IBM CICS Transaction Server for z/OS, V5.4 delivers unparalleled mixed language application serving

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At a glance

IBM(R) CICS(R) Transaction Server for z/OS(R), V5.4 adds support for a number of programming concepts that are critical to a mixed language application hosting environment, and includes:

- Support for applications written to the Java™ EE 7 Full platform specification
- A powerful and new asynchronous API to extend programming language capabilities
- Dynamic policy-based management of applications that span multiple languages
- Enhanced security and resiliency of applications across all languages
- API extensions that enable improved interoperability with batch applications
- Enhanced management capabilities for applications that utilize IBM MQ for z/OS
- Numerous enhancements to simplify or automate common workflows

Overview

No single programming language is optimal for every application requirement. For this reason, IBM CICS Transaction Server has evolved to become the world's most powerful mixed language application server.

CICS Transaction Server for z/OS (CICS TS) enables applications that are written in different programming languages to share core programming contexts, such as security, transactionality, management, and monitoring, regardless of the language those applications are written in.

CICS TS V5.4 enables development teams to create powerful mixed language applications, while allowing operational teams to manage these applications from a single point of control. Major new and enhanced capabilities include:

- Java EE Full Platform support
- New asynchronous API
- Policy-based management
- Security and resilience
- Enhanced batch interoperability
- MQ application management
- Usability and automation

Java EE Full Platform support

CICS TS now supports Java applications that are written to the Java Enterprise Edition (EE) 7 Full Platform specification by using the embedded version of IBM WebSphere[R] Application Server Liberty (Liberty). Java applications that are hosted in CICS TS are integrated with CICS tasks by default. They provide a simple and powerful mechanism of modernizing CICS applications by using Java EE 7 features and capabilities.

The ability to LINK to a Java EE application from other languages has been added. Non-Java programs, such as COBOL and PL/I programs, can now pass large volumes of structured parameter data to Java EE applications by using the standard CICS API.

The developer experience is enhanced through the introduction of the CICS TS remote development feature for Java, which adds remote CICS connectivity to a local Eclipse development environment. The management of the CICS bundle resource lifecycle is also greatly simplified.

The operations experience is also enhanced by using the improved management of JVM servers and associated CICS tasks. CICS is now better able to remove disruptive tasks from the JVM server using the purge option, and can now remove associated threads and tasks in a more orderly sequence when disabling the JVMSERVER.

New asynchronous API

A new asynchronous CICS API enables developers to incorporate programming logic that follows the 'parent-child' logic model in their CICS applications. This allows application processes to run in parallel, enabling developers to create more responsive applications that are designed to minimize response times.

The new asynchronous CICS API is supported across different programming languages. Applications that utilize this new API benefit from the comprehensive statistics, monitoring and transaction tracking capabilities provided by CICS TS.

Policy-based management

Policies are now expanded to support a new set of system-based rules. This simplifies CICS systems management by providing a single place to create and manage both task-based and system-based policy rules. Policies now provide the same capabilities as CICS system events[1] and with a number of additional advantages. These include the ability combine multiple rules in a single policy, the ability write a message to the CICS log in addition to emitting an event, and the removal of the requirement to define a capture specification for each event. Policies are the strategic replacement for the CICS system event technology.

Additionally, a new policy rules editor in the CICS Explorer[R] replaces the more limited functionality provided by the previous policy definition wizard. Additional capabilities, beyond the previous policy definition wizard, include the ability to edit existing policies, the ability to define multiple rules in a single policy, and the ability to specify a user-defined abend code for the abend action on task rules

[1] The underlying CICS events infrastructure and CICS application events remain strategic and are further enhanced in CICS TS V5.4.

Security and resilience

CICS Explorer Smartcard support is added. The CICS Explorer can now authenticate using certificates that are either stored on disk, or stored on a smartcard that must be attached during CICS Explorer usage.

CICS TS now supports three new IBM Health Checker for z/OS checks, each of which define security best practices. If a CICS region becomes non-compliant, a Health Checker exception message will be issued.

CICS TS can now utilize the z/OS Workload Manager Health API as a means of controlling the flow of work into a CICS region. This can allow a CICS region to have a warm-up process after system initialization, to help to ensure that the CICS region is ready to receive work.

CICSPlex(R) System Manager (SM) managed application system (MAS) internal tasks now run as CICS system transactions and have been implemented under the standard CICS CAT1 security category.

The CICS 3270 Intrusion Detection Service (IDS) can help alert you to 3270 protocol violations as they occur in CICS Basic Mapping Support (BMS) applications.

New CICS transactions CEDG and CEDY are introduced, which examine application programs safely when debugging in a production environment, without the risk of inadvertently overwriting sensitive in-memory storage.

Additional security infrastructure enhancements are added to:

- Kerberos support
- RACF(R) passtickets and logging of userids
- System Authorization Facility (SAF) security registration

Enhanced batch interoperability

The EXCI interface enables standalone applications that run on z/OS to programmatically interoperate with CICS-hosted applications and APIs. This interface is now enhanced to add support for CICS channels and containers. It provides a mechanism to exchange large volumes of structured parameter data between batch applications and CICS applications. Any CICS applications coded to the channel and containers API and invoked using distributed Program Link (DPL) can also be invoked unchanged from an EXCI client, including CICS applications that run on earlier CICS TS releases that support channels and containers.

This new API can also be used as a way to pass data between programs that run outside CICS, such as programs that make up a batch application, even if the application does not communicate with CICS.

MQ application management

CICS system administration of applications that utilize MQ is simplified. A new resource definition online (RDO) defined resource MQMONITOR provides control over the transaction ID and user ID under which a monitor task runs. CICS can now automatically start and stop MQ monitor tasks, which are based on the status of the MQCONN resource. Any number of MQMONITOR instances may be defined and installed, each of which can be a trigger monitor, an MQ bridge monitor, or a user-written monitor.

In addition, the MQ resource adapter can be configured as a JMS provider in the CICS Liberty JVM server. MQ servers on any platform are now supported as a JMS provider. When using MQ on z/OS on the same LPAR, cross-memory bindings can be used to optimize performance. Java Applications that use the MQ Classes for Java or the MQ Classes for JMS in the OSGi JVM server, to access MQ for z/OS, can gain a performance benefit from reduced task control block (TCB) switching.

Usability and automation

The quick filter capability of CICS Explorer is redesigned to easily create additional views that focus on specific information. Quick filters can be added to existing views and a full set of equality operators are now available. Quick filters can also now be quickly saved to permanent view configurations to provide rapid access to frequently used information. Permanent custom view configurations can be exported for sharing across teams and for back-up purposes, and can now be imported into CICS Explorer instances from a central web server.

Scriptable automation is extended by using enhancements to the DFHDPLOY batch utility, which can now also perform PIPELINE SCAN, PROGRAM NEWCOPY and PROGRAM PHASEIN operations. This enables automation to be written to update these resources without requiring the direct use of the CICSPlex SM API.

Upgrades are simplified because system auto install is now used to install program definitions for Language Environment^(R) (LE) as required. Only those programs that are used will have their definitions installed. This drastically reduces the number of installed definitions and removes the need for LE definitions to be refreshed for each individual CICS region when z/OS is upgraded.

Enhancements that have been continuously delivered

IBM is committed to a continuous delivery roadmap that delivers regular capability updates for current releases of CICS TS. Many of the features described in this section have also been made available on CICS TS V5.3, or earlier, using the standard CICS TS service channel and continuous delivery model.

A table listing the enhancements that have been continuously delivered can be found in the Description section. References to previous CICS TS V5.3 continuous delivery software announcements can be found in the Reference information section.

IBM z™/OS Provisioning Toolkit

The CICS provisioning toolkit beta that was delivered as part of the CICS TS V5.4 open beta program is renamed, enhanced, and made generally available as the IBM z/OS Provisioning Toolkit V1.0.

The z/OS Provisioning Toolkit, V1.0, delivers a simple command line utility for the rapid provisioning of development environments. It is fully supported and available to existing clients of IBM z/OS V2.1, or later, at no additional charge. It can be downloaded direct from IBM.

