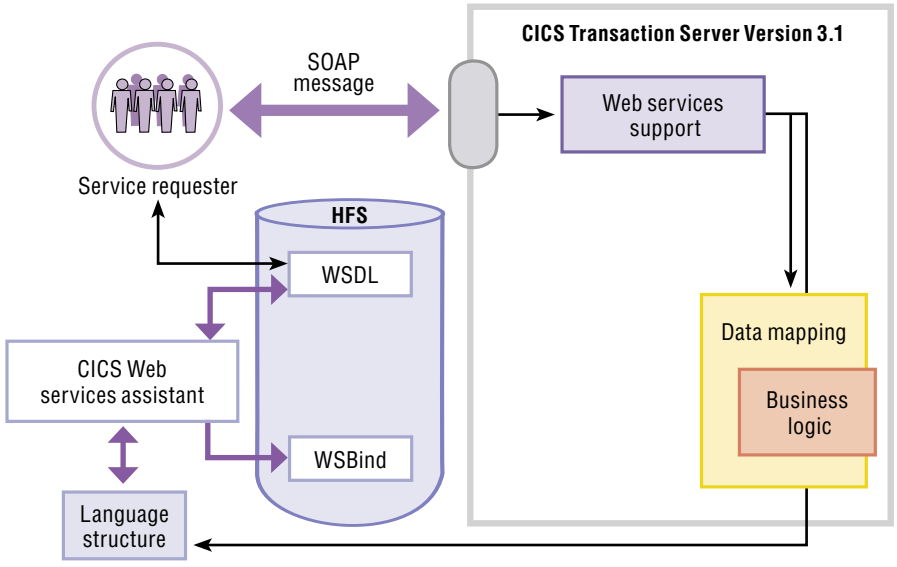
Offering easier integration with Web services, enhanced application transformation, and improved performance and enterprise-management capabilities

IBM CICS Transaction Server for z/OS, Version 3.1

Highlights

- ***Delivers CICS integration to enable reuse of CICS applications within broader, on demand scenarios, through standard APIs and protocols***
- ***Provides application-transformation capabilities that enable you to enhance existing applications and construct new applications, using contemporary programming languages, constructs and tools***
- ***Offers enterprise-management capabilities to help you effectively manage large run-time configurations using modern user interfaces, so you can meet demanding service-level objectives***

Many enterprises have assessed the opportunities and advantages presented by on demand business technologies. Now, they're aggressively moving forward to implement flexible business processes that take advantage of new technologies, while still leveraging existing IT assets. With this flexible architecture in place, companies can gain the momentum they need to achieve competitive advantage in the marketplace. To keep pace, you must ensure that your business processes integrate across your company and with partners, suppliers and customers by building an ecosystem that can respond to any market opportunity or competitive threat.



CICS Transaction Server extends its support for Web services technology.

The industry-leading transaction-processing platform

With this release, IBM CICS® Transaction Server, Version 3.1 provides the flexible platform you need to move your organization toward becoming an on demand business. To help you create an on demand operating environment, CICS Transaction Server, Version 3.1 provides a range of major enhancements that can be grouped into three primary areas:

- *Increased integration of CICS applications*
- *Enhanced application transformation*
- *Improved performance and enterprise management*

Through these enhancements, CICS Transaction Server, Version 3.1 can:

- *Integrate with modern development environments, helping to reduce the cost of producing new technology solutions and the time to market for production of traditional applications.*
- *Enable new Java™ applications to extend the value of existing applications with their proven, operational business logic, while minimizing your risk .*

- *Enable you to create adapters to integrate business applications, providing effective reuse of existing assets. Consolidating integration activities in the host environment helps you reduce risk and complexity, as well as the cost of creating point-to-point integration solutions.*
- *Help you earn a rapid return on investment (ROI) by providing a range of new capabilities that you can use immediately. Through system configuration, you can help improve service to the business and reduce computing costs from the day of adoption.*

Increased integration of CICS applications

These enhancements include facilities to reuse CICS applications within broader on demand business scenarios, using standard interfaces—primarily Web services and Java 2 Platform, Enterprise Edition (J2EE) connectors—and other industry communication protocols.

