

CICS Transaction Server for z/OS
Version 5 Release 3



Upgrading to CICS TS Version 5.3

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Version 5 Release 3



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Note

Before using this information and the product it supports, read the information in “Notices” on page 197.

This edition applies to the IBM CICS Transaction Server for z/OS Version 5 Release 3 (product number 5655-Y04) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

Preface	v	Chapter 18. Changes to messages and codes	79
What this book is about	v	Chapter 19. Changes to samples	97
Who this book is for.	v	Chapter 20. Changes to CICSplex SM	101
Part 1. Planning to upgrade	1	Part 3. Upgrading to the new release.	109
Part 2. Changes between releases ..	7	Chapter 21. Upgrading from CICS TS Developer Trial	111
Chapter 1. Changes to installing.	11	Chapter 22. Upgrading CICSplex SM	113
Chapter 2. Changes to CICS API.	13	Chapter 23. Upgrading CICS regions	129
Chapter 3. Changes to the JCICS API	19	CSD compatibility between different CICS releases	133
Chapter 4. Changes to compiler support	21	Chapter 24. Upgrading file control ..	139
Chapter 5. Changes to SIT parameters	23	Chapter 25. Upgrading CICS Explorer	141
Chapter 6. Changes to JVM profiles ..	27	Chapter 26. Upgrading the Java environment	143
Chapter 7. Changes to resource definitions	31	Chapter 27. Upgrading applications	151
Chapter 8. Changes to control tables	37	Chapter 28. Upgrading applications, platforms, and bundles	155
Chapter 9. Changes to CICS SPI.	39	Chapter 29. Connections	159
Chapter 10. Changes to CICS-supplied transactions	51	Upgrading IPIC	159
Chapter 11. Changes to CEMT.	53	Upgrading MRO	161
Chapter 12. Changes to CICS monitoring	59	Upgrading connections with WebSphere MQ	163
Chapter 13. Changes to CICS statistics	65	Chapter 30. Upgrading web services	171
Chapter 14. Changes to the CICS utilities.	67	Upgrading JSON web services.	171
Chapter 15. Changes to global user exits and task-related user exits.	69	Upgrading SOAP web services	172
Chapter 16. Changes to CICS XPI	73	Upgrading ATOM feeds from SupportPac CA8K	176
Chapter 17. Changes to CICS user-replaceable programs	77	Chapter 31. Upgrading security.	181
		Part 4. Explore upgrade scenarios	187
		Chapter 32. Upgrading CICS with a running workload	189
		Part 5. Appendixes	195

Notices	197
Trademarks	199

Accessibility.	201
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Preface

What this book is about

This book is about upgrading to the new version of CICS® Transaction Server for z/OS® from an earlier version. The book:

- 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.

The book 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.

Who this book is for

This book is primarily aimed at application programmers and system programmers who need to understand the scope and impact of the new release of CICS Transaction Server for z/OS.

Part 1. Planning to upgrade

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

You need to:

- Make sure that all the right people are involved in the plan
- Understand the drivers to upgrade, and the constraints on change, for your environment, and building 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.

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.

Actions

Your current version	Action	Mandatory or optional?
ALL VERSIONS	Clarify the drivers for upgrade	Optional, but recommended
ALL VERSIONS	Consider the timing	Optional, but recommended
ALL VERSIONS	Build your upgrade project team	Optional, but recommended
ALL VERSIONS	Choose your edition of CICS TS for z/OS	Optional, but recommended
ALL VERSIONS	Check hardware and software prerequisites	Optional, but recommended
ALL VERSIONS	Check compatibility with other IBM products	Optional, but recommended
ALL VERSIONS	Check compatibility with vendor products	Optional, but recommended
ALL VERSIONS	Review your applications	Optional, but recommended
ALL VERSIONS	Review your CICS regions	Optional, but recommended
ALL VERSIONS	Review your vendor products	Optional, but recommended
ALL VERSIONS	Review the service level of CICS TS for z/OS	Optional, but recommended
ALL VERSIONS	Review the changes in CICS TS for z/OS	Optional, but recommended

Your current version	Action	Mandatory or optional?
<small>ALL VERSIONS</small>	Develop your upgrade strategy	Optional. but recommended

ALL VERSIONS

Clarify the drivers for upgrade

Clarify what is driving the upgrade of CICS. Is it to keep current? Is it a desire to use a new capability? Is it a requirement so that you can meet regulatory constraints? Is it part of a bigger upgrade strategy? Your reason affects both your choice of CICS release, and when and how you upgrade.

[Back to top](#)

ALL VERSIONS

Consider the timing

When you think about the schedule for upgrade, factor in your deadlines and key business dates, and any windows of change for the business infrastructure. Consider whether your schedule allows for single licensing or whether a period of dual-licensing is necessary.

[Back to top](#)

ALL VERSIONS

Build your upgrade project team

Upgrading is a collective effort. You need to make sure that the key stakeholders are ready to support the project. Gather a team that includes:

- 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.

[Back to top](#)

ALL VERSIONS

Choose your edition of CICS TS for z/OS

Version 5 of CICS Transaction Server for z/OS introduced two more editions: Developer Trial to allow for a limited trial and Value Unit Edition for running specific workloads under 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 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

This runs on a qualified z Systems New Application License Charge (zNALC) LPAR. 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.

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

[Back to top](#)

[ALL VERSIONS](#)

Check hardware and software prerequisites

You can check the requirements for your target release of CICS TS at Detailed system requirements. 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.

[Back to top](#)

[ALL VERSIONS](#)

Check compatibility with other IBM products

You can create reports of the support that is provided by a product, or combinations of products at [Related products](#).

[Back to top](#)

[ALL VERSIONS](#)

Check compatibility with vendor products

When you assess a product for its compatibility with your target release, it typically falls into one of three 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 CICS release from CICS TS 4.1 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.

Always check with your vendor for definitive information on compatibility.

[Back to top](#)

[ALL VERSIONS](#)

Review your applications

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

- 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

[Back to top](#)

ALL VERSIONS

Review your CICS regions

You need to know what is running in each of your current CICS regions. Make sure to include in your check all regions, even the regions that haven't been started for some time. CICS Interdependency Analyzer can be used 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 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.

[Back to top](#)

ALL VERSIONS

Review your vendor products

You need information about the vendor products in your current environment.

- Check z/OS vendor compatibility information on Vendor support for z/OS.
- Check CICS vendor compatibility information.
- In addition, make the following checks:
 - The current version of vendor product supports 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

[Back to top](#)

ALL VERSIONS

Review the service level of CICS TS for z/OS

Organizations that are up-to-date with service typically encounter fewer problems during the upgrade process. Gather information about the service levels in your current environment.

[Back to top](#)

ALL VERSIONS

Review the changes in CICS TS for z/OS

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

[Back to top](#)

ALL VERSIONS

Develop your upgrade strategy

You need to consider whether you plan to upgrade all regions at the same time, or phase your upgrade. We assume that minimum downtime is your goal, but there are various ways to approach the upgrade with this goal in mind.

Do you need to leave some regions running at your current level?

For example, if you have an application that cannot be run on your target level of CICS.

Will a workload run while the upgrade takes place?

There are a number of considerations if this is your strategy:

- Can your workload cope when the routing and/or target regions are closed down for upgrading? Are alternative target regions available to

execute the work? Do the remaining routing and target regions have a sufficiently high MXT value to cater for 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 which own DB2 or DBCTL connections (for example)? Are these regions single point 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?
- Are you aware of the potential impact of a phased migration on a running workload? You can see an example of an upgrade that is based on this approach in Chapter 32, "Upgrading CICS with a running workload," on page 189.

[Back to top](#)

Part 2. 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 by release to areas of CICS TS. For more information about these changes, see the CICS TS for z/OS What's New section for each release: 3.2, 4.1, 4.2, 5.1, 5.2, and This release in the IBM Knowledge Center.

Table 1. Major areas of technology change, by release of CICS TS 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>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>Performance and scaling XML system service parsing, JVM server runtime environment, and wild-branch diagnostic improvements</p> <p>Application support Application bundles, application components, Java 6</p> <p>Enterprise management CICS Explorer®, RESTful API, improved WUI browser, optimized workload management, IBMWebSphere® MQ group attach, governance and SPI for resources, CICS monitoring improvements, and Discovery Library Adapter for CICS</p>	<ul style="list-style-type: none">• IBM SDK for z/OS JTE V1.4.2 and V1.5.0• DFHCSDUP MIGRATE command• CICSplex SM WLMLOADCOUNT and WLMLOADTHRESH EYUPARMS

Table 1. Major areas of technology change, by release of CICS TS for z/OS (continued)

Release	New	Discontinued
4.2	<p>Events System events, assured events, and lifecycle management</p> <p>Java Java 7, multi-threaded server, and OSGi packaging and management</p> <p>Scalability Threadsafe enhancements, optimized threadsafe, and 64-bit exploitation</p> <p>Connectivity Axis2 web services, web services offload, and HTTP and IP extensions</p> <p>Management Transaction tracking, workload management, and password phrases</p>	<ul style="list-style-type: none"> • CICS Events for WebSphere Business Events SupportPac CB11
5.1	<p>First-class application, platforms and policies</p> <p>Events Multiple emission</p> <p>Liberty Profile Support for Java servlets and JSPs, and Feature Pack for Mobile</p> <p>IBM WebSphere MQ Container support for DPL bridge</p> <p>Foundation 2000 MXT, and TD threadsafe</p> <p>Java 64-bit Java</p>	<ul style="list-style-type: none"> • EJB and CORBA support • JVM pool support • CCI Connector for CICS • DCE support • Message edit utility, DFHMEU
5.2	<p>Multiple editions CICS Transaction Server, Value Unit Edition, Developer Trial</p> <p>First-class applications Multi-versioning</p> <p>Policies Enhancements to thresholds</p> <p>Liberty Profile JAX-WS, JDBC type 4, JTA</p> <p>Security SAML and Kerberos support, TLS 1.2 enforcement, and NIST-SP800-131a conformance</p> <p>Java Java 7.0 and Java 7.1 support</p>	

Table 1. 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>Liberty Profile CDI, local JMX connector and REST JMX connector, EJB Lite, managed beans, MongoDB, Monitor, OSGi console, and database session persistence</p> <p>Security AT-TLS, SIGNON TOKEN, REQUEST PASSTICKET, HTTP TRACE inactive by default</p> <p>Java IBM MQ classes for JMS, document constructor, and simplified log management</p> <p>Performance and scaling Threadsafe commands, System z9 exploitation, tuning of HTTP connections</p> <p>Management New policy thresholds, transaction tracking for CICS-MQ bridge, DFHCSDUP COPY and LIST</p> <p>Automation for application deployment The CICS TS build toolkit, DFHDPLOY utility, integration with IBM UrbanCode™ Deploy</p>	<ul style="list-style-type: none"> • PASSWORD attribute on FILE • ACTJVMTCBS and MAXJVMTCBS on INQUIRE and SET DISPATCHER • BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL on PERFORM STATISTICS

Chapter 1. Changes to installing

This section summarizes the changes to installation across supported releases of CICS TS for z/OS.

Table 2. Changes to installing, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
					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.
					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.	
		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.			
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.					

Chapter 2. 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.

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

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
ASSIGN				CHANGED: New options: ASRAPSW16I and ASRAREGS64	CHANGED: New options: ERRORMSG, ERRORMSGLEN, LINKLEVEL, APPLICATION, MAJORVERSION, MICROVERSION, MINORVERSION, OPERATION, PLATFORM,	NEW: INPUTMSGLEN and ABOFFSET
ASKTIME		CHANGED: Changed value: ABSTIME				
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			
DELAY					CHANGED: New value: MILLISECS	
DELETE			CHANGED: Made threadsafe for remote regions through IPIC			
DELETE CHANNEL						NEW
DELETE COUNTER and DELETE DCOUNTER			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					

Table 3. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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			
EXEC DLI			CHANGED: Made threadsafe			
EXTRACT CERTIFICATE			CHANGED: Made threadsafe			
EXTRACT TCPIP		CHANGED: New values: CLNTADDR6NU, CLNTIPFAMILY, SRVRADDR6NU, and SRVRIPFAMILY. Changed options: CADDRENGTH, CLIENTADDR, SADDRENGTH, and SERVERADDR to return IPv6 information.	CHANGED: Made threadsafe			CHANGED: new value, ATTLISAWARE, on SSLTYPE parameter.
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			CHANGED: New option: STRINGZONE	
FREEMAIN64				NEW		
GETMAIN64				NEW		
GET64 CONTAINER				CHANGED: New option: BYTEOFFSET		
GET CONTAINER	CHANGED: New value: INTOCODEPAGE			CHANGED: New value: BYTEOFFSET		
GET COUNTER and GET DCOUNTER			CHANGED: Made threadsafe			
INVOKE APPLICATION					NEW	
INVOKE SERVICE		NEW				
INVOKE WEBSERVICE		DEPRECATED: Use INVOKE SERVICE instead.				
LINK			CHANGED: Made threadsafe		CHANGED: Change of impact: command now operates in the application context.	
LOAD PROGRAM				CHANGED: Changed value: ENTRY		
PUT64 CONTAINER				CHANGED: New option: APPEND		

Table 3. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
PUT CONTAINER (CHANNEL)	CHANGED: New value: FROMCODEPAGE			CHANGED: New value: APPEND		
QUERY CHANNEL						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			
READNEXT	CHANGED: New option: XRBA		CHANGED: Made threadsafe for remote regions through IPIC			
READQ TD				CHANGED: Made threadsafe		
READPREV	CHANGED: New option: XRBA		CHANGED: Made threadsafe for remote regions through IPIC			
REQUEST PASSTICKET						NEW
RESETBR	CHANGED: New value: 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			
SIGNON TOKEN						NEW
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		
SYNCPPOINT			CHANGED: Made threadsaf			

Table 3. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
SYNCPOINT ROLLBACK			CHANGED: Made threadsafe			
TRANSFORM DATATOXML		NEW				
TRANSFORM XMLTODATA		NEW				
UNLOCK			CHANGED: Made threadsafe for remote regions through IPICT			
UPDATE COUNTER and UPDATE DCOUNTER			CHANGED: Made threadsafe			
VERIFY PASSWORD			CHANGED: Made threadsafe	CHANGED: Change of impact. Function is changed, dependent on SECVFYREQ and/or USRDELAY.		
VERIFY PHRASE			NEW and CHANGED: Made threadsafe	CHANGED: change of impact. Function is changed, dependent on SECVFYREQ and/or USRDELAY.		
VERIFY TOKEN					NEW	CHANGED: ENCRYPTOKEN parameter returns a 4-byte encryption token when the TOKENTYPE is KERBEROS.
WAIT JOURNALNAME	CHANGED: Made threadsafe					
WAIT JOURNALNUM	CHANGED: Made threadsafe					
WRITE JOURNALNAME	CHANGED: Made threadsafe					CHANGED: a CICS message is issued when an EXEC CICS WRITE command is issued to a shared data table fails because the data table is full.
WEB CONVERSE	CHANGED: Made threadsafe and new option: DOCSTATUS					
WEB ENDBROWSE QUERYPARM		NEW				
WEB EXTRACT	CHANGED: New options REALM and REALMLN	CHANGED: New value: HOSTTYPE and existing value, HOST, is changed to support IPv6 addresses				

Table 3. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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 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				
WRITE	CHANGED: New value: XRBA		CHANGED: Made threadsafe for remote regions through IPIC			
WRITE OPERATOR						THREADSAFE
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				

Table 3. Changes to EXEC CICS commands, by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
WSACONTEXT DELETE		NEW				
WSACONTEXT GET		NEW				
WSAEPR CREATE		NEW				

Chapter 3. 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 [here](#).

Table 4. Changes to JCICS server package, by release of CICS Transaction Server for z/OS

Class	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
All	CHANGED: ClientCodepage is changed to Characterset					
Application					NEW	
Channel						NEW METHODS: getContainerCount() Channel.delete()
CICSExecutorService				NEW		
Container	CHANGED: 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.					NEW CONSTRUCTOR: docToken
Event		NEW				
EventErrorException		NEW				
HttpClientRequest	NEW METHODS setAuthenticate() setUserName() setPassword() setContainer() NEW EXCEPTIONS for: sendDocument()					
HttpRequest	NEW METHODS: setContainer() setChannel() getContentAsContainer() getBodyCharset()	NEW METHODS: getHostType() getQueryParm() startBrowseQueryParm() getNextQueryParm() endBrowseQueryParm()				

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

Class	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
HttpResponse	NEW METHODS: setContainer() setChannel() getContentAsContainer() getBodyCharset() NEW VERSION of: sendDocument()					
HttpSession		NEW METHOD: getHostType()				
Program						REMOVED: All xctl methods. Applications that used these methods do not compile and throw a NoSuchMethodError if called.
Task					NEW METHOD: getApplicationContext()	
TcpIpRequest		NEW METHODS: getClientHostAddress6() getServerHostAddress6() getClientIpFamily() getServerIpFamily()				
Webservice	CHANGED: NotAuthorised. Exception can be thrown on invoke.					

Chapter 4. Changes to compiler support

This section summarizes the changes to compilers that can be used for CICS applications, across supported CICS releases.

Table 5. Changes to compilers, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
WITHDRAWN: Support for pre-Language Environment compilers: <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 					
WITHDRAWN: support for OO COBOL, including both Java classes and COBOL classes					
					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 DFHZXTCL: 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

Chapter 5. Changes to SIT parameters

This section summarizes the changes to the system initialization parameters across supported CICS releases.

Table 6. Changes to system initialization by release of CICS Transaction Server for z/OS

Parameter	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
AKPFREQ				CHANGED: minimum value is now 50.		
APPLID	CHANGED: APPLID must be unique in the sysplex.					
AUTORESETTIME				CHANGED: new default is IMMEDIATE.		
CSDLSRNO			CHANGED: number of LSR pools can now be up to 255.			
CONFDATA	CHANGED: now also applies to initial input data received on IPIC connections (IS data).					
EDSALIM			CHANGED: minimum and default is changed to 48 MB.	CHANGED: default is changed to 800 MB.		
EJBROLEPRFX				REMOVED		
ENCRYPTION (DEPRECATED)	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 and two new values, ALL and TLS12FIPS.	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.
FCQRONLY	NEW		CHANGED: change of impact, depending on whether the connections to FORs are MRO, ISC, or IPIC.			
HTTPSERVERHDR						NEW: sets the value for HTTP Server field
HTTPUSRAGENTHDR						NEW: sets the value for HTTP User-Agent field
ICVTSD				CHANGED: default value changed to zero.		

Table 6. Changes to system initialization by release of CICS Transaction Server for z/OS (continued)

Parameter	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
INITPARM		CHANGED: you can no longer use INITPARM=DFHMQPRM to specify a default IBM MQ queue manager name and initiation queue name for the CICS-WebSphere MQ connection.				
IIOPLISTENER				REMOVED		
JVMCCSIZE				REMOVED		
JVMCCSTART				REMOVED		
JVMLEVEL0TRACE				REMOVED		
JVMLEVEL1TRACE				REMOVED		
JVMLEVEL2TRACE				REMOVED		
JVMPROFILEDIR		CHANGED: default value is now the value in USSHOME followed by JVMProfiles subdirectory.			CHANGED: for JVM servers that are defined in CICS bundles, the location of the JVM profile is specified by the bundle.	
JVMUSERTRACE				REMOVED		
MAXJVMTCBS				REMOVED		
MINTLSLEVEL						NEW: replaces ENCRYPTION
MNIDN		NEW				
MNSUBSYS	REMOVED					
MQCONN		CHANGED: CICS no longer uses INITPARM to provide information to start a connection.				
MSGCASE	CHANGED: now also applies to messages displayed by the CPSM message domain.					
MXT				CHANGED: minimum, default, and maximum values are changed to 10, 500, and 2000.	CHANGED: default value is now 250.	
NISTSP800131A					NEW	
NONRLSRECOV	NEW					
NQRNL						NEW: specifies that z/OS global resource serialization uses RNL processing for enqueue and dequeue requests from CICS
PRTYAGE				CHANGED: default value is now 1000 milliseconds.		

Table 6. Changes to system initialization by release of CICS Transaction Server for z/OS (continued)

Parameter	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
PSTYPE		CHANGED: new value, NOPS.				
RACFSYNC				NEW		
SECVFYFREQ				NEW		
SPCTR				CHANGED: new value of MP for managed platform domain.		
SOTUNING						NEW: controls the performance tuning for HTTP connections
STATINT				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.		
STGPROT						CHANGED: default value is now YES.
\				CHANGED: 4-byte GWA passed to an exit on enablement now comes from 31-bit storage.		
TCTUALLOC				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.			CHANGED: default changed to 12 MB.
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.					

Table 6. Changes to system initialization by release of CICS Transaction Server for z/OS (continued)

Parameter	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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.				
USSCONFIG					NEW	
USSHOME		NEW				
VERIFY TOKEN						CHANGED: ENCRYPTOKEN parameter returns a 4-byte encryption token when the TOKENTYPE is KERBEROS.
XCFGROUP	NEW					
XEJB				REMOVED		
XHFS	NEW					
XRES	NEW					

Chapter 6. Changes to JVM profiles

The settings in JVM profiles change between releases. This section summarizes the changes to JVM profile options, across supported CICS releases.

