Software Announcement
October 28, 2003

IBM CICS Transaction Server for z/OS V2.3 advances towards on demand business

Overview

Using an evolutionary approach, CICS® enables any enterprise to adopt e-business while minimizing its exposure to the potential risks of new technology. CICS allows existing applications to exploit the Web with little or no change and supports numerous application programming environments and languages including COBOL, PL/I, Java™(5), Enterprise JavaBeans (EJB), and C/C++, in any combination. CICS also provides unmatched scalability, performance, availability, reliability, security, and integrity —all essential for e-business.

CICS Transaction Server for z/OS® V2.3 (CICS TS V2.3) delivers:

- Enhanced Java capability including performance improvements, support for Java SDK V1.4, the Common Client Interface (CCI) Connector for CICS TS, and the addition of CICS Web Support to the JCICS classes
- Improved support for development of applications, including interactive debugging
- Further connectivity options, including new security functions, and the recently-introduced SOAP for CICS optional feature
- Enhancements in the area of availability, including workload balancing of the 3270 Bridge using CICSPlex® SM
- Important performance improvements in CICS-DB2® attachment

CICS TS V2 assists the evolution to on demand computing through integration, openness, autonomic computing, and virtualization, providing:

- Better integration with other products and platforms, supporting IBM's commitment to open standards that benefit you
- Improved manageability through autonomic computing features, simplified user interfaces for administration, and reduction of outages
- Extended scalability through virtualization, assuring flexibility for growth and expansion

Key prerequisites

CICS Transaction Server for z/OS V2.3 requires z/OS Version 1.4, or later.

Planned availability date

December 19, 2003

At a glance

CICS Transaction Server for z/OS V2.3 continues the themes that have applied in the preceding releases of support for e-business applications, support for Java, and enhancements to functions used by procedural programming. New functions available in this release include:

- Improvements to Java support, at V1.4 level, and to JVM infrastructure
- The CCI Connector for CICS TS
- Extensions to JCICS Web Support
- Enhancements to support of Enterprise JavaBeans, including performance improvements
- New facilities for interactive debugging of CICS application programs
- New security capabilities for IIOP
- Workload balancing of 3270 Bridge via CICSPlex SM
- Improvements to the CICSPlex SM Web User Interface
- The ability to cancel suspended or looping tasks

For ordering, contact:
Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

800-IBM-CALL Reference: LE001

Description

For a full description of the content of CICS TS V2.3, refer to Functions Delivered in CICS TS V2.3 in the **Supplemental information** section.

Accessibility by people with disabilities

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

The Information Center is accessible to people with visual, physical, or hearing impairment. The Information Center incorporates features which have been designed for users with visual impairment. Users can choose to read diagrams as a textual description or in diagrammatic form. Command syntax diagrams can be displayed in three different formats, including one which has been designed for visually impaired users. Some information with restricted distribution or limited application is not provided for screen-reader users. This information will be made available in an accessible format, on request. For further information, refer to the **Information Center** section. The Information Center has been tested for accessibility using Microsoft+ Internet Explorer V6 and JAWS screen reader V4.5.

The Assembly Toolkit (ATk) is available in this product, as a component of WebSphere® Application Server V5, which is accessible. The ATk may be used for the deployment of enterprise beans into CICS (a function which in the previous release used the Application Assembly Tool [AAT]).

Section 508 of the U.S. Rehabilitation Act

CICS TS V2.3 is capable as of December 19, 2003, when used in accordance with IBM′s associated 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.

Product positioning

Customer Information Control System (CICS) and WebSphere Application Server (WAS) are strategic middleware products that interoperate well using new technologies such as Web Services, to support end-to-end on demand systems. They exploit and complement z/OS qualities of service, such as high availability and scalability at low cost per transaction, with excellent security. In combination, WAS and CICS support almost any mission-critical e-business solution.

- WebSphere Application Server is the premier Java 2 Enterprise Edition (J2EE) 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 provides the base for the majority of mainframe applications today and excels in the execution of high-volume business applications. It supports the development of modern applications in popular languages such as COBOL, PL/I, C/C++, and Java, leveraging existing investments and skills, and exploiting new technologies where appropriate.

CICS enables thousands of enterprises to run business-critical workloads totalling billions of transactions per day, with a financial value of trillions of dollars. Many of these enterprises see significant advantages in building upon their core investment in CICS skills and applications, and extending that investment to provide the basis for their new e-business solutions.

CICS TS V2.3 continues to provide an efficient and effective environment for applications written in COBOL, PL/I, C, C++, and other languages. Version 2 as a whole strengthens application development capabilities, enables enhanced reuse of 3270 applications, enables applications to manipulate XML directly, and, using the SOAP for CICS optional feature, enables access to existing COMMAREA-based applications via SOAP messages. It also provides improved support for interactive debugging for both Java programs and compiled programs or combinations of both.

e-business access to CICS applications: CICS support for Java has evolved through a number of stages. With V2.3, CICS TS now provides a robust, high-performance environment for enterprise applications written in Java. Its exploitation of the innovative IBM SDK for z/OS, Java 2 Technology Edition, Version 1.4, together with an architecture that ensures that Java applications have a high degree of isolation from each other, achieves execution speed which is comparable with that of procedural languages. Further, CICS has enhanced Java execution by improving behavior under stress, reducing storage and start-up requirements for a JVM.

CICS provides optimized implementations of those parts of the J2EE specification that are appropriate to its role as a high performance transaction server for core business applications and data. It also includes a copy of WebSphere Application Server V5.0 for multiplatforms, which may be used for development, testing, and execution of J2EE applications in conjunction with CICS.

Through the availability with CICS TS V2 of the SOAP for CICS optional feature, CICS-based applications can be accessed as Web Services within a service-oriented architecture. These may be existing or new applications written in any supported programming language. The applications can be invoked by SOAP requests over either HTTP or WebSphere MQ, without the need for an intermediary application server. The SOAP for CICS feature also enables CICS applications to invoke Web services which are hosted on other systems. This enables an additional form of connectivity appropriate for Business to Business applications.

Application modernization: A range of Java services enables applications to exploit the strengths of CICS via open Java Enterprise APIs. WebSphere Studio may be used to develop these applications and deploy them under CICS; no other special tools are needed.

By supporting EJB session beans, CICS provides another dimension for application architects. Stateful session beans may be seen as a contemporary equivalent of pseudo-conversational programs and are suitable for a wide range of applications. The technology also enables transactional peer-to-peer interoperation with WebSphere Application Server and other CORBA-compliant servers using IIOP, which may be used as an advanced connector. By exploiting the WebSphere EJB container, CICS enables construction of reusable business logic components that

are binary portable between CICS and WebSphere and may be deployed in either environment using the same tools. Where an EJB component needs to incorporate procedural logic modules to accomplish its business function, CICS enables this mixed-language component to run in a single execution environment with good isolation from other components, thereby improving robustness and manageability.

CICS TS V2.3 provides a run-time environment optimized for business logic written as enterprise beans that can run alongside, and interoperate with, business logic written in languages such as COBOL. Both EJB applications and COBOL applications can access existing (and new) DB2, IMS™ DB, and VSAM data concurrently, and with complete integrity. By allowing new enterprise beans to run simultaneously in the same managed run-time environment as, for example, traditional 3270-based applications, CICS enables the same operations personnel to support multiple styles of application.

CICS TS V2.3 provides a new method for invoking a procedural application from a Java client. This function uses the standard interface defined in the J2EE Connector Architecture (JCA) specification 1.0 — JSR016, called the Common Client Interface Connector for CICS TS (CCI Connector for CICS TS). It replaces the CICS Connector for CICS TS, introduced in CICS TS V2.1. The CCI Connector for CICS TS enables customers to build powerful server components that exploit existing applications. Java programmers with little or no knowledge of CICS can easily reuse CICS applications. Java client applications should be portable between Java-enabled platforms with little or no modification, and, in particular, should be portable from a non-CICS environment such as WebSphere Application Server into the CICS environment.

Enterprise management: The CICSPlex System Manager, an integral part of CICS TS, reduces the complexity of operating multiple CICS systems by presenting them in the manner of a single system image. It combines all the major CICS management functions within a single user interface. It also cooperates with Tivoli® products to meet the need for end-to-end management and automation of CICS with z/OS and the customer's network. This release continues the themes for systems management of integration, simplification, monitoring, and automation. Through the CICSPlex SM Web User Interface, CICS has a modern intuitive interface for all aspects of system management.

In summary, the role of CICS TS V2 in an enterprise solution on z/OS is to enable:

- Efficient and optimized extension and reuse of existing CICS applications and business logic
- Enterprises with a strong investment in CICS skills and infrastructure to create applications using new technologies by building on those skills
- Support and management of mixed application types and workloads within a single CICS system
- Reuse of existing DB2, IMS DB, and VSAM data from Java and EJB applications

Hardware and Software Support Services

SmoothStart™ /Installation Services

IBM services for CICS Web enablement: IBM Global Services has the capability to provide on-site services to assist you with Web enabling your existing or new CICS applications. These services can include an analysis of your organization's environment and infrastructure, business requirements for e-business, general Internet strategy, and candidate CICS applications for Web enablement. We can also assist you with the installation and implementation of the most appropriate CICS Web enablement method that matches your e-business requirements.

IBM Migration services for CICS transaction server: IBM Global Services has the capability to provide on-site assistance from our CICS services specialists to work with your technical staff to produce a CICS Transaction Server for z/OS Version 2 Migration Plan that can include the following:

- Migration of CICS journals to the MVS™ logger
- Changes in startup, shutdown, and recovery operations of CICS regions
- Evaluation of CICS resource definitions
- Assessment of applications that use the CICS Web support
- Evaluation of connectivity between CICS regions
- Consideration of CICS environment use of DB2 and DL/1 resources

Installation and implementation planning of CICS Transaction Server for z/OS V2.3 is provided in accordance with this CICS Transaction Server for z/OS Version 2 Migration Plan.