Web services support

CICS Transaction Server, Version 3.1 extends its Web services support beyond the Simple Object Access Protocol (SOAP) for CICS function that was available optionally with IBM CICS Transaction Server, Version 2. Together with a range of extensions and new capabilities, this support now enables CICS business logic to be exposed as Web services, as part of a service-oriented architecture (SOA). These extensions include support for WS-Security to help protect SOAP messages. Support is also provided for distributed transaction-coordination capability compatible with the WS-Atomic Transaction specification to help ensure that CICS Transaction Server can adhere to Web services standards.

CICS applications can naturally act in the role of both service provider and service requester, in cases where the services are defined using Web Services Description Language (WSDL). The ability of CICS Transaction Server to act as a service provider means that it is relatively simple for you to transform an existing CICS application into a Web service. The ability of CICS Transaction Server to act as a service requester means that a CICS application can issue a single CICS command to use a Web service provided by any external provider.

To ease your ability to transform a CICS application into a Web service, IBM has included the CICS Web Services Assistant, a build-time capability provided to create WSDL document from a simple language structure, or a language structure from an existing WSDL document. This support is provided for COBOL, C/C++ and PL/I. The assistant also generates information used to enable automatic run-time conversion between SOAP messages and containers and COMMAREAs. These capabilities help ensure that you do not have to write your own code to parse inbound messages and to construct outbound messages.

Enhanced HTTP support

CICS Web support is enhanced by upgrading CICS Transaction Server HTTP support to comply with the HTTP, Version 1.1 specification. Outbound HTTP support has also been added, so that CICS can act as both an HTTP server or as an HTTP client using simple EXEC CICS commands.

CICS Transaction Server also supports pipelining and chunking of messages. You can use new resource definitions, known as *uriMAP definitions*, to manage the HTTP server facility without needing to customize your analyzer program. CICS Transaction Server automatically creates virtual hosts using these definitions, so multiple host

names can be provided at the same Internet Protocol (IP) address, which you can manage using CICS system commands. Static responses can be provided for HTTP requests, formed from a document template or hierarchical file system (HFS) file. This means that you can write CICS application programs to use a common protocol for business-to-business (B2B) communication, control hardware or software using HTTP, and access information in non-Web browser HTTP applications.

Improved connected, but inactive, sockets allow many more clients to connect to each CICS system. Using an internal pseudo-conversational model, no CICS task resources are consumed by sockets waiting for the next message from a partner. Use of this model simplifies managing task resources within a CICS environment.

Improvements to SSL support
CICS Transaction Server, Version 3.1 introduces a range of improvements to security. Besides its existing support for Secure Sockets Layer (SSL), Version 3.0, CICS Transaction Server now supports the Transport Layer Security (TLS), Version 1.0 protocol. This includes support for the Advanced Encryption Standard (AES) cipher suites that offer 128-bit and 256-bit encryption.

Resource definitions for TCP/IP service and CORBA Server are enhanced to allow the user to specify the precise list of cipher suites to be used in the negotiation. This capability is also included in the new uriMAP resource definition. To support management of these new capabilities and resources, CICS Transaction Server, Version 3.1 includes new system programming interface (SPI) commands.

CICS Transaction Server, Version 3.1 now supports certificate revocation lists (CRLs) when negotiating with clients, allowing any connections using revoked certificates to be closed immediately. A new transaction, *CCRL*, is provided to update the CRL in the Lightweight Directory Access Protocol (LDAP) server. These negotiations offer more flexibility. Now, you can specify a minimum, as well as a maximum, encryption level to negotiate with particular users.

You can also specify whether session IDs are shared across an IBM Parallel Sysplex® environment, improving the current use of the cache at the address-space level. Caching enables an SSL handshake to be optimized based on a previous negotiation, helping to improve the performance of the connection setup.

An increased number of simultaneous SSL connections can now be used, as a result of the introduction of support for *pthreads* within the IBM Language Environment® enclave from which system SSL is invoked. With this support, your system can achieve better throughput and improve the support for new functions such as Web services.

Support for mixed-case passwords
CICS Transaction Server, Version 3.1 now supports an underlying capability for case-sensitive passwords. When this capability is active, it is indicated on the sign-on panel supplied by CICS Transaction Server.