For further information on the z/OS Provisioning Toolkit, V1.0, refer to the Reference information section.

Delivery on commitments made in IBM statements of general direction

The Java enhancements in CICS TS V5.4 along with the delivery of the z/OS Provisioning Toolkit V1.0 completely satisfy the statements of direction that were made in earlier CICS software announcements on October 5, 2015 and October 4, 2016. For details refer to the Reference information section.

CICS TS Developer Trial V5.4 availability

CICS TS Developer Trial, V5.4 is available as a try-before-you-buy edition of CICS TS V5.4 and has a zero-cost license charge. The value that could be gained from a CICS TS upgrade can be assessed, before making an upgrade decision, by ordering this product. The CICS TS Developer Trial V5.4 is fully supported and can be upgraded to CICS TS V5.4 or CICS TS VUE V5.4 without the need for a full reinstallation.

Key prerequisites

The minimum required hardware prerequisite for CICS TS for z/OS, V5.4 is IBM z Systems™ z10™ or subsequent 64-bit z/Architecture^(R) processors.

The minimum required level of operating system for CICS TS for z/OS, V5.4 is IBM z/OS V2.1 (5650-ZOS).

The minimum required level of Java is IBM 64-bit SDK for z/OS, Java Technology Edition, V7.0 SR1.

Planned availability date

June 16, 2017:

- CICS TS for z/OS, V5.4
- CICS TS for z/OS VUE V5.4
- CICS TS for z/OS Developer Trial V5.4

Description

With CICS Transaction Server V5, developers can focus on developing core business application components using the best programming language for the task, without having to worry about complex language interoperability constructs. This provides an excellent foundation for a stepwise 'low risk, high return' approach to application modernization.

CICS TS V5.4 adds support for a number of programming concepts that are critical to the development and operations of a mixed language application hosting environment.

Java EE Full Platform support

Java is one of the most popular languages for enterprise application development. CICS TS provides a robust runtime in which these Java applications can be hosted. This allows Java applications to be integrated with other CICS applications without the need to span multiple subsystems or platforms. Java applications that run in CICS TS can also take advantage of proximity to data and applications on z/OS.

CICS TS V5.4 offers the following new capabilities to support CICS hosted Java applications:

- Support for the Java EE 7 Full Platform set of features
- Ability to LINK to a Java EE application from other languages
- Improved development experience for CICS hosted Java applications
- Improved management of JVM servers and associated CICS tasks

Java EE 7 Full Platform

Java developers require access to the latest Java Standard Edition (Java SE) and Enterprise Edition (Java EE) APIs. In addition to the existing support for Java SE applications, CICS TS now supports Java applications that are written to the Java EE 7 Full Platform specification using the embedded version of WebSphere Application Server Liberty (Liberty).

Java EE 7 provides a wealth of features that allow Java developers to quickly and easily write web applications, web service applications, enterprise applications and Java batch applications. It also provides a number of standard connectors such as JDBC, JCA and JMS that allow Java applications to interoperate with applications and data outside of a Java runtime environment.

Java applications that are hosted in CICS TS are integrated with CICS tasks by default. This allows applications that are written in different programming languages to share core characteristics such as CICS security, transactionality, management and monitoring. Utilizing Java capabilities directly in CICS can provide a simple and powerful mechanism of modernising CICS applications, without the requirement to unnecessarily distribute application components across multiple runtimes.

Additionally, a new standard-mode option is added to the Liberty JVM server. This mode is designed for applications that do not require tight integration with CICS by

default, but will benefit from the performance of Java on z/OS and proximity to data provided by IBM DB2$^{(R)}$ for z/OS and MQ for z/OS.

Ability to LINK to a Java EE application from other languages

The ability to exchange data between programs that are written in different languages is a core capability of a mixed language application server. Non-Java programs, such as COBOL and PL/I programs, can now perform a LINK, START or RUN command to a Java EE application by using channels and containers. This enables large volumes of structured parameter data to be passed to Java EE applications that use standard CICS API.

Improved development experience for CICS hosted Java applications

Many Java EE developers use Java, Eclipse, and Liberty on their local workstation to test and debug Java EE applications. A new CICS TS remote development feature for Java enables developers to develop local applications that call CICS programs on a remote CICS TS host by using the JCA interface over a TCP/IP network. As soon as the Java EE application is written and ready for use, it can be installed and run in Liberty in CICS without any changes.

CICS bundles are a convenient way to package and manage related components, which include Java applications and CICS resources. The CICS Explorer is enhanced to make it easier and quicker to export, install, and remove all types of CICS bundles. Additionally, z/OS UNIX™ file systems (zFS) paths within CICS Explorer resource tables and editors are now rendered as hyperlinks to quickly navigate to the underlying file or path. Together, these enhancements save time and reduce the number of steps required to manage the lifecycle of CICS bundle resources.

Improved management of JVM servers and associated CICS tasks

The ability to robustly manage workloads is critical to an application server. CICS is now able to remove disruptive tasks from the JVM server by using the purge option on the SET TASK command. In addition, when disabling the JVM server by using the SET JVMSERVER command, CICS can now remove associated threads and tasks in an orderly sequence in most situations.

New asynchronous API

A new asynchronous CICS API provides a set of commands that allows application developers to create more responsive applications.

An application developer can now incorporate programming logic that follows the 'parent-child' logic model to allow application processes to run in parallel, even when the parent and child applications are implemented in different programming languages.

By utilizing the new CICS asynchronous API, applications can be designed to minimize response times by allowing processes to run in parallel, with the results only being requested when they are required. To support this new capability, the following new API commands are introduced:

Command	Description
RUN TRANSID	Asynchronously start a child task, keeping track of it with a child token.
FETCH CHILD	Block the current (parent) task until a result is returned from a particular child.
FETCH ANY	Block the current (parent) task until a result is returned from any child task started.
FREE CHILD	Declare a lack of interest in a given child task; clean up relevant storage.

Applications that utilize this new API benefit from the comprehensive statistics, monitoring and transaction tracking capabilities provided by CICS TS. Additionally, the transaction tracking views of the CICS Explorer have been enhanced to report on the end to end parent-child relationships of applications that use this API. The

number of tasks that can be initiated by this new API can be controlled using a new task-based rule policy.

Policy-based management

Policies deliver automated control over critical system resources. In addition to the existing support for task-based rules, policies are now expanded to support a new set of system-based rules. System rules can be defined to either issue a message or emit an event. The following new system rules are introduced:

Rule	Description
DB2 connection status	Perform an action when the status of a DB2 connection changes to or from a specific state.
File enable status	Perform an action when the enable status of a CICS FILE changes to or from a specific enable status.
File open status	Perform an action when the open status of a CICS FILE changes to or from a specific open status.
Message	Perform an action whenever CICS emits a DFHxxnnnn message or CICSPlex SM emits a EYUxxnnnn message.
Tranclass tasks	Perform an action when the number of active tasks in a CICS TRANCLASS goes above or below a specific percentage of the maximum number of active tasks for that TRANCLASS, i.e. the MAXACTIVE value.
Transaction abend	Perform an action whenever a transaction encounters any unhandled transaction abend.
User tasks	Perform an action when the number of active tasks in a CICS system goes above or below a specific percentage of the maximum number of maximum user tasks for the CICS system (i.e. the MXT value).

A new policy rules editor in the CICS Explorer replaces the more limited functionality provided by the previous policy definition wizard. The new policy rules editor adds substantial new capabilities and makes it much easier to create and manage polices. Additional capabilities over and above the previous policy definition wizard include:

• Edit existing policies, including policies created using all previous versions of CICS Explorer.
• Define multiple rules in a single policy, including a combination of task-rules and system-rules.
• Specify a user-defined abend code for the abend action on task-rules.