IBM Installation services for CICSPlex SM: IBM Global Services has the capability to provide on-site assistance from our CICS services specialists to work with your technical staff to produce a CICSPlex SM Installation Plan that can include the following:

- CICS transaction affinities
- CICS region configuration design and implementation of improved CICS and CMAS JCL structure
- Implementation of Dynamic Transaction Routing and Dynamic Program Link Routing
- Implementation of the CICSPlex SM Web user interface
- Demonstration of the CICSPlex SM API
- Exploitation of CICSPlex SM Single Point of Control
- Exploitation of CICSPlex SM Business Application Services
- Exploitation of CICSPlex SM Real Time Analysis
- Implementation of VSAM Record Level Sharing

Installation and implementation planning of CICSPlex SM is provided in accordance with this CICSPlex SM Installation Plan.

For general information on IBM Global Services, refer to:

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

For services for CICS, refer to:

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

Reference information

For the announcement of CICS Transaction Server for z/OS V2.1, refer to Software Announcement 201-060, dated March 13, 2001.

For the announcement of CICS Transaction Server for z/OS V2.2, refer to Software Announcement 201-354, dated December 4, 2001.

For information on the SOAP for CICS feature, refer to Software Announcement 203-199, dated August 5, 2003.

For information on WebSphere Application Server V5.0, refer to Software Announcement 202-315, dated November 19, 2002.

For information on WebSphere Application Server for z/OS, V5, refer to Software Announcement 203-094, dated April 8, 2003.

For information on CICS Transaction Gateway V5.0, refer to Software Announcement 202-145, dated June 11, 2002.

For information on CICS Universal Client V5.0, refer to Software Announcement 202-145, dated June 11, 2002.

For information on CICS VSAM Recovery V3.2, refer to Software Announcement 203-031, dated February 4, 2003.

For information on CICS Interdependency Analyzer for z/OS V1.2, refer to Software Announcement 203-198, dated August 5, 2003.

For information on CICS Performance Monitor for z/OS V1.2, refer to Software Announcement 203-197, dated August 5, 2003.

For information on CICS Performance Analyzer for z/OS V1.3, refer to Software Announcement 203-196, dated August 5, 2003.

For information on Session Manager for z/OS V1.1, refer to Software Announcement 202-349, dated December 17, 2002.

For information on CICS Business Event Publisher for MQSeries® V1.1, refer to Software Announcement 203-030, dated February 4, 2003.

For information on CICS Online Transmission Time Optimizer V1.1, refer to Software Announcement 201-364, dated November 18, 2001.

For information on MQSeries Integrator Agent for CICS Transaction Server V1.1, refer to Software Announcement 201-059, dated March 13, 2001.

For information on Enterprise COBOL for z/OS and OS/390® V3.1, refer to Software Announcement 201-343, dated November 27, 2001, and for V3.2 refer to Software Announcement 202-195, dated August 20, 2002,

For information on Enterprise PL/I for z/OS and OS/390 V3.1, refer to Software Announcement 201-344, dated November 27, 2001, and for V3.2 refer to Software Announcement 202-192, dated August 20, 2002,

For information on IBM Fault Analyzer for z/OS V4.1, refer to Software Announcement 203-236, dated September 16, 2003.

For information on IBM Debug Tool for z/OS V4.1, refer to Software Announcement 203-237, dated September 16, 2003.

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 V2, refer to:

http://www.ibm.com/software/ts/cics/v2/

You can search for terms, phrases, error codes, or APAR numbers on the CICS support page, at:

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

Trademarks

IBM US Announcement Supplemental Information

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Functions delivered in CICS® TS V2.3

The following are the principal new functions provided in CICS TS V2.3. Functions previously delivered in CICS TS V2.1 and CICS TS V2.2 are also mentioned, but for full descriptions of these, refer to Software Announcement 201-354, dated December 4, 2001.

Enhanced Java™ support

Release 3 of CICS Transaction Server for z/OS® Version 2 continues the major enhancements to CICS support for Java that have been a theme of the previous two releases.

Improvements to Java support and JVM infrastructure: CICS Transaction Server for z/OS Version 2 introduced support of a specially optimized JVM, the IBM SDK for z/OS, Java 2 Technology Edition, featuring persistent reusable JVM technology. This JVM enables significant performance optimizations for any Java program running in CICS, including enterprise beans, by two mechanisms. Firstly, by serially reusing a JVM, the initialization cost for a Java application is dramatically reduced. Secondly, by discarding all the application objects created by the Java program all at one time when the program terminates, the performance overhead of the more usual garbage collection mechanism is effectively eliminated.

This JVM also supports special techniques that enable system and middleware code to re-initialize the JVM before it is reused for the next Java program. This ensures that there can be no interference between the applications, or between programs running on behalf of different end users, that serially reuse the same JVM. CICS supports a set of JVM instances ready for use within each CICS address space and provides management of the pool of JVMs to optimize throughput and to allow Java classes to be replaced without requiring that CICS be restarted.

CICS TS V2.3 requires the IBM SDK for z/OS, Java 2 Technology Edition, Version 1.4, with PTF for APAR PQ79281.

In CICS TS V2.3, many further enhancements in the exploitation of JVM infrastructure are introduced. These include:

- Exploitation of the Shared Classes configuration of the JVM, with the use of the shared class cache. This improves efficiency by reducing the storage and start-up requirements for a JVM.
- The introduction of a new mode of operating JVMs for applications that do not require the overhead of resetting the JVM′s state between transactions. This mode is referred to as running “continuous” JVMs. Running continuous JVMs reduces the CPU per transaction, but also reduces the level of isolation of application state between transactions that reuse the same JVM. The choice of mode (resettable or continuous) is application dependent. Testing and initial deployment of applications in a resettable JVM will provide the maximum assurance that the application is not compromising the integrity of the JVM by performing unresettable actions, and you should also ensure that the application is not allowing unwanted application state to persist from one transaction to another. If you are convinced that the application does not compromise the integrity of the JVM or allow unwanted application state to persist, and you require maximum performance, then moving to the use of continuous JVMs is recommended.
- Introduction of a dedicated storage monitor for JVMs, which improves behavior when a CICS region is short on storage used by JVMs.
- A new selection mechanism for creating, managing, and allocating work into JVMs. JVMs can have different characteristics and are grouped for management purposes. This increases the utilization of system resources, again improving behavior when under stress.
- Removal of the restriction that prevents nesting of Java programs within the same CICS task. In complex applications, this enables the piece-by-piece replacement of existing programs by Java programs.
- Improvements to tracing and problem determination for JVMs. Better granularity of diagnostic trace may be obtained using the supplied transaction CETR, enabling reduced overhead and better control over what is traced. The status of JVMs in a pool may be monitored using the INQUIRE JVM command. Better control is provided over the format and destination of standard output from JVMs, both from internal logic and from applications.
- New features that help in the management of JVM profiles.

There are also performance improvements for Java classes. The launcher code for these methods has been significantly optimized to reduce the overhead in pathlength imposed on each execution — increasing the Java activity throughput in CICS TS V2.3.

In addition, a new Object Request Broker (ORB) is delivered, which supports Common Object Request Broker Architecture (CORBA) V2.3. This brings advantages in terms of serviceability and of a greater level of interoperability with ORBs from other vendors. This ORB also supports the requirements for enterprise beans at General Inter-ORB Protocol (GIOP) V1.2, and optionally V1.1.

The Common Client Interface (CCI) Connector for CICS TS: CICS TS V2.3 provides a new method for invoking a CICS program from a Java program. This function uses the standard interface defined in the J2EE Connector Architecture (JCA) specification 1.0 — JSR016. This interface is called the **Common Client Interface Connector for CICS TS** (CCI Connector for CICS TS). It replaces the

CICS Connector for CICS TS, introduced in CICS TS V2.1. For more information about the CICS Connector for CICS TS and the Common Connector Framework (CCF) client API, refer to the **Compatibility** section.

The CCI Connector for CICS TS enables a Java program or an enterprise bean running under CICS TS 2.3 to communicate with any (Java or non-Java) COMMAREA application program, wherever that application program resides, whether in the same CICS region as the invoking Java class, or in another CICS region.

The CCI Connector for CICS TS enables customers to build powerful server components that exploit existing CICS programs. It enables Java programmers with little or no knowledge of CICS to reuse CICS applications. Java client applications should be portable between Java-enabled platforms with little or no modification, and, in particular, should be portable from a non-CICS environment into CICS.

The CCI Connector for CICS TS is functionally equivalent to the EXEC CICS LINK PROGRAM() COMMAREA() command, with information being sent to the target CICS application in a COMMAREA. The definition of the target CICS region is obtained via the standard Java Naming and Directory Interface (JNDI) technique. Sample CICS applications are provided to publish and retract the connection factory used for communication definition, and also to show the Java coding technique required to use the CCI Connector for CICS TS.

CICS Java applications are recommended to use the CCI Connector for CICS TS instead of the JCICS LINK operation whenever portability of Java code is required.

JDBC V2.0 support: CICS TS V2.3 supports JDBC V2.0. This support was first made available on CICS TS V2.2 via the service channel.

The use of the JDBC V2.0 driver in DB2® V7 provides significant performance improvements when compared with the use of the JDBC V1.2 driver. Improved handling of data passed to DB2 from the JDBC driver results in reduced use of the Java Native Interface (JNI), minimizing associated costs. These performance improvements can be exploited by Java applications or enterprise beans which are written to use either the JDBC V1.2 or the JDBC V2.0 API.

This support also enables the use of the JDBC V2.0 DataSource interface to provide application isolation from the platform-specific and JDBC driver-specific mechanisms for obtaining a connection to the database. Note that JDBC V2.0 is only supported for Java programs and enterprise beans that run in a JVM. It does not support Java program objects (sometimes referred to as HPJ programs).

CICS TS 2.3 supports the externals of JBDC V2.0, but the internals are tailored to the CICS environment. In particular, the JDBC concept of **directly** connecting to multiple databases does not apply to the CICS usage of DB2. No unique definitions of CICS resources are required for JDBC usage.

JCICS Web support: Java applications running under CICS have direct access to CICS services and resources via a set of Java classes known as JCICS, which provide equivalent function to the EXEC CICS interface used by applications in other languages. In CICS TS V2.3, new JCICS classes are provided that are equivalent to the EXEC commands for CICS Web Support. The extra classes provide Java applications with the ability to use the CICS Web, Document, and Extract APIs. This enables programs written in Java to be driven by CICS Web Support.