Improved user-ID checks
The revoked status of a user-ID or group connection is now tested by the `EXEC CICS START USERID()` command at the time it is issued, so that the issuer can be notified by the `USERIDERR` command if applicable.

Application transformation
CICS Transaction Server, Version 3.1 includes enhancements that help you extend existing applications and develop new applications, using contemporary programming languages, constructs and tools.

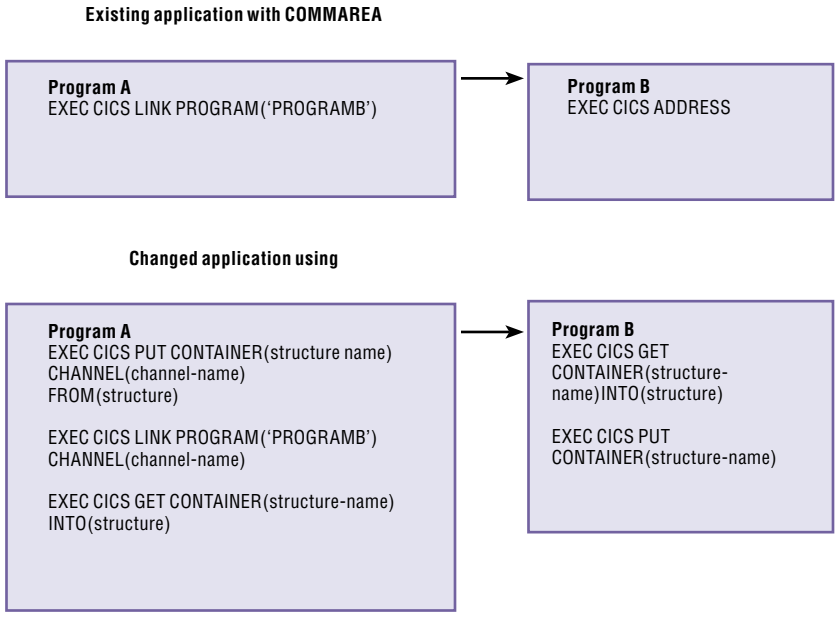
Enhanced interprogram data transfer
If you want to exchange more than 32KB of data between programs, CICS Transaction Server now includes a new application programming interface (API), which introduces *containers* and *channels*. Containers are named blocks of data for passing information between programs. Any number of containers can be passed between programs.

Containers are grouped together in named channels. Channels can be used as a standard mechanism for exchanging data between programs. A channel can be passed on `EXEC CICS LINK, START, XCTL` and `RETURN` commands. Data can be exchanged between systems by either using multiregion option (MRO) or intersystem communication (ISC). Channels provide a more-flexible and a more-structured method of passing data between program components. Variation in the size and number of containers can conveniently be accommodated to allow easier evolution of the interfaces between programs. The size of a container is one accommodation, limited only by the amount of storage available. There is no limit to the number of containers that can be added to a channel. This mechanism also removes the need for programs to know the exact size of the data returned. When containers go out of scope, they can be automatically destroyed, relieving you of storage-management concerns.

Channels can be used by applications written in any of the programming languages supported by CICS Transaction Server, Version 3.1. Options on the container API commands are provided for data conversion, giving you a much-simpler mechanism than that employed with a COMMAREA. Also, in COMMAREAs, application data conversion is controlled by the system programmer. With channels, application-data conversion is controlled by the application programmer using simple API commands, minimizing the need to involve the system programmer.

Language Environment MAIN support for assembler
CICS Transaction Server now includes support to enable coding of completely Language Environment technology-enabled application programs in assembler. A new translator option, `LEASM`, is provided, which causes Language Environment function to be used to set up the program's environment. This option eases integration of these applications into Language Environment, so that Language Environment services can run more easily, and improves debugger support.

64-bit addressing toleration
Although CICS Transaction Server, Version 3.1 does not support the running of 64-bit applications, it now supports 64-bit code running as task-related user exits (TRUEs) in a CICS address space. Extensions are provided to CICS Transaction Server abend-capture mechanisms to allow the contents of full 64-bit, general-purpose registers to be reported.