Table 7. Changes to JVM profiles, by release of CICS Transaction Server for z/OS

Type of profile	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
Standard class path	CHANGED: <ul style="list-style-type: none">New options: CLASSPATH_PREFIX, CLASSPATH_SUFFIX, to replace CLASSPATH					

The obsolete, changed, and new options in JVM profiles are summarized here. For more details about the options, see JVM profiles: options and samples in Deploying.

Table 8. New options in JVM profiles

Option	Status	CICS and Java launcher action	Notes
CLASSPATH_PREFIX, CLASSPATH_SUFFIX	Replaces CLASSPATH	Preferred	Specifies the standard class path. Use these options only with Axis2.
com.ibm.cics.jvmserver.override.ccsid	New property	Sets code page for JCICS	Specifies the code page for JCICS calls. The default behavior is to use the code page in the LOCALCCSID system initialization parameter.
com.ibm.cics.jvmserver.wlp.autoconfigure	New property	Sets automatic configuration	Specifies whether CICS automatically configures the server.xml file for a Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.host	New property	Accepted	Specifies the host name for a web application that runs in the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.http.port	New property	Accepted	Specifies the HTTP port for the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.https.port	New property	Accepted	Specifies the HTTPS port for the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.server.name	New property	Accepted	Specifies the Liberty profile server name for the Liberty JVM server.
com.ibm.cics.jvmserver.wlp.jdbc.driver.location	New property	Accepted	Specifies the location of the directory in zFS that contains the DB2® JDBC drivers.
ibm.cl.verbose	New for CICS sample profiles	Preferred	Examples are provided in comments.
JAVA_DUMP_ TDUMP_PATTERN	For CICS sample profiles	UNIX System Services environment variable set	Specifies location for Java memory dumps.
JAVA_PIPELINE	For CICS sample profiles	Accepted	Adds the required JAR files to the class path for Java-based SOAP pipelines.
LIBPATH_PREFIX, LIBPATH_SUFFIX	Replace LIBPATH	Preferred	Specifies the library path.
OSGI_BUNDLES	For CICS sample profiles	Accepted	Specifies a list of middleware OSGi bundles. Not supported in Liberty JVM server.
OSGI_FRAMEWORK_ TIMEOUT	For CICS sample profiles	Accepted	Specifies a timeout in seconds for the JVM server initialization and shutdown.
JNDI_REGISTRATION	For CICS sample profiles	Accepted	Specifies that the JNDI registration JAR files are automatically added to the JVM runtime environment.

Table 8. New options in JVM profiles (continued)

Option	Status	CICS and Java launcher action	Notes
SECURITY_TOKEN_SERVICE	For CICS sample profiles	Accepted	Controls whether the JVM server can use security tokens. This option must be set to YES for a JVM server to use security tokens. If this configuration option is set to NO, the JVM server is initialized as an OSGi JVM server and Security Token Service support is disabled for that JVM server. SECURITY_TOKEN_SERVICE=YES is not compatible with JAVA_PIPELINE=YES, which configures the JVM to support Axis2.
WSDL_VALIDATOR	For CICS sample profiles	Accepted	Enables validation for SOAP requests and responses against their definition and schema.
-verbose	New for CICS sample profiles	Preferred	Examples are provided in comments.
WLP_INSTALL_DIR	New in sample profiles	UNIX System Services environment variable set	Specifies the installation directory for the Liberty profile technology.
WLP_OUTPUT_DIR	New in sample profiles	UNIX System Services environment variable set	Specifies the output directory for the Liberty JVM server.
WLP_USER_DIR	New in sample profiles	UNIX System Services environment variable set	Specifies the directory that contains the configuration files for the Liberty JVM server.
-Xcheck	New for CICS sample profiles	Preferred	Examples are provided in comments.
-Xdump	New for CICS sample profiles	Preferred	Examples are provided in comments.

Table 9. Changed and obsolete options in JVM profiles

Option	Status	CICS and Java launcher action	Replace with	Notes
&JVM_NUM	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
-generate	Obsolete	n/a	n/a	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	USSHOME system initialization parameter	Do not specify. CICS issues message DFHSJ0534 if found.
CICS_HOME	Obsolete	Java launcher uses the value of the USSHOME system initialization parameter	USSHOME system initialization parameter	Do not specify.
CLASSCACHE	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
CLASSPATH	Replaced by equivalents	JVM does not start	CLASSPATH_SUFFIX (for Axis2 only)	CICS issues message DFHSJ0523 if found.
ibm.jvm.shareable.application.class.path	Obsolete	CICS adds entries to standard classpath	CLASSPATH_SUFFIX	Obsolete for Java 5 and later versions.
DISPLAY_JAVA_VERSION	Obsolete	Accepted	n/a	Shows JVM version in CICS MSGUSR log.
GC_HEAP_THRESHOLD	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
ibm.jvm.crossheap.events	Obsolete	Java launcher ignores	n/a	Pooled JVM option that is not supported in a JVM server.
ibm.jvm.events.output	Obsolete	Java launcher ignores	n/a	Pooled JVM option that is not supported in a JVM server.
ibm.jvm.reset.events	Obsolete	Java launcher ignores	n/a	Pooled JVM option that is not supported in a JVM server.
ibm.jvm.resettrace.events	Obsolete	Java launcher ignores	n/a	Pooled JVM option that is not supported in a JVM server.

Table 9. Changed and obsolete options in JVM profiles (continued)

Option	Status	CICS and Java launcher action	Replace with	Notes
ibm.jvm.unresettable.events.level	Obsolete	Java launcher ignores	n/a	Pooled JVM option that is not supported in a JVM server.
IDLE_TIMEOUT	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
INVOKE_DFHJVMAT	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
JAVA_DUMP_OPTS	Withdrawn from sample profiles	Accepted	-Xdump	Deprecated in Java 5.
LEHEAPSTATS	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
LIBPATH	Replaced by equivalents	CICS treats as LIBPATH_SUFFIX	LIBPATH_SUFFIX (LIBPATH_PREFIX also available)	CICS issues message DFHSJ0538 if found. You do not need to specify directories for base library path, only directories that you add.
MAX_RESETS_TO_GC	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
OSGI_BUNDLES	Not supported in Liberty JVM server	Liberty JVM server does not enable with this option	n/a	Deploy OSGi bundles in a Liberty JVM server as part of an enterprise bundle archive (EBA) or as library bundles.
REUSE	Obsolete	n/a	n/a	Pooled JVM option that is not supported in a JVM server.
TMPREFIX	Obsolete	CICS prefixes to standard class path	CLASSPATH_PREFIX	CICS issues message DFHSJ0521 if found. Move classes with care.
TMSUFFIX	Obsolete	CICS places on standard class path	CLASSPATH_SUFFIX	CICS issues message DFHSJ0522 if found.
VERBOSE	Withdrawn from sample profiles	Accepted	-verbose:gc	Works as before if specified in old format.
Xcheck (JVM default is NO)	Withdrawn from sample profiles	Accepted	-Xcheck	Specify this option only if other than JVM default.
Xdebug (JVM default is NO)	Withdrawn from sample profiles	Accepted	-Xdebug (no value) to set debug on	Specify this option only if other than JVM default
Xnoclassgc (JVM default is NO)	Withdrawn from sample profiles	Accepted	-Xnoclassgc (no value) to specify no class garbage collection	Specify this option only if other than JVM default
Xresettable=YES	Obsolete	JVM does not start	n/a	Pooled JVM option that is not supported in a JVM server.
Xverify (JVM default is remote)	Withdrawn from sample profiles	Accepted	n/a	Do not specify, use JVM default.
Xinitacsh	Obsolete	Java launcher ignores	Add value to -Xms	Pooled JVM option that is not supported in a JVM server.
Xinitth	Obsolete	Java launcher ignores	Add value to -Xms	Pooled JVM option that is not supported in a JVM server.
Xinitsh	Obsolete	Java launcher ignores	Add value to -Xms	Pooled JVM option that is not supported in a JVM server.

Undocumented options

Table 9 on page 28 lists only the options that were formerly used in the sample files that are supplied with CICS, together with the new options. Some options for JVM profiles and JVM properties files did not appear in the sample files that are supplied with CICS in previous CICS releases, but were documented in the CICS documentation. Some of these options are removed from the CICS documentation.

The `java.compiler` option is not documented because its primary use was to disable the Java just-in-time (JIT) compiler during the development process for applications in a resettable JVM. In a continuous JVM, this option is not required for that purpose.

The remaining undocumented options are still valid, but they can now be specified in the standard Java way (rather than in a special way for CICS), and so the documentation for the IBM 64-bit SDK for z/OS, Java Technology Edition and other Java documentation can be used. If you have any of these options in an existing JVM profile for CICS , they are still accepted.

The main categories of valid options that are not documented are as follows:

- The options that relate to assertions. You can find more information about programming with assertions, and about activating or deactivating assertions, at the Oracle Technology Network Java website .
- Various Java nonstandard options (beginning with -X), including -Xmaxe , -Xmaxf , -Xmine , -Xminf , -Xrundllname , and -Xrs . You can find more information about these options in the Java SDK documentation, which is available from Resource Information for Java .
- Various JVM system properties, most of which must not be changed by users of the IBM JVM with CICS .

Changes to JVM profile symbols

&CONFIGROOT;

When you use this symbol in a JVM profile, the absolute path of the directory where the JVM profile is located is substituted at run time.

&JVMNUM;

This symbol is obsolete. If this symbol was used, for example, as part of the file name for a Java memory dump, CICS substituted the unique JVM number for it at run time. The symbol could be specified for any type of output from the JVM, and used in combination with the APPLID symbol (CICS region APPLID). The **-generate** option for stdout and stderr files provided the unique JVM number automatically.

&JVMSERVER;

When you use this symbol in a JVM profile, the name of the JVMSERVER resource is substituted at run time. Use this symbol to create unique output or dump files for each JVM server.

&USSHOME;

When you use this symbol in a JVM profile, the symbol is replaced with the value of the **USSHOME** system initialization parameter. Use this symbol to automatically pick up the home directory for z/OS UNIX where CICS supplies its libraries for Java and the Liberty technology.

For information about the other supported JVM profile symbols, see JVM profiles: options and samples in Deploying.

Chapter 7. 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.

Table 10. Changes to resource definitions, by release of CICS Transaction Server for z/OS

Resource	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
ATOMSERVICE		NEW				
BUNDLE		NEW				
CORBASERVER				REMOVED		
DB2CONN					CHANGED: Change of impact: TCBLIMIT attribute now detects mismatch between TCBs and threads that are defined in pool and entry definitions.	
DFHCSDUP COPY						NEW: to copy a single resource definition from one group to another
DFHCSDUP LIST						CHANGED: shows the maintenance level of the CSD
DJAR				REMOVED		
FILE			CHANGED: New attribute, LSRPOOLNUM, and new value, REQUIRED on CONCURRENCY			CHANGED: Obsolete attribute, PASSWORD
FILE resources						REMOVED: PASSWORD attribute is obsolete
IPCONN	NEW	CHANGED: New attribute, IDPROP, and changed attribute HOST		CHANGED: Changed attributes CIPHERS and NUMCIPHERS	CHANGED: New attribute, HA, and changed attribute APPLID	
JVMSEVER		NEW				
LIBRARY	NEW					
LSRPOOL			CHANGED: New attribute, LSRPOOLNUM, and attribute made obsolete, LSRPOOLID			
MQCONN		NEW				
PACKAGESET						NEW: CICS application resource which represents a DB2 collection
PIPELINE	CHANGED: New attribute: RESPWAIT					

Table 10. Changes to resource definitions, by release of CICS Transaction Server for z/OS (continued)

Resource	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
PROGRAM			CHANGED: New attribute, JVMSERVER, and new value of REQUIRED on CONCURRENCY	CHANGED: Attribute made obsolete: JVMPROFILE		
REQUESTMODEL				REMOVED		
TERMINAL		CHANGED: Change of impact: REMOTESYSTEM attribute for IP connections				
TRANSACTION		CHANGED: Change of impact: REMOTESYSTEM attribute for IP connections				
TCPIPSERVICE	CHANGED: New attribute REALM. New values IPIC on PROTOCOL and NO on URM		CHANGED: New attributes, MAXPERSIST, and EXPIRYINT	CHANGED: New attribute SPECIFTCPS. Changed attributes, CIPHERS, NUMCIPHERS, and BACKLOG. For BACKLOG, default value is changed from 1 to zero. When zero is specified the value is taken from SOMAXCONN TCPIP configuration. ASSERTED is obsolete on AUTHENTICATE	CHANGED: Attributes made obsolete: DNSGROUP and GRPCRITICAL. IIOP is obsolete on TYPE.	CHANGED: ATTLISAWARE option added to the SSLTYPE parameter
TSMODEL			CHANGED: New attribute, EXPIRYINT		CHANGED: New attribute EXPIRYINTMIN and obsolete 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	CHANGED: Changed attributes CIPHERS and NUMCIPHERS. New value JVMSERVER on USAGE.		
WEBSERVICE			CHANGED: New attribute: ARCHIVEFILE			

Table 11. Changes to CICS-supplied resource definition groups, by release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFH\$AFLA				CHANGED: <ul style="list-style-type: none"> Programs are now DATALOCATION(ANY). Transactions are now TASKDATALOC(ANY). 		

Table 11. Changes to CICS-supplied resource definition groups, by release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFH\$DB2				CHANGED: <ul style="list-style-type: none"> Programs removed: DFJ\$DSDB, DFJ\$DSPU, and DFJ\$DSRE Transactions removed: DSDB, DSPU and DSRE 		
DFH\$CCI				REMOVED		
DFH\$EJB				REMOVED		
DFH\$EJB2				REMOVED		
DFH\$IIOP				REMOVED		
DFH\$JAVA				REMOVED		
DFH\$JVM				REMOVED		
DFH\$WEB	NEW					
DFHADET				REMOVED		
DFHADST				REMOVED		
DFHCOMPB				REMOVED		
DFHDB2				CHANGED: Program DFHD2EDF is marked thread safe		CHANGED: DFHD2SPS added as part of PACKAGESET support
DFHDCTG				CHANGED: TQ queues added: CADS and CMPO		
DFHEDF				CHANGED: <ul style="list-style-type: none"> Program DFHEDFX is marked threadsafe. Programs DFHEIGDS, DFHEITAB, and DFHSMTAB are changed to DATALOCATION(ANY). 		
DFHEJBU				REMOVED		
DFHEP		NEW		CHANGED: Transaction CEPS added		
DFHEPI				CHANGED: Program DFHEITSZ is changed to DATALOCATION(ANY)		
DFHFCRL					NEW	
DFHGAIP					CHANGED: Program DFHPGADX, DFHPGAHX, DFHPGALX, and DFHPGAOX specify THREADSAFE on CONCURRENCY	
DFHIIOP				REMOVED		
DFHINQUI				CHANGED: Program DFHEITBS is changed to DATALOCATION(ANY)		
DFHIPECI				CHANGED: Transaction CIEP is changed to TASKDATALOC(ANY) and PRIORITY(255)		
DFHISC				CHANGED: Storage location changed for the mirror transactions		

Table 11. Changes to CICS-supplied resource definition groups, by release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHISCIP	NEW			CHANGED: <ul style="list-style-type: none"> New programs: DFHISPHP and DFHISPRP New profile definition DFHCICSC Transactions CISC and CISS are changed to DTIMOUT(NO). Transactions CISP and CISI are added. 		
DFHISCQ				CHANGED: Transaction CQPI and CQPO are changed to TASKDATALOC(ANY)		
DFHJAVA				CHANGED: <ul style="list-style-type: none"> Programs removed: DFHDLLOD, DFHEJDNX, DFHJVCVT, DFHSJGC, DFHSJPI, DFJCICS, DFJCICSB, DFJCZDTC, DFJ1ESN, DFJ1ICS, DFJ1ICSB, DFJ1ZDTC New program: DFHSJITL Transactions removed: CJGC and CJPI New transactions: CJSA, CJSR 		
DFHMQ		NEW		CHANGED: <ul style="list-style-type: none"> New program: DFHMQBP3 New transaction; CKBC 		
DFHOPER				CHANGED: Transactions CBAM, CEMT, CEOT, CEST, and CETR are now TASKDATALOC(ANY)		
DFHPIPE				CHANGED: Program DFHPIVAL is added.		
DFHPIVAL				NEW		
DFHRL		NEW				
DFHRMI				CHANGED: Transaction CRSY is now TASKDATALOC(ANY).		
DFHROFA				CHANGED: <ul style="list-style-type: none"> All programs are now DATALOCATION(ANY). All transactions are now TASKDATALOC(ANY). 		
DFHROFT				CHANGED: All transactions are now TASKDATALOC(ANY)		
DFHRPL		NEW				
DFHRS		NEW				
DFHSIGN				CHANGED: All transactions are now TASKDATALOC(ANY)		

Table 11. Changes to CICS-supplied resource definition groups, by release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHSTAND				CHANGED: <ul style="list-style-type: none"> • New program: DFHPIITL • Programs removed: DFHEJITL, DFHPIITL, DFHSJITL, DFJDESN • Transactions CEJR and CJSR are removed • Transactions CSAC and CXCU are now TASKDATALOC(ANY) 		
DFHSWIT				CHANGED: Transaction CMSG is now TASKDATALOC(ANY)		
DFHWEB	NEW					
DFHWEB2		NEW				
DFHWU		NEW				

Chapter 8. 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.

Table 12. Changes to control tables, by release of CICS Transaction Server for z/OS

Table	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHDCT		CHANGED: Support for DFHCSDUP MIGRATE command withdrawn		NO LONGER SUPPLIED		
DFHMCT		CHANGED: Default on COMPRESS option is changed from NO to YES			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• IPL 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 DFHMCT TYPE=INITIAL• DFHMCT TYPE=RECORD allows for the new DFHTEMP fields to count TS queue requests.
DFHRCT		CHANGED: Support for DFHCSDUP MIGRATE command withdrawn				
DFHTCT		CHANGED: Support for DFHCSDUP MIGRATE command withdrawn				
DFHTST		CHANGED: Support for DFHCSDUP MIGRATE command withdrawn				

Chapter 9. Changes to CICS SPI

This section summarizes the changes to system programming interface commands across supported CICS releases.

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
COLLECT STATISTICS				CHANGED: <ul style="list-style-type: none"> For supported resource types and depending on context, statistics can be returned for private resources. New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, and PLATFORM Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL 		
CREATE ATOMSERVICE		NEW				
CREATE BUNDLE		NEW				
CREATE CORBASERVER				REMOVED		
CREATE DJAR				REMOVED		
CREATE FILE			CHANGED: <ul style="list-style-type: none"> Option made obsolete: LSRPOOLID New option: LSRPOOLNUM 			
CREATE IPCONN	NEW				CHANGED: New option, HA	
CREATE JVMSERVER		NEW				
CREATE LIBRARY	NEW					
CREATE LSRPOOL			CHANGED: <ul style="list-style-type: none"> Option made obsolete: LSRPOOLID New option: LSRPOOLNUM 			
CREATE MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option			
CREATE PIPELINE	CHANGED: New option: RESPWAIT					

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
CREATE PROGRAM			CHANGED: New option: JVMSERVER New value: REQUIRED on CONCURRENCY option			
CREATE REQUESTMODEL				REMOVED		
CREATE TCPIPService	CHANGED: New option: REALM	CHANGED: HOST replaces IPADDRESS option	CHANGED: New option: MAXPERSIST		CHANGED: <ul style="list-style-type: none"> New option: SPECIFICTCPS Options made obsolete: DNSGROUP and GRPCritical 	
CREATE TSMODEL			CHANGED: New option: EXPIRYINT		CHANGED: New option: EXPIRYINTMIN	
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				
CSD ENDBRGROUP		NEW				
CSD ENDBRLIST		NEW				
CSD ENDBRRSRCE		NEW				
CSD GETNEXTGROUP		NEW				
CSD GETNEXTLIST		NEW				
CSD GETNEXTRSRCE		NEW				
CSD INQUIREGROUP		NEW				
CSD INQUIRELIST		NEW				
CSD INQUIRERSRCE		NEW				
CSD INSTALL		NEW		CHANGED: Options made obsolete: CORBASERVER, DJAR, and REQUESTMODEL		
CSD LOCK		NEW				
CSD REMOVE		NEW				
CSD RENAME		NEW				
CSD STARTBRGROUP		NEW				
CSD STARTBRLIST		NEW				
CSD STARTBRRSRCE		NEW				
CSD UNLOCK		NEW				
CSD USERDEFINE		NEW				

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DISCARD ATOMSERVICE		NEW				
DISCARD BUNDLE		NEW				
DISCARD CORBASERVER				REMOVED		
DISCARD DJAR				REMOVED		
DISCARD ENQMODEL						THREADSAFE
DISCARD IPCONN		NEW				
DISCARD JOURNALMODEL						THREADSAFE
DISCARD JOURNALNAME						THREADSAFE
DISCARD JVMSERVER		NEW				
DISCARD LIBRARY		NEW				
DISCARD MQCONN		NEW				
DISCARD PROGRAM					CHANGED: Made threadsafe	
DISCARD REQUESTMODEL				REMOVED		
DISCARD TCPIPService						THREADSAFE
DISCARD TDQUEUE						THREADSAFE
DISCARD TRANSCLASS						THREADSAFE
DISCARD TRANSACTION					CHANGED: Made threadsafe	
DISCARD TSMODEL						THREADSAFE
ENABLE PROGRAM	CHANGED: Change of impact of options: QUASIRENT and THREADSAFE for GLUEs and TRUEs			CHANGED: <ul style="list-style-type: none"> Change of impact of option OPENAPI New options: GALLOCATION and REQUIRED 		
EXTRACT STATISTICS	CHANGED: New values on RESTYPE option: DOCTEMPLATE, IPCONN, LIBRARY, MQCONN			CHANGED: <ul style="list-style-type: none"> New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, PLATFORM For supported resource types and depending on context, statistics can be returned for private resources. Made threadsafe 		