A new Java sample program is provided to demonstrate the use of the new classes. This is invoked from a Web browser; it contains information about the inbound client request and the HTTP headers, writes it to the standard output stream, creates a response document, and sends it to the client.

Other Java support functions: Functions delivered in the previous releases of CICS TS V2 include JNDI support for a Lightweight Directory Access Protocol (LDAP) server, and enhancements to CORBA interoperability.

Note that some further enhancements in CICS TS V2.3 applicable to Java programs are described in the section **Enhancements to CICS support for enterprise beans** under EJB run-time functions.

EJB support

For a description of Enterprise JavaBeans, and of the support for them provided by CICS Transaction Server for z/OS V2, refer to Software Announcement 201-354, dated December 4, 2001.

EJB run-time functions

Support for session beans at EJB 1.1 specification level is already delivered in Releases 1 and 2 of CICS TS V2. The facilities of JCICS are available to these enterprise beans, which enables them, for example, to access VSAM data and other CICS resources.

As a practical and convenient way of accessing data, support is available in CICS TS V2.3 for DB Beans. DB Beans are similar to Data Access Beans, for which support was provided in CICS TS V2 V2.1 and V2.2, but they conform more closely to the JDBC V2.0 rowset specification. For more information on DB Beans, refer to the **Compatibility** section.

A number of EJB security functions have been enhanced in CICS TS V2.3. For details, refer to **Security enhancements** in Enhancements to network connectivity for e-business enablement.

Enhancements to CICS support for enterprise beans: Important improvements have been made to enterprise bean performance: for more information, refer to the **Performance considerations** section. In CICS TS V2.3, the generated code from within the deployed ejb-jar is treated as middleware code. As a result, various items previously held in the application heap are now long-lived middleware heap items and are not discarded at JVM reset; they persist in middleware caches and are reused when the JVM itself is reused. This caching also means that a CICS JNDI cache can be used to greatly improve the performance of JNDI lookups under CICS TS V2.3, provided the potential consequences concerning data integrity are understood.

A facility has been introduced to allow a CorbaServer to be enabled and disabled. This makes systems administration easier, since in order to apply maintenance (to alter the set of installed DJARs, for example), there is no need to shut down the whole CICS region. Instead, only the EJB workloads for the CorbaServer itself need to be dynamically quiesced, the maintenance applied, and then the workload brought backup.

Improved monitoring and statistics information is provided for enterprise beans. The information is collected at the request processor transaction level and

at the enterprise bean level. In addition, the distributed routing program is given improved data concerning routing failures for enterprise beans and CORBA stateless objects, allowing it to make better decisions on the temporary removal of an AOR from its routing set.

Application development and deployment functions in support of EJB

DJAR installation enhancements: Changes have been introduced in CICS TS V2.3 that offer better performance on installing a DJAR (also delivered on CICS TS V2.2 by the service channel, in APAR PQ62280), and improved diagnostics in the event of a failure on DJAR installation.

These changes also mean that EJB 2.0 deployment descriptors can now be read so that EJB 2.0 JAR files are now tolerated. This allows the use of EJB 2.0 tools, such as the WebSphere® Studio 5.0 family, for the deployment of session beans; however, CICS TS V2.3 ignores information not relevant to EJB 1.1.

EJB deployment tooling for CICS TS V2.3: Introduced in CICS TS V2.3 is the use of the Assembly Toolkit for WebSphere Application Server, known as the ATk, for building JAR files ready for the run-time environment and for preparation of enterprise beans for installation into CICS TS. The ATk functionally replaces the Application Assembly Tool (AAT), which was introduced in CICS TS V2.2, but both tools are supported by CICS TS V2.3. Advantages of the ATk include Accessibility by people with disabilities.

Both the AAT and the ATk are delivered as part of WebSphere Application Server V5, of which a media pack is included in the packaging of CICS TS V2.3.

- At the initial shipment of CICS TS V2.3, the media pack shipped contains a level of WebSphere Application Server that includes the AAT, but not the ATk.
- Since the shipment of its initial level, WebSphere Application Server V5 has made available the Application Server Toolkit (ASTK), which includes the ATk. The ASTK is available for download by users of WebSphere Application Server V5. Customers of CICS TS V2.3 wishing to use the ATk should go to the ASTK Web site for download:

  http://www-1.ibm.com/support/docview.wss?rs=180&context=SSEQTP&q=&uid=swg24005125&loc=en_US&cs=utf-8&lang=en+en

Also delivered in CICS TS V2.3 is the resource manager for enterprise beans, and three CICS EJB samples.

Systems management functions supporting EJB

A range of new resources, including two CICS-supplied transactions CREA and CREC, was delivered in releases 1 and 2 of CICS TS V2. New functions for CICSPlex® SM management of the EJB server, and CICSPlex SM workload management for enterprise beans were also introduced.

New facilities for CICS application programming

Improved support for interactive debugging: CICS TS V2.3 provides extensive and important improvements for the interactive debugging of CICS application programs. It enables access via the IBM Distributed Debugger to debug executing CICS application modules. This support is also applicable to other debug tools, such as WebSphere Studio Enterprise Developer V5, WebSphere Studio Application Developer V5, Debug Tool for z/OS and OS/390® V3, and others.

These debugging facilities apply to:

- Language Environment® enabled CICS Application programs (written in COBOL, PL/I, C, C++, or LE Assembler)
- Java classes (used as CICS modules)
- Enterprise JavaBeans
- CORBA stateless objects

They do not apply to assembler or to non-Language Environment modules (such as OS/VS COBOL modules).

Debugging is controlled by means of **debugging profiles**. These profiles are stored in a VSAM file, and can be shared between many CICS regions. Consequently, the debugging profiles persist over a CICS region restart.

A debugging profile is created by the new 3270 terminal-based CADP transaction, or using a newly-introduced **Web-based interface**. Each debugging profile contains, for example:

- The name of the CICS application program to be debugged
- The name of the applicable CICS region or regions
- The specific terminal or terminals at which applications are to be debugged
- The name of the Java class (or method) to be debugged

Active profiles are active in all CICS regions that use the same debugging profiles repository file. Items within a debugging profile can be specified generically.

A debugging profile, matching the required application program, has to be active before a debugging session can be started. Consequently if, for example, a COBOL application program invokes a Java class within the CICS region, two debugging profiles would normally be active (one for the COBOL program and one for the Java activity). In this case, the debugger display would initially show COBOL-related information and then Java-related objects as execution proceeds.

A debugging profile can be activated at a 3270 terminal using the CADP transaction. Alternatively, it can be activated from a CICS-supplied Web page, using the Web-based interface. The Web-based interface enables an application programmer executing an EJB within the CICS environment to control debugging without any reference to terminal-based activities.

Debugging profiles can be activated and deactivated within a CICS region as required.

Debugging application programs within CICS TS V2.2 required that the programs had to be linked with a Language Environment exit (CEEBXITA); and using a workstation for debugging required implementation of the TCP/IP Socket Interface for CICS within the CICS region. These requirements have been removed in CICS TS V2.3. The only application program requirement is that it has to be compiled with the TEST option (or equivalent). There is no equivalent preparation requirement for Java (including EJB) activity. However, the JVM used for the Java class or enterprise bean which is to be debugged must be configured to support debugging activity. Consequently, the debugging profile contains JVM-profile related information (specifically, the JVM profile identifying the JVM in debug mode that is to be used for execution).

The status of a debugging profile is recorded in the VSAM file; this status persists over a CICS region restart (even if it starts up as "Initial" or "Cold"). A transaction CIDP is provided which will turn off all debugging profiles. This will affect all CICS regions sharing the same repository file. CIDP can be started to run non-terminal as part of CICS initialization (PLT), CICS shutdown (PLT) or at any time during region execution.

The debugging client can still be a 3270 terminal in the CICS region. However, it is recommended that the debugging client runs on a workstation. It can be the IBM Distributed Debugger; WebSphere Studio Application Developer; WebSphere Studio Enterprise Developer; or any non-IBM debugger that complies with the relevant debugging standards. Access is made to the CICS region via TCP/IP. The DNS and the port number which the CICS region uses for debugging communication have to be known.

If WebSphere Studio Enterprise Developer (WSED) is being used to generate CICS COBOL or PL/I applications, the WSED debugger fully supports debugging of CICS applications generated from its environment. This includes Java applications (including enterprise beans) as well as COBOL or PL/I. In addition, the WSED debugger can follow execution flow through different environments (such as WebSphere Application Server) both before and after the CICS component is executed, thus providing an end-to-end debugging facility.

RDO enhancements: The CEDA transaction is used to define CICS resources. Properties associated with CICS resources are case sensitive where they apply to Hierarchical File System (HFS) or Java/EJB class/method names. An enhancement has been introduced to the CEDA (for Resource Definition), CADP (Debugging definition), and CREA (RequestModel configuration) transactions which greatly increases the usability of CICS system definition when mixed case entries are required. Terminal input is **by default** taken to be in mixed case. Items which have to be in upper case are automatically folded. Other items are taken to be case-dependent.

This means that the CEOT transaction no longer has to be used around these transactions to put the current terminal into mixed case (before usage of the transactions) and revert back to upper case (after the transactions have ended).

Improved support for C++: The C++ Standard Library (C128), originally shipped in z/OS V1.2, was built using the XPLINK compiler option for improved performance. CICS does not currently support the XPLINK linkage for C/C++ (though it does for Java), so IBM has supplied a NOXPLINK C++ Standard Library (C128N), to facilitate ISO C++ interoperability with CICS, via the following PTFs:

- z/OS V1.2 — UQ77834
- z/OS V1.3 — UQ77835
- z/OS V1.4 — UQ77836

The README file update which documents C128N was made available in compiler PTFs UQ77788 and UQ77789.