Restrictions on the amount of data that can be exchanged have been removed by using channels and containers.

Code-page conversion enhancements

The function to convert data between EBCDIC or ASCII and Unicode, in either direction, is now added to the existing CICS Transaction Server ASCIII and EBCDIC code-page conversions. This support uses IBM z/OS® conversion services. The code-page conversion capability applies to either UTF-8 or UTF-16, and support is also provided for conversion between these forms of Unicode.

Improved performance and enterprise management

The enterprise-management focus in CICS Transaction Server, Version 3.1 has been on providing a simple, flexible, intuitive and comprehensive Web user interface (WUI) from which all the CICS regions and associated resources in the enterprise can be managed efficiently. IBM has enhanced support for the open transaction environment (OTE) in CICS Transaction Server Version 3.1, extended API threadsafety to include the EXEC CICS WEB API and improved the interface for C/C++ applications to boost performance.

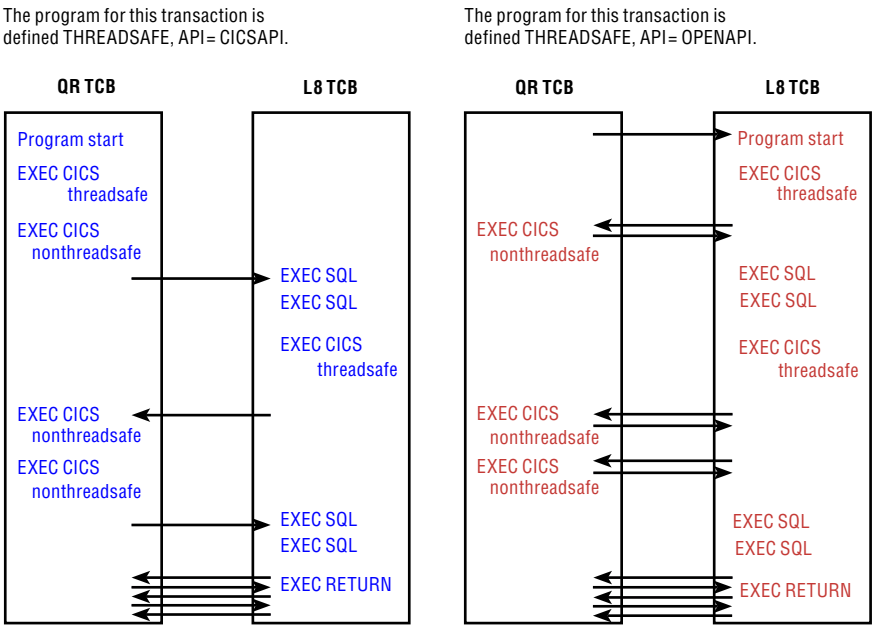
Enhanced open transaction environment

CICS Transaction Server, Version 3.1 extends the use of the OTE by providing support for COBOL, PL/I, Assembler and non-XPLink C/C++ OPENAPI application programs. The program runs on its own task control block (TCB) from the start. OPENAPI requires the application to be coded to threadsafe standards. Using nonthreadsafe CICS commands can cause a switch to the quasi-reentrant TCB (QR TCB), so that CICS can switch back to the OTE TCB before returning control to the program.

The main benefit of this support is that it allows application workloads to be moved from a single QR TCB onto multiple TCBs, enabling better utilization of machine resources to achieve better throughput.

Threadsafe Web commands

All EXEC CICS Web API commands have been made threadsafe. These commands include `WEB READ`, `WEB WRITE`, `WEB SEND`, `WEB RECEIVE`, `WEB RETRIEVE`, `WEB STARTBROWSE`, `WEB READNEXT`, `WEB ENDBROWSE`, `WEB EXTRACT`, `EXTRACT WEB`, `EXTRACT TCPIP` and `EXTRACT CERTIFICATE`. This enhancement removes the requirement for CICS Transaction Server to return to the QR TCB to run these commands. As a result, applications (both Java and non-Java) that use these commands should be able to obtain the performance improvements resulting from reduced TCB switching. Also threadsafe are the new Web API commands that support outbound HTTP, such as `WEB OPEN`, `WEB CLOSE`, `WEB CONVERSE` and `WEB PARSE URL`.