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
INQUIRE ASSOCIATION	NEW	CHANGED: New options: CLIENTLOC, SRVRIPFAMILY replaces IPFAMILY for new programs, CLNTIPFAMILY, DNAME, and REALM 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		CHANGED: New options: ACAPPLNAME, ACMAJORVER, ACMICROVER, ACMINORVER, ACOPEPNAME, ACPLATNAME	
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	CHANGED: New option: AVAILSTATUS	
INQUIRE BUNDLEPART		NEW		CHANGED: New value on PARTCLASS option: ENTRYPOINT	CHANGED: New option: AVAILSTATUS	
INQUIRE CAPDATAPRED			NEW			
INQUIRE CAPINFOSRCE			NEW			
INQUIRE CAPTURESPEC		NEW	CHANGED: New options: CURRPGM, CURRPGMOP, CURRTRANID, CURRTRANIDOP, CURRUSERID, CURRUSERIDOP, NUMDATAAPRED, NUMINFOSRCE, NUMOPTPRED, PRIMPRED, PRIMPREDOP, PRIMPREDTYPE	CHANGED: New value on PRIMPREDTYPE option: MESSAGEID		
INQUIRE CLASSCACHE				REMOVED		
INQUIRE CORBASERVER				REMOVED		
INQUIRE DB2CONN			CHANGED: New option: REUSELIMIT			

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
INQUIRE DISPATCHER		CHANGED: New options: ACTTHRDTCBS and MAXTHRDTCBS	CHANGED: Change of impact of options: MAXOPENTCBS and MAXXPTCBS now represent limits set automatically by CICS	CHANGED: Options made obsolete: ACTJVMTCBS and MAXJVMTCBS	CHANGED: Made threadsafe	OBSOLETE: the options ACTJVMTCBS and MAXJVMTCBS are obsolete.
INQUIRE DJAR				REMOVED		
INQUIRE DOCTEMPLATE				CHANGED: New option: CACHESIZE		
INQUIRE DSNNAME				CHANGED: New option: LOGREPSTATUS		
INQUIRE EPADAPTER			NEW			
INQUIRE EPADAPTERSET				NEW		
INQUIRE EPADAPTINSET				NEW		
INQUIRE ENQMODEL						THREADSAFE
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		
INQUIRE FILE	CHANGED: <ul style="list-style-type: none"> New option: RBATYPE Made threadsafe 		CHANGED: <ul style="list-style-type: none"> New options: LSRPOOLNUM Option made obsolete: LSRPOOLID 			
INQUIRE IPCONN	NEW	CHANGED: <ul style="list-style-type: none"> New options: CLIENTLOC, PARTNER, IDPROP, HOSTTYPE, IPRESOLVED, IPFAMILY New values on HOST option 	CHANGED: New option: MIRRORLIFE		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 IRC	CHANGED: New option: XCFGROUP					
INQUIRE JOURNALMODEL						THREADSAFE
INQUIRE JOURNALNAME						THREADSAFE
INQUIRE JVM	CHANGED: Change in value: RESET no longer returned on REUSEST option			REMOVED		

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
INQUIRE JVMPOOL				REMOVED		
INQUIRE JVmPROFILE	CHANGED: Change in value: RESET no longer returned on REUSEST option			REMOVED		
INQUIRE JVmSERVER		NEW	CHANGED: New options: CURRENTHEAP, GCPOLICY, INITHEAP, MAXHEAP, OCCUPANCY, PID	CHANGED: New option: PROFILEDIR		
INQUIRE LIBRARY	NEW				CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, PLATFORM	
INQUIRE MONITOR	CHANGED: <ul style="list-style-type: none"> Option made obsolete: SUBSYSTEMID New option: COMPRESSST 	CHANGED: <ul style="list-style-type: none"> New options: DPLLIMIT, IDNTYCLASS Change of default on COMPRESSST option to COMPRESS 			CHANGED: Made threadsafe	
INQUIRE MQCONN		CHANGED: New option: MQCONN	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 				CHANGED: Made threadsafe	
INQUIRE NETNAME	CHANGED: New option: AIDCOUNT					
INQUIRE OSGIBUNDLE			NEW			
INQUIRE OSGISERVICE			NEW			
INQUIRE PIPELINE	CHANGED: New options: CIDDOMAIN, MODE, MTOMNOXOPST, MTOMST, RESPWAIT, SENDMTOMST, SOAPLEVEL, SOAPRNUM, SOAPVNUM, XOPDIRECTST, XOPSUPPORTST				CHANGED: New option: MSGFORMAT	

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
INQUIRE PROGRAM	CHANGED: New options: LIBRARY and LIBRARYDSN		CHANGED: New option: JVMSERVER New value: REQUIRED on CONCURRENCY option	CHANGED: New option: ENTRYPOINT ENTRYPOINT changed to support non-LE 64-bit assembler programs	CHANGED: New options: RESIDENCY, APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, PLATFORM Made threadsafe	
INQUIRE REQID						CHANGED: INTERVAL and TIME options are no longer mutually exclusive.
INQUIRE REQUESTMODEL				REMOVED		
INQUIRE RRMS						THREADSAFE
INQUIRE STATISTICS					CHANGED: Made threadsafe	
INQUIRE STORAGE						THREADSAFE
INQUIRE STREAMNAME						THREADSAFE
INQUIRE SUBPOOL	CHANGED: New value on DSANAME option: GCDSA					THREADSAFE
INQUIRE SYSTEM	CHANGED: New options: MEMLIMIT, SOSABOVEBAR, SOSABOVELINE, SOSBELOWLINE			CHANGED: New options: ETDSASIZE, GCDSASIZE, GSDSASIZE, GUDSASIZE	CHANGED: <ul style="list-style-type: none"> New options: MESSAGECASE, MVSSMFID, MVSSYSNAME Made 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.
INQUIRE TASK	CHANGED: New options: IPFACILITIES and IPFLISTSZ					THREADSAFE
INQUIRE TASK LIST						THREADSAFE
INQUIRE TCLASS						THREADSAFE
INQUIRE TCPIP						THREADSAFE
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 options: MAXPERSIST		CHANGED: <ul style="list-style-type: none"> New options: GENERIC TCPS, SPECIFIC CPS New values: BUNDLE on INSTALLAGENT Options made obsolete: DNSGROUP, DNSSTATUS, and GRPCritical 	THREADSAFE
INQUIRE TDQUEUE						THREADSAFE
INQUIRE TEMPSTORAGE			NEW			
INQUIRE TERMINAL	CHANGED: New option: AIDCOUNT	CHANGED: New option: REMOTESYSTEM				

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
INQUIRE TRACEST				CHANGED: Made threadsafe		
INQUIRE TRACEFLAG				CHANGED: Made threadsafe		
INQUIRE TRACETYPE		CHANGED: New option: FLAGSET		CHANGED: Made threadsafe		
INQUIRE TRANCLASS						THREADSAFE
INQUIRE TRANSACTION		CHANGED: New option: REMOTESYSTEM			CHANGED: Made threadsafe	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM
INQUIRE TSMODEL			CHANGED: New option: EXPIRYINT		CHANGED: New option: EXPIRYINTMIN	THREADSAFE
INQUIRE TSPool						THREADSAFE
INQUIRE TSQUEUE / TSQNAME			CHANGED: New option: EXPIRYINT		CHANGED: New option: EXPIRYINTMIN	THREADSAFE
INQUIRE UOW						THREADSAFE
INQUIRE UOWENQ						THREADSAFE
INQUIRE UOWLINK					CHANGED: New option: PORT	
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	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM	
INQUIRE VTAM		CHANGED: New option: PSTYPE				
INQUIRE WEB	CHANGED: Made threadsafe					THREADSAFE
INQUIRE WEBSERVICE	CHANGED: New options: CCSID, MAPPINGLEVEL, MAPPINGRNUM, MAPPINGVNUM, MINRUNLEVEL, MINRUNRNUM, MINRUNVNUM, XOPDIRECTST, XOP SUPPORTST		CHANGED: New option: ARCHIVEFILE		CHANGED: New values: DISABLED, DISABLING on STATE option	
INQUIRE WORKREQUEST				REMOVED		
INQUIRE XMLTRANSFORM		NEW				
PERFORM CLASSCACHE				REMOVED		
PERFORM CORBASERVER				REMOVED		
PERFORM DJAR				REMOVED		
PERFORM JVMPOOL	NEW			REMOVED		

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
PERFORM SECURITY REBUILD						THREADSAFE
PERFORM SSL REBUILD				NEW		THREADSAFE
PERFORM STATISTICS RECORD	CHANGED: New options: DOCTEMPLATE, LIBRARY, IPCONN, and MQCONN			CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL	CHANGED: New DSECTs supplied to format status information for private program, program definition, JVM program, or library resource types.	OBSOLETE: the options BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL are obsolete.
RESYNC ENTRYNAME			CHANGED: Made threadsafe			
SET ATOMSERVICE		NEW				
SET BUNDLE		NEW			CHANGED: New option: AVAILSTATUS	CHANGED: New option: COPY
SET BUNDLE PHASEIN						CHANGED: New option: COPY
SET CLASS						THREADSAFE
SET CLASSCACHE				REMOVED		
SET CORBASERVER				REMOVED		
SET DB2CONN			CHANGED: New option: REUSELIMIT			
SET DISPATCHER				CHANGED: Option made obsolete: MAXJVMTCBS	CHANGED: Made threadsafe	OBSOLETE: the options ACTJVMTCBS and MAXJVMTCBS are obsolete.
SET DOCTEMPLATE	NEW					
SET ENQMODEL						THREADSAFE
SET EPADAPTER			NEW			
SET EPADAPTERSET				NEW		
SET EVENTBINDING		NEW				
SET EVENTPROCESS		NEW				
SET FILE			CHANGED: <ul style="list-style-type: none"> Option made obsolete: LSRPOOLID New option: LSRPOOLNUM 		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 IPCONN	NEW					
SET JOURNALNAME						THREADSAFE
SET JVMPOOL	CHANGED: Option made obsolete: TERMINATE			REMOVED		

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
SET JVMSERVER		NEW			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 LIBRARY	NEW					
SET MONITOR	CHANGED: New option: COMPRESST	CHANGED: New options: DPLLIMIT, FILELIMIT, IDNTYCLASS, and TSQUEUELIMIT		CHANGED: Made threadsafe		
SET MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option			
SET PIPELINE	CHANGED: New option: RESPWAIT					
SET PROGRAM				CHANGED: New option: OPERATION	CHANGED: Made threadsafe	
SET STATISTICS				CHANGED: Default changed on INTERVAL option to 010000 (1 hour)	CHANGED: Made threadsafe	
SET SYSTEM				CHANGED: Change of value: maximum value on MAXTASKS option to 2000 and minimum to 10	CHANGED: Made threadsafe	
SET TASK				CHANGED: Made threadsafe		
SET TCPIP						THREADSAFE
SET TCPIPSERVICE					CHANGED: <ul style="list-style-type: none"> 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 TEMPSTORAGE			NEW			
SET TDQUEUE						THREADSAFE
SET TRACEDEST				CHANGED: Made threadsafe		
SET TRACEFLAG				CHANGED: Made threadsafe		
SET TRACETYPE		CHANGED: New option: FLAGSET		CHANGED: Made threadsafe		

Table 13. Changes to system programming commands by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
SET TRANCLASS						THREADSAFE
SET TRANSACTION					CHANGED: Made threadsafe	
SET TSQUEUE / TSQNAME	CHANGED: Change of impact: maximum number of TS queues that can be deleted by single SET TSQUEUE or SET TSQNAME is 32766					THREADSAFE
SET UOW						THREADSAFE
SET VTAM		CHANGED: Change of impact: does not allow change to PSDINTERVAL, PSDINTHRS, PSDINTMINS, and PSDINTSECS to nonzero when parameter NOPS in effect				
SET WEB						THREADSAFE
SET WEB	CHANGED: Made threadsafe					
SET WORKREQUEST				REMOVED		
SET XMLTRANSFORM		NEW				

Chapter 10. Changes to CICS-supplied transactions

This section summarizes the changes to the CICS-supplied transactions across supported CICS releases.

For information about the changes to the CICS master terminal transaction, see Chapter 11, “Changes to CEMT,” on page 53.

Table 14. Changes to CICS-supplied transactions by release of CICS Transaction Server for z/OS. Transactions without a link have no operator interface. The program and CSD group, and security category for these transactions are shown in in the IBM Knowledge Center.

Transaction	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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				
			NEW			
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					
CFCR					NEW	
CIRP			REMOVED			
CIRR			REMOVED			
CJGC		REMOVED				
CJGC			REMOVED			
CJPI			REMOVED			
CJSA				NEW		
CKBC				NEW		

Table 14. Changes to CICS-supplied transactions by release of CICS Transaction Server for z/OS (continued). Transactions without a link have no operator interface. The program and CSD group, and security category for these transactions are shown in in the IBM Knowledge Center.

Transaction	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
CKQC	CHANGED: Change of impact: default settings are now taken from the MQCONN resource definition					
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				

Chapter 11. 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 Chapter 10, “Changes to CICS-supplied transactions,” on page 51.

Table 15. Changes to CEMT by release of CICS Transaction Server for z/OS

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
All CEMT				CHANGED: Change of storage location		
CEMT DISCARD ATOMSERVICE		NEW				
CEMT DISCARD BUNDLE		NEW				
CEMT DISCARD IPCONN	NEW					
CEMT DISCARD JVMSERVER		NEW				
CEMT DISCARD LIBRARY	NEW					
CEMT DISCARD MQCONN		NEW				
All CEMT INQUIRE		CHANGED: Change of layout				
CEMT INQUIRE ATOMSERVICE		NEW	CHANGED: New options: URIMAP, XMLTRANSFORM			
CEMT INQUIRE BUNDLE		NEW		CHANGED: New options: BUNDLEID, MAJORVERSION, MICROVERSION, MINORVERSION	CHANGED: New option: AVAILSTATUS	
CEMT INQUIRE CLASSCACHE	CHANGED: RESET no longer returned on REUSEST option	CHANGED: PROFILE option made obsolete		REMOVED		
CEMT INQUIRE CORBASERVER		CHANGED: <ul style="list-style-type: none"> New values: IPv6 addresses on HOST option New option: IPRESOLVED 				
CEMT INQUIRE DISPATCHER		CHANGED: New options: ACTTHRDTCBS and MAXTHRDTCBS		CHANGED: Change of impact: MAXOPENTCBS and MAXXPTCBS	CHANGED: <ul style="list-style-type: none"> Options made obsolete: ACTJVMTCBS, MAXJVMTCBS You can now set the options for MAXOPENTCBS and MAXXPTCBS. 	
CEMT INQUIRE DOCTEMPLATE	CHANGED: New option: SIZE					

Table 15. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
CEMT INQUIRE DSAS	CHANGED: <ul style="list-style-type: none"> Option made obsolete: SOSSTATUS New options: MEMLIMIT, SOSABOVEBAR, SOSABOVELINE and SOSBELOWLINE 					
CEMT INQUIRE DSASIZE				CHANGED: New values: ETDSASIZE, GCDSASIZE, GSDSASIZE, GUDSASIZE		
CEMT INQUIRE DSNAME				CHANGED: New option: LOGREPSTATUS		
CEMT INQUIRE EPADAPTER			NEW			
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 JVMSERVER		NEW	CHANGED: New options: CURRENTHEAP, GCPOLICY, INITHEAP, MAXHEAP, OCCUPANCY, PID	CHANGED: New option: PROFILEDIR	CHANGED: Change of impact of 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				

Table 15. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
CEMT INQUIRE MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option			
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	CHANGED: New option: RESIDENCY	
CEMT INQUIRE SYSTEM	CHANGED: New options: SOSABOVEBAR, SOSABOVELINE, and SOSBELOWLINE Option made obsolete: SOSSTATUS	CHANGED: New option: MQCONN				
CEMT INQUIRE TCIPSERVICE	CHANGED: • 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				CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM
CEMT INQUIRE TSMODEL					CHANGED: Option made obsolete: EXPIRYINT	
CEMT INQUIRE TSQUEUE,					CHANGED: Option made obsolete: EXPIRYINT	
CEMT INQUIRE TSQNAME					CHANGED: Option made obsolete: EXPIRYINT	

Table 15. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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	CHANGED: New options: APPLICATION, APPLMAJORVER, APPLMICROVER, APPLMINORVER, AVAILSTATUS, OPERATION, PLATFORM	
CEMT INQUIRE VTAM®		CHANGED: New option: PSTYPE				
CEMT INQUIRE WEBSERVICE	CHANGED: New options: CCSID, MAPPINGLEVEL, MINRUNLEVEL, XOPDIRECTST, XOPSUPPORTST		CHANGED: New option: ARCHIVEFILE		CHANGED: New values: DISABLING and DISABLED on STATE option	
CEMT INQUIRE XMLTRANSFORM		NEW				
CEMT PERFORM CLASSCACHE				REMOVED		
CEMT PERFORM DUMP					CHANGED: New option: DUMPCODE	
CEMT PERFORM JVMPOOL	NEW			REMOVED		
CEMT PERFORM SNAP					CHANGED: New option: DUMPCODE	
CEMT PERFORM SSL REBUILD				NEW		
CEMT PERFORM STATISTICS	CHANGED: New options: DOCTEMPLATE, IPCONN, LIBRARY, and MQCONN			CHANGED: Options made obsolete: BEAN, CORBASERVER, JVMPOOL, JVMPROFILE, and REQUESTMODEL		
CEMT SET ATOMSERVICE		NEW				
CEMT SET BUNDLE		NEW			CHANGED: New options: AVAILABLE and UNAVAILABLE	CHANGED: New option: PHASEIN
CEMT SET CLASSCACHE				REMOVED		
CEMT SET DISPATCHER				CHANGED: Option made obsolete: MAXJVMTCBS		
CEMT SET DOCTEMPLATE	NEW					
CEMT SET EPADAPTER			NEW			
CEMT SET EPDAPTERSET				NEW		
CEMT SET EVENTBINDING		NEW				
CEMT SET EVENTPROCESS		NEW				
CEMT SET IPCONN	NEW					

Table 15. Changes to CEMT by release of CICS Transaction Server for z/OS (continued)

Command	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
CEMT SET JVMPOOL	CHANGED: Option deprecated: TERMINATE			REMOVED		
CEMT SET JVMSERVER		NEW				
CEMT SET MONITOR	CHANGED: New options: COMPRESS and NOCOMPRESS	CHANGED: New options: DPLLIMIT, FILELIMIT, IDNTYCLASS, and TSQUEUELIMIT				
CEMT SET MQCONN		NEW	CHANGED: New value: GROUPRESYNC on RESYNCMEMBER option			
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 TEMPSTORAGE			NEW			
CEMT SET TSQUEUE	CHANGED: Change of value: ALL is limited to 32766					
CEMT SET TSQNAME	CHANGED: Change of value: ALL is limited to 32766					
CEMT SET XMLTRANSFORM		NEW				

Chapter 12. 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.

Table 16. Changes to performance class data, by release of CICS Transaction Server for z/OS

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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 					
DFHCHNL			CHANGED: Fields changed to include data from the new GET64 CONTAINER and PUT64 CONTAINER commands: PGGETCCT, PGPUTCCT, PGGETCDL, PGPUTCDL, PGCRECCT			
DFHCICS			CHANGED: New fields: OADID, OADATA1, OADATA2, OADATA3, OAPPLID, OSTART, OTRANNUM, OTRAN, OUSERID, OUSERCOR, OTCPSVCE, OPORTNUM, OCLIPORT, OTRANFLAG, OFCTYNME, OCLIPADR, PHNTWKID, PHAPPLID, PHSTART, PHTRANNO, PHTRAN, PHCOUNT, EICTOTCT, TIASKTCT, TIOTCT, BFTOTCT, ECSIGECT, ECEFOPT, ECEVNTCT, ECSEVCCT, MPPRTXCD, NCGETCT			NEW: new field, NCGETCT, to count the number of EXEC CICS GET COUNTER and GET DCOUNTER requests issued by a task.

