH09898 <p>Surrogate checking is always done. Specifying SURROGCHK=YES in the EXCI options table, DFHXCOPT, is accepted for compatibility.</p>

Changes to RACF classes

Table 283. Changes to RACF classes related to CICS user IDs in CICS TS 5.2	
User ID	CICS TS 5.2
<u>KERBEROSUSER</u>	NEW with APAR PI85443

Table 284. Changes to RACF classes related to user profiles in CICS TS 5.2	
Option	CICS TS 5.2
KERB(KERBNAME(<i>client_principal</i>))	NEW Configuring RACF for Kerberos

Table 285. Changes to other RACF classes in CICS TS 5.2		
Class	Profile	CICS TS 5.2
KERBLINK	<i>./../realm</i>	NEW: Configuring RACF for Kerberos
PTKTDATA	<i>IRRPTAUTH.applid.userid</i>	NEW with APAR: PI60653
SURROGAT	<i>userid.DFHEXCI</i>	NEW with APAR: PH09898

Changes to CICS API

Table 286. Changes to EXEC CICS commands in CICS TS 5.2	
API	CICS TS 5.2
<u>ASSIGN</u>	CHANGED: New options ERRORMSG, ERRORMSGLEN, LINKLEVEL, APPLICATION, MAJORVERSION, MICROVERSION, MINORVERSION, OPERATION, PLATFORM
<u>CHANGE PASSWORD</u>	SERVICE CHANGED with APAR PH31270: New NOTAUTH with RESP2 value of 17
<u>CHANGE PHRASE</u>	SERVICE CHANGED with APAR PH31270: New NOTAUTH with RESP2 value of 17

Table 286. Changes to **EXEC CICS** commands in CICS TS 5.2 (continued)

API	CICS TS 5.2
DELAY	CHANGED: New value MILLISECS
FORMATTIME	CHANGED: New option STRINGZONE
HANDLE CONDITION	CHANGED: When CICS handles a condition, the application's program mask is now restored to the value that it had when the EXEC CICS HANDLE CONDITION command was issued, not to zero.
INVOKE APPLICATION	NEW
LINK	CHANGED: Change of impact: command now operates in the application context.
VERIFY PASSWORD	SERVICE CHANGED with APAR PH31270: New NOTAUTH with RESP2 value of 17
VERIFY PHRASE	SERVICE CHANGED with APAR PH31270: New NOTAUTH with RESP2 value of 17
VERIFY TOKEN	NEW
WEB CONVERSE	SERVICE CHANGED with APAR PI43898: New INVREQ with RESP2 value of 157
WEB RECEIVE (Client)	SERVICE CHANGED with APAR PI43898: New INVREQ with RESP2 value of 157

Changes to JCICS API

Table 287. Changes to JCICS API in CICS TS 5.2

Class	Method	CICS TS 5.2
Application		NEW CLASS
Task	getApplicationContext()	NEW

Changes to resource definitions

Table 288. Changes to resource definitions and resource groups in CICS TS 5.2

Resource	CICS TS 5.2
DB2CONN	CHANGE OF IMPACT: TCBLIMIT attribute now detects mismatch between TCBs and threads that are defined in pool and entry definitions. SERVICE CHANGED with APAR PI98569: CICS now uses a command thread when CICS attempts to cancel a Db2 thread as part of purge or forcepurge processing of a CICS task.
IPCONN	NEW ATTRIBUTE: HA CHANGED ATTRIBUTE: APPLID
TCPIPSERVICE	OBSOLETE ATTRIBUTES: <ul style="list-style-type: none"> • DNSGROUP • GRPCRITICAL OBSOLETE OPTION: IIOP on attribute TYPE
TSMODEL	NEW ATTRIBUTE: EXPIRYINTMIN OBSOLETE ATTRIBUTE: EXPIRYINT

Table 288. Changes to resource definitions and resource groups in CICS TS 5.2

Resource groups	This release
DFH\$AXIS	CHANGED: JMVSERVICES definition DFH\$AXIS is renamed DFHAXIS.
DFH\$EXWS	CHANGED: The TCPIPSERVICE attribute GRPCRITICAL is obsolete and removed from EXMPPORT.
DFH\$OSGI	CHANGED: JMVSERVICES definition DFH\$JVM is renamed DFHJVM. Programs DFJ\$JHE1, DFJ\$JHE2, DFJ\$JPC1, DFJ\$JPC2, DFJ\$JPC3, DFJ\$JPC4, DFJ\$JTD1, DFJ\$JTSC, DFJ\$JTS1 and DFJ\$JWB1 are changed to JMVSERVICES(DFHJVM). Bundle JDBC added (moved from group DFH\$WLP).

Table 288. Changes to resource definitions and resource groups in CICS TS 5.2 (continued)

Resource groups	This release
DFH\$SAML	CHANGED: The HFSFILE attribute for DOCTEMPLATE definition DFHOXSTI is changed.
DFH\$SOT	CHANGED: The TCPIPSERVICE attribute GRPCRITICAL is obsolete and removed from ECI, HTTPNSL, and HTTPSSL.
DFH\$WLP	CHANGED: JVMSEVER definition DFH\$WLP is renamed DFHWLP. Bundle JDBC has moved to group DFH\$OSGI.
DFH\$WUTC	CHANGED: The TCPIPSERVICE attribute GRPCRITICAL is obsolete and removed from DFH\$WUTC.
DFHDBCTL	CHANGED: File DFHDBFK is changed from LSRPOOLNUM(NONE) to LSRPOOLNUM(1).
DFHFCRL	NEW GROUP
DFHISCIP	CHANGED: Transaction CISE is changed from DTIMOUT(NO) to DTIMOUT(5). The TSMODEL attribute EXPIRYINT is obsolete and removed from DFHISLQ; DFHISLQ now specifies EXPIRYINTMIN(0).
DFHJAVA	CHANGED: Program DFHSJTHP are changed from EXECKEY(USER) to EXECKEY(CICS) and from CONCURRENCY(QUASIRENT) to CONCURRENCY(REQUIRED).
DFHPGAIP	CHANGED: Programs DFHPGADX, DFHPGAHX, DFHPGALX, and DFHPGAOX are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).
DFHPIVAL	CHANGED: To match the rename of JVMSEVER definition DFH\$JVMS to DFHJVMS in group DFH\$OSGI, program DFHPIVAL is changed to JVMSEVER(DFHJVMS).
DFHWEB	CHANGED: The TSMODEL attribute EXPIRYINT is obsolete and removed from DFHWEB; DFHWEB now specifies EXPIRYINTMIN(0).

Table 289. Changes to compatibility groups in CICS TS 5.2

Group	CICS TS 5.2	Group	CICS TS 5.2
DFHCOMPC	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR	DFHCOMPD	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR
DFHCOMPE	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR	DFHCOMPF	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR Program removed: DFHPIEP
DFHCOMPG	NEW GROUP		

Changes to CICS utilities

Table 290. Changes to CICS-supplied utilities in CICS TS 5.2

Utility	CICS TS 5.2
DFHOSTAT	CHANGED: DFHOSTAT does not report any private resources for applications that are deployed on platforms, and it does not identify programs that are declared as application entry points.
DFHDUxxx	CHANGED: Renamed with new release identifier.
DFHPDxxx	CHANGED: Renamed with new release identifier.
DFHSTUP	CHANGED: Support for new statistics

Changes to CICS support for application programming languages

CICS TS 5.2 supports:

- **High Level Assembler for MVS and VM and VSE V1.6 and later**
5696-234
- **Enterprise COBOL for z/OS**
Versions 6.1 and 6.2, 5655-EC6
Versions 5.1 and 5.2, 5655-W32
Version 4.2, 5655-S71
- **z/OS V2.1/V2.2/V2.3 XL C/C++**
5655-121, Optional feature of z/OS
- **IBM 64-bit SDK for z/OS, Java Technology Edition**
Version 8, 5655-DGH
Version 7 Release 1, 5644-W44
Version 7, 5644-W44
- **Enterprise PL/I for z/OS**
Versions 5.1 and 5.2, 5655-PL5
Version 4.5, 5655-W67
- **REXX/CICS**

Changes to the CICS translator

WITHDRAWN: The CICS translator no longer inserts REENTRANT into the compiler options for compiling PL/I.

Changes to CICS assistants

Table 291. Changes to the CICS web services assistants, XML assistants, and JSON assistants in CICS TS 5.2	
Assistant	CICS TS 5.2
ALL	SERVICE NEW with APAR: Support for mapping level 4.1
DFHJS2LS	SERVICE NEW OPTIONS with APAR: <ul style="list-style-type: none"> • DATA-SCREENING • DEFAULT-FRACTION-DIGITS
DFHLS2JS	SERVICE NEW OPTION with APAR: <ul style="list-style-type: none"> • DATA-SCREENING
DFHLS2SC	SERVICE NEW OPTION with APAR: <ul style="list-style-type: none"> • DATA-SCREENING
DFHSC2LS	SERVICE NEW OPTION with APAR: <ul style="list-style-type: none"> • DATA-SCREENING
DFHWS2LS	SERVICE NEW OPTION with APAR: <ul style="list-style-type: none"> • DATA-SCREENING
DFHLS2WS	SERVICE NEW OPTION with APAR: <ul style="list-style-type: none"> • DATA-SCREENING

Changes to messages and codes

Table 292. Changes to messages in CICS TS 5.2		
New messages	Changed messages	Removed messages
	SERVICE DFH5275W DFHAM4952E SERVICE DFHAM4865S	

Table 292. Changes to messages in CICS TS 5.2 (continued)

New messages	Changed messages	Removed messages
<p>DFHCA4864S DFHCA4865S</p> <p>DFHFC6000 DFHFC6042W DFHFC6043W DFHFC6044I</p> <p>SERVICE DFHH0001 SERVICE DFHH0002 SERVICE DFHH0003 SERVICE DFHH0200 SERVICE DFHH0301 SERVICE DFHH0302 SERVICE DFHH0303</p> <p>DFHKE0007</p> <p>DFHLD0508I DFHLD0509I DFHLD0510I DFHLD0514W DFHLD0515E DFHLD0516I DFHLD0517W DFHLD0518I DFHLD0526I DFHLD0527I DFHLD0528W DFHLD0557I DFHLD0558I DFHLD0733 DFHLD0734 DFHLD0735 DFHLD0736 DFHLD0737 DFHLD0738 DFHLD0739 DFHLD0740 DFHLD0741 DFHLD0742 DFHLD0743 DFHLD0744 DFHLD0745 DFHLD0746</p> <p>DFHMP1007 DFHMP1008 DFHMP2013</p> <p>SERVICE DFHMP2018 SERVICE DFHMP3009 SERVICE DFHMP3010 SERVICE DFHMP3011 SERVICE DFHMP3012</p> <p>DFHMQ0793E</p>	<p>DFHAP1903</p> <p>DFHCA4952E SERVICE DFHCA4865S</p> <p>DFHDU0203I</p> <p>DFHLD0503W DFHLD0513W DFHLD0525W DFHLD0850</p> <p>DFHMP2006 SERVICE DFHMP2006</p> <p>SERVICE DFHMQ0331I SERVICE DFHMQ0334I</p>	<p>DFHCZ0357 DFHCZ0358 DFHCZ0359 DFHCZ0360 DFHCZ0361 DFHCZ0362</p>

Table 292. Changes to messages in CICS TS 5.2 (continued)

New messages	Changed messages	Removed messages
DFHPG0111 DFHPG0112 DFHPG0113 DFHPG0114 DFHPG0221 DFHPG0224 DFHPG0226 DFHPG0227 DFHPG0228 DFHPG0229 DFHPG0230 DFHPG0308 DFHPG0309 DFHPG0310 DFHPG0311 DFHPG0312 DFHPG0313 DFHPG0314 DFHPG0500 DFHPG0501 DFHPG0502 DFHPG0503	DFHPA1909 DFHPG0304 DFHPG0305 DFHPG0306 DFHPG0113	
DFHPI0200 DFHPI0201 DFHPI0202 DFHPI0203 DFHPI0204I DFHPI0220 DFHPI0221 DFHPI0222 DFHPI9715E DFHPI9716E DFHPI9717E DFHPI9718E DFHPI9719E DFHPI9720E DFHPI9721W DFHPI9722E DFHPI9723E DFHPI9724E	DFHPI0516 DFHPI0914E DFHPI0997 DFHPI1007 DFHPI1008 DFHPI1009 DFHPI110	
DFHRL0133E DFHRL0134I DFHRL0135E	DFHRL0115W DFHRL0128I	
DFHSJ1200 DFHSJ1203	DFHSJ0914E DFHSJ1105	DFHSJ0902
DFHSO0137 DFHSO0140	DFHSO0145W DFHSO0146I SERVICE DFHSO0123	
SERVICE DFHTF0200	DFHWB0800 DFHXM0600	
SERVICE EYUBM0349W SERVICE EYUCP0208E SERVICE EYUXC0026S SERVICE EYUXC0027I		

Table 293. Changes to abend codes in CICS TS 5.2

New abend codes	Changed abend codes	Removed abend codes
SERVICE ABSX AFDO AFDP SERVICE AMPC SERVICE AMPD AXSE AXSF AXSG		

Changes to SIT parameters

Table 294. Changes to system initialization parameters in CICS TS 5.2

SIT	CICS TS 5.2
ENCRYPTION	NEW OPTION: TLS12 REMOVED OPTION: TLS12FIPS CHANGED: STRONG now does not allow SSL version 3.0.
JVMPROFILEDIR	CHANGED: For JVM servers that are defined in CICS bundles, the location of the JVM profile is specified by the bundle.
KERBEROSUSER	NEW with APAR: The default is the region user ID.
MXT	CHANGED: Default value is now 250.
NISTSP800131A	NEW
USSCONFIG	NEW
XPTKT	NEW with APAR

Changes to JVM profiles

Table 295. Changes to JVM profiles in CICS TS 5.2

Option	CICS TS 5.2
JNDI_REGISTRATION	NEW compatible with: OSGi JVM server
WSDL_VALIDATOR	NEW compatible with: OSGi JVM server

Changes to control tables

Table 296. Changes to control tables in CICS TS 5.2

Control table	CICS TS 5.2
DFHMCT	CHANGED: <ul style="list-style-type: none"> New performance class data fields added. These fields can be defined on INCLUDE and EXCLUDE on DFHMCT TYPE=RECORD. New COMPRESS option on DFHMCT TYPE=INITIAL. 1PL link option DPLLIMIT added to DFHMCT TYPE=INITIAL.

Changes to CICS SPI

Table 297. Changes to the system programming interface commands in CICS TS 5.2

Command	CICS TS 5.2
CREATE IPCONN	CHANGED: New option HA

Table 297. Changes to the system programming interface commands in CICS TS 5.2 (continued)

Command	CICS TS 5.2
CREATE TCIPSERVICE	CHANGED: New option SPECIFICTCPS Options made obsolete: DNSGROUP and GRPCRITICAL
CREATE TSMODEL	CHANGED: New option EXPIRYINTMIN
DISCARD PROGRAM	THREADSAFE
DISCARD TRANSACTION	THREADSAFE
INQUIRE ASSOCIATION	CHANGED: New options: ACAPPLNAME, ACMAJORVER, ACMICROVER, ACMINORVER, ACOPERNAME, ACPLATNAME
INQUIRE BUNDLE	CHANGED: New option AVAILSTATUS
INQUIRE BUNDLEPART	CHANGED: New option AVAILSTATUS
INQUIRE DISPATCHER	CHANGED: Options made obsolete: ACTJVMTCBS and MAXJVMTCBS THREADSAFE
INQUIRE EPADAPTER	SERVICE CHANGED with APAR PI55133: New CVDA, DSIE on DATAFORMAT option.
INQUIRE IPCONN	CHANGED: New option HA
INQUIRE LIBRARY	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, PLATFORM
INQUIRE MONITOR	THREADSAFE
INQUIRE MVSTCB	THREADSAFE
INQUIRE PIPELINE	CHANGED: New option MSGFORMAT
INQUIRE PROGRAM	CHANGED: New options: RESIDENCY, APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, PLATFORM THREADSAFE
INQUIRE STATISTICS	THREADSAFE
INQUIRE SYSTEM	CHANGED: New options: MESSAGECASE, MVSSMFID, MVSSYSNAME THREADSAFE
INQUIRE TCIPSERVICE	CHANGED: New options: GENERICTCPS, SPECIFICCCPS New values: BUNDLE on INSTALLAGENT Options made obsolete: DNSGROUP, DNSSTATUS, and GRPCRITICAL
INQUIRE TRANSACTION	THREADSAFE
INQUIRE TSMODEL	CHANGED: New option EXPIRYINTMIN
INQUIRE TSQUEUE	CHANGED: New option EXPIRYINTMIN
INQUIRE UOWLINK	CHANGED: New option PORT
INQUIRE URIMAP	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM

Table 297. Changes to the system programming interface commands in CICS TS 5.2 (continued)

Command	CICS TS 5.2
INQUIRE WEBSERVICE	CHANGED: New values DISABLED and DISABLING on STATE option
PERFORM STATISTICS	CHANGED: New DSECTs supplied to format status information for private program, program definition, JVM program, or library resource types.
SET DISPATCHER	THREADSAFE
SET FILE	CHANGED: Change of impact: to change the status of a FILE resource that is defined and installed in a CICS bundle, change the status of the CICS bundle or application with which it is deployed.
SET JVMSERVER	CHANGED: Change of impact: to change the status of a FILE resource that is defined and installed in a CICS bundle, change the status of the CICS bundle or application with which it is deployed.
SET PROGRAM	THREADSAFE
SET STATISTICS	THREADSAFE
SET SYSTEM	THREADSAFE
SET TASK	SERVICE CHANGED with APAR PI98569: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.
SET TCPIPService	CHANGED: Option made obsolete: DNSSTATUS Change of impact: to change the status of a FILE resource that is defined and installed in a CICS bundle, change the status of the CICS bundle or application with which it is deployed.
SET TRANSACTION	THREADSAFE

Changes to CICS-supplied transactions

Table 298. Changes to CICS-supplied transactions in CICS TS 5.2

Transaction	Security category	CICS TS 5.2
CEMT	2	<p>CHANGED:</p> <ul style="list-style-type: none"> CEMT INQUIRE BUNDLE: New option AVAILSTATUS. CEMT INQUIRE DISPATCHER: Options ACTJVMTCBS and MAXJVMTCBS are made OBSOLETE. You can now set the options for MAXOPENTCBS and MAXXPTCBS. CEMT INQUIRE JVMSERVER CHANGE of IMPACT: Option PROFILEDIR displays the directory on z/OS UNIX that contains the JVM profile for the JVM server. For a JVM server that is defined in a local CICS region, which uses a JVM profile stored in the local CICS region, this is the directory specified by the JVMPROFILEDIR system initialization parameter for the CICS region. For a JVM server that is defined in a CICS bundle, which uses a JVM profile packaged in the CICS bundle, this is the CICS bundle subdirectory where the JVM profile is stored. CEMT INQUIRE PROGRAM: New option RESIDENCY. CEMT INQUIRE TSMODEL: Option EXPIRYINT is made OBSOLETE, and replaced by new option EXPIRYINTMIN. CEMT INQUIRE TSQUEUE / TSQNAME: Option EXPIRYINT is made OBSOLETE, and replaced by new option EXPIRYINTMIN. CEMT INQUIRE URIMAP: New options APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM CEMT INQUIRE WEBSERVICE: Option STATE has two new values, DISABLING and DISABLED. CEMT PERFORM DUMP: New option DUMPCODE. CEMT SET BUNDLE: New options AVAILABLE and UNAVAILABLE. <p>SERVICE CHANGED with APAR:</p> <ul style="list-style-type: none"> CEMT INQUIRE EPADAPTER (APAR PI55133): Support for the new DSIE XML format. CEMT SET TASK (APAR PI98569): CICS processing of a task purge is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.

