

CICS Transaction Server for z/OS
Version 5 Release 6

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 5 Release 6 (product number 5655-Y305655-BTA) and to all subsequent releases and modifications until otherwise indicated in new editions.

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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 Knowledge Center.

Date of this PDF

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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 new release.

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:

Table 1. Activities in an upgrade project	
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
Assess the impact of changes to CICS on your configuration.	Changes between releases in Upgrading
Install the new version of CICS TS.	Installing

<i>Table 1. Activities in an upgrade project (continued)</i>	
Activity	Find more information
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

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	“Assess the new release or continuous delivery capability” on page 19	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	“Clarify the driving forces for upgrade” on page 19	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	“Consider the cost of upgrade” on page 19	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Consider the timing	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Build your upgrade project team	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	<div>Choose your edition of CICS TS for z/OS</div>	<div>Optional, but recommended</div>

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Check hardware and software prerequisites	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	“Check downward compatibility with older releases of CICS” on page 20	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Check compatibility with other IBM products	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Check compatibility with vendor products	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Review your applications	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Review your CICS regions	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Review the service level of CICS TS for z/OS	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Review the changes in CICS TS for z/OS	Optional, but recommended

Your current version	Action	Mandatory or optional?
<div>All Versions</div>	Develop your upgrade strategy	Optional. but recommended

Assess the new release or continuous delivery capability

All Versions

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 307.

Clarify the driving forces for upgrade

All Versions

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 317 for an example.

Consider the cost of upgrade

All Versions

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

All Versions

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

All Versions

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

All Versions

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.

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

All Versions

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.

Check downward compatibility with older releases of CICS

All Versions

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 V5.2 SDFHLPA library in the MVS™ link pack area (LPA) and a CICS TS V5.2 version of the library SDFHLINK in the LNKLIST, can you use the CICS TS V5.6 libraries in the LINKLIST and LPA instead of the CICS TS V5.2 libraries?

You can run CICS TS V5.6 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 V5.6 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 V5.2 versions of LPA-eligible modules in the LPA, you must run with **LPA=YES** for your CICS TS V5.2 regions and **LPA=NO** for your CICS TS V5.5 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 DFHPDnnn, DFHTGnnn, DFHTRnnn, DFHTTnnn), which are release dependent, the CICS TS V5.6 modules in SDFHLINK are compatible with earlier releases of CICS so they can be used with CICS TS V5.5 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:

730
CICS TS V5.6

720
CICS TS V5.5

710
CICS TS V5.4

700
CICS TS V5.3

690
CICS TS V5.2

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

Check compatibility with other IBM products

All Versions

You can create reports of the related software products that are supported by your target release of CICS TS on the [Compatibility reports](#) page. The same type of software compatibility information can also be found under the **Supported Software** tab of the [Detailed system requirements](#) for CICS TS. Any requirements, such as APARs that are needed to make the software compatible, are listed in the notes or additional information in the report.

Check compatibility with your vendor products

All Versions

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 products](#). [Vendor software products for z/OS](#) shows the software developers who indicate that their products support levels of z/OS. In addition, make the following checks:

- 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?

Always check with your vendor for definitive information on compatibility.

Review your applications

All Versions

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

All Versions

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 service level of CICS Transaction Server for z/OS

All Versions

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 307.

Review the changes in CICS Transaction Server for z/OS

All Versions

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

Develop your upgrade strategy

All Versions

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 317.

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 332.

Chapter 3. 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.

Table 1 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 119](#).

For more information about these changes, see the CICS TS for z/OS What's New section for each release: [5.2](#), [5.3](#), [5.4](#), [5.5](#) and [This release](#).

You might also find the [CICS TS for z/OS V5 Performance Report](#) helpful.

Table 2. Major areas of technology change, by release of CICS TS for z/OS		
Release	New	Discontinued
5.6	Stabilization Several features have been stabilized, for more information, see “Stabilization notices” on page 234 .	
V5.5	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. Security Enhanced security and resiliency of applications across all supported languages. 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.	

Table 2. Major areas of technology change, by release of CICS TS for z/OS (continued)

Release	New	Discontinued
5.4	<p>Applications 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> <p>Liberty 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> <p>Management 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> <p>Policies Support for system rules, and new asynchronous requests task rule</p> <p>Security 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>	<p>Management System events (deprecated), CICSplex SM Real-Time Analysis (RTA) (stabilized).</p>

Table 2. Major areas of technology change, by release of CICS TS for z/OS (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>Note: 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>

Table 2. Major areas of technology change, by release of CICS TS for z/OS (continued)

Release	New	Discontinued
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 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>	

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 119.

Table 3. Changes to installing, by release of CICS Transaction Server for z/OS

V5.2	V5.3	V5.4	V5.5	V5.6
			<p>CHANGED: The Java components that were included within FMID JCI710D at CICS TS V5.4 are moved into the base FMID HCI7200.</p>	<p>CHANGED: Removed SD FHL1.</p>
			<p>NEW: Additional distribution library ADFHAUTH.</p>	
			<p>CHANGED: Removed distribution library ADFJMOD and removed library SDFJAUTH.</p>	
			<p>CHANGED: DFHALLOC, DFHINST1 and DFHINSTA jobs have been changed to allocate the following PDSs with BLKSIZE=0 rather than the previous BLKSIZE=400:</p> <p>ADFHCOB ADFH370 ADFHPL1 SDFHCOB SDFH370 SDFHPL1</p>	

Table 3. Changes to installing, by release of CICS Transaction Server for z/OS (continued)				
V5.2	V5.3	V5.4	V5.5	V5.6
		CHANGED: All source changes are now made by source replacement. Source updates will no longer be made.	CHANGED: The STEPLIB DD statement for the h1q .SDFJAUTH library in the CICS startup job stream must be removed.	
		NEW: Optional job, DFHIFTGS, tags the text files in the CICS USSHOME directory with the correct coded character set.	CHANGED: You have to run this job if you want to use Node.js capabilities.	
		CHANGED: DFHALLOC and DFHINST3 jobs create the ADFHMOD, SDFHAUTH, and SDFHLOAD data sets as PDSEs. CICS now requires these data sets to be PDSEs.		
	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 on dW Answers.			
	DFHRPL libraries and dynamic program LIBRARY concatenations can be put in the EAS of EAV DASD.			
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.		MEMLIMIT must be set to 10 GB or greater.		

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 119.

For information about changes to RACF classes, see [Changes to RACF classes](#).

Table 4. Changes to security, by release of CICS Transaction Server for z/OS					
Change	V5.2	V5.3	V5.4	V5.5	V5.6
TLS					
TLS 1.2 support	NEW				
MINTLSLEVEL system initialization parameter		NEW		CHANGED: the default is changed from TLS10 to TLS12.	
NIST SP800-131A and FIPS	NEW				
AT-TLS AWARE for inbound		NEW			
SNI support		NEW with APAR: PH20063	NEW with APAR: PH20063	NEW with APAR: PH20063	NEW

Table 4. Changes to security, by release of CICS Transaction Server for z/OS (continued)					
Change	V5.2	V5.3	V5.4	V5.5	V5.6
PassTickets					
REQUEST PASSTICKET		NEW			
XPTKT system initialization parameter	NEW with APAR: PI60653	NEW with APAR: PI60653	CHANGED: the default is changed from NO to YES.		
GROUPID on VERIFY for PassTicket				NEW	
Kerberos					
Support for Kerberos	NEW				
SIGNON for Kerberos		NEW			
KERBEROSUSER system initialization parameter	NEW with APAR: PI85443	NEW with APAR: PI85443	NEW with APAR: PI85443	NEW	
Kerberos mutual authentication		NEW with APAR: PI56774	NEW		
Other authentication changes					
VERIFY TOKEN support for JWT					NEW
Support for SAML	NEW				
RACF KFDES Support (R_Password)	NEW with APAR: PI21866	NEW			
CICS Explorer support for MFA			NEW with APAR: PI87691	NEW	CHANGED: on by default
Performance					
Monitoring the security domain					NEW
Preset user ID on a terminal can share ACEE		NEW with APAR: PI85452	NEW		
Performance improvement to QUERY SECURITY				NEW	
Audit					
Support for IBM Health Checker for z/OS	NEW with APAR: PI76965	NEW with APAR: PI76965	NEW		
DFHXS1206 has the number of invalid password attempts		NEW			
DISCONNECT option on GMTRAN system initialization parameter for CESN and CESL				NEW	
DISCONNECT option on GMTRAN system initialization parameter for CESF					NEW
HTTPSERVERHDR system initialization parameter		NEW			
HTTTPUSRAGENTHDR system initialization parameter		NEW			
Enhanced protection					
Security for job submission from SPOOL or TDQ commands				NEW	

Table 4. Changes to security, by release of CICS Transaction Server for z/OS (continued)					
Change	V5.2	V5.3	V5.4	V5.5	V5.6
CICS BMS 3270 intrusion detection service	NEW with APAR: PI51499	NEW with APAR: PI51499	CHANGED: support for IBM z/OS Communications Server IDS		
Additional changes					
MQMONITOR MONUSERID			NEW		
Control of HPO SIT override				NEW	
QUERY SECURITY USERID				NEW	
Controlling the API and SPI used by developers				NEW	
Check on region access to Category 1 transaction on start-up				NEW	
Default user ID security definitions					CHANGED: Category 3 transactions no longer need command authority.
CONFDATA system initialization parameter					CHANGED: the default is changed from SHOW to HIDE. The HIDE option replaces HIDE TC.
Customization					
UEPSGTYP parameter passed to XSNON exit		NEW			
Liberty					
JAVA EE integration with CICS security	NEW				
LDAP User Registry ldapRegistry-3.0		NEW			
cicsts:distributedIdentity-1.0		NEW			
oauth-2.0		NEW with APAR: PI91554	NEW with APAR: PI91554	NEW	
JWT and OpenID Connect		NEW with APAR: PI91554	NEW with APAR: PI91554	NEW	
Wait for angel at JVM server startup			NEW with APAR: PI92676		
Multiple Liberty servers per CICS region using an angel			NEW with APAR: PI98174	NEW	
Java EE 8 Security-1.0 API with JSR 375				NEW with APAR: PH15017	NEW
Using the syncToOSThread function		NEW			
Obsolete security-related options					
PASSWORD option on FILE definitions		REMOVED			
EXCI SURROGCHK=YES	REMOVED with APAR: PH09898	REMOVED with APAR: PH09898	REMOVED with APAR: PH09898	REMOVED with APAR: PH09898	REMOVED
HTTP TRACE		REMOVED			

Table 4. Changes to security, by release of CICS Transaction Server for z/OS (continued)

Change	V5.2	V5.3	V5.4	V5.5	V5.6
SECVFYFREQ system initialization parameter			REMOVED		
ENCRYPTION SIT parameter (deprecated)		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 119.

For other security-related changes, see [Changes to security](#). For changes to transactions, see [Changes to CICS transactions](#).

Table 5. Changes to RACF classes related to command security, by release of CICS Transaction Server for z/OS. 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	V5.2	V5.3	V5.4	V5.5	V5.6
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		
INQUIRE NODEJSAPP				NEW: resource identifier NODEJSAPP	
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 6. Changes to RACF classes related to CICS user IDs, by release of CICS Transaction Server for z/OS

User ID	V5.2	V5.3	V5.4	V5.5	V5.6
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.		

Table 6. Changes to RACF classes related to CICS user IDs, by release of CICS Transaction Server for z/OS (continued)					
User ID	V5.2	V5.3	V5.4	V5.5	V5.6
KERBEROSUSER	NEW with APAR: PI85443	NEW with APAR: PI85443	NEW with APAR: PI85443	NEW SIT parameter KERBEROSUSER to specify the user ID associated with the Kerberos service principal for the CICS region.	
KERBEROSUSER	NEW: Configuring RACF for Kerberos				

Table 7. Changes to RACF classes related to user profiles, by release of CICS Transaction Server for z/OS					
Option	V5.2	V5.3	V5.4	V5.5	V5.6
KERB(KERBNAME(client_principal))	NEW: Configuring RACF for Kerberos				

Table 8. Changes to other RACF classes, by release of CICS Transaction Server for z/OS						
Class	Profile	V5.2	V5.3	V5.4	V5.5	V5.6
FACILITY	DFHSIT.HPO				NEW: Control of HPO SIT override	
IDTDATA	JWT.applid.userid.SAF					NEW: support for JWT with RACF
KERBLINK	/.../realm	NEW: Configuring RACF for Kerberos				
PTKTDATA	IRRPTAUTH.applid.userid	NEW with APAR: PI60653	NEW with APAR: PI60653	NEW XPTKT system initialization parameter		
SURROGAT	userid.DFHEXCI	NEW with APAR: PH09898	NEW with APAR: PH09898	NEW with APAR: PH09898	NEW with APAR: PH09898	NEW: surrogate user checking for EXCI
SURROGAT	userid.DFHQUERY				NEW: Security checking using the QUERY SECURITY command	
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 119.

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS					
Command	V5.2	V5.3	V5.4	V5.5	V5.6
ASSIGN	CHANGED: New options ERRORMSG, ERRORMSGLEN, LINKLEVEL, APPLICATION, MAJORVERSION, MICROVERSION, MINORVERSION, OPERATION, PLATFORM	CHANGED: New options INPUTMSGLEN and ABOFFSET		CHANGED: New options LOCALCCSID, TNADDR, TNIPFAMILY, and TNPORT	

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V 5. 6
DEFINE COUNTER and DEFINE DOUNTER			CHANGED: New option NOSUSPEND		
DELAY	CHANGED: New value MILLISECS			CHANGED: New condition NORMAL with RESP2 value 23	
DELETE			CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
DELETE CHANNEL		NEW			
DELETE CHANNEL (EXCI)			NEW: EXCI can issue in batch		
DELETE CONTAINER (EXCI)			NEW EXCI can issue in batch		
DELETE COUNTER and DELETE DOUNTER			CHANGED: New option NOSUSPEND		
DELETEQ TD					
ENDBR				THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
ENDBROWSE CONTAINER (EXCI)				NEW	
EXTRACT TCP/IP		CHANGED: New value, ATTLAWARE, on SSLTYPE option.			
FETCH ANY			NEW		
FETCH CHILD			NEW		
FREE CHILD			NEW		
FORMATTIME	CHANGED: New option STRINGZONE				
FREEMAIN				CHANGED: New INVREQ with RESP2 value of 3	
FREEMAIN64				CHANGED: New INVREQ with RESP2 value of 3	
GET CONTAINER (CHANNEL)					
GET CONTAINER (EXCI)			NEW: EXCI can issue in batch		
GET COUNTER and GET DOUNTER			CHANGED: New option NOSUSPEND		
GETNEXT CONTAINER (CHANNEL)				CHANGED: The order in which containers are returned is changed.	
GETNEXT CONTAINER (EXCI)				NEW	
GET64 CONTAINER					
GETMAIN64					
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.				

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)					
Command	V5.2	V5.3	V5.4	V5.5	V 5. 6
INVOKE APPLICATION	NEW				
LINK	CHANGED: Change of impact: command now operates in the application context.				
LINK (EXCI)			CHANGED: New option CHANNEL		
LOAD					
MOVE CONTAINER (EXCI)			NEW: EXCI can issue in batch		
PUT CONTAINER (CHANNEL)					
PUT CONTAINER (EXCI)			NEW: EXCI can issue in batch		
PUT64 CONTAINER					
QUERY CHANNEL Reference		NEW			
QUERY CHANNEL (EXCI)				NEW	
QUERY COUNTER and QUERY DCOUNTER			CHANGED: New option NOSUSPEND		
QUERY SECURITY				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	
READ			CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
READNEXT			CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
READPREV			CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
READQ TD		CHANGED: The LENGERR condition is raised if an application specifies a negative LENGTH value.			
REQUEST ENCRYPTPTKT		NEW CHANGED with APAR PI54268: New INVREQ with RESP2 value of 257 CHANGED with APAR PI60604: New NOTAUTH with RESP2 value of 260	CHANGED: New INVREQ with RESP2 value of 257 New NOTAUTH with RESP2 value of 260		
REQUEST PASSTICKET		NEW			
RESETBR				THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
REWIND COUNTER and REWIND DCOUNTER			CHANGED: New option NOSUSPEND		

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V 5. 6
REWRITE			CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
RUN TRANSID			NEW		
SIGNON TOKEN		NEW			
SPOOLWRITE				CHANGED: New NOTAUTH with RESP2 value of 1	
START				CHANGED: 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.	
START CHANNEL					
STARTBR				THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
STARTBROWSE CONTAINER (CHANNEL)				CHANGED: The order in which containers are returned is changed.	
STARTBROWSE CONTAINER (EXCI)				NEW	
TRANSFORM DATATOJSON		NEW with APAR PI54841	NEW		
TRANSFORM JSONTODATA		NEW with APAR PI54841	NEW		
UPDATE COUNTER and UPDATE DCOUNTER			CHANGED: New option NOSUSPEND		
VERIFY PASSWORD				CHANGED: New option GROUPID	
VERIFY PHRASE				CHANGED: New option: GROUPID	

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
<u>VERIFY TOKEN</u>	NEW	CHANGED: New option ENCRYPTOKEN CHANGED with APAR PI56674: New options OUTTOKEN and OUTTOKENLEN	CHANGED: New options OUTTOKEN and OUTTOKENLEN		CHANGED: Enhanced to support JSON Web Tokens (JWTs) provided by RACF.

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
WEB CONVERSE	CHANGED with APAR PI43898: New INVREQ with RESP2 value of 157	CHANGED: New INVREQ with RESP2 value of 157		CHANGED: The body of an HTTP client request can be received into, and sent from, 64-bit (above-the-bar) storage.	CHANGED: The PATCH method is supported.
WEB RECEIVE (Client)	CHANGED with APAR PI43898: New INVREQ with RESP2 value of 157	CHANGED: New INVREQ with RESP2 value of 157		CHANGED: The body of an HTTP client request can be received into 64-bit storage.	
WEB RECEIVE (Server)			CHANGED: The body of an HTTP server request can be received into 64-bit storage.		
WEB SEND (Client)				CHANGED: The body of an HTTP client response can be sent from 64-bit storage.	CHANGED: The PATCH method is supported.
WEB SEND (Server)			CHANGED: The body of an HTTP server response can be sent from 64-bit storage.		

Table 9. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)					
Command	V5.2	V5.3	V5.4	V5.5	V5.6
WRITE		CHANGED: A CICS message is issued when an EXEC CICS WRITE command that is issued to a user-maintained table or shared data table fails because the data table is full.	CHANGED: New INVREQ with RESP2 value of 57	THREADSAFE: The command is threadsafe if it refers to a coupling facility data table.	
WRITE OPERATOR		CHANGED: Made threadsafe			
WRITEQ TD				CHANGED: New NOTAUTH with RESP2 value of 102	
XCTL		CHANGED: New INVREQ with RESP2 values of 32. CHANGED with APAR PI62831: New INVREQs with RESP2 values of 33 and 34.	CHANGED: New INVREQs with RESP2 values of 33 and 34.		

Changes to the 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](#).

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 119.

Table 10. Changes to JCICS server package, by release of CICS Transaction Server for z/OS					
Class	V5.2	V5.3	V5.4	V5.5	V5.6
AbendError		DEPRECATED			
JCICS Javadoc information Application	NEW				
JCICS Javadoc information AsyncService JCICS Javadoc information AsyncServiceImpl			NEW METHODS: runTransactionId() getAny() freeChild()		
JCICS Javadoc information Channel		NEW METHODS: getContainerCount() Channel.delete()			
JCICS Javadoc information ChildResponse			NEW METHODS: getCompletionStatus() getAbendCode() getChannel()		
JCICS Javadoc information CICSExecutorService					
Future<ChildResponse>			NEW METHODS: get() isDone()		
JCICS Javadoc information Container			NEW METHOD: getDatatype()		

Table 10. Changes to JCICS server package, by release of CICS Transaction Server for z/OS (continued)					
Class	V5.2	V5.3	V5.4	V5.5	V5.6
JCICS Javadoc information Document		NEW CONSTRUCTOR: docToken			
JCICS Javadoc information Program		REMOVED: All xctl methods. Applications that used these methods do not compile and throw a NoSuchMethodError if called.			
JCICS Javadoc information Task	NEW METHOD: getApplicationContext()				
TcpipRequest					
UnknownCicsError		DEPRECATED			

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 119.

Support overview

- [“CICS support for application programming languages”](#) on page 40
- [“CICS support for compilers and application programming language versions that are withdrawn from service”](#) on page 40

Listing of supported languages

- [Assembler](#)
- [COBOL](#)
- [C/C++](#)
- [Java](#)
- [Node.js](#)
- [PL/I](#)
- [REXX](#)

The CICS translator

[“Changes to the CICS translator, by release of CICS Transaction Server for z/OS”](#) on page 43

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 Transaction Server for z/OS

The following tables provide an overview of the releases of application programming languages and compilers that CICS Transaction Server for z/OS supports across in-service releases.

Assembler

Table 11. Support for Assembler, by release of CICS Transaction Server for z/OS					
Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
High Level Assembler for MVS and VM and VSE V1.6 and later 5696-234	✓	✓	✓	✓	✓

COBOL

Table 12. Support for Enterprise COBOL for z/OS, by release of CICS Transaction Server for z/OS					
Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
Enterprise COBOL for z/OS V6.3 5655-EC6		✓	✓	✓	✓
Enterprise COBOL for z/OS V6.2 5655-EC6	✓	✓	✓	✓	✓
Enterprise COBOL for z/OS V6.2 5655-EC6	✓	✓	✓	✓	✓
Enterprise COBOL for z/OS V5.2 5655-W32	✓	✓	✓	✓	✓
Enterprise COBOL for z/OS V5.1 5655-W32	✓	✓	✓	✓	✓
Enterprise COBOL for z/OS V4.2 5655-S71	✓	✓	✓	✓	✓

C and C++

Table 13. Support for XL C/C++, by release of CICS Transaction Server for z/OS					
Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
z/OS V2.3 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓	✓
z/OS V2.2 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓	✓
z/OS V2.1 XL C/C++ 5655-121 Optional feature of z/OS	✓	✓	✓	✓	✓
z/OS V1.13 XL C/C++ 5694-A01 Optional feature of z/OS	✓	✓	✓	✓	✓

Table 13. Support for XL C/C++, by release of CICS Transaction Server for z/OS (continued)

Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
z/OS V1.12 XL C/C++ 5694-A01 Optional feature of z/OS	✓	✓	✓	✓	✓
z/OS V1.11 XL C/C++ 5694-A01 Optional feature of z/OS	✓	✓	✓	✓	✓
z/OS V1.10 XL C/C++ 5694-A01 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 14. Support for Java, by release of CICS Transaction Server for z/OS

Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
IBM 64-bit SDK for z/OS, Java Technology Edition, V8 5655-DGH	✓	✓	✓	✓	✓
IBM 64-bit SDK for z/OS, Java Technology Edition, Version 7 Release 1 5644-W44	✓	✓	✓		
IBM 64-bit SDK for z/OS, Java Technology Edition, V7 5644-W44	✓	✓	✓		
IBM 64-bit SDK for z/OS, Java Technology Edition, V6.0.1 5655-R32					

Node.js

Table 15. Support for IBM SDK for Node.js - z/OS, by release of CICS Transaction Server for z/OS

Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
IBM SDK for Node.js - z/OS, V12.0 5655-NJS				✓	✓
IBM SDK for Node.js - z/OS, V8.0 5655-DKN				✓	✓

PL/I

Table 16. Support for Enterprise PL/I for z/OS, by release of CICS Transaction Server for z/OS

Product name PID	V5.2	V5.3	V5.4	V5.5	V5.6
Enterprise PL/I for z/OS V5.3 5655-PL5		✓	✓	✓	✓
Enterprise PL/I for z/OS V5.2 5655-PL5	✓	✓	✓	✓	✓
Enterprise PL/I for z/OS V5.1 5655-PL5	✓	✓	✓	✓	✓
Enterprise PL/I for z/OS V4.5 5655-W67	✓	✓	✓	✓	✓

REXX

Table 17. Support for REXX, by release of CICS Transaction Server for z/OS					
Product	V5.2	V5.3	V5.4	V5.5	V5.6
REXX/CICS	✓	✓	✓	✓	✓

Changes to the CICS translator, by release of CICS Transaction Server for z/OS

Table 18 on page 43 summarizes the changes to the integrated CICS translator that can be used for CICS applications, across supported CICS releases.

Table 18. Changes to the CICS translator, by release of CICS Transaction Server for z/OS				
V5.2	V5.3	V5.4	V5.5	V5.6
WITHDRAWN: The CICS translator no longer inserts REENTRANT into the compiler options for compiling PL/I.			WITHDRAWN: The CICS translator no longer inserts the COBOL LIB parameter into the CBL card when compiling COBOL programs.	
	NEW: <ul style="list-style-type: none"> DFHZXTCL: translates, compiles, and link-edits EXCI COBOL application programs using the integrated CICS translator DFHZXTDL: translates, compiles, and link-edits EXCI C application programs using the integrated CICS translator DFHZXTL: translates, compiles, and link-edits EXCI C++ application programs using the integrated CICS translator DFHZXTPL: translates, compiles, and link-edits EXCI PL/I application programs using the integrated CICS translator 		CHANGED: <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 the CICS assistants

This section summarizes the changes to CICS web services 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 119.

Table 19. Changes to assistants, by release of CICS Transaction Server for z/OS

Program	V5.2	V5.3	V5.4	V5.5	V5.6
DFHJS2LS	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING New option DEFAULT-FRACTION-DIGITS 	CHANGED with APAR: <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 New option DATA-SCREENING New option DEFAULT-FRACTION-DIGITS 	CHANGED: <ul style="list-style-type: none"> New options DEFAULT-ARRAY-MAXITEMS and DEFAULT-FRACTION-DIGITS New option, HYPHENS-AS-UNDERSCORES, on MAPPING-OVERRIDES New option, FULL, on WIDE-COMP3 Support for mapping level 4.1 CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New options: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. 	CHANGED: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New options: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. JSON schema to high-level language mapping now supports oneOf, anyOf, allOf and not keywords. 	CHANGED: <ul style="list-style-type: none"> New parameter, PATHMAIN, added.
DFHLS2JS	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING 	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: Support for mapping level 4.1 CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> New parameter, PATHMAIN, added.
DFHLS2SC	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING 	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: Support for mapping level 4.1 CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> New parameter, PATHMAIN, added.
DFHLS2WS	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING 	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> New parameters, PORT-NAME, BINDING-NAME, and SERVICE-NAME Support for mapping level 4.1 CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New option PACKEDZERO on TRUNCATE-NULL-ARRAY-VALUES 	CHANGED: <ul style="list-style-type: none"> New parameter, PATHMAIN, added.

Table 19. Changes to assistants, by release of CICS Transaction Server for z/OS (continued)					
Program	V5.2	V5.3	V5.4	V5.5	V5.6
DFHSC2LS	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING 	CHANGED with APAR: <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 New option DATA-SCREENING 	CHANGED: <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 CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New options: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. 	CHANGED: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New options: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. 	CHANGED: <ul style="list-style-type: none"> New parameter, PATHMAIN, added.
DFHWS2LS	CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping level 4.1 New option DATA-SCREENING 	CHANGED with APAR: <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 New option DATA-SCREENING 	CHANGED: <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 CHANGED with APAR: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New options: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. 	CHANGED: <ul style="list-style-type: none"> Support for mapping levels 4.2 and 4.3 New options: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE. 	CHANGED: <ul style="list-style-type: none"> New parameter, PATHMAIN, added.

Changes to SIT parameters

This section summarizes the changes to the system initialization parameters 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 119.

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS					
Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
AKPFREQ					
AUTORESETTIME					

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
CMDSEC					CHANGED: The ALLOWAYS option no longer affects category 3 transactions.

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
CONFDATA					CHANGED: The default is changed to HIDE. The HIDE option replaced HIDE TC, which means that all transports at

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
DUMP					CHANGED: The TABLEONLY option has been added to allow suppression of system dump sequence for those that have

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
DUMPSW					CHANGED: The ALL option has been added to allow continuous switching between the two transaction dump datasets.

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)					
Parameter	V5.2	V5.3	V5.4	V5.5	V 5 . 6
EDSALIM			CHANGED: minimum is changed to 64 MB.		
ENCRYPTION	CHANGED: value STRONG now does not allow SSL version 3.0 and new value TLS12. REMOVED: TLS12FIPS value.	DEPRECATED: replaced by MINTLSLEVEL, although ENCRYPTION remains available for compatibility with previous releases. SSLV3 is removed as an option.			

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
GMTRAN				CHANGED: New options, EXIT or DISCONNECT, to control terminal disconnection by using PF3 or PF15 for CESN or CESL.	CHANGED: The DISCONNECT option is extended to the CICS-supplied signing-off transaction CESSF, forcing the termination

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V 5 . 6
GNTRAN				CHANGED: New options, KEEP and DISCARD, to specify whether to keep a pseudo-conversation in use at a terminal that is the subject of a timeout sign-off.	
HPO				CHANGED: HPO can now be specified in the PARM parameter on an EXEC PGM=DFHSIP statement or in the SYSIN data set.	
HTTPSERVERHDR		NEW: sets the value for HTTP Server field			
HTTPUSRAGENTHDR		NEW: sets the value for HTTP User-Agent field			
ICVR			CHANGED: <ul style="list-style-type: none"> Lower limit changed to 250 Default value changed to 2000 Sample table DFHSIT6\$ changed to specify ICVR=5000 instead of 20000 		
ICVTSD					
INITPARM					
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.	NEW with APAR The default is the region user ID.	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.	
MAXOPENTCBS	CHANGED: CICS will set a value based on MXT (recommended), or you can explicitly manage this parameter yourself.		CHANGED: The minimum value is changed to 32.		
MAXSSLTCBS			CHANGED: Default value changed from 8 to 32. Sample table DFHSIT6\$ changed to specify MAXSSLTCBS=32 instead of 8.		
MINTLSLEVEL		NEW: replaces ENCRYPTION CHANGED with APAR: new parameter TLS10ONLY	CHANGED: new parameter TLS10ONLY	CHANGED: Default value changed from TLS10 to TLS12.	
MXT	CHANGED: default value is now 250.				
NISTSP800131A	NEW				

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V 5 . 6
NQRNL		NEW: specifies that z/OS global resource serialization uses RNL processing for enqueue and dequeue requests from CICS			
PLTPI				CHANGED: Allows specification of the full name of a program list table as an alternative to a suffix.	
PLTSD				CHANGED: Allows specification of the full name of a program list table as an alternative to a suffix.	
PRTYAGE					
RACFSYNC			CHANGED: the RACFDB2SYNC option is removed and its functionality is included when RACFSYNC=YES is specified.		
SECVFYREQ			REMOVED Note: CICS updates the last used time once a day for each user ID that is used on a CICS region.		
SNPRESET		NEW with APAR	NEW: allows preset userid terminals to share a single ACEE		
SOTUNING		NEW: controls the performance tuning for HTTP connections			
SPCTR					
STATINIT					
STATRCD					
STGPROT		CHANGED: default value is now YES.			
STNTR					
TBEXITS					
TCPIP			CHANGED: Default value changed from NO to YES. Sample table DFHSIT6\$ changed to specify TCPIP=YES instead of NO.		
TCTUALLOC					
TRANISO					

Table 20. Changes to system initialization parameters, by release of CICS Transaction Server for z/OS (continued)

Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
TRTABSZ		CHANGED: default changed to 12 MB.			CHANGED: Minimum changed to 1024 KB.
TRTRANSZ					CHANGED: Minimum changed to 1024 KB.
USSCONFIG	NEW				
USSHOME				CHANGED: NONE is removed.	
WLMHEALTH			NEW: specifies parameters to be used on z/OS WLM Health API calls		
XPTKT	NEW with APAR	NEW with APAR	NEW The default is changed to YES.		

Changes to JVM profiles

A summary of the changes to JVM profile options, across supported CICS releases.

New, changed, and obsolete options in JVM profiles are summarized in the following table, along with what type of JVM server they are compatible with. For more information about the options, see [JVM profile validation and properties CICS](#).

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 119](#).

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version					
Option	V5.2	V5.3	V5.4	V5.5	V5.6
com.ibm.cics.jvmserver.cmci.bundles.dir					NE W: Onl y for the CIC S bun dle depl oym ent API. Spe cifie s the bun dles dire ctor y on zFS that stor es the CIC S bun dles pus hed to the API.

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version (continued)

Option	V5.2	V5.3	V5.4	V5.5	V5.6
com.ibm.cics.jvmserver.cmci.deploy.timeout					<p>NE W: Only for the CICS bundle deployment API.</p> <p>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.</p>

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version (continued)

Option	V5.2	V5.3	V5.4	V5.5	V5.6
com.ibm.cics.jvmserver.cmci.max.file.size					NEW: Only for the CICS bundle deployment API. Specifies the maximum size allowed for the uploaded CICS bundle, in bytes.

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version (continued)

Option	V5.2	V5.3	V5.4	V5.5	V5.6
com.ibm.cics.jvmserver.cmci.max.request.size					NEW: Only for the CICS bundle deployment API. Specifies the maximum size allowed for a multipart or for m-data request, in bytes.

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version (continued)

Option	V5.2	V5.3	V5.4	V5.5	V5.6
com.ibm.cics.jvmserver.wlp.saf.profilePrefix					NEW: Only for the CM CI JVM server. Specifies the SAF profile prefix for the WUI regions that need to share security configurations.
_BPXK_DISABLE_SHLIB				CHANGED: _BPXK_DISABLE_SHLIB =YES is the default.	
_DFH_UMASK		NEW : compatible with all types including the classpath JVM server	CHANGED: Applies for the lifetime of the JVM server, not only during startup.		
CICS_WLP_MODE		NEW compatible with: Liberty JVM server			
com.ibm.cics.jvmserver.cmci.user.agent.white.list			NEW with APAR, compatible with: Liberty JVM server	NEW compatible with: Liberty JVM server	
com.ibm.cics.jvmserver.cmci.user.agent.white.list.monitor.interval			NEW with APAR, compatible with: Liberty JVM server	NEW compatible with: Liberty JVM server	
com.ibm.cics.jvmserver.cmci.user.agent.white.list.reject.text				NEW compatible with: Liberty JVM server	
com.ibm.cics.jvmserver.override.ccsid					

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version (continued)

Option	V5.2	V5.3	V5.4	V5.5	V5.6
com.ibm.cics.jvmserver.trace.specification			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.unclassified.tranid		NEW compatible with: Liberty JVM server and OSGi JVM server			
com.ibm.cics.jvmserver.unclassified.userid		NEW compatible with: Liberty JVM server and OSGi JVM server			
com.ibm.cics.jvmserver.wlp.autoconfigure					
com.ibm.cics.jvmserver.wlp.server.host					
com.ibm.cics.jvmserver.wlp.server.http.port					
com.ibm.cics.jvmserver.wlp.server.name					
com.ibm.cics.jvmserver.wlp.jdbc.driver.location					
com.ibm.cics.jvmserver.wlp.xml.format				NEW compatible with: Liberty JVM server	
com.ibm.ws.zos.core.angelName				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				NEW compatible with: Liberty JVM server	
JNDI_REGISTRATION	NEW compatible with: OSGi JVM server				
LIBERTY_INCLUDE_XML				NEW compatible with: Liberty JVM server	
PURGE_ESCALATION_TIMEOUT		NEW with APAR, compatible with: All JVM Environments	NEW with APAR, compatible with: All JVM Environments	NEW with APAR, compatible with: All JVM Environments	NEW compatible with: All JVM Environments
WLP_INSTALL_DIR					
WLP_OUTPUT_DIR					
WLP_USER_DIR					

Table 21. New, changed, and obsolete options in JVM profiles, grouped by version (continued)					
Option	V5.2	V5.3	V5.4	V5.5	V5.6
WLP_ZOS_PLATFORM				DEPRECATED: Because multiple fully configured Liberty servers are now allowed in the same address space.	OB SOL ETE : Multiple fully configured Liberty servers can be in the same address space.
WSDL_VALIDATOR	NEW compatible with: OSGi JVM server				

Changes to resource definitions

This section summarizes the changes to the resource definitions across supported CICS 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 119.

Note: The REMOVED content in [Table 22 on page 61](#) and [Table 23 on page 64](#) have been moved to compatibility groups DFHCOMPxxx; previous versions of modified resources are also in the compatibility groups.

[Table 22 on page 61](#) describes changes to resource definitions, by release of CICS Transaction Server for z/OS. These changes might affect user-defined resource definitions in user-defined groups.

Table 22. Changes to resource definitions, by release of CICS Transaction Server for z/OS					
Resource	V5.2	V5.3	V5.4	V5.5	V5.6
DB2CONN	<p>CHANGED: Change of impact: TCBLIMIT attribute now detects mismatch between TCBS and threads that are defined in pool and entry definitions.</p> <p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	

Table 22. Changes to resource definitions, by release of CICS Transaction Server for z/OS (continued)

Resource	V5.2	V5.3	V5.4	V5.5	V5.6
DUMPCODE					NEW: To define attributes for transaction dump codes and system dump codes
FILE		OBSOLETE: PASSWORD attribute			
IPCONN	CHANGED: New attribute HA, and changed attribute APPLID				
MQCONN			CHANGED: Changed attribute INITQNAME		
MQINI(DFHMQINI)			DEPRECATED: Replaced with MQMONITOR(DFHQMNI) See Review the use of MQCONN in Upgrading CICS regions for upgrade advice.		

