IBM CICS Transaction Server for z/OS , V4.2, further reinforces competitiveness, compliance, and control

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At a glance

CICS® Transaction Server (CICS TS) V4.2 delivers value and significant innovation in five main technical focus areas, and satisfies over fifty customer and user group requirements. It delivers a smarter transaction processing experience for our customers:

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  - Improved event lifecycle management
  - New assured events
- Java™
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- Scalability
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  - New threadsafe CICS commands
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  - New threadsafe performance option
  - Enhanced CICS VSAM local shared resource (LSR) performance options

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: LE001).

Overview

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

CICS TS V4.2 builds upon the new and enhanced capabilities developed and delivered in Version 4.1, to enable customers to compete in the marketplace, comply with standards and regulations, and control their IT processes. CICS TS V4.2 delivers technical innovation and significant business value in five main focus areas, satisfying in excess of fifty customer and user group enhancement requests. The result is a powerful new release with a huge amount of value for all stakeholders - delivering a smarter transaction processing experience for CICS users and their customers in turn.

- **Events:** New functionality in the CICS TS runtime enables system events to be emitted using the CICS business event infrastructure, providing immediate insight into the health of the CICS system. Enhanced CICS bundle support reduces set-up time and complexity through the separation of system programmer and application developer concerns, together with the use of common technology for both system- and application-related events.
- **Java:** A new 64-bit Java runtime environment, coupled with enhancements to the multithreaded Java Virtual Machine (JVM) server infrastructure allows CICS to run more, and larger, Java applications in a single region delivering better scalability for Java workloads in CICS. When combined with new support for the deployment of OSGi bundles, this can significantly simplify system administration and portability for Java applications. The provision of a new Java-based Axis2 web services engine improves portability of web services applications and reduces the cost of deployment through increased zAAP offload.
- **Connectivity:** CICS TS V4.2 extends its investment in System z IP networking, and supports the function shipping of file control, transient data, and temporary storage requests between CICS regions over a TCP/IP network using an IP interconnectivity (IPIC) connection, with potential benefits coming from improved performance, and the ability to simplify network administration when moving from SNA to an IP network.
- **Management:** Enhancements to simplify the management of CICS remains a focus with the introduction of:
  - A new transaction tracking facility designed to aid auditing and speed up problem determination.
  - Improvements to workload management that provide options to balance work more effectively in differing environments, and enable dynamic changes.
  - Support for password phrases to enhance log-on security.
  - Improvements and enhancements to the CICS Explorer™, in areas such as z/OS perspective, import and export of system connection details, ability to view system initialization table (SIT) parameters.
- **Scalability:** The scalability of the CICS environment is enhanced with major extensions to multiprocessor exploitation, including threadsafe access via the CICS-DBCTL interface to IBM Information Management System (IMS) Databases and function shipping requests between CICS systems over IPIC connections. This release also delivers a series of architectural enhancements to enable CICS system and application programs to use and exploit System z 64-bit architecture, where customers could benefit, for example, from 64-bit Java, trace, and temporary storage.

Key prerequisites

The minimum required level of operating system for CICS TS V4.2 is IBM z/OS V1.11 (5694-A01), or later.

The minimum required level of Java is IBM 64-bit SDK for z/OS, Java Technology Edition, V6.0.1

For information on IBM 64-bit SDK for z/OS, Java Technology Edition, V6.0.1, refer to Software Announcement 211-004, dated March 15, 2011.

Planned availability date

June 24, 2011

Open beta program: A beta version of the product is available free of charge, subject to acceptance by users of associated licensing and other terms and conditions. The beta can be used until July 31, 2011. For more information, visit

http://www.ibm.com/software/htp/cics/tserver/v42/openbeta

Description

CICS TS V4.2 builds upon the new and enhanced capabilities developed and delivered in CICS TS V4.1 to enable users to **compete** in the marketplace, **comply** with standards and regulations, and **control** their business. CICS TS V4.2 delivers value in five main technical areas that support these three initiatives:

- **Business event processing** is extended with new system events.
- **Java implementation** has been changed for better performance.
- **Connectivity** improvements have been made in both modern transports and interfaces, as well as more established methods.
- **System Management** enhancements and new functions make system management easier and more effective.
- **Scalability** of CICS is enhanced and extended to support more traditional workload, and improve throughput and performance.

Continued enhancements to the CICS Explorer make it so much more than just a point of integration into CICS. Also, initial delivery of 64-bit support is the result of major architectural enhancements to CICS that will be continued in future releases. These and many of the other valuable new and enhanced capabilities provided by CICS TS V4.2 are described in more detail in the section.

This new release of CICS TS supports the evolution of IBM software into new workloads, and more efficient and optimized processing with its zEnterprise announcement, promoting "a new dimension in computing". Customers, adopting CICS TS V4, are well-positioned to take advantage of shifts in the marketplace using their agility to react to changes and implement them into their business processes quickly and efficiently.

Business events

CICS TS V4.2 extends the support for event processing in CICS, which allows the power of event processing to be used to increase responsiveness and insight into business. CICS TS V4.2 adds the ability to emit system events to notify certain changes in the system as they happen, such as when VSAM files or DB2® connections fail unexpectedly. New capture points for transaction abends allow events to be emitted and routed to a suitable event consumer when an application encounters an unrecoverable failure condition. CICS system events are specified

using an enhanced CICS event binding editor in the CICS Explorer and Rational® Developer for System z.

New assured emission allows events to be included in a single unit of work, ensuring that if the event emission succeeds then the application will continue, but that if it fails and the event is not emitted, then the application will also fail, enabling CICS event processing to be used where emission of the event is critical to the application.

Lifecycle management for CICS events will make it easier to manage events when the applications that emit them change and evolve. Sharing of event processing adapters across event bindings reduces event set-up time. A HTTP event processing adapter enables events to be emitted over HTTP without any customization, as an alternative to existing transports, such as WebSphere® MQ.

Java

The pooled JVM and JVM server environments have both been updated to support the latest 64-bit Java runtime environment, which provides significantly increased processing capacity in a single CICS region for Java applications. The JVM server infrastructure with integrated OSGi support and tooling provides a new industry standard Java runtime environment in CICS.

CICS now supports the running of multiple Java transactions as threads in a single JVM server process. The JVM server also provides integrated statistics for the monitoring of JVM garbage collection, which simplifies the job of performance tuning Java applications in CICS.

Using the JVM server simplifies the setup and management of the CICS Java runtime environment, improves portability for Java applications and tools deployed in CICS, and provides a new standard Java runtime environment in CICS.

The JVM server environment supports the development and deployment of Java applications through the use of industry standard OSGi bundles. This will require Java applications to be packaged into an OSGi bundle, and then deployed as a CICS BUNDLE resource with reference to the OSGi bundle and its version, removing the need to load Java applications from a statically defined class path. This function will significantly improve the system management of Java applications in CICS through the provision of application isolation and versioning, cross-package prerequisite checking, and simplified package redeployment.

The CICS Explorer SDK supports the development of Java applications for both JVM servers and pooled JVMs. Users with the appropriate prerequisite Eclipse Integrated Development Environment (IDE) can use documentation, examples, and wizards in conjunction with the plug-in development environment to develop applications as a set of OSGi bundles and deploy them using the CICS bundle support in the SDK. This enhanced plug-in will significantly improve the development of new Java applications and accelerate the migration of existing Java applications to exploit the OSGi environment in a JVM server.

Connectivity

CICS Connectivity is enhanced in five key areas:

- IP Interconnectivity (IPIC)
- Web services
- HTTP
- ATOM
- Other subsystems

CICS TS V4.2 now supports the function shipping of file control, transient data, and temporary storage requests between CICS regions over a TCP/IP network using an IPIC connection. This function, together with the prior support for DPL,

transaction routing, and asynchronous starts, provides a modern alternative to IBM Systems Network Architecture (SNA) for CICS-to-CICS intercommunication, allowing migration of SNA networks to TCP/IP, performance enhancements resulting from the use of threadsafe mirror programs, improved security, and simplified administration.

CICS TS V4.2 also provides the option to use the common Axis2 Java-based SOAP engine, which is also used in WebSphere Application Server, to improve interoperability. The Axis2 infrastructure and the data conversion bindings have been implemented in Java, making them eligible for execution on available specialty zAAP processors, which can lead to lower software processing costs.

CICS will now optionally cache HTTP connections to enable the pooling of outbound connections, which greatly reduces the processing associated with opening and closing large numbers of HTTP connections. Additionally, CICS provides the option to control the number of persistent HTTP connections allowed for each port, which can improve workload balancing of connections in a sysplex. Other enhancements include simplified deployment and administration of ATOM feeds, and extensions to support for WebSphere Application Server and WebSphere MQ.

System management

Improving the management of CICS is a continued focus in this release. New transaction tracking capability provides the ability to identify the point of origin of a CICS task, for example an IP address or a queue name, and then to track those tasks as they flow across regions in a CICSplex, displaying the relationships between these tasks as they flow. This will be a significant aid in auditing and problem determination, and simplifies the administration skills required to diagnose business applications.

New CICSPlex® System Manager (CICSPlex SM) Workload Management (WLM) algorithms allows more control over how workload is distributed, enabling workload to be more evenly shared between local and remote systems if desired. Additionally, CICSPlex SM provides the ability to vary the algorithms for particular workloads non-disruptively, enabling mixed mode operation and algorithm switching without shutting down any workloads. Taken together, the enhancements improve the efficiency of workload management and simplify the creation of highly available CICSplex configurations.