Enhancements to CICS Business Transaction Services: CICS Business Transaction Services (BTS), first introduced in CICS TS V1.3, has been enhanced to improve the performance of certain types of BTS application. The NOCHECK option on the EXEC CICS DEFINE PROCESS command can be used to completely eliminate the repository file overhead for short-lived processes that complete in a single task. Applications satisfying the conditions for NOCHECK to eliminate the repository file activity also benefit from the removal of the restriction that the EXEC CICS SYNCPOINT command could not be used in BTS applications. These two enhancements:

- Allow BTS to be introduced to applications with lower overheads
- Enable more existing applications to be reused in a BTS application; and:
- Make it easier for elements of the BTS API, notably containers, to be used more widely and providing advantages for the general CICS application, for example passing more than 32K of data (such as XML) between local program components.

The introduction of the EXEC CICS MOVE CONTAINER command simplifies the data transfer within a BTS application, eliminating the need for applications to use the GET and PUT commands to achieve the same thing, and eliminating the associated storage allocation operations.

The NODATA option on the EXEC CICS GET CONTAINER is introduced to allow an application to quickly establish the length of data present in a container prior allocating storage to receive the data.

Other functions in support of procedural programming: Already introduced in CICS TS V2.1 and CICS TS V2.2 are functions including an integrated translator for COBOL and PL/I applications, which is particularly valuable in simplifying the debug process; CICS COBOL and PL/I XML application capability, which enhances the use of COBOL and PL/I transactions in service oriented architectures; 3270 Bridge enhancements; Load Module Scanner; enhancements to function shipping of remote file requests; CICS Web Bridge enhancements; additional CICS Web Support API enhancements; Web certificate auto-registration feature; CICS — Language Environment enhancements; and VSAM control interval deadlock avoidance.

Enhancements to network connectivity for e-business enablement

Security enhancements: In addition to the support previously provided for the Unauthenticated and SSL Client Certificates protocols over IIOP, CICS TS V2.3 adds support for the Asserted Identity method. Asserted Identity authentication can be used when an IIOP client communicates with a target server through an intermediate server. The target server verifies, through the z/OS Security Server (RACF®) that the intermediate server can be trusted to authenticate its clients. When the intermediate server receives a request, it authenticates the client using an appropriate authentication protocol, and, if successful, passes the request to the target server. Because the target server trusts the intermediate server to authenticate the client, it makes no further checks before processing the client's request. In effect, the end user's identity is replaced by that of the trusted server. When this protocol is in use, the server makes this protocol known to clients by publishing it in the IOR.

This function allows secure interoperability with other systems that use SSL with client authentication and the Asserted Identity protocol, including between any combination of CICS Transaction Server for z/OS V2.3 and WebSphere Application Server V4.0 for z/OS and OS/390, or WebSphere Application Server for z/OS, V5.

Other network connectivity functions: New bridge vectors are added to support the ACCUM option on BMS requests for transactions using the Link3270 bridge. This extends the range of BMS applications which may be used with the Link3270 bridge.

To assist problem determination for the growing number of users using TN3270 to access their CICS transactions, CICS TS V2.3 includes the client's IP address and port (if supplied by VTAM®) as part of trace, messages, and dumps, plus some sample code in the autoinstall URM.

Previously introduced in CICS TS V2.1 and CICS TS V2.2 are ECI over TCP/IP; enhancements to CICS exploitation of TCP/IP services; connection optimization; and CICS support for VTAM LU alias facility.

SOAP for CICS feature: The SOAP for CICS optional feature was made available on September 26, 2003. It provides a mechanism that allows CICS applications, written in any supported programming language, to communicate via the Simple Object Access Protocol (SOAP). Transports are provided over Hypertext Transfer Protocol (HTTP) and WebSphere MQ. Both inbound and outbound function is provided. The implementation supports SOAP 1.1.

The SOAP for CICS feature is available for use with both CICS TS V2.2 and CICS TS V2.3; there is no change to it on the introduction of CICS TS V2.3. For more information, refer to Software Announcement 203-199, dated August 5, 2003.

Outbound HTTP: A new CICS-supplied utility program, DFHWBCLI, is provided that can be invoked via EXEC CICS LINK to establish an outbound HTTP connection. The utility permits the specification of a target URL, from which an HTTP response is obtained. The HTTP GET and POST methods are supported. Access may be direct or through a proxy, and may use Secure Sockets Layer if the CICS region is suitably configured.

This was also made available on CICS TS V2.2 via the service channel. Note that it may be removed in a future release of CICS TS, after equivalent function is made available through the EXEC CICS interface, when applications that use this function would need to be altered.

Improved application availability

New threadsafe commands: The EXEC CICS commands ASKTIME, FORMATTIME, CHANGE TASK, DOCUMENT CREATE, DOCUMENT INSERT, DOCUMENT SET, and DOCUMENT RETRIEVE have been made threadsafe. This removes the requirement for CICS to return to the QR TCB to execute these commands, and therefore has the potential for applications that use DB2 extensively to gain major performance improvements by exploiting Open Transaction Environment (OTE) with the CICS-DB2 attachment facility.

Enhanced DB2 recovery: Support for DB2 Restart Light is introduced in CICS TS V2.3. This support requires DB2 Universal Database® for z/OS V8. Together with the DB2 Group Attach support (already provided in CICS TS V2.2), this enhancement improves DB2 availability for CICS applications and provides better recovery after an LPAR failure.

Read time-out on MRO connections: An enhancement has been introduced whereby tasks waiting on an MRO connection are purged if the wait exceeds a specified time-out value. The purpose of this is to prevent a "sympathy sickness" situation whereby, if transactions in an AOR for some reason stall or deadlock, the corresponding relay transactions in an MRO-connected TOR are left hanging, and can eventually cause the TOR to stall completely. In addition, the granularity of timeouts has been simplified to be in units of 1 second, and the field increased to allow longer maximum timeouts. These enhancements have also been made available via the service channel on CICS TS V1.3 and CICS TS V2.2.

Other application availability functions: Already introduced in CICS TS V2.1 and CICS TS V2.2 are:

- Enhanced DB2 facilities, comprising CICS-DB2 performance, and DB2 exploitation of the RMI Purge option
- Enhanced support for CICS data-sharing servers: automatic restart of CICS data-sharing servers, system-managed rebuild support for coupling facility structures, and system-managed coupling facility structure duplexing
- Sign-on retention for persistent sessions

Systems management enhancements

CICSPlex System Manager is an integrated part of CICS TS. Its role is to reduce the complexity of CICS systems by presenting them as a simple and integrated whole. It integrates all the major CICS management functions into one interface. It cooperates with Tivoli® products to meet the need to integrate management and automation of CICS with z/OS and the network.

This release continues the themes for systems management of integration, simplification, monitoring and automation, extended coverage, and infrastructure. Simplification, and extended coverage of end user interactions, are provided via enhancements to the CICSPlex SM Web User Interface. Simplification and infrastructure objectives are achieved through the architectural improvements item.

Workload balancing of 3270 Bridge via CICSPlex SM: CICSPlex SM's workload management component is enhanced in this release to provide dynamic routing capability for the 3270 Bridge enhancements that were introduced in CICS TS V2.2. This provides plugin support for the routing exit, removing the requirement for the user to code user exits. As with existing workload management support, this facility can provide benefits that include workload balancing, workload separation, and avoidance of systems that abended on a previous occasion.

CICSPlex SM architectural improvements: A range of improvements has been made to the architecture of CICSPlex SM. These alterations give immediate benefits to users, and also open the way for further future enhancements.

The immediate benefits include:

- Changes which can make the application of service much easier, in particular the removal of the need for simultaneous shutdown and upgrade to all CICS systems within a CICSplex when applying service to resource tables
- Simplification of migration between releases for sites with large remote Windows+ NT MAS networks
- Improved resource table reference book information, mainly concerning the descriptions of fields

- Improved CICSPlex SM API mapping macro commentary
- Additional data is now returned by the EXEC CPSM GETDEF command.

CICSPlex SM Web User Interface enhancements: Major extensions have been made to the functions of the CICSPlex SM Web User Interface server. In addition to working with operational resources and viewing definitional resources, the user can now create and update definitional resources.

The starter sets of views and menus now includes a set of administration views, which can be used to create, update, and remove CICS and CICSPlex SM definitions. The customization facilities of the Web User Interface permit the construction of views to capture specific details when creating a resource definition.

Enhanced security for the Web User Interface view sets and menus allows access to individual view sets and menus to be controlled at the individual user level when using the views and menus. It also allows the view editor to be made available to more users while preventing them from modifying specific view sets and menus during a view editor session. An audit trail records all changes made to view sets and menus.

A range of usability and accessibility enhancements includes mixed case field hints, better data formatting, and an enhanced starter set of views and menus which offers a default environment that is similar to that of the ISPF end-user interface.

Kill function: Customers have requested the ability to cancel suspended or looping tasks without having to cancel and restart the CICS region if the tasks cannot be cancelled using, for example, existing CEMT commands.

Currently the Purge function allows a task to be cancelled; data and system integrity are maintained. The Forcepurge function allows a task to be cancelled; system integrity is maintained; however, data integrity may be lost. The new Kill function allows a task to be cancelled in situations where the Purge and Forcepurge functions prove to be ineffective.

The Kill function allows looping or suspended tasks to be removed from a CICS region, without the need to cancel and restart the region, enabling the system to be kept running during critical periods. Two approaches are offered:

1. CEMT and the SPI have been enhanced by the addition of a new KILL option to the CEMT SET TASK, CEMT SET CONNECTION, and CEMT SET TERMINAL commands, and the EXEC CICS equivalents. This allows tasks to be cancelled where that could not have been achieved using the PURGE or FORCEPURGE options. These functions can also be invoked from CICSPlex SM.
2. A new CEKL transaction can be invoked from a console, and runs on its own Task Control Block (TCB) within CICS. This means it can be used even in the event of a lockout of the main CICS Quasi-Reentrant (QR) TCB. CEKL INQUIRE TASK allows information to be listed about tasks in the CICS region. CEKL SET TASK allows the cancelling of a selected task using the PURGE, FORCEPURGE, or KILL option.

An audit trail is provided for transactions that have been subjected to Kill.

It should be appreciated that the Kill function cannot guarantee data or system integrity.

In addition to the provision of the Kill function, enhancements are provided to existing support for cancelling tasks by improvements that include ensuring that deferred purges are attempted more frequently, in particular on subsequent suspends.