Table 22. Changes to resource definitions, by release of CICS Transaction Server for z/OS (continued)

Resource	V5.2	V5.3	V5.4	V5.5	V5.6
MQMONITOR			NEW: To define attributes for IBM MQ message consumers		CHANGE D: One or more symbolic parameters, <i>&applid.</i> or <i>&APPLID</i> can be used anywhere in the QNAME value to identify the APP LID of a CICS region. Any user-defined character strings <i>&applid.</i> or <i>&APPLID</i> will be replaced by the APP LID of the local region when the MQ MONITOR is installed. This will facilitate generic use of this resource

Table 22. Changes to resource definitions, by release of CICS Transaction Server for z/OS (continued)					
Resource	V5.2	V5.3	V5.4	V5.5	V5.6
PACKAGESET		NEW: CICS application resource which represents a Db2 collection			
PROGRAM			CHANGED: The default value of DATALOCATION is changed from BELOW to ANY.		
TCPIPService	OBSOLETE: DNSGROUP attribute. GRPCritical attribute. IIOP is obsolete on TYPE.	CHANGED: ATTLsAwARE option added to the SSLTYPE parameter			CHANGE D: New attribute OPTION SPGM
TDQueue				CHANGED: New attribute JOBUSERID	
TRANClass				CHANGED: The set of allowed characters for a transaction class name is expanded to be the same as that supported for a transaction name.	
Transaction			CHANGED: 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.	
TSMODEL	CHANGED: New attribute EXPIRYINTMIN OBSOLETE: EXPIRYINT attribute				
URIMAP					

Table 23 on page 64 describes changes to CICS-supplied resource definition groups, by release of CICS Transaction Server for z/OS. It does not include compatibility groups DFHCOMPxxx. To view changes to compatibility groups by CICS TS release, see [Table 24 on page 66](#).

Table 23. Changes to CICS-supplied resource definition groups excluding compatibility groups DFHCOMPxxx, by release of CICS Transaction Server for z/OS					
Group	V5.2	V5.3	V5.4	V5.5	V5.6
DFH\$AXIS	CHANGED: JVMSEVER definition DFH\$AXIS is renamed DFHAXIS.				
DFH\$EXCI			CHANGED: New program DFH\$AXNS		
DFH\$EXWS	CHANGED: The TCPIPService attribute GRPCritical is obsolete and removed from EXMPPORT.				
DFH\$NACT			CHANGED: File ACCTNAM now specifies RECORDSIZE(80) and KEYLENGTH(18).		

Table 23. Changes to CICS-supplied resource definition groups excluding compatibility groups DFHCOMPxxx, by release of CICS Transaction Server for z/OS (continued)

Group	V5.2	V5.3	V5.4	V5.5	V5.6
DFH\$OSGI	CHANGED: JMVSERVER 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 JMVSERVER(DFHJVM). Bundle JDBC added (moved from group DFH\$WLP).				
DFH\$SAML	CHANGED: The HFSFILE attribute for DOCTEMPLATE definition DFHOXSTI is changed.				
DFH\$SOT	CHANGED: The TCIPSERVICE attribute GRPCRITICAL is obsolete and removed from ECI, HTTPSSL, and HTTPSSL.				
DFH\$WLP	CHANGED: JMVSERVER definition DFH\$WLP is renamed DFHWLP. Bundle JDBC has moved to group DFH\$OSGI.				
	CHANGED: The TCIPSERVICE attribute GRPCRITICAL is obsolete and removed from DFH\$WUTC.				
DFHDBCTL	CHANGED: File DFHDBFK is changed from LSRPOOLNUM(NONE) to LSRPOOLNUM(1).				
DFHDB2		CHANGED: Program DFHD2SPS added as part of PACKAGESET support			
DFHEDF			CHANGED: New TRANCLASS definition: DFHEDFTO New transactions: CEDG and CEDY		
DFHEP			CHANGED: New program: DFHECEAQ New transaction: CEPR		
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).				

Table 23. Changes to CICS-supplied resource definition groups excluding compatibility groups DFHCOMPxxx, by release of CICS Transaction Server for z/OS (continued)

Group	V5.2	V5.3	V5.4	V5.5	V5.6
DFHJAVA	CHANGED: Program DFHSJTHP are changed from EXECKEY(USER) to EXECKEY(CICS) and from CONCURRENCY(QUASIRENT) to CONCURRENCY(REQUIRED).	CHANGED: New transaction: CJSU			
DFHLE			NEW GROUP		
DFHMQ					CHANGE D: New tsmo del: DFHCKB R
DFHPGAIP	CHANGED: Programs DFHPGADX, DFHPGAHX, DFHPGALX, and DFHPGAOX are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).		CHANGED: The default program for program autoinstall DFHPGAPG is changed from DATALOCATION(BELOW) to DATALOCATION(ANY).		
DFHPIVAL	CHANGED: To match the rename of JVMSEVER definition DFH\$JVMMS to DFHJVMS in group DFH\$OSGI, program DFHPIVAL is changed to JVMSEVER(DFHJVMS).				
DFHSIGN		CHANGED: Program DFHSFP is changed from RESIDENT(YES) to RESIDENT(NO).			
DFHWEB	CHANGED: The TSMODEL attribute EXPIRYINT is obsolete and removed from DFHWEB; DFHWEB now specifies EXPIRYINTMIN(0).		CHANGED: Program removed: DFHWBC00; Program DFHWBUN now specifies CONCURRENCY(THREADSAFE).		

Table 24 on page 66 describes changes to compatibility groups DFHCOMPxxx, by release of CICS Transaction Server for z/OS.

Table 24. Changes to compatibility groups DFHCOMPxxx, by release of CICS Transaction Server for z/OS

Group	V5.2	V5.3	V5.4	5.5	V5.6
DFHCOMPC	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR				
DFHCOMPD	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR				
DFHCOMPE	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR				

Table 24. Changes to compatibility groups DFHCOMPxxx, by release of CICS Transaction Server for z/OS (continued)

Group	V5.2	V5.3	V5.4	5.5	V5.6
DFHCOMPF	CHANGED: PIPELINE definitions removed: DFHWSATP and DFHWSATR Program removed: DFHPIEP				
DFHCOMPG	NEW GROUP				
DFHCOMPH		NEW GROUP with APAR			
DFHCOMPI			NEW GROUP		

Changes to control tables

This section summarizes the changes to CICS control tables across supported CICS 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 that the macro tables 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 119.

Table 25. Changes to control tables, by release of CICS Transaction Server for z/OS

Table	V5.2	V5.3	V5.4	V5.5	V5.6
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 available on DFHMCT TYPE=INITIAL 1PL link option DPLLIMIT added to DFHMCT TYPE=INITIAL 	CHANGED: <ul style="list-style-type: none"> TSQUEUE option includes information about requests to shared temporary storage queues on Control section: DFHMCT TYPE=INITIAL Control data recording - DFHMCT TYPE=RECORD allows for the new DFHTEMP fields to count TS queue requests. 		CHANGED: <ul style="list-style-type: none"> New option URIMAP available on DFHMCT TYPE=INITIAL, to set a limit for URIMAP transaction resource monitoring New option WEBSEVRC available on DFHMCT TYPE=INITIAL, to set a limit for WEBSERVICE transaction resource monitoring 	
DFHPLT				CHANGED: <ul style="list-style-type: none"> 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. Ensure CICS has READ access to data sets in PARMLIB or DFHTABLE concatenations. 	

Table 25. Changes to control tables, by release of CICS Transaction Server for z/OS (continued)

Table	V5.2	V5.3	V5.4	V5.5	V 5. 6
DFHXCOPT	<p>CHANGED with APAR: The SURROGCHK parameter has been removed. Surrogate checking is always done. If you want the option of SURROGCHK=NO, you need to request a usermod from IBM support.</p>	<p>CHANGED with APAR: The SURROGCHK parameter has been removed. Surrogate checking is always done. If you want the option of SURROGCHK=NO, you need to request a usermod from IBM support.</p>	<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: The SURROGCHK parameter has been removed. Surrogate checking is always done. If you want the option of SURROGCHK=NO, you need to request a usermod from IBM support.</p>	<p>CHANGED with APAR: The SURROGCHK parameter has been removed. Surrogate checking is always done. If you want the option of SURROGCHK=NO, you need to request a usermod from IBM support.</p>	<p>C H A N G E D : T h e S U R R O G C H K p a r a m e t e r h a s b e e n r e m o v e d. S u r r o g a t e c h e c k i n g i s a l w a y s d o n e. I f y o u w a n t t h e o p t i o n o f S U R R O G C H K</p>

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 119.

Table 26. Changes to system programming commands by release of CICS Transaction Server for z/OS					
Command	V5.2	V5.3	V5.4	V5.5	V5.6
COLLECT STATISTICS					
CREATE DUMPCODE					NEW
CREATE IPCONN	CHANGED: New option: HA				
CREATE MQMONITOR			NEW		
CREATE TCPIP SERVICE	CHANGED: New option: SPECIFIC TCPS Options made obsolete: DNSGROUP and GRPCRITICAL				
CREATE TS MODEL	CHANGED: New option: EXPIRYINTMIN				
CSD INSTALL					
DISCARD ENQMODEL		THREADSAFE			
DISCARD JOURNALMODEL		THREADSAFE			
DISCARD JOURNALNAME		THREADSAFE			
DISCARD MQMONITOR			NEW		
DISCARD PROGRAM	THREADSAFE				
DISCARD TCPIP SERVICE		THREADSAFE			
DISCARD TDQUEUE		THREADSAFE			
DISCARD TRANCLASS		THREADSAFE			
DISCARD TRANSACTION	THREADSAFE				CHANGED: 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).
DISCARD TS MODEL		THREADSAFE			
ENABLE PROGRAM command					
EXTRACT STATISTICS			CHANGED: New options: ASYNCSERVICE, LASTRESETABS and MQMONITOR	CHANGED: New option NODEJSAPP	CHANGED: New options SECURITY and USER
INQUIRE ASSOCIATION	CHANGED: New options: ACAPPLNAME, ACMAJORVER, ACMICROVER, ACMINORVER, ACOPEXNAME, ACPLATNAME		CHANGED: New options: PTCOUNT, PTSTARTTIME, PTTASKID, PTTRANSID		
INQUIRE BUNDLE	CHANGED: New option: AVAILSTATUS				
INQUIRE BUNDLEPART	CHANGED: New option: AVAILSTATUS				

Table 26. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
INQUIRE CAPTURESPEC					
INQUIRE CFDTPOOL				THREADSAFE	
INQUIRE CONNECTION				CHANGED: CONNECTION (<i>data-value</i>) now accepts the name of the local system. New option: AIDCOUNT New CVDA value DYNAMIC added to options CHANGEAGENT and INSTALLAGENT. New CVDA value NOTAPPLIC added to options ACCESSMETHOD and SERVSTATUS.	
INQUIRE DISPATCHER	CHANGED: Options made obsolete: ACTJVMTCBS and MAXJVMTCBS THREADSAFE				
INQUIRE DOCTEMPLATE					
INQUIRE DSNAME			CHANGED: New CVDA, RREPL on AVAILABILITY option		
INQUIRE DUMPDS					CHANGED: New cvda SWITCHALL on SWITCHSTATUS option
INQUIRE EPADAPTER	CHANGED with APAR PI55133: New CVDA, DSIE on DATAFORMAT option.	CHANGED with APAR PI55134: New CVDA, DSIE on DATAFORMAT option.	CHANGED: New CVDA, DSIE on DATAFORMAT option. New CVDA, TDQUEUE on ADAPTERTYPE option.		
INQUIRE EPADAPTERSET					
INQUIRE EPADAPTINSET					
INQUIRE ENQMODEL		THREADSAFE			
INQUIRE EVENTBINDING					
INQUIRE EXITPROGRAM					
INQUIRE FEATUREKEY				NEW: Retrieves the value of a feature toggle.	
INQUIRE IPCONN	CHANGED: New option: HA	CHANGED: The value in the PARTNER option on the INQUIRE IPCONN command is affected by the new system initialization parameter, HTTPUSRAGENTHDR.			
INQUIRE JOURNALMODEL		THREADSAFE			
INQUIRE JOURNALNAME		THREADSAFE			
INQUIRE JVMSERVER					
INQUIRE LIBRARY	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, PLATFORM				
INQUIRE MONITOR	THREADSAFE			CHANGED: New options: URIMAPLIMIT and WEBSERVLIMIT	
INQUIRE MQMONITOR			NEW		
INQUIRE MVSTCB	THREADSAFE				

Table 26. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
INQUIRE NETNAME				CHANGED: New options: TNADDR, TNIPFAMILY, and TNPORT	
INQUIRE NODEJSAPP				NEW	
INQUIRE PIPELINE	CHANGED: New option: MSGFORMAT				
INQUIRE PROGRAM	CHANGED: New options: RESIDENCY, APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, PLATFORM THREADSAFE		CHANGED: New option REPLICATION and new CVDA value, DYNAMIC on CHANGEAGENT and INSTALLAGENT		
INQUIRE REQID		CHANGED: INTERVAL and TIME options are no longer mutually exclusive.			
INQUIRE RRMS		THREADSAFE			
INQUIRE STATISTICS	THREADSAFE				
INQUIRE STORAGE		THREADSAFE			
INQUIRE STREAMNAME		THREADSAFE			
INQUIRE SUBPOOL		THREADSAFE			
INQUIRE SYSDUMPCODE			CHANGED: New options: DSPLIST and JOBLIST		CHANGED: New options: CHANGEAGENT, CHANGEAGREL, CHANGETIME, CHANGEUSRID, DEFINESOURCE, DEFINETIME, INSTALLTIME, INSTALLTIME and INSTALLUSRID
INQUIRE SYSTEM	CHANGED: New options: MESSAGECASE, MVSSMFID, MVSSYSNAME THREADSAFE	CHANGED: New value on CICSTSLEVEL to reflect latest version, release, or modification number. New value on RELEASE to reflect latest level of CICS code.		CHANGED: New options: AIDCOUNT, LASTCOLDTIME, LASTEMERTIME, LASTINITTIME, LASTWARMTIME, and PLTPUIUSR	CHANGED: New value TABLEONLY returned for DUMPING option
INQUIRE TASK		THREADSAFE			
INQUIRE TASK LIST		THREADSAFE			
INQUIRE TCLASS		THREADSAFE			
INQUIRE TCPIP		THREADSAFE			
INQUIRE TCPIP SERVICE	CHANGED: New options: GENERIC TCPS, SPECIFIC TCPS New values: BUNDLE on INSTALLAGENT Options made obsolete: DNSGROUP, DNSSTATUS, and GRPCRITICAL	THREADSAFE			CHANGED: New option: OPTIONSPGM
INQUIRE TDQUEUE		THREADSAFE			
INQUIRE TEMPSTORAGE					
INQUIRE TERMINAL				CHANGED: New options: TNADDR, TNIPFAMILY, and TNPORT	
INQUIRE TRACEDEST					
INQUIRE TRACEFLAG					

Table 26. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
INQUIRE TRACETYPE					
INQUIRE TRANCLASS		THREADSAFE			
INQUIRE TRANDUMPCODE					CHANGED: New options: CHANGEAGENT, CHANGEAGREL, CHANGETIME, CHANGEUSRID, DEFINESOURCE, DEFINETIME, INSTALLAGENT, INSTALLTIME and INSTALLUSRID
INQUIRE TRANSACTION	THREADSAFE	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM			
INQUIRE TSMODEL	CHANGED: New option: EXPIRYINTMIN	THREADSAFE			
INQUIRE TSPPOOL		THREADSAFE			
INQUIRE TSQUEUE / TSQNAME	CHANGED: New option: EXPIRYINTMIN	THREADSAFE			CHANGED: New option: TSMODEL
INQUIRE UOW		THREADSAFE			
INQUIRE UOWENQ		THREADSAFE			
INQUIRE UOWLINK	CHANGED: New option: PORT				
INQUIRE URIMAP	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM				
INQUIRE WEB		THREADSAFE			
INQUIRE WEBSERVICE	CHANGED: New values: DISABLED, DISABLING on STATE option		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	
INQUIRE WLMHEALTH			NEW		
INQUIRE WLPSERVICE			REMOVED		
INQUIRE XMLTRANSFORM			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	
PERFORM SECURITY		THREADSAFE			
PERFORM SHUTDOWN			CHANGED: New option: RESTART	CHANGED: New option: PLTNAME	
PERFORM SSL		THREADSAFE			

Table 26. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
PERFORM STATISTICS	CHANGED: New DSECTs supplied to format status information for private program, program definition, JVM program, or library resource types.	CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL	CHANGED: New options: ASYNCSERVICE and MQMONITOR	CHANGED: New options: NODEJSAPP and POLICY	CHANGED: New options: SECURITY and USER
SET BUNDLE	CHANGED:	CHANGED: New option: AVAILSTATUS	CHANGED: New option: COPY, PHASEIN		
SET CONNECTION				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.	
SET DISPATCHER	THREADSAFE	CHANGED: Options made obsolete: ACTJVMTCBS and MAXJVMTCBS	CHANGED: RUNAWAY option accepts a new, lower limit of 250		
SET DSNAME			CHANGED: New CVDA, RREPL on AVAILABILITY option		
SET DUMPDS					CHANGED: New cvda SWITCHALL on SWITCHSTATUS option
SET ENQMODEL		THREADSAFE			
SET EPADAPTERSET					
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 JOURNALNAME		THREADSAFE			
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 MONITOR				CHANGED: New options: URIMAPLIMIT and WEBSERVLIMIT	
SET MQMONITOR			NEW		
SET PROGRAM	THREADSAFE		CHANGED: New option REPLICATION		
SET STATISTICS	THREADSAFE				
SET SYSDUMPCODE			CHANGED: New options: DSPLIST and JOBLIST		
SET SYSTEM	THREADSAFE		CHANGED: RUNAWAY option accepts a new, lower limit of 250		CHANGED: New value TABLEONLY supported for DUMPING option.

Table 26. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)					
Command	V5.2	V5.3	V5.4	V5.5	V5.6
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.	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 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.	
SET TCLASS		THREADSAFE			
SET TCP/IP		THREADSAFE			
SET TCP/IPSERVICE	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.	THREADSAFE			
SET TDQUEUE		THREADSAFE			
SET TRACEDEST					
SET TRACEFLAG					
SET TRACETYPE					
SET TRANCLASS		THREADSAFE			
SET TRANSACTION	THREADSAFE		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).
SET TSQUEUE		THREADSAFE			
SET UOW		THREADSAFE			
SET WEB		THREADSAFE			
SET WLMHEALTH			NEW		

Changes to CICS transactions

This section summarizes the changes to the CICS-supplied 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 119.

If there are changes to the category 1 or category 2 transactions, you must rerun the DFHECAT1 and DFH£CAT2 CLISTs provided in SDFHSAMP library.

For information about the changes to the CICS master terminal transaction CEMT, see [“Changes to CEMT”](#) on page 76.

Table 27. Changes to CICS transactions by release of CICS Transaction Server for z/OS. The program and CSD group for these transactions are shown in List of CICS transactions .						
Transaction	Security category	V5.2	V5.3	V5.4	V5.5	V5.6
CDBE	1				NEW	
CDBF	2 V5.1-V5.4: 1				CHANGED to a Category 2 transaction	

Table 27. Changes to CICS transactions by release of CICS Transaction Server for z/OS . The program and CSD group for these transactions are shown in [List of CICS transactions](#). (continued)

Transaction	Security category	V5.2	V5.3	V5.4	V5.5	V5.6
CDBP	1				NEW	
CDBQ	2 V5.1-V5.4: 1				CHANGED to a Category 2 transaction	
CEDA CEDB CEDC	2					CHANGED: The dataset associated with the CSD for the local region is now displayed on the panel in format DSN=<dataset name>.
CEDG	2			NEW		
CEDY	2			NEW		
CEMN	2				CHANGED: Added options to set URIMAP and WEBSERVICE resource limits.	
CESF						CHANGED: Now subject to the control of GMTRAN=(, DISCONNECT) so that the terminal session is disconnected upon sign-off.
CEPS	2					
CFCR	1	NEW				
CFCT	1		NEW with APAR PI97207	NEW with APAR PI97207	NEW	
CHCK	1	NEW with APAR PI76965	NEW with APAR PI76965	NEW		
CJLR	1	NEW				
CJSA	2					
CJSU	2		NEW			
CJXA	2					NEW
CKBC	2					
CKBR	2			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.

Table 27. Changes to CICS transactions by release of CICS Transaction Server for z/OS . The program and CSD group for these transactions are shown in [List of CICS transactions](#). (continued)

Transaction	Security category	V5.2	V5.3	V5.4	V5.5	V5.6
CKTI	2			<p>CHANGED:</p> <p>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.</p> <p>CHANGED with APAR PH22136:</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 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.</p>	<p>CHANGED with APAR PH22136:</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 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.</p>	<p>CHANGED:</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 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.</p>
CMPE	1	NEW with APAR PI83667	NEW with APAR PI83667	NEW		
CNJL	1				NEW	
CNJW	2				NEW	
CSFE	2					CHANGED: CSFE has been enhanced to allow authorized users to change the CONFDATA settings.
CWDP	2					NEW
CWGQ	2				NEW	

Changes to CEMT

This section summarizes the changes to the CICS master 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 74.

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 119.

Table 28. Changes to CEMT by release of CICS Transaction Server for z/OS

Command	V5.2	V5.3	V5.4	V5.5	V5.6
CEMT DISCARD			CHANGED: New command: CEMT DISCARD MQMONITOR		
CEMT INQUIRE BUNDLE	CHANGED: New option: AVAILSTATUS				
CEMT INQUIRE CONNECTION				CHANGED: CONNECTION (<i>data-value</i>) now accepts the name of the local system. New option: AIDCOUNT	
CEMT INQUIRE DISPATCHER	CHANGED: Options made obsolete: ACTJVMTCBS, MAXJVMTCBS You can now set the options for MAXOPENTCBS and MAXXPTCBS.				
CEMT INQUIRE DSAS					
CEMT INQUIRE DSNAME			CHANGED: New option: RREPL		
CEMT INQUIRE DUMPDS					CHANGE D: New value ALL for SWIT CHST ATUS option
CEMT INQUIRE EPADAPTER	CHANGED with APAR PI55133: Support added for the new DSIE XML format.	CHANGED with APAR PI55134: Support added for the new DSIE XML format.	CHANGED: Support added for the new DSIE XML format.		
CEMT INQUIRE EPADAPTERSET					
CEMT INQUIRE EVENTBINDING					
CEMT INQUIRE JVMSERVER	CHANGED: Change of impact of PROFILEDIR				
CEMT INQUIRE MONITOR				CHANGED: New options: URIMAPLIMIT and WEBSERVLIMIT	
CEMT INQUIRE MQINI			REMOVED Replaced by CEMT INQUIRE MQMONITOR		
CEMT INQUIRE MQMONITOR			NEW		
CEMT INQUIRE NODEJSAPP				NEW	
CEMT INQUIRE PROGRAM	CHANGED: New option: RESIDENCY				

Table 28. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
CEMT INQUIRE SYDUMPCODE			CHANGED: New options: DSPLIST and JOBLIST		CHANGE D: New options: CHANGEAGENT, CHANGEAGREEMENT, CHANGETIME, CHANGESURRID, DEFINESOURCE, DEFINETIME, INSTALLAGENT, INSTALLTIME and INSTALLUSRID
CEMT INQUIRE SYSTEM				CHANGED: New options: AIDCOUNT, LASTCOLDTIME, LASTEMERTIME, LASTINITTIME, LASTWARMTIME and PLTPUIUSR The display now shows status fields in a single column split across multiple screens.	CHANGE D: New value TABLEONLY returned for DUMPING option
CEMT INQUIRE TCIPSERVICE					CHANGE D: New option: OPTIOPGM

Table 28. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
CEMT INQUIRE TRDUMPCODE					CHANGE D: New options: CHANGEAGENT, CHANGEAGRE, CHANGETIME, CHANGEUSRID, DEFINESOURCE, DEFINETIME, INSTALLAGENT, INSTALLTIME and INSTALLUSRID
CEMT INQUIRE TRANSACTION		CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM			
CEMT INQUIRE TSMODEL	CHANGED: Option made obsolete: EXPIRYINT New option: EXPIRYINTMIN (replacing EXPIRYINT)				
CEMT INQUIRE TSQUEUE / TSQNAME	CHANGED: Option made obsolete: EXPIRYINT New option: EXPIRYINTMIN (replacing EXPIRYINT)				CHANGE D: New option: TSMODEL
CEMT INQUIRE URIMAP	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM				

Table 28. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
CEMT INQUIRE WEBSERVICE	CHANGED: New values: DISABLING and DISABLED on STATE option				
CEMT INQUIRE WLMHEALTH			NEW		
CEMT PERFORM DUMP	CHANGED: New option: DUMPCODE				
CEMT PERFORM SHUTDOWN			CHANGED: New option: RESTART	CHANGED: New option: PLTNAME	
CEMT PERFORM SSL					
CEMT PERFORM STATISTICS			CHANGED: New options: MQMONITOR and ASYNCSERVICE	CHANGED: New options: NODEJSAPP and POLICY	CHANGED: New options: SECURITY and USER
CEMT SET BUNDLE	CHANGED: New options: AVAILABLE and UNAVAILABLE	CHANGED: New option: PHASEIN			
CEMT SET CONNECTION				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.	
CEMT SET DISPATCHER			CHANGED: RUNAWAY option accepts a new lower limit of 250		
CEMT SET DSNAME			CHANGED: New option RREPL		
CEMT SET DUMPDS					CHANGED: New value ALL for SWITCHSTATUS option
CEMT SET EPADAPTERSET					
CEMT SET MONITOR				CHANGED: New options: URIMAPLIMIT and WEBSERVLIMIT	
CEMT SET MQMONITOR			NEW		
CEMT SET PROGRAM					
CEMT SET STATISTICS					
CEMT SET SYDUMPCODE			CHANGED: New options: DSPLIST and JOBLIST		

Table 28. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V5.2	V5.3	V5.4	V5.5	V5.6
CEMT SET SYSTEM			CHANGED: RUNAWAY option accepts a new, lower limit of 250		CHANGE D: New value TABL EONL Y supp orted for DUM PING optio n.
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.	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 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.	
CEMT SET WLMHEALTH			NEW		

Changes to CICS monitoring

This section summarizes the changes to monitoring across supported CICS 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 119.

Table 29. Changes to performance class data, by release of CICS Transaction Server for z/OS

Group	V5.2	V5.3	V5.4	V5.5	V5.6
DFHCHNL					
DFHCICS		NEW FIELD: NCGETCT, to count the number of EXEC CICS GET COUNTER and GET DOUNTER requests issued by a task.	NEW FIELDS: MPSRACT, MPSRECT, PTCOUNT, PTSTARTTIME, PTTASKID, PTTRANSID CHANGED: OTRANFLG field has new transaction origin type for asynchronous transactions: X'16' ASRUNTRAN		
DFHDATA					
DFHDEST					
DFHEJBS					
DFHFILE					

Table 29. Changes to performance class data, by release of CICS Transaction Server for z/OS (continued)

Group	V5.2	V5.3	V5.4	V5.5	V5.6
DFHPROG			CHANGED: The following abend codes are now written to the ABCODEO and ABCODEC monitoring fields: ASPF ASPN ASPO ASPP ASPQ ASPR ASP1 ASP2 ASP3 ASP7 ASP8		
DFH SOCK				NEW FIELD: SOCONMSG	
DFHSTOR					
DFHTASK		NEW FIELD: 429, DSAPTHWT, for the dispatcher to allocate pthread wait time. CHANGED: JVMTHDWT no longer applies for Liberty.	NEW FIELDS: ASTOTCT, ASRUNCT, ASFTCHCT, ASFREECT, SFTCHWT, ASRNATWT, and LPARNAME CHANGED: TRANFLAG field has new transaction origin type for asynchronous transactions: X'16' Asynchronous services domain (AS)-run transaction		NEW FIELDS: SMMVSSWT XSVFYBAS XSVFYJWT XSVFYKER XSVFYPWD
DFHTEMP		NEW FIELDS: TSGETSCT, TSPUTSCT CHANGED: TSTOTCT includes the count for the new TSGETSCT and TSPUTSCT fields.			
DFHTERM					
DFHWEBB				NEW FIELDS: WBURIOPN, WBURIRCV, and WBURISND	
DFHWEBC				NEW FIELD: WBSVINVK	

Table 30. Changes to exception class data, by release of CICS Transaction Server for z/OS

	V5.2	V5.3	V5.4	V5.6
EXCMNRID				
XCMNTYP				

Table 31. Changes to transaction resource class data, by release of CICS Transaction Server for z/OS.

Group	V5.2	V5.3	V5.4	V5.6
All TS queues		CHANGED: The length of the transaction resource record is extended by 120 bytes		
MNR_PTD_ATTACH_TIME			NEW	
MNR_PTD_TRANNUM			NEW	
MNR_PTD_TRANID			NEW	
MNR_PTD_COUNT			NEW	
MNR_TSQUEUE_PUT		CHANGED: No longer counts the number of GET and PUT requests to a shared TS queue		
MNR_TSQUEUE_GET		CHANGED: No longer counts the number of GET and PUT requests to a shared TS queue		
MNR_TSQUEUE_GET_SHR		NEW: Counts the number of GET and PUT requests to a shared TS queue		
MNR_TSQUEUE_GET_ITEML		CHANGED: No longer includes the length of items written to a shared TS queue		
MNR_TSQUEUE_GET_SHR_ITEML		NEW: Includes the length of items written to a shared TS queue		
MNR_TSQUEUE_PUT_AUXQ_ITEML		CHANGED: No longer counts the number of GET and PUT requests to a shared TS queue		
MNR_TSQUEUE_PUT_AUXQ		CHANGED: No longer counts the number of GET and PUT requests to a shared TS queue		
MNR_TSQUEUE_PUT_SHR		NEW: Counts the number of GET and PUT requests to a shared TS queue		
MNR_TSQUEUE_PUT_ITEML		CHANGED: No longer includes the length of items written to a shared TS queue		
MNR_TSQUEUE_PUT_SHR_ITEML		NEW: Includes the length of items written to a shared TS queue		
MNR_URIMAP_CIPHER				NEW
MNR_URIMAP_NAME				NEW
MNR_URIMAP_WEBOPEN				NEW
MNR_URIMAP_WEBRECV				NEW
MNR_URIMAP_WEBSEND				NEW
MNR_WEBSVC_NAME				NEW
MNR_WEBSVC_PIPE				NEW
MNR_WEBSVC_INVK				NEW

Table 32. Changes to identity class data, by release of CICS Transaction Server for z/OS

Group	V5.2	V5.3	V5.4	V5.6
MNI_PTD_ATTACH_TIME			NEW	
MNI_PTD_TRANNUM			NEW	
MNI_PTD_TRANID			NEW	
MNI_PTD_COUNT			NEW	

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 119.

Table 33. Changes to statistics, by release of CICS Transaction Server for z/OS

Type	V5.2	V5.3	V5.4	V5.5	V5.6
All (data section, DFHSTIDS)	CHANGED: New values: STILDY, STILDP, STIPGP, and STIPGE				
Asynchronous services			NEW		
CICS Db2				CHANGED: New field: D2G_TCB_PROTECTED_CURRENT Current number of connections with pthreads	
ISC/IRC system entry				CHANGED: 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. New field: A14EAHWM Peak aids in chain	
JVM program	CHANGED: New resource statistics for private Java programs				
LIBRARY	CHANGED: Resource statistics for private LIBRARY resources				
Monitoring domain		NEW: Three new fields: MNGCPUT, MNGTONCP, and MNGOFLCP, to show the accumulated transaction CPU time for each completed transaction		CHANGED: New fields: MNGURIRL Urimap Resource Limit, and MNGWEBRL Webservice Resource Limit	CHANGED: New fields: MNGRMI MNGAPPNS MNGMCTNM MNGFREQ
NODEJSAPP				NEW	
Pipeline definition		NEW: Indicates the optimization attribute for a PIPELINE that uses a configuration file that contains a provider_pipeline_json element.			

Table 33. Changes to statistics, by release of CICS Transaction Server for z/OS (continued)

Type	V5.2	V5.3	V5.4	V5.5	V5.6
Policy				NEW	
Program	CHANGED: New program loader statistics for private programs				
Program definition	CHANGED: Resource definition statistics for private programs				
Security domain					NEW
Storage manager					NEW: Statistics are provided respectively for MVS user region and extended user region storage, indicating: <ul style="list-style-type: none"> The time the MVS monitor system task last sampled MVS storage State of the user region or extended user region The current total amount of unallocated user region or extended user region storage Low water mark of the total amount of unallocated user region or extended user region storage The size of the current largest contiguous storage area available in unallocated user region or extended user region storage Low water mark of the size of the largest contiguous storage area available in unallocated user region or extended user region 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
TCP/IP		NEW: Fields that show the effects of performance tuning for HTTP connections	NEW: Fields to show the use of inbound and outbound sockets		NEW: OPTIONSPGM field that shows the name of the HTTP OPTIONS handler program
Transactions		NEW: XMR_TRAN_ENTRYPOINT field that identifies a transaction as an application entry point		CHANGED: New field: XMRAENDC Abend Count	

Table 33. Changes to statistics, by release of CICS Transaction Server for z/OS (continued)					
Type	V5.2	V5.3	V5.4	V5.5	V5.6
Transient data		NEW: TQRPNTM field that reports the peak depth of the transient data queue			
URIMAP definitions		NEW: WBG_URIMAP_DIRECT_ATTACH field that reports the number of HTTP requests that are processed by direct alias attach instead of through the CWXN transaction.			
User domain					CHANGED: New fields: USGDESO USGDEENF USGDRCUR USGDRPK USGTOCUR USGTOPK USGENFK USGENFUN
IBM MQ monitor			NEW		
z/OS Communications Server (VTAM®)			CHANGED: New fields added for the BMS 3270 validation program.		

Changes to the 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 119.

Table 34. Changes to CICS utilities, by release of CICS Transaction Server for z/OS					
Utility	V5.2	V5.3	V5.4	V5.5	V5.6
DFH0IPCC migration utility		CHANGED: Creates USERAUTH attribute on the IPCONN definition if a CONNECTION has ATTACHSEC values of LOCAL, IDENTIFY, or VERIFY.			

Table 34. Changes to CICS utilities, by release of CICS Transaction Server for z/OS (continued)

Utility	V5.2	V5.3	V5.4	V5.5	V5.6
DFH0STAT	CHANGED: DFH0STAT 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.		CHANGED: New fields added to TCP/IP report and TCP/IP services report NEW: MQ monitors report	CHANGED: DFH0STAT reports on the local system entry. New field A14EAHWM Peak aids in chain added to the Connections and Modenames report. New field D2G_TCB_PROTECTED_CURRENT Current number of connections with pthreads added to the Db2 Connection report.	NEW: User report Security report MVS user region and extended user region storage report CHANGED: New fields Frequency and MCT program name added to the Monitoring section in the System status report. SMSMVSSTGREQWAITs and SMSTIMEWAITMVS are removed from Storage above 16 MB report. New field TCP/IPSERVICE OPTIONSPGM added to the TCP/IP services report.
DFHCSDUP Resource definition batch utility		CHANGED: Report data sets produced by the LIST function of DFHCSDUP now include release information for the CSD New command, COPY, to copy a single resource definition from one group to another New options: BEFORE and AFTER on ADD, resource type on COPY			
DFHDEPLOY		NEW: Provides commands to use in a script to deploy, undeploy, and set the state of CICS applications and CICS bundles.			
Dump utilities DFHDUxxx	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier
DFHJAIU (JVM Application Isolation Utility)					
DFHMEU					

Table 34. Changes to CICS utilities, by release of CICS Transaction Server for z/OS (continued)

Utility	V5.2	V5.3	V5.4	V5.5	V5.6
DFHMNDUP			CHANGED: Specifying a 2 digit year on the DATE and JOBDATE control parameters now defines a date in the twenty-first century.		
Dump utilities DFHPDxxx	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier. Also changes to formatting of DFHMQINI CICS MQINI and EXCI dump	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier. Also the TRS KE_NUM parameter has been enhanced to format out the most recent trace entries information for the specified task.

Table 34. Changes to CICS utilities, by release of CICS Transaction Server for z/OS (continued)

Utility	V5.2	V5.3	V5.4	V5.5	V5.6
DFHSTUP	<p>CHANGED: Support for new statistics</p>		<p>CHANGED: New fields added to TCP/IP global and service statistics</p> <p>MQ monitor statistics added</p> <p>New option MQMONITOR on SELECT TYPE and IGNORE TYPE control parameters</p> <p>Specifying a 2 digit year on the DATE control parameter now defines a date in the twenty-first century.</p>	<p>CHANGED: New fields MNGURIRL Urimap Resource Limit, and MNGWEBRL Webservice Resource Limit added to the Monitoring domain statistics</p> <p>DFHSTUP reports on the local system entry.</p> <p>New field A14EAHWM Peak aids in chain added to the ISC/IRC system entry resource statistics.</p> <p>New field D2G_TCB_PROTECTED_CURRENT Current number of connections with pthreads added to the CICS Db2 global statistics.</p>	<p>CHANGED: New fields added to user domain statistics:</p> <p>USGDESOF USGDEENF USGDRCUR USGDRPK USGTOCUR USGTOPK USGENFK USGENFUN</p> <p>Security domain statistics added.</p> <p>New option SECURITY added to SELECT TYPE and IGNORE TYPE control parameters.</p> <p>New fields added to monitoring domain statistics:</p> <p>MNGRMI MNGAPPNS MNGMCTNM MNGFREQ</p> <p>The Dispatcher Statistics - CICS TCB Mode Statistics report has been enhanced to print the QR TCB CPU Dispatch Ratio.</p> <p>New field added to the TCP/IP resource statistics:</p> <p>Name of the HTTP OPTIONS handler program (OPTIONSPGM)</p> <p>The Storage manager global statistics provides new fields for user region and extended user region storage, indicating</p> <p>The time the MVS monitor system task last sampled MVS storage</p> <p>State of the user region or extended user region</p> <p>The current total amount of unallocated user region or extended user region storage</p> <p>Low water mark of the total amount of unallocated user region or extended user region storage</p> <p>The size of the current largest contiguous storage area available in unallocated user region or extended user region storage</p> <p>Low water mark of the size of the largest contiguous storage area available in unallocated user region or extended user region storage</p> <p>The time the last SOS condition was detected</p> <p>The time tasks waited because of the SOS or constrained state</p> <p>The current, peak, and total number of tasks that are waiting because of the SOS or constrained state</p>

Table 34. Changes to CICS utilities, by release of CICS Transaction Server for z/OS (continued)					
Utility	V5.2	V5.3	V5.4	V5.5	V5.6
DFHTUxxx Trace utility print program	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	
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.	
EYU9XENF ESSS Information Display Utility		CHANGED: Shows the job ID or task ID or each connection to the ESSS, and the level of the ESSS program.			

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 119.