New support for password phrases allows a 9-100 character string of mixed-case letters, numbers, and special characters, including blanks. Longer password phrases offer improved system protection and greater usability since they are less likely to be guessed and require more processing power to sustain an attack.

First shipped with CICS TS V4.1, CICS Explorer has been continuously updated and improved, including the following new and enhanced capabilities:

- z/OS perspective
- Export and import system connection details
- Ability to view system initialization parameters
- Many new and updated Operations and Administration views including workload management and task association
- Separation of Connection definitions and Credentials
- Ability to use a proxy server to connect to the internet for software updates
- Ability to search for associated tasks
- Ability to copy and paste resource definitions
- Ability to work with resource definitions in a CICS System Definition (CSD) file
- CICS Explorer SDK API changes to support these updates

At general availability of CICS TS V4.2, new and enhanced capabilities will be available in CICS Explorer V1.1, in support of CICS TS V4.2, and will include:

- Software Development Toolkit for CICS Explorer

- Column sort in operations and administrative views
- Transaction tracking
- ATOM feed wizard
- Enhanced event binding editor
- Event search

Scalability

CICS TS V4.2 makes a number of enhancements to increase the scalability of CICS, by extending threadsafe support in key areas. These enhancements increased multiprocessor exploitation, and by extending its support for 64-bit architecture, further reducing virtual storage constraint.

Multiprocessor exploitation is improved by allowing threadsafe applications and commands to run on open Task Control Blocks (TCBs), and hence avoid the bottleneck of the CICS quasi-reentrant (QR) TCB. Further use of open TCBs and additional threadsafe capability in this latest release enable increased multiprocessing capability and potentially provide significant performance benefits.

The CICS DBCTL interface, which is used to communicate between CICS applications and IMS data, is now threadsafe, leading to the possibility of significant performance improvements. The mirror program (DFHMIRS) can now run on an L8 open TCB, and when used in conjunction with the new support for function shipping over IPIC connections, this provides optimization for large customers whose file-owning regions are CPU constrained.

CICS TS V4.2 introduces a new CONCURRENCY REQUIRED option which can eliminate even more TCB switches, and makes even more of the CICS API threadsafe, improving the performance of threadsafe applications which utilize those additional APIs.

Trace tables and both main and auxiliary temporary storage use the 64-bit storage capabilities of the hardware to increase region capacity, and reduce short on storage conditions. By enabling trace tables to hold considerably more data, problem determination of first failure data capture can be significantly improved.

The maximum number of LSR pools has been increased from 8 to 255, enabling customers with diverse requirements for VSAM caching to optimize the performance and manageability of their VSAM data.

CICS TS V4.2 now makes more use of the large 64-bit virtual storage to increase capacity by supporting a larger number of concurrent users and concurrent transactions, as well as keeping up with the virtual storage demands of increased workload of existing applications and the larger memory requirements of new applications and new technologies.

Accessibility by people with disabilities

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

http://www.ibm.com/able/product_accessibility/index.html

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

The Information Center is accessible to people with visual, physical, or hearing impairment. Features are incorporated which are designed for users with visual impairment. All functions can be performed without the use of a mouse. Instead of viewing diagrams, users can choose to read text descriptions. Command syntax diagrams can be displayed in two different formats, including one which has been designed for visually impaired users. Some information is provided in PDF format. This is accessible using Adobe® Acrobat Reader 8.0, or later.

Section 508 of the U.S. Rehabilitation Act

CICS Transaction Server for z/OS, V4.2 is capable, as of June 24, 2011, when used in accordance with the 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 at

http://www.ibm.com/able/product_accessibility/index.html

Product positioning

CICS TS and WebSphere Application Server are strategic middleware products that perform well using new technologies such as event processing, Web 2.0, web services and service components to support service-oriented architecture (SOA) environments. These middleware products exploit and complement z/OS qualities of service, such as high availability and scalability at low cost per transaction, with excellent security and governance capabilities. In combination, CICS TS and WebSphere Application Server support almost any mission-critical solution.

The new capabilities in CICS TS V4.2 position it squarely in the event processing domain, as a supplier of events to products such as WebSphere Business Events, WebSphere Business Monitor, and Cognos® Real-time Monitor. It can also be positioned in the business process management domain as both a process initiator - when single or aggregated events are used to trigger a business process instance, and as a service supplier - when a process instance invokes a service in CICS.

WebSphere Application Server is the premier Java Enterprise Edition (JEE) and web services-based application server. It is available on the broadest number of platforms (including z/OS and Linux®) and provides a robust, proven environment for Java applications.

CICS TS provides the base for a large number of mainframe applications today and excels in the execution of high-volume business applications. It supports the development of modern applications in the most popular business languages, COBOL, PL/I, C/C++, and Java, as well as functioning as a web services-based application server, leveraging existing investments and skills, whilst exploiting new technologies.

These applications are fundamental to the SOA environment and CICS enhances its ability to enable CICS-based applications to be exposed as loosely-coupled components in an SOA, enabling them to emit events and interact with web services. The functions delivered in CICS TS V4.2 should be seen as an extension to capability delivered in CICS TS V4.1, and a major advance over the previous SOAP for CICS feature that was delivered. Along with the provision of optimized transports, improved interoperability, and better security integration for this new workload, CICS TS V4.2 delivers the qualities of service expected from a CICS function.

For customers requiring tightly-coupled inbound connectivity from JEE application servers into CICS TS, the CICS TG is a production-proven and market-leading JEE connector, providing a high-performing, security-rich, and scalable method of SOA access to CICS. Tightly-coupled connectivity solutions such as JCA, along with other JEE standard services such as Java Message Service (JMS) and Java

Database Connectivity (JDBC), can coexist with loosely-coupled web services to take advantage of the agility of On Demand Business.

For further details on the latest enhancements provided in CICS TG V8.0, refer to Software Announcement 210-113 , dated April 27, 2010.

TXSeries® for Multiplatforms is a distributed CICS Online Transaction Processing (OLTP) environment, for mixed language enterprise applications. TXSeries can act as a gateway to CICS TS by handling terminal concentration, protocol conversion, or intelligent business logic locally, which can increase the performance of CICS TS and protect it from client-originated disruption.

TXSeries is a complementary deployment environment for high-performance, distributed transactional applications that integrate well into mixed-language, service-oriented architecture solutions. TXSeries for Multiplatforms, V7.1, extends and enhances the next generation of distributed CICS across a number of platforms and introduced IPIC-based inter-connectivity along with channels and containers for improved interoperability with CICS TS.

For further details on TXSeries for Multiplatforms, V7.1, refer to Software Announcement 209-040, dated March 17, 2009.

CICS TS V4.2 delivers important new functionality that can help build flexible and agile application systems that enable business to be more responsive to the changing needs of customers and partners. To help reap immediate benefit from these advanced capabilities, the System z tools portfolio is keeping pace, and all key products will either support CICS TS V4.2 without change or will deliver enabling PTFs or new releases, in most cases providing "Day 1" support.

System z tools help modernize and transform existing CICS applications, whether the goal is to develop and deploy new workloads to leverage the unique performance, availability, security, and cost benefits of System z to:

- Increase responsiveness to business requirements by modernizing the mainframe platform
- Optimize management of the IT environment, reducing cost and complexity while improving governance and compliance

To help transform CICS TS into a SOA hub on System z, the IBM System z tools deliver support right across the lifecycle whether building new applications or reusing existing applications. For CICS application developers, Rational Developer for System z provides a single Integrated Development Environment (IDE) for all supported languages and architectural styles, whether creating new CICS applications from scratch or are wrapping, refactoring, or otherwise reusing CICS application assets.

Developers can also use CICS PA to understand the performance of new or changed CICS applications and to identify performance improvements, including the benefits of running applications in threadsafe mode prior to deployment.

This helps to get the most benefit from your CICS application investments with reduced risk. CICS IA and IBM Rational Asset Analyzer help to understand the structure of the most complex applications, for example to determine which programs can most easily be refactored as web services. IBM Host Access Transformation Services (HATS) enables developers to expose existing 3270 applications as web services.

System z tools support the IBM Service Management initiative to help customers optimize their IT infrastructure and key service management processes, such as those defined by the IT Infrastructure Library® (ITIL®), as well as delivering a Discovery Library Adapter (DLA) to further identify CICSPlex SM configuration items for use in ITIL processes.

For example, CICS PA and Tivoli® OMEGAMON® XE for CICS on z/OS can work together to provide detailed CICS metrics that help to diagnose performance-related problems in the problem management process, and to provide performance trend

information for the capacity management process. CICS BAC and File Manager for z/OS provide automation and flexibility to the task of sharing CICS resources with batch systems. This helps improve system availability.

The need for governance and compliance is a requirement in business, but recent regulatory legislation such as the Sarbanes-Oxley Act has made it even more relevant to the business of IT. IBM System z tools can help to implement compliance-related initiatives. For example, CICS CM can be used to automate and manage CICS configuration changes in a controlled and authorized manner, and CICS VR can help to maintain the integrity of VSAM data.

Customers subject to strict PCI (and other data governance) requirements can convert CICS and batch VSAM files to DB2, and encrypt sensitive data using a combination of CICS VSAM Transparency and IBM Data Encryption Tool for DB2 without needing to make any application program changes.