Table 16. Changes to performance class data, by release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHDATA				CHANGED: <ul style="list-style-type: none"> Field DB2WAIT is obsolete New fields: WMQASRBT 		
DFHDEST				CHANGED: New fields: TDILWTT and TDELWTT		
DFHDOCH	CHANGED: New field: DHDELCT					
DFHEJBS				REMOVED		
DFHFILE				CHANGED: New fields: FCXCWTT and FCVSWTT		
DFHPROG		CHANGED: PGMNAME now contains the target application program name				
DFH SOCK		CHANGED: <ul style="list-style-type: none"> 318 (CLIPADDR) replaces field 244. New fields: ISALLOCT, ISIOWTT, ISIPICNM, ISALWTT, SOCIPHER, CLIPPORT 				
DFHSTOR				CHANGED: New fields: SC64CGCT, SC64CHWM, SC64UGCT, SC64UHWMT, SC64SGCT, SC64GSHR, SC64FSHR		

Table 16. Changes to performance class data, by release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHTASK	Y	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) Change of impact of JVMRTIME (3.2) New fields: MAXTTDLY, ROMODDLY, SOMODDLY, T8CPUT, JVMTHDWT, CECMCHTP, CECMDLID, MAXTASKS, CURTASKS, CPUTONCP, OFFLCPUT, ACAPPLNM, ACPLATNM, ACMAJVER, ACMINVER, ACMICVER, ACOPERNM, DSAPTHWT 				NEW: New field 429, DSAPTHWT, for the dispatcher to allocate pthread wait time.
DFHTEMP						CHANGED: New fields: MNR_TSQUEUE_GET_SHR and MNR_TSQUEUE_PUT_SHR, MNR_TSQUEUE_GET_SHR_ITEML and MNR_TSQUEUE_PUT_SHR_ITEML, TSGETSCT, TSPUTSCT Changed fields: MNR_TSQUEUE_GET, MNR_TSQUEUE_PUT, MNR_TSQUEUE_GET_ITEML, and MNR_TSQUEUE_PUT_AUX_ITEML no longer include the numbers of GET and PUT requests, or item lengths for shared temporary storage, that are issued by the user task. TSTOTCT includes the count for the new TSGETSCT and TSPUTSCT fields.
DFHTERM				CHANGED: New field: TCALWTT		

Table 16. Changes to performance class data, by release of CICS Transaction Server for z/OS (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHWEBB		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, WSAEPCCT, WSATOTCT 		REMOVED		

Table 17. Changes to exception class data, by release of CICS Transaction Server for z/OS

	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
EXCMNRID				CHANGED: New values: GUDSA, GSDSA, rule_id		
XCMNTYP				CHANGED: New value: X'0004		

Table 18. Changes to transaction resource class data, by release of CICS Transaction Server for z/OS.

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
All TS queues						CHANGED: The length of the transaction resource record is extended by 120 bytes
MNR_ID_TRNGRPID			NEW			
MNR_PHD_APPLID			NEW			
MNR_PHD_ATTACH_TIME			NEW			
MNR_PHD_COUNT			NEW			
MNR_PHD_NTWKID			NEW			
MNR_PHD_TRANNUM			NEW			

Table 18. Changes to transaction resource class data, by release of CICS Transaction Server for z/OS. (continued)

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
MNR_PHD_TRANID			NEW			
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						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

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

Group	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
MNI_ID_PHD_NTWKID			NEW			
MNI_ID_PHD_APPLID			NEW			
MNI_ID_PHD_START_TIME			NEW			
MNI_ID_PHD_TRANNO			NEW			
MNI_ID_PHD_TRANID			NEW			
MNI_ID_PHD_COUNT			NEW			Y

Table 20. Changes to the Monitoring Control Table (MCT), by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
CHANGED: Default value is changed from RMI=NO to RMI=YES					

Table 21. Changes to the monitoring sample program, DFH\$MOLS, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
	New EXPAND control statement to expand any SMF 110 monitoring records that have been compressed.				
Clock fields in the format ddd hh:mm:ss.000000.					
	Support for identity class records with IDN option on the PRINT option and counts in totals report page.				
New option, DPL, on the RESOURCE control statement.					
UNLOAD control statement can be used only with monitoring data for CICS TS V3.2 onwards.					

Chapter 13. 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.

Table 22. Changes to statistics, by release of CICS Transaction Server for z/OS

Type	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
All (data section, DFHSTIDS)	CHANGED: New values: STILDB, STIMQG, STISR, and STIDHD	CHANGED: New values: STIRLR, STIW2R, STIMLR, STISJS, STIPGD, STIECG, STIECR, STIEPG, and STIECC	CHANGED: New value: STIEPR		CHANGED: New values: STILDY, STILDP, STIPGP, and STIPGE	
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		
JVM program					CHANGED: New resource statistics for private Java programs	
JVM server		NEW				
LIBRARY	NEW				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
Pipeline definition						NEW: Indicates the optimization attribute for a PIPELINE that uses a configuration file that contains a provider_pipeline_json element.
Program					CHANGED: New program loader statistics for private programs	

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

Type	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
Program definition		NEW			CHANGED: Resource definition statistics for private programs	
Requestmodel				REMOVED		
TCP/IP						NEW: Fields that show the effects of performance tuning for HTTP connections
Transactions						NEW: XMR_TRAN_ENTRYPOINT field that identifies a transaction as an application entry point
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.
WebSphere MQ Connection	NEW					
XMLTRANSFORM		NEW				

Chapter 14. 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.

Table 23. Changes to CICS utilities, by release of CICS Transaction Server for z/OS

Utility	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFH0STAT	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.	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.	
DFH0STXD		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		CHANGED: <ul style="list-style-type: none"> Report data sets produced by the LIST function of DFHCSDUP now include release information for the CSD New options: BEFORE and AFTER on ADD, resource type on COPY
DFHCSVCU				NEW		
DFH0DUxxx	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	CHANGED: Renamed with new release identifier
DFHJAIU (JVM Application Isolation Utility)				REMOVED		
DFHMEU				REMOVED		
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	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier

Table 23. Changes to CICS utilities, by release of CICS Transaction Server for z/OS (continued)

Utility	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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.	CHANGED: Support for new statistics	
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	CHANGED: Renamed with new release identifier	CHANGED: Renamed with new release identifier
The DFH0IPCC migration utility						CHANGED: creates USERAUTH attribute on the IPCONN definition if a CONNECTION has ATTACHSEC values of LOCAL, IDENTIFY, or VERIFY.
DFHDPLOY						NEW: provides a set of commands that can be used in a script to deploy, undeploy, and set the state of CICS applications and CICS bundles.
EUYXENF						CHANGED: shows the job ID or task ID or each connection to the ESSS, and the level of the ESSS program.

Chapter 15. 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.

Table 24. Changes to global user exits by release of CICS Transaction Server for z/OS

Global user exit	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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_EL_PBTOK					
XEIOUT	CHANGED: New parameter: UEP_EL_PBTOK					
XEISPIN	CHANGED: New parameter: UEP_EL_PBTOK					
XEISPOUT	CHANGED: New parameter: UEP_EL_PBTOK					
XEPCAP			NEW			
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_XRBA and UEP_FC_REASON_NOT_EXTENDED					
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_XRBA and UEP_FC_REASON_NOT_EXTENDED					
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					

Table 24. Changes to global user exits by release of CICS Transaction Server for z/OS (continued)

Global user exit	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
XMEOUT	CHANGED: New parameters: UEPCPID, UEPCPDOM, UEPCPNUM, UEPCPSEV					Changed: change to application version format affecting UEPINSA
XPCFTCH				CHANGED: New fields on UEPPCDS parameter: PCUE_AMOD, PCUE_AMOD_31, PCUE_AMOD_64		
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_RM_PBTOK					
XRMIOUT	CHANGED: New parameter: UEP_RM_PBTOK					
XRSINDI				CHANGED: New values UEIDEPAS, UEIDMPPP, UEIDWARB and UEIDEBAB for UEPIDTYP parameter	CHANGED: New parameters: UEPAPCTXT and UEPAPPTK	CHANGED: New values UEIDEARB and UEIDPKST for UEPIDTYP parameter New parameter: UEPPLATTK
XSNON						NEW: new parameter, UEPSGTYP, identifies if the SIGNON was by USERID or TOKEN.
XSRAB			CHANGED: New fields on UEPERROR parameter: SRP_ADDITIONAL_REG_INFO, SRP_ADDITIONAL_REGS_FLAG, SRP_CICS_GP64_REGS, SRP_SYSTEM_GP64_REGS, SRP_FP_REGS, and SRP_FPC_REG	CHANGED: New fields on UEPERROR parameter: SRP_CICS_ERROR_DATA, SRP_SYSTEM_ERROR_DATA		
XWBAUTH	NEW	CHANGED: Support for IPv6 addressing	CHANGED: Support for HTTP EP adapter			
XWBOPEN		CHANGED: Support for IPv6 addressing				
XWBSNDO		CHANGED: Support for IPv6 addressing	CHANGED: Support for HTTP EP adapter			
XWSPRROI		NEW				
XWSPRROO	NEW					

Table 24. Changes to global user exits by release of CICS Transaction Server for z/OS (continued)

Global user exit	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
XWSPRRWI		NEW				
XWSPRRWO		NEW				
XWSRQROI		NEW				
XWSRQROO		NEW				
XWSRQRWI		NEW				
XWSRQRWO		NEW				
XWSRQROI		NEW				
XWSSRROO		NEW				
XWSSRRWI		NEW				
XWSSRRWO		NEW				

Table 25. Changes to the TCB indicators in DFHUEPAR, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
	OBSOLETE: UEPTJ8 (J8), UEPTJ9 (J9), UEPTJM (JM),				
	NEW: UEPTTP (TP), UEPTT8 (T8)				

Chapter 16. 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.

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 26 shows the effect of different combinations of CICS release and the release-sensitivity of the call.

Table 26. User exits with different CICS releases

CICS release of the libraries that are used to assemble the XPI call	Release-sensitive XPI call? (from V4.1 only)	CICS system that the XPI call is made on	Result
5.2, 5.1, 4.2, or 4.1	Yes	Any supported CICS release	Control transfers to the correct CICS module for the XPI call
5.2, 5.1, 4.2	No	5.2, 5.1, 4.2	Control transfers to the correct CICS module for the XPI call
5.2, 5.1, 4.2	No	4.1, 3.2, 3.1	Unpredictable result
4.1	No	5.2, 5.1, 4.2, or 4.1	Control transfers to the correct CICS module for the XPI call
4.1	No	3.2 or 3.1	Unpredictable result
3.2 or 3.1	No	5.2, 5.1, 4.2, or 4.1	Back-level XPI call detected, and user exit fails
3.2	No	3.2	Control transfers to the correct CICS module for the XPI call
3.2	No	3.1	Unpredictable result
3.1	No	3.2 or 3.1	Control transfers to the correct CICS module for the XPI call

Changes to the XPI functions

Table 27. Changes to CICS XPI by release of CICS Transaction Server for z/OS

Functional area	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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.				
Bind channel						NEW: DFHPGCHX - to bind a channel to a task.
Business application manager		NEW: INQUIRE_ACTIVATION call				
Enqueue		CHANGED: New ENQUEUE_TYPE option is added to ENQUEUE and DEQUEUE				
Loader				CHANGED: <ul style="list-style-type: none"> REQUIRED_AMODE option of the DEFINE_PROGRAM call can specify the addressing mode of non-Language Environment (LE) AMODE(64) assembler programs 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 		
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.		
Monitoring				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		

Table 27. Changes to CICS XPI by release of CICS Transaction Server for z/OS (continued)

Functional area	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
Program management				<p>CHANGED: REQUIRED_AMODE option of the SET_PROGRAM call specifies the addressing mode of non-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-Language Environment (LE) AMODE(64) assembler programs</p>	<p>CHANGED: New options on the INQUIRE_PROGRAM and START_BROWSE_PROGRAM calls to inquire on private programs for applications that are deployed on platforms.</p>	
Set tracking data						<p>NEW: DFHMNTDX - to set the transaction tracking origin data tag for the issuing task.</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>		
Storage control	<p>CHANGED: New output parameter, SOS_ABOVE_THE_BAR, is added to INQUIRE_SHORT_ON_STORAGE</p>					

Chapter 17. 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.

Table 28. Changes to user replaceable programs, by release of CICS Transaction Server for z/OS

Program	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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				
DFHDSRP			CHANGED: New tokens in DFHDYPDS copybook: DYRUOWAF, DYRFUNC 7 = End_UOW, DYRLUOWID, DYRNUOWID		CHANGED: <ul style="list-style-type: none"> New tokens in DFHDYPDS copybook: DYRCLOUD, DYRPLATFORM, DYRAPPLICATION, DYRAPPLVER, DYRAPPLMAJOR, DYRAPPLMINOR, DYRAPPLMICRO, and DYROPERATION DYRVER token is incremented by 1 	
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		
DFHJVMRO				REMOVED		
DFHPEP		CHANGED: New fields: PEP_COM_BEAR, fields to support the extended z/Architecture MVS linkage conventions.				
DFHPGADX (and DFHPGAHX, DFHPGALX, and DFHPGAOX)					CHANGED: Resource definitions for the following programs now specify CONCURRENCY(THREADSAFE)	
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				

Table 28. Changes to user replaceable programs, by release of CICS Transaction Server for z/OS (continued)

Program	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHXCURM				CHANGED: New parameter: URMXCFG		
DYRABNLC						Changed: This is now set when connections are unavailable to DB2, IMS™, IBM MQ, or VSAM RLSS
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		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_UOWOPT, WTRA_LOCUOWID, WTRA_NETUOWID		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	
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.			

Chapter 18. Changes to messages and codes

This section summarizes the changes to messages and codes across supported CICS releases.

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFH51xx		NEW: DFH5137	CHANGED: DFH5120 DFH5123 to DFH5125			
DFH52xx		NEW: DFH5297	NEW: DFH5208 DFH5209 CHANGED: DFH5273			
DFH55xx		NEW: DFH5559 DFH5560				
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		REMOVED: DFH7006
DFHACnnnn	CHANGED: DFHAC2216 DFHAC2234 DFHAC2235 DFHAC2246 DFHAC2247					

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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	NEW: DFHAM4961 CHANGED: DFHAM4952	NEW: DFHAM4961
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	CHANGED: DFHAP1903	NEW: DFHAP0006
DFHBRnnnn		NEW: DFHBR0509	CHANGED: DFHBR0412			

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHCAnnnn	NEW: DFHCA5553 to DFHCA5558 CHANGED: DFHCA5147 DFHCA5190 DFHCA5272 DFHCA5288	NEW: DFHCA4800 to DFHCA4803 DFHCA4805 to DFHCA4820 DFHCA4823 to DFHCA4825 DFHCA4828 to DFHCA4834 DFHCA4836 to DFHCA4843 DFHCA4850 to DFHCA4854 DFHCA4857 to DFHCA4860 DFHCA4863 to DFHCA4866 DFHCA4867 to DFHCA4869 DFHCA4871 to DFHCA4881 DFHCA4883 to DFHCA4885 DFHCA4887 to DFHCA4918 DFHCA4920 to DFHCA4946 DFHCA4999 to DFHCA5137 DFHCA5559 to DFHCA5560	NEW: DFHCA4807 to DFHCA5208 DFHCA5209 CHANGED: DFHCA4833 to DFHCA4843 DFHCA4800 to DFHCA4999 DFHCA5120 to DFHCA5123 DFHCA5540 to DFHCA5544 to DFHCA5634 REMOVED: DFHCA5161 DFHCA5274 DFHCA5292 DFHCA5603	NEW: DFHCA4948 to DFHCA4951 DFHCA4953 to DFHCA4864 DFHCA4865 CHANGED: DFHCA4952 REMOVED: DFHCA4921 to DFHCA4927	NEW: DFHCA4864 to DFHCA4865 CHANGED: DFHCA4952	NEW: DFHCA4961
DFHCCnnnn		NEW: DFHCC0106		NEW: DFHCC0107		
DFHCEnnnn			NEW: DFHCE3554 CHANGED: DFHCE3503 DFHCE3504			
DFHCFnnnn	NEW: DFHCF0123					
DFHCSnnnn				NEW: DFHCS0001 to DFHCS0007		
DFHCZnnnn					REMOVED: DFHCZ0357 to DFHCZ0362	
DFHDBnnnn	CHANGED: DFHDB2063	NEW: DFHDB2212	CHANGED: DFHDB2005 to DFHDB2057 DFHDB2066			NEW: DFHDB2080 to DFHDB2083 DFHDB2084 to DFHDB2087 to DFHDB2089 DFHDB8300 to DFHDB8311 CHANGED: DFHDB2003
DFHDDnnnn	NEW: DFHDD0004 DFHDD0006					
DFHDHnnnn			NEW: DFHDH0300			

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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: DFHEC1001 to DFHEC1003 DFHEC1009 DFHEC4007 to DFHEC4009 DFHEC4111 DFHEC4117 REMOVED: DFHEC1010 DFHEC4112	NEW: DFHEC1027 to DFHEC1032 CHANGED: DFHEC1013		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		
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		CHANGED: DFHEP2003 DFHEP2007
DFHEXnnnnn		NEW: DFHEX0005				

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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	NEW: DFHFC6000 DFHFC6042 to DFHFC6044	NEW: DFHFC0432 DFHFC6044
DFHIIInnnn	CHANGED: DFHII1013	NEW: DFHII1039		REMOVED: all DFHIIInnn		
DFHIRnnnn			CHANGED: DFHIR3789			
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	NEW: DFHKE0007 DFHKE0108 DFHKE0119	NEW: DFHKE0108 DFHKE0109

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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	NEW: DFHLD0508I DFHLD0509I DFHLD0510I DFHLD0514WI DFHLD0515E DFHLD0516I DFHLD0517W DFHLD0518I DFHLD0526I DFHLD0527I FHLD0528W DFHLD0557I DFHLD0558I DFHLD0733 DFHLD0734 DFHLD0735 DFHLD0736 DFHLD0737 DFHLD0738 DFHLD0739 DFHLD0740 DFHLD0741 DFHLD0742 DFHLD0743 DFHLD0744 DFHLD0745 DFHLD0746 CHANGED: DFHLD0503 DFHLD0513 DFHLD0525 DFHLD0850	NEW: DFHLD0110 DFHLD0519
DFHLGnnnn		NEW: DFHLG0195 to DFHLG0197		NEW: DFHLG0789		
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					

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHMPnnnn				NEW: DFHMP001 DFHMP002 DFHMP0100 DFHMP0101 DFHMP1001 to DFHMP1002 DFHMP1004 DFHMP1005 DFHMP2003 to DFHMP2012 DFHMP3001 to DFHMP3006 CHANGED: DFHMP2006	NEW: DFHMP1007 DFHMP1008 CHANGED: DFHMP2006	NEW: DFHMP3007 DFHMP3008 CHANGED: DFHMP2003 DFHMP2004
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	NEW: DFHMQ0209 DFHMQ0210 DFHMQ0218 DFHMQ0303 DFHMQ0317 DFHMQ0320 DFHMQ0324 DFHMQ0325 DFHMQ0792 DFHMQ2064 DFHMQ2100 to DFHMQ2103 DFHMQ2107 to DFHQM2109 CHANGED: DFHMQ0453	NEW: DFHMQ2065 DFHMQ2066 CHANGED: DFHMQ0308 DFHMQ0309 DFHMQ0320 DFHMQ0749 REMOVED: DFHMQ0212 to DFHMQ0217		NEW: DFHMQ0793	NEW: DFHMQ0245 DFHMQ0793

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHMQnnnn (continued)	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 DFHMQ0702 to DFHMQ0705 DFHMQ0707 DFHMQ0710 to DFHMQ0721 DFHMQ0724 DFHMQ0725 DFHMQ0729 to DFHMQ0740 DFHMQ0745 to DFHMQ0751 DFHMQ0753 to DFHMQ0764 DFHMQ0766 to DFHMQ0791 CHANGED: CICS-MQ messages are changed from CSQCxxx to DFHMQ0xxx					
DFHMUnnnn				REMOVED: all DFHMUnnnn messages		
DFHMOVnnnn				REMOVED: DFHMOV0001		

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHNCnnnn	NEW: DFHNC0123 CHANGED: DFHNC0944					
DFHPAnnnn	NEW: DFHPA1946		NEW: DFHPA1949	CHANGED: DFHPA1909	CHANGED: DFHPA1909	
DFHPGnnnn			CHANGED: DFHPG0101 to DFHPG0103 DFHPG0201 DFHPG0209 DFHPG0210	NEW: DFHPG0300 to DFHPG0307 CHANGED: DFHPG0304 DFHPG0305 DFHPG0306	NEW: DFHPG0111 DFHPG0112 DFHPG0113 DFHPG0114 DFHPG0221 DFHPG0224 DFHPG0226 DFHPG0227 DFHPG0228 DFHPG0229 DFHPG0230 DFHPG0308 DFHPG0309 DFHPG0310 DFHPG0311 DFHPG0312 DFHPG0313 DFHPG0314 DFHPG0500 DFHPG0501 DFHPG0502 DFHPG0503 CHANGED: DFHPG0304 to DFHPG0306 DFHPG0113	NEW: DFHPG0114 DFHPG0313 DFHPG0314 DFHPG0503 CHANGED: DFHPG0113

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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 DFHPI19010 to DFHPI19032 DFHPI19035 to DFHPI19039 DFHPI19500 to DFHPI19507 DFHPI19509 to DFHPI19663 DFHPI19668 DFHPI19676 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 DFHPI19033 to DFHPI19039 DFHPI19664 to DFHPI1984 DFHPI19800 to DFHPI19823 CHANGED: DFHPI0119 DFHPI0400 DFHPI0515 DFHPI0720 DFHPI0911 DFHPI0997	NEW: DFHPI0603 DFHPI0728 DFHPI0729 DFHPI0734 to DFHPI0736 DFHPI0905 DFHPI0906 DFHPI19685 to DFHPI19688 DFHPI19691 to DFHPI16714 CHANGED: DFHPI0400 DFHPI0403 DFHPI0720 DFHPI0997 DFHPI1007 to DFHPI1010 DFHPI1010 DFHPI19506 DFHPI15253	NEW: DFHPI0404 CHANGED: DFHPI0400 DFHPI0516 DFHPI1007 to DFHPI1010	NEW: DFHPI0200 to DFHPI0204 DFHPI0220 to DFHPI0222 DFHPI19715 to DFHPI19724 CHANGED: DFHPI0516 DFHPI0914 DFHPI1007 to DFHPI1110 DFHPI0997	CHANGED: DFHPI0997
DFHRDnnnn	NEW: DFHRD0126 DFHRD0127	NEW: DFHRD0128 to DFHRD0131	CHANGED: DFHRD0107			
DFHREGxx				REMOVED: All DFHREGxx messages		
DFHRLnnnn	CHANGED: DFHRL0119	NEW: DFHRL0001 DFHRL0002 DFHRL0101 to DFHRL0121	NEW: DFHRL0122 CHANGED: DFHRL0103	NEW: DFHRL0124 to DFHRL0132 CHANGED: DFHRL0013 DFHRL0115 DFHRL0128	NEW: DFHRL0133 DFHRL0134 DFHRL0135 CHANGED: DFHRL0115 DFHRL0128	
DFHRMnnnn		NEW: DFHRM0402 to DFHRM0405		NEW: DFHRM0100		
DFHRSnnnn		NEW: DFHRS001 DFHRS002		NEW: DFHRS0007		