Table 35. Changes to global user exits by release of CICS Transaction Server for z/OS					
Global user exit	V5.2	V5.3	V5.4	V5.5	V5.6
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: UERC SWCH return code has no effect if DUMP SW=A LL is already set. DUMP SW=A LL means that dump data sets will always switch.
XDUREQ			CHANGED: New parameters UEPDLISI and UEPJLISI		
XDUREQC			CHANGED: New parameters UEPDLISO and UEPJLISO		

Table 35. Changes to global user exits by release of CICS Transaction Server for z/OS (continued)					
Global user exit	V5.2	V5.3	V5.4	V5.5	V5.6
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.	
XMEOUT		CHANGED: Change to application version format affecting UEPINSA			
XPCFTCH				CHANGED: New field on UEPPCDS parameter, PCUE_INVOKING_PROGRAM_NAME	
XRSINDI	CHANGED: New parameters: UEPAPCTXT and UEPAPPTK	CHANGED: New values UEIDEARB and UEIDPKST for UEPIDTYP parameter New parameter: UEPPLATTK	CHANGED: New value UEIDMQMN for UEPIDTYP parameter		CHANGED: New value UEIDD MPC for UEPIDTYP parameter
XSNON		NEW: new parameter, UEPSTGTP, identifies if the SIGNON was by USERID or TOKEN.			
XSRAB					

Table 36. Changes to the TCB indicators in DFHUEPAR, by release of CICS Transaction Server for z/OS				
V5.2	V5.3	V5.4	V5.5	V5.6
	CHANGED: UERTSOTR (T8 for Liberty threads)			

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 119.

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 37 on page 91 shows the effect of different combinations of CICS release and the release-sensitivity of the call.

Table 37. 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

Table 37. User exits with different CICS releases (continued)			
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	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 38. Changes to CICS XPI by release of CICS Transaction Server for z/OS					
Functional area	V5.2	V5.3	V5.4	V5.5	V5.6
Bind channel		NEW: DFHPGCHX - to bind a channel to a task.			
Loader					
Kernel domain					
Monitoring					
Parameter domain				NEW: DFHPAIQX call INQUIRE_FEATUREKEY for feature toggles	
Program management	CHANGED: New options on the INQUIRE_PROGRAM and START_BROWSE_PROGRAM calls to inquire on private programs for applications that are deployed on platforms.				
Set tracking data		NEW: DFHMNTDX - to set the transaction tracking origin data tag for the issuing task.			
State data access					

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 119.

Table 39. Changes to user replaceable programs, by release of CICS Transaction Server for z/OS					
Program	V5.2	V5.3	V5.4	V5.5	V5.6
DFHBMSX	NEW with APAR	NEW with APAR	NEW		

Table 39. Changes to user replaceable programs, by release of CICS Transaction Server for z/OS (continued)					
Program	V5.2	V5.3	V5.4	V5.5	V5.6
DFHDSRP	CHANGED: New tokens in DFHDYPDS copybook: DYRCLOUD, DYRPLATFORM, DYRAPPLICATION, DYRAPPLVER, DYRAPPLMAJOR, DYRAPPLMINOR, DYRAPPLMICRO, and DYROPERATION DYRVER token is incremented by 1				
DFHPGADX (and DFHPGAHX, DFHPGALX, and DFHPGAOX)	CHANGED: Resource definitions for the following programs now specify CONCURRENCY(THREADSAFE)				
DFHWBOPT			NEW with APAR	NEW with APAR	NEW
DYRABNLC		CHANGED: This is now set when connections are unavailable to Db2, IMS, IBM MQ, or VSAM RLSS			
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 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 119](#).

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS					
Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
DFH52xx	CHANGED with APAR: DFH5275	CHANGED with APAR: DFH5275	CHANGED: DFH5275		
DFH7xxx (DFHEXP)		REMOVED: DFH7006		NEW: DFH7281 DFH7282 DFH7283 DFH7284 DFH7286 DFH7287 DFH7289 DFH7290	
DFHADnnnn					

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)					
Message	V5.2	V5.3	V5.4	V5.5	V5.6
DFHAMnnnn	NEW: DFHAM4961 CHANGED: DFHAM4952 CHANGED with APAR: DFHAM4865	NEW: DFHAM4961 CHANGED with APAR: DFHAM4865	NEW: DFHAM4900 DFHAM4962 to DFHAM4967	CHANGED: DFHAM4852	
DFHAPnnnn	CHANGED: DFHAP1903	NEW: DFHAP0006			N E W :
DFHASnnnn			NEW: DFHAS0001 DFHAS0002 DFHAS0004 DFHAS0100 DFHAS0101		
DFHCAnnnn	NEW: DFHCA4864 DFHCA4865 CHANGED: DFHCA4952 CHANGED with APAR: DFHCA4865	NEW: DFHCA4961 CHANGED with APAR: DFHCA4865	NEW: DFHCA4900 DFHCA4962 to DFHCA4967 CHANGED: DFHCA4865	CHANGED: DFHCA4852	
DFHCCnnnn					
DFHCSnnnn					
DFHCZnnnn	REMOVED: DFHCZ0357 to DFHCZ0362				

DFHAP00605

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)					
Message	V5.2	V5.3	V5.4	V5.5	V 5.6
DFHDBnnnn		NEW: DFHDB2080 DFHDB2083 DFHDB2084 DFHDB2087 to DFHDB2089 DFHDB8300 to DFHDB8311 CHANGED: DFHDB2003			C H A N G E D : DFHDB8111 DFHDB8222
DFHDSnnnn					N E W : DFHDS0102 DFHDS0103
DFHDUnnnn	CHANGED: DFHDU0203				N E W : DFHDU0311
DFHECnnnn		CHANGED: DFHEC1013	NEW: DFHEC4130 to DFHEC4135		
DFHEJnnnn					
DFHEPnnnn		CHANGED: DFHEP2003 DFHEP2007			

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)

Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
DFHEXnnnn			NEW: DFHEX0400		
DFHFCnnnn	NEW: DFHFC6000 DFHFC6042 to DFHFC6044	NEW: DFHFC0432 DFHFC6044 CHANGED: DFHFC0952 NEW with APAR: DFHFC6045 DFHFC6046	NEW with APAR: DFHFC6045 DFHFC6046	NEW: DFHFC6045 DFHFC6046	
DFHHnnnn	NEW with APAR DFHH0001 to DFHH0003 DFHH0200 DFHH0301 to DFHH0303	NEW with APAR DFHH0001 to DFHH0003 DFHH0200 DFHH0301 to DFHH0303	NEW: DFHH0001 to DFHH0003 DFHH0200 DFHH0301 to DFHH0303	CHANGED: DFHH0002	
DFHIInnnn					
DFHISnnnn				CHANGED: DFHIS1002	
DFHKEnnnn	NEW: DFHKE0007 DFHKE0108 DFHKE0119	NEW: DFHKE0108 DFHKE0109			
DFHLDnnnn	NEW: DFHLD0508I DFHLD0509I DFHLD0510I DFHLD0514WI DFHLD0515E DFHLD0516I DFHLD0517W DFHLD0518I DFHLD0526I DFHLD0527I DFHLD0528W DFHLD0557I DFHLD0558I DFHLD0733 to DFHLD0746 CHANGED: DFHLD0503 DFHLD0513 DFHLD0525 DFHLD0850	NEW: DFHLD0110 DFHLD0519			
DFHLGnnnn					
DFHMEnnnn					
DFHMNnnnn			NEW: DFHMN0011 DFHMN0115		

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)

Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
DFHMPnnnn	NEW: DFHMP1007 DFHMP1008 DFHMP2013 NEW with APAR: DFHMP2018 DFHMP3009 to DFHMP3012 CHANGED: DFHMP2006 CHANGED with APAR: DFHMP2006	NEW: DFHMP3007 DFHMP3008 NEW with APAR: DFHMP2018 DFHMP3009 to DFHMP3012 CHANGED: DFHMP2003 DFHMP2004 CHANGED with APAR: DFHMP2006	NEW: DFHMP2014 to DFHMP2017 DFHMP2020 to DFHMP2023 DFHMP3009 to DFHMP3012 NEW with APAR: DFHMP2018 CHANGED: DFHMP2004 DFHMP2006 CHANGED with APAR: DFHMP0002 DFHMP2006 DFHMP3009 DFHMP3010	NEW: DFHMP2018 DFHMP3013 DFHMP3014 CHANGED: DFHMP0002 DFHMP2006 DFHMP3009 DFHMP3010	N E W :

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)

Message	V5.2	V5.3	V5.4	V5.5	V 5.6
DFHMQnnnn	NEW: DFHMQ0793 CHANGED with APAR: DFHMQ0331 DFHMQ0334	NEW: DFHMQ0245 DFHMQ0793 CHANGED with APAR: DFHMQ0331 DFHMQ0334	NEW: DFHMQ0370 DFHMQ0371 DFHMQ0390 DFHMQ0391 DFHMQ0392 New with APAR: DFHMQ0126 DFHMQ0127 DFHMQ0128 DFHMQ0795 DFHMQ0796	New with APAR: DFHMQ0126 DFHMQ0127 DFHMQ0128 DFHMQ0795 DFHMQ0796	NEW: DFHMQ00126 DFHMQ00127 DFHMQ00128 DFHMQ00129 DFHMQ00130 DFHMQ00131 DFHMQ00132 DFHMQ00133 DFHMQ00134 DFHMQ00135 DFHMQ00136 DFHMQ00137 DFHMQ00138 DFHMQ00139 DFHMQ00140 DFHMQ00141 DFHMQ00142 DFHMQ00143 DFHMQ00144 DFHMQ00145 DFHMQ00146 DFHMQ00147 DFHMQ00148 DFHMQ00149 DFHMQ00150 DFHMQ00151 DFHMQ00152 DFHMQ00153 DFHMQ00154 DFHMQ00155 DFHMQ00156 DFHMQ00157 DFHMQ00158 DFHMQ00159 DFHMQ00160 DFHMQ00161 DFHMQ00162 DFHMQ00163 DFHMQ00164 DFHMQ00165 DFHMQ00166 DFHMQ00167 DFHMQ00168 DFHMQ00169 DFHMQ00170 DFHMQ00171 DFHMQ00172 DFHMQ00173 DFHMQ00174 DFHMQ00175 DFHMQ00176 DFHMQ00177 DFHMQ00178 DFHMQ00179 DFHMQ00180 DFHMQ00181 DFHMQ00182 DFHMQ00183 DFHMQ00184 DFHMQ00185 DFHMQ00186 DFHMQ00187 DFHMQ00188 DFHMQ00189 DFHMQ00190 DFHMQ00191 DFHMQ00192 DFHMQ00193 DFHMQ00194 DFHMQ00195 DFHMQ00196 DFHMQ00197 DFHMQ00198 DFHMQ00199 DFHMQ00200
DFHMUnnnn					
DFHMVnnnn					

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)

Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
DFHPAnnnn	CHANGED: DFHPA1909		NEW: DFHPA1950 to DFHPA1958		
DFHPGnnnn	NEW: DFHPG0111 to DFHPG0114 DFHPG0221 DFHPG0224 DFHPG0226 to DFHPG0230 DFHPG0308 to DFHPG0314 DFHPG0500 to DFHPG0503 CHANGED: DFHPG0304 to DFHPG0306 DFHPG0113	NEW: DFHPG0114 DFHPG0313 DFHPG0314 DFHPG0503 CHANGED: DFHPG0113			
DFHPInnnn	NEW: DFHPI0200 to DFHPI0204 DFHPI0220 to DFHPI0222 DFHPI9715 to DFHPI9724 CHANGED: DFHPI0516 DFHPI0914 DFHPI1007 to DFHPI110 DFHPI0997	CHANGED: DFHPI0997			
DFHREGxx					
DFHRLnnnn	NEW: DFHRL0133 to DFHRL0135 CHANGED: DFHRL0115 DFHRL0128			NEW: DFHRL2105	
DFHRMnnnn				NEW: DFHRM0316 DFHRM0317	
DFHRSnnnn					
DFHSInnnn		NEW with APAR: DFHSI1591	NEW with APAR: DFHSI1591	NEW: DFHSI1591	

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)					
Message	V5.2	V5.3	V5.4	V5.5	V5.6
DFHSNnnnn					C H A N G E D : D F H S N 1 1 0 0
DFHSOnnnn	NEW: DFHSO0137 DFHSO0140 CHANGED: DFHSO0145 DFHSO0146 CHANGED with APAR: DFHSO0123	NEW: DFHSO0147 CHANGED with APAR: DFHSO0123	CHANGED: DFHSO1001		
DFHSRnnnn		NEW: DFHSR0002			
DFHTAnnnn					
DFHTDnnnn				NEW: DFHTD0387	
DFHTFnnnn	NEW with APAR: DFHTF0200	NEW with APAR: DFHTF0200	NEW: DFHTF0200		C H A N G E D : D F H T F 0 2 0 0

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)					
Message	V5.2	V5.3	V5.4	V5.5	V 5.6
DFHTInnnn					REMOVED: DFHTI0102 CHANGED: DFHTI0103
DFHTRnnnn		NEW: DFHTR0130 DFHTR0131 DFHTR0140 DFHTR0141 DFHTR3004		NEW: DFHTR0120	NEW: DFHTR0125
DFHTSnnnn					
DFHWBnnnn	CHANGED: DFHWB0800	NEW: DFHWB0804 to DFHWB0808 DFHWB1580 to DFHWB1582			NEW: DFHWB0770 DFHWB0771

Table 40. Changes to CICS messages, by release of CICS Transaction Server for z/OS (continued)					
Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
DFHWUnnnn			NEW: DFHWU4033 CHANGED: DFHWU4302	NEW: DFHWU4303	
DFHXMnnnn	CHANGED: DFHXM0600	NEW: DFHXM0604 to DFHXM0611		NEW: DFHXM0612	
DFHXSnnnn		NEW: DFHXS1206 DFHXS1500		NEW: DFHXS1404 CHANGED: DFHXS1113 DFHXS1402	

Table 41. Changes to CICSplex SM messages, by release of CICS Transaction Server for z/OS					
Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
EYUBMnnnn	NEW with APAR: EYUBM0349W	NEW with APAR: EYUBM0349W	NEW with APAR: EYUBM0349W	NEW: EYUBM0349W	
EYUCPnnnn	NEW with APAR: EYUCP0208E	NEW with APAR: EYUCP0208E	NEW with APAR: EYUCP0208E	NEW with APAR: EYUCP0208E	N E W : E Y U C P 0 2 0 8 E
EYUCSnnnn			NEW with APAR: EYUCS0109I	NEW: EYUCS0109I	
EYUNLnnnn					
EYUNXnnnn			CHANGED: <ul style="list-style-type: none"> EYUNX0157 renamed to EYUXL0157 EYUNX0158 renamed to EYUXL0158 EYUNX0159 renamed to EYUXL0159 		
EYUPMnnnn					
EYUPNnnnn				CHANGED: EYUPN0005W	
EYUVCnnnn			NEW: EYUVC1031I EYUVC1030E REMOVED: EYUVC1003 EYUVC1004 EYUVC1005 EYUVC1006		

Table 41. Changes to CICSplex SM messages, by release of CICS Transaction Server for z/OS (continued)

Message	V5.2	V5.3	V5.4	V5.5	V5.6
EYUVSnnnn			NEW with APAR: EYUVS0215 EYUVS0216 EYUVS0218 EYUVS0219 EYUVS0220 EYUVS0223	NEW: EYUVS0215 EYUVS0216 EYUVS0218 EYUVS0219 to EYUVS0223	C H A N G E D : EYUVS0219 EYUVS0221 EYUVS0222 R E M O V E D : EYUVS0218
EYUWInnnn					
EUYWMnnnn					
EYUXCnnnn	NEW with APAR: EYUXC0026 EYUXC0027	NEW with APAR: EYUXC0026 EYUXC0027	NEW with APAR: EYUXC0026 EYUXC0027	NEW: EYUXC0026 EYUXC0027	N E W : EYUXC0028
EYUXDnnnn					

Table 41. Changes to CICSplex SM messages, by release of CICS Transaction Server for z/OS (continued)

Message	V5.2	V5.3	V5.4	V5.5	V 5. 6
EYUXEnnnn		NEW with APAR: EYUXE0038I EYUXE0039I EYUXE0040I EYUXE0041I EYUXE0042I EYUXE0043E EYUXE0044E EYUXE0045I EYUXE0046E EYUXE0047E CHANGED with APAR: EYUXE0023E	NEW with APAR: EYUXE0038I EYUXE0039I EYUXE0040I EYUXE0041I EYUXE0042I EYUXE0043E EYUXE0044E EYUXE0045I EYUXE0046E EYUXE0047E CHANGED with APAR: EYUXE0023E	NEW: EYUXE0048E EYUXE0049E	

Table 42. Changes to CICS codes, by release of CICS Transaction Server for z/OS

Codes	V5.2	V5.3	V5.4	V5.5	V5.6
AAxx			NEW: AASA		
ABxx	NEW with APAR: ABSX	NEW with APAR: ABSX	NEW: ABSX		
ADxx		NEW: AD31-AD33 AD35-39 AD4A			
AExx			NEW: AEZ2		
AFxx	NEW: AFDO AFDP				
AIxx					
AJxx					
AMxx	NEW with APAR: AMPC AMPD	NEW with APAR: AMPC AMPD	NEW: AMPC AMPD	NEW: AMQO	
ANxx				NEW: ANJ1 ANJ2 ANJ3 ANJ4	
APxx					
ASxx					
AWxx		NEW: AWBD			
AXxx	NEW: AXSE AXSF AXSG		NEW: AXSB		NEW: AXG1 to AXG4
04xx			NEW: 0416 to 0419		

Changes to samples

This section summarizes the changes to sample programs, sample resource definitions, and sample service routines 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 119.

Table 43. Changes to sample programs, by release of CICS Transaction Server for z/OS					
Type	V5.2	V5.3	V5.4	V5.5	V5.6
DFH\$DB2T					CHANGE D: The TYPE within JOURNALMODEL is now specified as a CHAR(5) attribute .
DFH\$DPLY		NEW: Annotated DFHDPLOY JCL to deploy, undeploy, and optionally set a sample bundle and application in a CICSplex. The sample is supplied in CICSTS53.CICS.SDFHSAMP			
DFH\$FORA					CHANGE D: Resources are now alphabetically ordered.
DFH\$FORC					CHANGE D: Resources are now alphabetically ordered and resource attributes that are COBOL reserved words are prefixed with RDO- .
DFH\$FORP					CHANGE D: Resources are now alphabetically ordered. Compiled version now supplied.
DFH\$UMOD			CHANGED: CICSplex SM module names updated in the sample		
DFHNJIVP				NEW	

Table 43. Changes to sample programs, by release of CICS Transaction Server for z/OS (continued)

Type	V5.2	V5.3	V5.4	V5.5	V5.6
DFH0QRCP					NEW: Associat ed with transacti on QRCP. This sample program demonst rates how to obtain and calculate the QR TCB CPU / Dispatch ratio and display a message when the ratio is less than a specified percenta ge.
DFHOSTEP			CHANGED: Changed to collect and print new asynchronous services statistics.		

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 119](#).

Table 44. Changes to CICSplex SM installation and definition, by release of CICS Transaction Server for z/OS

V5.2	V5.3	V5.4	V5.5	V5.6
				CH AN GE D: The CM CI interface now uses the CM CI JVM server by default. If you have not upgraded to the CM CI JVM server, follow the upgrade instruction in Upgrading CICSplex SM .

Table 44. Changes to CICSplex SM installation and definition, by release of CICS Transaction Server for z/OS (continued)

V5.2	V5.3	V5.4	V5.5	V5.6
				CH AN GE D: Support for using PLTPI to run the CICSplex SM PLT program directly has been removed. You must migrate to using the CPSMC ONN system initialization parameter.

Table 44. Changes to CICSplex SM installation and definition, by release of CICS Transaction Server for z/OS (continued)

V5.2	V5.3	V5.4	V5.5	V5.6
			<p>CHANGED: The record size of EYUHIST* data sets has increased from RECORDSIZE(3536 3540) to RECORDSIZE(3620 3624). The EYUJHIST sample has been updated to reflect this change.</p>	<p>CHANGE: The record size of EYUHIST* data sets has increased from RECORDSIZE(3620 3624) to RECORDSIZE(3680 3684). The EYUJHIST sample has been updated to reflect this change.</p>

Table 44. Changes to CICSplex SM installation and definition, by release of CICS Transaction Server for z/OS (continued)

V5.2	V5.3	V5.4	V5.5	V5.6
		<p>CHANGED with APAR PH19761: 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 disabled by default, but you can opt into this feature by setting the feature toggle <code>com.ibm.cics.cpsm.bas.largecicsplex=true</code>.</p>	<p>CHANGED with APAR PH19761: 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 disabled by default, but you can opt into this feature by setting the feature toggle <code>com.ibm.cics.cpsm.bas.largecicsplex=true</code>.</p>	<p>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 enabled by</p>

Table 44. Changes to CICSplex SM installation and definition, by release of CICS Transaction Server for z/OS (continued)

V5.2	V5.3	V5.4	V5.5	V5.6
		CHANGED: Beginning with V5.4, the MAS agent user ID is always the CICS region user ID. PLTPUIUSR no longer matters in determining the MAS agent user ID.		

Table 45. Changed CICSplex SM views

Transaction Server for z/OS Release	Changed CICS resource type or function	Corresponding changed CICSplex SM views
5.4	Support for WebSphere MQ: WebSphere MQ monitors added to views	1. CICS operations views > DB2, DBCTL and WebSphere MQ operations views
5.4	Support for z/OS WLM health: new fields added to views	1. Active workload views > Active target regions 2. Active workload views > Active workload target distribution factors 3. CICS operations views > CICS region operations views > MVS workload management
5.4	VSAM data set for files: new value RREPL for the AVAILABILITY attribute	1. CICS operations views > File operations views > Physical data sets for files views
5.2	WEBSERVICE resources in CICS bundles	1. CICS operations views > TCP/IP service operations views > Web services

Table 46. New or changed CICSplex SM views and resource tables

CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.6	New field MVS SOS wait time (SMMVSSWT)	CICS operations views > Task operations views > Complete tasks	HTASK
5.6	New field MVS SOS wait time (SMMVSSWT)	CICS operations views > Task operations views > Active tasks	TASK
5.6	New field OPTIONSPGM introduced to the resource table for TCPIP SERVICE resources.	CICS operations views > TCP/IP service operations views > TCP/IP services > TCP/IP service	TCPDEF

Table 46. New or changed CICSplex SM views and resource tables (continued)

CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.6	<p>The following changes have been introduced to the resource table for policy rules:</p> <ul style="list-style-type: none"> • New field OPENSTATUS • New value WLMHEALTH added to ACTION field • New values dbctlConnection, mqConnection and pipelineEnable added to RULETYPE field 	Not applicable	RULE
5.6	<ul style="list-style-type: none"> • New SWITCHALL value for dump data set switch type • New TABLEONLY value for system dump status 	CICS operations views > CICS region operations views > Dump and trace details	CICSRGN
5.6	New resource signature values for sysdumpcodes	CICS operations views > CICS region operations views > Dump and trace details > CICS system dump codes > System Dump code - resource signature	SYSDUMP
5.6	New resource signature values for trandumpcodes	CICS operations views > CICS region operations views > Dump and trace details > Transaction dump codes > Transaction dump code - resource signature	TRANDUMP
5.5	Base table for Node.js applications	Not applicable	NODEJSAP
5.5	New field JOBUSERID, specifying a default job user ID for jobs to the JES internal reader.	Not applicable	TDQDEF

Table 46. New or changed CICSplex SM views and resource tables (continued)

CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.5	New field TCBPROTCUR, indicating the current number of connections that have protected threads	Not applicable	DB2CONN
5.5	New fields URIMAPLIMIT and WEBSERVLIMIT, indicating the limit set for transaction resource monitoring	Not applicable	MONITOR
5.5	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.	Not applicable	CONNECT
5.5	Base table for feature toggles	Not applicable	FEATURE
5.5	New field PLTPIUSR, indicating the user ID applicable to PLTPI processing. New fields LASTCOLDTIME, LASTEMERTIME, LASTINITTIME, and LASTWARMTIME, indicating the date and time of the last CICS system startup. New field AIDCOUNT, indicating the current number of automatic initiator descriptors that are in the AID chain for the local system.	Not applicable	CICSRGN

Table 46. New or changed CICSplex SM views and resource tables (continued)

CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.5	New fields TNADDR, TNIPFAMILY, and TNPORT, indicating IP addresses of TN3270 clients, for TERMNL base table	Not applicable	TERMNL
5.5	New field TMRNJAPN, indicating the Node.js application name from which the task was started.	Not applicable	HTASK TASK
5.4	New attributes in HTASK for previous transaction tracking	CICS operations views > Task operations views > Completed tasks	HTASK
5.4	WebSphere MQ monitor	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ monitors	MQMON
5.4	MQMONITOR definitions	Administration views > Basic CICS resource administration views or Fully functional Business Application Services (BAS) administration views > Resource definitions > WebSphere MQ monitor definitions	MQMONDEF
5.4	MQMONITOR resources in a resource group	Administration views > Basic CICS resource administration views or Fully functional Business Application Services (BAS) administration views > Resource definitions in a resource group	MQMINGRP
5.4	Topology base table for WebSphere MQ monitor resource table	Not applicable	CRESMQMN
5.4	New attributes added for z/OS WLM health support	Active workload views > Active workload target distribution factors Active workload views > Active target regions CICS operations views > CICS region operations views > MVS workload management	WLMAWAOR WLMATARG MVSWLM
5.4 (available in 5.3 with APAR PI55134 and in 5.1 and 5.2 with APAR PI55133)	DSIE value for DATAFORMAT attribute of EPADAPT resource table	CICS operations views > Application operations views > Event processing adapter	EPADAPT
5.3	Topology base table for Db2 packageset resource table	Not applicable	CRESD2P

<i>Table 46. New or changed CICSplex SM views and resource tables (continued)</i>			
CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.3	Db2 packagesets	Not applicable	DB2PKGST
5.3	CICSplex SM notification resource table for resource map events for Db2 packagesets	Not applicable	ERMCDDB2P
5.3	Liberty JVM server LINK enabled services	Not applicable	WLPSEVR

<i>Table 47. Obsolete CICSplex SM views, resource tables, and attributes</i>			
CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.4	WLPSEVR resource table	Not applicable	The WLPSEVR resource table is obsolete. A GET operation on the WLPSEVR resource table returns NOTFOUND

<i>Table 48. New BAS definition objects</i>		
CICS Transaction Server for z/OS Release	BAS object	What is it?
5.4	MQMONDEF	CICS definition that describes an MQMONITOR resource.
5.4	MQMINGRP	BAS definition that describes the membership of an MQMONITOR definition (MQMONDEF) in a resource group.

<i>Table 49. Changes to CICSplex SM transactions, by release of CICS Transaction Server for z/OS</i>				
V5.2	V5.3	V5.4	5.5	V 5.6
	CHANGED: HTASK and Task resource tables include counts for requests to a named counter server	CHANGED: 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.		

Table 50. Changes to CICSplex SM parameters by release of CICS Transaction Server for z/OS					
Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
CACHEDSNUM	NEW: Added by 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.	NEW: Added by APAR PH00673.	NEW: Added by APAR PH00673.		
MASTASKPROT					
RESTART			NEW: Specifies that, if the CICS region shuts down normally, it is to be restarted by MVS Automatic Restart Manager (ARM).		

Table 51. Changes to CICSplex SM WUI server initialization parameters, by release of CICS Transaction Server for z/OS					
Parameter	V5.2	V5.3	V5.4	V5.5	V5.6
CMCIAUTH	NEW with APAR PI37543	NEW			
CMCISSL	NEW with APAR PI37543	NEW			
TCPISSL	CHANGED with APAR PI94706: New value ATTLBSBASIC	CHANGED with APAR PI94706: New value ATTLBSBASIC	CHANGED with APAR PI94706: New value ATTLBSBASIC	CHANGED: New value ATTLBSBASIC	

Changes to toggle-enabled features

This section lists toggle-enabled features that you can choose to use in your CICS region. It also summarizes changes in support for toggle-enabled features across supported CICS releases. Use this information to plan the impact of upgrading from one release to another.

Note: Feature toggling is not supported in CICS releases earlier than V5.4.

Table 52 on page 117 uses the following convention in the release columns for summarizing changes in support:

Blank

Not available in this release, or no longer enabled by the feature toggle.

APAR number

Available if the APAR is applied.

Available

Available with this release.

CHANGED

Available but changed in this release.

CHANGED with APAR number

Available with this release, but changed with this APAR.

BASE

The feature is made a base function in this release. It is not enabled by the feature toggle any more.

REMOVED

The feature has been removed in this release.

Table 52. Changes to toggle-enabled features list by release of CICS Transaction Server for z/OS				
Feature name	Feature toggle	V5.4	V5.5	V5.6
BMS 3270 Intrusion Detection Service	com.ibm.cics.bms.ids={true <u>false</u> }	Available	Available	Available

Table 52. Changes to toggle-enabled features list by release of CICS Transaction Server for z/OS (continued)

Feature name	Feature toggle	V5.4	V5.5	V5.6
CMCI JVM server	<code>com.ibm.cics.cmci.jvmserver={true false}</code>	APAR PI87691 The default is false.	Available The default is false.	CHANGED: The default is changed to true. If you have not upgraded to the CMCI JVM server, follow the upgrade instruction in Upgrading CICSplex SM .
Surrogate user checking for spool commands in job submissions to the JES internal reader	<code>com.ibm.cics.spool.surrogate.check={true false}</code>		Available	Available
User ID used for JCL job submission when no job user ID is specified on the job card	<code>com.ibm.cics.spool.defaultjobuser={region task}</code>		Available	Available
Container performance improvement	<code>com.ibm.cics.container.hash={true false}</code>		Available	Available
Avoid the potential of AFCG abends when using DELETE RIDFLD on RLS files	<code>com.ibm.cics.rls.delete.ridfld={true false}</code>	APAR PH07596	APAR PH07596	Available
Specify the name of the HTTP Options handler program	<code>com.ibm.cics.http.options.handler={program_name}</code>	APAR PH16992	APAR PH16992	REMOVED You can specify the name of the HTTP Options handler program in the OPTIONSPGM attribute of the TCPIPSERVICE resource definition.
Improved usage of BAS data space storage for large CICSplex environments	<code>com.ibm.cics.cpsm.bas.largecicsplex={true false}</code>	APAR PH19761 The default is false.	APAR PH19761 The default is false.	Available
Feature toggles for MVS storage monitoring and SOS wait support See Monitoring z/OS MVS storage for CICS for detailed setup instructions.				
The monitor sampling interval in seconds	<code>com.ibm.cics.mvssm.mon.interval={0 60,1-60}</code>			Available
The minimum amount in Kb of available user region contiguous storage (largest contiguous unallocated storage area)	<code>com.ibm.cics.mvssm.sos24.minavailable.contiguous={32,1-1024}</code>			Available
The minimum total amount in Kb of available user region unallocated storage	<code>com.ibm.cics.mvssm.sos24.minavailable.total={64,1-1024}</code>			Available
The minimum amount in Kb of available extended user region contiguous storage (largest contiguous unallocated storage area)	<code>com.ibm.cics.mvssm.sos31.minavailable.contiguous={64,1-16384}</code>			Available
The minimum total amount in Kb of available extended user region storage	<code>com.ibm.cics.mvssm.sos31.minavailable.total={128,1-16384}</code>			Available
CICS SOS wait feature	<code>com.ibm.cics.mvssm.sos.wait={true false}</code>			Available

Changes to feature toggle configuration and processing

This section summarizes the changes to feature toggle configuration and processing across supported releases of CICS TS.

Table 53. Changes to feature toggle configuration and processing, by release of CICS Transaction Server for z/OS		
V5.4	V5.5	V5.6
		<p>DEPRECATED: Group-level feature toggle configuration, which will be removed in a future release.</p> <p>CHANGED: You can now implement region ID-specific feature toggle configurations.</p>
NEW: Feature toggle mechanism is introduced.		

Summary of changes from end-of-service releases

This section summarizes the changes that were made to CICS externals and interfaces in Version 3, Version 4 and Version 5.1. 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 [V3.2](#), [V4.1](#), [V4.2](#), and [V5.1](#).

- [“Overview of release changes” on page 120](#)
- [“Changes to installing” on page 122](#)
- [“Changes to security” on page 122](#)
- [“Changes to the CICS API” on page 124](#)
- [“Changes to the JCICS API” on page 130](#)
- [“Changes to the CICS translator” on page 132](#)
- [“Changes to SIT parameters” on page 133](#)
- [“Changes to JVM profiles” on page 136](#)
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- [“Changes to CICS control tables” on page 169](#)
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- [“Changes to CICS-supplied transactions” on page 182](#)
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- [“Changes to CICS XPI” on page 199](#)
- [“Changes to CICS user-replaceable programs” on page 201](#)
- [“Changes to CICS messages and codes” on page 202](#)
- [“Changes to samples” on page 220](#)
- [“Changes to CICSplex SM” on page 223](#)

Overview of release changes

Table 54. Major areas of technology change, by end-of-service release of CICS Transaction Server for z/OS		
Release	New	Discontinued
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 • Resettable mode in JVMs • Earlier release support in DFH\$MOLS • DFHLSCU utility
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>

Table 54. Major areas of technology change, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	New	Discontinued
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>
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 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>

Changes to installing

Table 55. Changes to installing, by end-of-service release of CICS Transaction Server for z/OS			
V3.2	V4.1	V4.2	V5.1
<ul style="list-style-type: none"> CICS region user ID requires read access to each VSAM catalog for files for which CICS has installed file definitions. Integration of CICSplex[®] SM and CICS installation: EYUISTAR process is obsolete and merged into the DFHISTAR process. APPLID of the CICS region must be unique across sysplex (or XRF-specific). MEMLIMIT must be set to 6 GB or greater. 		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

This section covers changes to security and changes to RACF classes.

Table 56. Changes to security, by end-of-service release of CICS Transaction Server for z/OS				
Change	V3.2	V4.1	V4.2	V5.1
TLS				
TLS 1.2				NEW with APAR: PM97207
NIST SP800-131A and FIPS				NEW with APAR: PM97207
PERFORM SSL REBUILD				NEW
ENCRYPTION SIT parameter (deprecated)	CHANGED: option SSLV3 added.	CHANGED: options MEDIUM and WEAK removed and option SSLV3 added.	CHANGED: option SSLV3 added.	CHANGED with APAR: PM97207. Options ALL and TLS12FIPS added, SSLV3 added.
PassTickets				
XPTKT system initialization parameter		NEW with APAR: PI60653	NEW with APAR: PI60653	NEW with APAR: PI60653

Table 56. Changes to security, by end-of-service release of CICS Transaction Server for z/OS (continued)

Change	V3.2	V4.1	V4.2	V5.1
Other authentication changes				
Passphrase support			NEW	
Performance				
Monitor inbound cipher suite in performance record				NEW
Audit				
Support for IBM Health Checker for z/OS				NEW with APAR: PI76965
Audit SPI commands				NEW
Identity propagation		NEW with APARs: PK95579, PM01622, PK83741, and PK98426		
Identity propagation for START commands				NEW
ENF 71 (reflect changes to user IDs)		NEW		
RACFSYNC				NEW
SECVFYFREQ system initialization parameter				NEW
Enhanced protection				
CICS BMS 3270 intrusion detection service		NEW with APAR: PI50363	NEW with APAR: PI50363	NEW with APAR: PI51499 and PI55048
XHFS system initialization parameter	NEW			
XRES system initialization parameter	NEW			
RACF KFDAES Support (R_Password)			NEW with APAR: PI21865	NEW with APAR: PI21866
Additional changes				

Table 56. Changes to security, by end-of-service release of CICS Transaction Server for z/OS (continued)

Change	V3.2	V4.1	V4.2	V5.1
CONFDATA system initialization parameter	CHANGED: new trace points added.			