The addition of system-based rules to the policy capability simplifies CICS systems management by providing a single place to create and manage both task-based and system-based policy rules. Policies now provide the same capabilities previously provided by CICS system events, but with the following advantages:

• Policies provide support for two actions instead of one; write a message to the CICS log or emit a CICS event.
• The ability to issue messages makes system-based policy rules easier to adopt than CICS system events. These messages can be used to trigger automation using client's existing automation software.
• The data in the events emitted for policy rules is predefined avoiding the need to define a capture specification for each event.
• The ability to combine multiple rules in a single policy, including a combination of task and system rules

Policies are the strategic replacement for the CICS system events technology. CICS system events are now deprecated and may be removed in a future release of CICS

TS. All events emitted by policy make use of the existing CICS events infrastructure. The underlying CICS events infrastructure and CICS application events remain strategic and are further enhanced in CICS TS V5.4.

A new transient data queue (TDQ) event processing adapter is introduced so that CICS events can now be written to a TDQ. Additionally, CICS event processing now supports the Decision Server Insights Event (DSIE) format for additional interoperability with IBM Operational Decision Manager. The new CICS event infrastructure capabilities can be used by both application events and policies.

Security and resilience

CICS TS V5.4 delivers several new capabilities to ensure the z Systems™ platform remains the industry gold standard for security and resilience.

CICS Explorer Smartcard support

Through IBM Explorer for z/OS, the CICS Explorer now adds support for client certificate authentication to CMCI, FTP, and z/OS Management Facility (z/OSMF) connections. The CICS Explorer can now authenticate using certificates that are either stored on disk, or stored on a smartcard that must be attached during CICS Explorer usage.

IBM Health Checker for z/OS

IBM Health Checker for z/OS provides a foundation to help simplify and automate the identification of potential configuration problems. CICS TS now supports three new health checks that define best practices for CICS TS security. If a CICS region becomes non-compliant with these security best practices, a Health Checker exception message will be issued, listing non-compliant regions, so that corrective action can be taken.

z/OS Workload Manager Health API support

CICS TS now utilizes the z/OS Workload Manager Health (IWM4HLTH) API as a means of controlling the flow of work into a CICS region. This service is used to inform z/OS WLM of the health state of a server, in this context, a CICS region. The health indicator values can impact the flow of work accessing a CICS region from TCP/IP and MQ. Additionally, CICSPlex SM workload management will take into account the health state of target application-owning regions (AORs) when deciding where to route work.

CICSPlex SM system tasks

CICSPlex System Manager (SM) managed application system (MAS) internal tasks now run as CICS system transactions and are implemented under the standard CICS CAT1 security category. This simplifies and enhances security by integration with standard CICS security. Additionally, this improves CICS TS resiliency by avoiding the possibility that a user could inadvertently purge critical system management tasks.

3270 Intrusion Detection Service

The CICS 3270 Intrusion Detection Service (IDS), previously known as the BMS 3270 data stream protection service, can help alert 3270 protocol violations as they occur in CICS Basic Mapping Support (BMS) applications. This is complementary to the z/OS Communication Server 3270 IDS function that can help alert similar violations as they occur in real time. CICS TS integrates with the new z/OS Communication Server IDS function to identify potential protocol violations in real time, for both BMS and native 3270 data streams.

Production debugging

New transactions CEDG and CEDY are delivered to examine application programs safely when debugging in a production environment, without the risk of inadvertently overwriting sensitive in memory storage.

Additional security enhancements

CICS TS now supports mutual authentication for Kerberos so that a client who uses Kerberos can verify the identity of the CICS TS server.

The default CICS start-up configuration has been changed such that only CICS regions defined to RACF will be allowed to generate RACF passtickets.

Daily logging of userids that only use web access is now mandatory and the performance of this logging is improved.

Pre-set userid terminals that do not have terminal specific security can now be configured to share System Authorization Facilty (SAF) security registration, thereby reducing 31-bit storage consumption and CPU.

Enhanced batch interoperability

The ability to exchange data between programs that are written in different languages is a core capability of a mixed language application server. Channels and containers are the primary mechanism to exchange large volumes of structured parameter data between CICS programs. CICS TS V5.4 delivers the ability to exchange large volumes of structured parameter data between batch applications and CICS applications.

The EXCI interface enables stand-alone applications running on z/OS to programatically interoperate with CICS hosted applications and APIs. This interface is now enhanced to add support for CICS channels and containers. This provides a mechanism to exchange large volumes of structured parameter data between batch applications and CICS applications. CICS applications that are coded to the channel and containers API and invoked using distributed Program Link (DPL) can also be invoked unchanged from an EXCI client, including CICS applications that run on earlier CICS TS releases that support channels and containers.

This new API can also be used as a way to pass data between programs that run outside CICS, such as programs that make up a batch application, even if the application does not communicate with CICS.

MQ application management

MQ is messaging middleware that simplifies and accelerates the integration of diverse applications and business data across multiple platforms.

CICS system administration is simplified, with CICS automatically starting and stopping MQ monitor tasks, which are based on the status of the MQCONN resource. The new RDO-defined resource MQMONITOR provides control over the transaction ID and user ID under which a monitor task runs, while also specifying the user ID to start the application tasks if an alternative user ID is not provided by the application.

Any number of MQMONITOR instances may be defined and installed, each of which can be a trigger monitor, an MQ bridge monitor, or a user-written monitor. Using the MQMONITOR resource removes the need to manually start and stop monitors with the CKQC transaction.

In addition, the MQ resource adapter can be configured as a JMS provider in the CICS Liberty JVM server. Java EE 7 provides a complete Java messaging solution, with Java Messaging Support (JMS) and Message Driven Beans (MDB) to provide the ability to write fully portable applications. MQ servers on any platform are now supported as a JMS provider. When using MQ on z/OS on the same LPAR, cross memory bindings can be used to optimise performance.

Java applications that use the MQ Classes for Java or the MQ Classes for JMS in the OSGi JVM server to access MQ for z/OS can gain a performance benefit from reduced task control block (TCB) switching. The CICS-MQ task-related user exit is modified to take advantage of an enhancement to the RMI that allows TRUEs to run

on any key 8 TCB, not just an L8 TCB. This means that the call to MQ remains on the T8 TCB that runs the Java thread and will not switch to an L8 TCB.

Usability and automation

CICS TS V5.4 includes a number of ease of use and automation improvements that simplifies commonly used tasks and workflows.

CICS Explorer

The quick filter capability of CICS Explorer is redesigned to easily create additional views that focus on specific information. Multiple quick filters can now be added to existing views. A full set of equality operators is now available. Users can remove quick filters individually or as a set in a single operation. Quick filters can now be quickly saved to a permanent view configuration.

Permanent view configurations are now separate from temporary quick filters and are stored within the Preferences dialog. Default views can be edited directly, or they can be duplicated and modified. This provides rapid access to frequently used information. Default view configurations are always stored in Preferences and can be copied, modified, and recreated at any point.

Permanent custom view configurations can now be exported to enable sharing across teams and for back-up purposes. Exported view configuration files can be imported into CICS Explorer instances either as a file, or from a central Web server.

Scriptable automation

DFHDPLOY is a batch utility in CICS TS V5.1, or later, that supports scripted deployments of CICS applications. DFHDPLOY is enhanced to perform the operations PIPELINE SCAN, PROGRAM NEWCOPY and PROGRAM PHASEIN. This enables automation to be written to update these resources without requiring the direct use of the CICSPlex SM API. These operations can now be performed using a simple batch script.

Upgrade simplification

System auto install is now used to install program definitions for Language Environment (LE) as required. Only those programs that are used will have their definitions installed. This drastically reduces the number of installed definitions and simplifies the upgrade process when upgrading z/OS releases because LE definitions no longer have to be refreshed for each individual CICS region.

IBM z/OS Provisioning Toolkit

The CICS provisioning toolkit that was delivered in an earlier CICS TS V5.4 open beta offering has been enhanced and made generally available as the IBM z/OS Provisioning Toolkit V1.0.

The z/OS Provisioning Toolkit, V1.0, delivers a simple command line utility for the rapid provisioning of development environments. It is fully supported and available to existing clients of IBM z/OS V2.1, or later, at no additional charge. It can be downloaded direct from IBM.

For further information on the z/OS Provisioning Toolkit, V1.0, refer to the Reference information section.

Enhancements to CICS TS using continuous delivery

IBM is committed to a continuous delivery roadmap that delivers regular capability updates for current releases of CICS TS. Many of the features described in this section are made available for CICS TS V5.3, by using the standard CICS TS service channel and continuous delivery model.