An OTE delivers improved transaction performance.

Enhanced C/C++ support

With this release, CICS Transaction Server introduces new support for C/C++, which brings the performance of these applications to a level comparable with that obtained with COBOL, PL/I or Assembler applications. This performance level is provided by the extra performance linkage (XPLink) feature of z/OS, which delivers high-performance, subroutine linkage mechanisms and guard pages to support stack extension, resulting in highly optimized execution path lengths. Performance is also increased by running these applications in the CICS OTE, instead of in the QR TCB described previously.

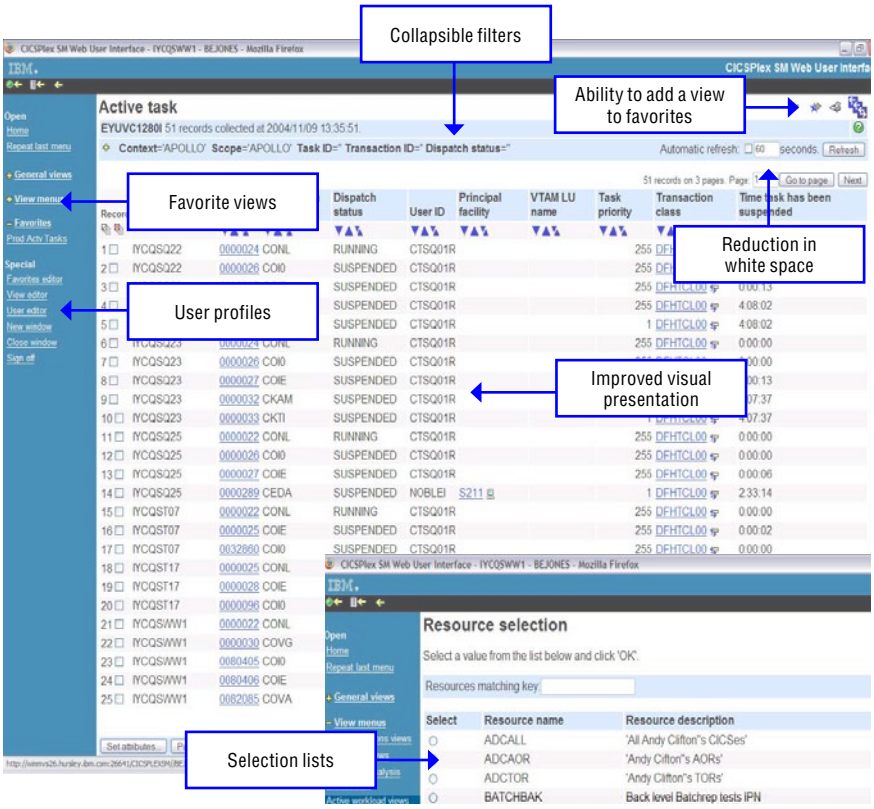
The applications use standard Language Environment services and CICS storage management. This requires that the applications be written to threadsafe standards. Maximum performance can be achieved only if the applications are limited to the use of threadsafe CICS commands. The support provided is for AMODE(31) C/C++ programs. XPLink support under CICS enables you to exploit the latest compiler and optimization technologies included with C/C++. In particular, XPLink DLLs used outside CICS can now be used inside CICS as well, enabling greater C/C++ code reusability.

CICS Transaction Server, Version 3.1 also includes enhancements to provide effective management of large run-time configurations through modern user interfaces, helping you meet demanding service-level objectives.

CICSPlex System Manager WUI enhancements

The IBM CICSPlex® System Manager WUI already provides simple, flexible, intuitive and comprehensive functions for managing CICS Transaction Server —including important functions not available with the Time Sharing Option (TSO) end-user interface. CICS Transaction Server, Version 3.1 introduces a greater range of improvements to the WUI that delivers significant user benefits.