Table 57. Changes to RACF classes related to command security, by release of CICS Transaction Server for z/OS. 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	V3.2	V4.1	V4.2	V5.1
INQUIRE CAPDATAPRED				NEW resource identifier CAPOPTPRED
INQUIRE EPADAPTERSET SET EPADAPTERSET				NEW resource identifier EPADAPTERSET
INQUIRE EPADAPTINSET				NEW resource identifier EPADAPTINSET

Changes to the CICS API

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS

Command	V3.2	V4.1	V4.2	V5.1
ASKTIME		CHANGED: Changed value: ABSTIME		
ASSIGN				CHANGED: New options: ASRAPSW16 and ASRAREGS64
BIF DEEDIT			CHANGED: Made threadsafe	
BIF DIGEST		NEW	CHANGED: Made threadsafe	
CHANGE PASSWORD			CHANGED: Made threadsafe	
CHANGE PHRASE			NEW	
CONVERTTIME		CHANGED: New value: RFC 3339 format		
DEFINE COUNTER and DEFINE DCOUNTER			CHANGED: Made threadsafe	
DELETE			CHANGED: Made threadsafe for remote regions through IPIC	

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
DELETE COUNTER and DELETE DOUNTER			CHANGED: Made threadsafe	
DELETEQ TD				CHANGED: Made threadsafe
DELETEQ TS			CHANGED: Made threadsafe for remote regions through IPIC	
DOCUMENT CREATE	CHANGED: New error condition: NOTAUTH if resource security for document templates is active in the CICS region.			
DOCUMENT DELETE	NEW			
DOCUMENT SET	CHANGED: New error condition: NOTAUTH if resource security for document templates is active in the CICS region.			
ENDBR			CHANGED: Made threadsafe for remote regions through IPIC	
FREEMAIN64				NEW
EXEC DLI			CHANGED: Made threadsafe	
EXTRACT CERTIFICATE			CHANGED: Made threadsafe	
EXTRACT TCPIP		CHANGED: New values: CLNTADDR6NU, CLNTIPFAMILY, SRVRADDR6NU, SRVRIPFAMILY. Changed options: CADDRLENGTH, CLIENTADDR, SADDRLENGTH, and SERVERADDR to return IPv6 information.	CHANGED: Made threadsafe	

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
EXTRACT WEB		CHANGED: New value: HOSTTYPE. Changed value: HOST, to support IPv6 addresses.		
FORMATTIME	CHANGED: New value: STRINGFORMAT	CHANGED: New value: RFC 3339. New option: MILLISECONDS		
GET CONTAINER (CHANNEL)	CHANGED: New value: INTOCODEPAGE			CHANGED: New value: BYTEOFFSET
GET COUNTER and GET DCOUNTER			CHANGED: Made threadsafe	
GET64 CONTAINER				NEW
GETMAIN64				NEW
INVOKE SERVICE		NEW		
INVOKE WEBSERVICE		DEPRECATED: Use INVOKE SERVICE instead.		
LOAD				CHANGED: Changed value: ENTRY
LINK			CHANGED: Made threadsafe	
PUT CONTAINER (CHANNEL)	CHANGED: New value: FROMCODEPAGE			CHANGED: New value: APPEND
PUT64 CONTAINER				NEW
QUERY COUNTER and QUERY DCOUNTER			CHANGED: Made threadsafe	
QUERY SECURITY	CHANGED: Change of impact. Can now determine if user has access to resource definitions for document templates.		CHANGED: Made threadsafe. New option: EPADAPTER	CHANGED: New option: EPADAPTERSET
READ	CHANGED: New option: XRBA		CHANGED: Made threadsafe for remote regions through IPIC	

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
READNEXT	CHANGED: New option: XRBA		CHANGED: Made threadsafe for remote regions through IPIC	
READPREV	CHANGED: New option: XRBA		CHANGED: Made threadsafe for remote regions through IPIC	
READQ TD				CHANGED: Made threadsafe
READQ TS			CHANGED: Made threadsafe for remote regions through IPIC	
RESETBR	CHANGED: New option: XRBA		CHANGED: Made threadsafe for remote regions through IPIC	
REWIND COUNTER and REWIND DCOUNTER			CHANGED: Made threadsafe	
REWRITE			CHANGED: Made threadsafe for remote regions through IPIC	
SIGNAL EVENT		NEW		
SIGNOFF			CHANGED: Made threadsafe	
SIGNON			CHANGED: Made threadsafe and changed to support password phrases	
START				CHANGED: Change of impact to support identity propagation
STARTBR	CHANGED: New value: XRBA		CHANGED: Made threadsafe for remote regions through IPIC	
START CHANNEL				CHANGED: Change of impact to support identity propagation
SYNCPOINT			CHANGED: Made threadsafe	

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
SYNCPOINT ROLLBACK			CHANGED: Made threadsafe	
TRANSFORM DATATOXML		NEW		
UNLOCK			CHANGED: Made threadsafe for remote regions through IPIC	
UPDATE COUNTER and UPDATE DCOUNTER			CHANGED: Made threadsafe	
VERIFY PASSWORD			CHANGED: Made threadsafe	CHANGED: Change of impact. Function is changed, dependent on SECVFYFREQ and/or USRDELAY.
VERIFY PHRASE			NEW	CHANGED: change of impact. Function is changed, dependent on SECVFYFREQ and/or USRDELAY.
WAIT JOURNALNAME	CHANGED: Made threadsafe			
WAIT JOURNALNUM	CHANGED: Made threadsafe			
WRITE JOURNALNAME	CHANGED: Made threadsafe			
WEB CONVERSE	CHANGED: Made threadsafe and new option: DOCSTATUS			Changed with APAR PI43898: New INVREQ with RESP2 value of 157
WEB ENDBROWSE QUERYPARM		NEW		
WEB EXTRACT	CHANGED: New options REALM and REALMLEN	CHANGED: New value: HOSTTYPE and existing value, HOST, is changed to support IPv6 addresses		

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
WEB OPEN		CHANGED: HOST option is changed to support IPv6 addresses. Description of HTTPRNUM and HTTPVNUM is changed		
WEB PARSE URL		CHANGED: New value: HOSTTYPE and existing value, HOST, is changed to support IPv6 addresses		
WEB READ QUERYPARM		NEW		
WEB READNEXT QUERYPARM		NEW		
WEB RECEIVE (Client)				Changed with APAR PI43898: New INVREQ with RESP2 value of 157
WEB RETRIEVE	CHANGED: Change of impact: if WEB SEND command specifies DOCDELETE on DOCSTATUS, the WEB RETRIEVE command cannot retrieve the document			
WEB SEND CLIENT	CHANGED: New option to specify authentication credentials			
WEB SEND (Server)	CHANGED: New values: AUTHENTICATE, PASSWORDLEN, PASSWORD, USERNAME, USERNAMELEN, DOCSTATUS			
WEB STARTBROWSE QUERYPARM		NEW		

Table 58. Changes to EXEC CICS commands, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
WRITE	CHANGED: New value: XRBA		CHANGED: Made threadsafe for remote regions through IPIC	
WRITE JOURNALNUM	CHANGED: Made threadsafe			
WRITEQ TD				CHANGED: Made threadsafe
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	
WSACONTEXT BUILD		NEW		
WSACONTEXT DELETE		NEW		
WSACONTEXT GET		NEW		
WSAEPR CREATE		NEW		
XCTL				CHANGED: Change of impact, COMMAREA is now created above or below the line.

Changes to the JCICS API

Table 59. Changes to the JCICS API, by end-of-service release of CICS Transaction Server for z/OS

Class	V3.2	V4.1	V4.2	V5.1
All	CHANGED: ClientCodepage is changed to Characterset			
CICSExecutorService				NEW

Table 59. Changes to the JCICS API, by end-of-service release of CICS Transaction Server for z/OS (continued)

Class	V3.2	V4.1	V4.2	V5.1
Container	CHANGED: <ul style="list-style-type: none"> Support for data type of CHAR. NotAuthorised Exception can be thrown on create, append, and insert. 			
Document	NEW METHOD: delete() NEW VERSION of sendDocument() CHANGED: NotAuthorised Exception can be thrown on create, append, and insert.			
<u>Event</u>		NEW		
<u>EventErrorException</u>		NEW		
HttpClientRequest	NEW METHODS <ul style="list-style-type: none"> setAuthenticate() setUserName() setPassword() setContainer() NEW EXCEPTIONS for sendDocument()			
<u>HttpRequest</u>	NEW METHODS: <ul style="list-style-type: none"> setContainer() setChannel() getContentAsContainer() getBodyCharset() 	NEW METHODS: <ul style="list-style-type: none"> getHostType() getQueryParm() startBrowseQueryParm() getNextQueryParam() endBrowseQueryParam() 		

Table 59. Changes to the JCICS API, by end-of-service release of CICS Transaction Server for z/OS (continued)				
Class	V3.2	V4.1	V4.2	V5.1
HttpResponse	NEW METHODS: <ul style="list-style-type: none"> • setContainer() • setChannel() • getContentAsContainer() • getBodyCharset() NEW VERSION of sendDocument().			
HttpSession		NEW METHOD: getHostType()		
TcpipRequest		NEW METHODS: <ul style="list-style-type: none"> • getClientHostAddress6() • getServerHostAddress6() • getClientIpFamily() • getServerIpFamily() 		
Webservice	CHANGED: NotAuthorised. Exception can be thrown on invoke.			

Changes to the CICS translator

Table 60. Changes to the CICS translator, by end-of-service release of CICS Transaction Server for z/OS		
V3.2	V4	V5.1
<ul style="list-style-type: none"> • Support for pre-Language Environment® compilers withdrawn: <ul style="list-style-type: none"> – Withdrawn JCL procedures: DFHEITVL, DFHEXTVL, DFHEBTVL, DFHEITCL, DFHEXTCL, DFHEITPL, DFHEXTPL, DFHEBTPL, DFHEITDL and DFHEXTDL – Obsolete CICS translator options: ANS185, LANGLVL, FE • Support for OO COBOL, including both Java classes and COBOL classes withdrawn. 		

Changes to SIT parameters

Table 61. Changes to SIT parameters, by end-of-service release of CICS Transaction Server for z/OS				
Parameter	V3.2	V4.1	V4.2	V5.1
AKPFREQ				CHANGED: minimum value is now 50.
APPLID	CHANGED: APPLID must be unique in the sysplex.			
AUTORESETTIME				CHANGED: new default is IMMEDIATE.
CONFDATA	CHANGED: now also applies to initial input data received on IPIC connections (IS data).			
CSDLSRNO			CHANGED: number of LSR pools can now be up to 255.	
EDSALIM			CHANGED: minimum and default are changed to 48 MB.	CHANGED: default is changed to 800 MB.
EJBROLEPRFX				REMOVED
ENCRYPTION	CHANGED: value STRONG now does not allow SSL version 3.0.	CHANGED: value STRONG now does not allow SSL version 3.0.	CHANGED: value STRONG now does not allow SSL version 3.0.	CHANGED: Value STRONG now does not allow SSL version 3.0. Two new values: ALL and TLS12FIPS.
FCQRONLY	NEW		CHANGED: change of impact, depending on whether the connections to FORs are MRO, ISC, or IPIC.	
ICVTSD				CHANGED: default value changed to zero.
IIOPLISTENER				REMOVED

Table 61. Changes to SIT parameters, by end-of-service release of CICS Transaction Server for z/OS (continued)

Parameter	V3.2	V4.1	V4.2	V5.1
<u>INITPARM</u>		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.		
JVMCCSIZE				REMOVED
JVMCCSTART				REMOVED
JVMLEVEL0TRACE				REMOVED
JVMLEVEL1TRACE				REMOVED
JVMLEVEL2TRACE				REMOVED
<u>JVMPROFILEDIR</u>		CHANGED: default value is now the value in USSHOME followed by JVMProfiles subdirectory.		
JVMUSERTRACE				REMOVED
MAXJVMTCBS				REMOVED
<u>MAXOPENTCBS</u>				REMOVED: CICS will set a value based on MXT
<u>MNIDN</u>		NEW		
MNSUBSYS	REMOVED			
<u>MQCONN</u>		CHANGED: CICS no longer uses INITPARM to provide information to start a connection.		
<u>MSGCASE</u>	CHANGED: now also applies to messages displayed by the CICSplex SM message domain.			
<u>MXT</u>				CHANGED: minimum, default, and maximum values are changed to 10, 500, and 2000.

Table 61. Changes to SIT parameters, by end-of-service release of CICS Transaction Server for z/OS (continued)

Parameter	V3.2	V4.1	V4.2	V5.1
PRTYAGE				CHANGED: default value is now 1000 milliseconds.
NONRLSRECOV	NEW			
PSTRYPE		CHANGED: new value, NOPS.		
RACFSYNC				NEW
SECVFYFREQ				NEW
SPCTR				CHANGED: new value of MP for managed platform domain.
STATINIT				CHANGED: default value is now 010000 (1 hour).
STATRCD				CHANGED: default value is now OFF.
STNTR				CHANGED: new value of MP for managed platform domain.
TBEXITS				CHANGED: 4-byte GWA passed to an exit on enablement now comes from 31-bit storage.
TCTUALOC				CHANGED: default value changed to ANY.
TDSUBTASK				REMOVED
TRANISO				CHANGED: TRANISO no longer affects the use of 64-bit storage.
TRTABSZ	CHANGED: default is changed to 4096 KB.		CHANGED: when the internal trace table is in 64-bit storage, TRTABSZ no longer influences EDSALIM.	

Table 61. Changes to SIT parameters, by end-of-service release of CICS Transaction Server for z/OS (continued)

Parameter	V3.2	V4.1	V4.2	V5.1
TRTRANSZ			CHANGED: default is now 1024 KB and recommendation to review your setting now that CICS uses 64-bit storage for the transaction dump trace table.	
TSMALIMIT			NEW	
UOWNETQL	CHANGED: on VTAM=NO regions, UOWNETQL is now used as the default NETWORKID of this CICS region.			
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.		
XCFCGROUP	NEW			
XEJB				REMOVED
XHFS	NEW			
XPTKT		NEW with APAR	NEW with APAR	NEW with APAR
XRES	NEW		NEW with APAR	

Changes to JVM profiles

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS

Option	V3.2	V4.1	V4.2	V5.1
&JVM_NUM;				OBSOLETE: Pooled JVM option that is not supported in a JVM server. The unique JVM number is substituted at run time.

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS (continued)

Option	V3.2	V4.1	V4.2	V5.1
-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.

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS (continued)

Option	V3.2	V4.1	V4.2	V5.1
-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.

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS (continued)

Option	V3.2	V4.1	V4.2	V5.1
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.
<u>CLASSPATH PREFIX</u>	TYPE: All JVM Environments			
<u>CLASSPATH SUFFIX</u>	TYPE: All JVM Environments			
<u>com.ibm.cics.jvmserver.override.classid</u>				NEW compatible with: All JVM Environments
<u>com.ibm.cics.jvmserver.wlp.autocountfigure</u>				NEW compatible with: Liberty JVM server
<u>com.ibm.cics.jvmserver.wlp.server.host</u>				NEW compatible with: Liberty JVM server
<u>com.ibm.cics.jvmserver.wlp.server.http.port</u>				NEW compatible with: Liberty JVM server
<u>com.ibm.cics.jvmserver.wlp.server.name</u>				NEW compatible with: Liberty JVM server
<u>com.ibm.cics.jvmserver.wlp.jdbc.driver.location</u>				NEW compatible with: Liberty JVM server

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS (continued)

Option	V3.2	V4.1	V4.2	V5.1
<u>DISPLAY JAVA VERSION</u>	TYPE: All JVM Environments			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.
<u>JAVA_DUMP_TDUMP_PATTERN</u>	TYPE: All JVM Environments			
<u>JAVA_PIPELINE</u>			NEW: compatible with non-OSGi JVM server (Axis 2)	
LEHEAPSTATS				OBSOLETE: Pooled JVM option that is not supported in a JVM server.

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS (continued)

Option	V3.2	V4.1	V4.2	V5.1
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.
LIBPATH_PREFIX	TYPE: All JVM Environments			
LIBPATH_SUFFIX	TYPE: All JVM Environments			
MAX_RESETS_TO_GC				OBSOLETE: Pooled JVM option that is not supported in a JVM server.
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	
REUSE				OBSOLETE: Pooled JVM option that is not supported in a JVM server.
SECURITY_TOKEN_SERVICE			NEW compatible with: OSGi JVM server	

Table 62. Changes to JVM profiles, by end-of-service release of CICS Transaction Server for z/OS (continued)

Option	V3.2	V4.1	V4.2	V5.1
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.
VERBOSE				CHANGED: Withdrawn from sample profiles. Replaced with -verbose:gc.
WLP_INSTALL_DIR				NEW compatible with: Liberty JVM server
WLP_OUTPUT_DIR				NEW compatible with: Liberty JVM server
WLP_USER_DIR				NEW compatible with: Liberty JVM server

Changes to resource definitions

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS

Resource or group	V3.2	V4.1	V4.2	V5.1
ATOMSERVICE		NEW		
BUNDLE		NEW		

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
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 force purge processing of a CICS task.
DJAR				REMOVED

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
IPCONN	NEW	CHANGED: New attribute, IDPROP, and changed attribute HOST		CHANGED: Changed attributes CIPHERS and NUMCIPHERS
FILE			CHANGED: New attribute, LSRPOOLNUM, and new value, REQUIRED on CONCURRENCY	
JVMSEVER		NEW		
LIBRARY	NEW			
MQCONN		NEW		
LSRPOOL			CHANGED: New attribute, LSRPOOLNUM, and attribute made obsolete, LSRPOOLID	
PIPELINE	CHANGED: New attribute: RESPWAIT			
PROGRAM				OBSOLETE: JVM PROFILE attribute
REQUESTMODEL				REMOVED

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
TCPIPSERVICE	CHANGED: New attribute REALM. New values IPIC on PROTOCOL and NO on URM		CHANGED: New attributes, MAXPERSIST, and EXPIRYINT	<p>CHANGED:</p> <p>New attribute SPECIFICS.</p> <p>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 SOMAXCONNECTION TCP/IP configuration</p>

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
PROGRAM			CHANGED: New attribute, JVMSERVER, and new value of REQUIRED on CONCURRENCY	
TERMINAL		CHANGED: Change of impact: REMOTESYSTEM attribute for IP connections		
TRANSACTION		CHANGED: Change of impact: REMOTESYSTEM attribute for IP connections		
TSMODEL			CHANGED: New attribute, EXPIRYINT	
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.	CHANGED: New attribute, SOCKETCLOSE	CHANGE D: Changed attributes CIPHERS and NUM CIPHERS. New value JVM SERVER on USAGE.
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).	

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFH\$AFLA				CHANGE D: Programs are changed from DAT ALO CATION(B ELOW) to DAT ALO CATION(ANY). Transactions are changed from TASK DAT ALO C(BELOW) to TASK DAT ALO C(ANY).
DFH\$AXIS			NEW GROUP	
DFH\$CCI				REMOVED

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFH\$DB2			CHANGED: DB2CONN definition RCT1\$ now specifies REUSELIMIT(1000).	CHANGED: Programs removed: DFJ \$DS DB, DFJ \$DS PU, and DFJ \$DS RE Transactions removed: DSD B, DSP U, and DSR E
DFH\$EJB		CHANGED: TCPIP SERVICE definition EJB TCP1 is changed from BACKLOG(5) to BACKLOG(10) and specifies HOST(ANY).	CHANGED: TCPIP SERVICE definition EJB TCP1 now specifies MAXPERSIST(NO).	REMOVED
DFH\$EJB2		CHANGED: TCPIP SERVICE definition EJB TCP1 is changed from BACKLOG(5) to BACKLOG(10) and specifies HOST(ANY) and MAXPERSIST(NO).	CHANGED: DB2CONN definition DB2CON1 now specifies REUSELIMIT(1000).	REMOVED
DFH\$EPAG		NEW GROUP	CHANGED: TRANSACTION definition EPAT is changed from SHUTDOWN(DISABLED) to SHUTDOWN(ENABLED).	
DFH\$EPCM		CHANGED: New bundle: EPBUND01		

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFH\$EXBS	CHANGED: New programs: DFH0XCFG and DFH0XGUI	CHANGED: New MAPSET definitions: DFH0XS1, DFH0XS2, and DFH0XS3 New programs: DFH0XCMN, DFH0XODE, DFH0XSDS, DFH0XSOD, DFH0XSSM, DFH0XVDS, and DFH0XWOD		
DFH\$EXWS	CHANGED: <ul style="list-style-type: none"> PIPELINE definitions EXPIPE01 and EXPIPE02 now specify RESPWAIT(DEFT). New program: DFH0XCUI 	CHANGED: TCPIP SERVICE definition EXMPPORT is changed from BACKLOG(5) to BACKLOG(10) and from URM(NONE) to URM(DFHWBAAX), and specifies HOST(ANY).	CHANGED: TCPIP SERVICE definition EXMPPORT now specifies MAXPERSIST(NO).	CHANGED: TCPIP SERVICE definition EXMPPORT is changed from BACKLOG(10) to BACKLOG(0). EXMPPORT now specifies IPADDRESS(ANY).
DFH\$IIOP		CHANGED: TCPIP SERVICE definitions IIOPNSSL and IIOPSSL are changed from BACKLOG(5) to BACKLOG(10) and specify HOST(ANY).	CHANGED: TCPIP SERVICE definitions IIOPNSSL and IIOPSSL specify MAXPERSIST(NO).	REMOVED

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFH\$JVM				REMOVED
DFH\$OSGI			NEW GROUP	
DFH\$SAML			NEW GROUP	
DFH\$SDAP	REMOVED			
DFH\$SOT		CHANGED: TCPIP SERVICE definitions ECI, HTTPNSSL, and HTTPSSL are changed from BACKLOG(5) to BACKLOG(10) and specify HOST(ANY).	CHANGED: TCPIP SERVICE definitions ECI, HTTPNSSL, and HTTPSSL now specify MAXPERSIST(NO).	CHANGE D: TCPIP SERVICE definitions ECI, HTTPNSSL, and HTTPSSL are changed from BACKLOG(10) to BACKLOG(0); they now specify IPADDRESS(ANY).
DFH\$STAT		CHANGED: New programs: DFH0STEP, DFH0TSA, DFH0TTS, and DFH0TWB		

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFH\$WBSN	CHANGED: Program DFH \$WB1C is moved to group DFH \$WEB.			
DFH\$WEB	NEW	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).	CHANGED: URIMAP definitions DFH\$URI2 and DFH\$URI3 now specify SOCKETCLOSE(0).	
DFH\$WEB2		NEW GROUP	CHANGED: New bundles: DFH\$TSQB and DFH\$TSQT Programs removed: DFH\$W2FD, DFH\$W2FI, DFH\$W2SD, DFH \$W2TS and DFH0W2FA	
DFH\$WLP				NEW GROUP

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFH\$WU		CHANGED: New TCPIP SERVICE definition: DFH\$WUTC New URIMAP definition: DFH\$WUUR	CHANGED: TCPIP SERVICE definition DFH\$WUTC now specifies MAXPERSIST(NO).	CHANGED: TCPIP SERVICE definition DFH\$WUTC is changed from BAC KLOG(10) to BAC KLOG(0); it now specifies IPADDRESS(ANY).
DFHADET				REMOVED
DFHADST				REMOVED
DFHDBCTL			CHANGED: Programs DFHDBAT and DFHDBUEX are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).	

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHDB2			CHANGED: Programs DSNTIAC and DSNTIA1 are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).	CHANGE D: Program DFH D2E DF is changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).
DFHDCTG	CHANGED: <ul style="list-style-type: none"> New TDQUEUE definitions: CISL, CISO, CKQQ, CMQM, and CSLB TDQUEUE definition CSSL now specifies RECORDSIZE(136) and BLOCKSIZE(140) 	CHANGED: <p>New TDQUEUE definitions: CECO, CEPO, CMLO, and CRLO</p> <p>TDQUEUE definitions removed: CPLD and CPLI</p>		CHANGE D: New TDQUEUE definition: CADS and CPMO

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHEDF				<p>CHANGE D:</p> <p>Program DFH EDFX is changed from CONCURRENT CY(Q UASIRENT) to CONCURRENT CY(T HRE ADS AFE).</p> <p>Programs DFH EIGD S,DF HEIT AB, and DFH SMT AB are changed from DAT ALO CATION(B ELO W) to DAT ALO CATION(A NY).</p>

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHEDP			CHANGED: Program DFHEDP is changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE)	
DFHEJBU				REMOVED
DFHEP		NEW GROUP	CHANGED: New programs: DFHECEAM, DFHECEAS, and DFHECEAT New transactions: CEPQ and CEPT Transaction CEPH is changed from DTIMOUT(NO) to DTIMOUT(5).	CHANGE D: New transaction: CEPS
DFHFEPI				CHANGE D: Program DFHEITSZ is changed from DATALOCATION(BELLOW) to DATALOCATION(ANY).
DFHIIOP				REMOVED

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHINQUI				CHANGE D: Program DFH EITB S is changed from DAT ALO CATI ON(B ELO W) to DAT ALO CATI ON(A NY).

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHIPECI				CHANGE: Transaction CIEP is changed from TASK DAT ALO C(BELOW) to TASK DAT ALO C(ANY) and from PRIORITY(1) to PRIORITY(255).

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHISC			<p>CHANGED:</p> <p>Programs DFHCCNV and DFHUCNV are changed from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).</p> <p>Program DFHMIRS is changed from DATALOCATION(BELOW) to DATALOCATION(ANY) and from CONCURRENCY(QUASIRENT) to CONCURRENCY(THREADSAFE).</p>	<p>CHANGE D:</p> <p>Program DFHCHS is changed from DATALOCATION(BELOW) to DATALOCATION(ANY).</p> <p>Transactions are changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).</p>

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHISCIP	NEW	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	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).	CHANGE D: New programs: DFHISPH and DFHISPRP New transactions: CISP and CIS1
DFHISCQ				CHANGE D: Transaction CQPI and CQPO are changed from TASKDATALLOC(BELOW) to TASKDATALLOC(ANY).

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHJAVA	CHANGED: <ul style="list-style-type: none"> New programs: DFHSJGC and DFHSJPI New transactions: CJGC and CJPI 	CHANGED: <p>New programs: DFHSJJI, DFJCICS, DFJCICSB, DFJCZDTC, and DFJDESN</p> <p>Program removed: DFHSJJML</p> <p>Transaction removed: CJMJ</p>		CHANGE D: <p>Programs removed: DFHDLLOD, DFHEJDNX, DFHJVCVT, DFHSJGC, DFHSJPI, DFJCICS, DFJCICSB, DFJCZDTC, DFJDESN, DFJ1ESN, DFJ1ICS, DFJ1ICSB, DFJ1ZDTC</p> <p>New program: DFHSJITL and DFHSJTHP</p> <p>Transactions removed: CJGC and</p>

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHMISC			CHANGED: Program DFHLETRU is changed from API(OPENAPI) to API(CICSAPI).	
DFHMQ	NEW			CHANGE D: New program: DFHMQBP3 New transaction; CKB C

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHMROFA				<p>CHANGE D:</p> <p>Programs DFH\$AALL, DFH\$ABRW, DFH\$ACOM, DFH\$AMNU, DFH\$AREN and DFH\$AREP are changed from DATALOCATION(BELLOW) to DATALOCATION(ANY). Transactions AADD, ABRW, AINQ, AMNU, AORD, AORQ, AREP and</p>

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHMROFD				CHANGE D: Transactions AAD D, ABR W, AIN Q, AMN U, AOR D, AOR Q, ARE P and AUP D are changed from TASK DAT ALO C(BE LOW) to TASK DAT ALO C(ANY).

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHMSWIT				CHANGE D: Transaction CMSGIS is changed from TASKDATALOC(BELOW) to TASKDATALOC(ANY).

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHOPER	CHANGED: <ul style="list-style-type: none"> New MAPSET definitions: DFHCMNH and DFHCMNM New programs: DFHCEMNA, DFHCEMND, DFHLDMAP, DFHLDMHF, and DFHLDMHS New transactions: CEMN and CLDM 	CHANGED: New programs: DFHCEMNB and DFHCEMNC		CHANGE D: Transactions CBA M, CEM T, CEO T, CEST , and CETR are changed from TASK DAT ALO C(BE LOW) to TASK DAT ALO C(AN Y).
DFHPIPE	CHANGED: <ul style="list-style-type: none"> New programs: IXMI33DA, IXMI33DI, IXMI33D1, IXMI33IN, and IXMI33UC Programs removed: DFHPIXE, IXMI26D1, and IXMI26UC 	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).	CHANGED: New programs: DFHJSON and DFHMLBSJ Program removed: DFHPIEP	CHANGE D: Program removed: DFHPIVAL
DFHPIVAL				NEW GROUP
DFHRL		NEW GROUP		

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHRMI				CHANGE D: Transaction CRSY is changed from TASK DAT ALO C(BE LOW) to TASK DAT ALO C(ANY).
DFHRS		NEW GROUP		
DFHSAML			NEW GROUP	
DFHSIGN		CHANGED: Program DFHSFP is changed from RESIDENT(NO) to RESIDENT(YES).	CHANGED: New MAPSET definition: DFHSNPE New transaction: CESL	CHANGE D: Transactions CESF, CESL, and CESN are changed from TASK DAT ALO C(BE LOW) to TASK DAT ALO C(ANY).

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHSPI		CHANGED: Programs DFHZCTDX, DFHZDTDX, and DFHZPTDX are changed from STATUS(DISABLED) to STATUS(ENABLED) and from DATALOCATION(BELOW) to DATALOCATION(ANY).		

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHSTAND		CHANGED: New program: DFHSJITL New transaction: CJSR		CHANGED: Programs removed: DFHEJITL and DFHSJITL Transactions CEJR and CJSR are removed Transactions CSA C and CXC U are changed from TASK DAT ALO C(BELOW) to TASK DAT ALO C(ANY)
DFHWEB	CHANGED: Transaction CWXN now specifies RESSEC(YES).		CHANGED: TSMODEL definition DFHWEB now specifies EXPIRYINT(0).	
DFHWEB2		NEW GROUP		

Table 63. Changes to resources and resource groups, by end-of-service release of CICS Transaction Server for z/OS (continued)

Resource or group	V3.2	V4.1	V4.2	V5.1
DFHWSAT	CHANGED: PIPELINE definitions DFHWSATP and DFHWSATR now specify RESPWAIT(DEFT).	CHANGED: URIMAP definition DFHRSURI now specifies PORT(NO).		
DFHWU		NEW GROUP	CHANGED: New program: DFHWUSRT	

Table 64. Changes to compatibility groups, by end-of-service release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1
DFHCOMPA			REMOVED	
DFHCOMPB				REMOVED
DFHCOMPC	NEW GROUP	NEW GROUP		
DFHCOMPD		NEW GROUP		
DFHCOMPF				NEW GROUP
DFHCOMPE			NEW GROUP	
DFHCOMP1			REMOVED	
DFHCOMP2			REMOVED	
DFHCOMP3			REMOVED	
DFHCOMP4			REMOVED	
DFHCOMP5			REMOVED	
DFHCOMP6			REMOVED	
DFHCOMP7			REMOVED	
DFHCOMP8			REMOVED	
DFHCOMP9		CHANGED: TCPIP SERVICE definition DFHADTCP specifies HOST(ANY).	REMOVED	

Changes to CICS control tables

Table 65. Changes to CICS control tables, by end-of-service release of CICS Transaction Server for z/OS

Control table	V3.2	V4.1	V4.2	V5.1
DFHDCT		CHANGED: Support for DFHCSDUP MIGRATE command withdrawn		NO LONGER SUPPLIED
DFHMCT		CHANGED: Default on COMPRESS option is changed from NO to YES		

Table 65. Changes to CICS control tables, by end-of-service release of CICS Transaction Server for z/OS (continued)

Control table	V3.2	V4.1	V4.2	V5.1
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 the CICS SPI

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS

Command	V3.2	V4.1	V4.2	V5.1
<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
<u>CREATE ATOMSERVICE</u>		NEW		
<u>CREATE BUNDLE</u>		NEW		
CREATE CORBASERVER				REMOVED
CREATE DJAR				REMOVED
<u>CREATE FILE</u>			CHANGED: Option made obsolete: LSRPOOLID New option: LSRPOOLNUM	
<u>CREATE IPCONN</u>	NEW			

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
CREATE JVMSERVER		NEW		
CREATE LIBRARY	NEW			
CREATE LSRPOOL			CHANGED: Option made obsolete: LSRPOOLID New option: LSRPOOLNUM	
CREATE MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option	
CREATE PIPELINE	CHANGED: New option: RESPWAIT			
CREATE PROGRAM			CHANGED: New option: CONCURRENCY New value: REQUIRED on CONCURRENCY option	
CREATE REQUESTMODEL				REMOVED
CREATE TCPIPService	CHANGED: New option: REALM	CHANGED: HOST replaces IPADDRESS option	CHANGED: New option: MAXPERSIST	
CREATE TSMODEL			CHANGED: New option: EXPIRYINT	
CREATE URIMAP			CHANGED: New option: SOCKETCLOSE	
CSD ADD		NEW		
CSD ALTER		NEW		
CSD APPEND		NEW		
CSD COPY		NEW		
CSD DEFINE		NEW		
CSD DELETE		NEW		
CSD DISCONNECT		NEW		

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
CSD ENDBRGROUP		NEW		
CSD ENDBRLIST		NEW		
CSD ENDBRRSRCE		NEW		
		NEW		
CSD GETNEXTGROUP		NEW		
CSD GETNEXTSRCE		NEW		
CSD INSTALL				CHANGED: Options made obsolete: CORBASERVER, DJAR, and REQUESTMODEL
CSD INQUIREGROUP		NEW		
CSD INQUIRELIST		NEW		
CSD INQUIRERSRCE		NEW		
CSD INSTALL		NEW		
CSD LOCK		NEW		
CSD REMOVE		NEW		
CSD RENAME		NEW		
CSD STARTBRGROUP		NEW		
CSD STARTBRLIST		NEW		
CSD STARTBRRSRCE		NEW		
CSD UNLOCK		NEW		
CSD USERDEFINE		NEW		
DISCARD ATOMSERVICE		NEW		
DISCARD BUNDLE		NEW		
DISCARD CORBASERVER				REMOVED
DISCARD DJAR				REMOVED
DISCARD EVENTBINDING		NEW		
DISCARD IPCONN		NEW		

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
DISCARD JVMSERVER		NEW		
DISCARD LIBRARY		NEW		
DISCARD MQCONN		NEW		
ENABLE PROGRAM command	CHANGED: Change of impact of options: QUASIRENT and THREADSAFE for GLUEs and TRUEs			
DISCARD REQUESTMODEL				REMOVED
ENABLE PROGRAM command				CHANGED: Changed impact of option OPENAPI New options: GALLOCATION and REQUIRED
EXTRACT STATISTICS	CHANGED: New values on RESTYPE option: DOCTEMPLATE, IPCONN, LIBRARY, MQCONN			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 ASSOCIATION	NEW	CHANGED: New options: CLIENTLOC, SRVRIPFAMILY replaces IPFAMILY for new programs, CLNTIPFAMILY, DNAME, and REALM	CHANGED: New options: ODADPTRID, ODADPTRDATA1, ODADPTRDATA2, ODADPTRDATA3, PHAPPLID, PHCOUNT, PHNETWORKID, PHSTARTTIME, PHTASKID, PHTRANSID	

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
INQUIRE ASSOCIATION LIST	NEW	CHANGED: New options: DNAME, REALM, DNAMELEN, and REALMLEN		
INQUIRE ATOMSERVICE		NEW	CHANGED: New options: URIMAP and XMLTRANSFORM	
INQUIRE BEAN				REMOVED
INQUIRE BUNDLE		NEW		CHANGED: New options: BUNDLEID, MGMTPART, MAJORVERSION, MICROVERSION, MINORVERSION
INQUIRE BUNDLEPART		NEW		CHANGED: New value on PARTCLASS option: ENTRYPOINT
INQUIRE CAPDATAPRED			NEW	
INQUIRE CAPINFOSRCE			NEW	
INQUIRE CAOPTRED			NEW	
INQUIRE CAPTURESPEC		NEW	CHANGED: New options: CURRPGM, CURRPGMOP, CURRTRANID, CURRTRANIDOP, CURRUSERID, CURRUSERIDOP, NUMDATAPRED, NUMINFOSRCE, NUMOPTPRED, PRIMPRED, PRIMPREDOP, PRIMPREDTYPE	CHANGED: New value on PRIMPREDTYPE option: MESSAGEID
INQUIRE CLASSCACHE			THREADSAFE	REMOVED

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
INQUIRE CORBASERVER				REMOVED
INQUIRE DB2CONN			CHANGED: New option: REUSELIMIT	
INQUIRE DISPATCHER		CHANGED: New options: ACTTHRDTCBS and MAXTHRDTCBS	CHANGED: Change of impact of options: MAXOPENTCBS and MAXXPTCBS now represent limits set automatically by CICS	
INQUIRE DJAR				REMOVED
INQUIRE DOCTEMPLATE				CHANGED: New option: CACHESIZE
INQUIRE DSNAME				CHANGED with APAR PI55133: New CVDA, DSIE on DATAFORMAT option.
INQUIRE EPADAPTER			NEW	
INQUIRE EPADAPTERSET				NEW
INQUIRE EPADAPTINSET				NEW
INQUIRE EVENTBINDING		NEW	CHANGED: New option: EPADAPTER	CHANGED: New options: EPADAPTERRES and EPADAPTERSET
INQUIRE EVENTPROCESS		NEW	CHANGED: New option: SCHEMALEVEL	
INQUIRE EXITPROGRAM				CHANGED: New value: REQUIRED on CONCURRENTST option

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
INQUIRE FILE	CHANGED: New option: RBATYPE THREADSAFE		CHANGED: New options: LSRPOOLNUM Option made obsolete: LSRPOOLID	
INQUIRE IPCONN	NEW	CHANGED: New options: CLIENTLOC, PARTNER, IDPROP, HOSTTYPE, IPRESOLVED, IPFAMILY New values on HOST option	CHANGED: New option: MIRRORLIFE	
INQUIRE IRC	CHANGED: New option: XCFGROUP			
INQUIRE JVM	CHANGED: Change in value: RESET no longer returned on REUSEST option		THREADSAFE	REMOVED
INQUIRE JVMPPOOL			THREADSAFE	REMOVED
INQUIRE JVMPROFILE	CHANGED: Change in value: RESET no longer returned on REUSEST option		THREADSAFE	REMOVED
INQUIRE JVMSERVER		NEW	CHANGED: New options: CURRENTHEAP, GCPOLICY, INITHEAP, MAXHEAP, OCCUPANCY, PID	CHANGED: New option: PROFILEDIR
INQUIRE LIBRARY	NEW			
INQUIRE MONITOR	CHANGED: <ul style="list-style-type: none"> Option made obsolete: SUBSYSTEMID New option: COMPRESSST 	CHANGED: New options: DPLLIMIT, IDNTYCLASS Change of default on COMPRESSST option to COMPRESS		

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
INQUIRE MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option	
INQUIRE MQINI		NEW		
INQUIRE MVSTCB	CHANGED: <ul style="list-style-type: none"> • New syntax • Options made obsolete: ELEMENTLIST, LENGTHLIST, and SUBPOOLLIST 			
INQUIRE NETNAME	CHANGED: New option: AIDCOUNT			
INQUIRE OSGIBUNDLE			NEW	
INQUIRE OSGISERVICE			NEW	
INQUIRE PIPELINE	CHANGED: <ul style="list-style-type: none"> • New options: CIDDOMAIN, MODE, MTOMNOXOPST, MTOMST, RESPWAIT, SENDMTOMST, SOAPLEVEL, SOAPRNUM, SOAPVNUM, XOPDIRECTST, XOPSUPPORTST 			
INQUIRE PROGRAM	CHANGED: New options: LIBRARY and LIBRARYDSN		CHANGED: <p>New option: JVMSERVER</p> <p>New value: REQUIRED on CONCURRENCY option</p>	CHANGED: <p>New option: ENTRYPOINT</p> <p>ENTRYPOINT changed to support non-LE 64-bit assembler programs</p>
INQUIRE REQUESTMODEL				REMOVED
INQUIRE SUBPOOL	CHANGED: New value on DSANAME option: GCDSA			