The following table lists the enhancements that have been made, using continuous delivery, to current CICS TS releases. For further information, refer to the Reference information section.

Capability	Availability method
Support for Liberty Java EE 7 Web Profile	For CICS TS V5.3 use APAR PI63877.
Support for Liberty Java EE 7 Full Platform in standard mode	For CICS TS V5.3 use APAR PI58375.
CICS TS remote development feature for Java	This feature is available from the Liberty repository for use with CICS TS V5.3.
Improved zIIP offload eligibility for Liberty workloads	For CICS TS V5.3 use APAR PI54263.
Support for Java 8 and for running JVM servers at different supported Java levels	CICS TS V5.3 includes this support. For CICS TS V5.1 and CICS TS V5.2 use APAR PI30532 and APAR PI52819.
Running z/OS Connect EE V2.0 in CICS	For CICS TS V5.2 use APAR PI59303. For CICS TS V5.3 use APAR PI59304.
End-to-end non-Java JSON	For CICS TS V5.3 use APAR PI56897.
EXEC CICS TRANSFORM for JSON	For CICS TS V5.3 use APAR PI54841.
Enhanced filtering in CICS Explorer views	For CICS Explorer V5.3.0.5, refer to the IBM developerWorks(R) mainframeDevelopment download and update website.
Enhanced CICS TS build toolkit	Refer to the IBM CICS Transaction Server build toolkit download website.
CICS Event processing support for the Decision Server Insights Event format	For CICS TS V5.1 and CICS TS V5.2 use APAR PI55133. For CICS TS V5.3 use APAR PI55134.
Enhanced Kerberos support	For CICS TS V5.3 use APAR PI56774.
DFHDPLOY utility	CICS TS V5.3 includes this support. For CICS TS V5.1 and CICS TS V5.2 use APAR PI56706.
Additional Java EE 7 features supported in integrated mode Liberty	See CICS TS V5.3 APAR PI63005.
The LINK and START commands now support invoking Java applications in a Liberty JVM server	- See CICS TS V5.3 APAR PI63005. - CICS Explorer V5.3.0.8, which is available on the Mainframe Developer Center and Aqua update website, is required by Java developers to use the new @CICSProgram annotation. - CICS build toolkit V5.3.0.8 is required by build systems to build CICS bundles that include Java applications that use the new @CICSProgram annotation.
- Improved Java developer experience when working with CICS bundles - Additional CICS Explorer views and view configuration options	CICS Explorer V5.3.0.8, available on the Mainframe Developer Center and Aqua update website, is required.
Enhancements to Java EE messaging in the CICS Liberty JVM server	Use CICS TS V5.3 APAR PI67640 and APAR PI58375.
Support for MQ as a JMS provider in the CICS Liberty JVM server	Use MQ Version 9.0.1 resource adapter, available from IBM Fix Central. The resource adapter can connect to MQ V7.1, or later, servers.
Support for new deployment tasks in DFHDPLOY	For CICS TS V5.1, CICS TS V5.2, and CICS TS V5.3 use APAR PI72104.
CICS system autoinstall for Language Environment, to simplify z/OS upgrades	For CICS TS V5.3, use APAR PI60389. For CICS TS V5.1 and CICS TS V5.2 use APAR PI60388 and APAR PI73184.
New and enhanced CICS Explorer capabilities	CICS Explorer V5.3.0.9 is required, available on the IBM Mainframe Developer Center and Aqua update website.

CICS TS V5.2 withdrawal from marketing

Effective August 14, 2017, IBM will withdraw from marketing the following releases of CICS TS:

Product name	Version	Product number	License	Replacement version	Replacement product number
CICS Transaction Server for z/OS	5.2	5655-Y04	ICA	5.4	5655-Y04
CICS Transaction Server Value Unit Edition	5.2	5722-DFJ	IPLA	5.4	5722-DFJ
CICS Transaction Server Developer Trial	5.2	5655-Y30	IPLA	5.4	5655-Y30

Stabilization of support and discontinued functions

CICS system events

CICS system events are now deprecated and may be removed in a future release of CICS TS. CICS policies are the strategic replacement for the CICS system events technology. All events emitted by policy make use of the existing CICS events infrastructure. The underlying CICS events infrastructure and CICS application events remain strategic and are further enhanced in CICS TS V5.4.

CICSPlex SM Real-Time Analysis (RTA)

The CICSPlex SM Real-Time Analysis (RTA) feature of CICS TS is stabilized. The strategic replacement for CICSPlex SM RTA is CICS policies or dedicated monitoring products, such as those provided by the Tivoli[R] OMEGAMON[R] XE Family.

Clients who use CICSPlex SM RTA should investigate CICS policies as a replacement for CICSPlex SM RTA and to raise requirements on CICS policies using the IBM Request for Enhancements (RFE) system. For more information, refer to the User group requirements section.

The CICSPlex SM RTA feature of CICS TS will not be withdrawn during the lifetime of CICS TS V5.

Removal of support for XSNEX global user exit

A future release of CICS TS will withdraw support for the signon and signoff global user exit XSNEX, which was introduced in CICS TS V2.2 as a temporary migration aid.

CICS TS Feature Pack for Modern Batch V1.0

CICS TS for z/OS V5.4 will be the last release of CICS TS to support the CICS TS Feature Pack for Modern Batch V1.0. This Feature Pack enabled clients to run Java batch applications in a CICS JVM server.

Java batch capabilities have been standardized and are now a core part of the Java EE 7 Full Platform specification. The strategic replacement for this technology is the Java batch capability that is now available in CICS TS V5.3 and CICS TS V5.4 as part of the Java EE 7 Full Platform support.

Clients who use the CICS TS Feature Pack for Modern Batch V1.0 are encouraged to migrate to the standard Java batch implementation, specifically, the Java Batch

1.0 feature and the Batch Management 1.0 feature of the Java EE 7 Full Platform specification, which are available for CICS TS V5.3, or later.

CICS TS documentation

The following PDF manuals are stabilized at general availability of CICS TS V5.4. No further releases of these manuals will be made available in PDF format:

- Business Transaction Services Guide
- CICSPlex SM Managing Resource Usage
- CICSPlex SM Web User Interface Guide
- Debugging Tools Interfaces Reference
- Diagnosis Reference
- Distributed Transaction Programming Guide
- External Interfaces Guide
- Front End Programming Interfaces Guide
- Internet Guide
- Trace Entries

Information relating to the EXCI capability that was previously available in the External Interfaces Guide has been moved to a new book called 'Using EXCI with CICS' and updated to reflect the new channels and containers support.

The equivalent online documentation for the PDF manuals listed above will remain in the IBM Knowledge Center.

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested.

The following features support use by people with disabilities:

- Operation by keyboard alone
- Optional font enlargement and high-contrast display settings
- Ability to run with screen readers and screen magnifiers for use by people with visual impairment
- Optional display of audio alerts for people with hearing impairment
- Communication of all information independently of color
- Ability for the user to request more time to complete timed responses

Section 508 of the US Rehabilitation Act

CICS TS V5.4 is capable, at general availability, when used in accordance with associated IBM documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be requested.

Hardware and software support services

SmoothStart/installation services

IBM Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our WebSphere lab-based services and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, IBM Services extends our reach through IBM Business

Partners to provide an unmatched portfolio of capabilities. Together, IBM provides the global reach, intellectual capital, industry insight, and technology leadership to support any critical-business need.

IBM IT Services

IBM Software Service

IBM Business Partners

IBM CICS Services

Reference information

IBM Software Announcements

For information on the January 2017 continuous delivery update of CICS TS V5.3, refer to Software Announcement 217-006, dated January 10, 2017.

For information on the October 2016 continuous delivery update of CICS TS V5.3, refer to Software Announcement 216-354, dated October 4, 2016.

For information on the July 2016 continuous delivery update of CICS TS V5.3, refer to Software Announcement 216-036, dated July 12, 2016.

For information on the December 2015 general availability of CICS TS, V5.3, CICS TS Value Unit Edition (VUE), V5.3, and CICS TS Developer Trial V5.3, refer to Software Announcement 215-363, dated October 5, 2015.