WebSphere ILOG® Rules for COBOL is part of the WebSphere Business Rules Management System that accelerates the adoption of agile business models on the CICS platform. ILOG Rules for COBOL enables users to define and externalize business decision logic in CICS COBOL applications, and make this logic accessible and manageable by line-of-business experts and analysts, while preserving the stability of core CICS applications infrastructure.

CICS seminars

IBM offers free customized CICS seminars delivered by CICS technical experts, at customer locations and with the opportunity to choose the topics and time. Given to a mixture of personnel involving operations, development, and strategy, this can provide an effective discussion on how CICS can deliver real value to a customer's business. For more details contact an IBM Account Team @ cicssem@uk.ibm.com.

Statement of direction

IBM declares the following statements of general direction:

1. IBM intends in the future for WebSphere MQ for z/OS to provide Group Units of Recovery (Group UR) support for CICS TS for z/OS.
2. IBM intends in the future to deliver a Dynamic Scripting Feature Pack for use with CICS TS V4.2.
3. IBM intends a future release of CICS TS to discontinue support for both: (i) session beans using Enterprise Java Beans (EJB); and (ii) the Java pool infrastructure. Customers are encouraged to migrate Java applications to the new JVM server infrastructure, and to migrate EJB applications to Java SE components and make them available through web services or the JEE Connector architecture (JCA). CICS will continue to support Java as a first class application programming language for CICS applications, including enhancements to the CICS interfaces, the deployment infrastructure, and Java runtime environment.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

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 provide the global reach, intellectual capital, industry insight, and technology leadership to support any critical-business need.

For information on IBM Global Services, visit

http://www.ibm.com/services

To learn more about IBM Software Services, visit

http://www.ibm.com/developerWorks/websphere/services/

To locate an IBM Business Partner, visit

http://www.ibm.com/software/solutions/isv

For services for CICS, refer to

http://www.ibm.com/software/ts/cics/service/

Reference information

IBM Software Announcements

The following software announcements are relevant to CICS TS V4.2:

For information on Application Performance Analyzer for z/OS V11.1, refer to Software Announcement 210-308, dated October 5, 2010.

For information on CICS CM V2.1, refer to Software Announcement 209-214, dated July 14, 2009.

For information on CICS DA V1.1, refer to Software Announcement 210-221, dated July 22, 2010,

For information on the CICS Explorer, refer to Software Announcement 209-135, dated April 28, 2009,

For information on CICS OTTO V1.2, refer to Software Announcement 206-187, dated August 1, 2006.

For information on CICS PA V3.2, refer to Software Announcement 210-331, dated October 5, 2010.

For information on CICS TG V8.0, refer to Software Announcement 210-113, dated April 27, 2010,

For information on CICS TS V4.1, refer to Software Announcement 209-135, dated April 28, 2009.

For information on CICS VR V4.3, refer to Software Announcement 208-138, dated June 24, 2008.

For information on Debug Tool for z/OS, V11.1, refer to Software Announcement 210-308, dated October 5, 2010.

For information on Enterprise PL/I for z/OS, V4.1, refer to Software Announcement 210-232, dated July 22, 2010,

For information on Fault Analyzer for z/OS, V11.1, refer to Software Announcement 210-308, dated October 5, 2010.

For information on File Manager for z/OS, V11.1, refer to Software Announcement 210-308, dated October 5, 2010.

For information on IBM 64-bit SDK for z/OS, Java Technology Edition, V6, refer to Software Announcement 207-318, dated December 4, 2007.

For information on IMS 12, refer to Software Announcement 210-315, dated October 5, 2010.

For information on Rational Developer for System z, V8.0, refer to Software Announcement 210-401, dated October 26, 2010.

For information on Rational Host Access Transformation Services V7.5.1, refer to Software Announcement 210-140, dated April 13, 2010.

For information on TXSeries for Multiplatforms, V7.1, refer to Software Announcement 209-040, dated March 17, 2009.

For information on WebSphere Application Server V7.0, refer to Software Announcement 208-266, dated September 9, 2008.

For information on WebSphere ILOG Rules for COBOL V7.1, refer to Software Announcement 210-121, dated April 27, 2010.

CICS web pages

For up-to-date information on CICS, refer to

http://www.ibm.com/software/ts/cics/

For the latest information on CICS TS V4.2, refer to

http://www.ibm.com/cics/tserver/v42

The CICS support web page can be used to search for terms, phrases, error codes, and APAR numbers

http://www.ibm.com/support/entry/portal/Overview/Software/Other_Software/CICS_Transaction_Server

CICS SupportPacs

The following SupportPacs were introduced or updated since the general availability of CICS TS V4.1:

CA0A: CICS channels and container support utility for ILOG rules for COBOL

CA1T: High availability exits for use with CICS Transaction Gateway for z/OS, V7.2 and V8

CA1W: CICS TS custom event processing adapter for dynamic scripting applications

CA73: CICS Transaction Gateway V7.2 .NET application support

CA75: CICS TG V8.0 channel and container support for .NET clients

CB01: TXSeries Events SDK for IBM WebSphere Business Events

CE01: IBM Migration Assistant for Oracle Tuxedo

CH15: CICS Time Machine

CH51: CICS Transaction Gateway Simple Request Monitor Utility

CN01: TXSeries in-bound SOAP support

CN11: CICS TS support for WebSphere Compute Grid

CN0A: IBM Application Performance Analyzer plug-in for Eclipse

CN0D: IBM Debug Tool plug-in for Eclipse

CN0F: IBM Fault Analyzer plug-in for Eclipse

CS04: CICS WSBind file display and change utility

CS1Q: CICS Explorer and WebSphere MQ Explorer Integration

For more information, visit the CICS SupportPac™ web page:

http://www.ibm.com/support/docview.wss?uid=swg27007241

Program number

Program Name	VRM	Program number
CICS Transaction Server for z/OS	420	5655-S97

Business events

System events

CICS TS V4.2 provides new capability to capture events when the state of certain resources in the system change, which can be used to respond quickly to potential problems in the system. The system events make use of the existing event infrastructure. The CICS event binding editor is used to define event specifications for system events which are then deployed into the CICS runtime to activate the events. The CICS event processing adapters, including custom-written event processing adapters, emit the events so that they can be made available to suitable consumers.

System events can be emitted under the following circumstances:

- A file is opened, closed, enabled or disabled
- The connection to DB2 becomes unavailable or available when a transaction class goes above or below a certain percentage of the limit for that class
- The number of tasks in the system goes above or below a certain percentage of the maximum number of tasks allowed in the system
- The number of tasks in a transaction class goes above or below a certain percentage of the maximum number of active tasks allowed for that transaction class
- A transaction abnormally terminates with an unhandled abend. The event can be made specific to a particular transaction name or abend code

System events could be used, for example, to notify an application when a file that it uses becomes disabled, or is opened, or to start an additional cloned CICS region when the number of tasks in a region goes above 80% of the limit for that region. In combination with products such as WebSphere Business Monitor or WebSphere Business Events, these events could be used, for example, to monitor the frequency of transaction abends throughout each month, or to take action when a particular pattern of DB2 connection and file state change is observed.

Assured events

CICS TS V4.2 introduces an optional synchronous event emission mode which causes events to be emitted within the unit of work of the capturing application, so that if the event fails to be emitted the unit of work is backed out, which assures the emission of the events. Assured event emission is ideally used in combination with WebSphere MQ and persistent queues to form the basis for extending business critical applications. In addition, assured event emission provides higher levels of robustness against rare situations such as transient system constraints or a CICS failure. The event emission mode is specified using the CICS event binding editor.

HTTP event processing adapter

CICS TS V4.2 provides an event processing adapter to emit events over HTTP using a choice of XML-based formats, for consumption by products such as WebSphere Business Events, WebSphere Business Monitor, and Cognos Real-time Monitor. The enhanced CICS event binding editor can be used to provide the necessary configuration for the HTTP event processing adapter. At run time, CICS uses a URIMAP resource to connect to the event consumer by using HTTP or HTTPS with the appropriate security credentials.

The HTTP event processing adapter is also available for CICS TS V4.1 in APAR PK94205.

Understand the impact of application changes on events

Impact analysis support helps developers to understand which events could be impacted by changes to an application or the resources that it uses, reducing the risk that application changes will impact events in use.

Support is provided to help address questions such as "If the copybook defining the interface between two programs is changed, what events might be impacted by that change?", or "Could a change to file X affect any events that the business is using?"

The CICS event binding editor provides a new search function to either search event capture specifications for references to specified strings, or perform an event-aware search. This second type of search takes the name, or partial name, of a resource as input and returns details of any event filtering or data capture which might be dependent on that resource. Extensions to the EXEC CICS SPI for capture specifications, used by the CICS Management Client Interface (CMCI) and the CICS Explorer, provide much richer information about the details of the event specifications, allowing searches for potentially impacted events deployed into a running CICS system.

The facility in the CICS event binding editor that derives filtering or data capture information from the application language structure is enhanced to record information about the structure and fields used, allowing a more direct linkage to be made between the language structures and the events that are based on them.

Simpler configuration of event emission

The event processing adapter is now a separate entity, deployed as a separate CICS resource, making it much easier to switch events over to using a different event processing adapter configuration, or a different event processing adapter altogether, and also to send the same event to multiple destinations. This could, for example, be used to change a WebSphere MQ queue that sends events to WebSphere Business Events when moving from test to production, or to increase the robustness of event emission by changing from using the HTTP event processing adapter to emitting events over WebSphere MQ, in both cases without changing the event binding containing the event specifications.