The Kill function will be made available via the service channel beginning November 7, 2003 for CICS TS V2.2, and early in 2004 for CICS TS V2.3. The applicable service is:

> For CICS TS V2.2: PTFs for APARs PQ73474, PQ79276, and PQ79277
> For CICS TS V2.3: numbers not yet available

Other systems management functions: A range of enhancements is included to the EXEC CICS SPI and to CICSPlex SM, and extensions to the CICSPlex SM Web User Interface. Some of the extensions to the Web User Interface provide improved ease of use, such as in data scrolling and in navigating between views.

A new EXTRACT function has been added to the CICS statistics utility program, DFHSTUP, which allows a user program to be written to analyze the CICS statistics records. Sample EXTRACT programs are provided which include a statistics exception event reporter, which highlights where a CICS limit condition (such as MXT, or file string waits) has been exceeded. The event reporter provides a significantly easier method of analyzing the CICS statistics records in order to determine if some corrective or preventative tuning action is required.

Systems management enhancements introduced in the previous releases of CICS TS V2 include CICSPlex SM remote MAS agent for Windows™; CICSPlex SM communications enhancements; and CICSPlex SM BAS integration.

Other benefits of CICS TS V2.3

The DFHCNV macro for ASCII/EBCDIC data conversion of COMMAREAs has been changed to allow templates to be keyed by resource type and by either full resource name, or generic prefix. This simplifies the definition and maintenance of conversion tables.

An enhancement is provided to EXEC CICS WEB READ FORMFIELD, which now supports fields on HTML forms created with the GET HTTP method.

IBM WebSphere Studio Enterprise Developer V5 (WSED) is an Integrated Development Environment (IDE) that helps developers create dynamic Web applications including support for Java 2 Enterprise Edition (J2EE), XML and Web services technologies that can integrate WebSphere software and traditional transactional environments, including CICS, IMS™, and Batch systems. It promotes the reuse and transformation of existing applications, and supports Java, COBOL, PL/I, and Enterprise Generation Language (EGL) development. One free license for WSED is included with CICS TS V2.3.

A range of significant enhancements has been made to the Information Center. For information on these, refer to the **Publications** section.

Support by CICS Tools and related products

IBM provides a range of CICS Tools and other products which support use of CICS Transaction Server for z/OS Version 2. All of these products may be used with CICS TS V2.3. For more information on CICS Tools, refer to:

http://www-3.ibm.com/software/htp/cics/products/tools.html

For information on the required levels and PTFs for support of CICS TS V2.3 by CICS Tools, refer to the General Information section of the Preventive Service Planning (PSP) bucket for CICS TS V2.3 on RETAIN®. For this, go to the IBM CICS support page, at:

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

Select Preventive Service Planning (under the heading **Plan**). This information will also be in the PSP bucket on RETAIN for each of the CICS Tools.

Information on the required levels and PTFs for support of CICS TS V2.3 by CICS Tools, as at the time of this announcement, is also given in the **Software requirements** section, below.

For the latest announcements of CICS Tools, refer to the **Reference information** section.

Additional information

IBM intends to include the runtime functions of MQSeries® Integrator Agent for CICS Transaction Server (MQIAC) in a future release of CICS Transaction Server. MQIAC is the successor product to Message Driven processor (MDp), formerly marketed by Early, Cloud & Company.

Education support

The training offerings listed below are available. Note that most countries have course codes in the format of WWWWsss, where WWWW is the worldwide course code, and sss is a 1 to 3 character suffix.

- **CICS Transaction Server for z/OS: EJB Support and More!**, worldwide course code CS04. This is a no-charge Web-based course teaching the features and functions of CICS Transaction Server for z/OS V2. It can be accessed at:

  http://www-3.ibm.com/software/webservers/learn/cs04/

- **CICS TS for OS/390 Transition: From V1 To V2**, worldwide course code CI95. This is a classroom course for system programmers who need information helpful for planning migrations from CICS TS V1.3 to CICS TS V2.2.

- **CICS TS for z/OS Transition to V2.3**, worldwide course code CI97. This course will become available in early 2004. This is a classroom course for system programmers who need information helpful for planning migrations from prior CICS versions to CICS TS V2.3.

- **Fastpath for Migrating CICS/ESA® Applications to CICS Transaction Server for z/OS V2**, worldwide course code CI96. This classroom course teaches students basic need-to-know information to transition a set of CICS/ESA applications to the latest release of CICS. It does not teach new functional enhancements, but concentrates on migrating existing applications.

- **Enabling Java Support in CICS TS V2**, worldwide course code is CI21. This classroom course teaches students how to enable Java support in CICS Transaction Server for z/OS, including how to configure an EJB container and how to deploy enterprise beans in the CICS environment.

- **Connecting CICS to WebSphere Application Server via CICS Transaction Gateway**, worldwide course code CI71. This classroom course shows how to use the CICS Transaction Gateway (CICS TG) to access CICS Transaction Server for z/OS applications.

- **CICS TS for OS/390 Planning for Recovery**, worldwide course code CI28. This course covers the recovery and restart facilities of CICS Transaction Server for z/OS, using classroom lectures and classroom paper projects.

- **CICSPlex System Manager Administration**, worldwide course code CI76. This classroom course will teach the students how to install, configure, and use functions of the CICSPlex System Manager (SM) component of CICS Transaction Server.

- **CICS TS for OS/390 Problem Analysis**, worldwide course code CI29. This classroom course teaches the CICS system programmer how to analyze problem related information provided by CICS Transaction Server.

- **CICS Application Programming with Java**, worldwide course code CI19. This three-day classroom course teaches Java application programmers how to develop basic CICS applications written in Java.

- **CICS Fundamentals**, worldwide course code CI01. This course teaches about 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 TS for z/OS Basic Tailoring**, worldwide course code CI20. This classroom course is intended for Systems Programmers who will be installing and tailoring CICS Transaction Server for z/OS for the first time.

- **CICS Application Programming**, worldwide course code CI17. This classroom course teaches you how to design, code and debug modern CICS application programs for e-business or traditional environments.

For additional information, visit the IBM IT Education Services Web page and select your country to view available offerings:

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

This site has descriptions of 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 site, call IBM IT Education Services at 800-IBM-TEACH (426-8322) for additional details or to enroll in a course.

Technical information

Specified operating environment

Hardware requirements:

Processors: The basic requirement is for a processor that supports the prerequisite operating system and has sufficient processor storage to meet the requirements of the operating system, CICS TS V2, the application programs, the access methods, and all other software being run.

This includes the IBM e(logo)server zSeries® 900.

Virtual storage: Requirements for virtual storage for the product with Java and enterprise beans are included in the *Performance Guide.*

Parallel Sysplex® support: A Parallel Sysplex environment is required by each of the data-sharing facilities supported by CICS, and by the MVS™ system logger′s log stream merging facility. This requires one or more coupling facilities with their associated coupling links installed, an IBM Sysplex Timer® to provide a common external time source, and sufficient 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 ESCON® director to provide the paths.

CICS support for data sharing can be used to access data in IMS databases, DB2 databases, VSAM data sets, CICS temporary storage, coupling facility data tables, or named counters.

Workstation components: WebSphere Application Server V5 requires any Intel™-based PC capable of running Windows+ NT Server V4.0, SP™ 6a, or later, Windows 2000 Server, or Advanced Server SP 3, or later is required.

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

Software requirements: Note that the **Program Directory** (GI10-2560) will normally contain the latest level of information on software requirements, particularly concerning service levels of supported products.

Operating environment:

- The minimum required level of operating system for CICS Transaction Server for z/OS V2.3 is z/OS (5694-A01) Version 1 Release 4. Note that the product will not initialize unless the minimum prerequisite level of operating system is installed.
- Note that the Language Environment library SCEERUN must be available to CICS during CICS initialization, by inclusion in either the STEPLIB concatenation or the LNKLIST. Language Environment services are used by a number of CICS functions.
- For Java application programs or for support of enterprise beans with CICS TS V2.3, the IBM SDK for z/OS, Java 2 Technology Edition, featuring persistent reusable JVM technology, Version 1.4, with PTF for APAR PQ79281, is required. This is program number 5655-I56.
  - The IBM SDK for z/OS, Java 2 Technology Edition, Version 1.4, is available, at no charge, on tape or by download from:

    http://www.s390.ibm.com/java/

CICS TS V2.3 supports Java program objects: but refer to restrictions and statement on the future in the **Compatibility** section. Java program objects are Java applications that have been compiled using the VisualAge® for Java Enterprise Toolkit for OS/390 (ET/390) byte-code binder (sometimes called high-performance compiler for Java).

For developing Java programs (including enterprise beans) for use with CICS TS V2.3, the members of the WebSphere Studio family, at Version 4 and Version 5, are supported. This support includes the ability to develop DB Beans. For more information on DB Beans and for their relation to Data Access Beans, refer to the **Compatibility** section. CICS TS support for JDBC V2.0 requires DB2 Version 7 with APAR PQ56655 (UQ65774) applied.

The CICSPlex SM remote MAS agent for Windows may be used with TXSeries™ for Windows NT™ Version 5.0.

For all supported levels of COBOL, PL/I, C and C++ compilers, including support for applications written using old compilers, refer to the table in the **Application programming summary** section.

The following levels of other products are supported for use with CICS TS V2.3:

- IMS Database Manager Version 7 (5655-B01)
- IMS Database Manager Version 8 (5655-C56)
- DB2 Universal Database Server for OS/390 Version 6.1 (5645-DB2)
- DB2 Universal Database Server for OS/390 Version 7.1 (5675-DB2)
- DB2 Universal Database for z/OS, Version 8.1 (5625-DB2)
  - For SQLJ/JDBC support, DB2 Universal Database Server for OS/390 Version 6.1 requires APAR PQ66125 (PTF UQ73040); and DB2 Universal Database Server for OS/390 Version 7.1 requires APAR PQ66126 (PTF UQ73041).
  - The DB2 Group Attach function requires DB2 Universal Database for OS/390 Version 7.1, with APARs PQ44614, PQ45691, and PQ45692.
- MQSeries for OS/390 Version 2.1 (5655-A95) with APAR PQ35501, or later, including WebSphere MQ for z/OS, V5.3 (5655-F10)
- Tivoli Decision Support for OS/390 (5698-ID9) Version 1.6 with necessary service applied (formerly Tivoli Performance Reporter for OS/390 (5695-101))
- Tivoli Business Systems Manager (5698-BSM) Version 1.5
- CICS Universal Client Version 5.0
- CICS Transaction Gateway Version 5.0

The resource manager for enterprise beans requires any Web browser.