For information on CICS PA V5.4, refer to Software Announcement 217-115, dated May 16, 2017.

For information on IBM z/OS Provisioning Toolkit, V1.0, refer to Software Announcement 217-020, dated January 10, 2017.

For information on the end of support for CICS TS V4.1 and CICS TS V4.2, refer to Software Announcement. 915-025, dated February 3, 2015.

For information on CICS TS Feature Pack for Dynamic Scripting, V2.0, refer to Software Announcement 213-323, dated August 13, 2013.

For information on IBM Explorer for z/OS, V3.0, refer to Software Announcement 215-373, dated October 5, 2015.

For information on Multi-version Measurement, that replaces Single Version Charging, refer to Software Announcement 217-093, dated February 14, 2017.

Availability of national languages

Translation information, if available, can be found at the Translation Reports website.

Program number

Program name	VRM	Program number
CICS Transaction Server for z/OS	540	5655-Y04
CICS Transaction Server for z/OS Value Unit Edition	540	5722-DFJ
CICS Transaction Server for z/OS Value Unit Edition S&S	110	5722-DFK

Program name	VRM	Program number
CICS Transaction Server for z/OS Developer Trial	540	5655-Y30
CICS Transaction Server for z/OS Developer Trial S&S	110	5655-Y15

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to BP Attachment for Announcement Letter 217-113 for this announcement. A PartnerWorld ID and password are required (use IBMid).

Technical information

Specified operating environment

Hardware requirements
Processor

CICS TS V5.4 runs on any IBM z Systems machine that supports the required z/OS operating system. For example, the minimum required hardware prerequisite for CICS TS V5.4 is IBM z Systems z10$^{(R)}$ or subsequent 64-bit z/Architecture processors.

Parallel Sysplex$^{(R)}$ support

A Parallel Sysplex environment is not required for CICS TS V5.4 but can be exploited by each of the following data-sharing facilities that are supported by CICS, and by the usage of the MVS^{TM} system logger's log stream merging facility:

- IMS^{TM} databases
- DB2$^{(R)}$ databases
- VSAM data sets
- CICS temporary storage
- Coupling facility data tables
- Named counter server

z Systems^{TM} cryptographic hardware

Appropriate z Systems cryptographic hardware is required, if clients need to exploit signature verification functions with WS-Security. For z Systems z9 and z10, it is the CP Assist for Cryptographic Functions and the Crypto Express$^{(R)}$ 2 Coprocessor. For z196, it is CP Assist for Cryptographic Functions and the Crypto Express 3 Coprocessor. For zEnterprise$^{(R)}$ EC12, it is the CP Assist for Cryptographic Functions and the Crypto Express 4 Coprocessor. For z13^{TM} it is CP Assist for Cryptographic Functions and the Crypto Express 5 Coprocessor.

Katakana terminal devices

CICS TS has to issue certain messages in mixed-case, and is therefore not supported with displays or terminal emulators that are restricted to the non-extended single-byte character set (SBCS) Katakana part of code page 930.

Software requirements

Operating environment

The minimum required level of operating system for CICS TS V5.4 is IBM z/OS V2.1 (5650-ZOS).

Java Runtime Environment

The IBM 64-bit SDK for z/OS, Java Technology Edition, V7.0 SR1 or later, V7.1, or V8.0 is required if using Java application programs, SAML support, JSON web services, the CICS Web Services Assistant, or the CICS XML Assistant. The IBM SDK for z/OS is available, without charge, on tape or by download.

CICS Explorer

CICS Explorer V5.4 requires CICS TS V5.4 to make use of the latest functionality provided. Details of other system requirements for both the CICS Explorer and CICS Explorer SDK are available online.

Details relating to service and support for CICS Explorer are also available online.

For additional information on software requirements, refer to the relevant *Program Directory.* For online information, click on *Detailed system requirements for CICS TS for z/OS V5.4* topic from document *Detailed System Requirements for CICS Transaction Server.*

User group requirements

Requirements for CICS TS can be created, viewed, and voted for in the IBM Request For Enhancement (RFE) community.

The following Request for Enhancements (RFEs) were satisfied or partially satisfied in CICS TS V5.4:

RFE number	Description
15211	EXCI should support CHANNEL and CONTAINER
15821	Do not use the name in CICS program used in the WSDL
22011	Make &APPLID available for MQCONN INITQNAME
22364	Expand the number of MQ initiation queues that can be defined and started by CICS
23115	Require the ability to start an MQ Trigger Monitor and specify a USERID that the transaction will execute under
23475	"READ-ONLY" CEDF and CEBR
23482	Provide CICS COMMAND for the Region USERID
23795	CICS shutdown parm to implement an ARM restart without an immediate shutdown
24590	Tolerate spaces in SSL certificate name
24727	Improve CICS TS FFDC to include dumps of relevant subsystems and dataspaces
24740	API to display details of current instances of CKTI
24841	CICS TS SMTP Support Request
24923	Expand the number of initiation queues that can be defined and started by CICS.
25010	Enhance MQCONN resource
25011	Ability to invoke MQ Adaptor functions from a non-terminal task.

RFE number	Description
25289	Allow Message Longer Than 32K Through Non-CICS Interface (SHARE Requirement SSCICS10003)
27170	Request to CICS itself prevents the purge commands against the CPSM system control tasks.
27976	DFHWS2LS Translate Underscore to Underscore for PLI
28078	READ ONLY CEDF
31806	Sort CSD Group List Entries not alphabetically, but in order
35565	Reduce ACEE storage
36802	CICS Explorer Event Processing Adapter for CICS TDQ
40176	Be able to restart CKTI listener with the STC CICS user Id like CSKL(Sockets) listener.
40948	CICS API to support async call
41348	SAVE DBCTL ID on RTA EVALUATION
42037	Parallel aggregation orchestrated from within CICS.
42412	Eliminate need to define LE module names in CICS DFHCSD
53145	Enhance CICS Events to allow computational data as a field type
56053	Adding timer wait value and retry loop counter in Named Counter EXEC interface
58516	Request for CICS Explorer to show LSR pools
59014	Enable MQ and DBCTL adapters to run on T8 TCB
59774	CICS Explorer: CICS System Link Definitions
60442	CKTI security concern
61776	All CICS transaction abends should be written to CICS Performance Monitoring fields (ABCODEO and ABCODEC)
63335	Obtain ID under which CICS region executes from a CPSM GET call
63423	jcics method datatype container
65071	Extend XPCT TRANSACTION security checking to EXEC CICS INQUIRE/SET TASK
65130	CICS API for MQM resources
67163	CICS MQ Bridge configuration
67341	CICS Explorer Smartcard Login
68982	CICS Logger problems automatation to dump Logger ASID with CICS
72590	Allow System Autoinstall for programs that are EXEC CICS LOADed.
73171	capacity to control flow between gateway and TOR, TOR and AOR
73345	Run transaction COWC under a CICS system userid instead of the userid of an application transaction.
74208	Autoinstall for CEE RDO Group programs
74231	CKTI does not restart on a MQ 2345 and 2373 error
74889	CICS Restart Lite
74973	Sign-On failed message should not provide information if a userid is valid or not
75554	CICS EDF Tool - Read Only Mode

RFE number	Description
76571	Complete RDO processing and Pipeline Scans before accepting MQ messages
77081	Enhance CICS Explorer to provide more statistics for DB2CONN POOL data.
77085	Merge Views, Preferences - share customized views
77562	LASTRESET
77702	LPARNAME in SMF110 records
78590	W3C SOAP/JMS with CICS Webservices
79292	CICS IPIC Heartbeat timeout adjustable
81545	CICS TCPIPService not closing in an orderly manner at shutdown.
82832	CICS-Region should tolerate an unexpected termination of JVM Server
83325	Provide a 'fence' capability that restricts application access to VSAM data to read-only, except for replication.
83349	CICSSVC=216 in DFHXCOPT
84580	Starting MQ CICS connection with PLTUSR ID
84794	Prevent mutually exclusive predicates in Event Specification
84875	OVERWRITE-OUTPUT parameter in BUNDLE creations using Batch Assistant
86677	Containerization of CICS
86997	CICS- Threadsafe Modules for Web Support
87285	Capture additional OMVS dump when hit DFHSO0* abend
87659	Expose some of CICS's API to Batch
88692	CICS Web Services Assistant option for generated COBOL from fractionDigits in XML
89360	Extend functions of program DFHDPLOY
90340	CICS Sample XMEOUT to include Multi-XMEOUT return code logic.
93148	CICS Install job DFHCOMDS should allocate DFHCSD with secondary extents
98022	CICS Install job DFHDEFDS should allocate DFHTEMP and DFHINTRA with secondary extents or at least provide comments
98325	CICS Explorer: Support User Shutdown Transaction in Regions View
100063	CICSPlex System Manager WUI - security weakness

Security, auditability, and control

CICS TS V5.4 uses the security and auditability features of the operating system under which it is running. Information about security is available in the online product documentation for CICS TS V5.4, in IBM Knowledge Center.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

New licensees

Orders for new licenses can be placed now.