This enhancement does not affect existing event bindings created using CICS TS V4.1, because an embedded event processing adapter can be transparently installed as a separate resource by CICS.

This enhancement also introduces a better separation of the roles of the CICS application developer who specifies the capture specification to capture a required event, and the CICS system programmer who sets up the event processing adapter configuration which allows the event to be emitted using an appropriate format and transport.

Global user exit for use by dependency analysis tools

A new global user exit (GLUE) in CICS TS V4.2 enables products, such as dependency analysis tools from IBM or independent software vendors, to become aware of events. The GLUE is driven when an event is captured from a CICS application, providing details about the event and the application context in which it occurred. This information could be used to discover the programs or transactions events are captured from, and to provide analysis based on the events that are detected in CICS applications.

Additional CICS event enhancements

Support for additional application event data types

It is now possible to create capture specifications which can filter on, and capture, data in an application which uses floating point, COBOL zoned decimal sign-leading or sign-trailing, and null-terminated varying string data types. This builds on the data types already supported, and extends both the range of applications from which events can be emitted and the set of possible capture points in an application.

Relaxed restrictions on emitting events from within CICS facilities

In CICS TS V4.2, it is possible to emit events when resource accesses are made by CICS Atom support, and when programs are linked to by the CICS WebSphere MQ Dynamic Program Link (DPL) bridge. This ability relaxes some of the restrictions on capturing events from within facilities provided by CICS. Events can be emitted when requests to files and temporary storage queues from Atom feeds indicate actions of significance to the business. This also enables events to provide information about work coming into CICS using the WebSphere MQ bridge.

Simpler testing of XML event formats

The choice of event formats that can be emitted to temporary storage queues, now includes XML event formats such as the common base event format and WebSphere Business Events format. This can be useful when initially testing emission of events which are to be used by event consumers that require these XML event formats, making it possible to use temporary storage queues to test not only that the correct events are emitted with the required data, but also that the events will be formatted as expected. It is therefore easier, especially in combination with the support for separate EP adapter resources, to send verified events to the appropriate event consumer.

Java

JVM server and OSGi bundles

CICS now supports the running of multiple Java transactions as threads in a single JVM server process. The JVM server also provides integrated statistics for the monitoring of JVM garbage collection, which simplifies the job of performance tuning Java applications in CICS.

Using the JVM server simplifies the setup and management of the CICS Java runtime environment, improves portability for Java applications and tools deployed in CICS, and provides a new standard Java runtime environment in CICS.

The JVM server environment supports the development and deployment of Java applications through the use of industry standard OSGi bundles. This will require Java applications to be packaged into an OSGi bundle, and then deployed as a CICS BUNDLE resource with reference to the OSGi bundle and its version, removing the

need to load Java applications from a statically defined class path. This function will significantly improve the system management of Java applications in CICS through the provision of application isolation and versioning, cross-package prerequisite checking, and simplified package redeployment.

The JVM server environment does not support the deployment of Enterprise Java Beans (EJB). For further details on EJB support see the Stabilization of support and discontinued functions section.

CICS Explorer Software Development Toolkit

The CICS Explorer SDK supports the development of Java applications for both JVM servers and pooled JVMs. Users with the appropriate prerequisite Eclipse Integrated Development Environment (IDE) can use documentation, examples, and wizards in conjunction with the plug-in development environment to develop applications as a set of OSGi bundles and deploy them using the CICS bundle support in the SDK. This enhanced plug-in will significantly improve the development of new Java applications and accelerate the migration of existing Java applications to exploit the OSGi environment in a JVM server.

64-bit JVMs

The pooled JVM and JVM server environments are updated to support the latest 64-bit Java runtime environment. This increases the number of JVMs that can be used in a single CICS region, removes the constraints on heap storage for each JVM, and provides performance advantages when running on IBM zEnterprise 196 (z196) hardware. These benefits provide significantly increased scalability of a single CICS region for Java applications, reducing the number of CICS regions required to deploy Java workloads in a CICSplex.

Java runtime support of copybook importers

The CICS Java runtime now supports the copybook importers provided by the IBM JZOS Batch Toolkit for z/OS and by the J2C tools in Rational Application Developer. The importers map the data types contained in the source program so that your Java application can more easily access individual fields in COBOL or other high-level language data structures.

Connectivity

IP interconnectivity (IPIC)

IPIC enhancements include function shipping of file control, transient data, and temporary storage commands, support for threadsafe mirrors, and enhanced routing for terminal START requests.

Operations used to process messages arriving over an IPIC connection have been made threadsafe, as part of ongoing complementary work to permit mirror transactions that are started in response to work arriving over an IPIC connection to be attached using an open TCB (Task Control Block). In doing so, there are benefits of greater transaction throughput for customers by exploiting the parallelism from the CICS Open Transaction Environment (OTE).

File control function shipped over IPIC

All CICS file control API commands can be function shipped over an IPIC connection.

File control requests that are function shipped over an IPIC connection are threadsafe. This provides potential throughput improvements compared with their use over LU6.2, in CICS regions that have multiple processors available to them.

Transient data function shipped over IPIC

All transient data related API commands can be function shipped over an IPIC connection. Access is provided to both intrapartition and extrapartition destinations over IPIC connections.

Temporary storage function shipped over IPIC

Temporary storage commands can be function shipped over IPIC connections and as a result are threadsafe. They benefit from not having to switch to the QR TCB before being function shipped, in contrast to their use over an LU6.2 or MRO connection.

IPCONN MIRRORLIFE

A new MIRRORLIFE attribute has been added to the IPCONN resource for function-shipped file control, transient data, and temporary storage requests using an IPIC connection. The MIRRORLIFE attribute improves efficiency and provides performance benefits by specifying the lifetime of mirror tasks and the amount of time a session is held.

Support for IPIC transaction routing

Enhanced transaction routing is now supported over IPIC connections, for transactions defined with the ROUTABLE(YES) option and invoked by terminal orientated START commands. These transactions receive the benefits of dynamic routing, improved efficiency, and simplification of the routing decision rules.

Web services

Axis2 Java-based SOAP engine bindings for Java

CICS TS V4.2 provides the ability for web services to use the common Axis2 SOAP engine as an alternative to the existing CICS SOAP processing. The implementation of the Axis2 infrastructure and the data conversion bindings in Java makes SOAP processing eligible for execution on available specialty zAAP processors, which can lead to lower software processing costs.

In addition the ability to develop web service applications using Java-based Axis2 tooling can simplify the development process for web services applications deployed in CICS, through the use of industry standard tools and reusable components.

Web services discovery

Web services, auto-installed by CICS, may now be queried using the industry recognized '?wsdl' suffix to retrieve the WSDL file or an archive file that describes the service. External products may discover which web services are available in CICS TS, using the CMCI interface.

HTTP

Outbound connection pooling for HTTP

Outbound HTTP requests can optionally reuse existing connections which have the same properties, either within or across tasks. The client URIMAP is used to identify connections suitable for shared use in this way, specified via a new SOCKETCLOSE timeout option on the URIMAP. A non-zero value means that any HTTP requests using that URIMAP can reuse existing connections without requiring code changes.

Inbound IP Connection Throttling

A limit can now be placed on the number of inbound connections over IP which will be persisted at any one time for a particular port. The MAXPERSIST option on TCPIPSERVICE allows throttling of the number of persistent connections.

ATOM

Simplified deployment and administration of ATOM feeds

The configuration of the ATOMSERVICE resource in CICS has been updated to simplify the deployment and administration for common usage scenarios. The ATOMSERVICE can now be included in a BUNDLE resource, along with the associated XMLTRANSFORM resource and an appropriate URIMAP resource can be dynamically generated for the ATOMSERVICE. The CICS Explorer is also enhanced to assist in the generation and deployment of this new bundle. Two new sample bundles are provided by CICS TS V4.2 that contain general purpose XMLTRANSFORM resources which can be used when creating ATOM feeds.

Other sub-systems

CICS support for WebSphere Optimized Local Adapter two-phase commit

An interface to CICS existing transaction services is provided for use by external products, such as the WebSphere Optimized Local Adapter components, to provide end-to-end two-phase commit capability, such as for WebSphere Application Server to CICS TS workload. The WebSphere Optimized Local Adapter is a cross-memory transport and requires that WebSphere Application Server and CICS are located on the same LPAR.

WebSphere MQ TRUE support for transaction tracking

Transaction tracking for adapters is enabled through the provision of adapter fields in the origin data section of the association data. As a task is being started, a TRUE can specify information to identify the task's point of origin, and this is placed into the task's origin data adapter fields. The CICS-WebSphere MQ trigger monitor supplied with CICS TS V4.2 exploits this function to identify the queue manager, application queue and initiation queue for each task that is initiated by a WebSphere MQ trigger message. This provides added value for CICS transaction tracking when using WebSphere MQ triggering to initiate work within the CICSplex.

Enhanced control of DB2 thread reuse

The potential impact on DB2 resources of long-running CICS DB2 threads can now be controlled. A new REUSELIMIT option on the DB2CONN resource definition specifies the maximum number of times a DB2 thread can be reused before it will be terminated by CICS to free up DB2 resources. In addition, CICS allows threads to be protected for shorter periods when not in use.