<i>Table 298. Changes to CICS-supplied transactions in CICS TS 5.2 (continued)</i>		
Transaction	Security category	CICS TS 5.2
CFCR	1	NEW
CHCK	1	SERVICE NEW (APAR PI76965)
CJLR	1	NEW
CMPE	1	SERVICE NEW (APAR PI83667)

Changes to statistics

<i>Table 299. Changes to statistics in CICS TS 5.2</i>	
Statistics	CICS TS 5.2
All (data section, DFHSTIDS)	CHANGED: New values added to the statistics data section DFHSTIDS: STILDY STILDP STIPGP STIPGE
JVM program	CHANGED: Resource statistics New statistics for private Java programs
LIBRARY	CHANGED: Resource statistics New statistics for private LIBRARY resources
Program	CHANGED: Resource statistics New program loader statistics for private programs
Program Definition	CHANGED: Resource statistics New resource definition statistics for private programs

Changes to CICS policies

<i>Table 300. Changes to policy system rules in CICS TS 5.2</i>	
System rule	CICS TS 5.2
All system rules	NEW with APAR PI88500
Db2 connection status	NEW with APAR PI83667
File open status	NEW with APAR PI83667
File enable status	NEW with APAR PI83667
Message	NEW with APAR PI83667
Transaction abend	NEW with APAR PI83667
Transaction class tasks	NEW with APAR PI83667
User tasks	NEW with APAR PI83667

<i>Table 301. Changes to policy task rules in CICS TS 5.2</i>	
Task rule	CICS TS 5.2
All task rules	NEW with APAR PI88500

Changes to XPI

Table 302. Changes to the exit programming interface in CICS TS 5.2		
Functional area	Call	CICS TS 5.2
Program management	<ul style="list-style-type: none"> INQUIRE_PROGRAM START_BROWSE_PROGRA M 	CHANGED: New options to inquire on private programs for applications that are deployed on platforms.

Changes to GLUEs and TRUEs

Table 303. Changes to global user exits and task-related user exits in CICS TS 5.2	
Exit	CICS TS 5.2
XRSINDI	CHANGED: New parameters UEPAPCTXT and UEPAPPTK

Changes to user-replaceable programs

Table 304. Changes to the user-replaceable programs in CICS TS 5.2	
Program	CICS TS 5.2
DFHBMSX	NEW with APAR
DFHPGADX (and DFHPGAHX, DFHPGALX, and DFHPGAOX)	CHANGED: Resource definitions for the following programs now specify CONCURRENCY(THREADSAFE).
EYU9WRAM	CHANGED: New tokens: WCOM_APPL_CONTEXT, WCOM_PLATFORM, WCOM_APPLICATION, WCOM_APPLVER, WCOM_APPLMAJORVER, WCOM_APPLMINORVER, WCOM_APPLMICROVER, WCOM_OPERATION Changed tokens: WCOM_FILL3 has a new value of WCOM_VERSION
EYU9XLOP	CHANGED: New tokens: WTRA_APPL_CONTEXT, WTRA_PLATFORM, WTRA_APPLICATION, WTRA_APPLVER, WTRA_APPLMAJORVER, WTRA_APPLMINORVER, WTRA_APPLMICROVER, WTRA_OPERATION Changed tokens: WTRA_FILL1 has a new value of WTRA_VERSION

Changes to CICSplex SM views

Table 305. Changes to CICSplex SM views in CICS TS 5.2		
Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
5.2	WEBSERVICE resources in CICS bundles	1. CICS operations views > TCP/IP service operations views > Web services

Changes to CICSplex SM resource tables

Table 306. Changes to the resource tables provided by CICSplex SM in CICS TS 5.2	
Resource table	CICS TS 5.2
EPADAPT	SERVICE CHANGED (APAR PI55133): new DSIE value for DATAFORMAT CICSplex SM view: CICS operations views > Application operations views > Event processing adapter

Changes to CICSplex SM parameters

Table 307. Changes to CICSplex SM parameters in CICS TS 5.2	
Parameter	CICS TS 5.2
CACHEDSNUM	SERVICE NEW with APAR PH00673: Specifies the number of data spaces that the CMAS creates for each CICSplex SM component. For use under the direction of IBM Support.

Changes to CICSplex SM WUI server initialization parameters

Table 308. Changes to the WUI server initialization parameters used by CICSplex SM in CICS TS 5.2	
System parameter	CICS TS 5.2
CMCIAUTH	SERVICE NEW (APAR PI37543): Specifies the settings for the CMCI TCPIP SERVICE AUTHENTICATE attribute.
CMCISSL	SERVICE NEW (APAR PI37543): Specifies the settings for the CMCI TCPIP SERVICE SSL attribute.
TCPIPSSL	SERVICE CHANGED (APAR PI94706): New value ATTLBASIC, to support Application Transparent Transport Layer Security (AT-TLS).

Changes to externals in CICS TS 5.1

CICS TS 5.1 changes a number of externals, including commands, transactions, resources, system initialization parameters, messages, trace and user exits.

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

- [“Changes to security” on page 283](#)
- [“Changes to RACF classes” on page 284](#)
- [“Changes to CICS API” on page 284](#)
- [“Changes to JCICS API” on page 285](#)
- [“Changes to SIT parameters” on page 285](#)
- [“Changes to JVM profiles” on page 285](#)
- [“Changes to resource definitions” on page 287](#)
- [“Changes to CICS control tables” on page 289](#)
- [“Changes to CICS SPI” on page 289](#)
- [“Changes to CICS-supplied transactions” on page 291](#)
- [“Changes to CICS monitoring” on page 292](#)
- [“Changes to CICS statistics” on page 293](#)
- [“Changes to CICS utilities” on page 293](#)
- [“Changes to global user exits and task-related user exits” on page 293](#)
- [“Changes to CICS XPI” on page 293](#)
- [“Changes to CICS user-replaceable programs” on page 294](#)

Changes to security

Table 309. Changes to security in CICS TS 5.1	
Area	CICS TS 5.1
TLS	<ul style="list-style-type: none"> • TLS 1.2: NEW with APAR PM97207 • NIST SP800-131A and FIPS: NEW with APAR PM97207 • PERFORM SSL REBUILD: NEW • ENCRYPTION (CHANGED APAR PM97207): Options ALL and TLS12FIPS added, SSLV3 added.
PassTickets	<ul style="list-style-type: none"> • XPTKT system initialization parameter: NEW with APAR PI60653
Performance	<ul style="list-style-type: none"> • Monitor inbound cipher suite in performance record: NEW
Audit	<ul style="list-style-type: none"> • Support for IBM Health Checker for z/OS: NEW with APAR PI76965 • Audit SPI commands: NEW • Identity propagation for START commands: NEW • RACFSYNC system initialization parameter: NEW • SECVFYFREQ system initialization parameter: NEW

Table 309. Changes to security in CICS TS 5.1 (continued)

Area	CICS TS 5.1
Enhanced protection	<ul style="list-style-type: none"> CICS BMS 3270 intrusion detection service: NEW with APAR PI51499 and PI55048 RACF KFDAES Support (R_Password): NEW with APAR PI21866

Changes to RACF classes

Table 310 on page 284 covers changes to RACF classes related to command security. These changes are new resource identifiers for SPI commands. See CICS resources subject to command security checking and Resource and command check cross-reference for a list of all of the SPI commands and the RACF ACCESS required for each one.

Table 310. Changes to RACF classes related to command security in CICS TS 5.1

Command	CICS TS 5.1
<u>INQUIRE CAPDATAPRED</u>	NEW resource identifier CAPOPTPRED
<u>INQUIRE EPADAPTERSET</u> <u>SET EPADAPTERSET</u>	NEW resource identifier EPADAPTERSET
<u>INQUIRE EPADAPTINSET</u>	NEW resource identifier EPADAPTINSET

Changes to CICS API

Table 311. Changes to EXEC CICS commands in CICS TS 5.1

Command	CICS TS 5.1
<u>ASSIGN</u>	CHANGED: New options: ASRAPSW16 and ASRAREGS64
<u>DELETEQ TD</u>	CHANGED: Made threadsafe
<u>FREEMAIN64</u>	NEW
<u>GET CONTAINER (CHANNEL)</u>	CHANGED: New value: BYTEOFFSET
<u>GET64 CONTAINER</u>	NEW
<u>GETMAIN64</u>	NEW
<u>LOAD</u>	CHANGED: Changed value: ENTRY
<u>PUT CONTAINER (CHANNEL)</u>	CHANGED: New value: APPEND
<u>PUT64 CONTAINER</u>	NEW
<u>QUERY SECURITY</u>	CHANGED: New option EPADAPTERSET
<u>READQ TD</u>	CHANGED: Made threadsafe
<u>START</u>	CHANGED: Change of impact to support identity propagation
<u>START CHANNEL</u>	CHANGED: Change of impact to support identity propagation
<u>VERIFY PASSWORD</u>	CHANGED: Change of impact. Function is changed, dependent on SECVFYFREQ and/or USRDELAY.
<u>VERIFY PHRASE</u>	CHANGED: change of impact. Function is changed, dependent on SECVFYFREQ and/or USRDELAY.
<u>WEB CONVERSE</u>	Changed with APAR PI43898: New INVREQ with RESP2 value of 157
<u>WEB RECEIVE (Client)</u>	Changed with APAR PI43898: New INVREQ with RESP2 value of 157
<u>WRITEQ TD</u>	CHANGED: Made threadsafe
<u>XCTL</u>	CHANGED: Change of impact, COMMAREA is now created above or below the line.

Changes to JCICS API

Table 312. Changes to JCICS API in CICS TS 5.1		
Class	Method	This release
CICSExecutorService		NEW

Changes to SIT parameters

Table 313. Changes to SIT parameters in CICS TS 5.1	
Parameter	CICS TS 5.1
<u>AKPFREQ</u>	CHANGED: minimum value is now 50.
<u>AUTORESETTIME</u>	CHANGED: new default is IMMEDIATE.
<u>EDSALIM</u>	CHANGED: default is changed to 800 MB.
<u>EJBROLEPRFX</u>	REMOVED
<u>ENCRYPTION</u>	CHANGED: Value STRONG now does not allow SSL version 3.0. Two new values: ALL and TLS12FIPS.
<u>ICVTSD</u>	CHANGED: default value changed to zero.
<u>IIOPLISTENER</u>	REMOVED
<u>JVMCCSIZE</u>	REMOVED
<u>JVMCCSTART</u>	REMOVED
<u>JVMLEVEL0TRACE</u>	REMOVED
<u>JVMLEVEL1TRACE</u>	REMOVED
<u>JVMLEVEL2TRACE</u>	REMOVED
<u>JVMUSERTRACE</u>	REMOVED
<u>MAXJVMTCBS</u>	REMOVED
<u>MAXOPENTCBS</u>	REMOVED: CICS will set a value based on MXT
<u>MXT</u>	CHANGED: minimum, default, and maximum values are changed to 10, 500, and 2000.
<u>PRTYAGE</u>	CHANGED: default value is now 1000 milliseconds.
<u>RACFSYNC</u>	NEW
<u>SECVFYFREQ</u>	NEW
<u>SPCTR</u>	CHANGED: new value of MP for managed platform domain.
<u>STATINIT</u>	CHANGED: default value is now 010000 (1 hour).
<u>STATRCD</u>	CHANGED: default value is now OFF.
<u>STNTR</u>	CHANGED: new value of MP for managed platform domain.
<u>TBEXITS</u>	CHANGED: 4-byte GWA passed to an exit on enablement now comes from 31-bit storage.
<u>TCTUALOC</u>	CHANGED: default value changed to ANY.
<u>TDSUBTASK</u>	REMOVED
<u>TRANISO</u>	CHANGED: TRANISO no longer affects the use of 64-bit storage.
<u>XEJB</u>	REMOVED
<u>XPTKT</u>	NEW with APAR

Changes to JVM profiles

Table 314. Changes to JVM profiles in CICS TS 5.1	
Option	CICS TS 5.1
&JVM_NUM;	OBSELETE: Pooled JVM option that is not supported in a JVM server. The unique JVM number is substituted at run time.

Table 314. Changes to JVM profiles in CICS TS 5.1 (continued)

Option	CICS TS 5.1
-Dibm.jvm.crossheap.events	OBsolete: Pooled JVM option that is not supported in a JVM server, and is ignored by the Java launcher.
-Dibm.jvm.events.output	OBsolete: Pooled JVM option that is not supported in a JVM server, and is ignored by the Java launcher.
-Dibm.jvm.reset.events	OBsolete: Pooled JVM option that is not supported in a JVM server, and is ignored by the Java launcher.
-Dibm.jvm.resettrace.events	OBsolete: Pooled JVM option that is not supported in a JVM server, and is ignored by the Java launcher.
-Dibm.jvm.shareable.application.class.path	OBsolete: CICS adds entries to standard class path.
-Dibm.jvm.unresettable.events.level	OBsolete: Pooled JVM option that is not supported in a JVM server, and is ignored by the Java launcher.
-Djava.compiler	OBsolete: Not required in a continuous JVM
-generate	OBsolete: Pooled JVM option that is not supported in a JVM server.
-Xinitacsh	OBsolete: Add value to -Xms. Pooled JVM option that is not supported in a JVM server.
-Xinitth	OBsolete: Add value to -Xms. Pooled JVM option that is not supported in a JVM server.
-Xinitsh	OBsolete: Add value to -Xms. Pooled JVM option that is not supported in a JVM server.
-Xresettable=YES	OBsolete: JVM does not start. Pooled JVM option that is not supported in a JVM server.
CICS_DIRECTORY	OBsolete: Java launcher uses the value of the USSHOME system initialization parameter instead. CICS issues message DFHSJ0534 if found.
CICS_HOME	OBsolete: Java launcher uses the value of the USSHOME system initialization parameter instead. CICS issues message DFHSJ0534 if found.
CLASSCACHE	OBsolete: Pooled JVM option that is not supported in a JVM server.
CLASSPATH	OBsolete: Replaced with CLASSPATH_SUFFIX for non-OSGi servers. The JVM does not start, and CICS issues message DFHSJ0523 if found.
com.ibm.cics.jvmserver.override.ccsid	NEW compatible with: All JVM Environments
com.ibm.cics.jvmserver.wlp.autoconfigure	NEW compatible with: Liberty JVM server
com.ibm.cics.jvmserver.wlp.server.host	NEW compatible with: Liberty JVM server
com.ibm.cics.jvmserver.wlp.server.http.port	NEW compatible with: Liberty JVM server
com.ibm.cics.jvmserver.wlp.server.name	NEW compatible with: Liberty JVM server
com.ibm.cics.jvmserver.wlp.jdbc.driver.location	NEW compatible with: Liberty JVM server
DISPLAY JAVA VERSION	CHANGED: Accepted by the Java launcher. Shows JVM version in CICS MSGUSR log.
GC_HEAP_THRESHOLD	OBsolete: Pooled JVM option that is not supported in a JVM server.
IDLE_TIMEOUT	OBsolete: Pooled JVM option that is not supported in a JVM server.
INVOKE_DFHJVMAT	OBsolete: Pooled JVM option that is not supported in a JVM server.
JAVA_DUMP_OPTS	CHANGED: Withdrawn from sample profiles. Replaced with -Xdump.
LEHEAPSTATS	OBsolete: Pooled JVM option that is not supported in a JVM server.
LIBPATH	OBsolete: Replaced by LIBPATH_SUFFIX or LIBPATH_PREFIX. CICS issues message DFHSJ0538 if found. You do not need to specify directories for base library path, only directories that you add.
MAX_RESETS_TO_GC	OBsolete: Pooled JVM option that is not supported in a JVM server.
REUSE	OBsolete: Pooled JVM option that is not supported in a JVM server.
TMPREFIX	OBsolete: CICS prefixes to standard class path. Replaced with CLASSPATH_PREFIX. CICS issues message DFHSJ0521 if found. Move classes with care.
TMSUFFIX	OBsolete: CICS places on standard class path. Replaced with CLASSPATH_SUFFIX. CICS issues message DFHSJ0522 if found.