Registered clients can access IBMLink for ordering information and charges.

Shipment will not occur before the availability date.

Unless a later date is specified, orders entered before the planned availability date will be assigned a schedule date of one week following availability.

New users of CICS TS should specify:

Type:5655 Model:Y04

Graduated or processor-based charges: Not applicable.

Parallel Sysplex license charge (PSLC)

To order a basic license, specify the program number and quantity of Service Units in Millions (MSU).

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable PSLC license options and quantity represented by the sum of the MSUs in your Parallel Sysplex. For all other program copies, specify the System Usage Registration No-Charge (SYSUSGREG NC) Identifier on the licenses.

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, PSLC below 3 MSU Basic MLC, PSLC AD SYSUSGREG NC, PSLC AD

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Advanced Workload License Charges (AWLC)

To order a basic license, specify the program number and quantity of MSUs. If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable AWLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the System Usage Registration No-Charge (SYSUSGREG NC) Identifier on the licenses.

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, AWLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Advanced Entry Workload License Charges (AEWLC)

To order a basic license, specify the program number and quantity of MSUs.

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, AEWLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Country Multiplex License Charges (CMLC)

Country Multiplex License Charges (CMLC) basic license

To order a basic license, specify the program number and quantity of MSUs.

If there is more than one program copy in a Country Multiplex, the charge for all copies is associated to one license if all the copies are licensed to one customer number within the multiplex. If there is more than one customer number, the charge for all copies is prorated to one license for each customer within the multiplex.

For each license being charged, specify the applicable CMLC license options and the prorated quantity of the Service Units in Millions (MSUs) for each customer number within the multiplex. For all other program copies, specify the Workload Registration No-Charge (WLREG NC) Identifier on the licenses.

Program name: CICS TS V5.4

Program PID: 5655-Y04

Entitlement identifier	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, CMLC

Variable Workload License Charge (VWLC)

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable WLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the Workload Registration Variable WLC Identifier on the licenses.

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, Variable WLC Workload Registration, Variable WLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Entry Workload License Charge (EWLC)

To order a basic license, specify the program number and the quantity of MSUs.

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, Entry WLC

S/390 and z Systems Usage License Charge

Specify the applicable S/390$^{(R)}$ and z Systems Usage License Charge option.

Charges will be based upon the peak MSUs. Usage reported between thresholds of features 1, 2, or 3, will be rounded up to the next MSU level. Above 1.0 MSU, usage will be rounded to the nearest whole MSU. For example, 2.4 MSUs would round to 2.0 MSUs for pricing, and 2.5 MSUs would round to 3.0 MSUs for pricing.

The client pricing will be determined by selecting either:

Entitlement identifier	Description	License option/ Pricing metric
S0172DF	CICS TS V5.4	0 to 0.25 MSU Base
		0.26 to 0.5 MSU Base
		0.51 to 1.0 MSU Base
		Level A Chg/MSU (2 to 11 MSUs)
		Level B Chg/MSU (12 to 44 MSUs)
		Level C Chg/MSU (45 to 78 MSUs)
		Level D Chg/MSU (Above 78 MSUs)
		Level D Chg/MSU (Above 78 MSUs), per 50 MSUs

Examples for ordering:

A client with a measured usage (from the IBM Measured Usage report) of 0.3 MSU would:

A client with 6.6 MSUs (from the IBM Usage report) would:

- Be rounded up to 7.0 MSUs
- Order quantity 1 of the 0.51 to 1.0 MSU base feature
- Order quantity 6 of the Level A 1 MSU feature

A client with 15 MSUs (from the IBM Usage report) would:

- Order quantity 1 of the 0.51 to 1.0 MSU base feature
- Order quantity 10 of the Level A 1 MSU feature
- Order quantity 4 of the Level B 1 MSU feature

A client with 50 MSUs (from the IBM Usage report) would:

- Order quantity 1 of the 0.51 to 1.0 MSU base feature
- Order quantity 10 of the Level A 1 MSU feature
- Order quantity 33 of the Level B 1 MSU feature
- Order quantity 6 of the Level C 1 MSU feature

A client with 85 MSUs (from the IBM Usage report) would:

- Order quantity 1 of the 0.51 to 1.0 MSU base feature
- Order quantity 10 of the Level A 1 MSU feature
- Order quantity 33 of the Level B 1 MSU feature
- Order quantity 34 of the Level C 1 MSU feature
- Order quantity 7 of the Level D 1 MSU feature

z Systems entry license charge (zELC)

To order zELC software, specify the program number and z800 model.

Specify the zELC monthly license option.

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, zELC

Basic machine-readable material

Feature description	Feature number
CICS TS V5.4 - English US, ENU -IBM 3590 Cartridge 1/2 Inch CST 34K Kbpi - Uncompressed	6006

Charge metric (for CICS TS VUE V5.4)

Program name	PID number	Charge metric
CICS TS VUE V5.4	5722-DFJ	Value Unit

Feature description	Feature number
CICS TS VUE V5.4	6052

The programs in this announcement all have Value Unit-based pricing.

Program number	Program name	Value unit exhibit
5722-DFJ	CICS TS VUE V5.4	VUE007

For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the **required license capacity** . Your required license capacity is based upon the following factors:

- The z Systems IPLA program you select
- The applicable Value Unit Exhibit
- The applicable terms
- Whether your current mainframes are full capacity or sub-capacity

Value Unit exhibit VUE007

	MSUs minimum	MSUs maximum	Value Units/MSU
Base	1	3	1
Tier A	4	45	0.45
Tier B	46	175	0.36
Tier C	176	315	0.27
Tier D	316	+	0.2

Value Units for mainframes without MSU ratings:

Hardware	Value Units/machine
MP3000 H30	6
MP3000 H50	8
MP3000 H70	12
ESL models 2	2

Ordering example

The total number of Value Units is calculated according to the following example.

If your required license capacity is 1,500 MSUs for your selected z Systems IPLA product, the applicable Value Units would be:

Translation from MSUs to Value Units

	MSUs	*	Value Units/ MSU	=	Value Units
Base	3	*	1.00	=	3.00

	MSUs	*	Value Units/MSU	=	Value Units
Tier A	42	*	.45	=	18.90
Tier B	130	*	.36	=	46.80
Tier C	140	*	.27	=	37.80
Tier D	1,185	*	.20	=	237.00
Total	1,500				343.50

When calculating the total number of Value Units, the sum is to be rounded up to the next integer.

Basic license (for CICS TS VUE V5.4)

On/Off CoD

CICS TS VUE V5.4 is eligible for On/Off CoD with a temporary use charge calculated based on MSUs per-day usage.