- *Improvements to screen design maximize the use of screen space in views and menus. The view editor now allows detailed views to be displayed in a two-column format. Users can choose to create their own detail views in two columns. The SELECT ALL and DESELECT ALL buttons have also been replaced in tabular views by icons in the record heading of the table to reduce white space. And filters on tabular views can now be collapsed, so that more screen space is available to display data.*
- *User favorites can now be managed using a favorites editor that includes tabular views. These features enable favorites to be easily saved and retrieved for editing at a later time.*
- *User-group profiles containing information, such as default context, scope, CICSPlex Managed Address Space (CMAS) context and result-set warning count, can now be set by administrators using a profile editor. This allows them to configure the WUI so that it is tailored to the needs of particular groups of users.*
- *Result-set warning counts can be set to issue a warning before a view is opened that would generate a large number of records. This allows a filter to be altered on the view to reduce the number of records returned, helping to avoid unnecessary waits.*
- *The view editor now allows the user, when creating or updating views, to include a filter confirmation panel before a view is opened. This means that, when navigating to a view, the user is prompted to enter filters. Business Application Services (BAS) administration views (introduced in CICS Transaction Server, Version 2.3) have been restructured to improve their usability by dividing them into two groups: basic BAS (which emulates resource definition online [RDO] function), and advanced BAS (which exploits the advanced features of CICSPlex System Manager).*



CICS Transaction Server, Version 3.1 provides extensions to the CICSPlex System Manager WUI.

With these enhancements to the WUI, together with job-step access to batch repositories enhancements, you can configure CICSPlex System Manager without having to activate the CICS Application Server (CAS) or TSO components.

- *Configuration enables new users to maximize CICSPlex System Manager functionality immediately. For existing users, it simplifies migration to the new level of CICS Transaction Server.*
- *Dynamic selection lists enhance usability by enabling the WUI to generate lists of valid potential values for users to select attributes in input panels. Users no longer have to remember values that they might have to enter.*
- *The previous set of samples known as the starter set is now included as a fully documented set of IBM-supplied views.*

CICSPlex System Manager BATCHREP access enhancements

CICS Transaction Server, Version 3.1 introduces a group of new facilities that provides access to a batch-repository update mechanism to support batch maintenance of definitions on the CICSPlex System Manager data repository. These facilities include:

- *A BATCHREP resource table, which is now accessible by the CICSPlex System Manager API through the WUI.*
- *A z/OS utility program, which enables definitions to be maintained from a job step.*
- *Simplified ability to navigate resource group relationships to more closely match those encountered in the base CICS RDO function.*

Providing a common framework

In CICS Transaction Server, Version 3.1, the IBM CICS Transaction Server information center is released as a plug-in, powered by Eclipse technology. This common framework is now the infrastructure of choice adopted by many IBM products, offering a common look and feel, together with consistency of behavior and a new search engine. It also allows you to customize your own CICS Transaction Server information center, using plug-ins from multiple products. The new CICS Transaction Server information center enables direct links from CICS information to support information. New functions include:

- *A* What's New *page, organized by major functional area, that is available through the navigation and welcome page. This is similar to the long-established* Release Guide*, but instead of being a separate document, the* What's New *page integrates with the CICS Transaction Server information center.*
- Learning paths, *a sequence of topics that helps a user learn about a new area of the product, are provided for Web services and the CICSPlex System Manager WUI.*
- Information roadmaps, *or topics that provide a set of comprehensive links, role- or function-based, to information from a variety of sources, are provided for Web services, Java in CICS and CICSPlex System Manager.*
- *An* online support plug-in *is a self-help resource that consists of components for searching external knowledge bases, getting fixes and if necessary, contacting IBM support.*

Designed to meet your needs

IBM supplies the total infrastructure your organization needs to model, develop, deploy and manage your critical business applications. As part of this infrastructure, CICS Transaction Server, Version 3.1 makes the most of the quality of service you've come to expect from the z/OS platform.

CICS Transaction Server has stood the test of time to become the transaction-processing platform of choice for a wide range of companies for 35 years. IBM continues to leverage new technologies and architectures to improve CICS Transaction Server, without sacrificing the product's robust, reliable function that lets you integrate your existing investment in IT resources to meet new business opportunities.