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
INQUIRE SYSTEM	CHANGED: New options: MEMLIMIT, SOSABOVEBAR, SOSABOVELINE, SOSBELOWLINE			CHANGED: New options: ETDSASIZE, GCDSASIZE, GSDSASIZE, GUDSASIZE
INQUIRE TASK	CHANGED: New options: IPFACILITIES and IPFLISTSZ			
INQUIRE TCPIP SERVICE	CHANGED: <ul style="list-style-type: none"> New option: REALM New values: IPIC on PROTOCOL option 	CHANGED: New options: HOST, HOSTTYPE, IPRESOLVED, IPFAMILY	CHANGED: New option: MAXPERSIST	
INQUIRE TEMPSTORAGE			NEW	
INQUIRE TERMINAL	CHANGED: New option: AIDCOUNT	CHANGED: New option: REMOTESYSTEM		
INQUIRE TRACEDEST				THREADSAFE
INQUIRE TRACEFLAG				THREADSAFE
INQUIRE TRACETYPE		CHANGED: New option: FLAGSET		THREADSAFE
INQUIRE TRANSACTION		CHANGED: New option: REMOTESYSTEM		
INQUIRE TSMODEL			CHANGED: New option: EXPIRYINT	
INQUIRE TSQUEUE			CHANGED: New option: EXPIRYINT	

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
INQUIRE URIMAP		CHANGED: New options: AUTHENTICATE, ATOMSERVICE, HOSTTYPE, IPRESOLVED, IPFAMILY, PORT New value: on HOST option	CHANGED: New options: SOCKETCLOSE and SOCKPOOLSIZE	CHANGED: New value: JVMSERVER on USAGE option
INQUIRE VTAM		CHANGED: New option: PSTYPE		
INQUIRE WEB	THREADSAFE			
INQUIRE WEBSERVICE	CHANGED: <ul style="list-style-type: none"> New options: CCSID, MAPPINGLEVEL, MAPPINGRNUM, MAPPINGVNUM, MINRUNLEVEL, MINRUNRNUM, MINRUNVNUM, XOPDIRECTST, XOPSUPPORTST 		CHANGED: New option: ARCHIVEFILE	
INQUIRE WORKREQUEST				REMOVED
INQUIRE XMLTRANSFORM		NEW		
PERFORM CLASSCACHE			THREADSAFE	REMOVED
PERFORM CORBASERVER				REMOVED
PERFORM DJAR				REMOVED
PERFORM JVMPOOL	NEW		THREADSAFE	REMOVED
PERFORM SSL				NEW
PERFORM STATISTICS	CHANGED: New options: DOCTEMPLATE, LIBRARY, IPCONN, and MQCONN			CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
RESYNC ENTRYNAME			THREADSAFE	
SET ATOMSERVICE		NEW		
SET BUNDLE		NEW		
SET CLASSCACHE			THREADSAFE	REMOVED
SET CORBASERVER				REMOVED
SET DB2CONN			CHANGED: New option: REUSELIMIT	
SET DISPATCHER				CHANGED: Option made obsolete: MAXJVMTCBS
SET DOCTEMPLATE	NEW			
SET EPADAPTER			NEW	
SET EPADAPTERSET				NEW
SET EVENTBINDING		NEW		
SET EVENTPROCESS		NEW		
SET FILE			CHANGED: Option made obsolete: LSRPOOLID New option: LSRPOOLNUM	
SET IPCONN	NEW			
SET JVMPOOL	CHANGED: Option made obsolete: TERMINATE		THREADSAFE	REMOVED
SET JVMSERVER		NEW		
SET LIBRARY	NEW			
SET MONITOR	CHANGED: New option: COMPRESSST	CHANGED: New options: DPLLIMIT, FILELIMIT, IDNTYCLASS, and TSQUEUELIMIT		THREADSAFE
SET MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option	

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
SET PIPELINE	CHANGED: New option: RESPWAIT			
SET PROGRAM				CHANGED: New option: OPERATION
SET STATISTICS				CHANGED: Default changed on INTERVAL option to 010000 (1 hour)
SET SYSTEM				CHANGED: Change of value: maximum value on MAXTASKS option to 2000 and minimum to 10
SET TASK				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.
SET TEMPSTORAGE			NEW	
SET TRACEDEST				THREADSAFE
SET TRACEFLAG				THREADSAFE
SET TRACETYPE		CHANGED: New option: FLAGSET		THREADSAFE
SET TSQUEUE	CHANGED: Change of impact: maximum number of TS queues that can be deleted by single SET TSQUEUE or SET TSQNAME is 32766			

Table 66. Changes to CICS system programming interface, by end-of-service release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1
<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 WEB</u>	THREADSAFE			
SET WORKREQUEST				REMOVED
<u>SET XMLTRANSFORM</u>		NEW		

Changes to CICS-supplied transactions

Table 67. Changes to CICS-supplied transactions, by end-of-service release of CICS Transaction Server for z/OS

Transaction	V3.2	V4.1	V4.2	V5.1
CEMN	NEW and CHANGED: <ul style="list-style-type: none"> • New functions: DPL resource limit, Identity class, changing values for DPLLIMIT, FILELIMIT, and TSQUEUELIMIT • Change of display: split into a primary panel and a second options panel 			
CEPD		NEW		
CEPF			NEW	
CEPH		NEW		
CEPM		NEW		
CEPQ		NEW		
CEPS				NEW
CEPT		NEW		
CESL			NEW	

Table 67. Changes to CICS-supplied transactions, by end-of-service release of CICS Transaction Server for z/OS (continued)

Transaction	V3.2	V4.1	V4.2	V5.1
CETR	NEW and CHANGED: <ul style="list-style-type: none"> • New options: setting the MP domain standard and special trace levels, TA domain keyword • Screen removed: Pooled JVMs Trace Options 			
CHCK			NEW with APAR PI76963	NEW with APAR PI76965
CIRP			REMOVED	
CIRR			REMOVED	
CJGC		REMOVED		
CJPI			REMOVED	
CJSA				NEW
CKBC				NEW
CKQC	CHANGED: Change of impact: default settings are now taken from the MQCONN resource definition			
CLER				NEW
CMPE				NEW with APAR PI83667
CREA			REMOVED	
CREC			REMOVED	
CRTE	CHANGED: New support for transaction routing over an IPIC connection			
CSFE	CHANGED: Now allows the status of DEBUG parameters to be queried			
CWWU		NEW		
CW2A		NEW		

Changes to CEMT

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS

CEMT	V3.2	V4.1	V4.2	V5.1
ALL CEMT				CHANGED: Change of storage location

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS (continued)

CEMT	V3.2	V4.1	V4.2	V5.1
<u>CEMT DISCARD</u>	CHANGED: New commands: CEMT DISCARD IPCONN, CEMT DISCARD LIBRARY	CHANGED: New commands: CEMT DISCARD ATOMSERVICE, CEMT DISCARD BUNDLE, CEMT DISCARD JVMSERVER, CEMT DISCARD MQCONN		CHANGED: Commands removed: CEMT DISCARD CORBASERVER, CEMT DISCARD DJAR, CEMT DISCARD REQUESTMODEL
All CEMT INQUIRE		CHANGED: Change of layout		
<u>CEMT INQUIRE ATOMSERVICE</u>		NEW	CHANGED: New options: URIMAP, XMLTRANSFORM	
CEMT INQUIRE BEAN				REMOVED
<u>CEMT INQUIRE BUNDLE</u>		NEW		CHANGED: New options: BUNDLEID, MAJORVERSION, MICROVERSION, MINORVERSION
CEMT INQUIRE CLASSCACHE	CHANGED: RESET no longer returned on REUSEST option	CHANGED: PROFILE option made obsolete		REMOVED
CEMT INQUIRE CORBASERVER		CHANGED: New values: IPv6 addresses on HOST option New option: IPRESOLVED		REMOVED
<u>CEMT INQUIRE DISPATCHER</u>		CHANGED: New options: ACTTHRDTCBS and MAXTHRDTCBS		CHANGED: Change of impact: MAXOPENTCBS and MAXXPTCBS
<u>CEMT INQUIRE DOCTEMPLATE</u>	CHANGED: New option: SIZE			

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS (continued)

CEMT	V3.2	V4.1	V4.2	V5.1
CEMT INQUIRE DSAS	CHANGED: <ul style="list-style-type: none"> Option made obsolete: SOSSTATUS New options: MEMLIMIT, SOSABOVEBAR, SOSABOVELINE and SOSBELOWLINE 			CHANGED: New values: ETDSASIZE, GCDSASIZE, GSDSASIZE, GUDSASIZE
CEMT INQUIRE DSNAME				CHANGED: New option: LOGREPSTATUS
CEMT INQUIRE EPADAPTER			NEW	CHANGED with APAR PI55133: Support added for the new DSIE XML format.
CEMT INQUIRE EPADAPTERSET				NEW
CEMT INQUIRE EVENTBINDING		NEW	CHANGED: New option: EPADAPTER	CHANGED: New options: EPADAPTERRES and EPADAPTERSET
CEMT INQUIRE EVENTPROCESS		NEW	CHANGED: New option: SCHEMALEVEL	
CEMT INQUIRE FILE	CHANGED: New option: RBATYPE			
CEMT INQUIRE IPCONN	NEW and CHANGED: New value: IPv6 addresses on HOST option	CHANGED: New options: IPRESOLVED, IDPROP	CHANGED: New options: MIRRORLIFE	
CEMT INQUIRE IRC	CHANGED: New option: XCFGROUP			
CEMT INQUIRE JVM	CHANGED: RESET no longer returned by REUSEST option			REMOVED
CEMT INQUIRE JVMPOOL				REMOVED
CEMT INQUIRE JVMPROFILE				REMOVED

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS (continued)

CEMT	V3.2	V4.1	V4.2	V5.1
CEMT INQUIRE JVMSERVER		NEW	CHANGED: New options: CURRENTHEAP, GCPOLICY, INITHEAP, MAXHEAP, OCCUPANCY, PID	CHANGED: New option: PROFILEDIR
CEMT INQUIRE LIBRARY	NEW			
CEMT INQUIRE MONITOR	CHANGED: <ul style="list-style-type: none"> Option made obsolete: SUBSYSTEMID New option: COMPRESSST and value default changed 	CHANGED: New options: DPLLIMIT, IDNTYCLASS		
CEMT INQUIRE MQCONN		NEW	CHANGED: New value: GROUPORESYNC on RESYNCMEMBER option	
CEMT INQUIRE MQINI		NEW		
CEMT INQUIRE PIPELINE	CHANGED: New options: CIDDOMAIN, MODE, MTOMNOXOPST, MTOMST, RESPWAIT, SENDMTOMST, SOAPLEVEL, XOPDIRECTST, XOPSUPPORTST			
CEMT INQUIRE PROGRAM	CHANGED: Change of impact: USECOUNT option displays a use count for Java programs		CHANGED: New option: JVMSERVER New value: OREQUIRED on CONCURRENCY option	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, OPERATION, and PLATFORM
CEMT INQUIRE REQUESTMODEL				REMOVED

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS (continued)

CEMT	V3.2	V4.1	V4.2	V5.1
CEMT INQUIRE SYSTEM	CHANGED: New options: SOSABOVEBAR, SOSABOVELINE, and SOSBELOWLINE Option made obsolete: SOSSTATUS	CHANGED: New option: MQCONN		
CEMT INQUIRE TCIPSERVICE	CHANGED: <ul style="list-style-type: none"> New value: IPIC on PROTOCOL option New option: REALM 	CHANGED: New value: IPv6 addresses on HOST option New option: IPRESOLVED	CHANGED: New option: MAXPERSIST	
CEMT INQUIRE TEMPSTORAGE			NEW	
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	CHANGED: New options: SOCKETCLOSE and SOCKPOOLSIZE	CHANGED: New value: JVMSERVER on USAGE option
CEMT INQUIRE VTAM		CHANGED: New option: PSTYPE		
CEMT INQUIRE WEBSERVICE	CHANGED: New options: CCSID, MAPPINGLEVEL, MINRUNLEVEL, XOPDIRECTST, XOPSUPPORTST		CHANGED: New option: ARCHIVEFILE	
CEMT INQUIRE XMLTRANSFORM		NEW		
CEMT PERFORM CLASSCACHE				REMOVED

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS (continued)

CEMT	V3.2	V4.1	V4.2	V5.1
CEMT PERFORM JVMPOOL	NEW			REMOVED
CEMT PERFORM SSL				NEW
CEMT PERFORM STATISTICS	CHANGED: New options: DOCTEMPLATE, IPCONN, LIBRARY, and MQCONN			CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL
CEMT SET CLASSCACHE				REMOVED
CEMT SET DISPATCHER				CHANGED: Option made obsolete: MAXJVMTCBS
CEMT SET DOCTEMPLATE	NEW			
CEMT SET EPADAPTERSET				NEW
CEMT SET IPCONN	NEW			
CEMT SET JVMPOOL	CHANGED: Option deprecated: TERMINATE			REMOVED
CEMT SET ATOMSERVICE		NEW		
CEMT SET BUNDLE		NEW		
CEMT SET EPADAPTER			NEW	
CEMT SET EVENTBINDING		NEW		
CEMT SET EVENTPROCESSING		NEW		
CEMT SET JVMSEVER		NEW		
CEMT SET MONITOR	CHANGED: New options: COMPRESS and NOCOMPRESS	CHANGED: New options: DPLLIMIT, IDNTYCLASS, and TSQUEUELIMIT		
CEMT SET MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option	

Table 68. Changes to CEMT, by end-of-service release of CICS Transaction Server for z/OS (continued)

CEMT	V3.2	V4.1	V4.2	V5.1
CEMT SET PIPELINE	CHANGED: New option: RESPWAIT			
CEMT SET PROGRAM	CHANGED: Change of value: ALL is limited to 32766			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.
CEMT SET TEMPSTORAGE			NEW	
CEMT SET TSQUEUE	CHANGED: The number of queues that are affected when the ALL option is in effect is limited to 32766.			
CEMT SET TSQNAME	CHANGED: The number of queues that are affected when the ALL option is in effect is limited to 32766.			
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 69. Changes to performance class data, by end-of-service release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1
All	CHANGED: <ul style="list-style-type: none"> Data compression for SMF 110 records, including a new field in product header SMFMNCRL Increased precision and capacity of monitoring clocks 	NEW FIELDS: EICTOTCT, TIASKTCT, TIOTCT, BFTOTCT, ECSIGECT, ECEFOPCT, ECEVNTCT, OCLIPADR,		
DFHCHNL				CHANGED: Fields changed to include data from the new GET64 CONTAINER and PUT64 CONTAINER commands: PGGETCCT, PGPUTCCT, PGGETCDL, PGPUTCDL, PGCRECCT
DFHCICS	NEW FIELDS: OAPPLID, OSTART, OTRANNUM, OTRAN, OUSERID, OUSERCOR, OTCPSVCE, OPORTNUM, OCLIPORT, OTRANFLAG, OFCTYNME		NEW FIELDS: OADID, OADATA1, OADATA2, OADATA3, PHNTWKID, PHAPPLID, PHSTART, PHTRANNO, PHTRAN, PHCOUNT, ECSEVCCT, NCGETCT	NEW FIELD: MPRTXCD
DFHDATA			NEW FIELD: WMQASRBT	OBSOLETE: Field DB2WAIT
DFHDEST				NEW FIELDS: TDILWTT and TDELWTT
DFHDOCH	NEW FIELD: DHDELCT			
DFHEJBS				REMOVED
DFHFIL E				NEW FIELDS: FCXCWTT and FCVSWTT
DFHPR OG		CHANGED: PGMNAME now contains the target application program name		
DFHSOCK	NEW FIELDS: ISALLOCT, ISIOWTT, ISIPICNM, CLIPPORT	CHANGED: <ul style="list-style-type: none"> CLIPADDR 318: replaces field 244. 	NEW FIELDS: ISALWTT and SOCIPHER	

Table 69. Changes to performance class data, by end-of-service release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1
DFHSTOR				NEW FIELDS: SC64CGCT, SC64CHWM, SC64UGCT, SC64UHWL, SC64SGCT, SC64GSHR, SC64FSHR
DFHTASK	CHANGED: <ul style="list-style-type: none"> New values added to byte 2 (3.2). E Change of impact of JVMRTIME (3.2) 	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 	CHANGED: New TP MODES are added for TUSRCPUT, DSTCBHWM, MSDISPT, MSCPUT	NEW FIELDS: ROMODDLY, SOMODDLY, CECMCHTP, CECMDLID, MAXTASKS, CURTASKS, CPUTONCP, OFFLCPUT, ACAPPLNM, ACPLATNM, ACMAJVER, ACMINVER, ACMICVER, ACOPERNM
DFHTERM				NEW FIELD: TCALWTT

Table 69. Changes to performance class data, by end-of-service release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1
DFHWE BB		CHANGED: <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 WBIWBSCT New fields: WBURIMNM, WBPIPLNM, WBATMSNM, WBSVCENM, WBSVOPNM, WBPROGNM, WBSFCRCT, WBSFTOCT, WBISSFCT, WBSREQBL, WBSRSPBL, MLXSSTD, MLXMLTCT, WSACBLCT, WSACGTCT, WSAEPCT, WSATOTCT 		

Table 70. Changes to exception class data, by end-of-service release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1
EXCMNRID				CHANGED: New values: GUDSA, GSDSA, rule_id
EXCMNTRF	CHANGED: EXCMNTRF changed to match			
XCMNTYP				CHANGED: New value: X'0004

Table 71. Changes to transaction resource class data, by end-of-service release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1
MNR_ID_TRNGRPID			NEW	
MNR_PHD_APPLID			NEW	
MNR_PHD_ATTACH_TIME			NEW	
MNR_PHD_COUNT			NEW	
MNR_PHD_NETWKID			NEW	
MNR_PHD_TRANNUM			NEW	
MNR_PHD_TRANID			NEW	

Table 72. Changes to identity class data, by end-of-service release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1
MNI_PHD_NETWKID			NEW	
MNI_PHD_APPLID			NEW	
MNR_PHD_ATTACH_TIME			NEW	
MNI_PHD_TRANNO			NEW	
MNI_PHD_TRANID			NEW	
MNI_PHD_COUNT			NEW	

Table 73. Changes to the monitoring sample program, DFH\$MOLS, by end-of-service release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1
Clock fields in the format ddd hh:mm:ss.000000.			
New option, DPL, on the RESOURCE control statement.			
UNLOAD control statement can be used only with monitoring data for CICS TS V3.2 onwards.			
	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 74. Changes to CICS statistics, by end-of-service release of CICS Transaction Server for z/OS				
Type	V3.2	V4.1	V4.2	V5.1
All (data section, DFHSTIDS)	CHANGED: New values: STILDB, STIMQG, STIISR, and STIDHD	CHANGED: New values: STIRLR, STIW2R, STIMLR, STISJS, STIPGD, STIECG, STIECR, STIEPG, and STIECC	CHANGED: New value: STIEPR	
Atom feed		NEW		
Bundle		CHANGED: New DSECT		
CorbaServer				REMOVED
Document templates	CHANGED: New DSECT: DFHDHDDS			
Enterprise beans				REMOVED
Event processing		CHANGED: New CAPTURESPEC, EVENTBINDING, and EVENTPROCESS	CHANGED: New EPADAPTER	
Identity class	NEW			
IPCONN	NEW			
JVM pool				REMOVED
JVM profile				REMOVED
JVMSERVER		NEW		
LIBRARY	NEW			
Program Definition		NEW		
Requestmodel				REMOVED
IBM MQ Connection	NEW			
XMLTRANSFORM		NEW		

Changes to CICS utilities

Table 75. Changes to CICS utilities, by end-of-service release of CICS Transaction Server for z/OS				
Utility	V3.2	V4.1	V4.2	V5.1
DFHOSTAT	CHANGED: <ul style="list-style-type: none"> Displays 4-digit hours in time fields, and time to six decimal places (down to 1 microsecond) New report for LIBRARY resources 	CHANGED: <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. 	CHANGED: Uses the INQUIRE TEMPSTORAGE command, which is subject to command-security checking	CHANGED: Storage above 2 GB report includes new fields that relate to 64-bit storage use in the GDSA.
DFHOSTXD	NEW			
DFHCSDUP		CHANGED: <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\$SQLT New option: SIGSUMM on LIST, 		CHANGED: Support for changes to CSD resource definitions
DFHDUxxx	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier
DFHJAIU (JVM Application Isolation Utility)				REMOVED
DFHMEU				REMOVED

Table 75. Changes to CICS utilities, by end-of-service release of CICS Transaction Server for z/OS (continued)

Utility	V3.2	V4.1	V4.2	V5.1
DFHPDxxx	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier
DFHSTUP		CHANGED: New parameter, DPLLIMIT, in Interval, End of Day, Requested, and Summary reports for transaction resource monitoring.		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	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier

Changes to global user exits and task-related user exits

Table 76. Changes to global user exit points, by end-of-service release of CICS Transaction Server for z/OS

User exit	V3.2	V4.1	V4.2	V5.1
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
XAPADMGR	NEW			
XEIIN	CHANGED: New parameter: UEP_EI_PBTOK			
XEIOUT	CHANGED: New parameter: UEP_EI_PBTOK			
XEISPIN	CHANGED: New parameter: UEP_EI_PBTOK			
XEISPOUT	CHANGED: New parameter: UEP_EI_PBTOK			
XEPCAP			NEW	

Table 76. Changes to global user exit points, by end-of-service release of CICS Transaction Server for z/OS (continued)

User exit	V3.2	V4.1	V4.2	V5.1
XFCFRIN	CHANGED: New value: UEP_FC_XRBA returned on UEP_FC_RECORD_ID_TYPE parameter New return codes on UEP_FC_REASON: UEP_FC_REASON_KSDS_AND_X RBA and UEP_FC_REASON_NOT_EXTEND ED			
XFCFROUT	CHANGED: New value: UEP_FC_XRBA returned on UEP_FC_RECORD_ID_TYPE parameter New return codes on UEP_FC_REASON: UEP_FC_REASON_KSDS_AND_X RBA and UEP_FC_REASON_NOT_EXTEND ED			
XFCREQ	CHANGED: New value: X'08' (XRBA) can be returned in FC_EIDOPT8			
XFCREQC	CHANGED: New value: X'08' (XRBA) can be returned in FC_EIDOPT8			
XFCRLSCO		NEW		
XISQLCL		NEW		
XISQUE	NEW			
XMEOUT	CHANGED: New parameters: UEPCPID, UEPCPDOM, UEPCPNUM, UEPCPSEV			
XPCERES	CHANGED: New parameter: UEP_PC_PBTOK			
XPCREQ	CHANGED: New parameter: UEP_PC_PBTOK			
XPCREQC	CHANGED: New parameter: UEP_PC_PBTOK			
XRMIIN	CHANGED: New parameter: UEP_PC_PBTOK			
XRMIOUT	CHANGED: New parameter: UEP_PC_PBTOK			

Table 76. Changes to global user exit points, by end-of-service release of CICS Transaction Server for z/OS (continued)

User exit	V3.2	V4.1	V4.2	V5.1
XRSINDI				CHANGED: New values UEIDEPAS, UEIDMPPP , UEIDWARB and UEIDEBAB for UEPIDTYP parameter
XSRAB			CHANGED: New fields on UEPERROR parameter: SRP_ADDITIONAL_REG_IN FO, SRP_ADDITIONAL_REGS_F LAG, SRP_CICS_GP64_REGS, SRP_SYSTEM_GP64_REGS, SRP_FP_REGS, and SRP_FPC_REG	CHANGED: New fields on UEPERROR parameter: SRP_CICS_ERR OR_DATA, SRP_SYSTEM_E RROR_DATA
XWBAUTH	NEW	CHANGE D: Support for IPv6 addressin g	CHANGED: Support for HTTP EP adapter	
XWBOPEN		CHANGE D: Support for IPv6 addressin g		
XWBSNDO		CHANGE D: Support for IPv6 addressin g	CHANGED: Support for HTTP EP adapter	
XWSPRROO	NEW			
XWSPRROI	NEW			
XWSPRRWI	NEW			
XWSPRRWO	NEW			
XWSRQROI	NEW			
XWSRQROO	NEW			
XWSRQRWI	NEW			
XWSRQRWO	NEW			
XWSRQROI	NEW			

Table 76. Changes to global user exit points, by end-of-service release of CICS Transaction Server for z/OS (continued)

User exit	V3.2	V4.1	V4.2	V5.1
XWSSRROO	NEW			
XWSSRRWI	NEW			
XWSSRRWO	NEW			

Table 77. Changes to the TCB indicators in DFHUEPAR, by end-of-service release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1
	OBSOLETE: UEPTJ8 (J8), UEPTJ9 (J9), UEPTJM (JM), NEW: UEPTTP (TP), UEPTT8 (T8)		

Changes to CICS XPI

Table 78. Changes to CICS XPI, by end-of-service release of CICS Transaction Server for z/OS

Functional area	V3.2	V4.1	V4.2	V5.1
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		
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 78. Changes to CICS XPI, by end-of-service release of CICS Transaction Server for z/OS (continued)

Functional area	V3.2	V4.1	V4.2	V5.1
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 DFHLDLDX 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:</p> <p>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>

Table 78. Changes to CICS XPI, by end-of-service release of CICS Transaction Server for z/OS (continued)

Functional area	V3.2	V4.1	V4.2	V5.1
Storage control	CHANGED: New output parameter, SOS_ABOVE_THE_BAR, is added to INQUIRE_SHORT_ON_STORAGE.			

Changes to CICS user-replaceable programs

Table 79. Changes to user replaceable programs, by end-of-service release of CICS Transaction Server for z/OS

Program	V3.2	V4.1	V4.2	V5.1
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		NEW with APAR	NEW with APAR	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	
DFHEJDNX				REMOVED
DFHEJEP				REMOVED
DFHISAIP	NEW			
DFHJVMAT				REMOVED
DFHJVMRO				REMOVED
DFHPEP		CHANGED: New fields: PEP_COM_BEAR, fields to support the extended z/Architecture® MVS linkage conventions.		

Table 79. Changes to user replaceable programs, by end-of-service release of CICS Transaction Server for z/OS (continued)

Program	V3.2	V4.1	V4.2	V5.1
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		
DFHXCURM				CHANGED: New parameter: URMXCFG
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 CICS messages and codes

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFH51xx		NEW: DFH5137	CHANGED: DFH5120, DFH5123 to DFH5125	
DFH52xx		NEW: DFH5297	NEW: DFH5208, DFH5209 CHANGED: DFH5273	CHANGED with APAR: DFH5275
DFH55xx		NEW: DFH5559 and DFH5560		

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFH7xxx (DFHExP)				NEW: 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 CHANGED: DFH7054 DFH7089
DFHACnnnn	CHANGED: DFHAC2216, DFHAC2234, DFHAC2235, DFHAC2246, DFHAC2247			

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHADnnnn				REMOVED: DFHAD0201 to DFHAD0209 DFHAD0210 to DFHAD0216 DFHAD0231 DFHAD0232 DFHAD0261 to DFHAD0269 DFHAD0270 to DFHAD0273
DFHAMnnnn	NEW: DFHAM4812, DFHAM4813, DFHAM4817, DFHAM4878, DFHAM4885, DFHAM4913, DFHAM4914, DFHAM418, DFHAM4934, DFHAM4935, DFHAM4999 CHANGED: DFHAM4834, DFHAM4851, DFHAM4889, DFHAM4898, DFHAM4920, DFHAM4928	NEW: DFHAM4936, DFHAM4946 CHANGED: DFHAM4834, DFHAM481, DFHAM4921	NEW: DFHAM4807 CHANGED: DFHAM4843, DFHAM4868, DFHAM4943, DFHAM4944	NEW: DFHAM4947 DFHAM4954 CHANGED: DFHAM4952 REMOVED: DFHAM4921 to DFHAM4927
DFHAPnnnn	NEW: DFHAP1500 CHANGED: DFHAP1300	NEW: DFHAP0702, DFHAP0703, DFHAP0708, DFHAP1301, DFHAP1600 to DFHAP1603	NEW: DFHAP1605 REMOVED: DFHAP1600 to DFHAP1603	NEW: DFHAP1900 to DFHAP1903 REMOVED: DFHAP1217
DFHBRnnnn		NEW: DFHBR0509	CHANGED: DFHBR0412	

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHCAnnnn	NEW: DFHCA5553 to DFHCA5558 CHANGED: DFHCA5147, DFHCA5190, DFHCA5272, DFHCA5288	NEW: 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	NEW: DFHCA4807, DFHCA5208, DFHCA5209 CHANGED: DFHCA4833, DFHCA4843, DFHCA4800 to DFHCA4999, DFHCA5120, DFHCA5123, DFHCA5540, DFHCA5544 to DFHCA5634 REMOVED: DFHCA5161, DFHCA5274, DFHCA5292, DFHCA5603	NEW: DFHCA4948 to DFHCA4951, DFHCA4953, DFHCA4864, DFHCA4865 CHANGED: DFHCA4952 REMOVED: DFHCA4921 to DFHCA4927
DFHCCnnnn		NEW: DFHCC0106		NEW: DFHCC0107
DFHCEnnnn			NEW: DFHCE3554 CHANGED: DFHCE3503, DFHCE3504	
DFHCFnnnn	NEW: DFHCF0123			
DFHCSnnnn				NEW: DFHCS0001 to DFHCS0007
DFHDBnnnn	CHANGED: DFHDB2063	NEW: DFHDB2212	CHANGED: DFHDB2005, DFHDB2057, DFHDB2066	
DFHDDnnnn	NEW: DFHDD0004, DFHDD0006			

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS (continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHdHnnnn			NEW: DFHdH0300	
DFHdSnnnn		NEW: DFHdS0007		
DFHdUnnnn		NEW: DFHdU0218		
DFHECnnnn		NEW: DFHEC0001, DFHEC0002, DFHEC0004, DFHEC1000 to DFHEC0009, DFHEC2100, DFHEC3100 to DFHEC3108, DFHEC3110, DFHEC4007, DFHEC4008, DFHEC4111, DFHEC4112, DFHEC4117, DFHEC4120 to DFHEC4123	NEW: DFHEC1011 to DFHEC1013, DFHEC1016, DFHEC1022 to DFHEC1024, DFHEC1026, DFHEC3111, DFHEC3112, DFHEC4006, DFHEC4009, DFHEC4010, DFHEC4113, DFHEC4118 to DFHEC4123 CHANGED: DFHEC1 001 to DFHEC1003, DFHEC1009, DFHEC4007 to DFHEC4009, DFHEC4111, DFHEC4117 REMOVED: DFHEC1010, DFHEC4112	NEW: DFHEC1027 to DFHEC1032 CHANGED: DFHEC1013
DFHEJnnnn	CHANGED: DFHEJ0601		CHANGED: DFHEJ0101	REMOVED: DFHEJ0101 DFHEJ0102 DFHEJ5001 to DFHEJ5009 DFHEJ5010 to DFHEJ5019 DFHEJ5020 to DFHEJ5029 DFHEJ5030 DFHEJ5031 DFHEJ5036 to DFHEJ5041 DFHEJ5043 to DFHEJ5062 DFHEJ5101 to DFHEJ5114 DFHEJ600 DFHEJ6001

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHEPnnnn		NEW: DFHEP0001, DFHEP0002, DFHEP0101, DFHEP0102, DFHEP0113 to DFHEP0121, DFHREP1001 to DFHEP1002, DFHEP2001 to DFHEP2003, DFHEP2005	NEW: DFHEP0120 to DFHEP0123, DFHEP1000 to DFHEP1003, DFHEP2001 to DFHEP2003, DFHEP2005 CHANGED: DFHEP0114, DFHEP0117, DFHEP0118	NEW: DFHEP1004 to DFHEP1006 DFHEP2006 DFHEP2007 CHANGED: DFHEP1001 to DFHEP1003
DFHEXnnnn		NEW: DFHEX0005		
DFHFCnnnn	NEW: DFHFC0119, DFHFC0517 to DFHFC0519, DFHFC6037, DFHFC6038, DFHFC6040, DFHFC6041 CHANGED: DFHFC0312, DFHFC6018, DFHFC6026, DFHFC0631, DFHFC0634	NEW: DFHFC0209, DFHFC0210, DFHFC6039	CHANGED: DFHFC0202 to DFHFC0204, DFHFC0206, DFHFC0207, DFHFC0150 to DFHFC0512, DFHFC0157, DFHFC0164 to DFHFC0169, DFHFC0177, DFHFC0179, DFHFC0300 to DFHFC0303, DFHFC0308 to DFHFC0311, DFHFC0951, DFHFC0979, DFHFC3010 REMOVED: DFHFC0112	NEW: DFHFC0543 DFHFC0557 DFHFC6040
DFHHnnnn			NEW with APAR: DFHH0001 to DFHH0003, DFHH0200, DFHH0301 to DFHH0303	NEW with APAR: DFHH0001 to DFHH0003 DFHH0200 DFHH0301 to DFHH0303
DFHIInnnn	CHANGED: DFHII1013	NEW: DFHII1039		REMOVED: all DFHIInnn
DFHIRnnnn			CHANGED: DFHIR3789	

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHISnnnn	NEW: DFHIS0001 to DFHIS0004, DFHIS0006, DFHIS0998, DFHIS1000 to DFHIS1031, DFHIS2000 to DFHIS2003, DFHIS2006, DFHIS2008 to DFHIS2011, DFHIS3000 to DFHIS3011, DFHIS4000, DFHIS5000 to DFHIS5003, DFHIS6000 to DFHIS6007, DFHIS6010	NEW: DFHIS0100, DFHIS1032 to DFHIS1041, DFHIS3040, DFHIS3041 CHANGED: DFHIS1011, DFHIS2001, DFHIS2009, DFHIS2010 REMOVED: DFHIS0003, DFHIS0004, DFHIS0006, DFHIS1024	NEW: DFHIS1042, DFHIS3031, DFHIS3032 CHANGED: DFHIS1035	NEW: DFHIS1050 to DFHIS1052, DFHIS2300, DFHIS2031 REMOVED: DFHIS003 to DFHIS006, DFHIS1024, DFHIS1038, DFHIS1054
DFHKEnnnn	NEW: DFHKE1798	NEW: DFHKE0106, DFHKE0997		NEW: DFHKE0217
DFHLDnnnn	NEW: DFHLD0109, DFHLD0205, DFHLD0206, DFHLD0501 to DFHLD0507, DFHLD0512, DFHLD0513, DFHLD0521 to DFHLD0525, DFHLD0555, DFHLD0556, DFHLD0701 to DFHLD0704, DFHLD0710 to DFHLD0713, DFHLD0715, DFHLD0720 to DFHLD0725, DFHLD0730, DFHLD0800 to DFHLD0812	NEW: DFHLD0731		NEW: DFHLD0850 to DFHLD0852 CHANGED: DFHLD0503W, DFHLD0513W, DFHLD0525W, DFHLD0850
DFHLGnnnn		NEW: DFHLG0195 to DFHLG0197		NEW: DFHLG0789

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHMEnnnn	NEW: DFHME0140	NEW: DFHME0141	NEW: DFHME0103, DFHME0213, DFHME0215, DFHME0217, DFHME0218, DFHME0220, DFHME0222, DFHME0223, DFHME0225, DFHME0232, DFHME0237, DFHME0240 CHANGED: DFHME0101, DFHME0503	CHANGED: DFHME0006
DFHMLnnnn		NEW: DFHML0001, DFHML0002, DFHML0100, DFHML0500 to DFHML0510	NEW: DFHML0101, DFHML0600 to DFHML0605, DFHML0609, DFHML0610	
DFHMNnnnn	NEW: DFHMN0112			
DFHMPnnnn				NEW: DFHMP001 DFHMP002 DFHMP0100 DFHMP0101 DFHMP1001 to DFHMP1002 DFHMP1004 DFHMP1005 DFHMP2003 to DFHMP2012 DFHMP3001 to DFHMP3006 NEW with APAR: DFHMP1007 DFHMP1008 DFHMP2018 DFHMP3009 to DFHMP3012 CHANGED with APAR: DFHMP2006

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHMQnnnn	NEW: DFHMQ0107 to DFHMQ0114, DFHMQ0116 to DFHMQ0124, DFHMQ0211to DFHMQ0214, DFHMQ0216, DFHMQ0217, DFHMQ0220 to DFHMQ0223, DFHMQ0230, DFHMQ0232, DFHMQ0235 to DFHMQ0237, DFHMQ0239 to DFHMQ0244, DFHMQ0300 to DFHMQ0302, DFHMQ0304 to DFHMQ0316, DFHMQ0318, DFHMQ0319, DFHMQ0321 to DFHMQ0323, DFHMQ0326, DFHMQ0331 to DFHMQ0334, DFHMQ0336, DFHMQ0341 to DFHMQ0345, DFHMQ0350, DFHMQ0351, DFHMQ0360 to DFHMQ0366, DFHMQ0369, DFHMQ0380 to DFHMQ0389, DFHMQ0400 to DFHMQ0412, DFHMQ0414 to DFHMQ0416, DFHMQ0418, DFHMQ0420 to DFHMQ0425, DFHMQ0430 to DFHMQ0434, DFHMQ0439, DFHMQ0440, DFHMQ0443, DFHMQ0451 to DFHMQ0453, DFHMQ0455 to DFHMQ0462, DFHMQ0480, DFHMQ0481, DFHMQ0500 to DFHMQ0506, DFHMQ0700	NEW: DFHMQ0209, DFHMQ0210, DFHMQ0218, DFHMQ0303, DFHMQ0317, DFHMQ0320, DFHMQ0324, DFHMQ0325, DFHMQ0792, DFHMQ2064, DFHMQ2100 to DFHMQ2103, DFHMQ2107 to DFHMQ2109 CHANGED: DFHMQ0453	NEW: DFHMQ2065, DFHMQ2066 CHANGED: DFHMQ0308, DFHMQ0309, DFHMQ0320, DFHMQ0749 REMOVED: DFHMQ0212 to DFHMQ0217	CHANGED with APAR: DFHMQ0331 DFHMQ0334

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS (continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHMUnnnn				REMOVED: all DFHMUnnnn messages
DFHMVnnnn				REMOVED: DFHMV0001
DFHNCnnnn	NEW: DFHNC0123 CHANGED: DFHNC0944			
DFHPAnnnn	NEW: DFHPA1946		NEW: DFHPA1949	CHANGED: DFHPA1909
DFHPGnnnn			CHANGED: DFHPG0101 to DFHPG0103, DFHPG0201, DFHPG0209, DFHPG0210	NEW: DFHPG0300 to DFHPG0307 CHANGED: DFHPG0304 DFHPG0305 DFHPG0306