For the shipped WebSphere Application Server, V5:

- Java requirements are provided in the package.
- For its Windows operating environment requirements refer to:

  http://www-3.ibm.com/software/webservers/appserv/doc/v50/prereqs/was_v502.htm

JNDI support for enterprise beans requires either an LDAP server, such as the LDAP server provided in SecureWay® Security Server and licensed as part of the base z/OS operating system, or a COSNaming server, such as that provided in WebSphere Application Server, V5.0, shipped with this product.

For the Information Center as a server:

- Windows 2000
- Windows XP
- AIX® V5.1, or later

For browsing the Information Center:

- A browser that supports HTML 4.0 and the Document Object Model (DOM) standard. Suitable browsers include Microsoft™ Internet Explorer Version 6.0, Netscape Navigator V7.0, and Mozilla V1.0, running on Windows 2000 or Windows XP.
- PDF files shipped with the Information Center have been generated using Adobe Acrobat Distiller 6.0 at the Acrobat 6.0 (PDF 1.5) level. They can be read using Adobe Acrobat Reader 5.0, but Reader 6.0 is necessary if the accessibility features of Distiller 6.0 are required.

WebSphere Studio Enterprise Developer V5.0, or later (WSED) is an Integrated Development Environment (IDE) that supports development of applications in a range of languages, including Java, COBOL, and PL/I, and a range of environments including CICS TS V2.3.

Supporting levels of CICS Tools and related products: This information applies at the time of announcement. For up-to-date information, as stated above, refer to information on RETAIN.

- CICS Interdependency Analyzer for z/OS (CICS IA) V1.2 runs with CICS TS V2.3. PTF for APAR PQ79057 is required. A later PTF will provide exploitation of new function.
  - CICS IA V1.1 does not run with CICS TS V2.3.
- CICS Performance Analyzer for z/OS (CICS PA) V1.3, with PTF for APAR PQ79013, runs with CICS TS V2.3 and reports performance data for its new function.
  - CICS PA V1.2 will ignore SMF 110 data from CICS TS V2.3.
- CICS Performance Monitor for z/OS V1.2, with appropriate service, will run with and provides performance information for the new function of CICS TS V2.3.
  - CICS PM V1.2 without appropriate service will run with CICS TS V2.3, but does not provide information on new functions.
  - CICS PM V1.1 is not supported with CICS TS V2.3.
- CICS VSAM Recovery Version 3 (either release) runs with CICS TS V2.3. No PTF is required.
- CICS Business Event Publisher for MQSeries Version 1.1 may be used with CICS TS V2.3. PTF for APAR PQ79056 is required.
- CICS Online Transmission Time Optimizer for z/OS V1.1 may be used with CICS TS V2.3. No PTF is required.
- Session Manager for z/OS V1.1 may be used with CICS TS V2.3. No PTF is required.
- MQSeries Integrator Agent for CICS Transaction Server V1.1.2 runs with CICS TS V2.3.
- Fault Analyzer for z/OS and OS/390 V3.1, with PTF UQ77156 for APAR PQ74048, or Fault Analyzer for z/OS V4.1, will run with CICS TS V2.3.
- Debug Tool for z/OS and OS/390 V3.1, with PTF UQ77541 for APAR PQ73643, or Debug Tool for z/OS V4.1, will run with CICS TS V2.3.

Compatibility

DB beans: If Data Access Beans have been developed using VisualAge for Java Version 3.5 or 4.0 for use with CICS Transaction Server for z/OS, they will need to be converted to DB Beans for use with CICS TS V2.3. For information on compatibility and migration between Data Access Beans and DB Beans, refer to the information on transitioning from VisualAge for Java to WebSphere Studio. Migration information is given in the documentation in the WebSphere Studio library. Alternatively, go to:

http://www.software.ibm.com/wsdd/zones/vajava/

or:

http://www7b.software.ibm.com/wsdd/zones/studio/transition.html

CICSPlex SM support: The CICSPlex System Manager element of CICS TS V2.3 does not support the following CICS products, which are no longer in service:

- CICS/ESA Version 4.1 (5655-018)
- CICS Transaction Server for OS/2® Version 4.1 (5622-808)

For CICSPlex SM support of these CICS products, a CMAS at an appropriate lower level may be used. They can be controlled from the CICSPlex SM element of this product through CICS TS V1.3 or CICS TS V2.2.

As indicated in a previous announcement, CICS TS V2.3 does not include CICSPlex SM Agent support for CICS Transaction Server for OS/2 V4.1.

Common Connector Framework (CCF): The Common Connector Framework (CCF) was a predecessor interface to the CCI. It is now functionally stabilized. The CCF has been available in CICS TS V2.1 and V2.2 as the **CICS Connector for CICS TS**. Runtime function is provided in CICS TS V2.3, but will be removed in a future release. Compile-time function is only available in VisualAge for Java, and is not provided in the WebSphere Studio toolset. Note that service support for VisualAge for Java V4.0 (Professional Edition) ceases on December 31, 2003.

Customers should migrate their applications to the CCI Connector for CICS TS.

ECI Base Classes (ECIREQUEST): The ECI Base Classes (ECIREQUEST, which were introduced for compatibility with the CICS Transaction Gateway) have now been stabilized. These classes will be removed in a future release of CICS Transaction Server. The recommended replacement is the CCI Connector for CICS TS, described above.

EXEC CICS SIGNON exit: As previously announced, the semantics of the EXEC CICS SIGNON/SIGNOFF command were changed in CICS TS V2.2, when the ability to alter the current security identity of an executing CICS terminal attached transaction was removed.

A temporary migration aid was provided which modifies the behavior to that obtaining in CICS TS V1.3. This migration aid remains in CICS TS V2.3, but will be removed in a future release.

Information is available on the CICS Web site about application design changes needed for the new behavior.

One-byte console ID support: Four-byte console IDs have been available in MVS and its successors for many years. Use of one-byte console IDs has remained for migration and compatibility purposes, but will be removed in the next release of CICS Transaction Server. This means that the CONSOLE() attribute will be removed from the RDO

definition for TERMINAL, and the CONSNAME() attribute must be used instead.

TCAM support: It is planned that support for ACF/TCAM (DCB) will be removed in a future release of CICS Transaction Server. Customers who have a continued need for a queued communications method should consider modifying their applications to use WebSphere MQ.

BTAM support: It is planned that support for BTAM applications will be removed in a future release of CICS Transaction Server.

Application programming summary: The following summarizes the support within CICS TS V1.3, CICS TS V2.2, and CICS TS V2.3 for application programming considerations. For full information, refer to the *CICS Transaction Server for z/OS Version 2 Release 3: Release Guide*, GC34-6218.

COBOL Compilers

Compiler	Compiler in Service?	CICS Translator Support	CICS Runtime Support (refer to note 4)	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
OS/VS COBOL (5740-CB1, 5734-CB4, and 5740-LM1) (see note 2)	No	—CICS TS V1.3 supported —CICS TS V2.2, V2.3: not supported	—CICS TS V1.3, V2.2, V2.3: the Language Environment component of z/OS is required; applications will run unchanged. This function will be removed in the next release of CICS TS	No	No
VS COBOL II (5668-022, 5668-023, and (5668-958)	No	—CICS TS V1.3: supported with COBOL2 option —CICS TS V2.2; V2.3: supported only with COBOL3 option	—CICS TS V1.3, V2.2: the Language Environment component of z/OS is required; applications will run unchanged. —CICS TS V2.3: the Language Environment component of z/OS is required; CICS will use Language Environment runtime exclusively. Application behavior may change (refer to note 7)	Yes, with res-trictions	No

Compiler	Compiler in Service?	CICS Translator Support	CICS Runtime Support refer to note 4)	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
SAA® AD/Cycle® COBOL/370™ (5688-197) 5668-958)	No	—CICS TS V1.3 supported with COBOL2 option —CICS TS V2.2, V2.3: supported only with COBOL3 option	Language Environment	Yes, with res-trictions	No
COBOL for MVS and VM (5688-197)	No				
COBOL for OS/390 and VM V2 (5648-A25)	Yes				
COBOL for OS/390 and VM V2 (5648-A25) with PTF for APAR PQ45462	Yes	Can use integrated translator (refer to note 3)	Language Environment	Yes, with res-trictons	Yes, with res-trictions
Enterprise COBOL for z/OS and OS/390 V3 (5655-G53)	Yes	Can use integrated translator (refer to note 3)	Language Environment	Yes	Yes

PL/I Compilers

Compiler	Compiler in Service?	CICS Translator Support	CICS Runtime Support (refer to note 4)	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
OS PL/I Optimizing Compiler V1 (5724-PLI)	No	Yes	—CICS TS V1.3, V2.2, V2.3: the Language Environment component of z/OS is required; applications will run unchanged. This function will be removed in the next release of CICS TS	Yes, with res-trictions	No
OS PL/I Optimizing Compiler V2 (5668-909, 5668-910, and 5668-911)	No				

Compiler	Compiler in Service?	CICS Translator Support	CICS Runtime Support (refer to note 4)	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
SAA AD/ Cycle PL/I for MVS and VM (5688-235)	No	Yes (refer to note 5)	Language Environment	Yes, with res- trictions	No
PL/I for MVS and VM V1 (5688-235)	No				
VisualAge PL/I for OS/390 V2 (5655-B22)	No				
Enterprise PL/I for z/OS and and OS/390 V3 (5655-H31)	Yes	Can use integrated translator (refer to note 5)	Language Environment	Yes	Yes

C or C++ Compilers

Compiler	Compiler in Service?	CICS Translator Support	CICS Runtime Support (refer to note 4)	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
C/370™ V1 (5688-040)	No	Yes	—CICS TS V1.3, V2.2, V2.3 the Language Environment component of z/OS is required; applications will run unchanged. This function will be removed in the next release of CICS TS	Yes, with res- trictions	No
C/370 V2 (5688-187 and 5688-188)	No				
SAA AD/ Cycle C/370 (5688-216)	No	Yes	Language Environment	Yes, with res- trictions	No
C/C++ for MVS/ESA™ (5655-121)	No				
C/C++ for OS/390 (component of 5647-A01)	Yes				