For more information

To learn more about IBM CICS Transaction Server, Version 3.1, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/cics

IBM CICS Transaction Server, Version 3.1 at a glance

Hardware requirements

- *Processor:* One that supports the prerequisite operating system and has sufficient processor storage to meet the requirements of the operating system, CICS Transaction Server, Version 3.1, the application programs, the access methods and all other software being run.
- *Parallel Sysplex support*: A Parallel Sysplex environment is required by each of the data-sharing facilities supported by CICS, and by the IBM MVS™ system logger's log-stream merging facility. This requires one or more coupling facilities with the associated coupling links installed, a sysplex timer to provide a common, external time source and sufficient direct access storage device (DASD) paths to support the number of central processor complexes (CPCs) in the sysplex. The DASD paths can be provided either by DASD controllers with enough paths to dedicate one to each CPC in the sysplex, or by an IBM ESCON® director to provide the paths.
- *Data sharing support:* CICS support for data sharing can be used to access data in IBM IMS™ databases, IBM DB2® databases, virtual storage access method (VSAM) data sets, CICS temporary storage, coupling facility data tables or named counters.
- *WS-Security capability:* To exploit the WS-Security capability, which relies on the z/OS Integrated Cryptographic Services Facility (ICSF), appropriate IBM @server® zSeries® cryptographic hardware is required.

Software requirements

- *Operating environment*: IBM z/OS, Version 1.4
- The Language Environment library SCEERUN required for CICS Transaction Server initialization, by inclusion in either the STEPLIB concatenation or the LNKLIST
- IBM Software Developer Kit (SDK) for z/OS, Java 2 Platform, Technology Edition, featuring persistent reusable Java Virtual Machine (JVM) technology, Version 1.4.2, for Java application programs or enterprise beans
- IBM XML Toolkit for z/OS, Version 1.7 required for WS-Security support (available at no charge)
- IBM WebSphere® Application Server, Version 5.0 required to deploy enterprise beans

IBM CICS Transaction Server, Version 3.1 at a glance (continued)

Software requirements (continued)

Other supported software

- IBM CICS Universal Client, Version 5.0 or later
- IBM CICS Transaction Gateway, Version 5.0 or later
- IBM IMS Database Manager, Version 7, Version 8 or Version 9
- IBM DB2® Universal Database™ Server for OS/390®, Version 6.1
  -With PTF for APAR PQ84783 for Structured Query Language for Java (SQLJ) and Java Database Connectivity (JDBC)
  -IBM DB2 Group Attach not supported
- DB2 Universal Database Server for OS/390, Version 7.1
  - With PTFs for APARs PQ84783 and 86525 for SQLJ and JDBC support
  - With APARs PQ44614, PQ45691, and PQ45692 for DB2 Group Attach
- DB2 Universal Database for z/OS, Version 8.1
  - With PTFs for APARs PQ84783 and 86525 for SQLJ and JDBC support
- IBM WebSphere MQ for z/OS, Version 5.3
- IBM Tivoli® Decision Support for OS/390, Version 1.6, with necessary Service Packs applied
- IBM Tivoli Business Systems Manager, Version 3.1

The CICS Transaction Server information center, as a server, is supported on :

- Microsoft® Windows® 2000 Server, Windows 2000 Advanced Server and Windows 2000 Profession (32-bit)
- Windows XP Professional (32-bit)
- Red Hat Linux® Enterprise (AS), Version 3.0 (32-bit)
- SUSE LINUX Enterprise, Version 8 and Version 9 (32-bit)
- IBM AIX®, Version 5.2 and Version 5.3 (32-bit)

For browsing the CICS Transaction Server information center:

- A Web browser that supports HTML, Version 4.0 and the Document Object Model (DOM) standard. Suitable browsers include Microsoft Internet Explorer, Version 6.0; Netscape Navigator, Version 7.0; and Mozilla, Version 1.0, running on Windows 2000 or Windows XP.
- PDF files shipped with the CICS Transaction Server information center have been generated using Adobe Acrobat Distiller, Version 6.0 at the Acrobat, Version 6.0 (PDF 1.5) level. These files can be read using Adobe Acrobat Reader, Version 5.0, but Version 6.0 is required to take advantage of the accessibility features of Adobe Acrobat Distiller, Version 6.0.

IBM Corporation
Hursley Park
Winchester
Hampshire
SO21 2JN
United Kingdom

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