System management

Transaction tracking

As CICS systems and applications become more complex there is a growing need to expose the relationships between the sets of in-flight transactions and the local and remote tasks they spawn. To address this situation CICS TS V4.2 introduces a transaction tracking facility using the function provided by task association data. Task association data is now created for all user-initiated transactions, and the origin data is now propagated across both MRO and IPIC connections whenever tasks are initiated in subsequent regions. Additional previous hop and adapter data information is also provided, and describes the initiating task and the number of communication hops in the transaction flow, and a mechanism for exploitation by TRUE based adapters.

Transaction tracking for adapters is now enabled through the provision of adapter data fields in the origin data section of the association data. When a request to start a new task is made, a TRUE can specify information to identify the adapter as the task's point of origin, and this is placed into the new task's origin data adapter fields. The CICS-WebSphere MQ trigger monitor, supplied with CICS TS V4.2,

exploits this function to identify the queue manager, application queue, and initiation queue for each task that is initiated by a WebSphere MQ trigger message.

Transaction tracking can be viewed using the CICS Explorer. Transaction tracking data is also recorded in CICS performance class monitoring data records. New association data information is now used by enhanced task search functions in CICS Explorer, which can display the flow topology of interrelated tasks in the CICSPlex, and locate tasks based on the originating TCP/IP address or TCPIP service. Together with performance monitoring records these functions provide a powerful transaction tracking capability. This can be used to visualize interrelated tasks as they flow across regions in a CICSplex, to locate specific tasks based on information in the point of origin and to improve any charge-back accounting of user transactions. This will be a significant aid in auditing and problem determination and simplifies the administration skills required to diagnose business applications.

Workload management

New WLM routing algorithms can be chosen which exclude link weights

When directing work from a routing region, such as a Terminal Owning Region (TOR), to a target region, an Application Owning Region (AOR), CICSPlex SM workload management makes use of queue and goal routing algorithms to select a suitable region as the target.

The routing algorithms rely on factors like the health of a region, the present load on a region, the type (Local, MRO, XCF, LU6.2, IPIC and INDIRECT), state and speed of connections between routing and target regions, whether an instance of the work has recently failed in a given region, and other criteria, to determine routing weights and hence distribute work from a routing region to a target region. CICSPlex SM uses link weight values which favor routing to locally-connected regions.

Customers have observed that the weight of a link can prevent routing across system boundaries in a single-site parallel sysplex environment. To address this problem, location neutral queue (LNQUEUE) and goal (LNGOAL) routing algorithms have been introduced. These algorithms set the link weight to a constant load factor of one to ensure that all types of links are treated equally when determining the routing weight. This allows work to be routed to all suitably eligible regions irrespective of the link type.

The four routing algorithms (QUEUE, GOAL, LNQUEUE and LNGOAL) can be specified at the WLMSPEC level and at the TRANGRP level. The value specified at the WLMSPEC level will be the default but values specified at the TRANGRP level override values specified at the WLMSPEC level.

CICSPlex SM WLM support for UOW affinities

DPL requests in the same Unit of Work (UOW) can now be routed dynamically based on the UOW affinity. In earlier releases, multiple Distributed Program Link requests in the same UOW that access a shared recoverable resource could lead to deadlocks if they were routed to different CICS regions. This new function allows simplified workload management of DPL requests preventing deadlock situations, improving the efficiency of workload management and simplifying the creation of highly available CICSplex configurations.

Security

100-character password phrases

CICS TS V4.2 has been modified to provide support for password phrases. Longer password phrases offer improved system protection and greater usability since they are less likely to be guessed and require more processing power to sustain an attack.

Password phrases are easier to remember. Longer password phrases also provide better cross-platform consistency and meet the enterprise password requirements imposed by many companies, governments, and institutions. A password phrase is a

character string that can comprise mixed-case letters, numbers, and certain special characters from 9 to 100 characters in length.

Password phrases allow for an exponentially greater number of possible combinations of characters than do passwords. A user ID can have both a password and a password phrase. The same user ID can be used both for existing applications that accept an eight-character password and for those applications that take advantage of the new password phrase support.

CICS Explorer

First shipped with CICS TS V4.1, CICS Explorer is continuously updated and improved, including the following new and enhanced capabilities:

- z/OS perspective
- Export and import system connection details
- Ability to view system initialization parameters
- Many new and updated Operations and Administration views including workload management and task association
- Separation of Connection definitions and Credentials
- Ability to use a proxy server to connect to the internet for software updates
- Ability to search for associated tasks
- Ability to copy and paste resource definitions
- Ability to work with resource definitions in a CICS System Definition (CSD) file
- CICS Explorer SDK API changes to support these updates

At the general availability of CICS TS V4.2, new and enhanced capabilities will be available in CICS Explorer V1.1, in support of CICS TS V4.2, and will include:

- Software Development Toolkit for CICS Explorer
- Column sort in operations and administrative view2
- Transaction tracking
- ATOM feed wizard
- Enhanced event binding editor
- Event search

Event processing in CICS Explorer

In CICS TS V4.2, event processing adapters are now a separate CICS resource which allows them to be managed separately from the event binding containing the capture specifications. The CICS Explorer has been enhanced to support the de-coupling of event processing adapters from event bindings, which is useful when changing the emission properties of events, or to use the same emission properties for unrelated events.

In CICS TS 4.2 the ability to capture system events, such as when a file's open status changes, has been introduced. The CICS Explorer event processing editor has been enhanced to allow capture of these events, and sample wizards are provided to provide quick start help to demonstrate how these kinds of events can be captured.

The z/OS perspective in CICS Explorer

A number of enhancements have been made to the capabilities that can be performed against files in the UNIX® file system. Users no longer have to exit the CICS Explorer to complete tasks such as viewing or changing file permissions.

Threadsafe enhancements

Threadsafe function shipping

Requests function shipped over IPIC can exploit open TCBs

In CICS TS V4.2, it becomes possible for function shipped requests to be threadsafe. When function shipping over IPIC connections, the mirror program, which receives and executes function shipped requests, will now run on an L8 open TCB, providing relief for large customers whose file-owning regions are CPU constrained on the QR TCB.

This is a considerable extension to CICS support for both IP Interconnectivity and threadsafe exploitation. IPIC using TCP/IP now supports function shipping of file control, transient data, and temporary storage requests between CICS TS 4.2 regions. For remote files and temporary storage queues, the function shipped requests are threadsafe, providing better throughput in file-owning and TS queue-owning regions.

In addition, the EXEC CICS LINK command is now threadsafe when it is used to link to a program in a remote CICS region over an IPIC connection.

A related enhancement improves efficiency and provides performance benefits by providing a new MIRRORLIFE option to specifying the lifetime of mirror tasks.

Threadsafe access to IBM IMS 12

Access to IMS 12 from CICS is enabled to run on an open TCB

The CICS-DBCTL interface, used by CICS applications to access IMS data bases, is enabled to run on L8 open TCBs. This provides benefits for applications that access IMS and which are already or can be made threadsafe. EXEC DLI and CALL DLI calls from CICS can now be made without any TCB switching overhead. This allows CPU savings and increased throughput.

For IMS 12 threadsafe support for CICS TS V4.2, PTF for APAR PM31420 is required.
For IMS 10 toleration support for CICS TS V4.2, PTF for APAR PM31730 is required.
For IMS 11 toleration support for CICS TS V4.2, PTF for APAR PM31729 is required.

At General Availability of CICS TS V4.2, IMS 12 is available through a Quality Partnership Program (QPP). For more information, visit

http://www.ibm.com/software/data/ims/

New program attribute CONCURRENCY REQUIRED

Program concurrency setting REQUIRED reduces TCB switching

The new program concurrency option 'REQUIRED' is introduced which can optimize the use of open TCBs. This option allows programs which are coded to threadsafe standards to start on open TCBs. Threadsafe applications which use DB2, WebSphere MQ or sockets applications can gain greater throughput benefits by using this option.

Application programs defined with a CONCURRENCY value of REQUIRED will always run on an open TCB. If the API attribute is OPENAPI, then the behavior is the same as when concurrency is THREADSAFE and the API attribute is OPENAPI, in that the key of the open TCB must match the execution key of the program, which can result in switching between L8 and L9 TCBs.

When the CONCURRENCY REQUIRED attribute is used in combination with CICSAPI, this allows a program using only CICS services to start on an L8 open TCB, and remain on an L8 open TCB, only switching if it uses non-threadsafe CICS commands. This provides great benefit for CICS-to-DB2, CICS-to-WebSphere MQ, CICS sockets, and CICS VSAM applications that are threadsafe.

Additional threadsafe CICS commands

EXEC CICS QUERY SECURITY is a commonly used command which in previous releases required a switch back to the QR TCB. In CICS TS V4.2, this command is made threadsafe, which reduces TCB switching and allows a wider set of applications to benefit from open TCBs.

The following CICS commands are now also threadsafe:

- SIGNON
- SIGNOFF
- VERIFY PASSWORD
- VERIFY PHRASE
- CHANGE PASSWORD
- CHANGE PHRASE
- EXTRACT CERTIFICATE
- EXTRACT TCPIP
- All named Counter server commands
- BIF DIGEST
- BIF DEEDIT
- New SPI commands

Sync point processing in CICS is now aware of threadsafe considerations, so that the processing of a sync point will be optimized when the participants in the syncpoint are threadsafe, and the QR TCB is only used when it is required. This increases the amount of time spent on an open TCB during sync point and, for example, increases throughput and reduces TCB switching for threadsafe applications that use DB2 and WebSphere MQ.