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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 DFHSJ1007and 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	NEW: DFHSJ1200 DFHSJ1203 CHANGED: DFHSJ0914 DFHSJ091 DFHSL1105 REMOVED: DFHSJ0902	NEW: DFHSJ1107 to DFHSJ1110 CHANGED: DFHSJ0911 DFHSJ1105
DFHSMnnnn	NEW: DFHSM0601 to DFHSM0603 DFHSM0606 DFHDSM0607		REMOVED: DFHSM0603	NEW: DFHSM0137 to DFHSM0140 CHANGED: DFHSM0602		NEW: DFHSM0121
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	NEW: DFHSO0137 DFHSO0140	NEW: DFHSO0147
DFHSRnnnn				CHANGED: DFHSR0622		NEW: DFHSR0002
DFHSTnnnn	NEW: DFHST0236					
DFHTAnnnn				NEW: DFHTA0100 DFHTA0101		

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHTCnnnn	NEW: DFHTC1600 CHANGED: DFHTC2534		CHANGED: DFHTC2536			
DFHTDnnnn	NEW: DFHTD0247 DFHTD0386		NEW: DFHTD1290 CHANGED: DFHTD1217 DFHTD1221 DFHTD1278			
DFHTInnnn	NEW: DFHTI0100 DFHTI0101			NEW: DFHTI0102 DFHTI0103 DFHTI0200 DFHTI0201		
DFHTMnnnn			NEW: DFHTM1718 DFHTM1719			
DFHTRnnnn			NEW: DFHTR0119 DFHTR0122 to DFHTR0124 DFHTR1004	CHANGED: DFHSR0622 REMOVED: DFHTR0101 DFHTR0102		NEW: DFHTR0130 DFHTR0131 DFHTR0140 DFHTR0141 DFHTR3004
DFHTSnnnn			NEW: DFHTS1601 to DFHTS1608	CHANGED: DFHTS1605		
DFHUPnnnn	CHANGED: DFHUP0203					
DFHUSnnnn		NEW: DFHUS0100	NEW: DFHUS0300 CHANGED: DFHUS0100			
DFHW2nnnn		NEW: DFHW20001 DFHW20002 DFHW20004 DFHW20006 DFHW20100 DFHW20101 DFHW20110 DFHW20111 DFHW20120 to DFHW20133 DFHW20141 DFHW20142 DFHW20151	NEW: DFHW20134 to DFHW20137 DFHW20161			
DFHWBnnnn	NEW: DFHWB0154 DFHWB0364 DFHWB0756 to DFHWB0762 DFHWB1560 DFHWB1570 CHANGED: DFHWB0101 DFHWB0151 DFHWB0731 DFHWB0734	NEW: DFHWB0763 DFHWB0764		NEW: DFHWB0800 to DFHWB0802	CHANGED: DFHWB0800	NEW: DFHWB0804 to DFHWB0808 DFHWB1580 to DFHWB1582

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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	CHANGED: DFHXM0600	NEW: DFHXM0604 to DFHXM0611
DFHXQnnnn	NEW: DFHXQ0123					
DFHXSnnnn	NEW: DFHXS1116 CHANGED: DFHXS1115					NEW: DFHXS1206 DFHXS1500

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

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFHZCnnnn	NEW: DFHZC3403 DFHZC6312 CHANGED: DFHZC3205 DFHZC5908 DFHZC5939 DFHZC5978 DFHZC5983	CHANGED: DFHZC2352 DFHZC2401 DFHZC2405 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 DFHZC4924 DFHZC4925 DFHZC4926 DFHZC4937 DFHZC4938 DFHZC4941 DFHZC4942				

Table 30. Changes to CICSplex SM messages, by release of CICS Transaction Server for z/OS

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
EUYNLnnnn				NEW: EYUNL0152W		
EYUPMnnnn				NEW: EYUPM007I EYUPM008I		
EYUPMnnnn				NEW: EYUPP007I EYUPP008I		
EYUWIinnnn				NEW: EYUWI0011E EYUWI0012E CHANGED: EYUWI0020 EYUWI0021 EYUWI0080 EYUWI0081 EYUWI0082 EYUWI0083 EYUWI0084 EYUWI0085 EYUWI0090		

Table 30. Changes to CICSplex SM messages, by release of CICS Transaction Server for z/OS (continued)

Message	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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		
EYUXDnnnn				NEW: EYUXD0718E EYUXD0719I EYUXD0720E		

Table 31. Changes to CICS codes, by release of CICS Transaction Server for z/OS

Codes	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
AAxx	NEW: AALY AALZ AAM3	NEW: AALA AALC AAM4		NEW: AALB		
ABxx			NEW: ABRP	REMOVED: ABX9		
ACxx		NEW: ACRQ	NEW: AC SO			
ADxx	NEW: ADCF		NEW: ADDK			NEW: AD31-AD33 AD35-39 AD4A
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	NEW: AFDO AFDP	

Table 31. Changes to CICS codes, by release of CICS Transaction Server for z/OS (continued)

Codes	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
AIxx	NEW: AIPA AIPB AIPC AIPD 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		
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				NEW: AWBD
AXxx		NEW: AXFN AXFV		NEW: AXFZ	NEW: AXSE AXSF AXSG	

Table 32. Changes to HTTP status codes, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
	<p>New HTTP status codes for Atom feeds:</p> <ul style="list-style-type: none"> • 201 Created • 409 Conflict <p>Changed HTTP status codes:</p> <ul style="list-style-type: none"> • 400 Bad Request • 403 Forbidden • 404 Not Found • 412 Precondition Failed • 500 Resource Error • 503 Service Unavailable 				

Chapter 19. 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.

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

Type	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
FILEA (DFH\$AALL, DFH\$ABRW, DFH\$ACOM, DFH\$AMNU, DFH\$AREP, and DFH\$AREN)			CHANGED: <ul style="list-style-type: none"> 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			
DFH\$DB2				CHANGED: JDBC samples removed: CICSDataSource, CICSDataSourcePublish, CICSDataSourceRetract and CICSjdbcDataSource		
DFH\$DCTD				REMOVED		
DFH\$DCTR				REMOVED		
DFH\$DCTS				REMOVED		
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\$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)					

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

Type	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
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)					
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: <ul style="list-style-type: none"> • New custom EP adapter sample (COBOL) • Changed to set the default CICS TS queue (TSQ) for system events to userid.SYSTEM. 			
DFH0STEP			CHANGED: <ul style="list-style-type: none"> • New custom EP adapter sample (COBOL) • Changed to collect and print new event processing statistics 			
DFH0WBCO	CHANGED: Chunking client sample (COBOL)					
DFH0WBHO	CHANGED: Chunking server sample (COBOL)					

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

Type	V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
DFH0WBPO	CHANGED: Pipelining sample (COBOL)					
DFH0W2F1		CHANGED: New COBOL atom feed sample service routine				

Chapter 20. 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.

Table 34. Changes to CICSplex SM installation and definition, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
		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: TCPIPSSLCERT CICSplex SM WUI server initialization parameter now has a case sensitive specified value.				
			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 size of the Common Work Area has increased to 2048 bytes.				
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 5655M15.	CHANGED: The product number used in Tivoli NetView SNA Generic Alerts changed to 5655S97.		CHANGED: The product number used in Tivoli NetView SNA Generic Alerts changed to 5655Y04.		

Table 35. Changed CICSplex SM views

Transaction Server for z/OS Release	Changed CICS resource type or function	Corresponding changed CICSplex SM views
5.2	WEBSERVICE resources in CICS bundles	1. CICS operations views > TCP/IP service operations views > Web services
5.1	CICS monitoring: new fields added or obsolete fields made invalid in new releases	1. CICS operations views > Task operations views > Active tasks 2. CICS operations views > Task operations views > Completed tasks 3. Monitoring views > Transaction monitoring views > Local or dynamic
5.1	CICS system: changed MAXTASKS input value	CICS operations views > CICS region operations views > CICS regions

Table 35. Changed CICSplex SM views (continued)

Transaction Server for z/OS Release	Changed CICS resource type or function	Corresponding changed CICSplex SM views
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"> 1. CICS operations views > CICS region operations views > CICS regions 2. Monitoring views > Transaction monitoring views > Local or dynamic 3. CICS operations views > Task operations views > Active tasks 4. CICS operations views > Task operations views > Completed tasks
5.1	JVM servers	<ol style="list-style-type: none"> 1. CICS operations views > CICS region operations views > CICS regions 2. EYUSTARTCICSRGN.DETAILED > Logging and journaling activity > Monitor status 3. CICS operations views > Task operations views 4. CICS operations views > Enterprise Java component operations views > JVM servers
5.1	Loader information: RO TCB load fields	<ol style="list-style-type: none"> 1. CICS operations views > CICS region operations views > Loader information 2. 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"> 1. CICS operations views > CICS region operations views > CICS regions 2. CICS operations views > Task operations views > Active tasks 3. CICS operations views > Task operations views > Completed tasks
5.1	Task storage: GCDSA and GUDSA are now supported	CICS operations > CICS region operations views > Task subpool
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: 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

Table 35. Changed CICSplex SM views (continued)

Transaction Server for z/OS Release	Changed CICS resource type or function	Corresponding changed CICSplex SM views
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	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
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
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

Table 35. Changed CICSplex SM views (continued)

Transaction Server for z/OS Release	Changed CICS resource type or function	Corresponding changed CICSplex SM views
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
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 36. New CICSplex SM views and resource tables

CICS Transaction Server for z/OS Release	Resource type or function	CICSplex SM views	CICSplex SM resource tables
5.2	Installed analysis definitions associated with an analysis point specification	Real Time Analysis (RTA) views > Installed analysis definitions associated with an analysis point specification	APACTV
5.2	Real Time Analysis (RTA) installed analysis and status definitions	Real Time Analysis (RTA) views > Real Time Analysis (RTA) installed analysis and status definitions	RTAACTV
5.1	Applications	Not applicable	APPLCTN
5.1	Application definitions	Not applicable	APPLDEF

Table 36. New 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
5.1	Event processing adapter sets	Not applicable	EPADSET
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	BUNDDEF
4.1	BUNDLE resources in a resource group	Administration views > Basic CICS resource administration views > Resource definitions in a resource group	BUNINGRP

Table 36. New 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
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 previously supported only by the EUI)	Administration views > CMAS configuration administration views > CMAS in CICSplex definitions	CPLXCMAS (existing resource table)
3.2	Historical data for tasks	CICS operations views > Task operations views > Completed tasksEYUSTARTHTASK, EYUSTARTMASHIST , and EYUSTARTTASKRMI	HTASK (existing resource table) MASHIST TASKRMI

Table 36. New 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
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 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 37. 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 38. New BAS definition objects

CICS Transaction Server for z/OS Release	BAS object	What is it?
4.1	ATOMDEF	CICS definition that describes an ATOMSERVICE resource.
4.1	ATMINGRP	BAS definition that describes the membership of an ATOMSERVICE definition (ATOMDEF) in a resource group.
4.1	BUNDDDEF	CICS definition that describes a BUNDLE resource.

Table 38. New BAS definition objects (continued)

CICS Transaction Server for z/OS Release	BAS object	What is it?
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.
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 39. Changes to CICSplex SM transactions, by release of CICS Transaction Server for z/OS

V3.2	V4.1	V4.2	V5.1	V5.2	V5.3
	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: HTASK and Task resource tables include counts for requests to a named counter server
	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.				
	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.				

Part 3. 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. 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.







In the kind of complex, enterprise-scale environments that include CICS Transaction Server for z/OS, there are many dependencies to consider. The upgrade must be accommodated on top of regular operations, with minimal impact to Production systems. For CICS TS for z/OS, the ability to skip multiple releases increases the complexity of the upgrade process.

Chapter 21. Upgrading from CICS TS Developer Trial

You can upgrade CICS regions from Developer Trial to a full version of either CICS TS or Value Unit Edition (VUE) without having to reinstall.

If you are upgrading to Value Unit Edition, first make sure that you meet the conditions for eligible workloads. For details about eligibility, see the CICS TS announcement letter on the IBM Offering Information web page.

Upgrade actions

Your current version	Action	Mandatory or optional?
 V5.1  V5.2	"Install the activation module"	Mandatory
 V5.1  V5.2	"Replace the SDFHDEV library"	Mandatory
 V5.1  V5.2	"Start the CICS region" on page 112	Mandatory

 V5.1  V5.2

Install the activation module

Install the activation module for either CICS TS or Value Unit Edition. For instructions, see in the IBM Knowledge Center. You don't need to install the base module because you can use the libraries that you installed for Developer Trial.

[Back to top](#)

 V5.1  V5.2

Replace the SDFHDEV library

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

- The SDFHLIC or SDFHVUE library must be APF-authorized.
- 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.

[Back to top](#)

 V5.1  V5.2

Start the CICS region

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

- Message and message , which are issued when you start a Developer Trial region, should *not* be displayed.
- For Value Unit Edition only, message confirms that you are running Value Unit Edition on a zNALC LPAR. Message is issued if you are running on a non-zNALC LPAR. You must either reconfigure your LPAR to be a zNALC LPAR, or reinstall on a zNALC LPAR.

[Back to top](#)

Chapter 22. Upgrading CICSplex SM

This section tells you how to upgrade CICSplex SM. If you have CPSM, upgrade CPSM before you take action on the other areas of your CICS configuration. If you don't have CPSM, you can skip this section.

Upgrade actions

Your current version	Action	Mandatory or optional?
ALL VERSIONS	Check compatibility requirements for different levels of	Mandatory
ALL VERSIONS	Back up your configuration	Optional, but strongly recommended
V3.2	Replace a CAS with a WUI	Mandatory
ALL VERSIONS	"Upgrade a maintenance point CMAS" on page 116	Mandatory
ALL VERSIONS	Upgrade a WUI and the contents of the WUI server repository (EYUWREP)	Mandatory
ALL VERSIONS	"Upgrade a non-maintenance point CMAS" on page 122	Mandatory
ALL VERSIONS	Upgrade a CICSplex SM managed CICS system (MAS)	Mandatory
ALL VERSIONS	Upgrade API programs	Mandatory
V3.2	Delete previous CICSplex SM release definitions from CSD files	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)	Mandatory
ALL VERSIONS	Update consumers of Tivoli NetView SNA Generic Alerts (for Tivoli NetView users only)	Mandatory
ALL VERSIONS	Recompile your programs to match the current release of CICSplexSM (for programs that connect to a previous release of CICSplexSM only)	Optional, but strongly recommended

ALL VERSIONS

Check compatibility requirements for different levels of CICSplex SM

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

Applying support for a protection exception issue in V3.2

If you have difficulty running CICSplex SM with CICS TS for z/OS,

Version 3.2 because of a recursive 0c4 protection exception in module DFHMSMR, apply PTF UK43094 for APAR PK77484 and restart the system.

CMAS

You can run a CMAS at Version 5.3 that connects to a CMAS running at Version 5.2, Version 5.1, Version 4.2, Version 4.1, Version 3.2, or Version 3.1. However:

- A CICS TS for z/OS, Version 5.3 CICSplex SM CMAS runs only in a CICS system at Version 5.3
- In a CICSplex that consists of CMASs at the latest level and at one or more earlier levels, the maintenance point 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 5.3 must be the maintenance point.
- You cannot view all resources of a CICS TS for z/OS, Version 5.3 region using a CMAS running 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. For example, a MAS running Version 5.2 is connected to a CMAS that also runs Version 5.2. 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 Version 5.3 , Version 5.2, Version 5.1, Version 4.2, Version 4.1, Version 3.2, and Version 3.1 can be connected to CICSplex SM Version 5.3 . To be connected to CICSplex SM Version 5.3 , CICS systems must use the CICSplex SM Version 5.3 MAS agent, so they must have the CICSplex SM Version 5.3 libraries in their CICS JCL. For a CICS system that runs CICS TS for z/OS, Version 3.1 , you must also apply the compatibility APAR PK17360 to the CICS system.

If you are using the API or Web User Interface to manage MASs connected to a CMAS at an earlier release, make sure that the MASs are managed indirectly from the Version 5.3 CMAS:

- We recommend that WUI servers run at the latest release. If they are not, they cannot see any of the resources of the latest release. If you have a mix of releases, we recommend that only the WUI at the latest release is used 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 5.3 CMAS, if the CMAS participates in the management of the CICSplex. However, the WUI server cannot retrieve data about resource types that were not available in the earlier release.

If you want to create any of the following CICSplex SM objects, you must create them using a WUI server that is running at the same CICSplex SM release level as the maintenance point CMAS:

- CPLEXDEF (CICSplex definition)
- CMTCMDEF (CMAS to CMAS link definition)
- CSYSGRP (system group definition)
- PERIODEF (time period definition)
- MONSPEC (monitor specification)
- MONGROUP (monitor group)
- MONDEF (monitor definition)
- RTAGROUP (RTA group)
- RTADEF (RTA definition)
- WLMSPEC (WLM specification)
- WLMGROUP (WLM group)
- WLMDEF (WLM definition)
- TRANGRP (transaction group)

If you use the API, EYU9XDBT, or the BATCHREP batched repository-update facility to create these objects, CICSplex SM and the maintenance point CMAS release level must, again, be at the same release level.

Workload management (from CICS TS V4.2)

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

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

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

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 the Version 4.2 level or later. This causes UOW affinities to be honored by any other region that joins the workload name that is at the Version 4.2 level or later. If any regions that are at earlier release levels join the workload, they are not able to use the UOW affinity function, and must continue to make routing decisions 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 is not capable of exploiting any defined UOW affinities.

Considerations for releases earlier than Version 3.1

If you have any CICS systems between Version 3.1 and 5.3 that are connected to an earlier release of CICSplex SM, you are recommended to migrate them to the current release of CICSplex SM to take full advantage of the enhanced management services.

If you want to manage CICS systems at an earlier release level than the releases listed here, connect them to a CMAS running at an earlier release level that supported those systems. This CMAS can be connected to your CICSplex SM Version 5.3 CMAS, so that the older CICS systems are indirectly connected to the Version 5.3 CMAS.

[Back to top](#)

ALL VERSIONS

Back up your CICSplex SM configuration

We strongly recommend that you back up of 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 (for CICSplex SM users only)” on page 127.

Note: Although it is recommended that you keep back ups of your CMAS data repositories, do not use the back up 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 (for CICSplex SM users only)” on page 127. Failure to do this might result in CMASs becoming isolated.

[Back to top](#)

> V3.J

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.

[Back to top](#)

ALL VERSIONS

Upgrade a maintenance point CMAS

You must upgrade your CICSplex SM CMAS to Version 5.3 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 5.3 level and at one or more earlier levels, the maintenance point CMAS must be at the Version 5.3 level. So, when a CICSplex contains CMASs at more than one level, the first CMAS upgraded to Version 5.3 must be the maintenance point. To upgrade the maintenance point CMAS, follow all the steps below.

1. If the MP CMAS is running, stop it. You can continue to execute 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 you should not make any changes to definitions while the MP CMAS is down.