Table 314. Changes to JVM profiles in CICS TS 5.1 (continued)

Option	CICS TS 5.1
VERBOSE	CHANGED: Withdrawn from sample profiles. Replaced with -verbose:gc.
<u>WLP_INSTALL_DIR</u>	NEW compatible with: Liberty JVM server
<u>WLP_OUTPUT_DIR</u>	NEW compatible with: Liberty JVM server
<u>WLP_USER_DIR</u>	NEW compatible with: Liberty JVM server

Changes to resource definitions

Table 315. Changes to resources and resource groups in CICS TS 5.1

Resource or group	CICS TS 5.1
CORBASERVER	REMOVED
DB2CONN	CHANGED with APAR PI98569: CICS now uses a command thread when CICS attempts to cancel a Db2 thread as part of purge or forcepurge processing of a CICS task.
DJAR	REMOVED
IPCONN	CHANGED: Changed attributes CIPHERS and NUMCIPHERS
PROGRAM	OBSOLETE: JVMPROFILE attribute
REQUESTMODEL	REMOVED
<u>TCPIPSERVICE</u>	CHANGED: New attribute SPECIFTCPS. Changed attributes, CIPHERS, NUMCIPHERS, and BACKLOG. For BACKLOG, default value is changed from 1 to zero. When zero is specified the value is taken from SOMAXCONN TCPIP configuration. OBSOLETE: ASSERTED is obsolete on AUTHENTICATE.
<u>URIMAP</u>	CHANGED: Changed attributes CIPHERS and NUMCIPHERS. New value JVMSERVER on USAGE.

Table 315. Changes to resources and resource groups in CICS TS 5.1

Resource group	This release
DFH\$AFLA	CHANGED: Programs are changed from DATALOCATION(BELOW) to DATALOCATION(ANY). Transactions are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFH\$CCI	REMOVED
DFH\$DB2	CHANGED: Programs removed: DFJ\$DSDB, DFJ\$DSPU, and DFJ\$DSRE Transactions removed: DSDB, DSPU, and DSRE
DFH\$EJB	REMOVED
DFH\$EJB2	REMOVED
DFH\$EXWS	CHANGED: TCPIPSERVICE definition EXMPPORT is changed from BACKLOG(10) to BACKLOG(0). EXMPPORT now specifies IPADDRESS(ANY).
DFH\$IIOP	REMOVED
DFH\$JVM	REMOVED
DFH\$SOT	CHANGED: TCPIPSERVICE definitions ECI, HTTPNSL, and HTTPSSL are changed from BACKLOG(10) to BACKLOG(0); they now specify IPADDRESS(ANY).
DFH\$WLP	NEW GROUP
DFH\$WU	CHANGED: TCPIPSERVICE definition DFH\$WUTC is changed from BACKLOG(10) to BACKLOG(0); it now specifies IPADDRESS(ANY).
DFHADET	REMOVED
DFHADST	REMOVED

Table 315. Changes to resources and resource groups in CICS TS 5.1 (continued)

Resource group	This release
DFHDB2	CHANGED: Program DFHD2EDF is changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).
DFHDCTG	CHANGED: New TDQUEUE definitions: CADS and CMPO
DFHEDF	CHANGED: Program DFHEDFX is changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE). Programs DFHEIGDS, DFHEITAB, and DFHSMTAB are changed from DATALOCATION(BELOW) to DATALOCATION(ANY).
DFHEJBU	REMOVED
DFHEP	CHANGED: New transaction: CEPS
DFHFEPI	CHANGED: Program DFHEITSZ is changed from DATALOCATION(BELOW) to DATALOCATION(ANY).
DFHIIOP	REMOVED
DFHINQUI	CHANGED: Program DFHEITBS is changed from DATALOCATION(BELOW) to DATALOCATION(ANY).
DFHIPECI	CHANGED: Transaction CIEP is changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY) and from PRIORITY(1) to PRIORITY(255).
DFHISC	CHANGED: Program DFHCHS is changed from DATALOCATION(BELOW) to DATALOCATION(ANY). Transactions are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHISCIP	CHANGED: New programs: DFHISPHP and DFHISPRP New transactions: CISP and CIS1
DFHISCQ	CHANGED: Transaction CQPI and CQPO are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHJAVA	CHANGED: Programs removed: DFHDLLOD, DFHEJDNX, DFHJVCVT, DFHSJGC, DFHSJPI, DFJCICS, DFJCICSB, DFJCZDTC, DFJDESN, DFJ1ESN, DFJ1ICS, DFJ1ICSB, DFJ1ZDTC New program: DFHSJITL and DFHSJTTHP Transactions removed: CJGC and CJPI New transactions: CJSA and CJSR
DFHMQ	CHANGED: New program DFHMQB3 New transaction CKBC
DFHMROFA	CHANGED: Programs DFH\$AALL, DFH\$ABRW, DFH\$ACOM, DFH\$AMNU, DFH\$AREN and DFH\$AREP are changed from DATALOCATION(BELOW) to DATALOCATION(ANY). Transactions AADD, ABRW, AINQ, AMNU, AORD, AORQ, AREP and AUPD are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHMROFD	CHANGED: Transactions AADD, ABRW, AINQ, AMNU, AORD, AORQ, AREP and AUPD are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHMSWIT	CHANGED: Transaction CMSG is changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHOPER	CHANGED: Transactions CBAM, CEMT, CEOT, CEST, and CETR are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).

<i>Table 315. Changes to resources and resource groups in CICS TS 5.1 (continued)</i>	
Resource group	This release
DFHPIPE	CHANGED: Program removed: DFHPIVAL
DFHPIVAL	NEW GROUP
DFHRMI	CHANGED: Transaction CRSY is changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHSIGN	CHANGED: Transactions CESF, CESL, and CESN are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).
DFHSTAND	CHANGED: Programs removed: DFHEJITL and DFHSJITL Transactions CEJR and CJSR are removed Transactions CSAC and CXCU are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY)

<i>Table 316. Changes to compatibility groups in CICS TS 5.1</i>	
NEW GROUP	REMOVED GROUP
DFHCOMPF	DFHCOMPB

Changes to CICS control tables

<i>Table 317. Changes to CICS control tables in CICS TS 5.1</i>	
Control table	CICS TS 5.1
DFHDCT	NO LONGER SUPPLIED

Changes to CICS SPI

<i>Table 318. Changes to CICS system programming interface in CICS TS 5.1</i>	
Command	CICS TS 5.1
<u>COLLECT STATISTICS</u>	CHANGED: For supported resource types and depending on context, statistics can be returned for private resources. New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, and PLATFORM Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL
CREATE CORBASERVER	REMOVED
CREATE DJAR	REMOVED
CREATE REQUESTMODEL	REMOVED
<u>CSD INSTALL</u>	CHANGED: Options made obsolete: CORBASERVER, DJAR, and REQUESTMODEL
DISCARD CORBASERVER	REMOVED
DISCARD DJAR	REMOVED
DISCARD REQUESTMODEL	REMOVED
<u>ENABLE PROGRAM command</u>	CHANGED: Changed impact of option OPENAPI New options: GALLOCATION and REQUIRED
<u>EXTRACT STATISTICS</u>	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, PLATFORM For supported resource types and depending on context, statistics can be returned for private resources. THREADSAFE
INQUIRE BEAN	REMOVED

Table 318. Changes to CICS system programming interface in CICS TS 5.1 (continued)

Command	CICS TS 5.1
<u>INQUIRE BUNDLE</u>	CHANGED: New options: BUNDLEID, MGMTPART, MAJORVERSION, MICROVERSION, MINORVERSION
<u>INQUIRE BUNDLEPART</u>	CHANGED: New value on PARTCLASS option: ENTRYPOINT
<u>INQUIRE CAPTURESPEC</u>	CHANGED: New value on PRIMPREDTYPE option: MESSAGEID
<u>INQUIRE CLASSCACHE</u>	REMOVED
<u>INQUIRE CORBASERVER</u>	REMOVED
<u>INQUIRE DJAR</u>	REMOVED
<u>INQUIRE DOCTEMPLATE</u>	CHANGED: New option: CACHESIZE
<u>INQUIRE DSNAME</u>	CHANGED with APAR PI55133: New CVDA, DSIE on DATAFORMAT option.
<u>INQUIRE EPADAPTERSET</u>	NEW
<u>INQUIRE EPADAPTINSET</u>	NEW
<u>INQUIRE EVENTBINDING</u>	CHANGED: New options: EPADAPTERRES and EPADAPTERSET
<u>INQUIRE EXITPROGRAM</u>	CHANGED: New value: REQUIRED on CONCURRENTST option
<u>INQUIRE JVM</u>	REMOVED
<u>INQUIRE JVMPOOL</u>	REMOVED
<u>INQUIRE JVMPROFILE</u>	REMOVED
<u>INQUIRE JVMSERVER</u>	CHANGED: New option: PROFILEDIR
<u>INQUIRE PROGRAM</u>	CHANGED: New option: ENTRYPOINT ENTRYPOINT changed to support non-LE 64-bit assembler programs
<u>INQUIRE REQUESTMODEL</u>	REMOVED
<u>INQUIRE SYSTEM</u>	CHANGED: New options: ETDSASIZE, GCDSASIZE, GSDSASIZE, GUDSASIZE
<u>INQUIRE TRACEDEST</u>	THREADSAFE
<u>INQUIRE TRACEFLAG</u>	THREADSAFE
<u>INQUIRE TRACETYPE</u>	THREADSAFE
<u>INQUIRE URIMAP</u>	CHANGED: New value: JVMSERVER on USAGE option
<u>INQUIRE WORKREQUEST</u>	REMOVED
<u>PERFORM CLASSCACHE</u>	REMOVED
<u>PERFORM CORBASERVER</u>	REMOVED
<u>PERFORM DJAR</u>	REMOVED
<u>PERFORM JVMPOOL</u>	REMOVED
<u>PERFORM SSL</u>	NEW
<u>PERFORM STATISTICS</u>	CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL
<u>SET CLASSCACHE</u>	REMOVED
<u>SET CORBASERVER</u>	REMOVED

<i>Table 318. Changes to CICS system programming interface in CICS TS 5.1 (continued)</i>	
Command	CICS TS 5.1
<u>SET DISPATCHER</u>	CHANGED: Option made obsolete: MAXJVMTCBS
<u>SET EPADAPTERSET</u>	NEW
<u>SET JVMPOOL</u>	REMOVED
<u>SET MONITOR</u>	THREADSAFE
<u>SET PROGRAM</u>	CHANGED: New option: OPERATION
<u>SET STATISTICS</u>	CHANGED: Default changed on INTERVAL option to 010000 (1 hour)
<u>SET SYSTEM</u>	CHANGED: Change of value: maximum value on MAXTASKS option to 2000 and minimum to 10
<u>SET TASK</u>	THREADSAFE CHANGED with APAR PI98569: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.
<u>SET TRACEDEST</u>	THREADSAFE
<u>SET TRACEFLAG</u>	THREADSAFE
<u>SET TRACETYPE</u>	THREADSAFE
<u>SET WORKREQUEST</u>	REMOVED

Changes to CICS-supplied transactions

NEW transactions in CICS TS 5.1:

- CEPS
- **SERVICE CHCK (APAR PI76965)**
- CJSA
- CKBC
- CLER
- **SERVICE CMPE (APAR PI83667)**

Changes to CEMT

<i>Table 319. Changes to CEMT in CICS TS 5.1</i>	
CEMT	CICS TS 5.1
ALL CEMT	CHANGED: Change of storage location
<u>CEMT DISCARD</u>	REMOVED: CEMT DISCARD CORBASERVER, CEMT DISCARD DJAR, CEMT DISCARD REQUESTMODEL
<u>CEMT INQUIRE BEAN</u>	REMOVED
<u>CEMT INQUIRE BUNDLE</u>	CHANGED: New options: BUNDLEID, MAJORVERSION, MICROVERSION, MINORVERSION
<u>CEMT INQUIRE CLASSCACHE</u>	REMOVED
<u>CEMT INQUIRE CORBASERVER</u>	REMOVED
<u>CEMT INQUIRE DISPATCHER</u>	CHANGED: Change of impact: MAXOPENTCBS and MAXXPTCBS
<u>CEMT INQUIRE DSAS</u>	CHANGED: New values: ETDSASIZE, GCDSASIZE, GSDSASIZE, GUDSASIZE
<u>CEMT INQUIRE DSNAME</u>	CHANGED: New option: LOGREPSTATUS

Table 319. Changes to CEMT in CICS TS 5.1 (continued)

CEMT	CICS TS 5.1
CEMT INQUIRE EPADAPTER	CHANGED with APAR PI55133: Support added for the new DSIE XML format.
CEMT INQUIRE EPADAPTERSET	NEW
CEMT INQUIRE EVENTBINDING	CHANGED: New options: EPADAPTERRES and EPADAPTERSET
CEMT INQUIRE JVM	REMOVED
CEMT INQUIRE JVMPOOL	REMOVED
CEMT INQUIRE JVMPROFILE	REMOVED
CEMT INQUIRE JVMSERVER	CHANGED: New option: PROFILEDIR
CEMT INQUIRE PROGRAM	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, OPERATION, and PLATFORM
CEMT INQUIRE REQUESTMODEL	REMOVED
CEMT INQUIRE URIMAP	CHANGED: New value: JVMSERVER on USAGE option
CEMT PERFORM CLASSCACHE	REMOVED
CEMT PERFORM JVMPOOL	REMOVED
CEMT PERFORM SSL	NEW
CEMT PERFORM STATISTICS	CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL
CEMT SET CLASSCACHE	REMOVED
CEMT SET DISPATCHER	CHANGED: Option made obsolete: MAXJVMTCBS
CEMT SET EPADAPTERSET	NEW
CEMT SET JVMPOOL	REMOVED
CEMT SET PROGRAM	CHANGED: New option: OPERATION
CEMT SET STATISTICS	CHANGED: Change of default value: INTERVAL option
CEMT SET SYSTEM	CHANGED: Change of value: maximum value of MAXTASKS option
CEMT SET TASK	CHANGED with APAR PI98569: CICS processing of a task purge or forcepurge request is enhanced to ensure that a Db2 cancel thread command is issued to cancel a thread that is active in Db2 at the time the task that is using the thread is purged or forcepurged.

Changes to CICS monitoring

Change to the Monitoring Control Table (MCT): In V3.2, the default value is changed from RMI=NO to RMI=YES.

Table 320. Changes to performance class data in CICS TS 5.1

Group	CICS TS 5.1
DFHCHNL	CHANGED: Fields changed to include data from the new GET64 CONTAINER and PUT64 CONTAINER commands: PGGETCCT, PGPUTCCT, PGGETCDL, PGPUTCDL, PGCRECCT
DFHCICS	NEW FIELD: MPPRTXCD
DFHDATA	OBSOLETE: Field DB2WAIT
DFHDEST	NEW FIELDS: TDILWTT and TDELWTT
DFHEJBS	REMOVED
DFHFILE	NEW FIELDS: FCXCWTT and FCVSWTT
DFHSTOR	NEW FIELDS: SC64CGCT, SC64CHWM, SC64UGCT, SC64UHWM, SC64SGCT, SC64GSHR, SC64FSHR
DFHTASK	NEW FIELDS: ROMODDLY, SOMODDLY, CECMCHTP, CECMDLID, MAXTASKS, CURTASKS, CPUTONCP, OFFLCPUT, ACAPPLNM, ACPLATNM, ACMAJVER, ACMINVER, ACMICVER, ACOPERNM
DFHTERM	NEW FIELD: TCALWTT

Table 321. Changes to exception class data in CICS TS 5.1

Group	CICS TS 5.1
EXCMNRID	CHANGED: New values: GUDSA, GSDSA, rule_id
XCMNTYP	CHANGED: New value: X'0004

Changes to CICS statistics

Table 322. Changes to CICS statistics in CICS TS 5.1

Type	CICS TS 5.1
CorbaServer	REMOVED
Enterprise beans	REMOVED
JVM pool	REMOVED
JVM profile	REMOVED
Requestmodel	REMOVED

Changes to CICS utilities

Table 323. Changes to CICS utilities in CICS TS 5.1

Utility	CICS TS 5.1
DFHOSTAT	CHANGED: Storage above 2 GB report includes new fields that relate to 64-bit storage use in the GDSA.
DFHCSDUP	CHANGED: Support for changes to CSD resource definitions
DFHDUxxx	CHANGED: Renamed with new release identifier
DFHJAIU (JVM Application Isolation Utility)	REMOVED
DFHMEU	REMOVED
DFHPDxxx	CHANGED: Renamed with new release identifier
DFHSTUP	CHANGED: Maximum number of CICS regions (APPLIDs) that the DFHSTUP utility can process is increased from 520 to 2000.
DFHTUxxx	CHANGED: Renamed with new release identifier

Changes to global user exits and task-related user exits

Table 324. Changes to global user exit points in CICS TS 5.1

User exit	CICS TS 5.1
ALL	CHANGED: Choice of global work area storage location through ENABLE PROGRAM Increase to UEPXSTOR storage
Backout exit programs	CHANGED: Global work area storage allocation
XRSINDI	CHANGED: New values UEIDEPAS, UEIDMPPP, UEIDWARB and UEIDEBAB for UEPIDTYP parameter
XSRAB	CHANGED: New fields on UEPERROR parameter: SRP_CICS_ERROR_DATA, SRP_SYSTEM_ERROR_DATA