64-bit exploitation

64-bit CICS domain re-architecture

The aim of CICS 64-bit re-architecture is to provide a CICS domain architecture environment that exploits the underlying z/Architecture® for 64-bit addressing and to provide the infrastructure for CICS applications to use and exploit 64-bit addressing mode. This enables CICS to remove some of the previous limitations that affected scalability and availability by delivering large address spaces with the exploitation of the 64-bit addressing provided by the z/Architecture.

CICS can make use of the large 64-bit virtual storage to increase capacity by supporting a larger number of concurrent users and concurrent transactions, as well as keeping up with the virtual storage demands of increased workload of existing applications and the larger memory requirements of new applications and new technologies.

64-bit trace domain

The CICS trace domain now runs in and exploits 64-bit addressing mode. This offers more capacity in a single CICS region and reduces the need to clone CICS regions for virtual storage capacity where there is significant use of the CICS internal trace table. With the CICS internal trace table residing in 64-bit storage, it is possible to have larger internal trace tables without compromising the virtual storage available to CICS applications. This also improves the time span of the available trace information and the scope for system or application problem diagnosis.

Enhancements to 64-bit temporary storage

CICS temporary storage main queues now reside in 64-bit storage, instead of residing in 31-bit storage subpools. This offers more capacity in a single CICS region

and reduces the need to clone CICS regions for virtual storage capacity where there is significant CICS application usage of temporary storage main queues.

Additionally, temporary storage queues that are not deleted by applications can now be cleaned up. A new parameter, EXPIRYINT, has been added to the CICS TSMODEL definition. This parameter defines the number of hours of inactivity before a TS queue becomes eligible for automatic deletion by CICS, and avoids the need to write and maintain a scheduled operations utility to perform clean-up of temporary storage queues.

LSR pool options

Increase number of LSR pools available in a CICS region to 255

Local shared resource (LSR) pools provide an effective means to improve transaction response times for CICS workloads that use VSAM files, and offer better vertical growth in constrained file-owning regions. The number of LSR pools has been increased from 8 to 255 per region, to provide more options for separating groups of files into different LSR pools.

Other enhancements

Support for WebSphere MQ Group Units of Recovery (Group UR)

Support for the WebSphere MQ function Group Attach was introduced in CICS TS V4.1, to provide easier attachment configuration and quicker recovery from WebSphere MQ queue manager failures, provided there are no outstanding units of work (UOW). If CICS has outstanding UOW with the WebSphere MQ queue manager, then CICS needs to reconnect to that specific WebSphere MQ queue manager that it was previously connected to, to resolve the UOW. This new support enables CICS to attached to any local WebSphere MQ queue manager in the group and have it resolve outstanding UOW.

CICS TS V4.2 and a release of WebSphere MQ for z/OS that supports group units of recovery for CICS can be configured to recover faster and more autonomously, without compromising integrity, following a failure of a WebSphere MQ server. CICS and at least two WebSphere MQ servers in the same LPAR are required to make use of this new support. The resulting configuration can then be promoted as best practice.

New XPI DFHLDLDX IDENTIFY_PROGRAM

A new XPI allows user exit programs to identify the name of the program that has issued a CICS application call. This includes when the CICS call has been issued out of a dynamically called COBOL program.

C structures for CICS statistics

Users who wish to write a program to process CICS statistics records for reporting or analysis need to interpret the layout of the records using appropriate CICS supplied data structures. CICS previously supplied data structures for Assembler, COBOL, and PL/I, and data structures are now also provided for the C language.

Stabilization of support and discontinued functions

The following functions are stabilized, reduced in scope, or discontinued in this latest release of CICS TS.

Removal of support for selected versions of Java

In CICS TS V4.2, support for 31-bit SDK for z/OS, Java Technology Edition, Version 6, is withdrawn. Customers must upgrade to 64-bit SDK for z/OS, Java Technology Edition, Version 6 Release 0 Modification 1.

Enterprise Java Bean support and Java pool infrastructure

Support for session beans using the Enterprise Java Bean (EJB) 1.1 specification and the associated CICS EJB Server components, and Java pool infrastructure was stabilized in CICS TS V4.1. A future release of CICS TS intends to discontinue support for both session beans using EJBs and the Java pool infrastructure.

Customers are encouraged to migrate Java applications to the new JVM server infrastructure and to migrate EJB applications to be Java SE components and make them available through web services or the JEE Connector Architecture (JCA). CICS supports Java as a first class application programming language for CICS applications, and includes enhancements to the CICS interfaces, deployment infrastructure and Java runtime.

Release sensitive XPI call RELSENSCALL

Support for the release sensitive XPI call RELSENSCALL is stabilized in CICS TS V4.2. A future release of CICS TS intends to discontinue support for RELSENSCALL.

Removal of updates to CICS Messages And Codes (CMAC)

For CICS TS V4.2 and later, IBM will no longer provide updates to CICS Messages And Codes (CMAC) files via PTF. Changes to message definitions that arise either from APARs which add or amend a message, or from Readers Comment Forms, will be made available via the CICS Information Center only. A refreshed CMAC file incorporating all Information Center updates made during the service of CICS TS V4.2 will be shipped in a future release of CICS TS.

Education support

IBM training provides education to support many IBM offerings.

The core training offerings for CICS are listed below. Versions of these courses will be available for CICS V4.2. Please refer to your country's IBM education delivery organization for specific course codes and class schedules.

- CICS Fundamentals. This course teaches the major CICS concepts and facilities that are applicable to the CICS family of products. It focuses on the tasks involved in designing, programming, and managing applications.
- CICS Basic Tailoring. This course is intended for systems programmers who will be installing and tailoring CICS TS.
- CICS Advanced System Programming Topics. This course is designed to teach experienced CICS system programmers the more advanced resource definition and tailoring skills needed to fully leverage the many features available in today's CICS environments. Topics include troubleshooting, configuration and tailoring, planning for recovery, and tailoring CICS support for web services.
- CICSPlex System Manager Introduction. This course teaches students the concepts and facilities of CICSPlex System Manager.
- CICSPlex System Manager Administration. This course builds upon the foundation established in WM840 and teaches students how to install, configure, and manage a CICSPlex environment using CICSPlex System Manager.
- CICS Command Level Coding. This course teaches students to design, code and debug CICS Command Level application programs.
- CICS Application Development for SOA and Web Services. This course teaches students how to design, code, and debug CICS application programs that utilize CICS web support and web services facilities.

For additional information, or to check for the latest updates, visit the IBM Education web page at

http://www.ibm.com/services/learning/

Select your country to view the available offerings. This site has links to descriptions for all classroom and self-study courses available in each country. The web page also contains information on course schedules and enrollment procedures.

If you cannot find the information you need on the web page, call IBM Education at 800-IBM-TEACH (426-8322) for additional details or to enroll in a course.

Technical information

Specified operating environment

Hardware requirements

Processor

CICS TS V4.2 runs on any IBM System z machine that supports the required z/OS operating system.

Parallel Sysplex support

A Parallel Sysplex® environment is not required for CICS TS V4.2, but can be exploited by each of the following data-sharing facilities supported by CICS, and by the usage of the MVS™ system logger's log stream merging facility.

- IMS databases
- DB2 databases
- VSAM data sets
- CICS temporary storage
- Coupling facility data tables
- Named counter server

System z cryptographic hardware

If the customer wants to exploit signature verification functions with WS-Security, then appropriate System z cryptographic hardware is required. For System z 800 and 900, this hardware is the Cryptographic Coprocessor Feature and the PCI Cryptographic Coprocessor. For System z 890, 990, z9™ and z10™, it is the CP Assist for Cryptographic Functions and the Crypto Express® 2 Coprocessor and for System z196 it is CP Assist for Cryptographic Functions and the Crypto Express 3 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

For additional information on software requirements, refer to the *Program Directory* (GI13-0565). For on-line information, click on *Detailed system requirements for CICS TS for z/OS V4.2* from document *Detailed System Requirements for CICS Transaction Server.*

http://www.ibm.com/support/docview.wss?uid=swg27006382

Operating environment

z/OS V1.11 or later is required. CICS TS V4.2 will not initialize in an environment with a lower level of operating system installed.

If z/OS V1.12 is used, to enable 64-bit subspace support APAR OA34311 is also required.

Java Runtime Environment

The IBM 64-bit SDK for z/OS, Java Technology Edition V6.0.1, or later, is required if using Java application programs, enterprise beans, or the CICS Web Services Assistant. The IBM SDK for z/OS is available, without charge, on tape or by download from:

http://www.ibm.com/servers/eserver/zseries/software/java/

Further details are available at Software Announcement 208-138, dated June 24, 2008.

Details of other IBM products supported by CICS TS V4.2, and web browser support for various components of CICS TS V4.2 are available at

http://www.ibm.com/support/docview.wss?uid=swg27020857

Details of the system requirements for both the CICS Explorer and CICS Explorer SDK are available at

http://www.ibm.com/software/htp/cics/explorer/requirements/

Details relating to service and support for CICS Explorer are available at

http://www.ibm.com/support/docview.wss?uid=swg21380083

System z tools (including CICS tools)

For information on these tool, refer to the section.

Compatibility

Information center publications

Details are provided in the Information Center and publications section.