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHPInnnn	NEW: DFHPI0115 to DFHPI0118, DFHPI0403, DFHPI0511 to DFHPI0514, DFHPI0602, DFHPI0721 to DFHPI0726, DFHPI0731 to DFHPI0733, DFHPI0801, DFHPI0917, DFHPI0996 to DFHPI0997, DFHPI1000, DFHPI1007 to DFHPI1010, DFHPI1100 to DFHPI1004, DFHPI9010 to DFHPI9032, DFHPI9035 to DFHPI9039, DFHPI9500 to DFHPI9507, DFHPI9509 to DFHPI9663, DFHPI9668, DFHPI9676 CHANGED: DFHPI0301, DFHPI0400, DFHPI0401, DFHPI0700, DFHPI0704, DFHPI07015, DFHPI0716, DFHPI0720, DFHPI0730, DFHPI1001, DFHPI1002 REMOVED: DFHPI0999	NEW: 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 CHANGED: DFHPI0119, DFHPI0400, DFHPI0515, DFHPI0720, DFHPI0911, DFHPI0997	NEW: DFHPI0603, DFHPI0728, DFHPI0729, DFHPI0734 to DFHPI0736, DFHPI0905, DFHPI0906, DFHPI9685 to DFHPI9688, DFHPI9691 to DFHPI6714 CHANG ED: DFHPI0400, DFHPI0403, DFHPI0720, DFHPI0997, DFHPI1007 to DFHPI1010, DFHPI9506, DFHPI5253	NEW: DFHPI0404 CHANGED: DFHPI0400 DFHPI0516 DFHPI1007 to DFHPI1010
DFHRDnnnn	NEW: DFHRD0126, DFHRD0127	NEW: DFHRD0128 to DFHRD0131	CHANGED: DFHRD0107	
DFHREGxx				REMOVED: All DFHREGxx messages

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHRLnnnn	CHANGED: DFHRL0119	NEW: DFHRL0001, DFHRL0002, DFHRL0101 to DFHRL0121	NEW: DFHRL0122 CHANGED: DFHRL0103	NEW: DFHRL0124 to DFHRL0132 CHANGED: DFHRL0013 DFHRL0115 DFHRL0128
DFHRMnnnn		NEW: DFHRM0402 to DFHRM0405		NEW: DFHRM0100
DFHRSnnnn		NEW: DFHRS001, DFHRS002		NEW: DFHRS0007
DFHRTnnnn			NEW: DFHRT4424 CHANGED: DFHRT4418	
DFHSInnnn	NEW: DFHSI8421, DFHSI8445, DFHSI8431 CHANGED: DFHSI1519			NEW: DFHSI1600 DFHSI1601 REMOVED: DFHSI8444
DFHSJnnnn	NEW: DFHSJ0206, DFHSJ0521 to DFHSJ0539, DFHSJ0709 CHANGED: DFHSJ0201 to DFHSJ0205, DFHSJ0501 to DFHSJ0503, DFHSJ0505, DFHSJ0507 to DFHSJ0509, DFHSJ0511 to DFHSJ0516, DFHSJ0520, DFHSJ0706 to DFHSJ0708, DFHSJ0801 to DFHSJ0803	NEW: DFHSJ0004, DFHSJ0207, DFHSJ0910 to DFHSJ0918, DFHSJ1001 to DFHSJ1006 REMOVED: DFHSJ0504, DFHSJ0513, DFHSJ0519, DFHSJ0520, DFHSJ0540, DFHSJ0701 to DFHSJ0709, DFHSJ0801 to DFHSJ0803	NEW: DFHSJ010 to DFHSJ0103, DFHSJ0210 to DFHSJ0215, DFHSJ0540 to DFHSJ0542, DFHSJ0600, DFHSJ1007 and DFHSJ1008, DFHSJ1100 to DFHSJ1002, DFHSJ1104 to DFHSJ1106 CHANGED: DFHSJ0201 to DFHSJ0205, DFHSJ0534 to DFHSJ0537, DFHSJ0904, DFHSJ0911, DFHSJ1004, DFHSJ1006	NEW: DFHSJ0216 DFHSJ0921 to DFHSJ0923 CHANGED: DFHSJ0914 DFHSJ1100 to DFHSJ1106 REMOVED: DFHSJ0206 DFHSJ0501 to DFHSJ0503 DFHSJ0505 to DFHSJ0512 DFHSJ0514 to DFHSJ0518 DFHSJ0521 to DFHSJ0540 DFHSJ0900

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHSMnnnn	NEW: DFHSM0601 to DFHSM0603, DFHSM0606, DFHDSM0607		REMOVED: DFHSM0603	NEW: DFHSM0137 to DFHSM0140 CHANGED: DFHSM0602
DFHSNnnnn			REMOVED: DFHSN1150, DFHSN1250	
DFHSOnnnn	NEW: DFHSO128 to DFHSO0132 CHANGED: DFHSO0123	NEW: DFHSO0118, DFHSO0139, DFHSO0133, DFHSO0134	NEW: DFHSO0135 CHANGED: DFHSO0102, DFHSO0106, DFHSO0111, DFHSO0117, DFHSO0123	NEW: DFHSO0136
DFHSRnnnn				CHANGED: DFHSR0622
DFHSTnnnn	NEW: DFHST0236			
DFHTAnnnn				NEW: DFHTA0100, DFHTA0101
DFHTCnnnn	NEW: DFHTC1600 CHANGED: DFHTC2534		CHANGED: DFHTC2536	
DFHTDnnnn	NEW: DFHTD0247, DFHTD0386		NEW: DFHTD1290 CHANGED: DFHTD1217, DFHTD1221, DFHTD1278	
DFHTFnnnn		NEW with APAR: DFHTF0200	NEW with APAR: DFHTF0200	NEW with APAR: DFHTF0200
DFHTInnnn	NEW: DFHTI0100, DFHTI0101			NEW: DFHTI0102, DFHTI0103, DFHTI0200, DFHTI0201
DFHTMnnnn			NEW: DFHTM1718, DFHTM1719	

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS (continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHTRnnnn			NEW: DFHTR0119, DFHTR0122 to DFHTR0124, DFHTR1004	CHANGED: DFHSR0622 REMOVED: DFHTR0101 DFHTR0102
DFHTSnnnn			NEW: DFHTS1601 to DFHTS1608	CHANGED: DFHTS1605
DFHUPnnnn	CHANGED: DFHUP0203			
DFHUSnnnn		NEW: DFHUS0100	NEW: DFHUS0300 CHANGED: DFHUS0100	
DFHW2nnnn		NEW: DFHW20001, DFHW20002, DFHW20004, DFHW20006, DFHW20100, DFHW20100, DFHW20101, DFHW20110, DFHW20111, DFHW20120 to DFHW20133, DFHW20141, DFHW20142, DFHW20151	NEW: DFHW20134 to DFHW20137, DFHW20161	
DFHWPnnnn	NEW: DFHWP0154, DFHWP0364, DFHWP0756 to DFHWP0762, DFHWP1560, DFHWP1570 CHANGED: DFHWP0101, DFHWP0151, DFHWP0731, DFHWP0734	NEW: DFHWP0763, DFHWP0764		NEW: DFHWP0800 to DFHWP0802

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHWUnnnn		NEW: 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	NEW: DFHWU002, DFHWU004, DFHWU2100	CHANGED: DFHWU4001 REMOVED: DFHWU4015 DFHWU4023 DFHWU4024
DFHXCnnnn	CHANGED: DFHXC6646			
DFHXMnnnn				NEW: DFHXM0600 to DFHXM0603
DFHXQnnnn	NEW: DFHXQ0123			
DFHXSnnnn	NEW: DFHXS1116 CHANGED: DFHXS1115			

Table 80. Changes to messages and codes, by end-of-service release of CICS Transaction Server for z/OS (continued)

Messages or codes	V3.2	V4.1	V4.2	V5.1
DFHZCnnnn	NEW: DFHZC3403, DFHZC6312 CHANGED: DFHZC3205, DFHZC5908, DFHZC5939, DFHZC5978, DFHZC5983	CHANGED: 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 81. Changes to CICSplex SM messages, by end-of-service release of CICS Transaction Server for z/OS

Message	V5.1
EYUNLnnnn	NEW: EYUNL0152W
EYUPMnnnn	NEW: EYUPM007I EYUPM008I

Table 81. Changes to CICSplex SM messages, by end-of-service release of CICS Transaction Server for z/OS (continued)

Message	V5.1
EYUWIInnn	NEW: EYUWI0011E EYUWI0012E CHANGED: EYUWI0020 EYUWI0021 EYUWI0080 EYUWI0081 EYUWI0082 EYUWI0083 EYUWI0084 EYUWI0085 EYUWI0090
EUYWMnnnn	CHANGED: EYUWM0400 EYUWM0401 EYUWM0402 EYUWM0420 EYUWM0421 EYUWM0422 EYUWM0423 EYUWM0424 EYUWM0425 EYUWM0426 EYUWM0427 EYUWM0428 EYUWM0429 EYUWM0430 EYUWM0431 EYUWM0432 EYUWM0433 EYUWM0503 EYUWM0504 EYUWM0505 EYUWM0506 EYUWM0507 EYUWM0508
EYUXCnnnn	NEW with APAR: EYUXC0026 EYUXC0027
EYUXDnnnn	NEW: EYUXD0718E EYUXD0719I EYUXD0720E

Table 82. Changes to abend codes, by end-of-service release of CICS Transaction Server for z/OS

Code	V3.2	V4.1	V4.2	V5.1
AAxx	NEW: AALY, AALZ, AAM3	NEW: AALA, AALC, AAM4		NEW: AALB
ABxx		NEW with APAR: ABSX	NEW: ABRP NEW with APAR: ABSX	REMOVED: ABX9 NEW with APAR: ABSX

Table 82. Changes to abend codes, by end-of-service release of CICS Transaction Server for z/OS (continued)

Code	V3.2	V4.1	V4.2	V5.1
ACxx		NEW: ACRQ	NEW: ACSO	
ADxx	NEW: ADCF		NEW: ADDK	
AExx	NEW: AEZY	NEW: AECA, AECC, AECO, AECY, AECZ, AEPD, AEPM	NEW: AECE, AECM	NEW: AEE0-3 AEZZ REMOVED: AECY AECZ
AFxx	NEW: AFCI, AFDI	NEW: AFDK		NEW: AFDN AFDL
AIxx	NEW: AIPA, AIPB, AIPC, AIPD, AIPE, AIPF, AIPG, AIPH, AIPJ, AIPK, AIPL, AITJ, AITK, AITL, AITM	NEW: AIPM, AIPN, AIPO, AIPP, AIPR	NEW: AITN	NEW: AINT AINU AIPS AIPT AITO REMOVED: AII1 AII5 AIIA AIID AIIP AIIT
AJxx			NEW: AJST	REMOVED: AJAA AJAB AJAC AJAD AJAE AJAF AJAG
AKxx	NEW: AKEX	NEW: AKEJ		
ALxx		NEW: ALIL		
AMxx	NEW: AMQA	REMOVED: AMQL		NEW: AMPB NEW with APAR: AMPC AMPD

Table 82. Changes toabend codes, by end-of-service release of CICS Transaction Server for z/OS (continued)				
Code	V3.2	V4.1	V4.2	V5.1
APxx				NEW: APGD APGE
ASxx		NEW: ASJO	NEW: ASJ7, ASJS	REMOVED: ASJC ASJD ASJE ASJF ASJG ASJJ ASJK ASJL ASJM ASJN ASJR ASJ1 ASJ3 - ASJ5 ASJ6 ASJ8 ASRK
AWxx		NEW: AW2A, AW2B		
AXxx		NEW: AXFN, AXFV		NEW: AXFZ

Changes to samples

Table 83. Changes to samples, by end-of-service release of CICS Transaction Server for z/OS				
Sample	V3.2	V4.1	V4.2	V5.1
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	

Table 83. Changes to samples, by end-of-service release of CICS Transaction Server for z/OS (continued)

Sample	V3.2	V4.1	V4.2	V5.1
DFH\$DB2				CHANGED: JDBC samples removed: CICSDataSource, CICSDataSourcePublish, CICSDataSourceRetract and CICSjdbcDataSource
DFH\$DCTD				REMOVED
DFH\$DCTR				REMOVED
DFH\$DCTS				REMOVED
DFH\$EJB				REMOVED
DFH\$EJB2				REMOVED
DFH\$IIOP				REMOVED
DFH\$MOLS	NEW: <ul style="list-style-type: none"> • DPL option on RESOURCE • IDN option on PRINT • EXPAND control statement • Format of clock field 			
DFH\$PCTA				CHANGED: To include the ETDSA, GCDSA, and GUDSA
DFH\$WB1A	CHANGED: Verification program for CICS web support (assembler)			
DFH\$WB1C	CHANGED: Verification program for CICS web support (C)			
DFH\$WBCA	CHANGED: Chunking client sample (assembler)			
DFH\$WBCC	CHANGED: Chunking client sample (C)			
DFH\$WBHA	CHANGED: Chunking server sample (assembler)			

Table 83. Changes to samples, by end-of-service release of CICS Transaction Server for z/OS (continued)

Sample	V3.2	V4.1	V4.2	V5.1
DFH\$WBHC	CHANGED: Chunking server sample (C)			
DFH\$WBPA	CHANGED: Pipelining sample (assembler)			
DFH\$WBPC	CHANGED: Pipelining sample (C)			
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		
DFHWLP				CHANGED: Sample JVMSERVER resource definition
DFH0EPAC			CHANGED: New custom EP adapter sample (COBOL) Changed to set the default CICS TS queue (TSQ) for system events to userid.SYSTEM.	
DFH0STEP			CHANGED: New custom EP adapter sample (COBOL) Changed to collect and print new event processing statistics	
DFH0W2F1		CHANGED: New COBOL atom feed sample service routine		
DFH0WBCO	CHANGED: Chunking client sample (COBOL)			

Table 83. Changes to samples, by end-of-service release of CICS Transaction Server for z/OS (continued)				
Sample	V3.2	V4.1	V4.2	V5.1
DFHOWBHO	CHANGED: Chunking server sample (COBOL)			
DFHOWBPO	CHANGED: Pipelining sample (COBOL)			

Changes to CICSplex SM

Table 84. Changes to CICSplex SM installation and definition, by end-of-service release of CICS Transaction Server for z/OS			
V3.2	V4.1	V4.2	V5.1
REMOVED: The libraries SEYUMLIB, SEYUPLIB, and SEYUTLIB and all their contents are no longer shipped with CICS Transaction Server.	CHANGED: The product number used in Tivoli® NetView® SNA Generic Alerts changed to 5655S97.	NEW: MASTASKPROT system initialization parameter controls whether the CICSplex SM API, Web User Interface (WUI), and CICS Management Client Interface (CMCI) are allowed to perform actions or set attribute values for CICSplex SM MAS agent tasks with transaction IDs COIE, COIO, CONA, or CONL.	CHANGED: 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.
CHANGED: The product number used in Tivoli NetView SNA Generic Alerts changed to 5655M15.	CHANGED: TCPIPSSLCERT CICSplex SM WUI server initialization parameter now has a case sensitive specified value.		CHANGED: The product number used in Tivoli NetView SNA Generic Alerts changed to 5655Y04.
	CHANGED: The size of the Common Work Area has increased to 2048 bytes.		

Table 85. Changed CICSplex SM views, by end-of-service release of CICS Transaction Server for z/OS		
Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
5.1	CICS monitoring: new fields added or obsolete fields made invalid in new releases	<ol style="list-style-type: none"> CICS operations views > Task operations views > Active tasks CICS operations views > Task operations views > Completed tasks Monitoring views > Transaction monitoring views > Local or dynamic
5.1	CICS system: changed MAXTASKS input value	CICS operations views > CICS region operations views > CICS regions

Table 85. Changed CICSplex SM views, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
5.1	Domain subpool storage: GUDSA and GSDSA are now supported	CICS operations > CICS region operations views > Domain subpool
5.1	Dynamic storage areas: GUDSA and GSDSA are now supported	CICS operations > CICS region operations views > Dynamic storage areas
5.1	Event processing: EP adapter sets	CICS operations views > Application operations views > Event binding
5.1	JVMs: manual start up, and changes to termination	CICS operations views > Enterprise Java component operations views > JVM pool
5.1	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
5.1	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
5.1	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
5.1	MVS workload manager statistics	CICS operations views > CICS region operations views > MVS workload management
5.1	Platform and region type details	SM Administration Views > System Group Definitions
5.1	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
5.1	Task storage: GCDSA and GUDSA are now supported	CICS operations > CICS region operations views > Task subpool

Table 85. Changed CICSplex SM views, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
4.2	Client HTTP connections	<ol style="list-style-type: none"> 1. CICS operations views > TCP/IP service operations views > URI maps 2. Administration views > Basic CICS resource administration views > Resource definitions > URI mapping definitions
4.2	Dynamic workload management improvements	<ol style="list-style-type: none"> 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
4.2	Event processing: system events	<ol style="list-style-type: none"> 1. CICS operations views > Application operations views > Event processing 2. CICS operations views > Application operations views > Event capture specifications
4.2	Event processing: capture specifications	CICS operations views > Application operations views > Event capture specifications
4.2	Event processing: assured events	<ol style="list-style-type: none"> 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
4.2	TCP/IP	CICS operations views > TCP/IP service operations views > TCP/IP services
4.2	TCPIPSERVICE resource definition attributes	Administration views > Basic CICS resource administration views > Resource definitions > TCP/IP service definitions

Table 85. Changed CICSplex SM views, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
4.2	Temporary storage queues: automatic deletion	<ol style="list-style-type: none"> 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
4.2	Temporary storage queues: limit for main storage	CICS operations views > Temporary storage queue (TSQ) operations views > Global temporary storage statistics
4.1	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
4.1	Configuring z/OS Communications Server persistent sessions support	CICS operations views > CICS region operations views > CICS regions
4.1	Event processing: HTTP EP adapter	CICS operations views > Application operations views > Event processing
4.1	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
4.1	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
4.1	Java programs: use count and JVM profile	CICS operations views > Program operations views > Programs
4.1	Monitoring details: new DPLLIMIT field, DPLLIMIT, FILELIMIT, and TSQLIMIT values can be set	CICS Regions > CICS system name > Monitoring and statistics details > Monitoring details

Table 85. Changed CICSplex SM views, by end-of-service release of CICS Transaction Server for z/OS
(continued)

Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
4.1	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
4.1	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
4.1	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
4.1	z/OS Communications Server and partner system information	CICS operations views > TCP/IP service operations views > IP connections
4.1	z/OS Communications Server information	CICS operations views > Task operations views > Task association information
3.2	Document deletion	<ol style="list-style-type: none"> 1. CICS operations views > Task operations views > Active tasks 2. CICS operations views > Task operations views > Completed tasks
3.2	Document template statistics and refresh (newcopy) function	CICS operations views > Document template operations views > Document template

Table 85. Changed CICSplex SM views, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Changed CICS resource type or function	Corresponding changes to CICSplex SM
3.2	IPIC	<ol style="list-style-type: none"> 1. CICS operations views > Enterprise Java component operations views > CorbaServers 2. CICS operations views > Task operations views > Task association information 3. CICS operations views > TCP/IP service operations views > TCP/IP services 4. CICS operations views > TCP/IP service operations views > URI maps 5. Administration views > CICS resource definitions > URI mapping definitions 6. CICS operations views > Task operations views > Work requests
3.2	JVMs: withdrawal of resettable mode	<ol style="list-style-type: none"> 1. CICS operations views > Enterprise Java component operations views > JVM pool 2. CICS operations views > Enterprise Java component operations views > JVM profile 3. CICS operations views > Enterprise Java component operations views > JVM status 4. CICS operations views > Enterprise Java component operations views > JVM Class Cache status
3.2	LIBRARY resources	CICS operations views > Program operations views > Program
3.2	Storage information for MVS TCBs	<ol style="list-style-type: none"> 1. CICS operations views > CICS region operations views > MVS TCBs 2. CICS operations views > CICS region operations views > Global MVS TCB information 3. CICS operations views > CICS region operations views > MVS storage areas
3.2	XCF group ID	CICS regions > region name

Table 86. New or changed CICSplex SM views and resource tables, by end-of-service release of CICS Transaction Server for z/OS

Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.1	Applications	Not applicable	APPLCTN
5.1	Application definitions	Not applicable	APPLDEF
5.1	Event processing adapter sets	Not applicable	EPADSET

Table 86. New or changed CICSplex SM views and resource tables, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.1	Event processing adapters in an event processing adapter set	Not applicable	EPAINSET
5.1	Management parts	Not applicable	MGMTPART
5.1	Platforms	Not applicable	PLATFORM
5.1	Policy rule information	Not applicable	RULE
5.1	Platform definitions	Not applicable	PLATDEF
5.1	Topology base table for event processing adapter sets resource table	Not applicable	CRESEPAS
4.2	Data predicates for a capture specification	CICS operations views > Application operations views > Event capture specification data predicates	EVCSDATA
4.2	Event processing adapter	CICS operations views > Application operations views > Event processing adapter	CRESEPAD, EPADAPT
4.2	Information sources for a capture specification	CICS operations views > Application operations views > Event capture specification information sources	EVCSINFO
4.2	Option predicates for a capture specification	CICS operations views > Application operations views > Event capture specification option predicates	EVCSOPT
4.2	OSGi bundles	Not applicable	OSGIBUND
4.2	OSGi services	Not applicable	OSGISERV
4.1	Atom feeds	CICS operations views > TCP/IP service operations views > Atomservice definitions	ATOMSERV
4.1	ATOMSERVICE resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > Atomservice definitions	ATOMDEF
4.1	ATOMSERVICE resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	ATMINGRP
4.1	Bundles	CICS operations views > Applications > Bundles	BUNDLE, CRESBUND
4.1	BUNDLE resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > BUNDLE definitions	BUNDEF
4.1	BUNDLE resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	BUNINGRP

Table 86. New or changed CICSplex SM views and resource tables, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
4.1	Event capture specifications	Application operations views > Event capture specification	CRESEVCS, EVCSPEC
4.1	Event bindings	Application operations views > Event bindings	CRESEVBD, EVNTBIND
4.1	Event processing	Application operations views > Global event processing attributes	EVNTGBL
4.1	JVM servers	CICS operations views > Enterprise Java operations views > JVM servers	JVMSERV
4.1	JVMSEVER resource definitions	Administration views > Basic CICS resource administration views > Resource definitions > JVMSEVER definitions	JVMSVDEF
4.1	JVMSEVER resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	JMSINGRP
4.1	MQCONN resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > WebSphere MQ connection definitions	MQCONDEF
4.1	MQCONN resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	MQCINGRP
4.1	System link definitions	Administration views > Basic CICS resource administration views > CICS system links and related resources	SYSLINK (existing resource table)
4.1	Target region for one or more active workloads	Active workload views > Target region distribution statistics	WLMATARG
4.1	WebSphere MQ connection definition with MQCONN resource	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ Connection	MQCON
4.1	WebSphere MQ connection with dynamically created MQINI resource	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ initiation queue	MQINI
4.1	XMLTRANSFORM resources	Application operations views > XMLTRANSFORM resources	XMLTRANS
3.2	Association data for tasks	CICS operations views > Task operations views > Task association data	TASKASSC
3.2	CMASs and CICSplexes (this view was previously supported only by the EUI)	Administration views > CMAS configuration administration views > CMAS in CICSplex definitions	CPLXCMAS (existing resource table)

Table 86. New or changed CICSplex SM views and resource tables, by end-of-service release of CICS Transaction Server for z/OS (continued)

Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
3.2	Historical data for tasks	CICS operations views > Task operations views > Completed tasks EYUSTARTHTASK, EYUSTARTMASHIST, and EYUSTARTTASKRMI	HTASK (existing resource table) MASHIST TASKRMI
3.2	IPIC connection	CICS operations views > Connection operations views > IP connections	IPCONN
3.2	LIBRARY	CICS operations views > Program operations views > Program > LIBRARYs	LIBRARY
3.2	LIBRARY data set names	CICS operations views > Program operations views > Program > LIBRARYs including DFHRPL > LIBRARY name > Number of DSNAMEs	LIBDSN, LIBRARY
3.2	LIBRARY definitions in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	LIBINGRP
3.2	LIBRARY resource definitions	Administration views > Basic CICS resource administration views and Resource definitions > LIBRARY definitions	LIBDEF
3.2	Task element storage	EYUSTARTTASKESTG	TASKESTG
3.2	Task file usage	EYUSTARTTASKFILE	TASKFILE
3.2	Task temporary storage queue usage	EYUSTARTTASKTSQ	TASKTSQ
3.2	Transient data queues (this view was previously supported only by the EUI)	CICS operations views > Transient data queue (TDQ) operations views > Topology data for transient data queue	CRESTDQ (existing resource table)
3.2	WebSphere MQ connection	CICS operations views > DB2, DBCTL and WebSphere MQ operations views > WebSphere MQ connections	MQCONN

Table 87. Obsolete CICSplex SM views, resource tables, and attributes			
CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
4.2	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 88. New BAS definition objects, by end-of-service release of CICS Transaction Server for z/OS		
Release	BAS object	What is it?
4.1	ATMINGRP	BAS definition that describes the membership of an ATOMSERVICE definition (ATOMDEF) in a resource group.
4.1	BUNDDEF	CICS definition that describes a BUNDLE resource.
4.1	BUNINGRP	BAS definition that describes the membership of a BUNDLE definition (BUNDDEF) in a resource group.
4.1	JVMSVDEF	CICS definition that describes a JVMSERVER resource.
4.1	JMSINGRP	BAS definition that describes the membership of a JVMSERVER definition (JVMSVDEF) in a resource group.
4.1	MQCONDEF	CICS definition that describes an MQCONN resource.
4.1	MQCINGRP	BAS definition that describes the membership of an MQCONN definition (MQCONDEF) in a resource group.
4.1	ATOMDEF	CICS definition that describes an ATOMSERVICE resource.
3.2	IPCINGRP	BAS definition that describes the membership of an IPIC connection definition (IPCONDEF) in a resource group.
3.2	IPCONDEF	CICS definition that describes an IPIC connection.
3.2	LIBINGRP	BAS definition that describes the membership of a LIBRARY definition (LIBDEF) in a resource group.
3.2	LIBDEF	CICS definition that describes a LIBRARY resource.

Table 89. Changes to CICSplex SM transactions by end-of-service release of CICS Transaction Server for z/OS		
V4.1	V4.2	V5.1
CHANGED: COVC front panel: The Current Status, Time, Applid, and Date fields have moved by one line down the screen COVC status screen. Please review any automated processes that use these fields.		
CHANGED: COVC status panel has a new field, TCP/IP Family, that displays whether the address of the connected region is an IPv4 or IPv6 address.		

Table 89. Changes to CICSplex SM transactions by end-of-service release of CICS Transaction Server for z/OS (continued)

V4.1	V4.2	V5.1
CHANGED: The ClientIp field of the COVC user sessions panel 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: CICSplex SM transaction, WMWD. This transaction is listed in the CSD group EYU \$CDEF and must be defined to your external security manager.		
NEW: CICSplex SM transaction, XZLT. This transaction is listed in the CSD group EYU \$CDEF and must be defined to your external security manager.		

Table 90. Changes to CICSplex SM parameters by end-of-service release of CICS Transaction Server for z/OS

Parameter	V4.1	V4.2	V5.1
CASNAME	REMOVED		
MASTASKPROT		NEW: Added by APAR PM75983. Specifies whether CICSplex SM MAS agent tasks can be controlled through the CICSplex SM API, WUI, and CMCI.	NEW: Added by APAR PM79038.
SECRPTLVL	NEW: Added by APAR PM42117. Controls the level of detail available to a client API task when a response of NOTPERMIT with reason USRID is returned by a request.		
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.
WLMLOADCOUNT	REMOVED		
WLMLOADTHRS	REMOVED		

Table 91. Changes to CICSplex SM WUI server initialization parameters by end-of-service release of CICS Transaction Server for z/OS

Parameter	V4.1	V4.2	V5.1
CMCIAUTH			NEW with APAR PI37543 Specifies the settings for the CMCI TCIPSERVICE AUTHENTICATE attribute.
CMCIPORT	NEW: Specifies the TCP/IP port number that is allocated to the CMCI.		
CMCISSL			NEW with APAR PI37543 Specifies the settings for the CMCI TCIPSERVICE SSL attribute.
TCPIPADDRESS	CHANGED: Now supports IPv6.		
TCPIPSSL			CHANGED with APAR PI94706: New value ATTLSBASIC, to support Application Transparent Transport Layer Security (AT-TLS)

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 were discontinued in CICS TS V5.5 and previous releases are detailed in [Changes between releases](#) in [Upgrading](#). The following technologies are stabilized.

CICS Service Flow Runtime

CICS 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 fully 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](#).

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.

JVMSERVER-based configuration option for the web services data transformation service

Support for the JVMSERVER-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](#) JVMSERVER 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 Knowledge Center remains available. For a list of these PDFs, see [Documentation in PDF](#).

Release sensitive XPI call RELENSCALL

Support for the [Release sensitive XPI call](#) is stabilized.

WS-Security infrastructure options

CICS web services support for [Pipeline configuration files](#) infrastructure is stabilized.

WSDL 2.0

(WSDL) 2.0 in CICS is stabilized. Use WSDL 1.1 as the de facto standard for SOAP-based web services.

XSNEX global user exit

The `signon` and `signoff` global user was introduced as a temporary migration aid in CICS TS 2.2 and will be removed in a future release.

Chapter 4. Upgrading to the new release

This section tells you how to migrate your CICS environment to a new release, or from Developer Trial to another edition of CICS TS. Each section covers a different aspect of a CICS configuration and summarizes the actions that you need to take to upgrade from one release to another. Icons indicate the versions to which an action applies.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

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](#).

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.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All Versions	“Install the activation module” on page 237	Mandatory
All Versions	“Replace the SDFHDEV library” on page 237	Mandatory
All Versions	“Start the CICS region” on page 238	Mandatory

Install the activation module

All Versions

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.

Replace the SDFHDEV library

All Versions

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.

Start the CICS region

All Versions

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.

IBM CICS Explorer for Aqua V3.1¹ and later can connect to all CICS TS versions. If your CICS Explorer is at a lower release (CICS Explorer V5.3 or earlier), you must install a new copy of CICS Explorer to work with CICS® regions at CICS TS V5.6 . Some features in CICS TS V5.6 are only available in CICS Explorer for Aqua V3.2.

Upgrade actions

Your current CICS Explorer version	Action	Mandatory or optional?
All Versions	“Back up your CICS Explorer workspace” on page 238	Optional, but recommended
All Versions	“Install CICS Explorer” on page 238	Mandatory

Back up your CICS Explorer workspace

All Versions

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](#).

Install CICS Explorer

All Versions

¹ Aqua refers to IBM Explorer for z/OS Aqua.

As of 22 June, 2020, IBM CICS Explorer is branded to include the version of the IBM Explorer for z/OS (z/OS Explorer) platform it's based on. If you're using a CICS Explorer V5.5 client, it will become CICS Explorer for Aqua V3.2 with your next fix pack update. If you are using an earlier release of CICS Explorer, you must install a new copy because earlier releases are based on different versions of Eclipse.

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

Upgrading CICSplex SM

This section 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. If you don't have CICSplex SM, you can skip this section.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

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” on page 242	Optional, but strongly recommended
All Versions	“Upgrade a maintenance point CMAS” on page 242	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” on page 248	Mandatory, unless you disable the feature
All Versions	“Upgrade a non-maintenance point CMAS” on page 249	Mandatory
All Versions	Upgrade a CICSplex SM managed CICS system (MAS)	Mandatory
All Versions	“Migrate PLTPI to using CPSMCONN” on page 251	Mandatory
All Versions	“Upgrade CICSplex SM API programs” on page 252	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 (for sysplex optimized workload users only)” on page 253	Mandatory
All Versions	Update consumers of Tivoli NetView SNA Generic Alerts (for Tivoli NetView users only)	Mandatory

Your current version	Action	Mandatory or optional?
All Versions	Recompile your programs to match the current release of CICSplexSM (for programs that connect to a previous release of CICSplexSM only)	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” on page 254	Mandatory

Check compatibility requirements for different levels of CICSplex SM

All Versions

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 5.6 that connects to a CMAS running at a supported level of CICS TS. However:

- A CICS TS for z/OS, Version 5.6 CICSplex SM CMAS runs only in a CICS system at Version 5.6 .
- 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 5.6 must be the MP CMAS. See [“Upgrade a maintenance point CMAS” on page 242](#).
- You cannot view all resources of a CICS TS for z/OS, Version 5.6 region by using a CMAS that runs at an earlier release.

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 5.6 . To be connected to CICSplex SM Version 5.6 , CICS systems must use the CICSplex SM Version 5.6 MAS agent, so they must have the CICSplex SM Version 5.6 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
V5.6	V5.2, V5.3, V5.4, V5.5, V5.6
V5.5	V5.1, V5.2, V5.3, V5.4, V5.5
V5.4	V4.1, V4.2, V5.1, V5.2, V5.3, V5.4
V5.3	V3.1, V3.2, V4.1, V4.2, V5.1, V5.2, V5.3
V5.2	V3.1, V3.2, V4.1, V4.2, V5.1, V5.2

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 5.6 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 5.6 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 (CICS TS 4.2 or later)

If you use workload management, to use the unit of work (UOW) affinities that are introduced in CICS TS 4.2, the CMAS that owns the workload must be at Version 4.2 or later.

Workload function is controlled by the CMAS that owns a workload. The workload owner is assigned to the CMAS that manages the first started TOR that causes the workload to be initialized. If the workload is not shown as ACTIVE, the first started TOR associated with the workload causes its associated CMAS to be the workload owner. If the workload-owning CMAS is not at Version 4.2 or later, any UOW affinity definitions cannot be honored. That is, affinities are not correctly created and

complied with, and are denied to any other CMASs that later join the workload, even if those CMASs are at Version 4.2 or later.

To ensure that UOW affinities can be exploited by a workload:

1. Ensure that the existing workload is cloned to a new name, and that any required UOW affinity definitions are applied to the new name.
2. Ensure that the first TOR that is started for the new name is at Version 4.2 or later, so that UOW affinities are honored by any other region at Version 4.2 or later that joins the workload name. If a region at an earlier release level joins the workload, it cannot use the UOW affinity function, and must continue to make routing decisions based on the standard workload routing algorithms.

If you believe that your defined UOW affinities are not being implemented, use the **System ID of workload owner** hyperlink in any of the WUI workload runtime views to determine the CICSplex SM version of the workload-owning CMAS. If the CPSM version of CMAS attribute is not at least at the 0420 level, the workload cannot exploit any defined UOW affinities.

Back up your CICSplex SM configuration

All Versions

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 [“Back out of a CICS upgrade” on page 252](#).

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 [“Back out of a CICS upgrade” on page 252](#). If you do not, CMASs might become isolated.

Upgrade a maintenance point CMAS

All Versions

You must upgrade your CICSplex SM CMAS to Version 5.6 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 5.6 level and at one or more earlier levels, the maintenance point CMAS (MP CMAS) must be at the Version 5.6 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 5.6 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 5.6. 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. Specifying each CMAS correctly in IEASYSxx explains what values are suitable. If you are running both a previous release and Version 5.6 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 5.6 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 5.6 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 5.6 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 5.6 .

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 5.6 . 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 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 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.

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

All Versions

A Web User Interface server and the CMAS to which it connects must be at the highest level of CICSplex SM and CICS in the CICSplex. They must be at the same level as the MP CMAS. Web User Interface 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 Web User Interface server can connect only to a CMAS at the same release level. Before you upgrade a Web User Interface server, you must upgrade the CMAS to which it connects, by using the instructions in [“Upgrade a non-maintenance point CMAS”](#) on page 249. If the CMAS to which the Web User Interface server connects is not the MP CMAS, you must also upgrade the MP CMAS before you start the Web User Interface server and the CMAS to which it connects. Upgrade the Web User Interface server to Version 5.6 before you start any other MASs, so that it is ready to manage the upgraded MASs.

A CICS system that acts as a Web User Interface server is a local MAS. However, when you upgrade a Web User Interface server, you must upgrade both the CICSplex SM MAS agent and the CICS region to Version 5.6. In other MASs, you can upgrade only the CICSplex SM MAS agent, and you do not need to upgrade the CICS region.

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.

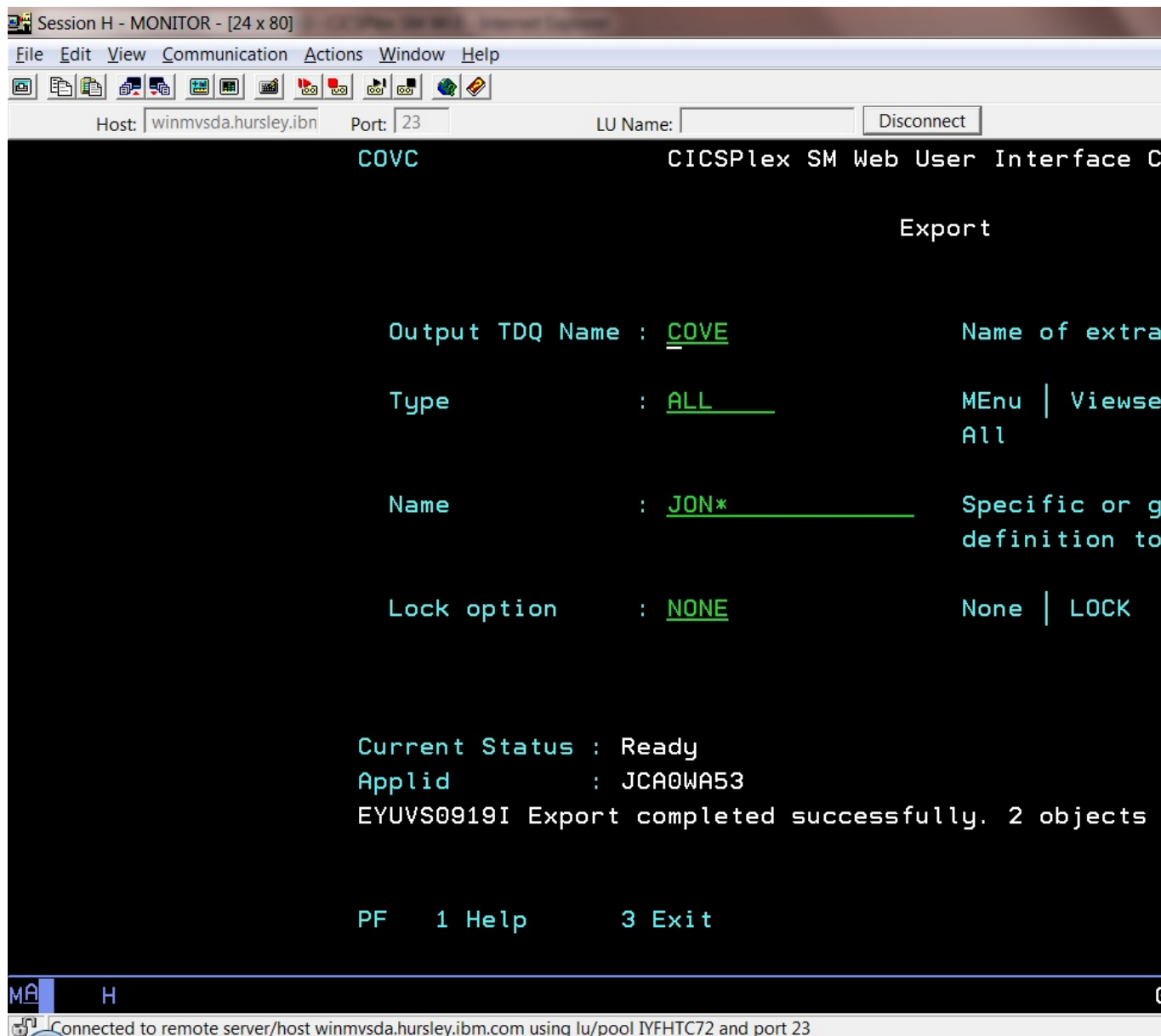
If you used DFHISTAR, the XDFHINST library that it creates contains member EYUWUIDS. When EYUWUIDS is run, it creates a new WUI Server repository (EYUWREP) and some new import (EYUCOVI) and export (EYUCOVE) files to use later if you tailored or used your own WUI view or menus. EYUWUIDS also creates the 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 246.