Changes to CICS XPI

Table 325. Changes to CICS XPI in CICS TS 5.1

Functional area	CICS TS 5.1
Kernel domain	CHANGED: Changes to the parameter list structure for functions on the KEDS gate. You must reassemble any exit programs that use START_PURGE_PROTECTION and STOP_PURGE_PROTECTION

Table 325. Changes to CICS XPI in CICS TS 5.1 (continued)	
Functional area	CICS TS 5.1
Loader	<p>CHANGED:</p> <p>REQUIRED_AMODE option of the DEFINE_PROGRAM call can specify the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs</p> <p>The size of the PROGRAM_TOKEN and NEW_PROGRAM_TOKEN options is increased 4 bytes to 8 bytes. This change affects DFHLDLXD calls: ACQUIRE_PROGRAM, DEFINE_PROGRAM, and RELEASE_PROGRAM</p>
Monitoring	<p>NEW and CHANGED: New INQUIRE_APP_CONTEXT call now returns the current application context for the most recent application that was set onto the task</p>
Program management	<p>CHANGED: REQUIRED_AMODE option of the SET_PROGRAM call specifies the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs.</p> <p>SPECIFIED_AMODE option of the GET_NEXT_PROGRAM and INQUIRE_PROGRAM calls, and the CURRENT_AMODE option of the INQUIRE_CURRENT_PROGRAM call, now return the addressing mode of non-LE AMODE(64) assembler programs</p>
State data access	<p>CHANGED: DSA option of the INQ_APPLICATION_DATA call now returns the address of the head of the dynamic storage chain as a 64-bit address.</p>

Changes to CICS user-replaceable programs

Table 326. Changes to user replaceable programs in CICS TS 5.1		
NEW:	CHANGED:	REMOVED:
<ul style="list-style-type: none"> • SERVICE DFHBMSX 	<ul style="list-style-type: none"> • DFHXCURM: New parameter URMXCFG 	<ul style="list-style-type: none"> • DFHEJDNX • DFHEJEP • DFHJVMAT • DFHJVMRO

Changes to messages and codes

Table 327. Changes to messages in CICS TS 5.1		
New messages	Changed messages	Removed messages
	<p>SERVICE DFH5275</p>	
DFH7040 DFH7042 DFH7045 DFH7049 DFH7051 DFH7052 DFH7056 DFH7062 DFH7064 DFH7068 to DFH7073 DFH7079 DFH7081 DFH7087 to DFH7116 DFH7021 DFH7031 DFH7211 DFH7212 DFH7214 DFH7223 DFH7224 DFH7227 DFH7231 DFH7234 DFH7236 DFH7261 DFH7265 DFH7266 DFH7280	DFH7054 DFH7089	

Table 327. Changes to messages in CICS TS 5.1 (continued)

New messages	Changed messages	Removed messages
		DFHAD0201 to DFHAD0209 DFHAD0210 to DFHAD0216 DFHAD0231 DFHAD0232 DFHAD0261 to DFHAD0269 DFHAD0270 to DFHAD0273
DFHAM4947 DFHAM4954	DFHAM4952	DFHAM4921 to DFHAM4927
DFHAP1900 to DFHAP1903		DFHAP1217
DFHCA4948 to DFHCA4951 DFHCA4953 DFHCA4864 DFHCA4865	DFHCA4952	DFHCA4921 to DFHCA4927
DFHCC0107		
DFHCS0001 to DFHCS0007		
DFHEC1027 to DFHEC1032	DFHEC1013	
		DFHEJ0101 DFHEJ0102 DFHEJ5001 to DFHEJ5009 DFHEJ5010 to DFHEJ5019 DFHEJ5020 to DFHEJ5029 DFHEJ5030 DFHEJ5031 DFHEJ5036 to DFHEJ5041 DFHEJ5043 to DFHEJ5062 DFHEJ5101 to DFHEJ5114 DFHEJ600 DFHEJ6001
DFHEP1004 to DFHEP1006 DFHEP2006 DFHEP2007	DFHEP1001 to DFHEP1003	
DFHFC0543 DFHFC0557 DFHFC6040		
SERVICE DFHH0001 to DFHH0003 SERVICE DFHH0200 SERVICE DFHH0301 to DFHH0303		
		All DFHIIInn messages
DFHIS1050 to DFHIS1052 DFHIS2300 DFHIS2031		DFHIS003 to DFHIS006 DFHIS1024 DFHIS1038 DFHIS1054
DFHKE0217		
DFHLD0850 to DFHLD0852	DFHLD0503W DFHLD0513W DFHLD0525W DFHLD0850	
DFHLG0789		
	DFHME0006	

Table 327. Changes to messages in CICS TS 5.1 (continued)

New messages	Changed messages	Removed messages
DFHMP001 DFHMP002 DFHMP0100 DFHMP0101 DFHMP1001 to DFHMP1002 DFHMP1004 DFHMP1005 DFHMP2003 to DFHMP2012 DFHMP3001 to DFHMP3006 SERVICE DFHMP1007 SERVICE DFHMP1008 SERVICE DFHMP2018 SERVICE DFHMP3009 to DFHMP3012	SERVICE DFHMP2006	
	SERVICE DFHM0331 SERVICE DFHM0334	
		All DFHMUnnnn messages
		DFHMOV0001
	DFHPA1909	
	DFHPG0304 DFHPG0305 DFHPG0306	DFHPG0300 to DFHPG0307
DFHPI0404	DFHPI0400 DFHPI0516 DFHPI1007 to DFHPI1010	
		All DFHREGxx messages
DFHRL0124 to DFHRL0132	DFHRL0013 DFHRL0115 DFHRL0128	
DFHRM0100		
DFHRS0007		
DFHSI1600 DFHSI1601		DFHSI8444
DFHSJ0216 DFHSJ0921 to DFHSJ0923	DFHSJ0914 DFHSJ1100 to DFHSJ1106	DFHSJ0206 DFHSJ0501 to DFHSJ0503 DFHSJ0505 to DFHSJ0512 DFHSJ0514 to DFHSJ0518 DFHSJ0521 to DFHSJ0540 DFHSJ0900
DFHSM0137 to DFHSM0140	DFHSM0602	
DFHSO0136		
	DFHSR0622	
DFHTA0100 DFHTA0101		
SERVICE DFHTF0200		
		DFHTI0102 DFHTI0103 DFHTI0200 DFHTI0201
	DFHTR0622	DFHTR0101 DFHTR0102

Table 327. Changes to messages in CICS TS 5.1 (continued)

New messages	Changed messages	Removed messages
	DFHTS1605	
DFHWP0800 to DFHWP0802		
	DFHWU4001	DFHWU4015 DFHWU4023 DFHWU4024
DFHXM0600 to DFHXM0603		
EYUNL0152W		
EYUPM007I EYUPM008I		
EYUWI0011E EYUWI0012E	EYUWI0020 EYUWI0021 EYUWI0080 EYUWI0081 EYUWI0082 EYUWI0083 EYUWI0084 EYUWI0085 EYUWI0090	
	EYUWM0400 EYUWM0401 EYUWM0402 EYUWM0420 EYUWM0421 EYUWM0422 EYUWM0423 EYUWM0424 EYUWM0425 EYUWM0426 EYUWM0427 EYUWM0428 EYUWM0429 EYUWM0430 EYUWM0431 EYUWM0432 EYUWM0433 EYUWM0503 EYUWM0504 EYUWM0505 EYUWM0506 EYUWM0507 EYUWM0508	
SERVICE EYUXC0026 SERVICE EYUXC0027		
EYUXD0718E EYUXD0719I EYUXD0720E		

Table 328. Changes to codes in CICS TS 5.1

NEW:	CHANGED:	REMOVED:
AALB SERVICE ABSX AEE0-3 AEZZ AFDN AFDL AINT AINU AIPS AIPT AITO AMPB SERVICE AMPC SERVICE AMPD APGD APGE AXFZ		ABX9 AECY AECZ AII1 AII5 AIIA AIID AIIP AIIT AJAA AJAB AJAC AJAD AJAE AJAF AJAG ASJC ASJD ASJE ASJF ASJG ASJJ ASJK ASJL ASJM ASJN ASJR ASJ1 ASJ3 - ASJ5 ASJ6 ASJ8 ASRK

Changes to samples

Table 329. Changes to samples in CICS TS 5.1

CHANGED:	REMOVED:
DFH\$DB2 JDBC samples removed: CICSDataSource, CICSDataSourcePublish, CICSDataSourceRetract and CICSjdbcDataSource DFH\$PCTA Includes the ETDSA, GCDSA, and GUDSA DFHWLP Sample JVMSERVER resource definition	<ul style="list-style-type: none"> • DFH\$DCTD • DFH\$DCTR • DFH\$DCTS • DFH\$EJB • DFH\$EJB2 • DFH\$IIOP

Changes to CICSplex SM

Changes to CICSplex SM installation and definition in CICS TS 5.1:

- EYU9XDBT utility now enables you to export and import complete CICSplex SM data repository backups, at the level of a CMAS or a CICSplex context. EYU9XDBT also reports more summary data for each command processed.
- The product number used in Tivoli NetView SNA Generic Alerts changed to 5655Y04.

Table 330. Changed CICSplex SM views in CICS TS 5.1

Changed CICS resource type or function	Corresponding changes to CICSplex SM
CICS monitoring: new fields added or obsolete fields made invalid in new releases	<ol style="list-style-type: none"> 1. CICS operations views > Task operations views > Active tasks 2. CICS operations views > Task operations views > Completed tasks 3. Monitoring views > Transaction monitoring views > Local or dynamic

<i>Table 330. Changed CICSplex SM views in CICS TS 5.1 (continued)</i>	
Changed CICS resource type or function	Corresponding changes to CICSplex SM
CICS system: changed MAXTASKS input value	CICS operations views > CICS region operations views > CICS regions
Domain subpool storage: GUDSA and GSDSA are now supported	CICS operations > CICS region operations views > Domain subpool
Dynamic storage areas: GUDSA and GSDSA are now supported	CICS operations > CICS region operations views > Dynamic storage areas
Event processing: EP adapter sets	CICS operations views > Application operations views > Event binding
JVMs: manual start up, and changes to termination	CICS operations views > Enterprise Java component operations views > JVM pool
JVMs: withdrawal of pooled JVMs	<ol style="list-style-type: none"> CICS operations views > CICS region operations views > CICS regions Monitoring views > Transaction monitoring views > Local or dynamic CICS operations views > Task operations views > Active tasks CICS operations views > Task operations views > Completed tasks
JVM servers	<ol style="list-style-type: none"> CICS operations views > CICS region operations views > CICS regions EYUSTARTCICSRGN.DETAILED > Logging and journaling activity > Monitor status CICS operations views > Task operations views CICS operations views > Enterprise Java component operations views > JVM servers
Loader information: RO TCB load fields	<ol style="list-style-type: none"> CICS operations views > CICS region operations views > Loader information CICS operations views > CICS region operations views > Loader by dynamic storage area
MVS workload manager statistics	CICS operations views > CICS region operations views > MVS workload management
Platform and region type details	SM Administration Views > System Group Definitions
SSL connections: SSL rebuild and cipher identification	<ol style="list-style-type: none"> CICS operations views > CICS region operations views > CICS regions CICS operations views > Task operations views > Active tasks CICS operations views > Task operations views > Completed tasks
Task storage: GCDSA and GUDSA are now supported	CICS operations > CICS region operations views > Task subpool

<i>Table 331. New or changed CICSplex SM views and resource tables in CICS TS 5.1</i>		
Resource type or function	CICSplex SM views	CICSplex SM resource tables
SERVICE APAR PI55133 DSIE value for DATAFORMAT attribute of EPADAPT resource table	CICS operations views > Application operations views > Event processing adapter	EPADAPT
Applications	Not applicable	APPLCTN
Application definitions	Not applicable	APPLDEF
Event processing adapter sets	Not applicable	EPADSET
Event processing adapters in an event processing adapter set	Not applicable	EPAINSET
Management parts	Not applicable	MGMTPART
Platforms	Not applicable	PLATFORM
Policy rule information	Not applicable	RULE
Platform definitions	Not applicable	PLATDEF
Topology base table for event processing adapter sets resource table	Not applicable	CRESEPAS

<i>Table 332. Changes to CICSplex SM parameters in CICS TS 5.1</i>	
Parameter	CICS TS 5.1
MASTASKPROT	SERVICE NEW with APAR PM79038
WLMLCUSH	NEW: Specifies the percentage of extra pre-allocated storage that CICSplex SM WLM list management uses in addition to the value of MAXTASK at region initialization.

Table 333. Changes to CICSplex SM WUI server initialization parameters in CICS TS 5.1

Parameter	CICS TS 5.1
CMCIAUTH	SERVICE NEW with APAR PI37543 Specifies the settings for the CMCI TCPIP SERVICE AUTHENTICATE attribute.
CMCISSL	SERVICE NEW with APAR PI37543 Specifies the settings for the CMCI TCPIP SERVICE SSL attribute.
TCPIPSSL	SERVICE CHANGED with APAR PI94706: New value ATTLBSBASIC, to support Application Transparent Transport Layer Security (AT-TLS)

Changes to externals in CICS TS 4.2

CICS TS 4.2 changes a number of externals, including commands, transactions, resources, system initialization parameters, messages, trace and user exits.

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

- [“Changes to installing” on page 300](#)
- [“Changes to security” on page 300](#)
- [“Changes to CICS API” on page 301](#)
- [“Changes to SIT parameters” on page 302](#)
- [“Changes to JVM profiles” on page 302](#)
- [“Changes to resource definitions” on page 302](#)
- [“Changes to CICS SPI” on page 304](#)
- [“Changes to CICS-supplied transactions” on page 305](#)
- [“Changes to CEMT” on page 305](#)
- [“Changes to CICS monitoring” on page 306](#)
- [“Changes to CICS statistics” on page 306](#)
- [“Changes to CICS utilities” on page 306](#)
- [“Changes to global user exits and task-related user exits” on page 307](#)
- [“Changes to CICS user-replaceable programs” on page 307](#)
- [“Changes to messages and codes” on page 307](#)
- [“Changes to samples” on page 309](#)
- [“Changes to CICSplex SM” on page 309](#)

Changes to installing

- Default size of auxiliary data sets changed from 1 cylinder to 25 cylinders, so the supplied SDFHINST JCL members DFHDEFDS, EYUCMSDS, and EYUCSYDS also changed.
- The default location of JAVADIR is changed to support 64-bit JVM.

Changes to security

Table 334. Changes to security in CICS TS 4.2

Area	CICS TS 4.2
TLS	• ENCRYPTION CHANGED: option SSLV3 added.
PassTickets	• XPTKT system initialization parameter: NEW with APAR PI60653
Other authentication changes	• Password support: NEW

Table 334. Changes to security in CICS TS 4.2 (continued)

Area	CICS TS 4.2
Audit	<ul style="list-style-type: none"> Identity propagation: NEW
Enhanced protection	<ul style="list-style-type: none"> CICS BMS 3270 intrusion detection service: NEW with APAR PI50363 RACF KFDAES Support (R_Password): NEW with APAR PI21865

Changes to CICS API

Table 335. Changes to EXEC CICS commands in CICS TS 4.2

Command	CICS TS 4.2
<u>BIF DEEDIT</u>	CHANGED: Made threadsafe
<u>BIF DIGEST</u>	CHANGED: Made threadsafe
<u>CHANGE PASSWORD</u>	CHANGED: Made threadsafe
<u>CHANGE PHRASE</u>	NEW
<u>DEFINE COUNTER</u> and <u>DEFINE DOUNTER</u>	CHANGED: Made threadsafe
<u>DELETE</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>DELETE COUNTER</u> and <u>DELETE DOUNTER</u>	CHANGED: Made threadsafe
<u>DELETEQ TS</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>ENDBR</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>EXEC DLI</u>	CHANGED: Made threadsafe
<u>EXTRACT CERTIFICATE</u>	CHANGED: Made threadsafe
<u>EXTRACT TCPIP</u>	CHANGED: Made threadsafe
<u>GET COUNTER</u> and <u>GET DOUNTER</u>	CHANGED: Made threadsafe
<u>LINK</u>	CHANGED: Made threadsafe
<u>QUERY COUNTER</u> and <u>QUERY DOUNTER</u>	CHANGED: Made threadsafe
<u>QUERY SECURITY</u>	CHANGED: Made threadsafe. New option: EPADAPTER
<u>READ</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>READNEXT</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>READPREV</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>READQ TS</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>RESETBR</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>REWIND COUNTER</u> and <u>REWIND DOUNTER</u>	CHANGED: Made threadsafe
<u>REWRITE</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>SIGNOFF</u>	CHANGED: Made threadsafe
<u>SIGNON</u>	CHANGED: Made threadsafe and changed to support password phrases
<u>STARTBR</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>SYNCPOINT</u>	CHANGED: Made threadsafe
<u>SYNCPOINT ROLLBACK</u>	CHANGED: Made threadsafe
<u>UNLOCK</u>	CHANGED: Made threadsafe for remote regions through IPIC
<u>UPDATE COUNTER</u> and <u>UPDATE DOUNTER</u>	CHANGED: Made threadsafe
<u>VERIFY PASSWORD</u>	CHANGED: Made threadsafe
<u>VERIFY PHRASE</u>	NEW
<u>WRITE</u>	CHANGED: Made threadsafe for remote regions through IPIC

Table 335. Changes to EXEC CICS commands in CICS TS 4.2 (continued)

Command	CICS TS 4.2
WRITEQ TS	CHANGED: Change of impact of MAIN and AUXILIARY options: IPIC support for function shipping between CICS TS 4.2 or later regions. Also made threadsafe for remote regions through IPIC