Application programming summary

The following programming language compilers are currently supported by CICS TS V4.2:

COBOL

Product name	PID	Translator support	Run time support
Enterprise COBOL for z/OS, V4.1	5655-S71	Yes(1)	(2)
Enterprise COBOL for z/OS, V3.4	5655-G53	Yes(1)	(2)

PL/I

Enterprise PL/I for z/OS, V3.7, or later	5655-H31	Yes(1)	(2)

C and C++

z/OS V1.11, or later, XL C/C++	5694-A01 - Component of z/OS	Yes(1)	(2)

Assembler			
High Level Assembler for MVS, VM, and VSE, V1.6 or later	5696-234	Yes	Yes
Java			
IBM 64-bit SDK for z/OS, Java Technology Edition, V6.0.1	5655-R32	Yes	Yes
IBM 31-bit SDK for z/OS, Java Technology Edition, V6	5655-R32	Yes	No
IBM 31-bit SDK for z/OS, Java Technology Edition, V5	5655-N98	(3)	No
IBM 31-bit SDK for z/OS, Java Technology Edition, V1.4	5655-I56	(3)	No

(1) The compiler provides support for the CICS integrated translator.

(2) Provided by Language Environment®.

(3) Java application byte codes that execute on SDK for z/OS, Java 2 Technology Edition, V1.4 or V5 are expected to run unchanged on IBM SDK for z/OS, Java Technology Edition, V6.0.1. This assumes that those byte codes do not use deprecated Java 2 APIs or new API keywords. For more details on Java byte code compatibility, refer to

http://java.sun.com/javase/6/webnotes/compatibility.html

Further details are available for programming language compilers that may be used with CICS TS V4.2 but are no longer supported by IBM. See the CICS TS V4.2 Information Center, under topic "High-level language support"

http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/index.jsp

Performance considerations

Performance information is available in the Performance Guide (SC34-7177), from general availability. In addition, at a later date, a performance report will be available on request from your IBM representative.

User group requirements

Requirements from the worldwide user group communities satisfied or partially satisfied by enhancements in CICS TS V4.2 include the following:

Requirement number	Description
MR00076018	UOW affinity needed for CPSM to manage DPL requests
MR0209091743	Make QUERY SECURITY command threadsafe
MR021710380	Permanent FIX appl. to check AID chain terminal status
MR0217105419	Provide support for appl. specific classloader in CICS/Java
MR021804748	CPSM routing based upon UOW affinity
MR0222104856	Missing description of SOAP Fault formats
MR031009541	Remove LSR Limit or Restriction
MR031710527	Raise LSRPOOL limit in CICS TS
MR0325044216	CICS-DBCTL interface OTE support
MR0331082018	CPSM WUI enhancements - allow sort and summary on column EYU_CICSNAME
MR0408101740	CICS-DBCTL interface OTE support
MR0409104213	Validation that CICS NC Call interface is Threadsafe
MR041305698	Allow an active worker-JVM to process multiple method requests
MR0413076043	CICS Web Services WSDL Inquiry
MR0413105120	EXEC Interface to the name counter threadsafe
MR042009373	Propagate CICS transaction identification information

```
              to subordinate AOR/FOR transaction SMF 110 records
MR0422102613  Add CICS support for password phrase
MR0428105126  DFHCSDUP should report CSD DSN(s) in SYSPRINT
MR0429081249  CICS should provide tooling to Web Service - enable
              Java-classes deployed in CICS
MR0429085123  CICS JVMs need to support 64-bit
MR042910559   Reduce task switching at CICS syncpoint
MR0507095955  CICS is not showing the current MEMLIMIT
MR0515074834  CICS DB2 protected thread purge
MR0516074531  File Control threadsafe support for remote VSAM files
MR0516082528  VSAM requests on FORs to run on open TCBs
MR0517076048  Maintain connection persistence for successive EXEC
              CICS INVOKE WEBSERVICE calls
MR0518062747  Need a way to delete data in CICS TS queues by age
MR0602056425  Increase CICS max Region size beyond 2GB
MR0602092949  Multiple TCB support for mirror tasks
MR0602095543  CICS JVM in 64 bit mode
MR061306292   Make the QUERY SECURITY command 'threadsafe'
MR0616094728  DFHXCOPT should acq. default trace size if trace is off
MR062207325   DBCTL DFHDBAT Adapter
MR0629061215  Increase number of LSR pools supported in CICS
MR0712063317  Appl. program has no way to find task related user
              storage for use by the application program only
MR071709690   Adjust the weight factor of the link type in CPSM
              routing algorithm
MR072607138   Have 64-bit JVM feature available in next CICS release
MR0802054229  Threadsafe IMS in CICS
MR0814091121  Additional option for API= parameter used in pgm defn
MR082608411   Automatic Temporary storage queue purge
MR0826104122  Make EXTRACT TCPIP command Threadsafe
MR091509351   DFHLS2WS support of Packed struct. for C/C++ Webservice
MR0915095617  UOW affinity management for dynamic DPLs with CPSM
MR0923084356  Storage constraints for JVMs in CICS
MR100507129   CICS needs to support password phrase
MR1006084611  CICS TS 3.2 - EDSA Limit for TS Main
MR1008093032  Additional messages for CICS ABENDU0402
MR1013057457  DBCICD05001 - Provide a new SIT parameter SHOWSIT
              (or equivalent)
MR1016065212  CICS Threadsafe for remote VSAM
MR1028085811  CICS-DBCTL enhancement
MR1029092015  Password Phrase Support for CICS Sign-on (RACF-2009-03)
MR1102105159  Move DFHPIUCO to SDFHCOB Library.
MR1109094539  CICS should CLOSE IMMEDIATE a TCPIPSERVICE when CICS is
              SOS and after DFHSO0114 is issued
MR1112082248  CICS web services to pull WSDL's via internet browsers
MR1130097258  Threadsafe DPL mirror
MR1201091957  Allow CICS/DB2 Purge Cycle to be reduced below 30
              seconds
MR120309460   CICS Support for password phrase
MR1204083830  Provide CPSM API to look at various security related
              SIT settings
MR1207104444  Qname in ABBREV Trace for CICS/TS 4.1
MR1213066317  File Control threadsafe support for remote VSAM
              files
MR1219082510  CICS Support for password phrase
```

Planning information

Elements included in CICS TS V4.2

The base CICS element of CICS TS V4.2 is CICS V6.7.

The CICSPlex SM element is CICSPlex SM V4.2.

Other elements of CICS TS V4.2, that were previously available as separate IBM products, are:

- CICS REXX™ Runtime Facility
- CICS REXX Development System
- CICS REXX Common for z/OS

CICS TS V4.2 is shipped with CICS Service Flow Runtime, previously only available as a separately orderable feature, which allows the deployment of CICS business services (or service flows) created by the Service Flow Modeler component of IBM Rational Developer for System z, V7.5 or later. The service flow runtime capability of CICS TS V4.2 is fully compatible with IBM CICS Service Flow Feature V3.2. Customers upgrading to CICS TS V4.2 might use the integrated support for business services in this release as a direct replacement for IBM CICS Service Flow Feature V3.2.

CICS Application Migration Aid V1.1 is no longer provided as a separate element of CICS TS V4.2.

Physical delivery

The following hardcopy documents are shipped, together with the basic machine-readable material for the product:

- Licensed Program Specifications (GC34-7212-00)
- Memo to licensees (GI13-0569-00)
- CICS Information Center flyer (GI13-0570-00)
- CICS Deployment Assistant flyer (GI13-0557-02)
- CICS technical services flyer (GI13-0546-01)
- Rational Developer for System z promotional flyer (GI13-0556-01)

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

Electronic delivery

After general availability of CICS TS V4.2, customers can order (for a fee) the following CICS Information Centers on CD-ROM:

- CD-ROM: CICS Information Center for AIX® (SK4T-2664)
- CD-ROM: CICS Information Center for Linux Intel® (SK4T-2665)
- CD-ROM: CICS Information Center for Microsoft® Windows® (SK4T-2666)

To download a CICS Information Center, visit the IBM Publications Center. Search for the form number, then select **download.** If preferred, a CD-ROM of the required Information Center can be ordered from the Publications Center. Visit

http://www.ibm.com/shop/publications/order

After general availability of CICS TS V4.2, customers can also download and use a fully featured version of the CICS Explorer for CICS TS V4.2. A version of the CICS Explorer for CICS TS V3 customers is also available as a no-charge optional feature. Further information about the CICS Explorer and how to download it can be found at

http://www.ibm.com/cics/explorer/

Security, auditability, and control

For information on security, refer to the *CICS Transaction Server for z/OS, V4.2, RACF® Security Guide,*(SC34-7179).

CICS TS V4.2 includes new enhancements in support of security, auditability and control. For details, refer to the Description section of this announcement. 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

Ordering z/OS through the Internet

ShopzSeries provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the U.S., Canada, and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries website at

http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp

Information Center and publications

Information Center

The CICS TS V4.2 Information Center consists of an IBM User Interface Help System built on Eclipse and the content as a set of document plug-ins. The Information Center can be viewed on the web at

http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/index.jsp

The CICS TS V4.2 Information Center can also be downloaded for free from the IBM Publications Center and installed on a workstation or server. For a fee, the Information Center can be ordered on CD-ROM by visiting

http://www.ibm.com/shop/publications/order

The following CICS Information Center downloads are available from the IBM Publications Center:

- CICS Information Center for AIX (SK4T-2664)
- CICS Information Center for Linux Intel (SK4T-2665)
- CICS Information Center for Microsoft Windows (SK4T-2666)

The Information Center What's New sections are translated into Brazilian Portuguese, Italian, Japanese, Simplified Chinese, and Spanish. The Readme is also translated into Traditional Chinese. The Upgrading section is translated into Italian, Japanese, and Spanish only. Additional sections which might be translated at a later date can also be accessed in this way.