3. Authorize the Version 5.6 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 5.6 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 5.6 modules in the LPA immediately, change your previous release MASs to use the previous release modules from the STEPLIB and DFHRPL concatenations, instead of the LPA.
 - b. If you put the Version 5.6 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 5.6 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 5.6 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 5.6 .

A good way to upgrade modified resource definitions is to copy the Version 5.6 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 5.6 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

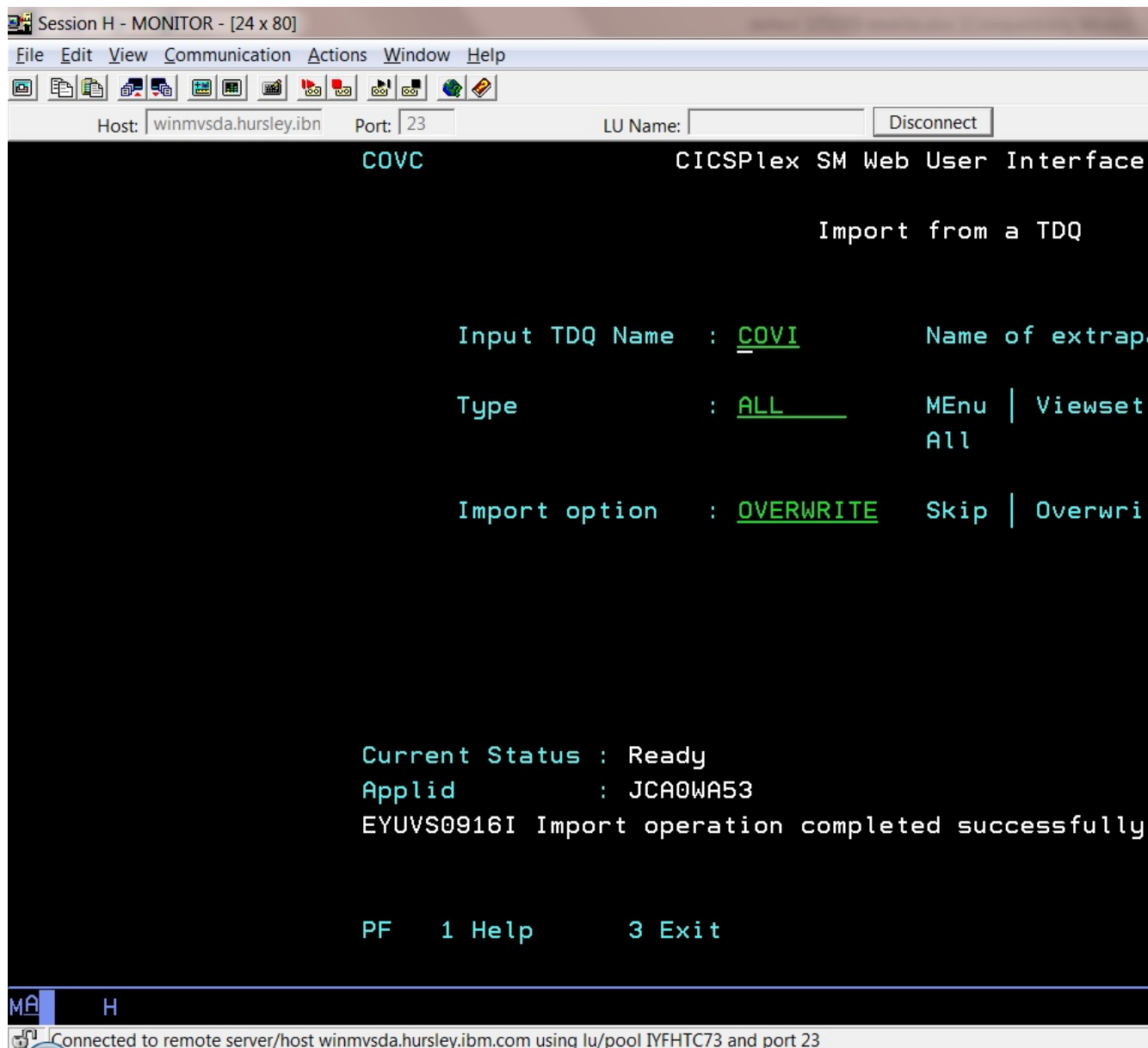
Interface repository contains customized view sets or menus, you must upgrade your view set and menu definitions.

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 5.6, 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 5.6 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 5.6 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:



Upgrade the CMCI to use the CMCI JVM server

All Versions

As of CICS TS Version 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](#).

Upgrade a non-maintenance point CMAS

All Versions

You must upgrade your CICSplex SM CMAS to Version 5.6 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 5.6 . 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 5.6 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 5.6 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 5.6 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 5.6 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 5.6 .

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 5.6 . 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.

Upgrade a CICSplex SM managed CICS system (MAS)

All Versions

When you upgrade a CICSplex SM MAS to CICSplex SM Version 5.6 , you might choose to upgrade only the CICSplex SM MAS agent. You do not need to upgrade the CICS region to Version 5.6 at the same time.

Before you upgrade a CICSplex SM MAS to CICSplex SM Version 5.6 , 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 5.6 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 5.6 modules in the LPA immediately, change your previous release MASs to use the previous release modules from the STEPLIB and DFHRPL concatenations, instead of the LPA.
 - b. If you put the Version 5.6 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 5.6 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 5.6 SEYUAUTH and SEYULOAD library names. The Version 5.6 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 5.6 . 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 5.6 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 254 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.

Migrate PLTPI to using CPSMCONN

All Versions

Support for using PLTPI to run the CICSplex SM PLT program directly has been removed as of CICS TS V5.6. You must migrate to using the [CPSMCONN](#) system initialization parameter.

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Upgrade CICSplex SM API programs

All Versions

CICSplex SM API programs that were written to run in a MAS at a previous release can be run in a Version 5.6 MAS. You can either continue to access the data that is provided by the previous release or access the new data available from Version 5.6. 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 Version 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.

Back out of a CICS upgrade

All Versions

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 \(TERMINATE\)](#).

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

All Versions

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 [“Upgrade the CICS data sharing servers”](#) on page 255.

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

All Versions

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](#) 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](#).

Recompile your programs to match the current release of CICSplex SM

All Versions

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.

Rerun EYUJHIST to upgrade your CICSplex SM history data sets

All Versions



As of CICS TS V5.5, the record size of EYUJHIST* data sets has increased from RECORDSIZE(3536 3540) to RECORDSIZE(3620 3624). You must rerun the EYUJHIST sample job to upgrade your CICSplex SM history data sets.

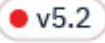
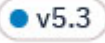




Upgrading CICS regions

This section summarizes the actions to take to migrate any CICS region from one release to another. Other sections go through the actions to take for other elements of a CICS environment.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All Versions	“Upgrade the CICS data sharing servers” on page 255	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 Exits programs that are using XPI calls without the RELENSCALL parameter	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
All Versions	“Review the use of MQCONN” on page 259	Mandatory
	CHANGE OF IMPACT	
 v5.2  v5.3	“Upgrade programs that process policy events” on page 260	Mandatory
All Versions	“Review whether the prerequisite PTF is installed on your z/OS operating system for IBM Health Checker for z/OS” on page 261	Mandatory

Your current version	Action	Mandatory or optional?
 v5.2  v5.3  v5.4	“Make the source code of any required PLTs available to CICS at run time” on page 261	Mandatory
 All Versions	“Migrate from CICS HTTP server plug-in to CICS Web Support” on page 262	Mandatory
 v5.4  v5.5	“Migrate group-level feature toggle configuration files” on page 263	Recommended

Upgrade the CICS data sharing servers

All Versions

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.

Redefine and initialize the local and global catalogs

All Versions

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.

Enable z/OS conversion services

All Versions

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.

Upgrade the CSD

All Versions

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 263](#).

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.

Upgrade user-modified, CICS-supplied resource definitions

All Versions

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 5.6. 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.

Upgrade your copies of CICS-supplied resource definitions

All Versions

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.

Reassemble all your macro tables

All Versions

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.

Reassemble all Global User Exits programs that are using XPI calls without the RELENSCALL parameter

All Versions

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 5.6 libraries, because the assembled code only works on the CICS TS release for which it is assembled.

Review DSA size limits

All Versions

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.

Review MEMLIMIT

All Versions

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, checking, and setting MEMLIMIT in Improving performance](#).

Review program and transaction definitions

All Versions

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)
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.

Review the use of MQCONN

All Versions

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(DFHQMNI)

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 DFHQMNI.

DFHQMNI 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 V5.3 or earlier	CICS TS V5.4 or later
Resource name: MQINI(DFHMQINI)	Resource name: MQMONITOR(DFHQMNI)
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"> • DFLTUSER • PLTPIUSR
The CKTI transaction runs under the authority of the transaction that initiated the CKTI instance. 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).	The CKTI transaction runs under the authority of the DFHQMNI MONUSERID , which is either the CICS region user ID, or the PLTPI user ID if specified. CKTI uses the DFHQMNI USERID , which is set to the CICS default user ID, for starting the required application transaction.

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.

Review the system dump data set size

All Versions

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.

Upgrade programs that process policy events

 v5.2  v5.3  v5.4

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
rule_threshold	DFHEP.DATA.00006	DFHEP.DATA.00024

Capture data item name	Container name in previous releases	Container name in CICS TS 5.4onwards
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](#).

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

All Versions

You can now 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

Make the source code of any required PLTs available to CICS at run time



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.

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

All Versions

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 TCPIPService 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 TCPIPService 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 262](#) are represented by the set of URIMAPs in [Figure 2 on page 262](#).

```
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 262](#) 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.

Migrate group-level feature toggle configuration files



As of CICS TS V5.6, 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 92 on page 263](#) 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 DFHCOMP1 compatibility group, followed by the DFHCOMPH compatibility group, to the end of your group list.

Table 92. Required compatibility groups for earlier releases of CICS					
	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	None	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 5.5	None	None	Do not share	Do not share	Do not share
Shared with CICS TS 5.4	None	None	None	Do not share	Do not share

Table 92. Required compatibility groups for earlier releases of CICS (continued)					
	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 5.3	DFHCOMPI	DFHCOMPI	DFHCOMPI	None	Do not share
Shared with CICS TS 5.2	DFHCOMPI DFHCOMP	DFHCOMPI DFHCOMP	DFHCOMPI DFHCOMP	DFHCOMP	None

Compatibility group DFHCOMPI

Group DFHCOMPI is required for compatibility with CICS Transaction Server for z/OS, Version 5 Release 3.

Table 93. Contents of compatibility group DFHCOMPI	
Resource type	Name
PROGRAM	DFHWBUN

Compatibility group DFHCOMP

Group DFHCOMP is required for compatibility with CICS Transaction Server for z/OS, Version 5 Release 2.



Table 94. Contents of compatibility group DFHCOMP	
Resource type	Name
PROGRAM	DFHSFP

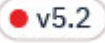
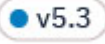

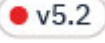
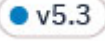
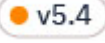
Upgrading security

This section 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.

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.

Upgrade actions

Your current version	Action	Mandatory or optional?
All Versions	“Review the impact of extensions to command and resource security checks” on page 265	Mandatory
All Versions	“Define new Category 1 transactions to RACF” on page 265	Mandatory
All Versions	“Define new Category 2 transactions to RACF” on page 265	Mandatory
 v5.4  v5.5	“Review external security settings for CMCI” on page 266	Mandatory if you use the CMCI

Your current version	Action	Mandatory or optional?
 v5.2  v5.3  v5.4	“Migrate to using CICS surrogate user checking in JCL job submissions” on page 266	Optional
 v5.2  v5.3  v5.4	“Specify the KERBEROSUSER SIT parameter for regions that use the Kerberos service” on page 267	Mandatory if you use Kerberos and you have not installed APAR PI85443.

Review the impact of extensions to command and resource security checks

All Versions

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.

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Define new Category 1 transactions to RACF

All Versions

Category 1 transactions are CICS internal system transactions. You must define these transactions to RACF, and authorize the CICS region user ID to use them, so that CICS can initialize successfully. Sample CLIST DFH\$CAT1 is provided to assist with this. For a list of CICS transactions that are Category 1, see [All supplied transactions and associated security categories](#).

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Define new Category 2 transactions to RACF

All Versions

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](#).

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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 V5.6 regions, this is enabled by default in regions that use the CMCI. In V5.5 regions, this is off by default. In V5.4 regions, this is enabled by APAR PI87691. If you installed and implemented the change in APAR PI87691, no action is required for V5.4.

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 Maven or Gradle 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](#).

Migrate to using CICS surrogate user checking in JCL job submissions



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](#).

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Specify the KERBEROSUSER SIT parameter for regions that use the Kerberos service



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 V5.2, V5.3, and V5.4, this capability is provided with APAR PI85443.

In CICS TS 5.2 through 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.

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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.

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

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases”](#) on page 276.

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
v5.2	“If you use the <code>_EDC</code> option to set the <code>UMASK</code> that applies when <code>JVMSEVER</code> files are created, migrate to using the <code>_DFH_UMASK</code> option in the JVM profile” on page 269	Mandatory

Check your programs for deprecated APIs

All Versions

Java Standard Edition Products on z/OS gives details about any compatibility issues between the Java APIs, and compatibility issues that are specific to the IBM SDK for z/OS. Check your Java programs for compatibility issues between the supported IBM SDK for z/OS and previous versions. Make any changes that are required to enable your programs to run with the supported versions.

In addition, 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.

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.

Review your JVM profiles for new settings

All Versions

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 v5.3 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.

Note: From CICS TS v5.2 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](#).

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

v5.2

If at V5.2 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

Existing applications typically continue to run in a later version of CICS.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases”](#) on page 276.

Upgrade actions

Your current version	Action	Mandatory or optional?
All Versions	“Modify routing programs to tolerate channels” on page 269	Mandatory
All Versions	“Modify applications that rely on the order in which containers are returned” on page 269	Mandatory

Modify routing programs to tolerate channels

All Versions

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.

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

All Versions

A container performance improvement introduced in CICS TS V5.5 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-V5.5 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.

Upgrading applications, platforms, and bundles

If you use platforms, applications, and CICS bundles, you have some changes to make when you upgrade your version of CICS.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
 v5.2	If your application has URIMAP resource and URIMAP entry point in different CICS bundles, review the change in availability	Optional

If your application has URIMAP resource and URIMAP entry point in different CICS bundles, review the change in availability



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 connections

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

Upgrading IPIC

This section tells you how to upgrade IPIC connections between CICS systems when you migrate from one release of CICS to another.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
All Versions	“Review selection behavior for IPCONN and CONNECTION resources across releases of CICS” on page 271	Mandatory

Review selection behavior for IPCONN and CONNECTION resources across releases of CICS

All Versions

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 95 on page 271 and Table 96 on page 271 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 95. 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 5.5 AOR		
		DPL	Asynchronous processing and transaction routing	Enhanced Routing
CICS TS 5.1 to 5.5	Acquired	IPIC connection	IPIC connection	IPIC connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Table 96. 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 5.5 ROR			
		File control	Transient data	Temporary storage	DL/I
CICS TS 5.1 to 5.5	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 section tells you about the changes that you need to make to MRO connections when you migrate from one release of CICS to another.

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

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases”](#) on page 276.

Upgrade actions

Your current version	Action	Mandatory or optional?
All Versions	Install and test DFHCSVC	Mandatory
All Versions	Install and test DFHIRP	Mandatory
All Versions	Define DFHAPPL.applid profiles in the RACF FACILITY class	Optional
All Versions	Test MRO	Optional

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 SVC Parm 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 5.6 DFHIRP module is compatible with earlier releases, and works with all releases of CICS. However, the CICS TS for z/OS, Version 5.6 version of DFHIRP, required for multiple XCF group support, can be used only on z/OS Version 1.7 or later. DFHIRP can be used only from the LPA. So, in an MVS 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 MVS 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 5.1 DFHIRP can communicate with a CICS TS for z/OS, Version 5.6 DFHIRP across XCF/MRO, but the CICS regions that run in the MVS with the CICS TS 5.1 DFHIRP cannot be later than CICS TS 5.1.

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 5.6 level. For more information, see [“Upgrade a maintenance point CMAS” on page 242](#).

2. Update LPA modules DFHCSVC, DFHDSPEX, DFHDUMPX, DFHIRP, DFHSEN and DFH99SVC with the dynamic LPA facility. Specify the **ADD** verb.
3. Run the CICS TS 5.6 supplied utility DFHCSVCU to update the z/OS SVC table as documented in [Running the DFHCSVCJ job in the IBM Knowledge Center](#).
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 [Responses from the system authorization facility \(SAF\)](#).

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 Transaction Server regions with MRO. These test regions can coexist in the same MVS 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.

If you are upgrading from an end-of-service release, you can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases” on page 276](#).

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
<div>v5.2</div> <div>v5.3</div>	“Replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources” on page 274	Optional
<div>v5.2</div> <div>v5.3</div>	“Replace existing mechanisms for managing instances of CKBR transactions with MQMONITOR resources” on page 275	Optional

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

All Versions

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.

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.

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 can find information about additional actions that are relevant to those releases in [“Upgrading from end-of-service releases”](#) on page 276.

For information about upgrading the ATOM feeds in the CA8K SupportPac for CICS TS Version 3, see [“Upgrading from Version 3”](#) on page 291.

Upgrading JSON web services

If you use JSON web services, you have some changes to make when you upgrade your version of CICS.

Upgrade actions

Your current version	Action	Mandatory or optional?
 v5.3	“Use the EXEC CICS TRANSFORM command to parse and generate JSON” on page 275	Optional
 v5.3	Take advantage of non-Java support for JSON web services	Optional

Use the EXEC CICS TRANSFORM command to parse and generate JSON

 v5.3

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 JSONTODATA API command](#).

Take advantage of non-Java support for JSON web services

 v5.3


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.

Upgrade actions

Your current version	Action	Mandatory or optional?
 v5.3	“Consider migrating JAX-WS applications from the Axis2 environment to a Liberty JVM server” on page 276	Optional

Consider migrating JAX-WS applications from the Axis2 environment to a Liberty JVM server

 v5.3

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](#).

Upgrading from end-of-service releases

CICS TS Version 3, CICS TS Version 4, and CICS TS Version 5.1 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 Version 5.1

CICS TS Version 5.1 is 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 V5.1 here: [“Summary of changes from end-of-service releases” on page 119](#).

Table 97. Upgrade considerations for Version 5.1	
Upgrade requirement	Actions
Upgrading CICSplex SM	Follow the instructions in “Upgrading CICSplex SM” on page 239 .
Upgrading CICS Explorer	Follow the instructions in “Upgrading CICS Explorer” on page 238 .
Upgrading CICS regions	Follow the instructions in “Upgrading CICS regions” on page 254 and “Upgrading regions: considerations for upgrading from CICS TS V5.1” on page 277 .
Upgrading security	Follow the instructions in “Upgrading security” on page 264 and “Upgrading regions: considerations for upgrading from CICS TS V5.1” on page 277 .

Table 97. Upgrade considerations for Version 5.1 (continued)

Upgrade requirement	Actions
Upgrading the Java environment	Follow the instructions in “Upgrading the Java environment” on page 267 and “Upgrading Java: considerations for upgrading from CICS TS V5.1” on page 280.
Upgrading applications	Follow the instructions in “Upgrading applications” on page 269
Upgrading applications, platforms, and bundles	Follow the instructions in “Upgrading applications, platforms, and bundles from CICS TS V5.1” on page 280.
Upgrading connections	Follow the instructions in “Upgrading connections” on page 270 and “Upgrading connections with IBM MQ: considerations for upgrading from CICS TS V5.1” on page 281.
Upgrading web services	Follow the instructions in “Upgrading JSON web services: considerations for upgrading from CICS TS V5.1” on page 282 and “Upgrading SOAP web services: considerations for upgrading from CICS TS V5.1” on page 282.

Upgrading regions: considerations for upgrading from CICS TS V5.1

In addition to the actions described in [“Upgrading CICS regions”](#) on page 254, you must do the following:

- 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.

- 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 5.4onwards
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
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

Capture data item name	Container name in previous releases	Container name in CICS TS 5.4 onwards
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](#).

- 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.

Upgrading security: considerations for upgrading from CICS TS V5.1

In addition to the actions described in [“Upgrading security”](#) on page 264, you must do the following:

- 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.

- 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.

```
///  
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.

- 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.

- 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 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.

Upgrading Java: considerations for upgrading from CICS TS V5.1

In addition to the actions described in [“Upgrading the Java environment”](#) on page 267, you must do the following:

- If you use the CICS Liberty security feature, check whether you need to start the Liberty angel process. (Mandatory)
- 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 System.out and System.err. Replaces the <code>dfjoutput.jar</code> file.
<code>com.ibm.cics.server.jar</code>	<code>com.ibm.cics.server</code>	The JCICS API. Replaces the <code>dfjcics.jar</code> file.
<code>com.ibm.record.jar</code>	<code>com.ibm.record</code>	The Java API for legacy programs that use <code>IByteBuffer</code> from the Java Record Framework that came with VisualAge®. Previously in the <code>dfjcics.jar</code> file.

- 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.

Upgrading applications, platforms, and bundles from CICS TS V5.1

You must do the following:

- 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](#).

- 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.

- 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".

Upgrading connections with IBM MQ: considerations for upgrading from CICS TS V5.1

You must do the following:

- Replace existing mechanisms for managing instances of CKTI transactions with MQMONITOR resources. (Optional)

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.

- Replace existing mechanisms for managing instances of CKBR transactions with MQMONITOR resources. (Optional)

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 JSON web services: considerations for upgrading from CICS TS V5.1

You must do the following:

- 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](#).

Upgrading SOAP web services: considerations for upgrading from CICS TS V5.1

You must do the following:

- 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 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 V4.1 and V4.2 here: [“Summary of changes from end-of-service releases” on page 119](#).

Table 98. Upgrade considerations for Version 4	
Upgrade requirement	Actions
Upgrading CICSplex SM	Follow the instructions in “Upgrading CICSplex SM” on page 239 .
Upgrading CICS Explorer	Follow the instructions in “Upgrading CICS Explorer” on page 238 .
Upgrading CICS regions	Follow the instructions in “Upgrading CICS regions” on page 254 and “Upgrading regions: considerations for upgrading from CICS TS Version 4” on page 283
Upgrading security	Follow the instructions in “Upgrading security” on page 264 and “Upgrading security: considerations for upgrading from CICS TS Version 4” on page 284 .
Upgrading file control	Follow the instructions in “Upgrading file control: considerations for upgrading from CICS TS Version 4” on page 285 .
Upgrading the Java environment	Follow the instructions in “Upgrading the Java environment” on page 267 and “Upgrading Java: considerations for upgrading from CICS TS Version 4” on page 286 .
Upgrading applications	Follow the instructions in “Upgrading applications” on page 269
Upgrading connections	Follow the instructions “Upgrading connections” on page 270 , “Upgrading IPIC connections: considerations for upgrading from CICS TS Version 4” on page 288 , “Upgrading connections to IBM MQ: considerations for upgrading from CICS TS Version 4” on page 288 .
Upgrading web services	Follow the instructions in “Upgrading JSON web services: considerations for upgrading from CICS TS Version 4” on page 289 and “Upgrading SOAP web services: considerations for upgrading from CICS TS Version 4” on page 290 .

Upgrading regions: considerations for upgrading from CICS TS Version 4

 v4.1  v4.2

In addition to the actions described in [“Upgrading CICS regions” on page 254](#), 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:

- APF-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.

Upgrading security: considerations for upgrading from CICS TS Version 4

● v4.1 ● v4.2

In addition to the actions described in [“Upgrading security” on page 264](#), you must do the following:

- For CICS TS 4.2 only, 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.

- For CICS TS V4.2 only, 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.

- 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.

- 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 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.

Upgrading file control: considerations for upgrading from CICS TS Version 4



You must do the following:

- 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.

- 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 system definition utility program (DFHCSDUP) and issue the commands **ALTER FILE**, **DEFINE FILE**, **ALTER LSRPOOL**, or **DEFINE LSRPOOL** with the LSRPOOLID attribute continue to work correctly. When compatibility mode is used, CICS uses the value in the LSRPOOLID attribute as the number of LSR pools. When compatibility mode is not used, CICS substitutes the value in LSRPOOLNUM for the value in LSRPOOLID.

Upgrading Java: considerations for upgrading from CICS TS Version 4

 v4.1  v4.2

In addition to the actions described in [“Upgrading the Java environment”](#) on page 267, 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, both the JVM server and CICS shut down.
3. Package the Java application as one or more OSGi bundles by either conversion, injection or wrapping, ready for running in the JVM server environment.

Conversion

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

Injection

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

Wrapping

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

4. Add the CICS-MainClass declaration to the project manifest. Right-click 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 v5.3 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.

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

 v4.1  v4.2

In addition to the actions described in [“Upgrading IPIC” on page 271](#), 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 [“Upgrade the CSD” on page 256](#).

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

 v4.1  v4.2

In addition to the actions described in [“Upgrading connections with IBM MQ” on page 273](#), 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.

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

● v4.1

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: considerations for upgrading from CICS TS Version 4



You must do the following:

- 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.

- 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.

- 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.

- For CICS TS 4.1 only, 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.

- For CICS TS 4.1 only, 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 Version 3

CICS TS Version 3.1 and Version 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 V3.2 here: [“Summary of changes from end-of-service releases” on page 119.](#)

Table 99. Upgrade considerations for Version 3	
Upgrade requirement	Actions
Upgrading CICS Explorer	Follow the instructions in “Upgrading CICS Explorer” on page 238.
Upgrading CICSplex SM	Follow the instructions in “Upgrading CICSplex SM” on page 239 and “Upgrading CICSplex SM: considerations for upgrading from CICS TS Version 3.1” on page 291.
Upgrading CICS regions	Follow the instructions in “Upgrading CICS regions” on page 254 and “Upgrading regions: considerations for upgrading from CICS TS Version 3” on page 292 .
Upgrading security	Follow the instructions in “Upgrading security” on page 264 and “Upgrading security: considerations for upgrading from CICS TS Version 3” on page 294.
Upgrading the Java environment	Follow the instructions in “Upgrading the Java environment” on page 267
Upgrading applications	Follow the instructions in “Upgrading applications” on page 269 and “Upgrading applications: considerations for upgrading from CICS TS Version 3.1” on page 295
Upgrading connections	Follow the instructions in “Upgrading connections” on page 270 and “Upgrading MRO: considerations for upgrading from CICS TS Version 3” on page 296 and “Upgrading connections to IBM MQ: considerations for upgrading from CICS TS Version 3” on page 296.
Upgrading web services	Follow the instructions in “Upgrading web services” on page 275 and “Upgrading SOAP web services: considerations for upgrading from CICS TS Version 3” on page 300 and “Upgrading ATOM feeds from SupportPac CA8K” on page 301.

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

● v3.1

In addition to the actions described in [“Upgrading CICSplex SM” on page 239](#), 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 V3.1. 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 5.6 , 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 Version 3.1. This module is supplied in CICSTS56.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.dfhcscd,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.

Upgrading regions: considerations for upgrading from CICS TS Version 3

v3.1 v3.2

In addition to the actions described in [“Upgrading CICS regions”](#) on page 254, 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:

- APF-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 Version 3.2, include the DFHCOMPd compatibility group in addition to the compatibility groups listed in [“CSD compatibility between different CICS releases”](#) on page 263.

Table 100. Contents of compatibility group DFHCOMPd	
Resource type	Name
TDQUEUE	CPLD CPLI

Table 100. Contents of compatibility group DFHCOMPDP (continued)	
Resource type	Name
PROGRAM	DFHPIVAL DFHSJJML IXMI33DA IXMI33D1 IXMI33IN IXMI33UC IXM4C56
TRANSACTION	CJMJ

Upgrading regions: considerations for upgrading from CICS TS Version 3

v3.1
v3.2

In addition to the actions described in [“Upgrading CICS regions”](#) on page 254, 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:

- APF-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 Version 3.2, include the DFHCOMPDP compatibility group in addition to the compatibility groups listed in [“CSD compatibility between different CICS releases”](#) on page 263.

Table 101. Contents of compatibility group DFHCOMPDP	
Resource type	Name
TDQUEUE	CPLD CPLI
PROGRAM	DFHPIVAL DFHSJJML IXMI33DA IXMI33D1 IXMI33IN IXMI33UC IXM4C56

Table 101. Contents of compatibility group DFHCOMPd (continued)

Resource type	Name
TRANSACTION	CJMJ

Upgrading security: considerations for upgrading from CICS TS Version 3

● v3.1 ● v3.2

In addition to the actions described in “Upgrading security” on page 264, 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.

Upgrading applications: considerations for upgrading from CICS TS Version 3.1

● v3.1

In addition to the actions described in “Upgrading applications” on page 269, 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.

Upgrading MRO: considerations for upgrading from CICS TS Version 3

● v3.1

In addition to the actions described in “[Upgrading MRO](#)” on page 272, 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 Version 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.

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

● v3.1 ● v3.2

In addition to the actions described in “[Upgrading connections with IBM MQ](#)” on page 273, 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 Version 6, you might also need to increase your setting for the WebSphere MQ subsystem tuning parameter CTHREAD. Before CICS TS for z/OS, Version 3.2 , CICS always took up nine of the connections specified by CTHREAD, plus one for each task initiator (CKTI). From CICS TS for z/OS, Version 3.2 , the number of connections depends on the number of CICS tasks that are using L8 TCBs to connect to WebSphere MQ. In WebSphere MQ Version 6, you can change the value of CTHREAD using the WebSphere MQ SET SYSTEM command. From WebSphere MQ Version 7, the CTHREAD parameter cannot be adjusted in WebSphere MQ.