Changes to SIT parameters

Table 336. Changes to SIT parameters in CICS TS 4.2

Parameter	CICS TS 4.2
CSDLSRNO	CHANGED: number of LSR pools can now be up to 255.
EDSALIM	CHANGED: minimum and default are changed to 48 MB.
ENCRYPTION	CHANGED: value STRONG now does not allow SSL version 3.0.
FCQRONLY	CHANGED: change of impact, depending on whether the connections to FORs are MRO, ISC, or IPIC.
TRTABSZ	CHANGED: when the internal trace table is in 64-bit storage, TRTABSZ no longer influences EDSALIM.
TRTRANSZ	CHANGED: default is now 1024 KB <i>and</i> recommendation to review your setting now that CICS uses 64-bit storage for the transaction dump trace table.
TSMAINLIMIT	NEW
XPTKT	NEW with APAR
XRES	NEW with APAR

Changes to JVM profiles

Table 337. Changes to JVM profiles in CICS TS 4.2

Option	CICS TS 4.2
JAVA_PIPELINE	NEW: compatible with non-OSGi JVM server (Axis 2)
OSGI_BUNDLES	NEW compatible with: OSGi JVM server
OSGI_CONSOLE	NEW compatible with: OSGi JVM server
OSGI_FRAMEWORK_TIMEOUT	NEW compatible with: OSGi JVM server
SECURITY_TOKEN_SERVICE	NEW compatible with: OSGi JVM server

Changes to resource definitions

Table 338. Changes to resources and resource groups in CICS TS 4.2

Resource or group	CICS TS 4.2
FILE	CHANGED: New attribute, LSRPOOLNUM, and new value, REQUIRED on CONCURRENCY
LSRPOOL	CHANGED: New attribute, LSRPOOLNUM, and attribute made obsolete, LSRPOOLID
TCIPSERVICE	CHANGED: New attributes, MAXPERSIST, and EXPIRYINT
PROGRAM	CHANGED: New attribute, JVMSERVER, and new value of REQUIRED on CONCURRENCY
TSMODEL	CHANGED: New attribute, EXPIRYINT
URIMAP	CHANGED: New attribute, SOCKETCLOSE
WEBSERVICE	CHANGED: New attribute: ARCHIVEFILE
Groups containing programs that specify JVM(NO)	CHANGED: Programs that specify JVM(NO) no longer have a default JVMPROFILE attribute.
Groups containing files that specify LSRPOOLID(1) or LSRPOOLID(NONE)	CHANGED: The FILE attribute LSRPOOLID is obsolete and replaced with LSRPOOLNUM. Files that previously specified LSRPOOLID(1) now specify LSRPOOLNUM(1). Files that previously specified LSRPOOLID(NONE) now specify LSRPOOLNUM(NONE).
DFH\$AXIS	NEW GROUP
DFH\$DB2	CHANGED: DB2CONN definition RCT1\$ now specifies REUSELIMIT(1000).
DFH\$EJB	CHANGED: TCIPSERVICE definition EJBTCP1 now specifies MAXPERSIST(NO).

Table 338. Changes to resources and resource groups in CICS TS 4.2 (continued)

Resource or group	CICS TS 4.2
DFH\$EJB2	CHANGED: DB2CONN definition DB2CON1 now specifies REUSELIMIT(1000).
DFH\$EPAG	CHANGED: TRANSACTION definition EPAT is changed from SHUTDOWN(DISABLED) to SHUTDOWN(ENABLED).
DFH\$EXWS	CHANGED: TCPIPSERVICE definition EXMPPORT now specifies MAXPERSIST(NO).
DFH\$IIOPI	CHANGED: TCPIPSERVICE definitions IIOPNSSL and IIOPNSSL specify MAXPERSIST(NO).
DFH\$OSGI	NEW GROUP
DFH\$SAML	NEW GROUP
DFH\$SOT	CHANGED: TCPIPSERVICE definitions ECI, HTTPNSSL, and HTTPSSL now specify MAXPERSIST(NO).
DFH\$WEB	CHANGED: URIMAP definitions DFH\$URI2 and DFH\$URI3 now specify SOCKETCLOSE(0).
DFH\$WEB2	CHANGED: New bundles: DFH\$TSQB and DFH\$TSQT Programs removed: DFH\$W2FD, DFH\$W2FI, DFH\$W2SD, DFH\$W2TS and DFH\$W2FA
DFH\$WU	CHANGED: TCPIPSERVICE definition DFH\$WUTC now specifies MAXPERSIST(NO).
DFHDBCTL	CHANGED: Programs DFHDBAT and DFHDBUEX are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).
DFHDB2	CHANGED: Programs DSNTIAC and DSNTIA1 are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).
DFHEDP	CHANGED: Program DFHEDP is changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE)
DFHEP	CHANGED: New programs: DFHECEAM, DFHECEAS, and DFHECEAT New transactions: CEPQ and CEPT Transaction CEPH is changed from DTIMOUT(NO) to DTIMOUT(5).
DFHISC	CHANGED: Programs DFHCCNV and DFHUCNV are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE). Program DFHMIRS is changed from DATALOCATION(BELOW) to DATALOCATION(ANY) and from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).
DFHISCIP	CHANGED: New profile: DFHCICSC Transactions CISC and CISS are changed from PROFILE(DFHCICST) to PROFILE(DFHCICSC) and from DTIMOUT(30) to DTIMOUT(NO). TSMODEL definition DFHISLQ now specifies EXPIRYINT(0).
DFHMISC	CHANGED: Program DFHLETRU is changed from API(OPENAPI) to API(CICSAPI).
DFHPIPE	CHANGED: New programs: DFHJSON and DFHMLBSJ Program removed: DFHPIEP
DFHSAML	NEW GROUP
DFHSIGN	CHANGED: New MAPSET definition: DFHSNPE New transaction: CESL
DFHWEB	CHANGED: TSMODEL definition DFHWEB now specifies EXPIRYINT(0).
DFHWU	CHANGED: New program DFHWUSRT

Table 339. Changes to compatibility groups in CICS TS 4.2

Group	CICS TS 4.2
DFHCOMPA	REMOVED
DFHCOMPE	NEW GROUP
DFHCOMP1	REMOVED
DFHCOMP2	REMOVED

Table 339. Changes to compatibility groups in CICS TS 4.2 (continued)

Group	CICS TS 4.2
DFHCOMP3	REMOVED
DFHCOMP4	REMOVED
DFHCOMP5	REMOVED
DFHCOMP6	REMOVED
DFHCOMP7	REMOVED
DFHCOMP8	REMOVED
DFHCOMP9	REMOVED

Changes to CICS SPI

Table 340. Changes to CICS system programming interface in CICS TS 4.2

Command	CICS TS 4.2
<u>CREATE FILE</u>	CHANGED: Option made obsolete: LSRPOOLID New option: LSRPOOLNUM
<u>CREATE LSRPOOL</u>	CHANGED: Option made obsolete: LSRPOOLID New option: LSRPOOLNUM
<u>CREATE MQCONN</u>	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option
<u>CREATE PROGRAM</u>	CHANGED: New option: CONCURRENCY New value: REQUIRED on CONCURRENCY option
<u>CREATE TCPIP SERVICE</u>	CHANGED: New option: MAXPERSIST
<u>CREATE TSMODEL</u>	CHANGED: New option: EXPIRYINT
<u>CREATE URIMAP</u>	CHANGED: New option: SOCKETCLOSE
<u>INQUIRE ASSOCIATION</u>	CHANGED: New options: ODADPTRID, ODADPTRDATA1, ODADPTRDATA2, ODADPTRDATA3, PHAPPLID, PHCOUNT, PHNETWORKID, PHSTARTTIME, PHTASKID, PHTRANSID
<u>INQUIRE ATOMSERVICE</u>	CHANGED: New options: URIMAP and XMLTRANSFORM
<u>INQUIRE CAPDATAPRED</u>	NEW
<u>INQUIRE CAPINFOSRCE</u>	NEW
<u>INQUIRE CAPOPTRED</u>	NEW
<u>INQUIRE CAPTURESPEC</u>	CHANGED: New options: CURRPGM, CURRPGMOP, CURRTRANID, CURRTRANIDOP, CURRUSERID, CURRUSERIDOP, NUMDATAPRED, NUMINFOSRCE, NUMOPTPRED, PRIMPRED, PRIMPREDOP, PRIMPREDTYPE
<u>INQUIRE CLASSCACHE</u>	THREADSAFE
<u>INQUIRE DB2CONN</u>	CHANGED: New option: REUSELIMIT
<u>INQUIRE DISPATCHER</u>	CHANGED: Change of impact of options: MAXOPENTCBS and MAXXPTCBS now represent limits set automatically by CICS
<u>INQUIRE EPADAPTER</u>	NEW
<u>INQUIRE EVENTBINDING</u>	CHANGED: New option: EPADAPTER
<u>INQUIRE EVENTPROCESS</u>	CHANGED: New option: SCHEMALEVEL
<u>INQUIRE FILE</u>	CHANGED: New options: LSRPOOLNUM Option made obsolete: LSRPOOLID

Table 340. Changes to CICS system programming interface in CICS TS 4.2 (continued)

Command	CICS TS 4.2
INQUIRE IPCONN	CHANGED: New option: MIRRORLIFE
INQUIRE JVM	THREADSAFE
INQUIRE JVMPOOL	THREADSAFE
INQUIRE JVMPROFILE	THREADSAFE
INQUIRE JVMSERVER	CHANGED: New options: CURRENTHEAP, GCPOLICY, INITHEAP, MAXHEAP, OCCUPANCY, PID
INQUIRE MQCONN	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option
INQUIRE OSGIBUNDLE	NEW
INQUIRE OSGISERVICE	NEW
INQUIRE PROGRAM	CHANGED: New option: JVMSERVER New value: REQUIRED on CONCURRENCY option
INQUIRE TCIPSERVICE	CHANGED: New option: MAXPERSIST
INQUIRE TEMPSTORAGE	NEW
INQUIRE TSMODEL	CHANGED: New option: EXPIRYINT
INQUIRE TSQUEUE	CHANGED: New option: EXPIRYINT
INQUIRE URIMAP	CHANGED: New options: SOCKETCLOSE and SOCKPOOLSIZE
INQUIRE WEBSERVICE	CHANGED: New option: ARCHIVEFILE
PERFORM CLASSCACHE	THREADSAFE
PERFORM JVMPOOL	THREADSAFE
RESYNC ENTRYNAME	THREADSAFE
SET CLASSCACHE	THREADSAFE
SET DB2CONN	CHANGED: New option: REUSELIMIT
SET EPADAPTER	NEW
SET FILE	CHANGED: Option made obsolete: LSRPOOLID New option: LSRPOOLNUM
SET JVMPOOL	THREADSAFE
SET MQCONN	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option
SET TEMPSTORAGE	NEW

Changes to CICS-supplied transactions

Table 341. Changes to CICS-supplied transactions in CICS TS 4.2

NEW	REMOVED
<ul style="list-style-type: none"> • CEPF • CESL • SERVICE CHCK (APAR PI76963) 	<ul style="list-style-type: none"> • CIRP • CIRR • CJPI • CREA • CREC

Changes to CEMT

Table 342. Changes to CEMT in CICS TS 4.2

CEMT	CICS TS 4.2
CEMT INQUIRE ATOMSERVICE	CHANGED: New options: URIMAP, XMLTRANSFORM

Table 342. Changes to CEMT in CICS TS 4.2 (continued)

CEMT	CICS TS 4.2
CEMT INQUIRE EPADAPTER	NEW
CEMT INQUIRE EVENTBINDING	CHANGED: New option: EPADAPTER
CEMT INQUIRE EVENTPROCESS	CHANGED: New option: SCHEMALEVEL
CEMT INQUIRE IPCONN	CHANGED: New options: MIRRORLIFE
CEMT INQUIRE JVMSERVER	CHANGED: New options: CURRENTHEAP, GCPOLICY, INITHEAP, MAXHEAP, OCCUPANCY, PID
CEMT INQUIRE MQCONN	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option
CEMT INQUIRE PROGRAM	CHANGED: New option: JVMSERVER New value: OREQUIRED on CONCURRENCY option
CEMT INQUIRE TCIPSERVICE	CHANGED: New option: MAXPERSIST
CEMT INQUIRE TEMPSTORAGE	NEW
CEMT INQUIRE URIMAP	CHANGED: New options: SOCKETCLOSE and SOCKPOOLSIZE
CEMT INQUIRE WEBSERVICE	CHANGED: New option: ARCHIVEFILE
CEMT SET EPADAPTER	NEW
CEMT SET MQCONN	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option
CEMT SET TEMPSTORAGE	NEW

Changes to CICS monitoring

Change to the Monitoring Control Table (MCT): In V3.2, the default value is changed from RMI=NO to RMI=YES.

Table 343. Changes to CICS monitoring in CICS TS 4.2

Performance class data	Transaction resource class data	Identity class data
CHANGED GROUPS: DFHCICS NEW FIELDS: OADID, OADATA1, OADATA2, OADATA3, PHNTWKID, PHAPPLID, PHSTART, PHTRANNO, PHTRAN, PHCOUNT, ECSEVCCT, NCGETCT DFHDATA NEW FIELD: WMQASRBT DFH SOCK NEW FIELDS: ISALWTT and SOCIIPHER DFHTASK New TP MODES are added for TUSRCPUT, DSTCBHWM, MSDISPT, MSCPUT	NEW GROUPS: <ul style="list-style-type: none"> • MNR_ID_TRNGRPID • MNR_PHD_APPLID • MNR_PHD_ATTACH_TIME • MNR_PHD_COUNT • MNR_PHD_NETWORKID • MNR_PHD_TRANNUM • MNR_PHD_TRANID 	NEW GROUPS: <ul style="list-style-type: none"> • MNI_PHD_NETWORKID • MNI_PHD_APPLID • MNR_PHD_ATTACH_TIME • MNI_PHD_TRANNO • MNI_PHD_TRANID • MNI_PHD_COUNT

Changes to CICS statistics

Table 344. Changes to CICS statistics in CICS TS 4.2

Type	CICS TS 4.2
All (data section, DFHSTIDS)	CHANGED: New value: STIEPR
Event processing	CHANGED: New EPADAPTER

Changes to CICS utilities

Table 345. Changes to CICS utilities in CICS TS 4.2

Utility	CICS TS 4.2
DFHOSTAT	CHANGED: Uses the INQUIRE TEMPSTORAGE command, which is subject to command-security checking
DFHDUxxx	CHANGED: Renamed with new release identifier
DFHPDxxx	CHANGED: Renamed with new release identifier

Table 345. Changes to CICS utilities in CICS TS 4.2 (continued)

Utility	CICS TS 4.2
DFHTUxxx	CHANGED: Renamed with new release identifier

Changes to global user exits and task-related user exits

Table 346. Changes to global user exit points in CICS TS 4.2

User exit	CICS TS 4.2
XEPCAP	NEW
XSRAB	CHANGED: New fields on UEPERROR parameter: SRP_ADDITIONAL_REG_INFO, SRP_ADDITIONAL_REGS_FLAG, SRP_CICS_GP64_REGS, SRP_SYSTEM_GP64_REGS, SRP_FP_REGS, and SRP_FPC_REG
XWBAUTH	CHANGED: Support for HTTP EP adapter
XWBSNDO	CHANGED: Support for HTTP EP adapter

Changes to CICS user-replaceable programs

Table 347. Changes to user replaceable programs in CICS TS 4.2

Program	CICS TS 4.2
DFHBMSX	SERVICE NEW with APAR
DFHDSRP	CHANGED: New tokens in DFHDYPDS copybook: DYRUOWAF, DYRFUNC 7 = End_UOW, DYRLUOWID, DYRNUOWID
DFHDYP	CHANGED: A threadsafe program can function-ship a DPL request by using dynamic routing to ship the request to another region
EYU9WRAM	CHANGED: New tokens: WCOM_DYRLUOW, WCOM_DYRNUOW Changed tokens: WCOM_AFF_TYPE has a new value of WCOM_AFF_LOCKED. WCOM_AFF_LIFE has a new value of WCOM_AFF_UOW
EYU9XLOP	CHANGED: New tokens: WTRA_UOWOPT, WTRA_LOCUOWID, WTRA_NETUOWID
EP adapters	CHANGED: Must now honor the EPAP_RECOVER flag in the DFHEP.ADAPTPARM container. EPCX_PROGRAM in the DFHEP.CONTEXT container is not set for system events.