Compiler	Compiler in Service?	CICS Translator Support	CICS Runtime Support (refer to note 4)	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
C/C++ for z/OS and OS/390 (component of 5694-A01)	Yes	Yes	Language Environment	Yes	No

Java Support

Compiler/ JVM	Function in Service?	CICS Translator Support	CICS Runtime Support	Use of IBM Distributed Debugger (refer to note 1)	Use with WebSphere Studio Enterprise Developer
VisualAge for Java, Enterprise Edition V2 — Enterprise Toolkit for OS/390 (5655-JAV) (refer to Note 6)	No	No translator required — use JCICS classes. Supported by CICS TS TS V1.3, CICS TS V2.2 CICS TS V2.3	Language Environment	Yes, with res-trictions	No
Java for OS/390 at SDK 1.1.8	Yes	No translator required — use JCICS classes. Supported by CICS TS V1.3 only	Language Environment	Yes	Yes
Developer Kit for OS/390 Java 2 Technology Edition, V1.3.1 (5655-D35)	Yes	No translator required — use JCICS classes. Supported by CICS TS V2.2 only	Language Environment	Yes	Yes
SDK for z/OS, Java 2 Technology Edition, V1.4 (5655-I56)	Yes	No translator required — use JCICS classes. Supported by CICS TS V2.3 only	Language Environment	Yes	Yes

Notes

1. IBM Distributed Debugger is available as a component of WebSphere Studio Enterprise Developer V5, and other IBM products. For more information, refer to:

   http://www.ibm.com/software/awdtools/debugger/

2. This is a clarification of the information on OS/VS COBOL given in previous announcements.
3. The integrated translator function requires IBM COBOL for OS/390 and VM Version 2 Release 2, with PTF for APAR PQ45462, or Enterprise COBOL for z/OS and OS/390 Version 3. Note, however, that the COBOL3 translator option must be active.
4. Refer to the publications for information on the use of the Language Environment condition handler.
5. The integrated translator function requires VisualAge PL/I for OS/390, Version 2 Release 2.1, with PTF for APAR PQ45562, or Enterprise PL/I for z/OS and OS/390 Version 3.
6. Refer to the statement below on migration of Java Program Objects.
7. Refer to the paper **Language Environment within CICS TS: Questions and Answers**, available at:

   http://www-3.ibm.com/software/htp/cics/library/indexes/whitepapers.html

Migration of Java program objects: Java program objects are programs compiled with the VisualAge for Java Enterprise Toolkit for OS/390 (ET/390) byte-code binder (they are compiled with the hpj command, and are sometimes referred to as compiled Java programs or as HPJ programs). To assist in migration, support is continued in CICS TS V2.3 for Java program objects. However, this will be the last release of CICS Transaction Server that provides this support.

Customers migrating Java program objects to CICS TS V2.3 are recommended to rebuild and run them in JVM mode under CICS.

Assembler modules: No change has been made in CICS TS V2.3 to the support for Assembler modules. Assembler source is translated and compiled without any migration issues.

There is no Integrated Translator support for assembler compilation.

The IBM Distributed Debugger does not support Assembler modules. WebSphere Studio Enterprise Developer can be used to generate Assembler modules.

Performance considerations

Traditional workloads: Comparisons with CICS TS V2.2, using an IBM internal benchmark, show that CICS TS V2.3 has similar performance characteristics in terms of Internal Transaction Rate (ITR).

Java Support: The Java support of CICS TS V2.3 has been enhanced to support the use of a shared class cache across multiple JVMs. The startup time and storage required for JVMs that use this shared class cache is significantly reduced compared with the previous model of standalone JVMs. The Java support has also been enhanced to include support for applications that do not require all class state data to be reset at the end of a transaction. The use of the JVM in this continuous mode will reduce CPU per transaction by eliminating the cost of the JVM reset.

EJB support: The cost of using the EJB infrastructure in CICS TS V2.3 has been significantly reduced compared to CICS TS V2.2. Measurements have shown that the CPU per transaction for a simple stateless EJB has been reduced by approximately 20% compared to CICS TS V2.2.

Considerations when migrating to CICS TS V2: On migrating to a new level of CICS TS, such as from CICS TS V1.3 to CICS TS V2, it should be appreciated that certain actions may be necessary to optimize the use of the new features of the product.

An important area concerns the use of the Open Transaction Environment (OTE) with the CICS-DB2 attachment facility, which can give significant performance improvements, especially with heavy DB2 workloads. Realization of these improvements requires an understanding of OTE and of the concept of threadsafe transactions. Also note that, with OTE, CPU times as reported in CICS TS V2 include time spent in DB2, which is also reported by DB2.

It should also be remembered that, if moving to a machine with a smaller number of more powerful processors, the LPAR configuration normally requires modification to ensure adequate processing capability for the CICS TCBs.

For more detailed discussion of these and other factors, refer to **Migration planning for threadsafe programming and the open transaction environment (OTE)** in the *Migration Guides* in the CICS Information Center.

User group requirements: Requirements from the worldwide user group communities satisfied or partially satisfied by enhancements in CICS TS V2.3 include the following:

Requirement numbers	Description
MR031301584, MR0313012749 MR0320001442, MR1213016516 MR00074294	Addition of new bridge vectors to support the ACCUM option on BMS requests for transactions using the Link3270 bridge
MR00073252 , MR00048961	Read time-out on MRO connections
MR081001491, MR1010013056	Explicitly forgetting sessions awaiting
MR1009013142	CICS must be the first user to establish the XM environment in an address space

Requirement numbers	Description
MR111902664	Provide use count for Java programs
MR0313036911	Request for CICS to provide way to redirect STDOUT/STDERR to non HFS location
MR052102384, MR0627025233	Produce transaction dump for APCW and ALIG abends
MR050200670	CEDX debugging of remote background transaction
MR1130015725	Support generic transid and program on DTCN on MVS
Guide/Share/Europe: DBCICS99001/MR00074295	Java support for Web and document API
MR0512004257	Provide support for administration functions via the CICSPlex SM Web User Interface
MR0308005231	CICSPlex SM administration and the CICSPlex SM Web User Interface
MR0123026819	CICSPlex SM Web User Interface should be able to display/interpret data in HEX or CHAR form like the TSO End User Interface does
MR0622003545	CICSPlex SM Web User Interface EYUSTARTTASK missing data
MR00069712	Improve CICSPLEX SM migration path on a single MVS image
MR0103021335	CICSPlex SM maintenance should not impact production
MR00074441	Remove need to IPL for applying maintenance

Planning information

Elements included in CICS Transaction Server for z/OS V2.3: The base CICS element of CICS TS V2.3 is CICS V6.3; the CICSPlex System Manager element is CICSPlex SM V2.3. Other elements included in CICS TS V2.3 are:

- REXX Development System for CICS/ESA
- REXX Runtime Facility for CICS/ESA
- CICS Application Migration Aid Version 1.1
- WebSphere Application Server V5, program number 5630-A36. This is licensed under the IBM International Program License Agreement (IPLA), and its use is subject to restrictions refer to the **Terms and conditions** section of this announcement.

Also shipped with the product is WebSphere Studio Enterprise Developer V5, program number 5724-B67, with an unrestricted entitlement for one user install.

Packaging: The following items are shipped together with the basic machine-readable material for the product:

- Hardcopy publications as listed in the publications section
- CD-ROM: CICS Information Center (SK3T-6957)
- Media Pack: WebSphere Application Server V5.0 (includes IPLA licensing material), program number 5630-A36. Also shipped is a Proof of Entitlement for installation in five processors. Note that the use of this is subject to restrictions (refer to the **Terms and conditions** section.
- Media Pack: WebSphere Studio Enterprise Developer V5.0 (includes IPLA licensing material), program number 5724-B67. Also shipped is a Proof of Entitlement for one user install, allowing full use without restrictions.

Additional items packaged will include specification sheets of some related products.

If the SOAP for CICS optional feature is ordered, the items applicable to that feature will also be shipped, as described in its announcement refer to **Reference information**

Security, auditability, and control

For information on security, refer to the *RACF Security Guide*, SC34-6249.

This release of CICS TS V2 adds support for the Asserted Identity security method. For more information, refer to **Enhancements to network connectivity for e-business enablement** above.

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

Advance publications: The publication *CICS Transaction Server for z/OS Version 2 Release 3: Release Guide*, GC34-6218, is available now for download in PDF format, free of charge, from:

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

Ordering z/OS through the Internet

ShopzSeries (formerly SHOPS390) 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. and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries Web site at:

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

Current licensees

Current licensees of CICS Transaction Server for z/OS Version 2 will be sent a program reorder form that can be returned directly to IBM Software Delivery and Fulfillment.

Reorder forms are scheduled to be mailed by January 2, 2004. Reorder forms returned to IBM Software Delivery and Fulfillment. will be processed within ten workdays of receipt.

When CICS TS V2.3 is available, CICS TS V2.2 can no longer be ordered.

New licensees

Shipment will begin on the planned availability date.

- Orders that ship before the planned availability will receive CICS Transaction Server for z/OS V2.2.
- Orders that ship after the planned availability date will receive CICS Transaction Server for z/OS V2.3. Unless a later date is specified, an order is scheduled for the week following order entry.

The ordering information for CICS Transaction Server for z/OS Version 2 (5697-E93) is unaffected by this announcement. However, some features have previously been listed only in different announcements. The whole ordering information is repeated here for the convenience of users.

The base CICS TS product code can only be ordered through Customized Offerings. However, an MES order may be used for optional components that are not specified on the base order. For these orders, specify:

Type: 5697 Model: E93

Basic license: To order a basic license, specify the program number 5697-E93. Specify feature number 9001 for asset registration. Note that this registration is required even though delivery is by Customized Offerings (CBPDO and ServerPac).

Entry Support License (ESL): To order an ESL license, specify the program number. Specify feature number 9001 for asset registration.