2. Upgrade the CICS modules to Version 5.3. 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, with an appropriate value. Specifying each CMAS correctly in IEASYSxx in the IBM Knowledge Center explains what values are suitable. If you are running both a previous release and Version 5.3 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 5.3 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 in the IBM Knowledge Center.
5. Update the MVS linklist with the Version 5.3 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 5.3 group of resource definitions and CICS startup group list. You do not need to do 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. It is likely that you prefer to copy the CSD that the CMAS currently uses, and upgrade this copy. Here is an example of a job that does that:

```
//DFHCSDUP JOB MSGCLASS=A,NOTIFY=&SYSUID,CLASS=A
//*
//* UPGRADE THE CSD TO 5.3
//*
//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.CICS700.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 5.3. The safest way is to copy the upgraded default resource definitions and reapply your modifications. It is important to upgrade your modified definitions to ensure that they are defined correctly with non-default values for attributes that are new. If you fail to upgrade modified definitions, CICS assigns default values to any new attributes. The default values might be inappropriate for your requirements.
8. Use the EYU9XDUT utility to upgrade the data repository (EYUDREP data set) for the CMAS to Version 5.3. It is very important that you upgrade the data repository file itself instead of a copy of the data repository. Failure to do this can cause CMAS isolation issues 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. Failure to do this might result in CMASs becoming 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. DFHDEFDS creates the LCD and GCD files and initializes them. It 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 information about these parameters, see CICSplex SM system parameters in the IBM Knowledge Center.
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. Cold start the upgraded MP CMAS.

Back to top

ALL VERSIONS

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

A Web User Interface server and the CMAS to which it connects must be at the highest level of CICSplex SM and CICS in the CICSplex. They must be at the same level as the maintenance point CMAS. Web User Interface servers that have not yet been upgraded to the same level as the maintenance point CMAS can be used, but they might return unreliable results until you upgrade them.

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, using the instructions in “Upgrade a non-maintenance point CMAS” on page 122. If the CMAS to which the Web User Interface server connects is not the maintenance point CMAS, you must also upgrade the maintenance point CMAS before you start the Web User Interface server and the CMAS to which it connects. Upgrade the Web User Interface server to Version 5.3 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 5.3. In other MASs, you can upgrade only the CICSplex SM MAS agent, and you are not required to upgrade the CICS region.

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

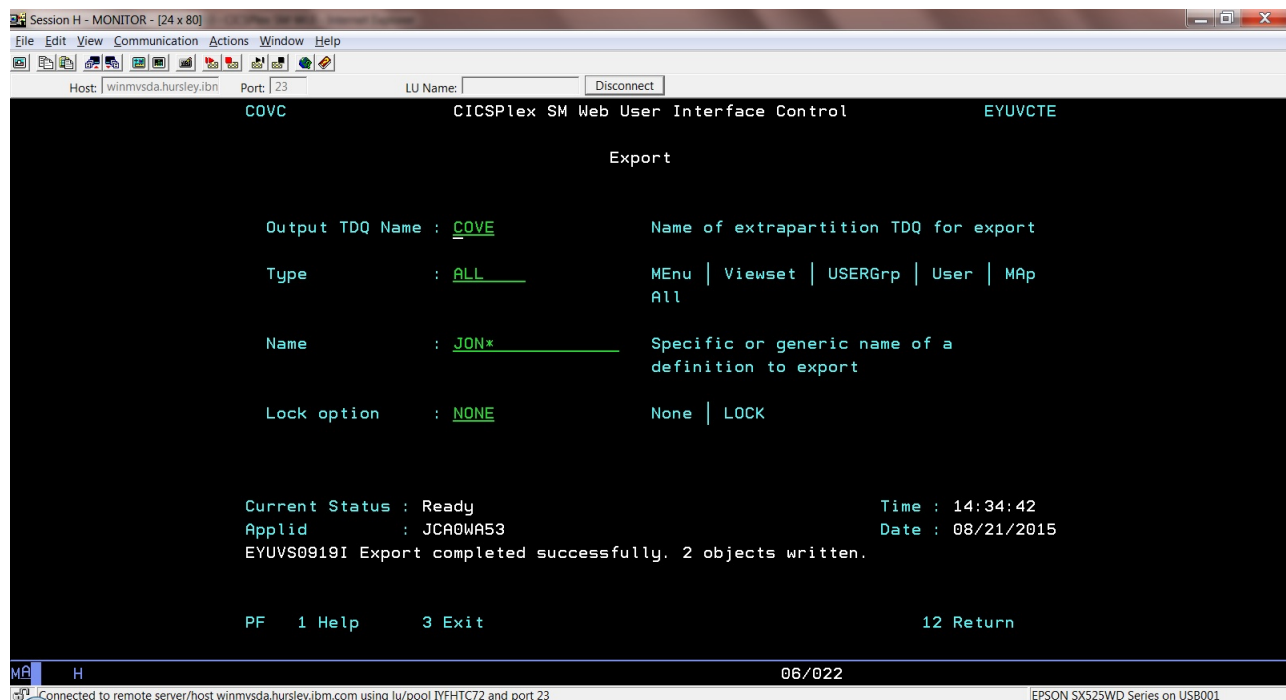
(EYUWREP) and some new import (EYUCOVI) and export (EYUCOVE) files to use later if you tailored or used your own WUI view or menus. EYUWUIDS also creates the WUIs, the trace, dump, INTRA TD, LCD, GCD, LRQ, and CSD files.

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 and re-import the artifacts from the current WUI. You can use the COVC transaction to do the export and import. If you use only the IBM-supplied WUI menus and views, you can skip the remainder of this step.

Using the EYUCOVE (export) dataset that was previously created by EYUWUIDS, apply the COVE file to the WUI start up 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 dataset. Do this with the COVC transaction, by selecting the “Export” option. On the “Output TD Queue name”, specify COVE. The Type can be MENU, VIEWSET, USERGRP, USER, MAP, or specify ALL if you want to extract all of your artifacts together. This example exports to COVE all artifacts that begin with the characters JON*:



After the data is exported, you must import it. This is done later during the step to “Upgrade the contents of the Web User Interface server repository (EYUWREP)” on page 121.

3. Authorize the Version 5.3 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 5.3 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 5.3 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 5.3 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 5.3 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 in the IBM Knowledge Center.

5. Upgrade the CSD file that is used by the WUI with the Version 5.3 group of resource definitions and CICS startup group list. You do not need to carry out 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. It is likely that you prefer to copy the CSD that the WUI currently uses, and upgrade this copy. Here is an example of a job that does that:

```
//DFHCSDUP JOB MSGCLASS=A,NOTIFY=&SYSUID,CLASS=A
/*
/* UPGRADE THE CSD TO 5.3
/*
//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.CICS700.DFHCSD,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 5.3.

The safest way to upgrade the resource definitions is to copy the Version 5.3 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 attributes that are new. If you do not upgrade your modified definitions, CICS assigns default values to any new attributes. These 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 5.3 names. For information about the MAS startup JCL, see Changing startup JCL before starting a MAS in the IBM Knowledge Center.
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. System initialization parameters can be specified 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 CICS-supplied default startup group list, DFHLIST, any CSD groups that contain resource definitions that you modified, and the 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 do this by using the EYUJHIST sample job and following the upgrading instructions, which are supplied as comments, in the sample. The EYUJHIST sample is supplied uncustomized in the TDFHINST library, and customized by DFHISTAR in the XDFHINST library. Remember to edit the MAS startup JCL to include the history data sets.

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

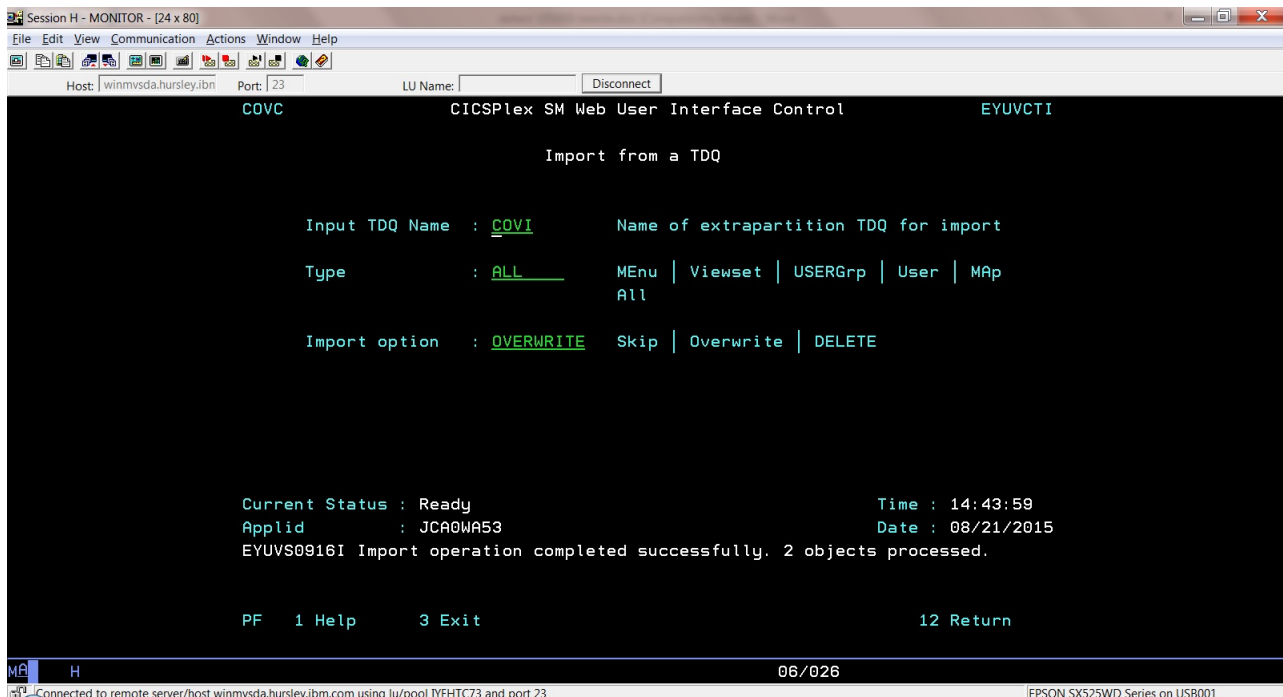
This step is needed only if you have tailored the WUI, for example, menus, views, and usergrps. If you use only the IBM-supplied menus and views, you can skip this step.

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

The previous steps to upgrade a WUI server included a step to use the export function of the COVC transaction to export your existing view set and menu definitions from the Web User Interface server repository to an export file. When you upgrade the Web User Interface server repository to Version 5.3, you can import a view set and menu definitions from a previous release into your new Web User Interface server repository. You do not need to make any changes to existing customized views and menus, but you can consider modifying or creating new view sets to take into account the new attributes and resources at the next release level.

1. When you have exported to the COVE file, amend the Version 5.3 WUI start up JCL so that the exported dataset becomes the DD name that is used for the COVI (import) file. For example:

```
//EYUCOVI DD DSN=h1q.EYUCOVE,DISP=SHR
```
2. Start the Version 5.3 WUI.
3. Use the COVC **Import from a TDQ** option to import the view set and menu definitions from the COVI dataset. On the Input TD Queue name, specify COVI. The Type can be MENU, VIEWSET, USERGRP, USER, MAP or use ALL if you want to import all of your artifacts together. Specify the OVERWRITE option to harden the changes. The following example imports ALL changes from COVI:



Back to top

ALL VERSIONS

Upgrade a non-maintenance point CMAS

You must upgrade your CICSplex SM CMAS to Version 5.3 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, note that non-Sysplex Optimized workloads continue, but information about the region health might be unavailable while the CMAS is down. This can impact routing decisions during this time. For Sysplex Optimized workloads, region information should continue to be obtained from the coupling facility during the time that the CMAS is down.

When you upgrade a CMAS that is not a maintenance point CMAS, all of the CICSplex records are removed from its data repository. The CMAS cannot connect to its MASs, or join MASs connected to other CMASs, until it reconnects to its maintenance point, at which point its data repository is resynchronized for the CICSplex. Both the maintenance point and non-maintenance point issue EYULOG messages EYUCP0203I and EYUCP0204I. The data repository synchronize is not complete until both CMASs issue both messages. Depending on the number of records in the CICSplex, the maintenance point usually takes longer than the non-maintenance point. This means that the time between the two messages on the non-maintenance point is short, but the time between the two messages on the maintenance point is longer.

To upgrade a CMAS that is not a maintenance point:

- Check that the maintenance point 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 maintenance point CMAS is still at an earlier level. If the CMAS is started in a CICSplex that has a maintenance point CMAS at an earlier level, message EYUCP0012E is issued. In an environment with multiple interconnecting CICSplexes, this message and message EYUTS0012E can be issued repeatedly.
- Take down each non-maintenance point CMAS
- Follow the steps 2 - 12 below 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 5.3. 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, with an appropriate value. Specifying each CMAS correctly in IEASYSxx in the IBM Knowledge Center explains what values are suitable. If you are running both a previous release and Version 5.3 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 5.3 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 in the IBM Knowledge Center.
 5. If you have not already done so as part of the MP CMAS upgrade, update the MVS linklist with the Version 5.3 modules that are required for CICS and CICSplex SM. See Installing CICS-required modules in the MVS linklist in the IBM Knowledge Center.
 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 5.3 group of resource definitions and CICS startup group list. You do not need to do 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. It is likely that you prefer to copy the CSD that the CMAS currently uses, and upgrade this copy. Here is an example of a job that does that:


```
//DFHCSDUP JOB MSGCLASS=A,NOTIFY=&SYSUID,CLASS=A
//*
//* UPGRADE THE CSD TO 5.3
//*
//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.CICS700.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 5.3. The safest way is to copy the upgraded default resource definitions and reapply your modifications. It is important to upgrade your modified

definitions to ensure that they are defined correctly with non-default values for attributes that are new. If you fail to upgrade modified definitions, CICS assigns default values to any new attributes. The default values might be inappropriate for your requirements.

8. Use the EYU9XDUT utility to upgrade the data repository (EYUDREP data set) for the CMAS to Version 5.3. It is very important that you upgrade the data repository file itself instead of a copy of the data repository. Failure to do this can cause CMAS isolation issues 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* in the IBM Knowledge Center. 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. Failure to do this might result in CMASs becoming 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 XDHFINST. This library contains member DFHDEFDS. DFHDEFDS creates the LCD and GCD files and initializes them. It 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 information about these parameters, see *CICSplex SM system parameters* in the IBM Knowledge Center.
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 maintenance point CMAS for the CICSplex is running in every CICSplex where the CMAS is a member. Perform a cold start of 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.

Back to top

ALL VERSIONS

Upgrade a CICSplex SM managed CICS system (MAS)

When you upgrade a CICSplex SM MAS to CICSplex SM Version 5.3, you might choose to upgrade only the CICSplex SM MAS agent. You are not required to upgrade the CICS region to Version 5.3 at the same time.

Before you upgrade a CICSplex SM MAS to CICSplex SM Version 5.3, 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 5.3 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. Every CICSplex SM module installed in the LPA can be used only by the release of CICSplex SM to which it relates.
 - a. If you put the Version 5.3 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 5.3 modules in the LPA at the end of the upgrade process, make sure your upgraded MASs are using the Version 5.3 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 in the IBM Knowledge Center.

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 5.3 SEYUAUTH and SEYULOAD library names. The Version 5.3 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 in the IBM Knowledge Center.
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 5.3. System initialization parameters can be specified 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 following the upgrading instructions, which are supplied as comments, in the sample. The EYUJHIST sample is supplied uncustomized in the TDFHINST library, and customized by DFHISTAR in the XDFHINST library. Remember to edit the MAS startup JCL to include the history data sets.
5. If you also want to upgrade the CICS region to Version 5.3 at this time. You must upgrade the CSD for CICS as instructed, but you do not need to do 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, there are still some steps that need to be considered. See Chapter 23, “Upgrading CICS regions,” on page 129 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, ensure that it is cold-started.

[Back to top](#)

[ALL VERSIONS](#)

Upgrade CICSplex SM API programs

CICSplex SM API programs that were written to run in a MAS at a previous release can be run in a Version 5.3 MAS. You can either continue to access the data that is provided by the previous release or access the new data available from Version 5.3. For information about using API programs with different releases of CICSplex SM, see Compatibility between releases of CICSplex SM in the IBM Knowledge Center.

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, note that 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. API programs querying WLMAWTOR, therefore, 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 to top

► V3.1

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 5.3, 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 CICSTS53.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.

Back to top

ALL VERSIONS

Back out of a CICS upgrade (for CICSplex SM users only)

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

- Make sure 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 in the IBM Knowledge Center .

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 in the IBM Knowledge Center.

ALL VERSIONS

Upgrade the Region Status Server (for Sysplex Optimized Workload users only)

The Region Status 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, so you must update the STEPLIB reference in the RS Server JCL to locate the latest CICS-authorized load library. Before you do so, be aware that your dynamic routing environment might consist of Routing and Target CICS regions at different release levels of CICS. Therefore, only restart your RS Server with the new CICS version library after all the CICS regions that participate in a workload (Router or Target) is upgraded to the latest CICS version. The version of your RS Server should match the lowest CICS release level of any regions that participate in your workloads. For more information, see Setting up and running a Region Status Server in the IBM Knowledge Center.

ALL VERSIONS

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

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

“Product Set ID” (X'10') MS common subvector is a “Product ID” (X'11') common subvector that identifies the product as IBM Software (X'04'). It contains a “Product Number” (X'08') Product ID subfield that identifies the product number.

See Chapter 20, “Changes to CICSplex SM,” on page 101 for the product numbers 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 identifying the product identifier, you will need to 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 using a Message Automation Table, see Writing Automation Table Statements to Automate MSUs in the Tivoli NetView for z/OS documentation.

For information about using MSUSEG to process CPSM alerts, see the Automating CICS/ESA Operations with CICSplex SM and NetView Redbook.

ALL VERSIONS

Recompile your programs to match the current release of CICSplex SM (for programs that connect to a previous release of CICSplex SM only)

API programs that specify a CRITERIA string to limit the size of a result set on a GET or PERFORM OBJECT request, or use the SPECIFY FILTER verb, can experience the increase in CMAS CPU and ESSS storage. Batch job run times might also increase.
















You are not required to recompile your CICSplex SM API programs when you upgrade to the new release. However, if you do not recompile affected programs, the CMAS has to convert the records from the current release format to the level specified on the VERSION keyword on the CONNECT verb. This transformation process is highly intensive for CPU and storage when the result set is very large, for example, 300,000 - 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 has to retrieve all program objects and return them to the CMAS where the API is connected, transform the records to the version of the API, and then apply the filtering.

If you recompile your programs to specify the VERSION keyword to match the current release of CICSplex SM, this conversion does not take place, and storage and CPU consumption do not increase significantly.

Chapter 23. 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.

Upgrade actions

Your current version	Action	Mandatory or optional?
   	APF-authorize the CICS activation modules	Mandatory
	Redefine and initialize the local and global catalogs	Mandatory
	Enable z/OS conversion services	Optional
	Upgrade the CSD	Mandatory
	Upgrade user-modified, CICS-supplied resource definitions	Mandatory
	Upgrade your copies of CICS-supplied resource definitions	Mandatory
	Review DSA size limits	Mandatory
    	Migrate the DFHLRQ data set	Mandatory



APF-authorize the CICS activation modules

CICS TS V5 introduced activation modules for each edition: base, Developer Trial, and Value Unit Edition. You must:

- AFP-authorize the SDFHLIC or SDFHVUE library.
- Add the SDFHLIC or SDFHVUE library in the STEPLIB of the CICS TS JCL.

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

ALL VERSIONS

Redefine and initialize the local and global catalogs

You must delete, redefine, and initialize the DFHLCD and DFHGCD datasets:

- Delete your existing datasets.
- Define and initialize new local and global catalogs, following the instructions in Defining the global catalog and Defining the local catalog in the IBM Knowledge Center. 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, using the START=INITIAL parameter.

ALL VERSIONS

Enable z/OS conversion services

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

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

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

ALL VERSIONS

Upgrade the CSD

If you have resource definitions in your CSD that support other IBM products, such as z/OS, you might also need to upgrade these definitions. 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. See CSD compatibility between different CICS releases for details.

To upgrade the CSD, you have two alternatives:

1. Upgrade the CICS-supplied definitions in your CSD to the latest level. To do this, run the DFHCSDUP utility program with the UPGRADE command.
2. Define a new CSD by using DFHCSDUP INITIALIZE command.

If you have resource definitions in your CSD that support other IBM products, upgrade these definitions as required. For example, if you upgrade z/OS release, you must upgrade your Language Environment[®] resource definitions to the new z/OS level by deleting and replacing the CSD group that contains them. The Language Environment resource definitions are in the SCEESAMP library in member CEECCSD. Figure 1 is an example of how to delete and replace the CSD

group that contains the LE definitions.