Changes to messages and codes

Table 348. Changes to messages in CICS TS 4.2

New messages	Changed messages	Removed messages
	DFH5120, DFH5123 to DFH5125	
DFH5208, DFH5209	DFH5273	
DFHAM4807	DFHAM4843, DFHAM4868, DFHAM4943, DFHAM4944	
DFHAP1605		DFHAP1600 to DFHAP1603
	DFHBR0412	
DFHCA4807, DFHCA5208, DFHCA5209	DFHCA4833, DFHCA4843, DFHCA4800 to DFHCA4999, DFHCA5120, DFHCA5123, DFHCA5540, DFHCA5544 to DFHCA5634	DFHCA5161, DFHCA5274, DFHCA5292, DFHCA5603
DFHCE3554	DFHCE3503, DFHCE3504	
	DFHDB2005, DFHDB2057, DFHDB2066	
DFHDH0300		
DFHEC1011 to DFHEC1013, DFHEC1016, DFHEC1022 to DFHEC1024, DFHEC1026, DFHEC3111, DFHEC3112, DFHEC4006, DFHEC4009, DFHEC4010, DFHEC4113, DFHEC4118 to DFHEC4123	DFHEC1001 to DFHEC1003, DFHEC1009, DFHEC4007 to DFHEC4009, DFHEC4111, DFHEC4117	DFHEC1010, DFHEC4112
	DFHEJ0101	

Table 348. Changes to messages in CICS TS 4.2 (continued)

New messages	Changed messages	Removed messages
DFHEP0120 to DFHEP0123, DFHEP1000 to DFHEP1003, DFHEP2001 to DFHEP2003, DFHEP2005	DFHEP0114, DFHEP0117, DFHEP0118	
	DFHFC0202 to DFHFC0204, DFHFC0206, DFHFC0207, DFHFC0150 to DFHFC0512, DFHFC0157, DFHFC0164 to DFHFC0169, DFHFC0177, DFHFC0179, DFHFC0300 to DFHFC0303, DFHFC0308 to DFHFC0311, DFHFC0951, DFHFC0979, DFHFC3010	DFHFC0112
SERVICE DFHH0001 to DFHH0003, DFHH0200, DFHH0301 to DFHH0303		
	DFHIR3789	
DFHIS1042, DFHIS3031, DFHIS3032	DFHIS1035	
DFHME0103, DFHME0213, DFHME0215, DFHME0217, DFHME0218, DFHME0220, DFHME0222, DFHME0223, DFHME0225, DFHME0232, DFHME0237, DFHME0240	DFHME0101, DFHME0503	
DFHML0101, DFHML0600 to DFHML0605, DFHML0609, DFHML0610		
DFHMQ2065, DFHMQ2066	DFHMQ0308, DFHMQ0309, DFHMQ0320, DFHMQ0749	DFHMQ0212 to DFHMQ0217
DFHPA1949		
	DFHPG0101 to DFHPG0103, DFHPG0201, DFHPG0209, DFHPG0210	
DFHPI0603, DFHPI0728, DFHPI0729, DFHPI0734 to DFHPI0736, DFHPI0905, DFHPI0906, DFHPI9685 to DFHPI9688, DFHPI9691 to DFHPI6714	DFHPI0400, DFHPI0403, DFHPI0720, DFHPI0997, DFHPI1007 to DFHPI1010, DFHPI9506, DFHPI5253	
	DFHRD0107	
DFHRL0122	DFHRL0103	
DFHRT4424	DFHRT4418	
DFHSJ010 to DFHSJ0103, DFHSJ0210 to DFHSJ0215, DFHSJ0540 to DFHSJ0542, DFHSJ0600, DFHSJ1007 and DFHSJ1008, DFHSJ1100 to DFHSJ1002, DFHSJ1104 to DFHSJ1106	DFHSJ0201 to DFHSJ0205, DFHSJ0534 to DFHSJ0537, DFHSJ0904, DFHSJ0911, DFHSJ1004, DFHSJ1006	
		DFHSM0603
		DFHSN1150, DFHSN1250
DFHSO0135	DFHSO0102, DFHSO0106, DFHSO0111, DFHSO0117, DFHSO0123	
	DFHTC2536	
DFHTD1290	DFHTD1217, DFHTD1221, DFHTD1278	
SERVICE DFHTF0200		
DFHTM1718, DFHTM1719		
DFHTR0119, DFHTR0122 to DFHTR0124, DFHTR1004		
DFHTS1601 to DFHTS1608		
DFHUS0300	DFHUS0100	
DFHW20134 to DFHW20137, DFHW20161		
DFHWU002, DFHWU004, DFHWU2100		

Table 349. Changes to codes in CICS TS 4.2

NEW:	CHANGED:	REMOVED:
ABRP SERVICE ABSX ACSO ADDK AECE AECM AITN AJST ASJ7 ASJS		

Changes to samples

Table 350. Changes to samples in CICS TS 4.2

Sample	CICS TS 4.2
FILEA (DFH\$AALL, DFH\$ABRW, DFH\$ACOM, DFH\$AMNU, DFH\$AREP, and DFH\$AREN)	CHANGED: Changed to AMODE(64) and using relative addressing: DFH\$AALL, DFH\$ABRW, DFH\$ACOM, DFH\$AMNU, and DFH\$AREN Changed to use relative addressing, but is AMODE(31): DFH\$AREP
DFH\$APDT	NEW
DFHOEPAC	CHANGED: New custom EP adapter sample (COBOL) Changed to set the default CICS TS queue (TSQ) for system events to userid.SYSTEM.
DFHOSTEP	CHANGED: New custom EP adapter sample (COBOL) Changed to collect and print new event processing statistics

Changes to CICSplex SM

Table 351. Changed CICSplex SM views in CICS TS 4.2

Changed CICS resource type or function	Corresponding changes to CICSplex SM
Client HTTP connections	1. CICS operations views > TCP/IP service operations views > URI maps 2. Administration views > Basic CICS resource administration views > Resource definitions > URI mapping definitions
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
Event processing: system events	1. CICS operations views > Application operations views > Event processing 2. CICS operations views > Application operations views > Event capture specifications
Event processing: capture specifications	CICS operations views > Application operations views > Event capture specifications
Event processing: assured events	1. CICS operations views > Application operations views > Event processing 2. CICS operations views > Application operations views > Event binding 3. CICS operations views > Application operations views > Event capture specifications 4. CICS operations views > Task operations views > Completed tasks 5. CICS operations views > Task operations views > Active tasks
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

Table 351. Changed CICSplex SM views in CICS TS 4.2 (continued)	
Changed CICS resource type or function	Corresponding changes to CICSplex SM
Temporary storage queues: limit for main storage	CICS operations views > Temporary storage queue (TSQ) operations views > Global temporary storage statistics

Table 352. New or changed CICSplex SM views and resource tables in CICS TS 4.2		
Resource type or function	CICSplex SM views	CICSplex SM resource tables
Data predicates for a capture specification	CICS operations views > Application operations views > Event capture specification data predicates	EVCSDATA
Event processing adapter	CICS operations views > Application operations views > Event processing adapter	CRESEPAD, EPADAPT
Information sources for a capture specification	CICS operations views > Application operations views > Event capture specification information sources	EVCSINFO
Option predicates for a capture specification	CICS operations views > Application operations views > Event capture specification option predicates	EVCSOPT
OSGi bundles	Not applicable	OSGIBUND
OSGi services	Not applicable	OSGISERV

Table 353. Obsolete CICSplex SM views, resource tables, and attributes in CICS TS 4.2		
Resource type or function	CICSplex SM views	CICSplex SM resource tables
CICS region 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".	The corresponding SMSATBCUSHRE and SMSATBCUSHLI attributes in the CICSSTOR resource table return "Not applicable" for regions from CICS Transaction Server.

Table 354. Changes to CICSplex SM parameters in CICS TS 4.2	
Parameter	CICS TS 4.2
MASTASKPROT	SERVICE NEW with APAR PM75983: Specifies whether CICSplex SM MAS agent tasks can be controlled through the CICSplex SM API, WUI, and CMCI.

Changes to externals in CICS TS 4.1

CICS TS 4.1 changes a number of externals, including commands, transactions, resources, system initialization parameters, messages, trace and user exits.

This document reflects changes only up to the date when a release was withdrawn from service (end-of-service). Occasionally current APARs can apply also to end-of-service releases. For fix lists that summarize all the APARs for each CICS TS release level, see [Fixes by version for CICS products](#).

- [“Changes to security” on page 311](#)
- [“Changes to CICS API” on page 311](#)
- [“Changes to JCICS API” on page 312](#)
- [“Changes to SIT parameters” on page 312](#)
- [“Changes to resource definitions” on page 312](#)
- [“Changes to CICS control tables” on page 314](#)
- [“Changes to CICS SPI” on page 314](#)
- [“Changes to CICS-supplied transactions” on page 316](#)
- [“Changes to CEMT” on page 316](#)
- [“Changes to CICS monitoring” on page 317](#)
- [“Changes to CICS statistics” on page 318](#)
- [“Changes to CICS utilities” on page 318](#)

- “Changes to global user exits and task-related user exits” on page 319
- “Changes to CICS user-replaceable programs” on page 319
- “Changes to messages and codes” on page 319
- “Changes to samples” on page 322
- “Changes to CICSplex SM” on page 322

Changes to security

Table 355. Changes to security in CICS TS 4.1	
Area	CICS TS 4.1
TLS	CHANGED: ENCRYPTION options MEDIUM and WEAK removed and option SSLV3 added.
PassTickets	XPTKT system initialization parameter: NEW with APAR PI60653
Audit	<ul style="list-style-type: none"> • Identity propagation: NEW with APARs: PK95579, PM01622, PK83741, and PK98426 • ENF 71 (reflect changes to user IDs): NEW
Enhanced protection	CICS BMS 3270 intrusion detection service: NEW with APAR PI50363

Changes to CICS API

Table 356. Changes to EXEC CICS commands in CICS TS 4.1	
Command	CICS TS 4.1
<u>ASKTIME</u>	CHANGED: Changed value: ABSTIME
<u>BIF DIGEST</u>	NEW
<u>CONVERTTIME</u>	CHANGED: New value: RFC 3339 format
<u>EXTRACT TCPIP</u>	CHANGED: New values: CLNTADDR6NU, CLNTIPFAMILY, SRVRADDR6NU, SRVRIPFAMILY. Changed options: CADDRLENGTH, CLIENTADDR, SADDRLENGTH, and SERVERADDR to return IPv6 information.
<u>EXTRACT WEB</u>	CHANGED: New value: HOSTTYPE. Changed value: HOST, to support IPv6 addresses.
<u>FORMATTIME</u>	CHANGED: New value: RFC 3339. New option: MILLISECONDS
<u>INVOKE SERVICE</u>	NEW
<u>INVOKE WEBSERVICE</u>	DEPRECATED: Use INVOKE SERVICE instead.
<u>SIGNAL EVENT</u>	NEW
<u>TRANSFORM DATATOXML</u>	NEW
<u>WEB ENDBROWSE QUERYPARM</u>	NEW
<u>WEB EXTRACT</u>	CHANGED: New value: HOSTTYPE and existing value, HOST, is changed to support IPv6 addresses
<u>WEB OPEN</u>	CHANGED: HOST option is changed to support IPv6 addresses. Description of HTTPRNUM and HTTPVNUM is changed
<u>WEB PARSE URL</u>	CHANGED: New value: HOSTTYPE and existing value, HOST, is changed to support IPv6 addresses
<u>WEB READ QUERYPARM</u>	NEW
<u>WEB READNEXT QUERYPARM</u>	NEW
<u>WEB STARTBROWSE QUERYPARM</u>	NEW
<u>WSACONTEXT BUILD</u>	NEW
<u>WSACONTEXT DELETE</u>	NEW
<u>WSACONTEXT GET</u>	NEW
<u>WSAEPR CREATE</u>	NEW

Changes to JCICS API

Table 357. Changes to JCICS API in CICS TS 4.1		
Class	Method	CICS TS 4.1
Event		NEW
EventErrorException		NEW
HttpRequest	<ul style="list-style-type: none"> • <code>getHostType()</code> • <code>getQueryParm()</code> • <code>startBrowseQueryParm()</code> • <code>getNextQueryParm()</code> • <code>endBrowseQueryParm()</code> 	NEW
HttpSession	<code>getHostType()</code>	NEW
TcpipRequest	<ul style="list-style-type: none"> • <code>getClientHostAddress6()</code> • <code>getServerHostAddress6()</code> • <code>getClientIpFamily()</code> • <code>getServerIpFamily()</code> 	NEW

Changes to SIT parameters

Table 358. Changes to SIT parameters in CICS TS 4.1	
Parameter	CICS TS 4.1
ENCRYPTION	CHANGED: value STRONG now does not allow SSL version 3.0.
INITPARM	CHANGED: you can no longer use INITPARM= DFHMQPRM to specify a default IBM MQ queue manager name and initiation queue name for the CICS-WebSphere MQ connection.
JVMPROFILEDIR	CHANGED: default value is now the value in USSHOME followed by JVMProfiles subdirectory.
MNIDN	NEW
MQCONN	CHANGED: CICS no longer uses INITPARM to provide information to start a connection.
PSTRYPE	CHANGED: new value, NOPS.
USRDELAY	CHANGED: new recommendation to check your settings if you run z/OS 1.11 or later. From z/OS 1.11, CICS is notified immediately if RACF profile changes occur.
XPTKT	NEW with APAR

Changes to resource definitions

Table 359. Changes to resources and resource groups in CICS TS 4.1	
Resource or group	CICS TS 4.1
ATOMSERVICE	NEW
BUNDLE	NEW
IPCONN	CHANGED: New attribute, IDPROP, and changed attribute HOST
JVMSERVER	NEW
MQCONN	NEW
TERMINAL	CHANGED: Change of impact: REMOTESYSTEM attribute for IP connections
TRANSACTION	CHANGED: Change of impact: REMOTESYSTEM attribute for IP connections
URIMAP	CHANGED: New attributes ATOMSERVICE and AUTHENTICATE. Changed attributes HOST and PATH. New value ATOM on USAGE. Change of impact: USAGE(HTTP) required for use with HTTP EP adapter.
DFH\$EJB	CHANGED: TCPIPService definition EJBTCP1 is changed from BACKLOG(5) to BACKLOG(10) and specifies HOST(ANY).
DFH\$EJB2	CHANGED: TCPIPService definition EJBTCP1 is changed from BACKLOG(5) to BACKLOG(10) and specifies HOST(ANY) and MAXPERSIST(NO).
DFH\$EPAG	NEW GROUP

Table 359. Changes to resources and resource groups in CICS TS 4.1 (continued)

Resource or group	CICS TS 4.1
DFH\$EPCM	CHANGED: New bundle: EPBUND01
DFH\$EXBS	CHANGED: New MAPSET definitions: DFH0XS1, DFH0XS2, and DFH0XS3 New programs: DFH0XCMN, DFH0XODE, DFH0XSDS, DFH0XSOD, DFH0XSSM, DFH0XVDS, and DFH0XWOD
DFH\$EXWS	CHANGED: TCPIPSERVICE definition EXMPPORT is changed from BACKLOG(5) to BACKLOG(10) and from URM(NONE) to URM(DFHWBAAX), and specifies HOST(ANY).
DFH\$IIOP	CHANGED: TCPIPSERVICE definitions IIOPNSL and IIOPSSL are changed from BACKLOG(5) to BACKLOG(10) and specify HOST(ANY).
DFH\$SOT	CHANGED: TCPIPSERVICE definitions ECI, HTTPNSL, and HTTPSSL are changed from BACKLOG(5) to BACKLOG(10) and specify HOST(ANY).
DFH\$STAT	CHANGED: New programs: DFHOSTEP, DFHOSTSA, DFHOSTTS, and DFHOSTWB
DFH\$WEB	CHANGED: URIMAP definitions DFH\$URI1 and DFH\$URI4 now specify PORT(NO). URIMAP definitions DFH\$URI2 and DFH\$URI3 now specify AUTHENTICATE(NO) and PORT(NO).
DFH\$WEB2	NEW GROUP
DFH\$WU	CHANGED: New TCPIPSERVICE definition: DFH\$WUTC New URIMAP definition: DFH\$WUUR
DFHDCTG	CHANGED: New TDQUEUE definitions: CECO, CEPO, CMLO, and CRLO TDQUEUE definitions removed: CPLD and CPLI
DFHEP	NEW GROUP
DFHISCIP	CHANGED: New programs: DFHCIS4, DFHISLQP, DFHISREU, and DFHISRSP New transactions: CISB, CISM, CISQ, CISU, and CIS4 Transactions CISC and CISS now specify TASKDATAKEY(CICS) and DTIMOUT(30). Transactions CISC, CISE, CISR, CIST, and CISX are changed from TASKDATAKEY(USER) to TASKDATAKEY(CICS). New TSMODEL definition: DFHISLQ
DFHJAVA	CHANGED: New programs: DFHSJJI, DFJCICS, DFJCICSB, DFJCZDTC, and DFJDESN Program removed: DFHSJJML Transaction removed: CJMJ
DFHOPER	CHANGED: New programs: DFHCEMNB and DFHCEMNC
DFHPIPE	CHANGED: New programs: DFHMLBST, DFHWSADH, IXMI38DA, IXMI38D1, IXMI38IN, IXMI38UC, and IXM4C57 Programs removed: IXMI33DA, IXMI33DI, IXMI33D1, IXMI33IN, IXMI33UC, and IXM4C56 Program DFHPIVAL are changed from EXECKEY(USER) to EXECKEY(CICS).
DFHRL	NEW GROUP
DFHRS	NEW GROUP
DFHSIGN	CHANGED: Program DFHSFP is changed from RESIDENT(NO) to RESIDENT(YES).
DFHSPI	CHANGED: Programs DFHZCTDX, DFHZDTEX, and DFHZPTDX are changed from STATUS(DISABLED) to STATUS(ENABLED) and from DATALOCATION(BELOW) to DATALOCATION(ANY).
DFHSTAND	CHANGED: New program: DFHSJITL New transaction: CJSR
DFHWEB2	NEW GROUP

Table 359. Changes to resources and resource groups in CICS TS 4.1 (continued)

Resource or group	CICS TS 4.1
DFHWSAT	CHANGED: URIMAP definition DFHRSURI now specifies PORT(NO).
DFHWU	NEW GROUP

Table 360. Changes to compatibility groups in CICS TS 4.1

Group	CICS TS 4.1
DFHCOMPC	NEW GROUP
DFHCOMPD	NEW GROUP
DFHCOMP9	CHANGED: TCPIPSERVICE definition DFHADTCP specifies HOST(ANY).