The translated content of the Information Center is also available with updates to the English language version from an Update Manager site. IBM refreshes the content of the Information Center on the web at frequent intervals. A user may obtain these updates directly from an installed Information Center using the Update Manager function. The CICS documentation can also be downloaded from the Update Manager in the CICS Explorer to extend the CICS Explorer help.

Information Center enhancements

The CICS TS V4.2 Information Center is upgraded to run on the IBM User Interface Help System, built on Eclipse V3.6. As a result, the Information Center has a number of enhancements:

- An enhanced search engine and search result listing. Search results with the same title and same abstract are recognized as similar pages and only one link is displayed with a total count of similar pages. Users can click on the Similar Pages link to have all the similar pages displayed.
- Applying a scope now filters the navigation and search results.

- When printing a set of topics, provides the option to not to print the delimiters between topics.

In the CICS TS V4.2 Information Center, the CICS documentation is enhanced to include the following:

- Scenarios and an additional learning path and scenarios
- Significant upgrade to the Performance Guide
- Introduction of linking from PDFs to Information Center topics

The inclusion of all the documentation for CICS TS V4.2, in a single unlicensed Information Center (available as a CD-ROM and also online and by download from the Publications Center) makes for much easier availability of all information on CICS TS.

Printed publications

In addition to the softcopy information in the Information Center, the following printed documentation is delivered as hardcopy with the product.

Title	Form number
Licensed Program Specifications*	GC34-7212
Memo to licensees*	GI13-0569
CICS Information Center flyer*	GI13-0570
CICS Deployment Assistant flyer*	GI13-0557
CICS technical services flyer*	GI13-0546
Rational Developer for System z promotional flyer*	GI13-0556

*These items are available in hardcopy only; they are not provided in the Information Center.

The following translated editions of the What's New publication are also available:

Title	Form number
What's New (Brazilian Portuguese)	G517-9896
What's New (Italian)	GC13-4271
What's New (Japanese)	GA88-4308
What's New (Simplified Chinese)	G151-1548
What's New (Spanish)	GC11-7926

New licensees

Product Kits (PKITs)

In addition, the books for the product, as included on the Information Center CD-ROM in PDF format, are available separately for download from the IBM Publications Center:

Order	Form Number
PDF PKIT	SK4T-2669

z/OS software products collection kit

The collection kit is a DVD containing books in PDF format for a range of IBM z/OS products, including members of the CICS family (SK3T-4271).

The CICS TS V4.2 books are included in the collection kit in the next refresh following general availability, scheduled for September 30, 2011.

Description	Orderable Supply ID
z/OS V1R12 and Software Products DVD Collection	SO16NPW

CICS publications

Publication	Form number
Program Directory	GI13-0565
Application Programming Guide	SC34-7158
Application Programming Reference	SC34-7159
Business Transaction Services	SC34-7160
Customization Guide	SC34-7161
C++ OO Class Libraries	SC34-7162
Data Areas	GC34-7163
CICS DB2 Guide	SC34-7164
Debugging Tools Interfaces Reference	GC34-7165
Diagnosis Reference	GC34-7166
Distributed Programming Reference	SC34-7167
CICS External Interfaces Guide	SC34-7168
Front End Programming Interface Guide	SC34-7169
CICS IMS Database Control Guide	SC34-7170
Installation Guide	GC34-7171
CICS Intercommunication Guide	SC34-7172
Internet Guide	SC34-7173
Java Applications in CICS	SC34-7174
CICS Messages and Codes Volume 1	GC34-7175
CICS Messages and Codes Volume 2	GC34-7176
Performance Guide	SC34-7177
CICS Problem Determination Guide	GC34-7178
RACF Security Guide	SC34-7179
Recovery and Restart Guide	SC34-7180
Resource Definition Guide	SC34-7181
CICS Shared Data Tables Guide	SC34-7182
Supplied Transactions	SC34-7184
System Definition Guide	SC34-7185
System Programming Reference	SC34-7186
CICS Trace Entries	SC34-7187
Upgrading from Version 3.1	GC34-7188
Upgrading from Version 3.2	GC34-7189
Upgrading from Version 4.1	GC34-7190
Web Services Guide	SC34-7191
What's New	GC34-7192
CICSPlex SM Administration	SC34-7193
CICSPlex SM Application Programming Guide	SC34-7194
CICSPlex SM Application Programming Reference	SC34-7195
CICSPlex SM Concepts and Planning	SC34-7196
CICSPlex SM Managing Business Applications	SC34-7197
CICSPlex SM Managing Resource Usage	SC34-7198
CICSPlex SM Managing Workloads	SC34-7199
CICSPlex SM Monitor Views Reference	SC34-7200
CICSPlex SM Messages and Codes	GC34-7201
CICSPlex SM Operations View Reference	SC34-7202
CICSPlex SM Problem Determination Guide	GC34-7203
CICSPlex SM Resource Tables Reference Volume 1	SC34-7204
CICSPlex SM Resource Tables Reference Volume 2	SC34-7205
Operations and Utilities Guide	SC34-7213
CICSPlex SM Web User Interface	SC34-7214

For further information on CICS publications, visit

http://www.ibm.com/software/htp/cics/tserver/v42/library/index.html

For the CICS TS V4.2 Information Center, visit

http://publib.boulder.ibm.com/infocenter/cicsts/v4r2/index.jsp

For information on IBM Redbooks®, visit

http://www.redbooks.ibm.com/

For information on IBM Redpapers, visit

http://www.redbooks.ibm.com/Redbooks.nsf/redpapers/

CICS workshops

Workshops are available from IBM education services to help customers make the most of CICS and related CICS products. Available courses include:

Course name	Code	Duration
IBM CICS and Web services	WRB032	2.5 days
IBM CICS tools and CICSPlex SM	WRB033	3 days
IBM CICS Java development	WRB030	3 days
Integrating CICS applications in an SOA	WRB053	3 days
SOA application modernization on z/OS	WRB051	2 days
IBM Workload Manager: Controlling system performance	WRB061	3 days
Analyzing and optimizing system performance for your installation	WRB058	5 days
Cross site data sharing	ITS748	2 days
IBM z/OS diagnostics and analysis	WRB034	2 days

For more information visit

http://www.ibm.com/jct03001c/services/learning/ites.wss/us/en?pageType=page&c=a0000313

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 via CBPDO, ServerPac, SystemPac®.

CBPDO and ServerPac are offered for Internet delivery in countries where ShopzSeries product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on Internet delivery, refer to the ShopzSeries help information at

http://www.software.ibm.com/ShopzSeries

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 for CBPDO, ServerPac, SystemPac include:

- 3590
- 3592

Most products can be ordered in ServerPac and SystemPac the month following their availability on CBPDO. z/OS can be ordered via all three offerings at general

availability. 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
- SystemPac shipments will begin four weeks after general availability due to additional customization, and data input verification.

Terms and conditions

The terms and conditions for CICS Transaction Server for z/OS, V4.2are described in the Licensed Program Specifications document (GC34-7212) that accompanies the product.

IBM Operational Support Services - SupportLine

Yes

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IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

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Prices

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

System z entry license charge (zELC)

```
Program name:  CICS TS V4.2
Program ID:    5655-S97

Entitlement
identifier   Description       License option/Pricing metric

S015H9T      CICS Transaction  Basic MLC, zELC
              Server for z/OS
               V4.2
z800
models

 0A1
 0B1
 0C1
 001
 0A2
 002
 003
 004
 110
 0E1
 0X2
```

Parallel sysplex license charge (PSLC)

```
Program name:  CICS TS V4.2
Program ID:    5655-S97

Entitlement
 identifier  Description       License option/Pricing metric

S015H9T      CICS Transaction  Basic MLC, PSLC below 3 MSU,
              Server for z/OS   SYSUSGREG NC, PSLC AD
               V4.2
```

Variable Workload License Charges

```
Entitlement
identifier   Description        License option/Pricing metric

S015H9T      CICS Transaction   Basic MLC, Variable  WLC,
              Server for z/OS    Workload Registration
               V4.2
```

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

System z 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 System z 900, no other MVS-based operating system is licensed to that server,

and the required information is provided by the customer 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 customer is required to:

- Sign and abide by the terms of the Attachment for IBM System z Workload License Charges - (Z125-6516).
- Obtain the latest version of the Sub-Capacity Reporting Tool.
- Install any VWLC product and IBM e(logo)server System z 900 Licensed Internal Code (LIC) service required for sub-capacity charging. Required service will be listed on the WLC website

  http://www.ibm.com/zseries/swprice
- 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 IBM System z Workload License Charges Exhibit (Z125-6324) and on the System z Software Pricing website

  http://www.ibm.com/zseries/swprice

  Sub-Capacity Reports that reflect a changed product defined capacity will be considered to be orders placed by the customer without further action on the customer'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 customer must contact IBM or their IBM Business Partner.
- Configure the machine to send weekly Transmit System Availability Data (TSAD) to IBM via the IBM System z 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*at

  http://www.ibm.com/zseries/swprice

Entry Workload License Charge (EWLC)

```
Program name:  CICS TS V4.2
Program ID:    5655-S97

Entitlement
identifier   Description              License option/Pricing Metric

S015H9T      CICS Transaction Server   Basic MLC, Entry WLC
```

Usage license charge (ULC)

Entitlement identifier	Description	License option/Pricing metric
S015H9T	CICS Transaction Server for z/OS V4.2	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

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