Program name: CICS TS VUE V5.4

Program ID: 5722-DFJ

Entitlement ID	Description	License option/Pricing metric
S01770R	CICS TS VUE V5.4	Basic OTC, Per MSU-day TUC

Program name: CICS TS VUE V5.4

Program ID: 5722-DFJ

Entitlement ID	Description	License option/Pricing metric
S01770R	CICS TS VUE V5.4	Basic OTC, per Value Unit, Multi Version Measurement No Charge

Orderable supply ID	Language	Distribution medium
S018683	Multilingual	3590 Tape

Subscription and Support PID: 5722-DFK

Entitlement ID	Description	License option/Pricing metric
S01770Z	CICS TS VUE Subscription and Support	Basic ASC, per Value Unit SW S&S, No charge, decline SW S&S Per MSU SW S&S registration, Multi Version Measurement No Charge

Orderable supply ID	Language	Distribution medium
S01770X	Multilingual	Hardcopy publication

Subscription and Support (for CICS TS VUE V5.4)

To receive voice technical support via telephone and future releases and versions at no additional charge, Subscription and Support must be ordered. The capacity of Subscription and Support (Value Units) must be the same as the capacity ordered for the product licenses.

To order, specify the Subscription and Support program number (PID) referenced above and the appropriate license or charge option.

IBM is also providing Subscription and Support for these products via a separately purchased offering under the terms of the IBM International Agreement for Acquisition of Software Maintenance. This offering:

- Includes and extends the support services provided in the base support to include technical support via telephone.
- Entitles you to future releases and versions, at no additional charge. Note that you are not entitled to new products.

When Subscription and Support is ordered, the charges will automatically renew annually unless cancelled by you.

The combined effect of the IPLA license and the Agreement for Acquisition of Software Maintenance gives you rights and support services comparable to those under the traditional ICA S/390 and z Systems license or its equivalent. To ensure that you continue to enjoy the level of support you are used to in the ICA business model, you must order **both** the license for the program **and** the support for the selected programs at the same Value Unit quantities.

Charge metric (for CICS TS Developer Trial V5.4)

Program name	PID number	Charge metric
CICS TS Developer Trial V5.4	5655-Y30	No charge. Unlimited Installs

Basic license (for CICS TS Developer Trial V5.4)

CICS TS Developer Trial V5.4

Basic license: No charge. Unlimited Installs

Feature description	Feature number
CICS TS Developer Trial V5.4	6007

To order, specify the program product number and the appropriate license or charge option. Also, specify the desired distribution medium. To suppress shipment of media, select the license-only option in CFSW.

Program name: CICS TS Developer Trial V5.4

Program ID: 5655-Y30

Entitlement ID	Description	License option/Pricing metric
S0172F9	CICS TS Developer Trial V5.4	No charge, Unlimited Installs, Multi Version Measurement No Charge

Orderable supply ID	Language	Distribution medium
S0186BC	English	3590 tape

Subscription and Support PID: 5655-Y15

Entitlement ID	Description	License option/Pricing metric
S016Z0T	CICS TS Developer Trial Subscription and Support	No charge, Unlimited Installs, SW S&S Reg, No Charge, Multi Version Measurement No Charge

Orderable Supply ID	Description
S016Z28	CICS TS Developer Trial S&S Hardcopy

Customization options

Select the appropriate feature numbers to customize your order to specify the delivery options desired. These features can be specified on the initial or MES orders.

Expedite shipments will be processed to receive 72-hour delivery from the time IBM Integrated Supply Chain (ISC) receives the order. ISC will then ship the order via overnight air transportation.

Unlicensed documentation

CICS TS V5.4 product documentation is provided by IBM, using four separate approaches. The documentation is refreshed regularly to reflect feedback from users, and includes changes that result from IBM Service. Detailed information is provided in What documentation is available?

Online information in IBM Knowledge Center

Online documentation for CICS TS V5.4 is hosted in IBM Knowledge Center.

PDF manuals

Documentation for CICS TS V5.4 is provided for download in PDF format from IBM Knowledge Center. In this release, a number of manuals are restructured and renamed. See Documentation in PDF for details.

Offline information, by using IBM Knowledge Center for CICS products

IBM Knowledge Center can be downloaded and installed on a local system on AIX[(R)], Linux[TM], Linux on z Systems, and Microsoft[TM] Windows[TM]. The IBM Knowledge Center application can then be loaded with the selected product documentation. CICS TS supplies the application for IBM Knowledge Center on a single DVD that is available from IBM Shopz (GC34-7459). The documentation for CICS TS V5.4 that you can load into the application for IBM Knowledge Center is available for download. See CICS TS V5.4 Downloadable documentation for details about how the downloadable IBM Knowledge Center for CICS products works, and how to load the latest CICS TS documentation into it.

Offline information, by using IBM Knowledge Center for z/OS

IBM z/OS V2R2 contains a base element of IBM Knowledge Center for z/OS. If you have this level of z/OS, you can use the z/OS Softcopy Librarian feature to load CICS TS V5.4 documentation into IBM Knowledge Center for z/OS. See the z/OS 2.2 product documentation Installing, Managing, and Using the Online Libraryfor details about how IBM Knowledge Center for z/OS works, and how to load the latest CICS TS documentation into it.

Note: The contents of IBM Knowledge Center for z/OS are refreshed on a quarterly schedule that is independent of z Systems product releases. As a result, the documentation in this format for CICS TS V5.4 will not be available at general availability, but will be added at a subsequent refresh.

IBM Knowledge Center accessibility

Within IBM Knowledge Center, the CICS documentation is designed to be accessible. For example, instead of viewing diagrams, users can choose to read text descriptions. To request the accessibility status for the IBM Knowledge Center service, visit the IBM Product accessibility information website. Select *IBM Knowledge Center - Hosted Edition.*

CICS TS program directories in IBM Publications Center

The following CICS TS program directories are available in the IBM Publications Center:

Description	Document number
CICS TS for z/OS V5.4 - base	GI13-4401

Description	Document number
CICS TS for z/OS V5.4 - activation module	GI13-4402
CICS TS for z/OS Developer Trial V5.4 - activation module	GI13-4404
CICS TS for z/OS Value Unit Edition V5.4 - activation module	GI13-4403

National language versions

Some documentation is translated into languages other than English. For details of the content that is translated and the formats in which it is available, see the CICS TS V5.4 product documentation in IBM Knowledge Center, under section Translated documentation.

Other CICS publications

Other CICS publications are available, in IBM Redbooks(R).

Selected articles are also available, in IBM Redpapers(TM).

Packaging

CICS TS V5.4 consists of CICS as its base element, together with several other elements providing CICS-enabling functions. The elements of CICS TS V5.4 are:
- CICS Version 7.1
- CICSPlex SM Version 5.4
- CICS Service Flow Runtime for CICS TS
- REXX Development System for CICS/ESA Version 1.1
- REXX Runtime Facility for CICS/ESA Version 1.1

Physical delivery

The following hardcopy documents and DVDs are shipped, together with the basic machine-readable material for the product:
- Licensed Program Specifications DVD (for CICS TS V5.4) (GC34-7359)
- License Information DVD (for CICS TS VUE V5.4) (GC34-7360)
- License Information DVD (for CICS TS Developer Trial V5.4) (GC34-7361)
- License Information DVD (for IBM Knowledge Center for CICS local install) (GC34-7460)
- Memo to Licensees (GI13-4405)
- CICS Technical Services Flyer (GI13-4406)
- IBM Knowledge Center for CICS DVD (local install for Microsoft Windows, AIX, and Linux) (GC34-7459)

Certain other items, such as specification sheets of related IBM products, might be included.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Customized Offerings

Product deliverables are shipped only through CBPDO and ServerPac. These customized offerings are offered for internet delivery from Shopz. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on internet delivery, go to the Help section on the Shopz website.

You choose the delivery method when you order the software. IBM recommends internet delivery. In addition to internet and DVD, the supported tape delivery options include:

- 3590
- 3592

Most products can be ordered in ServerPac the month following their availability in CBPDO. z/OS can be ordered through CBPDO and ServerPac at general availability. Many products will also be orderable in a Product ServerPac without also having to order the z/OS operating system or subsystem.

Shopz and CFSW will determine the eligibility based on product requisite checking. For more details on the product ServerPac, go to the Help section on the Shopz website.

For additional information on the Product ServerPac option, refer to Software Announcement 212-272, dated July 31, 2012.

Production of software product orders will begin on the planned general availability date.

- CBPDO shipments will begin one week after general availability.
- ServerPac shipments will begin two weeks after general availability.