Changes to CICS control tables

Table 361. Changes to CICS control tables in CICS TS 4.1

Control table	CICS TS 4.1
DFHDCT	CHANGED: Support for DFHCSDUP MIGRATE command withdrawn
DFHMCT	CHANGED: Default on COMPRESS option is changed from NO to YES
DFHRCT	CHANGED: Support for DFHCSDUP MIGRATE command withdrawn
DFHTCT	CHANGED: Support for DFHCSDUP MIGRATE command withdrawn
DFHTST	CHANGED: Support for DFHCSDUP MIGRATE command withdrawn

Changes to CICS SPI

Table 362. Changes to CICS system programming interface in CICS TS 4.1

Command	CICS TS 4.1
<u>CREATE ATOMSERVICE</u>	NEW
<u>CREATE BUNDLE</u>	NEW
<u>CREATE JVMSERVER</u>	NEW
<u>CREATE MQCONN</u>	NEW
<u>CREATE TCPIPSERVICE</u>	CHANGED: HOST replaces IPADDRESS option
<u>CSD ADD</u>	NEW
<u>CSD ALTER</u>	NEW
<u>CSD APPEND</u>	NEW
<u>CSD COPY</u>	NEW
<u>CSD DEFINE</u>	NEW
<u>CSD DELETE</u>	NEW
<u>CSD DISCONNECT</u>	NEW
<u>CSD ENDBRGROUP</u>	NEW
<u>CSD ENDBRLIST</u>	NEW
<u>CSD ENDBRRSRCE</u>	NEW
<u>CSD GETNEXTGROUP</u>	NEW
<u>CSD GETNEXTLIST</u>	NEW
<u>CSD GETNEXTRSRCE</u>	NEW
<u>CSD INQUIREGROUP</u>	NEW
<u>CSD INQUIRELIST</u>	NEW

Table 362. Changes to CICS system programming interface in CICS TS 4.1 (continued)

Command	CICS TS 4.1
<u>CSD INQUIRERSRCE</u>	NEW
<u>CSD INSTALL</u>	NEW
<u>CSD LOCK</u>	NEW
<u>CSD REMOVE</u>	NEW
<u>CSD RENAME</u>	NEW
<u>CSD STARTBRGROUP</u>	NEW
<u>CSD STARTBRLIST</u>	NEW
<u>CSD STARTBRRSRCE</u>	NEW
<u>CSD UNLOCK</u>	NEW
<u>CSD USERDEFINE</u>	NEW
<u>DISCARD ATOMSERVICE</u>	NEW
<u>DISCARD BUNDLE</u>	NEW
<u>DISCARD EVENTBINDING</u>	NEW
<u>DISCARD IPCONN</u>	NEW
<u>DISCARD JVMSERVER</u>	NEW
<u>DISCARD LIBRARY</u>	NEW
<u>DISCARD MQCONN</u>	NEW
<u>INQUIRE ASSOCIATION</u>	CHANGED: New options: CLIENTLOC, SRVRIPFAMILY replaces IPFAMILY for new programs, CLNTIPFAMILY, DNAME, and REALM
<u>INQUIRE ASSOCIATION LIST</u>	CHANGED: New options: DNAME, REALM, DNAMELEN, and REALMLEN
<u>INQUIRE ATOMSERVICE</u>	NEW
<u>INQUIRE BUNDLE</u>	NEW
<u>INQUIRE BUNDLEPART</u>	NEW
<u>INQUIRE CAPTURESPEC</u>	NEW
<u>INQUIRE DISPATCHER</u>	CHANGED: New options: ACTTHRDTCS and MAXTHRDTCS
<u>INQUIRE EVENTBINDING</u>	NEW
<u>INQUIRE EVENTPROCESS</u>	NEW
<u>INQUIRE IPCONN</u>	CHANGED: New options: CLIENTLOC, PARTNER, IDPROP, HOSTTYPE, IPRESOLVED, IPFAMILY New values on HOST option
<u>INQUIRE JVMSERVER</u>	NEW
<u>INQUIRE MONITOR</u>	CHANGED: New options: DPLLIMIT, IDNTYCLASS Change of default on COMPRESSST option to COMPRESS
<u>INQUIRE MQCONN</u>	NEW
<u>INQUIRE MQINI</u>	NEW
<u>INQUIRE TCIPSERVICE</u>	CHANGED: New options: HOST, HOSTTYPE, IPRESOLVED, IPFAMILY
<u>INQUIRE TERMINAL</u>	CHANGED: New option: REMOTESYSTEM
<u>INQUIRE TRACETYPE</u>	CHANGED: New option: FLAGSET
<u>INQUIRE TRANSACTION</u>	CHANGED: New option: REMOTESYSTEM

Table 362. Changes to CICS system programming interface in CICS TS 4.1 (continued)

Command	CICS TS 4.1
<u>INQUIRE URIMAP</u>	CHANGED: New options: AUTHENTICATE, ATOMSERVICE, HOSTTYPE, IPRESOLVED, IPFAMILY, PORT New value: on HOST option
<u>INQUIRE VTAM</u>	CHANGED: New option: PSTYPE
<u>INQUIRE XMLTRANSFORM</u>	NEW
<u>SET ATOMSERVICE</u>	NEW
<u>SET BUNDLE</u>	NEW
<u>SET EVENTBINDING</u>	NEW
<u>SET EVENTPROCESS</u>	NEW
<u>SET JVMSERVER</u>	NEW
<u>SET MONITOR</u>	CHANGED: New options: DPLLIMIT, FILELIMIT, IDNTYCLASS, and TSQUEUELIMIT
<u>SET MQCONN</u>	NEW
<u>SET TRACETYPE</u>	CHANGED: New option: FLAGSET
<u>SET VTAM</u>	CHANGED: Change of impact: does not allow change to PSDINTERVAL, PSDINTHRS, PSDINTMINS, and PSDINTSECS to nonzero when parameter NOPS in effect
<u>SET XMLTRANSFORM</u>	NEW

Changes to CICS-supplied transactions

Table 363. Changes to CICS-supplied transactions in CICS TS 4.1

NEW	REMOVED
<ul style="list-style-type: none"> • CEPD • CEPH • CEPM • CEPQ • CEPT • CWWU • CW2A 	<ul style="list-style-type: none"> • CJGC

Changes to CEMT

Table 364. Changes to CEMT in CICS TS 4.1

CEMT	CICS TS 4.1
<u>CEMT DISCARD</u>	NEW: CEMT DISCARD ATOMSERVICE, CEMT DISCARD BUNDLE, CEMT DISCARD JVMSERVER, CEMT DISCARD MQCONN
All CEMT INQUIRE	CHANGED: Change of layout
<u>CEMT INQUIRE ATOMSERVICE</u>	NEW
<u>CEMT INQUIRE BUNDLE</u>	NEW
<u>CEMT INQUIRE CLASSCACHE</u>	CHANGED: PROFILE option made obsolete
<u>CEMT INQUIRE CORBASERVER</u>	CHANGED: New values: IPv6 addresses on HOST option New option: IPRESOLVED
<u>CEMT INQUIRE DISPATCHER</u>	CHANGED: New options: ACTTHRDCBS and MAXTHRDCBS

Table 364. Changes to CEMT in CICS TS 4.1 (continued)

CEMT	CICS TS 4.1
CEMT INQUIRE EVENTBINDING	NEW
CEMT INQUIRE EVENTPROCESS	NEW
CEMT INQUIRE IPCONN	CHANGED: New options: IPRESOLVED, IDPROP
CEMT INQUIRE JVMSERVER	NEW
CEMT INQUIRE MONITOR	CHANGED: New options: DPLLIMIT, IDNTYCLASS
CEMT INQUIRE MQCONN	NEW
CEMT INQUIRE MQINI	NEW
CEMT INQUIRE SYSTEM	CHANGED: New option: MQCONN
CEMT INQUIRE TCPIPService	CHANGED: New value: IPv6 addresses on HOST option New option: IPRESOLVED
CEMT INQUIRE TERMINAL	CHANGED: Change of impact: REMOTESYSTEM option
CEMT INQUIRE TRANSACTION	CHANGED: Change of impact of REMOTESYSTEM option
CEMT INQUIRE URIMAP	CHANGED: New options: AUTHENTICATE, ATOMSERVICE, IPRESOLVED, PORT New values: IPv6 on HOST option, ATOM on USAGE option
CEMT INQUIRE VTAM	CHANGED: New option PSTYPE
CEMT INQUIRE XMLTRANSFORM	NEW
CEMT SET ATOMSERVICE	NEW
CEMT SET BUNDLE	NEW
CEMT SET EVENTBINDING	NEW
CEMT SET EVENTPROCESSING	NEW
CEMT SET JVMSERVER	NEW
CEMT SET MONITOR	CHANGED: New options DPLLIMIT FILELIMIT, IDNTYCLASS, and TSQUEUELIMIT
CEMT SET MQCONN	NEW
CEMT SET XMLTRANSFORM	NEW

Changes to CICS monitoring

Change to the Monitoring Control Table (MCT): In V3.2, the default value is changed from RMI=NO to RMI=YES.

Table 365. Changes to performance class data in CICS TS 4.1

Group	CICS TS 4.1
All	NEW FIELDS: EICTOTCT, TIASKTCT, TIOTCT, BFTOTCT, ECSIGECT, ECFOPCT, ECEVNTCT, OCLIPADR,
DFHPROG	CHANGED: PGMNAME now contains the target application program name
DFH SOCK	CHANGED: <ul style="list-style-type: none"> CLIPADDR 318: replaces field 244.
DFHTASK	CHANGED: <ul style="list-style-type: none"> New TCB modes TP and T8 are added for USRDISPT, MSDISPT, MSCPUT New TCB mode TP only is added to KY8DISPT, KY8CPUT New values in bytes 4 TRANFLAG field (4.1 and 3.2), new value in byte 5 (4.1), bit 3 added to byte 2 (3.2). EXCMNTRF changed to match (3.2) New fields: MAXTTDLY, T8CPUT, JVMTHDWT

Table 365. Changes to performance class data in CICS TS 4.1 (continued)

Group	CICS TS 4.1
DFHWEBB	<p>CHANGED:</p> <ul style="list-style-type: none"> Number of QUERYPARM requests issued by the user task is added to the count for WBREADCT (read) and WBTOTWCT (read), and WBBRWCT (browse) Number of EXEC CICS INVOKE SERVICE requests that are issued by the user task is added to the count for WBIWBSC New fields: WBURIMNM, WBPIPLNM, WBATMSNM, WBSVCENM, WBSVOPNM, WBPROGNM, WBSFCRCT, WBSFTOCT, WBISSFCT, WBSREQBL, WBSRSPBL, MLXSSTD, MLXMLTCT, WSACBLCT, WSACGTCT, WSAEPCCT, WSATOTCT

Changes to the monitoring sample program, DFH\$MOLS, in this release:

- Support for identity class records with IDN option on the PRINT option and counts in totals report page.
- New EXPAND control statement to expand any SMF 110 monitoring records that have been compressed.

Changes to CICS statistics

Table 366. Changes to CICS statistics in CICS TS 4.1

Type	CICS TS 4.1
All (data section, DFHSTIDS)	CHANGED: New values: STIRLR, STIW2R, STIMLR, STISJS, STIPGD, STIECG, STIECR, STIEPG, and STIECC
Atom feed	NEW
Bundle	CHANGED: New DSECT
Event processing	CHANGED: New CAPTURESPEC, EVENTBINDING, and EVENTPROCESS
JVMSERVER	NEW
Program Definition	NEW
XMLTRANSFORM	NEW

Changes to CICS utilities

Table 367. Changes to CICS utilities in CICS TS 4.1

Utility	CICS TS 4.1
<u>DFHOSTAT</u>	<p>CHANGED:</p> <ul style="list-style-type: none"> Data Tables Storage report includes storage totals for each data table in the report. New parameter, DPLLIMIT, in the System Status Report Changes for printing: three panels for selecting reports to be printed, new COBOL modules, changes to selection of statistics.
DFHCS DUP	<p>CHANGED:</p> <ul style="list-style-type: none"> MIGRATE withdrawn (4.1) Support for definition signature fields on EXTRACT sample programs: DFH\$CRFA, DFH\$CRFP, DFH0CRFC, DFH\$FORA, DFH\$FORP, DFH0FORC, DFH0CBDC, DFH\$DB2T and DFH\$SQT New option: SIGSUMM on LIST,
DFHDUxxx	CHANGED: Renamed with new release identifier
DFHPDxxx	CHANGED: Renamed with new release identifier
<u>DFHSTUP</u>	CHANGED: New parameter, DPLLIMIT, in Interval, End of Day, Requested, and Summary reports for transaction resource monitoring.
DFHTUxxx	CHANGED: Renamed with new release identifier

Changes to global user exits and task-related user exits

Table 368. Changes to global user exit points in CICS TS 4.1	
User exit	CICS TS 4.1
XFCRLSCO	NEW
XISQLCL	NEW
XWBAUTH	CHANGED: Support for IPv6 addressing
XWBOPEN	CHANGED: Support for IPv6 addressing
XWBSNDO	CHANGED: Support for IPv6 addressing

Changes to the TCB indicators in DFHUEPAR in this release:

- **OBsolete:** UEPTJ8 (J8), UEPTJ9 (J9), UEPTJM (JM)
- **NEW:** UEPTTP (TP), UEPTT8 (T8)

Changes to CICS XPI

Table 369. Changes to CICS XPI in CICS TS 4.1	
Functional area	CICS TS 4.1
All	CHANGED: By replacing the CALL XPI parameter with the RELENSCALL XPI parameter, an XPI call assembled by using the CICS TS 4.1 libraries can execute successfully on all currently supported CICS releases.
Business application manager	NEW: INQUIRE_ACTIVATION call
Enqueue	CHANGED: New ENQUEUE_TYPE option is added to ENQUEUE and DEQUEUE

Changes to CICS user-replaceable programs

Table 370. Changes to user replaceable programs in CICS TS 4.1	
Program	CICS TS 4.1
Analyzer programs	CHANGED: New fields for IPv6 addressing: wbra_client_ipv6_address and wbra_server_ipv6_address
Converter programs	CHANGED: New fields for IPv6 addressing: decode_client_ipv6_address and decode_client_ipv6_address_string
DFHBMSX	SERVICE NEW with APAR
DFHPEP	CHANGED: New fields: PEP_COM_BEAR, fields to support the extended z/Architecture [®] MVS linkage conventions.
DFHWBEP	CHANGED: New fields for IPv6 addressing: wbep_client_ipv6_address_len, wbep_client_ipv6_address, wbep_server_ipv6_address_len, and wbep_server_ipv6_address

Changes to messages and codes

Table 371. Changes to messages in CICS TS 4.1		
New messages	Changed messages	Removed messages
DFH5137		
DFH5297		
DFH5559, DFH5560		
DFHAM4936, DFHAM4946	DFHAM4834, DFHAM481, DFHAM4921	
DFHAP0702, DFHAP0703, DFHAP0708, DFHAP1301, DFHAP1600 to DFHAP1603		
DFHBR0509		

Table 371. Changes to messages in CICS TS 4.1 (continued)

New messages	Changed messages	Removed messages
DFHCA4800 to DFHCA4803, DFHCA4805, DFHCA4809 to DFHCA4820, DFHCA4823 to DFHCA4825, DFHCA4828 to DFHCA4834, DFHCA4836 to DFHCA4843, DFHCA4850 to DFHCA4854, DFHCA4857 to DFHCA4860, DFHCA4863, DFHCA4866, DFHCA4867, DFHCA4869, DFHCA4871 to DFHCA4881, DFHCA4883 to DFHCA4885, DFHCA4887 to DFHCA4918, DFHCA4920 to DFHCA4946, DFHCA4999, DFHCA5137, DFHCA5559, DFHCA5560		
DFHCC0106		
DFHDB2212		
DFHDS0007		
DFHDU0218		
DFHEC0001, DFHEC0002, DFHEC0004, DFHEC1000 to DFHEC0009, DFHEC2100, DFHEC3100 to DFHEC3108, DFHEC3110, DFHEC4007, DFHEC4008, DFHEC4111, DFHEC4112, DFHEC4117, DFHEC4120 to DFHEC4123		
DFHEP0001, DFHEP0002, DFHEP0101, DFHEP0102, DFHEP0113 to DFHEP0121, DFHREP1001 to DFHEP1002, DFHEP2001 to DFHEP2003, DFHEP2005		
DFHEX0005		
DFHFC0209, DFHFC0210, DFHFC6039		
DFHII1039		
DFHIS0100, DFHIS1032 to DFHIS1041, DFHIS3040, DFHIS3041	DFHIS1011, DFHIS2001, DFHIS2009, DFHIS2010	DFHIS0003, DFHIS0004, DFHIS0006, DFHIS1024
DFHKE0106, DFHKE0997		
DFHLD0731		
DFHLG0195 to DFHLG0197		
DFHME0141		
DFHML0001, DFHML0002, DFHML0100, DFHML0500 to DFHML0510		
DFHMQ0209, DFHMQ0210, DFHMQ0218, DFHMQ0303, DFHMQ0317, DFHMQ0320, DFHMQ0324, DFHMQ0325, DFHMQ0792, DFHMQ2064, DFHMQ2100 to DFHMQ2103, DFHMQ2107 to DFHMQ2109	DFHMQ0453	
DFHPI0116 to DFHPI0119, DFHPI0450 to DFHPI0457, DFHPI0514, DFHPI0727, DFHPI0732, DFHPI0733, DFHPI0800, DFHPI0917, DFHPI0999, DFHPI1000, DFHPI1020, DFHPI2000 to DFHPI2012, DFHPI2015 to DFHPI2016, DFHPI2018 to DFHPI2027, DFHPI9033 to DFHPI9039, DFHPI9664 to DFHPI984, DFHPI9800 to DFHPI9823	DFHPI0119, DFHPI0400, DFHPI0515, DFHPI0720, DFHPI0911, DFHPI0997	
DFHRD0128 to DFHRD0131		
DFHRL0001, DFHRL0002, DFHRL0101 to DFHRL0121		
DFHRM0402 to DFHRM0405		
DFHRS001, DFHRS002		
DFHSJ0004, DFHSJ0207, DFHSJ0910 to DFHSJ0918, DFHSJ1001 to DFHSJ1006		DFHSJ0504, DFHSJ0513, DFHSJ0519, DFHSJ0520, DFHSJ0540, DFHSJ0701 to DFHSJ0709, DFHSJ0801 to DFHSJ0803