```
//JOBNAME JOB 1,userid,
//      NOTIFY=userid,CLASS=n,MSGLEVEL=(n,n),MSGCLASS=n
/*JOBPARM SYSAFF=sysid
/* Remove Old Language Environment group
//CSDUP1 EXEC PGM=DFHCSDUP,REGION=2M,PARM='CSD(READWRITE) '
//STEPLIB DD DSN=CICSTS53.CICS.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS53.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
DELETE GROUP(CEE)
/*
//
//CSDUP2 EXEC PGM=DFHCSDUP,REGION=2M,PARM='CSD(READWRITE) '
//STEPLIB DD DSN=CICSTS53.CICS.SDFHLOAD,DISP=SHR
//DFHCSD DD DSN=CICSTS53.CICSHURS.DFHCSD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABOUT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD DSN=SYS1.ZOS113.SCEESAMP(CEECCSD),DISP=SHR
/*
//
```

Figure 1. Sample job for additional CSD modification

ALL VERSIONS

Upgrade user-modified, CICS-supplied resource definitions

If you modified any of the CICS-supplied resource definitions in your current release of CICS TS, you must upgrade them. This 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 that it finds 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 allows you to specify the changed name as an alias.
2. Copy the upgraded CICS-supplied definitions and reapply your modifications. This is the safest way to upgrade your definitions. This action 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 5.3. The dynamically-created resource definitions and their attributes are in the following members of the SEYUSAMP sample library:
 - EYU\$CDEF contains the default resource definitions for a CMAS.
 - EYU\$MDEF contains the default resource definitions for a MAS.

- EYU\$WDEF contains the default resource definitions for a WUI server.

ALL VERSIONS

Upgrade your copies of CICS-supplied resource definitions

If you made copies of 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 if you copied any CICS-supplied definitions.
2. Review DFH\$CSDU to determine if 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 now defined as CONCURRENCY(THREADSAFE). Therefore, DFH\$CSDU contains the following command:

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

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

ALL VERSIONS

Review DSA size limits

It is not advisable to set the size of individual dynamic storage areas (DSAs), and usually it is not necessary. However, it is possible to set the size of some DSAs by using the CDSASZE, UDSASZE, RDSASZE, ECDSASZE, EUDSASZE, ESDSASZE, and ERDSASZE system initialization parameters. All of these parameters default to 0. 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 DSA in 64-bit storage.

For example, CDSASZE sets the size of the CICS® dynamic storage area (CDSA), and ECDSASZE specifies the size of the extended CICS dynamic storage area (ECDSA). The default value for these parameters is 0, indicating that the size of the DSA can change dynamically. If you specify a nonzero value, the DSA size is fixed. If you specify DSA size values that in combination do not allow sufficient space for the remaining DSAs, CICS fails to initialize.



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 dataset from your current release.

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 40 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 4.1 region with a CSD that is upgraded to CICS TS 5.2, add the DFHCOMPG compatibility group, followed by the DFHCOMPF compatibility group, followed by the DFHCOMPE compatibility group, to the end of your group list.

Table 40. Required compatibility groups for earlier releases of CICS

	CICS TS 5.3 CSD	CICS TS 5.2 CSD	CICS TS 5.1 CSD	CICS TS 4.2 CSD	CICS TS 4.1 CSD	CICS TS 3.2 CSD	CICS TS 3.1 CSD
Shared with CICS TS 5.3	None	Do not share	Do not share	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 5.2	None	None	Do not share	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 5.1	DFHCOMPG	DFHCOMPG	None	Do not share	Do not share	Do not share	Do not share
Shared with CICS TS 4.2	DFHCOMPG DFHCOMPF	DFHCOMPG DFHCOMPF	DFHCOMPF	None	Do not share	Do not share	Do not share
Shared with CICS TS 4.1	DFHCOMPG DFHCOMPF DFHCOMPE	DFHCOMPG DFHCOMPF DFHCOMPE	DFHCOMPF DFHCOMPE	DFHCOMPE	None	Do not share	Do not share

Table 40. Required compatibility groups for earlier releases of CICS (continued)

	CICS TS 5.3 CSD	CICS TS 5.2 CSD	CICS TS 5.1 CSD	CICS TS 4.2 CSD	CICS TS 4.1 CSD	CICS TS 3.2 CSD	CICS TS 3.1 CSD
Shared with CICS TS 3.2	DFHCOMPG DFHCOMPF DFHCOMPE DFHCOMPD	DFHCOMPG DFHCOMPF DFHCOMPE DFHCOMPD	DFHCOMPF DFHCOMPE DFHCOMPD	DFHCOMPE DFHCOMPD	DFHCOMPD	None	Do not share
Shared with CICS TS 3.1	DFHCOMPG DFHCOMPF DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPG DFHCOMPF DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPF DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPE DFHCOMPD DFHCOMPC	DFHCOMPD DFHCOMPC	DFHCOMPC	None

Compatibility group DFHCOMPG

Group DFHCOMPG is required for compatibility with CICS Transaction Server for z/OS, Version 5 Release 1.

Table 41. Contents of compatibility group DFHCOMPG

Resource type	Name
PROGRAM	DFHPGADX DFHPGAHX DFHPGALX DFHPGAOX DFHPIEP

Compatibility group DFHCOMPF

Group DFHCOMPF is required for compatibility with CICS Transaction Server for z/OS, Version 4 Release 2.

Table 42. Contents of compatibility group DFHCOMPF

Resource type	Name
FILE	DFHADEM
MAPSET	DFHADMS
PROFILE	DFHCICSI

Table 42. Contents of compatibility group DFHCOMPF (continued)

Resource type	Name
PROGRAM	DFHADDRM
	DFHADJR
	DFHADWB0
	DFHADWM0
	DFHADWM1
	DFHADWM2
	DFHADWM3
	DFHADWM4
	DFHADWM5
	DFHADWM6
	DFHADWT0
	DFHADWT1
	DFHADWT2
	DFHADWT3
	DFHADWT4
	DFHADWT5
	DFHCHS
	DFHDLLOD
	DFHD2EDF
	DFHEDFX
	DFHEIGDS
	DFHEITAB
	DFHEITBS
	DFHEITSZ
	DFHEJDNX
	DFHEJEP
	DFHEJITL
	DFHIIRRS
	DFHJVCVT
	DFHLETRU
	DFHPIVAL
	DFHSJGC
	DFHSJPI
	DFHSMTAB
	DFHXOPUS
	DFJCICS
	DFJCICSB
	DFJCZDTC
	DFJDESN
	DFJIIRP
	DFJIIRQ
	DFJ1ESN
	DFJ1ICS
	DFJ1ICSB
	DFJ1ZDTC

Table 42. Contents of compatibility group DFHCOMPF (continued)

Resource type	Name
TRANSACTION	CBAM
	CDFS
	CEHP
	CEHS
	CEJR
	CEMT
	CEOT
	CESF
	CESL
	CESN
	CEST
	CETR
	CIEP
	CIRP
	CIRR
	CJGC
	CJPI
	CLQ2
	CLR2
	CLS2
	CLS3
	CLS4
	CMPX
	CMSG
	CPMI
	CQPI
	CQPO
	CREA
	CREC
	CRSQ
	CRSR
	CRSY
	CRTE
	CSAC
	CSHR
	CSMI
	CSM1
	CSM2
	CSM3
	CSM5
	CSNC
	CSSF
	CVMI
	CXCU
	CXRT

Compatibility group DFHCOMPE

Group DFHCOMPE is required for compatibility with CICS Transaction Server for z/OS, Version 4 Release 1.

Table 43. Contents of compatibility group DFHCOMPE

Resource type	Name
PROGRAM	DFHMIRS DFHCCNV DFHUCNV DSNTIAC DSNTIA1 DFHEDP DFHDBAT DFHDBUEX DFHPIEP

Compatibility group DFHCOMPD

Group DFHCOMPD is required for compatibility with CICS Transaction Server for z/OS, Version 3 Release 2.

Table 44. Contents of compatibility group DFHCOMPD

Resource type	Name
TDQUEUE	CPLD CPLI
PROGRAM	DFHPIVAL DFHSJJML IXMI33DA IXMI33D1 IXMI33IN IXMI33UC IXM4C56
TRANSACTION	CJMJ

Compatibility group DFHCOMPC

Group DFHCOMPC is required for compatibility with CICS Transaction Server for z/OS, Version 3 Release 1.









Table 45. Contents of compatibility group DFHCOMPC

Resource type	Name
PROGRAM	IXM4C53

Chapter 24. Upgrading file control

This section covers the actions to take to migrate file control resources when you upgrade from one release of CICS to another.

Upgrade actions

Your current version	Action	Mandatory or optional?
 V3.J  V3.2  V4.J  V4.2	"Change file and transaction resource definitions"	Mandatory
 V3.J  V3.2  V4.J  V4.2	"Adapt to changes in LSR pool settings" on page 140	Optional

 V3.J  V3.2  V4.J  V4.2

Change file and transaction resource definitions

If transaction isolation is active, and a program attempts to issue a file control write or update request against a file where the VSAM data set associated with the file uses VSAM nonshared resources (NSR), the program abends with the abend code AFDK. Requests to read or browse the file that do not attempt to update the file in any way do not result in an abend.

To avoid this situation, choose one of the following solutions:

- If the file requires transaction isolation, change the FILE resource definition so that the file uses either VSAM record-level sharing (RLS) or VSAM local shared resources (LSR). RLSACCESS(YES) specifies that CICS opens the file in RLS mode. LSRPOOLNUM(*number*) specifies the number of an LSR pool to be used by the VSAM data set associated with the file.
- If the file does not require transaction isolation, change the TRANSACTION resource definition to specify ISOLATE(NO). Setting this value causes the individual transaction to run without transaction isolation.

[Back to top](#)

 V3.J  V3.2  V4.J  V4.2

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.

[Back to top](#)

Chapter 25. Upgrading CICS Explorer

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

You must install a new copy of CICS Explorer Version 5.3 before you can work with CICS regions at CICS TS Version 5.3.

- For connections to a stand-alone CICS region (SMSS), when you install CICS Explorer Version 5.3, you can use it to work with CICS TS Version 5.3 and earlier regions.
- For connections to a CICSplex SM WUI server, when you install CICS Explorer Version 5.3, you can use it to work with CICS TS Version 5.3 and earlier CICSplex SM WUI servers.

Upgrade actions

Your current version	Action	Mandatory or optional?
ALL VERSIONS	"Back up your CICS Explorer workspace"	Optional, but advisable
ALL VERSIONS	"Install CICS Explorer"	Optional

Back up your CICS Explorer workspace

Before you upgrade or install a new copy of CICS Explorer, it is advisable to back up your CICS Explorer workspace so that you can restore the workspace to a previous version, if required.

When you upgrade to CICS Explorer Version 5.3 from Version 5.2 or earlier, if you need to work with CICS Explorer Version 5.2 or earlier, you must back up your existing workspace before you upgrade.

For details, see Taking a backup of the CICS Explorer workspace in Installing.

Install CICS Explorer

If your current version of CICS Explorer is Version 5.2 or earlier, you must install a new copy of CICS Explorer. You cannot just upgrade CICS Explorer because earlier versions of CICS Explorer use a different version of Eclipse.



















For more information, see CICS Explorer installation in Installing.









Chapter 26. 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](#).

Upgrade actions

Your current version	Action	Mandatory or optional?
   	Upgrade the IBM SDK for z/OS	Mandatory
	Check your programs for deprecated APIs	Optional, but recommended
	Review your JVM profiles for new settings	Mandatory
   	If you have not already migrated to OSGi, change your Java applications to run in a JVM server	Mandatory, if you haven't already migrated to OSGi
   	Check whether applications that run in a JVM server depend on IBM or vendor classes in the supplied JRE	Mandatory, if you haven't already migrated to OSGi
   	Check that MEMLIMIT allows sufficient storage for 64-bit JVMs	Mandatory, if you haven't already migrated to OSGi

Your current version	Action	Mandatory or optional?
   	Change applications that use EJBs or stateless CORBA objects	Mandatory
	If you use the CICS Liberty security feature, check for restrictions	Mandatory
	Move OSGi bundles from Liberty JVM servers	Mandatory
	Import classes from JCICS API or IByteBuffer	Mandatory
	If you use the CICS Liberty security feature and do not use autoconfigure, define your own SAF registry.	Mandatory






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 7, Version 7 Release 1 or 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 7, Version 7 Release 1 or Version 8 from Java Standard Editions Products on z/OS , then make the necessary changes in your CICS environment. If you encounter problems see in the IBM Knowledge Center.

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 in the IBM Knowledge Center.

Back to top

[ALL VERSIONS](#)

Check your programs for deprecated APIs

Java Standard Editions 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. For example:

- From 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.
- From 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 CICS Explorer® SDK.

Back to top

ALL VERSIONS

Review your JVM profiles for new settings

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

For more information about the sample profiles, see in the IBM Knowledge Center. For a summary of the changes to the JVM profiles, see [Changes to JVM profiles](#).

Back to top



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 CICS Explorer SDK to repack the applications as OSGi bundles and deploy them to run in a JVM server.

There are three possible ways to repack 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 website developerWorks® has useful information about Java: <http://www.ibm.com/developerworks/java/>.
2. Check that the Java application does not use the System.exit() Java method. If this method is used, 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

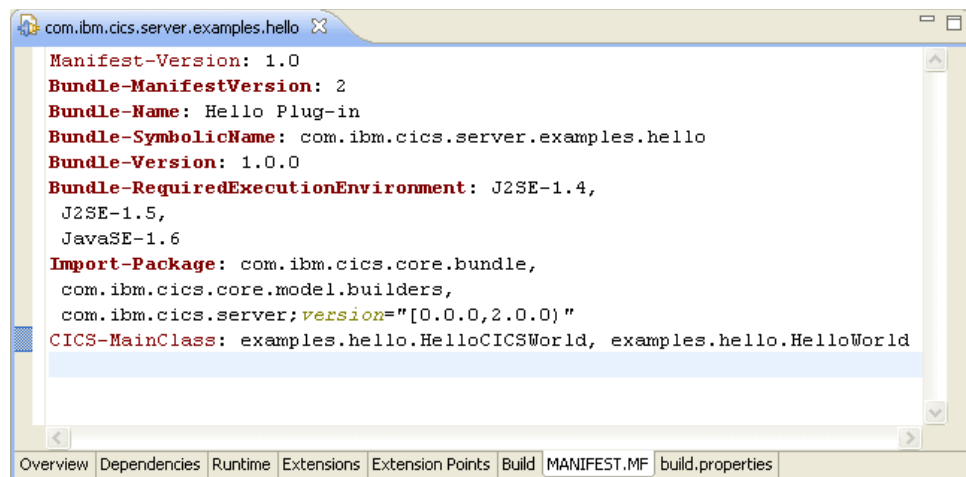
Create an OSGi plug-in project and import the contents of the existing JAR file. This method is useful when the application is already threadsafe and no refactoring or recompiling is required.

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**.

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.

Back to top



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 `com.ibm.misc`, you must create a middleware OSGi bundle to make these classes available to the OSGi framework. If you do not change the application, transactions abend with an `AJ05` code and `java.lang.ClassNotFoundException` errors are written to the JVM server error log and CICS system log.

1. For each IBM or vendor package that the application requires, create an OSGi bundle fragment to export the package. The following example shows what the manifest of the OSGi bundle fragment can contain:

```
Manifest-Version: 1.0
Bundle-ManifestVersion: 2
Bundle-Name: Extension
Bundle-SymbolicName: com.ibm.example.extension
Bundle-Version: 1.0.0
Bundle-Vendor: IBM
Fragment-Host: system.bundle; extension:=framework
Export-Package: com.ibm.misc
Bundle-RequiredExecutionEnvironment: JavaSE-1.6
```

The `Fragment-Host` defines that the OSGi bundle fragment extends the system bundle in the OSGi framework. The `Export-Package` lists the packages that are exported; in this example, the package beginning `com.ibm.misc` is exported. If you use Eclipse, ignore the error that is flagged.

2. 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.
3. Install the OSGi fragment bundle into the JVM server as a middleware bundle. Add the bundle to the `OSGI_BUNDLES` option in the JVM profile for the JVM server. Separate the middleware bundle from the application so that you can manage the lifecycle separately in CICS.
4. Restart the JVM server to pick up the OSGi fragment.
5. Deploy the updated application bundle to CICS.

The OSGi bundle fragments are loaded when the OSGi framework is initialized. When the application is called, the application can access the IBM or vendor classes.

[Back to top](#)



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

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

[Back to top](#)



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.

[Back to top](#)

> V5.J

If you use the CICS Liberty security feature, check for restrictions

If you use the CICS Liberty security feature, check whether you need to make changes for the following restrictions:

- The Liberty Angel process must be started.
- Only one Liberty JVM server can be run per region with the CICS Liberty security feature enabled.

[Back to top](#)

> V5.J

Move OSGi bundles from Liberty JVM servers

You can no longer use OSGi bundles in a Liberty JVM server. A CICS bundle that contains OSGi bundles resources no longer deploys to a Liberty JVM server, and a Liberty JVM server does not enable if it has the OSGI_BUNDLES option in its JVM profile. OSGi bundles can only be deployed to a Liberty JVM server as part of an enterprise bundle archive (EBA), or as library bundles using the bundle repository of Liberty. You therefore cannot specify the DB2 .jar files in OSGi bundles. Instead, specify the <cicsts_jdbcDriver> element in the server.xml file.

[Back to top](#)

> V5.J

Import classes from JCICS API or IByteBuffer

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
com.ibm.cics.samples.jar	com.ibm.cics.samples	Samples for redirecting System.out and System.err. Replaces the dfjoutput.jar file.
com.ibm.cics.server.jar	com.ibm.cics.server	The JCICS API. Replaces the dfjcics.jar file.

File name	OSGi bundle symbolic name	Description
com.ibm.record.jar	com.ibm.record	The Java API for legacy programs that use IByteBuffer from the Java Record Framework that came with VisualAge®. Previously in the dfjcics.jar file.

[Back to top](#)

► V5.1

If you use the CICS Liberty security feature and do not use autoconfigure, define your own SAF registry.

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.

[Back to top](#)

Chapter 27. Upgrading applications

Existing applications typically continue to run in a later version of CICS. But the withdrawal of some older compilers and runtime support for OO COBOL do require you to take action when you upgrade to a new version of CICS TS.

Upgrade actions

Your current version	Action	Mandatory or optional?
> V3.I	Review startup JCL for unsupported language libraries	Mandatory
> V3.I	Replace any OO COBOL applications	Mandatory
> V3.I	“Runtime support for programs developed with pre-Language Environment compilers” on page 152	Mandatory
ALL VERSIONS	Modify routing programs to tolerate channels	Mandatory

> V3.I

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.

CICS translator support is withdrawn for the following compilers:

- OS/VS COBOL (5740-CB1, 5740-LM1, and 5734-CB4)
- VS COBOL II (5668-958 and 5688-023)
- OS PL/I Version 1 (5734-PL1)
- OS PL/I Version 2 (5668-910 and 5668-909)
- SAA AD/Cycle C/370™ (5688-216)

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

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.

> V3.J

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.

> V3.J

Runtime support for programs developed with pre-Language Environment compilers

Although application program development support for obsolete compilers is withdrawn, CICS usually continues to provide runtime support for your existing application programs that were developed with these old compilers. However, to apply maintenance to these application programs, use one of the supported compilers that conforms to Language Environment.

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 Run-Time Application Migration Guide and the migration information for the language in use. Because pre-Language Environment compilers

are not Language Environment-conforming, programs that are compiled by these compilers cannot take advantage of all Language Environment facilities in a CICS region.

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.

ALL VERSIONS

Modify routing programs to tolerate channels

If you use a user-written dynamic routing program or distributed routing program for workload management, rather than CICSplex SM, you must modify your program to handle the new values that it might be passed in the DYNLEVEL, DYNRTYPE, and DYNRVER 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.

Chapter 28. 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.

Upgrade actions

Your current version	Action	Mandatory or optional?
> V5.J	Declare application entry points for PROGRAM and LIBRARY resources	Mandatory
> V5.J	Make applications and CICS bundles available	Mandatory
> V5.J	Ensure that operation names are unique	Mandatory
> V5.2	If your application has URIMAP resource and URIMAP entry point in different CICS bundles, review the change in availability	Optional

> V5.J

Declare application entry points for PROGRAM and LIBRARY resources

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.

> V5.J

Make applications and CICS bundles available

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 online application 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.

If your platform includes any CICS regions that are still at CICS TS 5.1, the **Make Available** and **Make Unavailable** actions are not required or supported for applications or stand-alone CICS bundles installed in those CICS regions. In CICS TS 5.1 regions, applications or stand-alone CICS bundles are assumed to be available when they are enabled with the **Enable** action, and unavailable when they are disabled with the **Disable** action, as was the case for all applications in CICS TS 5.1.

► V5.1

Ensure that operation names are unique

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”.

► V5.2

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.






Chapter 29. 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.

Upgrade actions

Your current version	Action	Mandatory or optional?
   	"Upgrade CSD to pick up changes to IPIC service definitions"	Mandatory
	"Review selection behavior for IPCONN and CONNECTION resources across releases of CICS"	Mandatory



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 130.



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

If both an APPC or MRO connection and an IPIC connection exist between two CICS® regions, and both have the same name, the IPIC connection takes precedence. However, if your terminal-owning region (TOR) and application-owning region (AOR) are in CICS systems that are using different levels of CICS, the rules can differ.

An APPC or MRO connection is defined with the CONNECTION resource. An IPIC connection is defined with the IPCONN resource.

If both CONNECTION resources and IPCONN resources are active in a CICS region, CICS searches for an IPIC connection first, so that when resources with the same name exist, the preference for an IPCONN resource can be maintained. However, if an IPCONN resource is not available, CICS attempts to route over an

APPC or MRO connection by using a CONNECTION resource. If the request fails, a SYSID error is returned to the application that scheduled the request. For more information about how IPIC overrides default connections, see Chapter 7, “Changes to resource definitions,” on page 31.

Table 46 and Table 47 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 46. Selection behavior for IPCONN and CONNECTION resources with TOR and AOR communications

Version of CICS in TOR or routing region	Status of IPCONN resource	CICS TS 3.2 AOR			CICS TS 4.1 AOR			CICS TS 4.2, 5.1, 5.2, or 5.3 AOR		
		DPL	Asynchronous processing and transaction routing	Enhanced Routing	DPL	Asynchronous processing and transaction routing	Enhanced Routing	DPL	Asynchronous processing and transaction routing	Enhanced Routing
CICS TS 3.2	Acquired	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	APPC or MRO connection	APPC or MRO connection
	Released	Request rejected	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.1	Acquired	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	IPIC connection	APPC or MRO connection	IPIC connection	IPIC connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.2, 5.1, 5.2 or 5.3	Acquired	IPIC connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	IPIC connection	APPC or MRO connection	IPIC connection	IPIC connection	IPIC connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Table 47. Selection behavior for IPCONN and CONNECTION resources with AOR and ROR communications

Version of CICS in the AOR	Status of IPCONN resource	CICS TS 3.2 or 4.1 ROR				CICS TS 4.2, 5.1, 5.2, or 5.3 ROR			
		File control	Transient data	Temporary storage	DL/I	File control	Transient data	Temporary storage	DL/I
CICS TS 3.2	Acquired	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.1	Acquired	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection
CICS TS 4.2, 5.1, 5.2, or 5.3	Acquired	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	IPIC connection	IPIC connection	IPIC connection	APPC or MRO connection
	Released	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection	APPC or MRO connection

Upgrading 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).

Upgrade actions

Your current version	Action	Mandatory or optional?
<small>ALL VERSIONS</small>	Install and test DFHCSVC	Mandatory
<small>ALL VERSIONS</small>	Install and test DFHIRP	Mandatory
<small>ALL VERSIONS</small>	Define DFHAPPL.applid profiles in the RACF FACILITY class	Mandatory
<small>> V3.1</small>	Upgrade to multiple XCF groups	Optional
<small>ALL VERSIONS</small>	Test MRO	Optional

ALL VERSIONS

Install and test DFHCSVC

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 IBM Knowledge Center](#).

[Back to top](#)

ALL VERSIONS

Install and test DFHIRP

For MRO, the interregion communication program DFHIRP is installed in the link pack area (LPA). The CICS TS for z/OS, Version 5.3 DFHIRP module is compatible with earlier releases, and works with all releases of CICS. However, the CICS TS for z/OS, Version 5.3 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 3.2 DFHIRP can communicate with a CICS TS for z/OS, Version 5.3 DFHIRP across XCF/MRO, but the CICS regions that run in the MVS with the CICS TS 3.2 DFHIRP cannot be later than CICS TS 3.2.

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 5.3 level. For more information, see Upgrade a CMAS .

2. Update LPA modules DFHCVSC, DFHDSPEX, DFHUMPX, DFHIRP, DFHSSEN and DFHSVC99 with the dynamic LPA facility. Specify the **ADD** verb.
3. Run the CICS TS 5.3 supplied utility DFHCSVCU to update the z/OS SVC table as documented in Running the DFHCSVJ 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.

Back to top

ALL VERSIONS

Define DFHAPPL.applid profiles in the RACF FACILITY class

Define the required DFHAPPL.applid profiles in the RACF FACILITY general resource class. When the profiles are ready for all the MRO regions, test the production regions again with the new SVC and DFHIRP, this time use the FACILITY class profiles for logon and bind-time security checking.

Back to top

V3.1

Upgrade to multiple XCF groups

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.

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 XCFCGROUP 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 Generating XCF/MRO support in the IBM Knowledge Center .

[Back to top](#)

[ALL VERSIONS](#)

Test MRO

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.

[Back to top](#)

Upgrading connections with WebSphere MQ

If you use the CICS-WebSphere MQ adapter, bridge, trigger monitor, or API crossing exit to connect CICS® to WebSphere® MQ, you have some changes to make when you upgrade your version of CICS.

Upgrade actions

Your current version	Action	Mandatory or optional?
ALL VERSIONS	Specify the new versions of WebSphere MQ libraries in the STEPLIB and DFHRPL concatenation	Mandatory
V3.1	Review availability of TCBs for CICS-WebSphere MQ connection	Mandatory
V3.1	Review use of common storage in the WebSphere MQ subsystem	Mandatory
V3.1	Increase the value of CTHREAD (WebSphere MQ V6 only)	Mandatory
V3.1	Adapt to the move of CICS-WebSphere MQ components from MQ to CICS	Mandatory
V3.1 V3.2	Replace DFHMQPRM with MQCONN resource definition	Mandatory
V3.1 V3.2	Review how applications control the CICS-WebSphere MQ connection	Optional

Your current version	Action	Mandatory or optional?
<div> <div>V3.J</div> <div>V3.2</div> <div>V4.J</div> </div>	Exploit new WebSphere MQ Version 7 API calls	Optional

ALL VERSIONS

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

You must replace the existing versions of the WebSphere 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 WebSphere MQ libraries. The SCSQAUTH library is included in both concatenations, but the SCSQLOAD library and the optional SCSQCICS library are included in the DFHRPL concatenation only. Include the WebSphere MQ libraries after the CICS libraries to ensure that the correct code is used.

V3.J

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.

► V3.J

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 the WebSphere MQ product documentation* . For further information about storage and performance requirements in WebSphere MQ, including velocity goals for CICS regions, see *Planning your storage and performance requirements in the WebSphere MQ product documentation* .

► V3.J

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.

► V3.J

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.

► V3.1 ► V3.2

Replace DFHMQPRM with MQCONN resource definition

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

Before CICS TS 4.1, you used the DFHMQPRM operand of the CICS system initialization parameter INITPARM to specify a default WebSphere MQ queue manager name and initiation queue name for the CICS-WebSphere MQ connection. (The DFHMQPRM operand was called CSQCPARM before CICS TS 3.2.) An example of this statement is as follows:

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

You can no longer use the INITPARM system initialization parameter to specify these defaults. If the DFHMQPRM or CSQCPARM operand is present on INITPARM, you must remove it. CICS issues a warning message if the DFHMQPRM operand is present on INITPARM when you start the

CICS-WebSphere MQ connection, and defaults specified there are not applied to the CICS-WebSphere MQ connection. The INITPARM system initialization parameter itself is still valid with other operands.

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

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

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

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

► V3.1 ► V3.2

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 in the same way as you did prior to CICS TS 4.1, 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).

► V3.J ► V3.2 ► V4.J

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 in the IBM Knowledge Center.


Chapter 30. 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 or the ATOM feeds in the CA8K SupportPac for Version 3.

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?
    	Change the JCL that calls the JSON assistant	Mandatory
    	Exploit the data mapping of COBOL OCCURS clauses	Optional
    	Enable the transformation of UTF-16 data	Optional



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 in the IBM Knowledge Center and DFHLS2JS: high-level language to JSON schema conversion for request-response services in the IBM Knowledge Center.

► V3.J ► V3.2 ► V4.J ► V4.2 ► V5.J

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.

► V3.J ► V3.2 ► V4.J ► V4.2 ► V5.J

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

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?
► V3.J	"Check that your region size can accommodate the increased memory that is needed for DFHWS2LS and DFHL2WS" on page 174	Mandatory
► V3.J	"Enable MTOM/XOP support in a pipeline" on page 174	Optional

Your current version	Action	Mandatory or optional?
 	“Consider using zAAP” on page 174	Optional
 	“Check that SOAP messages are well-formed” on page 175	Mandatory
 	“Adapt to the changed namespace prefix of WS-Addressing elements” on page 175	Mandatory
  	“Exploit connection pooling for performance benefits” on page 175	Optional
  	“Exploit the additional URIMAP resource from a pipeline scan” on page 175	Optional
   	“Enable SOAP message validation in a JVM server” on page 175	Mandatory
    	“Package WEBSERVICE resources in CICS bundles” on page 176	Optional
    	“Exploit the data mapping of COBOL OCCURS clauses” on page 176	Optional

Your current version	Action	Mandatory or optional?
 V3.J  V3.2  V4.J  V4.2  V5.J	"Enable the transformation of UTF-16 data" on page 176	Optional

 V3.J

Check that your region size can accommodate the increased memory that is needed for DFHWS2LS and DFHLS2WS

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 200 MB. Either increase the region size, or set the region size to 0M.

If you redeploy your existing web services in a CICS TS 5.3 region, the regenerated web service binding files are slightly larger.

 V3.J

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.

 V3.J  V3.2

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.

► V3.1 ► V3.2

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 the *z/OS XML System Services User's Guide and Reference* on the IBM z/OS XML System Services Library page.

► V3.1 ► V3.2

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`.

► V3.1 ► V3.2 ► V4.1

Exploit connection pooling for performance benefits

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

► V3.1 ► V3.2 ► V4.1

Exploit the additional URIMAP resource from a pipeline scan

A pipeline scan produces a second URIMAP resource for each WSDL document that is present in the pickup directory. This URIMAP resource defines a URI that points to the location of the WSDL document. You can use this URI to publish WSDL documents so that external requesters can create web service applications.

► V3.1 ► V3.2 ► V4.1 ► V4.2

Enable SOAP message validation in a JVM server

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

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



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.

Upgrading ATOM feeds from SupportPac CA8K

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

CICS TS for z/OS, Version 5.3 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 5.3 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 48. Reusing CA8K SupportPac resources

SupportPac CA8K resource	CICS TS for z/OS, Version 5.3 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
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

Upgrade actions

Your current version	Action	Mandatory or optional?
<div> <div>V 3.1</div> <div>V 3.2</div> </div>	Modify your service routine	Mandatory
<div> <div>V 3.1</div> <div>V 3.2</div> </div>	Produce an XML binding	Mandatory
<div> <div>V 3.1</div> <div>V 3.2</div> </div>	Deploy a bundle project	Mandatory
<div> <div>V 3.1</div> <div>V 3.2</div> </div>	Modify your URIMAP resource	Optional

V 3.1

V 3.2

Modify your service routine

1. Rename the ATOMPARAMETERS container to DFHATOMPARGS.
2. Rename the ATOMCONTENT container to DFHATOMCONTENT.

3. If you used the optional containers ATOMTITLE and ATOMSUMMARY, rename these containers to DFHATOMTITLE and DFHATOMSUMMARY. If you used the optional container ATOMSUBTITLE, discard this container, as subtitles are not valid for an Atom entry, only for an Atom feed.
4. Replace the references to the copybooks that mapped the parameters passed in the ATOMPARAMETERS container, with the copybooks that map the DFHATOMPARDS 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 DFHATOMPARDS container in the IBM Knowledge Center. 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 DFHATOMPARDS 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 data as an Atom feed in the IBM Knowledge Center 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.

► V3.1 ► V3.2

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 Generate mappings from language structures in the IBM Knowledge Center.

Deploy a bundle project

Follow the instructions in Setting up an Atom feed in the IBM Knowledge Center 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 in the IBM Knowledge Center explains how to set up an alternative alias transaction.

Chapter 31. Upgrading security

This section summarizes the actions that relate to security when you migrate from one release of CICS to another.

Your current version	Action	Mandatory or optional?
 V3.1  V3.2	"Check DB2 signon exits and resources"	Mandatory
 V3.1  V3.2	"Review the setting on USRDELAY " on page 182	Mandatory
 V4.2  V5.1	"Reconfigure to use SAML support in the base product" on page 182	Mandatory, if you are using SAML support
 V4.1  V4.2  V5.1	"Check security permissions on CICS bundles" on page 183	Optional, if you use bundles
 V4.2  V5.1  V5.2	"Review the impact of extensions to command and resource security checks" on page 183	Mandatory
 ALL VERSIONS	" Review settings for programs that are used as application entry points" on page 183	Optional
 ALL VERSIONS	"Define new RACF category 1 transactions to the ESM" on page 184	Mandatory
 ALL VERSIONS	"Adapt applications to changed ESM output from VERIFY PASSWORD" on page 184	Mandatory

 V3.1  V3.2

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.

[Back to top](#)

► V3.1 ► V3.2

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, that is, how CICS behaved in releases before CICS TS for z/OS, Version 4.1, 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.

[Back to top](#)

► V4.2 ► V5.1

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.

[Back to top](#)



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.

[Back to top](#)



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.

[Back to top](#)



Review settings for programs that are used as application entry points

If you use program security by setting XPPT=YES, review the security settings for any programs that you declare as application entry points. If you apply security measures to individual PROGRAM resources, for applications that are deployed on platforms, secure the programs that are declared as application entry points, but do not secure other programs in the applications.

The security settings that you specify for a program that is part of an application deployed on a platform apply to both public and private programs, and do not take into account the version of the application. Programs that are declared as an

application entry point must have a unique PROGRAM resource name in your environment. However, if you secure programs that run at a lower level in the application, programs with the same names might be running in different applications, which can lead to unforeseen consequences. In this situation, a user might have permission to access a program that is declared as an application entry point, but not have permission to access a program that runs at a lower level in the application because the security settings from another instance of the program name are in effect. Consider the security measures that you apply to a program that is declared as an application entry point program, as applying to the whole application.

[Back to top](#)

ALL VERSIONS

Define new RACF category 1 transactions to the ESM

Category 1 transactions include some CICS internal system transactions. You must define these transactions to your external security manager, and authorize the CICS region user ID to use them, so that CICS can initialize successfully when it is running with security enabled (SEC=YES). For a list of CICS transactions that are category 1, see RACF category 1 transactions in the IBM Knowledge Center.

[Back to top](#)

ALL VERSIONS

Adapt applications to changed ESM output from VERIFY PASSWORD

This action applies to CICS TS Version 3 and 4.1, to Version 4.2 only if you have not applied APAR PI21865 and to Version 5 only 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.

[Back to top](#)

Part 4. Explore upgrade scenarios

This section gives examples of upgrade scenarios.

Chapter 32. 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

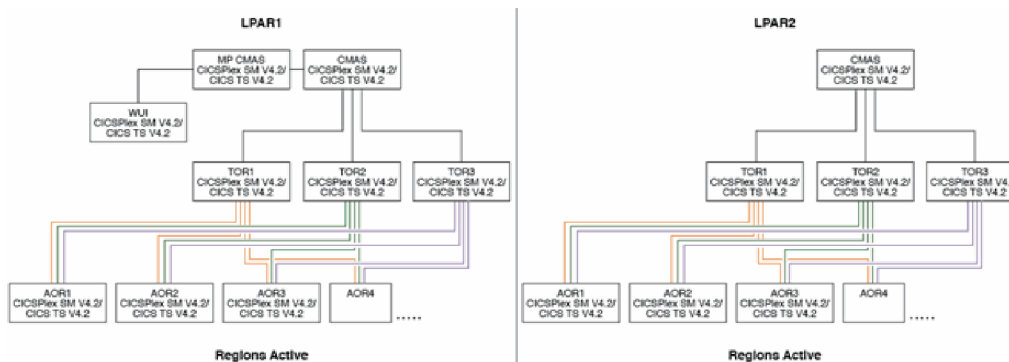


Figure 2. Initial configuration

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 the MAS, WUI server, and 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.

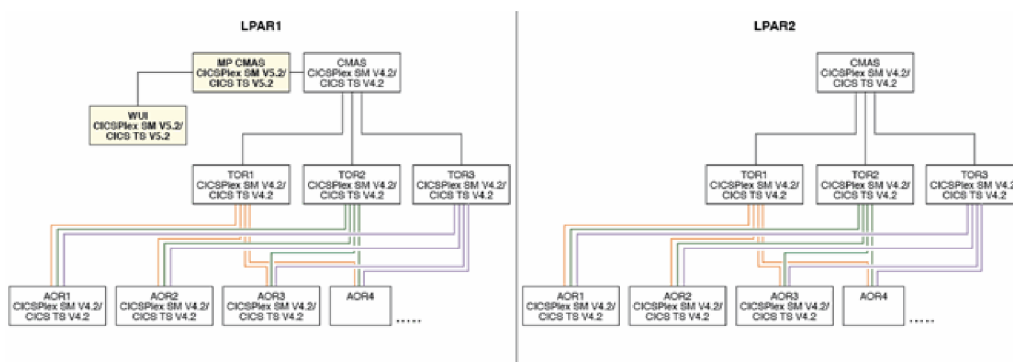


Figure 3. The outcome of the procedure so far: the CMAS and WUI are upgraded.

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.

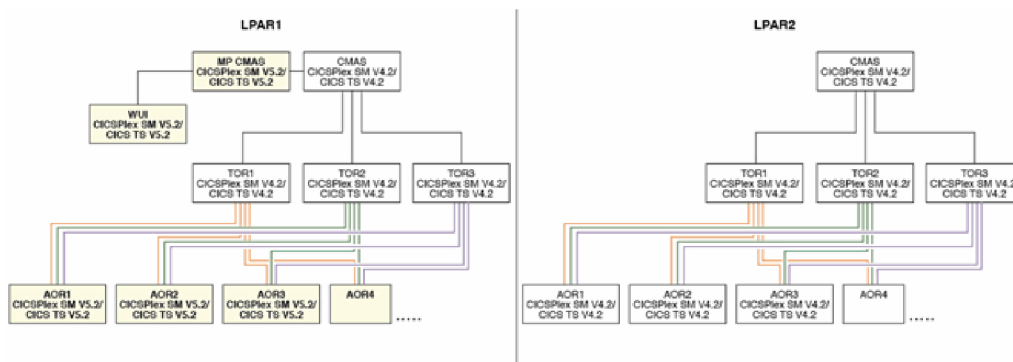


Figure 4. The outcome of the previous step: the AORs are upgraded.

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.

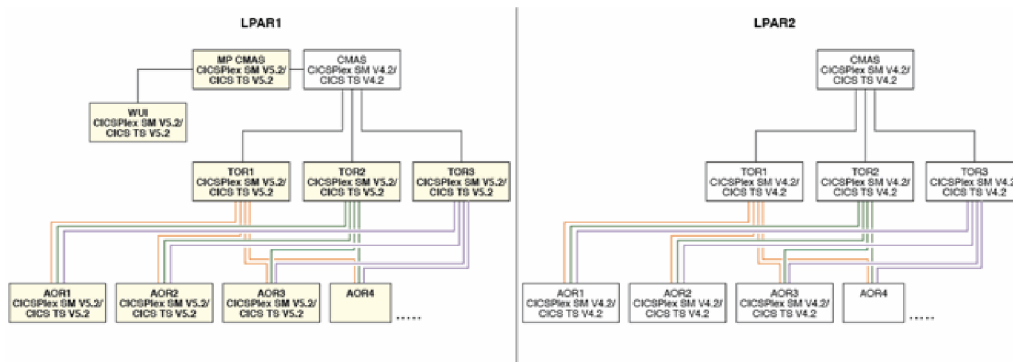


Figure 5. The outcome of the previous step: the TORs are upgraded.

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.

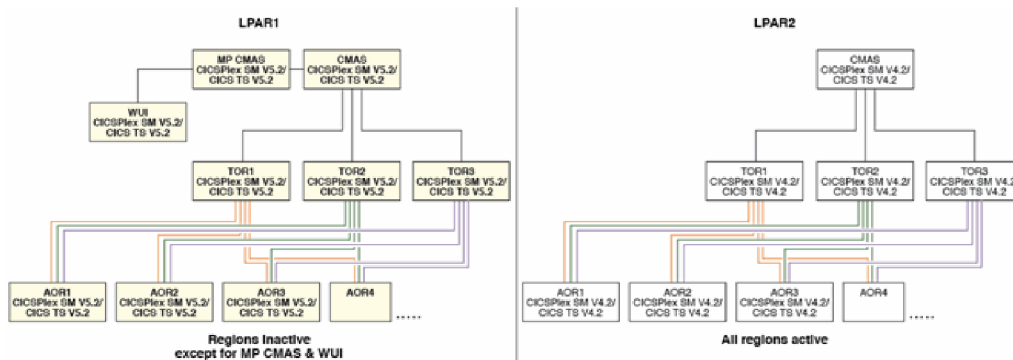


Figure 6. The outcome of the previous step: all elements are upgraded in LPAR 1 but not yet all started.

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.

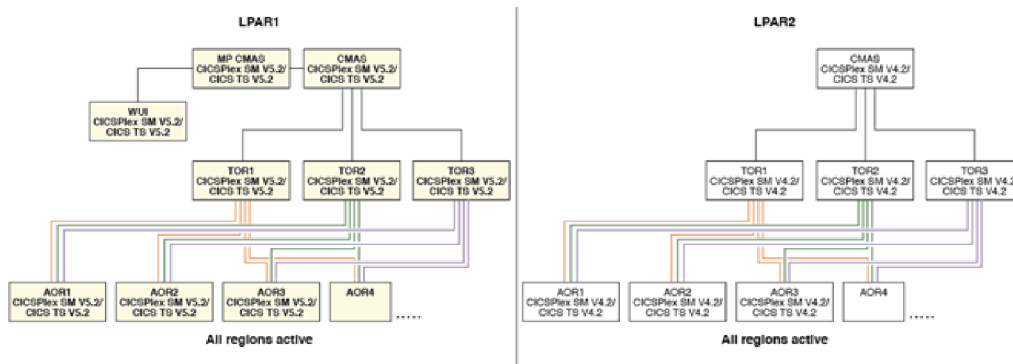


Figure 7. Upgrade is complete on LPAR 1

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 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.

3. Upgrade the remaining CMAS.
4. Restart the remaining CMAS. For details, see Restarting a CMAS in the IBM Knowledge Center.
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.

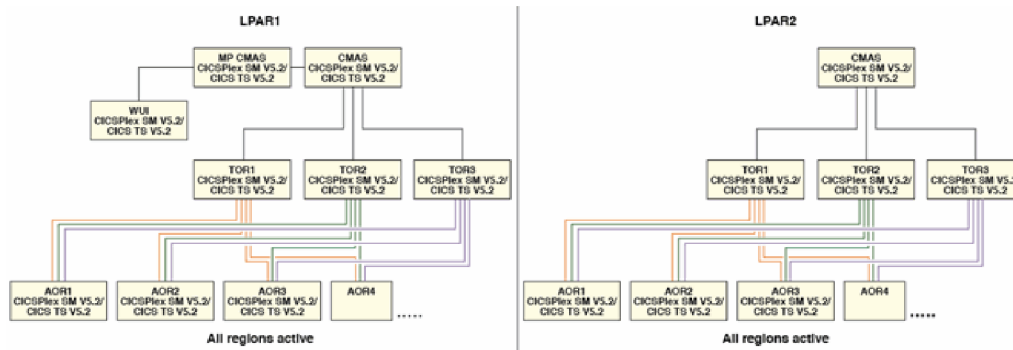


Figure 8. The upgrade is complete across both LPARs.

Part 5. Appendixes

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