Terms and conditions

For CICS TS VUE V5.4 and CICS TS Developer Trial V5.4 only

The information provided in this announcement is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement, IBM International Passport Advantage[R] Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

Licensing: IBM International Program License Agreement, which includes the License Information document and Proof of Entitlement (PoE), governs your use of the program. PoEs are required for all authorized use.

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License Information numbers for IPLA Programs

LI number	Program name
L-ACRR-AK8FRQ	IBM CICS Transaction Server for z/OS V5.4 Value Unit Edition
L-ACRR-AK8FLF	IBM CICS Transaction Server for z/OS V5.4 Developer Trial
L-APIG-9U5DA7	IBM Knowledge Center for IBM CICS products V1.5[2]

The License Information documents for these Programs are available for review on the IBM License Information documents website.

Statement of good security practices

IT system security involves protecting systems and information through prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a lawful, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

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Electronic Service Agent™ and the IBM Electronic Support web portal are dedicated to providing fast, exceptional support to IBM Systems customers. The IBM Electronic Service Agent tool is a no-additional-charge tool that proactively monitors and reports hardware events, such as system errors, performance issues, and inventory. The Electronic Service Agent tool can help you stay focused on your company's strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues. Servers enabled with this tool can be monitored remotely around the clock by IBM Support, all at no additional cost to you.

Now integrated into the base operating system of AIX V5.3, AIX V6.1, and AIX V7.1, Electronic Service Agent is designed to automatically and electronically report system failures and utilization issues to IBM, which can result in faster problem resolution and increased availability. System configuration and inventory information collected by the Electronic Service Agent tool also can be viewed on the secure Electronic Support web portal, and used to improve problem determination and resolution by you and the IBM support team. To access the tool main menu, simply type smitty esa_main, and select Configure Electronic Service Agent. In addition, ESA now includes a powerful web user interface, giving the administrator easy access to status, tool settings, problem information, and filters. For more information and documentation on how to configure and use Electronic Service Agent, go to the IBM Electronic Support website.

The IBM Electronic Support portal is a single internet entry point that replaces the multiple entry points traditionally used to access IBM internet services and support. This portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The My Systems and Premium Search functions make it even easier for Electronic Service Agent tool-enabled customers to track system inventory and find pertinent fixes.

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Increased uptime: The Electronic Service Agent™ tool is designed to enhance the Warranty or Maintenance Agreement by providing faster hardware error reporting and uploading system information to IBM Support. This can translate to less wasted time monitoring the symptoms, diagnosing the error, and manually calling IBM

Support to open a problem record. Its 24 x 7 monitoring and reporting mean intervention is not required to report errors.

Security: The Electronic Service Agent tool is designed to be secure in monitoring, reporting, and storing the data at IBM. The Electronic Service Agent tool is designed to securely transmit either through the internet (HTTPS or VPN) or modem to provide customers a single point of exit from their site. Communication is one way. Activating Electronic Service Agent does not enable IBM to call into a customer's system.

For additional information, go to the IBM Electronic Service Agent website.

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Customized support: Using the IBMid entered during activation, you can view system and support information in the *My Systems and Premium Search* sections of the IBM Electronic Support page.

My Systems provides valuable reports of installed hardware and software using information collected from the systems by Electronic Service Agent. Reports are available for any system associated with your IBMid. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium search and the Electronic Service Agent information that has been collected from your system, you are able to see search results that apply specifically to your systems.

For more information on how to utilize the power of IBM Electronic Services, contact your IBM Systems Services Representative, or go to the IBM Electronic Support website.

Prices

For additional information and current prices, contact your local IBM representative or IBM Business Partner.

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, zELC
Orderable supply ID	**Language**	**Distribution medium**
S0186J0	Multilingual	3590 tape

Parallel sysplex license charge (PSLC)

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, PSLC below 3 MSU, SYSUSGREG NC, PSLC AD
Orderable supply ID	**Language**	**Distribution medium**
S0186J0	Multilingual	3590 tape

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, AWLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, CMLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, AEWLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Variable workload license charge (VWLC)

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, Variable WLC Workload Registration

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Sub-capacity charges for VWLC products

Sub-capacity charges for VWLC products are based on product LPAR utilization capacity. Product LPAR utilization capacity for a VWLC product is the highest number of MSUs utilized by the combined LPARs in which a VWLC product runs concurrently during a reporting period. The number of MSUs is based on the highest observed rolling 4-hour average utilization used by the combination of the relevant LPARs during the reporting period.

Sub-capacity charges terms and conditions

IBM z Systems software charges at less than full machine capacity for eligible VWLC products apply when z/OS is running in z/Architecture (64-bit) mode on an IBM z Systems 900, no other MVS-based operating system is licensed to that server, and the required information is provided by the client in accordance with the applicable terms.

Sub-capacity charges for a VWLC product is based on the utilization of the LPARs where/when the product executes. To obtain charges at less than full machine capacity for VWLC products, the client is required to:

- Sign and abide by the terms of the Attachment for z Systems workload license charges - (Z125-6516).
- Obtain the latest version of the Sub-Capacity Reporting Tool.

- Install any VWLC product and IBM e(logo)server z Systems 900 Licensed Internal Code (LIC) service required for sub-capacity charging. Required service will be listed on the WLC website.
- Collect SMF data as required by the Sub-Capacity Reporting Tool. Retain the collected SMF data for a period of not less than six months.
- Use the IBM provided Sub-Capacity Reporting Tool to process the collected SMF data. The Sub-Capacity Report produced by the tool is used to determine required license capacity for the VWLC products. Required license capacity is determined based on the largest MSU value of a VWLC product running concurrently in all LPARs during the reporting period. IBM reserves the right to request the system data that supports these product-defined capacity values for a period of up to six months after the data was collected.
- Provide an initial Sub-Capacity Report to begin to receive the benefits of less than full machine capacity charges. Sub-capacity charging will follow submission of a Sub-Capacity Report. There will be no retroactive application of sub-capacity charges.
- Submit Sub-Capacity Reports monthly.
- Submit Sub-Capacity Reports for all VWLC products with complete data for the entire reporting period to the email address and by the date specified in the current z Systems workload license charges exhibit (Z125-6324) and on the z Systems Software Pricing website.

  Sub-Capacity Reports that reflect a changed product defined capacity will be considered to be orders placed by the client without further action on the client's part, and IBM is authorized to make any resulting billing increase or decrease. To place an order for a new license or to discontinue licenses, move licenses between machines, report a hardware model upgrade, or enable or disable product features, the client must contact IBM or their IBM Business Partner.

- Configure the machine to send weekly Transmit System Availability Data (TSAD) to IBM via the z Systems 900 Remote Support Facility (RSF). If the machine cannot connect via the RSF, provide this TSAD via an alternate means documented in the z/OS publication, *Planning for workload license charges.*

Entry Workload License Charge (EWLC):

Program name: CICS TS V5.4

Program ID: 5655-Y04

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	Basic MLC, Entry WLC

Orderable supply ID	Language	Distribution medium
S0186J0	Multilingual	3590 tape

Entitlement ID	Description	License option/Pricing metric
S0172DF	CICS TS V5.4	0 to 0.25 MSU Base
		0.26 to 0.5 MSU Base
		0.51 to 1.0 MSU Base
		Level A Chg/MSU (2 to 11 MSUs)
		Level B Chg/MSU (12 to 44 MSUs)
		Level C Chg/MSU (45 to 78 MSUs)
		Level D Chg/MSU (Above 78 MSUs)
		Level D Chg/MSU (Above 78 MSUs), per 50 MSUs

Programming announcement reference: Not applicable.

Variable charges:

The applicable processor based one-time charge will be based on the group of the designated machine on which the program is licensed for use. If the program is designated to a processor in a group for which no charge is listed, the charge of the next higher group listed applies. For movement to a machine in a higher group, an upgrade charge equal to the difference in the then-current charges between the two groups will apply. For movement to a machine in a lower group, there will be no adjustment or refund of charges paid.

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Corrections

(Corrected on June 1, 2017)

The Hardware requirements section is revised.