Table 371. Changes to messages in CICS TS 4.1 (continued)

New messages	Changed messages	Removed messages
DFHSO0118, DFHSO0139, DFHSO0133, DFHSO0134		
SERVICE DFHTF0200		
DFHUS0100		
DFHW20001, DFHW20002, DFHW20004, DFHW20006, DFHW20100, DFHW20100, DFHW20101, DFHW20110, DFHW20111, DFHW20120 to DFHW20133, DFHW20141, DFHW20142, DFHW20151		
DFHWB0763, DFHWB0764		
DFHWU0910 to DFHWU0920, DFHWU4001 to DFHWU4003, DFHWU4005 to DFHWU4022, DFHWU4025 to DFHWU4027, DFHWU4029 to DFHWU4032, DFHWU4300 to DFHWU4302, DFHWU4400 to DFHWU4402, DFHWU4500, DFHWU5000 to DFHWU5002		
	DFHZC2352, DFHZC2401, DFHZC2405, DFHZC2411, DFHZC2411, DFHZC2417, DFHZC2419, DFHZC2422, DFHZC2432, DFHZC2433, DFHZC2447, DFHZC2449, DFHZC2450, DFHZC2456, DFHZC2458, DFHZC2488, DFHZC3205, DFHZC3418, DFHZC3418 to DFHZC3420, DFHZC3433, DFHZC3442, DFHZC3444, DFHZC3461, DFHZC3480, DFHZC3482, DFHZC3499, DFHZC4904 to DFHZC4906, DFHZC4919, DFHZC4920, DFHZC4922, DFHZC4924, DFHZC4925, DFHZC4926, DFHZC4937, DFHZC4938, DFHZC4941, DFHZC4942	

Table 372. Changes to codes in CICS TS 4.1

NEW:	CHANGED:	REMOVED:
AALA AALC AAM4 SERVICE ABSX ACRQ AECA AECC AECO AECY AECZ AEPD AEPM AFDK AIPM AIPN AIPO AIPP AIPR AKEJ ALIL ASJO AW2A AW2B AXFN AXFV		AMQL

Changes to samples

Table 373. Changes to samples in CICS TS 4.1	
Sample	CICS TS 4.1
DFH\$WUTC	CHANGED: New sample TCP/IP service definition
DFH\$WUUR	CHANGED: New sample URI map definition
DFH\$W2S1	CHANGED: New C atom feed sample service routine
DFH\$XISL	CHANGED: New IPIC sample
DFHOW2F1	CHANGED: New COBOL atom feed sample service routine

Changes to CICSplex SM

Changes to CICSplex SM installation and definition in CICS TS 4.1:

- The product number used in Tivoli NetView SNA Generic Alerts changed to 5655S97.
- The size of the Common Work Area has increased to 2048 bytes.

Table 374. Changed CICSplex SM views in CICS TS 4.1	
Changed CICS resource type or function	Corresponding changes to CICSplex SM
Bundles	<ol style="list-style-type: none"> 1. Administration views > Basic CICS resource administration views > Resource definitions 2. CICS operations views 3. CICS Bundles view
Configuring z/OS Communications Server persistent sessions support	CICS operations views > CICS region operations views > CICS regions
Event processing: HTTP EP adapter	CICS operations views > Application operations views > Event processing
Identity propagation	<ol style="list-style-type: none"> 1. CICS operations views > Task operations views > Task association information 2. CICS operations views > CICS region operations views > CICS regions 3. Administration views > Monitor administration views > Definitions
IPv6	<ol style="list-style-type: none"> 1. CICS operations views > TCP/IP service operations views > IPIC connections 2. CICS operations views > Task operations views > Task association information
Java programs: use count and JVM profile	CICS operations views > Program operations views > Programs
Monitoring details: new DPLLIMIT field, DPLLIMIT, FILELIMIT, and TSQLIMIT values can be set	CICS Regions > CICS system name > Monitoring and statistics details > Monitoring details
SYSLINK objects that support IPIC connections	<ol style="list-style-type: none"> 1. Administration views > Basic resource administration views 2. Administration views > Fully functional resource administration views 3. Administration views > Basic CICS resource administration views > CICS system links and related resources > System link definitions 4. Administration views > Basic CICS resource administration views > CICS system links and related resources > CICS system definitions 5. Administration views > Basic CICS resource administration views > System link definitions > MASs known to CICSplex
Workload management improvements	<ol style="list-style-type: none"> 1. Active workload views 2. Active workload views > Active workloads 3. Active workload views > Active routing regions 4. Active workload views > Active workload target distribution factors 5. Active workload views > CICSplex definitions 6. Active workload views > CICS system definitions 7. Active workload views > Active MASs in CICSplex 8. CICSplex SM operations views > CMASs managing CICSplex 9. Administration views > CMAS configuration administration views > CMAS in CICSplex definitions

<i>Table 374. Changed CICSplex SM views in CICS TS 4.1 (continued)</i>	
Changed CICS resource type or function	Corresponding changes to CICSplex SM
XMLTRANSFORM resources	<ol style="list-style-type: none"> 1. CICS operations views > CICS region operations views > Request statistics processing 2. EYUSTARTCICSRGN.DETAILED > Monitoring and statistics details > Statistics details > Request statistics processing
z/OS Communications Server and partner system information	CICS operations views > TCP/IP service operations views > IP connections
z/OS Communications Server information	CICS operations views > Task operations views > Task association information

<i>Table 375. New or changed CICSplex SM views and resource tables in CICS TS 4.1</i>		
Resource type or function	CICSplex SM views	CICSplex SM resource tables
Atom feeds	CICS operations views > TCP/IP service operations views > Atomservice definitions	ATOMSERV
ATOMSERVICE resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > Atomservice definitions	ATOMDEF
ATOMSERVICE resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	ATMINGRP
Bundles	CICS operations views > Applications > Bundles	BUNDLE, CRESBUND
BUNDLE resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > BUNDLE definitions	BUNDDEF
BUNDLE resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	BUNINGRP
Event capture specifications	Application operations views > Event capture specification	CRESEVCS, EVCSPEC
Event bindings	Application operations views > Event bindings	CRESEVBD, EVNTBIND
Event processing	Application operations views > Global event processing attributes	EVNTGBL
JVM servers	CICS operations views > Enterprise Java operations views > JVM servers	JVMSERV
JVMSEVER resource definitions	Administration views > Basic CICS resource administration views > Resource definitions > JVMSEVER definitions	JVMSVDEF
JVMSEVER resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	JMSINGRP
MQCONN resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > WebSphere MQ connection definitions	MQCONDEF
MQCONN resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	MQCINGRP
System link definitions	Administration views > Basic CICS resource administration views > CICS system links and related resources	SYSLINK (existing resource table)
Target region for one or more active workloads	Active workload views > Target region distribution statistics	WLMATARG
WebSphere MQ connection definition with MQCONN resource	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ Connection	MQCON
WebSphere MQ connection with dynamically created MQINI resource	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ initiation queue	MQINI
XMLTRANSFORM resources	Application operations views > XMLTRANSFORM resources	XMLTRANS

BAS object	Description
ATMINGRP	BAS definition that describes the membership of an ATOMSERVICE definition (ATOMDEF) in a resource group.
BUNDDDEF	CICS definition that describes a BUNDLE resource.
BUNINGRP	BAS definition that describes the membership of a BUNDLE definition (BUNDDDEF) in a resource group.
JVMSVDEF	CICS definition that describes a JVMSEVER resource.
JMSINGRP	BAS definition that describes the membership of a JVMSEVER definition (JVMSVDEF) in a resource group.
MQCONDEF	CICS definition that describes an MQCONN resource.
MQCINGRP	BAS definition that describes the membership of an MQCONN definition (MQCONDEF) in a resource group.
ATOMDEF	CICS definition that describes an ATOMSERVICE resource.

NEW:	CHANGED:
<ul style="list-style-type: none"> WMWD: This transaction is listed in the CSD group EYU\$CDEF and must be defined to RACF. XZLT: This transaction is listed in the CSD group EYU\$CDEF and must be defined to RACF. 	COVC <ul style="list-style-type: none"> Front panel: The Current Status, Time, Applid, and Date fields have moved by one line down the screen COVC status screen. Please review any automated processes that use these fields. Status panel has a new field, TCP/IP Family, that displays whether the address of the connected region is an IPv4 or IPv6 address. User sessions panel: The ClientIp field now displays IPv6 addresses. The IPv6 address extends over two lines, which reduces the number of users visible per page (to a minimum of three users, if they all have IPv6 addresses). IPv4 addresses are displayed on a single line.

NEW:	REMOVED:
SERVICE APAR PM42117: SECRPTLVL Controls the level of detail available to a client API task when a response of NOTPERMIT with reason USRID is returned by a request.	<ul style="list-style-type: none"> CASNAME WLMLOADCOUNT WLMLOADTHRS

Parameter	CICS TS 4.1
CMCIPOPT	NEW: Specifies the TCP/IP port number that is allocated to the CMCI.
TCPIPADDRESS	CHANGED: Now supports IPv6.
TCPIPSSLCERT	CHANGED: Now has a case sensitive specified value.

Stabilization notices

Out-of-date technology inside CICS Transaction Server for z/OS is often stabilized and might be reduced in capability or discontinued in a future release.

Technologies that are discontinued are detailed in [Changes between releases in Upgrading](#). The following technologies are stabilized.

APPC password expiration management (PEM)

Support for APPC PEM is stabilized. The PEM server does not support password phrases. To support authentication with password phrases when using CICS Transaction Gateway with CICS TS, you must migrate from APPC to IP interconnectivity (IPIC) and change your application code to use a current External Security Interface (ESI) API such as **CICS_VerifyPassword** and **CICS_ChangePassword** as described in the [CICS Transaction Gateway for Multiplatforms](#) product documentation.

CICS debugging tools sockets interface

As of Version 14.2, IBM z/OS Debugger supports only the TCP/IP Socket Interface for CICS; therefore, the debugging tools sockets interface provided by CICS TS is no longer used and thus stabilized.

CICS Service Flow Runtime

Service Flow Runtime and Service Flow Modeler capability in [IBM Developer for z/OS 14.2.3](#) are stabilized. Consider exposing and orchestrating applications as API services by using [z/OS Connect Enterprise Edition](#), CICS web services, or by writing web applications in [Java](#) or [Node.js](#).

Where applications contain a mixture of presentation and business logic, consider using the IBM Developer for z/OS refactoring tools to extract reusable components into separate programs that are suitable for API enablement. In addition, IBM Developer for z/OS can integrate with [IBM Application Discovery and Delivery Intelligence](#) to enable in-context analysis of source and dependencies to aid refactoring and impact analysis.

CICS system events

System events are stabilized. Consider moving to [Policy system rules](#). Events that are emitted by policies and CICS application events share common infrastructure and remain strategic.

CICS TS Application Handler Java interface

The CICS [Application handler](#) Java interface, which can be used to write SOAP web services provider pipeline application handlers in an Axis2 JVM server, is stabilized. Consider writing a web application for API services that use the Java API for XML Web Services (JAX-WS) [Liberty features](#), [Node.js](#), or [z/OS Connect Enterprise Edition](#).

CICSplex SM Real-Time Analysis

CICSplex SM [Monitoring using real-time analysis \(RTA\)](#) is stabilized. Consider moving to [Policy system rules](#) or a dedicated monitoring product, such as the [IBM OMEGAMON for z/OS](#).

CICSplex SM Web User Interface

The CICSplex SM Web User Interface (WUI) is stabilized, although minor additions to views continue. The CICSplex SM address space (CMAS) and WUI server components continue to support the CICS Explorer and form the basis of the modern CICS user experience. CICS Explorer provides an extensive set of task-oriented views, powerful context-sensitive editors, and supports the new features of CICS TS, enabling developers and systems programmers to be more productive.

DFHWBCLI web client interface

The [DFHWBCLI Web Client Interface](#) is stabilized. Consider moving to use the CICS WEB API with [Session tokens](#).

Enterprise Bundle Archive (EBA)

Enterprise Bundle Archive (EBA) support is stabilized in CICS TS. Additionally, the ability to build EBAs as part of the CICS bundle export is stabilized in both CICS Explorer and CICS TS build toolkit. Consider either using Gradle or Maven to build EBAs or copying a built EBA into a CICS bundle before export.

Extended Recovery Facility

[XRF system initialization parameter](#) in CICS is stabilized. Consider alternative technologies that provide more flexible high-availability solutions for modern workloads. These solutions include the [z/OS Automatic Restart Manager \(ARM\)](#), CICS data sharing, VTAM persistent sessions, and use of the cross-system coupling facility.

JVMSEVER-based configuration option for the web services data transformation service

Support for the JVMSEVER-based configuration option for the web services data transformation service is stabilized. Avoid use of the following pipeline configuration file options:

- The [<cics_soap_1.1_handler_java>](#) element
- The [<cics_soap_1.2_handler_java>](#) element
- The [<cics_json_handler_java>](#) element
- The [<apphandler_class>](#) pipeline configuration element

Also, avoid using the [JVM server profile options](#) JVMSEVER profile option.

These options can be replaced with the use of non-Java pipeline for CICS [web services](#), [z/OS Connect Enterprise Edition](#), or by writing web applications in [Java](#) or [Node.js](#). WSBind files that are currently deployed to an Axis2 pipeline can be redeployed into a non-Java pipeline with no required change to the WSBind files.

ONC RPC

Open Network Computing Remote Procedure Call (ONC RPC) is stabilized. Consider exposing and orchestrating applications as API services by using [z/OS Connect Enterprise Edition](#), [CICS web services](#), or by writing web applications in [Java](#) or [Node.js](#).

PDF documentation

PDF format versions of some parts of the CICS Transaction Server documentation are stabilized and no longer updated. The corresponding information in HTML in IBM Documentation remains available. For a list of these PDFs, see [Changes to documentation](#).

Release sensitive XPI call RELENSCALL

Support for the [Release sensitive XPI call](#) is stabilized.

SAML using the CICS STS

Support for SAML using the [CICS Security Token Service](#) is stabilized.

Transport Layer Security (TLS)

Support for TLS 1.1 is stabilized. Consider using TLS 1.2 or TLS 1.3 that provide increased security for TCP/IP connections using [Customizing encryption negotiations](#).

WS-Security infrastructure options

CICS web services support for [Pipeline configuration for WS-Security infrastructure](#) is stabilized.

WSDL 2.0

[Web Services Description Language \(WSDL\) 2.0](#) in CICS is stabilized. Use WSDL 1.1 as the de facto standard for SOAP-based web services.

XSSEX global user exit

The `signon` and `signoff` global user exit XSSEX was introduced as a temporary migration aid in CICS TS 2.2 and is removed in CICS TS 6.1.

zosConnect-1.0 and zosConnect-1.2 Liberty features

Liberty features `zosConnect-1.0` and `zosConnect-1.2` are stabilized. You are recommended to migrate to the IBM z/OS Connect Enterprise Edition product. For more information about stabilized Liberty features and feature capabilities, see [Stabilized Liberty features and feature capabilities in WebSphere Application Server for z/OS Liberty product documentation](#).

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Programming interface information

IBM CICS supplies some documentation that can be considered to be Programming Interfaces, and some documentation that cannot be considered to be a Programming Interface.

Programming Interfaces that allow the customer to write programs to obtain the services of CICS Transaction Server for z/OS, Version 6 Release 1 (CICS TS 6.1) are included in the following sections of the online product documentation:

- [Developing applications](#)
- [Developing system programs](#)
- [CICS TS security](#)
- [Developing for external interfaces](#)
- [Application development reference](#)
- [Reference: system programming](#)
- [Reference: connectivity](#)

Information that is NOT intended to be used as a Programming Interface of CICS TS 6.1, but that might be misconstrued as Programming Interfaces, is included in the following sections of the online product documentation:

- [Troubleshooting and support](#)
- [CICS TS diagnostics reference](#)

If you access the CICS documentation in manuals in PDF format, Programming Interfaces that allow the customer to write programs to obtain the services of CICS TS 6.1 are included in the following manuals:

- Application Programming Guide and Application Programming Reference
- Business Transaction Services

- Customization Guide
- C++ OO Class Libraries
- Debugging Tools Interfaces Reference
- Distributed Transaction Programming Guide
- External Interfaces Guide
- Front End Programming Interface Guide
- IMS Database Control Guide
- Installation Guide
- Security Guide
- CICS Transactions
- CICSplex System Manager (CICSplex SM) Managing Workloads
- CICSplex SM Managing Resource Usage
- CICSplex SM Application Programming Guide and Application Programming Reference
- Java Applications in CICS

If you access the CICS documentation in manuals in PDF format, information that is NOT intended to be used as a Programming Interface of CICS TS 6.1, but that might be misconstrued as Programming Interfaces, is included in the following manuals:

- Data Areas
- Diagnosis Reference
- Problem Determination Guide
- CICSplex SM Problem Determination Guide

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Index

A

ATMINGRP, new BAS object [324](#)

ATOMDEF, new BAS object [324](#)

B

BUNDEF, new BAS object [324](#)

BUNINGRP, new BAS object [324](#)

J

JMSINGRP, new BAS object [324](#)

JVMSVDEF, new BAS object [324](#)

M

MQCINGRP, new BAS object [324](#)

MQCONDEF, new BAS object [324](#)

multi-release [85](#)

N

new BAS definition objects

ATMINGRP [324](#)

ATOMDEF [324](#)

BUNDEF [324](#)

BUNINGRP [324](#)

JMSINGRP [324](#)

JVMSVDEF [324](#)

MQCINGRP [324](#)

MQCONDEF [324](#)