- 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 Version 6, apply the PTF for APAR PK42616 to WebSphere MQ to police the use of the correct adapter. This PTF is not required if you are using WebSphere MQ Version 7.
- If you do not share your CSD with earlier releases of CICS , you can remove the existing groups CSQCAT1 and CSQCKB, which contain CSQCxxx definitions, from your CSD.
- If you do share your CSD with earlier CICS releases, ensure that CSQCAT1 and CSQCKB are not installed for CICS TS Version 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 Version 7 of WebSphere MQ.
 - CSQCCOPEN, CSQCCLOS, CSQCGET, CSQCPUT1, and CSQCINQ are shipped unchanged, and are all entry points into DFHMQSTB, which is loaded from SDFHLOAD.
 - There are two new transient data queues, CMQM and CKQQ, both defined in group DFHDCTG. CMQM logs all CICS-WebSphere MQ messages issued by the CICS-WebSphere MQ adapter, trigger monitor and bridge. CKQQ logs all messages relating to CICS-WebSphere MQ connection and disconnection.
 - WebSphere MQ statistics can now be reset during the life of a CICS execution. This means that when you use the **CKQC DISPLAY** commands, you see only active CICS-WebSphere MQ threads, so numbers can go down or reduce to zero.
- 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
Initqname   ==> CICS01.INITQ
```

Yes | No

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).

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

v3.1 v3.2

In addition to the actions described in [“Upgrading SOAP web services”](#) on page 276, 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 5.6 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 zEnterprise® 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.

Upgrading ATOM feeds from SupportPac CA8K

v3.1 v3.2

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 5.6 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 5.6 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.

Table 102. Reusing CA8K SupportPac resources	
SupportPac CA8K resource	CICS TS for z/OS, Version 5.6 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
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

Table 102. Reusing CA8K SupportPac resources (continued)

SupportPac CA8K resource	CICS TS for z/OS, Version 5.6 usage
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 DFHATOMPARMS.
 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 DFHATOMPARMS 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 [DFHATOMPARMS 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 DFHATOMPARMS container, and there are also some new bit values in **ATMP_OPTIONS**.

5. Replace the references to the copybooks that contained the constant definitions that are referenced by the copybooks for the ATOMPARAMETERS 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

6. 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.

7. 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.

1. Change USAGE(PIPELINE) to USAGE(ATOM).
2. 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 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
<div>All Versions</div>	Decide which features to apply from the list in “CICS continuous delivery features” on page 307 .

Your current CICS version	Action
 v5.4	If any of the features are managed by feature toggles, decide which ones to enable. See Specifying feature toggles .

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 307](#)
 - [CICS Liberty features](#)
 - [Other features](#)
- [Fixes for WebSphere Application Server Liberty](#)
- [“Features for CICS web services” on page 311](#)
- [“Features for CICS policies” on page 312](#)
- [“Features for CICS security” on page 312](#)
- [“All other continuous delivery features” on page 313](#)

Learn more about the features

To learn more about any of the continuous delivery features, see [What's New](#) in the CICS TS Knowledge Center that is applicable to 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 103 on page 307 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 103. Continuous delivery for Liberty features, by release of CICS Transaction Server for z/OS						
CICS Liberty feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
cicsts:standard-1.0			PI58375	BASE	BASE	BASE
cicsts:link-1.0			PI63005	BASE	BASE	BASE
batch-1.0						
batchManagement-1.0						
javaMail-1.5						
webProfile-7.0			PI63877	BASE	BASE	BASE
websocket-1.0						
websocket-1.1						

Table 103. Continuous delivery for Liberty features, by release of CICS Transaction Server for z/OS (continued)						
CICS Liberty feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
jms-1.1 jmsMdb-3.1 mdb-3.1 mdb-3.2 wasJmsClient-1.1 wasJmsClient-2.0 wasJmsServer-1.0 wasJmsSecurity-1.0 wmqJmsClient-2.0			PI67639	BASE	BASE	BASE
appClientSupport-1.0 ejb-3.2 (including ejbRemote-3.2)			PI77502	BASE	BASE	BASE
jwt-1.0 oauth-2.0 openidConnectClient-1.0 openidConnectServer-1.0			PI91554	PI91554	BASE	BASE
microProfile-1.0			BASE	BASE	BASE	BASE
microProfile-1.2 mpConfig-1.1 mpFaultTolerance-1.0 mpHealth-1.0 mpJwt-1.0 mpMetrics-1.0				PI91554	BASE	BASE
adminCenter-1.0					PH08321	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
springboot-1.5 spring boot-2.0					BASE	BASE

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

- [V5.6](#)
- [V5.4](#)
- [V5.3](#)
- [V5.2](#)
- [V5.1](#)

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Other features

Table 104. Other continuous delivery features for Java, OSGi, and Liberty, by release of CICS Transaction Server for z/OS						
Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
Support for IBM SDK, Java Technology Edition Version 8	PI52819 PI87181 PI87695	PI52819 PI87181 PI87695	PI87181 PI87695	PI87181 PI87695	BASE	BASE
Eligibility enhancements reducing the cost of transactions Tasks that run as Liberty threads no longer switch to the QR TCB when the transaction environment is built or destroyed, improving the proportion of processing carried out on a specialty engine.			PI54263	BASE	BASE	BASE
Support for Java EE 7 Full Platform in standard-mode Liberty This enhancement adds the new <i>standard-mode</i> of operation to the Liberty JVM server. The standard-mode of Liberty JVM server supports all features of the certified Java EE 7 Full Platform in Liberty.			PI58375	BASE	BASE	BASE
Enable CICS programs to invoke a Java EE application Using the new <code>cicsts:link-1.0</code> feature, a CICS program is able to invoke a Java EE application that is running in a Liberty JVM server. You can invoke a Java EE application as the initial program of a CICS transaction, or by using the EXEC CICS LINK command or EXEC CICS START command from any CICS program.			PI63005	BASE	BASE	BASE
Support for IBM MQ for z/OS V9.0.1 resource adapter as a JMS provider in a Liberty server	PI67639	PI67639	PI67640	BASE	BASE	BASE
Support for Java EE 7 Web Profile in integrated-mode Liberty The Java EE 7 Web Profile provides the latest, standards-based features for hosting modern web applications. This enhancement introduces support for JPA with Db2 JDBC type 2.			PI63877	BASE	BASE	BASE
Support for Java EE 7 Full Platform in integrated-mode Liberty in CICS Improved support for JVMSERVER DISABLE(PURGE, FORCEPURGE, KILL) This enhancement provides support for a more standard configuration for Db2 type 2 connectivity using the <code>jdbc-4.0</code> or <code>jdbc-4.1</code> feature and the Liberty <code>dataSource</code> . In addition, it introduces a new, more comprehensive and robust mechanism for handling RUNAWAY tasks in a JVMSERVER.			PI77502	BASE	BASE	BASE
Fix to DISABLE JVMSERVER PURGETYPE(KILL) CICS has been updated so that tasks executing in a JVM server at the time it is killed will be recovered to the QR TCB, and will then abend. The JVMSERVER resource will not reach the DISABLED state until all the affected tasks abend and the count of tasks remaining in the JVM server has reached zero.			PI82073	PI82073	BASE	BASE
Support for multiple secure Liberty servers within a single CICS region The JVM server option <code>WLP_ZOS_PLATFORM={TRUE FALSE}</code> is no longer needed to allow more than one Liberty JVM server to be started in the same region. Multiple Liberty JVM servers can connect to a single angel process within individual regions.				PI98174	BASE	BASE
Remove DPL subset restriction for Link to Liberty applications			PI98229	PI98229	BASE	BASE
New JVM server profile option <code>com.ibm.cics.jvmserver.trace.specification</code> to filter package and class trace from the JVM server				PH11496	PH11496	BASE

Table 104. Other continuous delivery features for Java, OSGi, and Liberty, by release of CICS Transaction Server for z/OS (continued)						
Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
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
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
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

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Fixes for WebSphere Application Server Liberty

Table 105 on page 310 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 103 on page 307](#).

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 105. Fixes for WebSphere Application Server Liberty, by release of CICS Transaction Server for z/OS						
IBM WebSphere Liberty fix pack version	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
8.5.5.8	PI54207	PI54207	PI54208	BASE	BASE	BASE
8.5.5.9	PI58556	PI58556	PI58557	BASE	BASE	BASE
16.0.0.2	PI64748	PI64748	PI64749	BASE	BASE	BASE
16.0.0.3	PI67639	PI67639	PI67640	BASE	BASE	BASE
16.0.0.4	PI73477	PI73477	PI73477	BASE	BASE	BASE
17.0.0.1	PI75754	PI75754	PI75754	BASE	BASE	BASE
17.0.0.2	PI81288	PI81288	PI81288	PI81288	BASE	BASE
17.0.0.3	PI86079	PI86079	PI86079	PI86079	BASE	BASE
17.0.0.4	PI91554	PI91554	PI91554	PI91554	BASE	BASE
18.0.0.1	PI94353	PI94353	PI94353	PI94353	BASE	BASE
18.0.0.2	PI99650	PI99650	PI99650	PI99650	BASE	BASE
18.0.0.3	PH05401	PH05401	PH05401	PH05401	PH05401	BASE
18.0.0.4	PH07871	PH07871	PH07871	PH07871	PH07871	BASE
19.0.0.3	PH09600	PH09600	PH09600	PH09600	PH09600	BASE
19.0.0.6	PH13560	PH13560	PH13560	PH13560	PH13560	BASE
19.0.0.9	PH16415	PH16415	PH16415	PH16415	PH16415	BASE
19.0.0.12	PH19704	PH19704	PH19704	PH19704	PH19704	BASE
20.0.0.3	PH21613	PH21613	PH21613	PH21613	PH21613	BASE

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Features for CICS web services

Table 106. Continuous delivery features for CICS web services, by release of CICS Transaction Server for z/OS						
Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
New EXEC CICS TRANSFORM commands for the conversion between JSON data and a language structure <ul style="list-style-type: none"> • TRANSFORM DATATOJSON: converts application data to JSON. • TRANSFORM JSONTODATA: converts JSON to application data. 			PI54841	BASE	BASE	BASE
Non-Java support for JSON web services JSON messages can now be processed in CICS regions with no Java configuration. You don't have to configure and install a JVM server. Performance and throughput for many workloads will be better than when using a JVM server to process JSON messages.			PI56897	BASE	BASE	BASE
Support for z/OS Connect Enterprise Edition 2.0		PI59303	PI59304	BASE	BASE	BASE
Improved deployment of z/OS Connect Enterprise Edition		PI64509	PI64510	BASE	BASE	BASE
Support for mapping level 4.1 Mapping level 4.1 implements improved mappings for simple arrays generated bottom-up from existing copybooks. It also adds the ability for CICS to auto-detect uninitialized trailing storage in arrays, and to omit those records from the generated XML/JSON form.		PI67641	PI67641	BASE	BASE	BASE
New DATA-SCREENING option in the CICS Web Services assistants to handle values in application-supplied runtime data that are inconsistent with the language structure		PI74752	PI74752	BASE	BASE	BASE
DFHJS2LS enhanced to support pointers within a JSON schema			PI76081	BASE	BASE	BASE
Support for the z/OS Connect Enterprise Edition V3 CICS Service Provider			PI78678	BASE	BASE	BASE
DFHJS2LS enhanced with new parameter DEFAULT-ARRAY-MAXITEMS to support processing of JSON with an array as its root element			PI78732	BASE	BASE	BASE
DFHJS2LS enhanced to support JSON Enums				PI84652	BASE	BASE
Support for mapping level 4.2 Mapping level 4.2 is primarily for use with DFHJS2LS. It implements support for Additional Properties in JSON, and introduces the following three parameters to DFHJS2LS: ADDITIONAL-PROPERTIES-DEFAULT, ADDITIONAL-PROPERTIES-MAX, and ADDITIONAL-PROPERTIES-SIZE.				PI86039	BASE	BASE
Support for mapping level 4.3 Mapping level 4.3 implements support for multidimensional arrays in JSON.				PI88519	BASE	BASE
Support for HTTP OPTIONS handler program				PH16992	PH16992	BASE

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Features for CICS policies

Table 107. Continuous delivery features for CICS policies, by release of CICS Transaction Server for z/OS						
Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
Support for system rules in CICS policies To monitor the state of system resources or the overall health of a CICS system, you can define system rules in CICS policies. System rules define an automated action to be performed, such as issue a message or emit a CICS event, when something of interest happens in a CICS system, such as a resource state change, a threshold that is crossed, or an unusual system state or action. System rules provide equivalent function to system events, which are now deprecated.	PI83667	PI83667	PI83667	BASE	BASE	BASE
Support for static data capture items and event names for policy events If you use IBM CICS Explorer for Aqua V3.1 ² (Fix Pack 5.4.0.6) or later, you can now define items of static data to be emitted with policy events and specify a user-defined name for the event.	PI88500	PI88500	PI88500	PI88500	BASE	BASE
System rules: Bundle available status Bundle enable status IPIC connection status MRO connection status Program enable status You must use CICS Explorer for Aqua V3.1 (Fix Pack 5.4.0.11) or later to define these system rules.				PI92806	BASE	BASE
System rules: DBCTL connection status IBM MQ connection status Pipeline enable status You must use CICS Explorer for Aqua V3.2 (Fix Pack 5.5.0.3) or later to define these system rules.					PH07632	BASE

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Features for CICS security

Table 108. Continuous delivery features for CICS security, by release of CICS Transaction Server for z/OS						
Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
VERIFY TOKEN enhanced with new options OUTTOKEN and OUTTOKENLEN to support Kerberos mutual authentication			PI56774	BASE	BASE	BASE
Support for IBM Health Checker for z/OS IBM Health Checker for z/OS provides a foundation to help simplify and automate the identification of potential configuration problems. CICS TS now supports three health checker rules that define best practice for CICS TS security. If a CICS region becomes non-compliant with these security best practices, a warning message is issued so that you can take corrective actions.	PI76965	PI76965	PI76965	BASE	BASE	BASE
Multi-Factor Authentication support for CMCI and CICS Explorer Security and data protection regulations, such as Payment Card Industry (PCI) Data Security Standard (DSS) 3.2 and the European Union's General Data Protection Regulation (GDPR), require higher levels of user authentication for some or all users. CICS TS now supports CICS Explorer sign-in with Multi-Factor Authentication for enhanced CICS Explorer sign-on security.				PI87691 PI92676	BASE	BASE

² Aqua refers to IBM Explorer for z/OS Aqua.

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All other continuous delivery features

Table 109. All other continuous delivery features, by release of CICS Transaction Server for z/OS						
Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
Improvement to the BMS 3270 data stream validation for SEND MAP and RECEIVE MAP for checking overwritten protected fields by a 3270 emulator, to prevent unnecessary issuing of message DFHTF0200	PI51499 and PI55048	PI51499 and PI55048	PI54386	BASE	BASE	BASE
New user replaceable module for BMS, DFHBMSX DFHBMSX (3270 datastream validation program) is called to enable 3270 data stream validation at CICS initialization. It is also called when a 3270 data stream validation error is detected when BMS RECEIVE MAP commands are issued.	PI51499	PI51499	PI54386	BASE	BASE	BASE
Decision Server Insights Event format The Decision Server Insights Event format is an XML representation of a CICS event that is recognized by the Decision Server Insights component of IBM Operational Decision Manager. This format can also be used by any consumer that can recognize the Decision Server Insights Event format.	PI55133	PI55133	PI55134	BASE	BASE	BASE
Serviceability updates to DFHDPLOY utility for deploying and undeploying CICS application resources	PI56706	PI56706	PI56708	BASE	BASE	BASE
CICS ERTLI support for vector registers			PI59322	BASE	BASE	BASE
System autoinstall of program definitions for Language Environment CICS now uses system autoinstall to install program definitions for Language Environment as required, removing the need to maintain definitions in the CEE CSD group. Only those programs that are used have their definitions installed.	PI60388 and PI73184	PI60388 and PI73184	PI60389	BASE	BASE	BASE
Support for new deployment tasks in DFHDPLOY DFHDPLOY is enhanced to perform PIPELINE SCAN, PROGRAM NEWCOPY, and PROGRAM PHASEIN. This enables automation to be written to update these resources without requiring the direct use of the CICSplex SM API.	PI72104	PI72104	PI72104	BASE	BASE	BASE
Support for &APPLID in the MONDATA attribute of the MQMONITORS				PI84916	BASE	BASE
ACEE reduction with new system initialization parameter SNPRESET SNPRESET allows userid terminals that are associated with the same user ID to share a single access control environment element (ACEE). You can save storage by specifying SNPRESET=SHARED.			PI85452	BASE	BASE	BASE
CICS standalone translator for COBOL supports Computational 5			PI88564	PI88564	BASE	BASE
Enhanced use of the region's z/OS WLM health value in CICSplex SM workload routing decisions The z/OS WLM health value of a region is now a more effective factor in CICSplex SM workload routing decisions. When determining the target region to route workload to, CICSplex SM workload management assigns additional weights in the routing algorithm based on the actual health value of each region. With this enhancement to CICSplex SM workload routing, you can have better control of flow of work into regions that are in warm-up or cool-down.				PI90147	BASE	BASE

Table 109. All other continuous delivery features, by release of CICS Transaction Server for z/OS (continued)

Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
<p>VSAM dynamic buffer addition disabled for CICS LSR pools</p> <p>From z/OS V2.2, VSAM provides a dynamic buffer addition capability that allows for the addition of extra buffers for an LSR pool if no buffer is available for a given VSAM request. For CICS, it is preferable to retry the request rather than allow uncontrolled expansion of an LSR pool, so dynamic buffer addition is not enabled for CICS LSR pools.</p>	PI92486	PI92486	PI92486	PI92486	BASE	BASE
<p>Enhancement to tie-up record production for replication logging</p> <p>A new system transaction, called CFCT, and its associated program, DFHFCLJ1, are supplied to provide tie-up records for VSAM files (including non-recoverable VSAM files) to a replication log at specified intervals. You enable this capability by setting the INITPARM system initialization parameter.</p>			PI97207	PI97207	BASE	BASE
<p>Improved management of Db2 threads used by CICS tasks subject to purge or forcepurge requests</p> <p>The SET TASK command has been enhanced such that CICS processing of task purge or forcepurge requests will attempt to cancel active Db2 threads used by CICS tasks that are being purged or forcepurged. This enhancement ensures that the purge does not cause problems for Db2 and that the Db2 updates are safely backed out.</p>	PI98569	PI98569	PI98569	PI98569	BASE	BASE
<p>REXX for CICS enhancements</p> <p>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.</p>	OA56111 , OA56806 , and OA56807 .	OA56111 , OA56806 , and OA56807 .	OA56111 , OA56806 , and OA56807 .	OA56111 , OA56806 , and OA56807 .	OA56111 , OA56806 , and OA56807 .	BASE
<p>New replication log record</p> <p>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.</p>		PH09381	PH09381	PH09381	PH09381	BASE
<p>New feature toggle <code>com.ibm.cics.rls.delete.ridfld</code> to help you with RLS migration</p> <p>When this feature is enabled, you can issue a DELETE command with the RIDFLD option for a single record without causing AFCG abends.</p>				PH07596	PH07596	BASE
Support for IBM SDK for Node.js - z/OS, V12.0					PH18618	BASE
<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	PH20063	PH20063	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	PH16392	BASE

Table 109. All other continuous delivery features, by release of CICS Transaction Server for z/OS (continued)

Feature	V5.1	V5.2	V5.3	V5.4	V5.5	V5.6
<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	PH22136	BASE

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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 V5.4:
 - 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 V5.4, 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.)

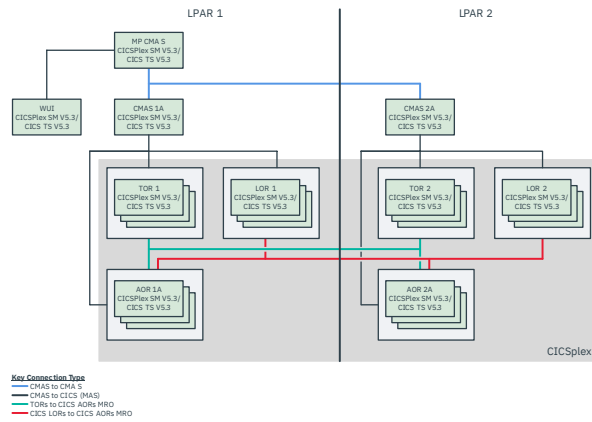
In outline, the scenario has these steps:

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 V5.3, 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 V5.3. 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 V5.3. 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 239](#) 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.

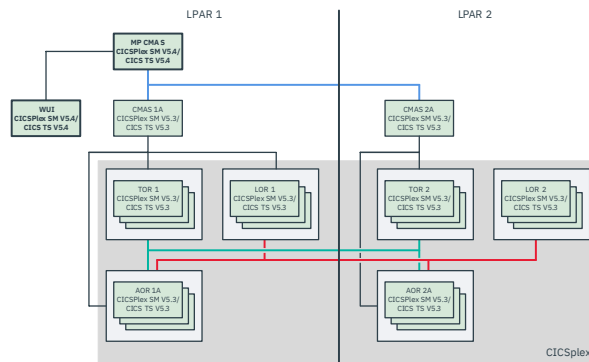
Upgrade the first LPAR

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 V5.3 CMASs have reconnected to the upgraded CICS TS V5.4 MP CMAS.
 - Check that the CICS Explorer and WUI server are correctly showing the active CICS TS V5.3 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

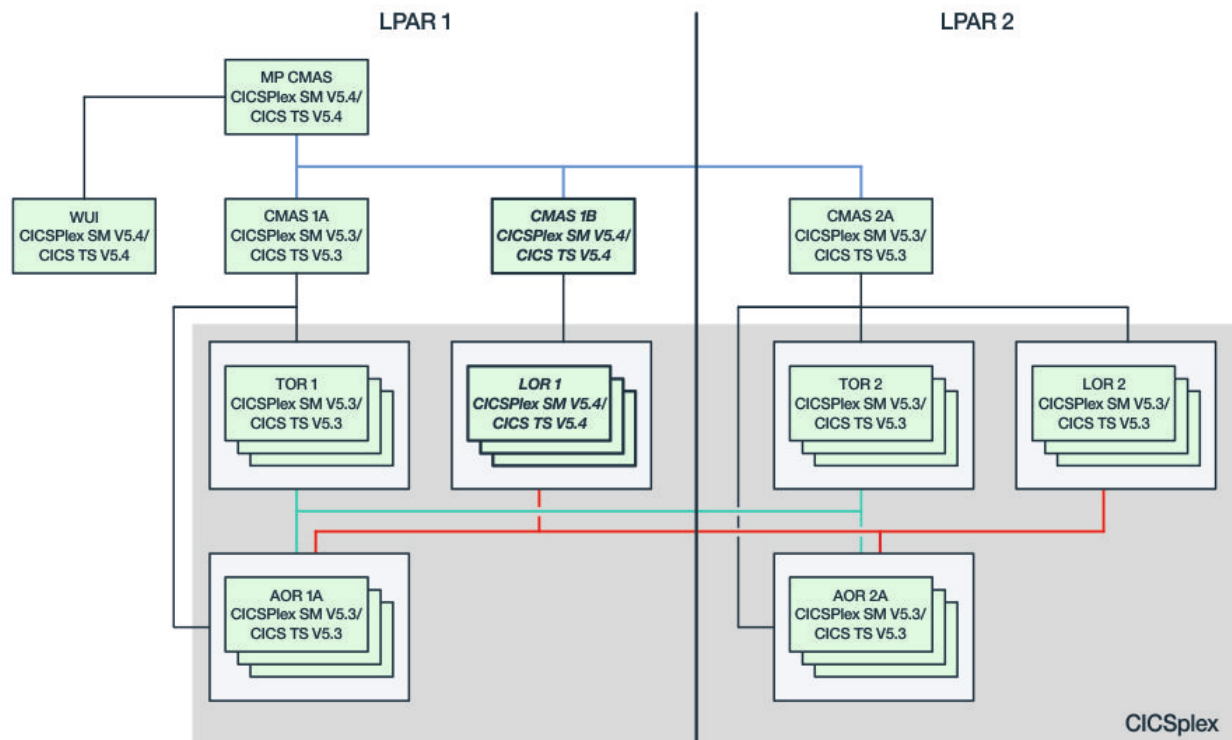
The steps in this section are required only for the example of providing Java application developers with access to the most up-to-date Liberty features, while leaving the rest of the environment at the existing release of CICS TS.

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.



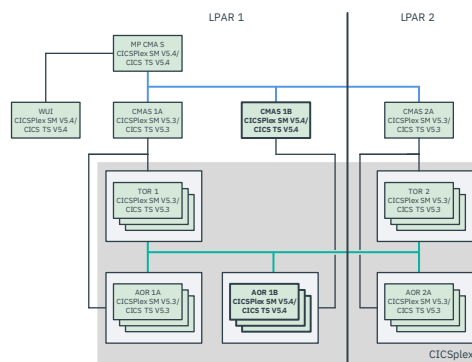
Introduce new application-owning regions on LPAR 1

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 V5.4, 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 V5.4 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 V5.4 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.

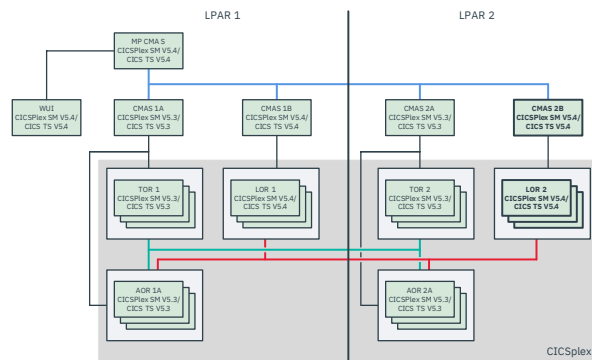
Upgrade the Liberty-owning regions on LPAR 2

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 V5.4 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 V5.4.0 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.



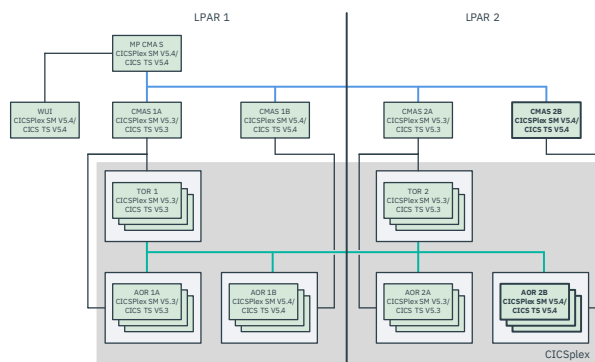
Introduce new application-owning regions on LPAR 2

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 V5.4, 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 V5.4 data sets, license, and UNIX System Services (USS).
 - d. Change the EYUPARMs to reference the CMASYSID 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 V5.4 AORs.

The diagram shows the resulting configuration on LPAR 2.

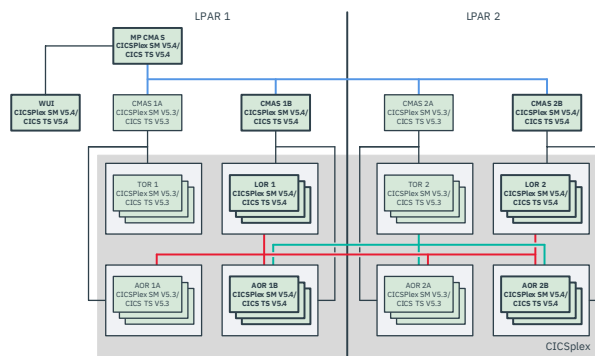
AORs at the latest release level are active in LPAR 2.



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 V5.3. Other regions are running CICS TS for z/OS V5.4. 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

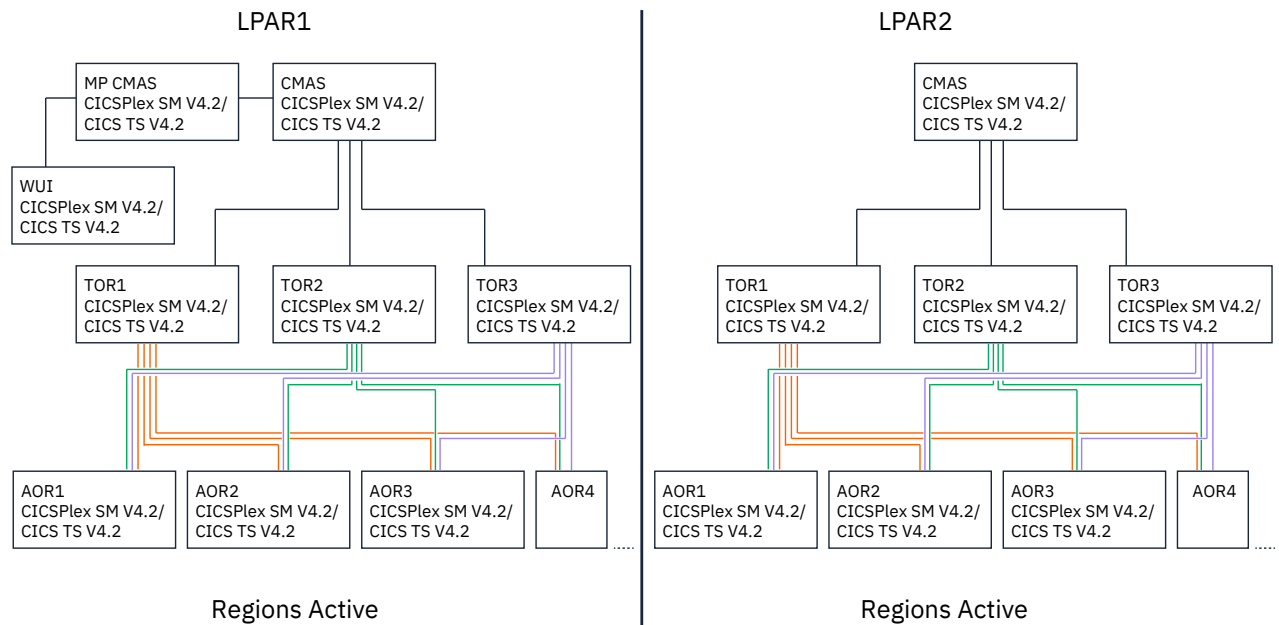


Figure 3. Initial configuration

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 V4.2. 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 V4.2. 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 in the IBM Knowledge Center](#). 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.

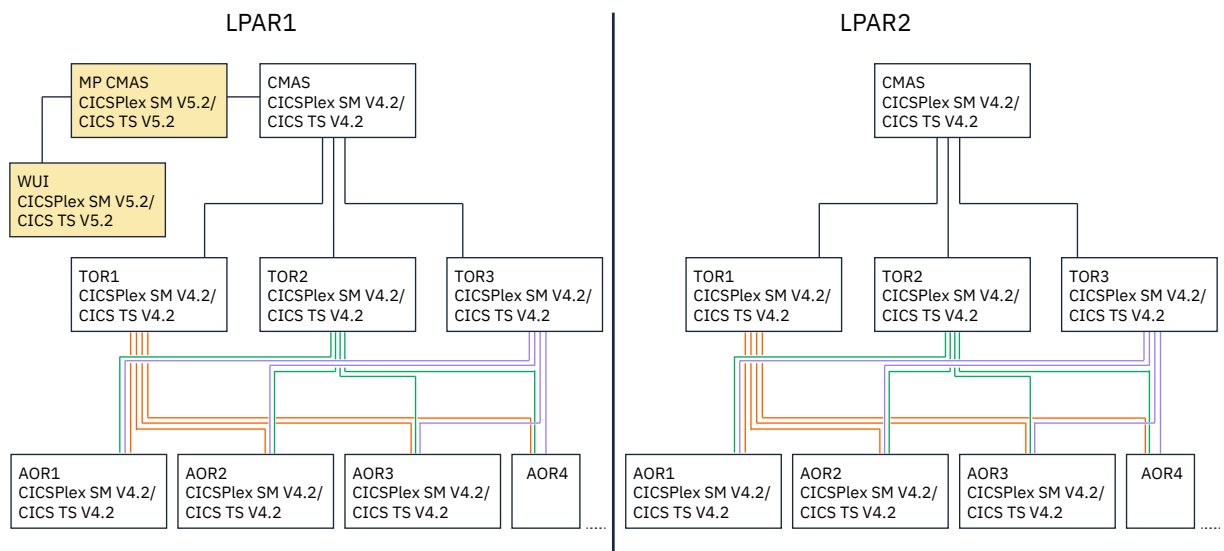


Figure 4. The outcome of the procedure so far: the CMAS and WUI are upgraded.

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](#) in the IBM Knowledge Center.
- 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.

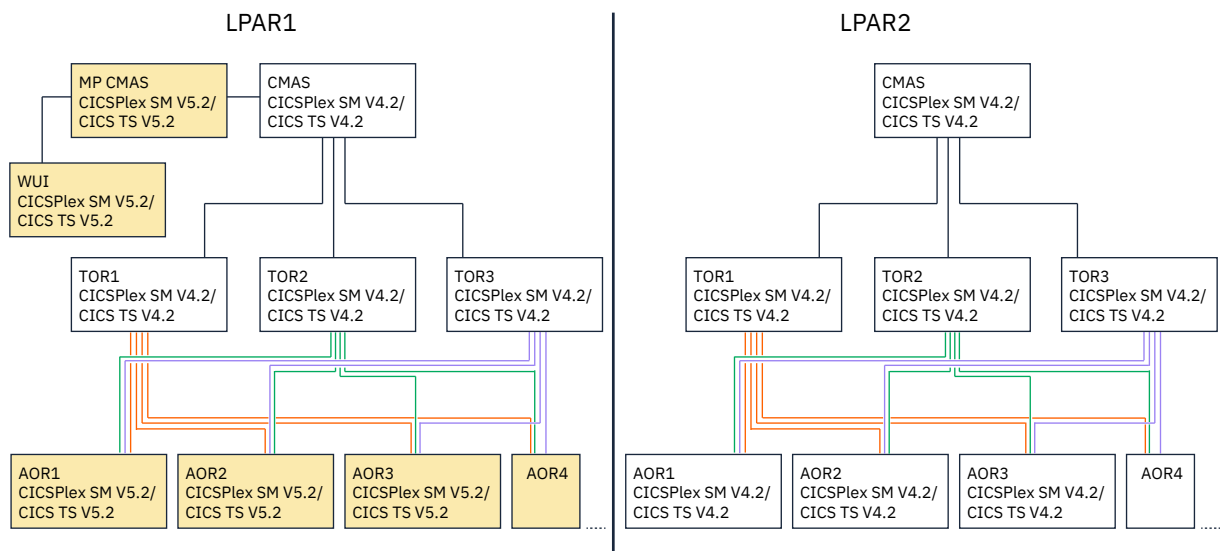


Figure 5. The outcome of the previous step: the AORs are upgraded.

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](#) in the IBM Knowledge Center.
- 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.

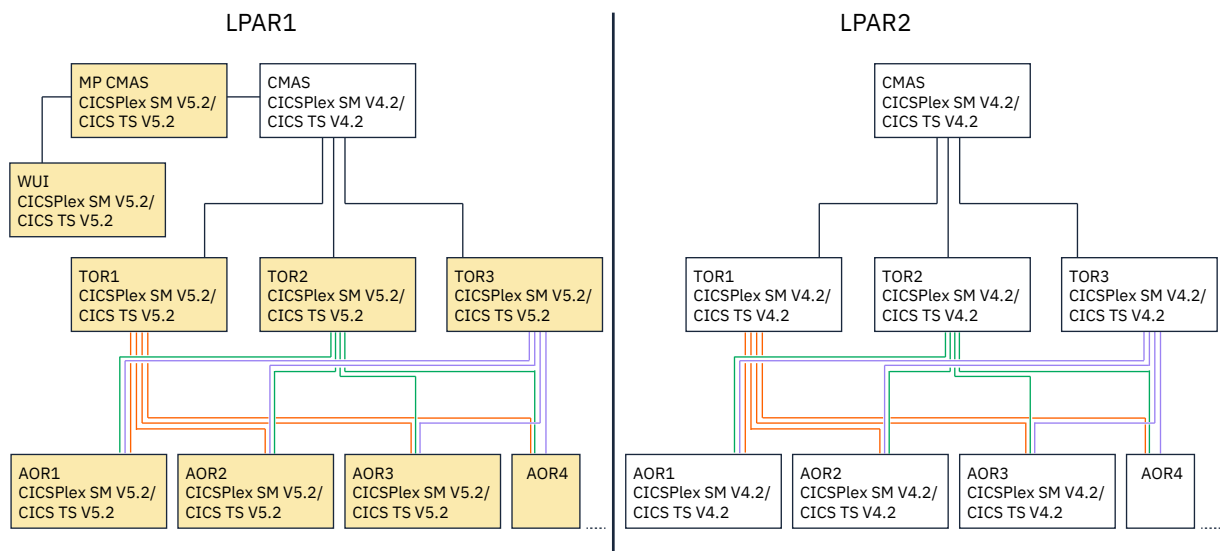


Figure 6. The outcome of the previous step: the TORs are upgraded.

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.

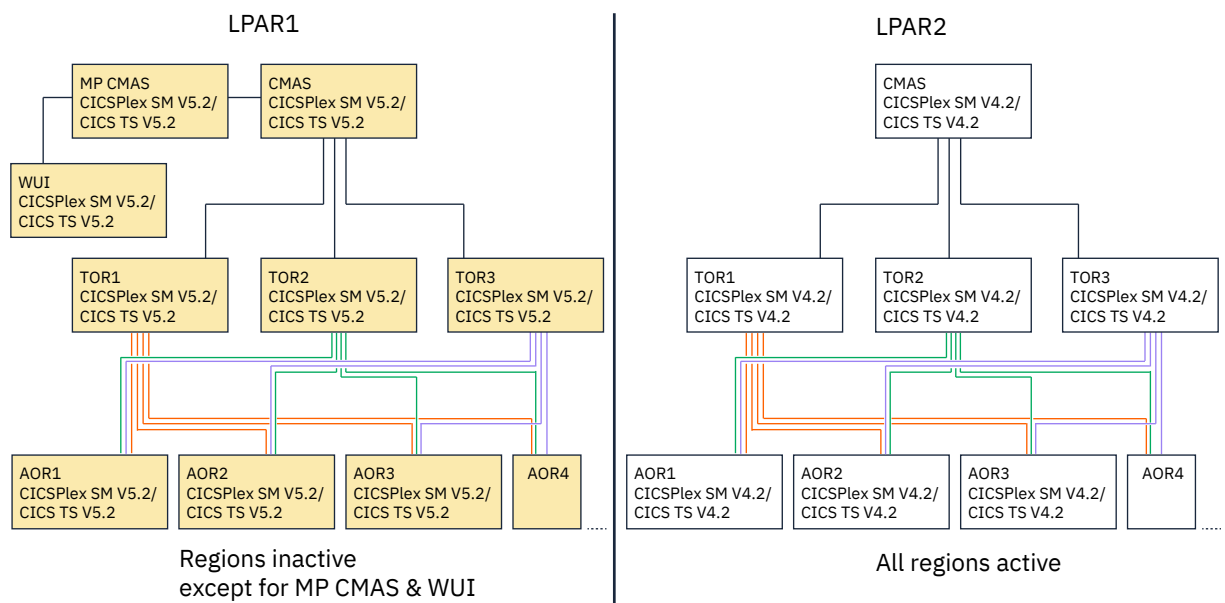


Figure 7. The outcome of the previous step: all elements are upgraded in LPAR 1 but not yet all started.

10. Restart the remaining CMAS. For details, see [Restarting a CMAS](#) in the IBM Knowledge Center.
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.

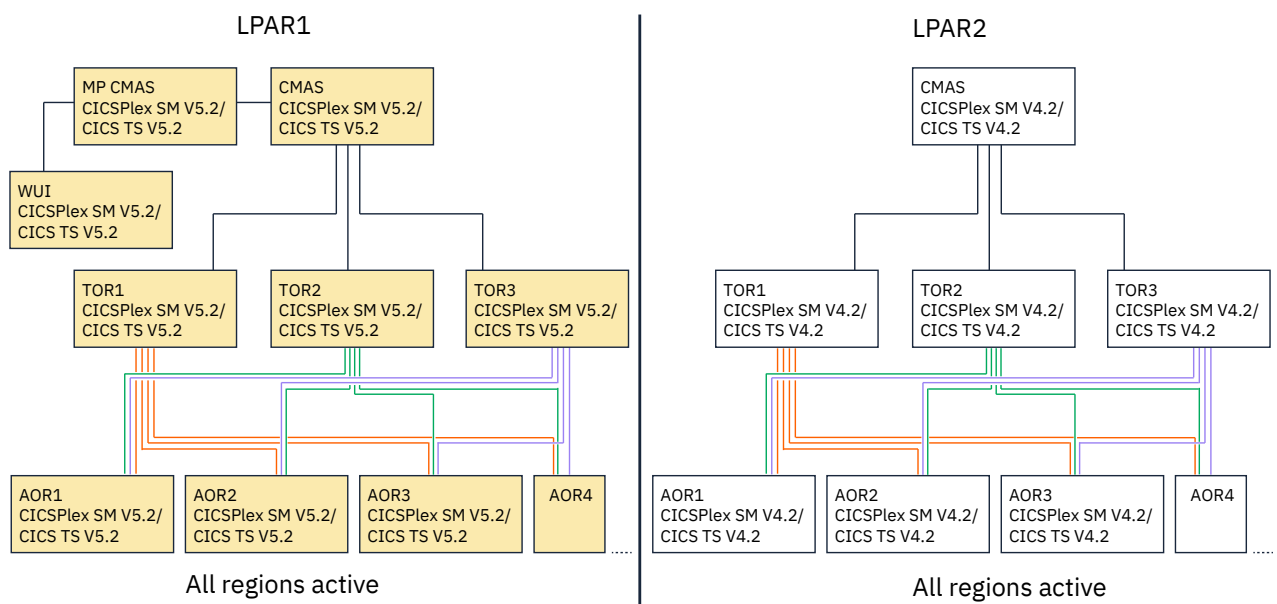


Figure 8. Upgrade is complete on LPAR 1

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](#) in the IBM Knowledge Center.
 - 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](#) in the IBM Knowledge Center.
 - 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.

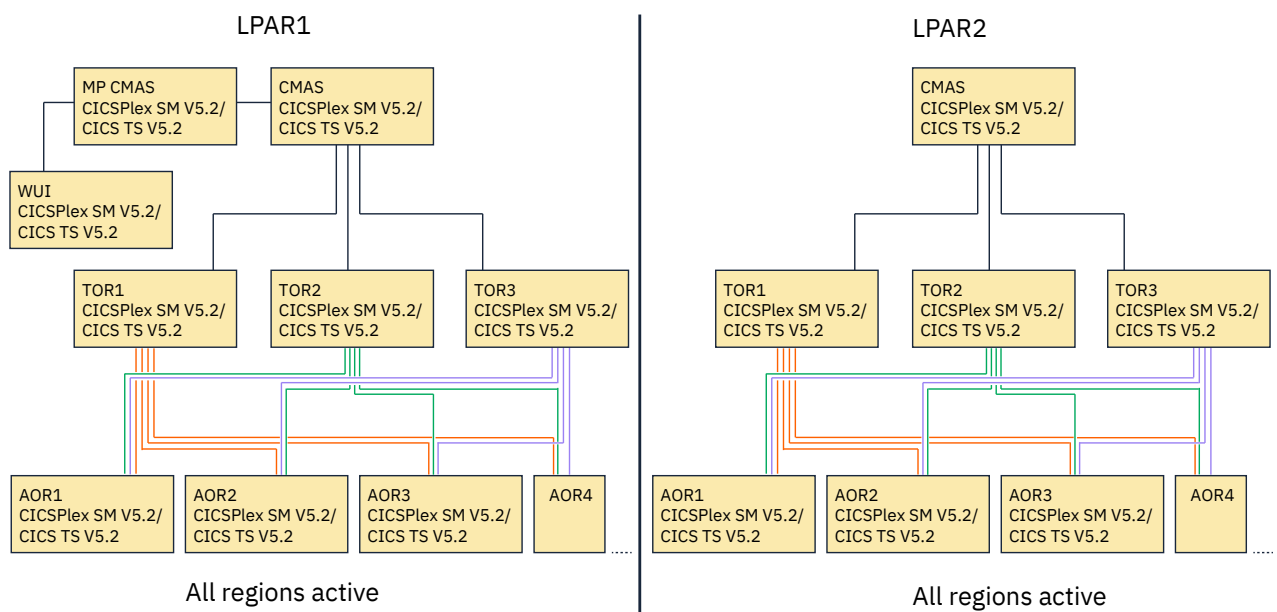


Figure 9. The upgrade is complete across both LPARs.

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- [Developing applications](#)
- [Developing system programs](#)
- [CICS TS security](#)
- [Developing for external interfaces](#)
- [Application development reference](#)
- [Reference: system programming](#)
- [Reference: connectivity](#)

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- [Troubleshooting and support](#)
- [CICS TS diagnostics reference](#)

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- C++ OO Class Libraries
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- Installation Guide
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- CICSplex SM Managing Resource Usage
- CICSplex SM Application Programming Guide and Application Programming Reference
- Java Applications in CICS

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