Specify the applicable ESL OTC feature number, below. Also specify the feature number as described under **Basic machine-readable material,** below.

Program number/description	ESL One-Time Charge feature number
5697-E93 Entry Support License	0024

ESL machines can be determined by referring to the IBM Entry End User/390 Attachment (Z125-4379).

Parallel Sysplex License Charge (PSLC) Basic License: To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the PSLC Base feature. If applicable, specify the PSLC Level A and PSLC Level B, and PSLC Level C, PSLC Level D features and quantity.

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

Also, specify the feature number of the desired distribution medium.

Parallel Sysplex license charge features

Machine MSU Capacity	PSLC feature number	PSLC Basic License MLC feature description
1	0001	PSLC Base, 1 MSU
2	0002	PSLC Base, 2 MSUs
3	0003	PSLC Base, 3 MSUs
4 — 45	0004	PSLC Level A, 1 MSU
	0005	PSLC Level A, 42 MSUs
46 — 175	0006	PSLC Level B, 1 MSU
	0007	PSLC Level B, 10 MSUs
	0008	PSLC Level B, 50 MSUs
176 — 315	0009	PSLC Level C, 1 MSU
	0010	PSLC Level C, 10 MSUs
	0011	PSLC Level C, 50 MSUs
316 or more	0012	PSLC Level D, 1 MSU
	0013	PSLC Level D, 50 MSUs
NA	0014	PSLC NC Identifier

Example 1: For a single machine with 11 MSUs, the PSLC features would be:

0003 — quantity 1
0004 — quantity 8

Example 2: For two machines in a Parallel Sysplex, which have an aggregation of 60 MSUs, the PSLC features would be:

- PSLC chargeable license #1:

  0003 — quantity 1
  0005 — quantity 1
  0006 — quantity 5
  0007 — quantity 1

- PSLC no-charge license #2:

  0014 — quantity 1

Workload License Charge (WLC) basic license: To order a basic license, specify the program number and feature number 9001 for asset registration. Also, specify the feature number of the desired distribution medium.

Variable Workload License Charge features

VWLC Feature Description	VWLC feature number
Base, Level 0 includes 3 MSUs	4100
Additional qty, Level 0 up to 45 MSUs	4101
Registration Base, Level 0 incl 1 MSU	4102
Registration additional quantity Level 0 up to 45 MSUs	4103
Additional qty, Level 1 46 — 175 MSUs	0029
Registration additional quantity Level 1 46 — 175 MSUs	0031
Additional qty, Level 2 176 — 315 MSUs	0032
Registration additional quantity Level 2 176 — 315 MSUs	0033
Additional qty, Level 3 316 — 575 MSUs	0034
Registration additional quantity Level 3 316 — 575 MSUs	0035
Level 3, Per 50 MSUs for machine capacity of 316 — 575 MSUs	0036
Level 3, Registration per 50 MSUs for machine capacity of 316 — 575 MSUs	0037
Additional qty, Level 4 576 — 875 MSUs	0038
Registration additional quantity Level 4 576 — 875 MSUs	0039
Level 4, Per 50 MSUs for machine capacity of 576 — 875 MSUs	0040
Level 4, Registration per 50 MSUs for machine capacity of 576 — 875 MSUs	0041
Additional qty, Level 5 876 — 1315 MSUs	4401
Registration additional quantity Level 5 876 — 1315 MSUs	4403
Level 5, Per 50 MSUs for machine capacity of 876 — 1315 MSUs	4402
Level 5, Registration per 50 MSUs for machine capacity of 876 — 1315 MSUs	4404
Additional qty, Level 6 1316 — 1975 MSUs	4405
Registration additional quantity Level 6 1316 — 1975 MSUs	4407
Level 6, Per 50 MSUs for machine capacity of 1316 — 1975 MSUs	4406
Level 6, Registration per 50 MSUs for machine capacity of 1316 — 1975 MSUs	4408
Additional qty, Level 7 1976+ MSUs	4409
Registration additional quantity Level 7 1976+ MSUs	4411
Level 7, Per 50 MSUs for machine capacity of 1976+ MSUs	4410
Level 7, Registration per 50 MSUs for machine capacity of 1976+ MSUs	4412

S/390® Usage Pricing (Usage License Charge) basic license: To order a basic license, specify the appropriate program and feature number, if required, for asset registration. Specify the applicable S/390 Usage Pricing feature. Also, specify the feature number of the desired distribution medium.

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

The customer pricing will be determined by selecting either:

Feature 1 (if usage is below 0.25 MSU)
Feature 2 (if usage is between 0.26 and 0.50)
Feature 3 (if usage is between 0.51 and 1.0)

Feature 3+ (# MSUs from 2-11 times the charge associated with feature number 4) + (# MSUs from 12-44 times the charge associated with feature number 5) + (# MSUs from 45-78 times the charge associated with feature number 6) + (# MSUs above 78 times the charge associated with feature number 7 — if applicable)

Usage License Charge features

Description	Usage pricing feature number
0 to 0.25 MSU Base	0015
0.26 to 0.5 MSU Base	0016
0.51 to 1.0 MSU Base	0017
Level A Chg/MSU (2 to 11 MSUs)	0018
Level B Chg/MSU (12 to 44 MSUs)	0019
Level C Chg/MSU (45 to 78 MSUs)	0020
Level D Chg/MSU (Above 78 MSUs)	0021
Level D per 50 MSUs (Above 78 MSUs)	0022
NC ID Feature	0023

Examples for ordering:

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

Order quantity 1 of the 0.26 to 0.5 MSU base feature

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

Be rounded up to 7.0 MSUs

Order quantity 1 of the “0.51 to 1.0 MSU” base feature

Order quantity 6 of the Level A 1 MSU feature

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

Order quantity 1 of the “0.51 to 1.0 MSU” base feature

Order quantity 10 of the Level A 1 MSU feature

Order quantity 4 of the Level B 1 MSU feature

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

Order quantity 1 of the “0.51 to 1.0 MSU”base feature

Order quantity 10 of the Level A 1 MSU feature

Order quantity 33 of the Level B 1 MSU feature

Order quantity 6 of the Level C 1 MSU feature

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

Order quantity 1 of the “0.51 to 1.0 MSU” base feature

Order quantity 10 of the Level A 1 MSU feature

Order quantity 33 of the Level B 1 MSU feature

Order quantity 34 of the Level C 1 MSU feature

Order quantity 7 of the Level D 1 MSU feature

Growth Opportunity License Charge (GOLC): To order a GOLC software, specify the program number, feature number 9001 for asset registration, and the GOLC monthly charge feature number from the table below. Also, specify the feature number for the desired distribution medium.

GOLC category	GOLC feature number
H30	0025
H50	0026
H70	0027

zSeries Entry License Charge (zELC): To order zELC software, specify the program number, feature number 9001 for asset registration, and the zELC monthly charge feature number from the table below. Also, specify the feature number for the desired distribution medium.

z800 Models	zELC feature number
Model 0E1 Basic	4009
Model 0A1 Basic	4001
Model 0B1 Basic	4002
Model 0C1 Basic	4003
Model 0X2 Basic	4010
Model 001 Basic	4004
Model 0A2 Basic	4005
Model 002 Basic	4006
Model 003 Basic	4007
Model 004 Basic	4008

Entry Workload License Charge (EWLC): To order EWLC software, specify the program number, feature number 9001 for asset registration, and the EWLC monthly charge feature number from the table below. Also, specify the feature number for the desired distribution medium.

EWLC feature description	EWLC feature number
Level 1 incl 3 MSU, Basic Per User Base EWLC	4104
Level 1 4-17 MSU, Per Usage Additional Quantity EWLC	4105
Level 2 18-30 MSU, Per Usage Additional Quantity EWLC	4106
Level 3 31-45 MSU, Per Usage Additional Quantity EWLC	4107
Level 4 46-87 MSU, Per Usage Additional Quantity EWLC	4108
Level 5 88-175 MSU, Per Usage Additional Quantity EWLC	4109
Level 6 176-260 MSU, Per Usage Additional Quantity EWLC	4110
Level 7 261 and up MSU, Per Usage Additional Quantity EWLC	4111
Level 7 261 and up MSU, Per 50 MSU Usage Additional Quantity EWLC	4112

SOAP for CICS feature: In addition, to order the SOAP for CICS no-charge feature, specify the following feature number:

Description	Feature number
CICS Transaction Server for z/OS V2: SOAP for CICS feature	5882

Note that, in addition to being orderable for use with CICS TS V2.3, this feature remains orderable for customers already running CICS TS V2.2.

Also note that an order placed using this feature results in the shipment only of the associated items. For shipment of machine-readable media, an order must be placed via the Customized Offerings.

Single version charging: To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the designated machine the programs are operating on.

Basic machine-readable material: The executable code of this product is shipped only via the Customized Offerings (CBPDO, ServerPac, Systempac®). The media type for the delivery of the executable code is therefore chosen during the ordering procedure for the Customized Offerings. However, non-customized items (including CD-ROMs, a Memo to Licensees, licensing materials, and Hardcopy Publications) continue to be shipped via the stand-alone product order. It is therefore necessary, as part of the order, to include a feature number as below

(which originally specified the distribution medium, but is now required only for the shipment of these non-customized items).

For an order with hardcopy publications in U.S. English, specify feature number 5802.

Note that orders with hardcopy publications in Japanese are not accepted in the United States.

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

Example: If publications are not desired for the initial order, specify feature number 3470 to ship media only. For future updates, specify feature number 3480 to ship media updates only. If, in the future, publication updates are required, order an MES to remove feature number 3480; then, the publications will ship with the next release of the program.

Description	Feature Number
Initial Shipments	
Serial Number Only (suppresses shipment of media and documentation)	3444
Ship Media Only (suppresses initial shipment of documentation)	3470
Ship Documentation Only (suppresses initial shipment of media)	3471
Update Shipments	
Ship Media Updates Only (suppresses update shipment of documentation)	3480
Ship Documentation Only (suppresses update shipment of media)	3481
Suppress Updates (suppresses update shipment of media and documentation)	3482

Optional machine-readable material: To order, select the feature number for the desired distribution medium:

Optional source (excludes Object-Code Only modules): Note that these feature numbers remain unchanged from those applicable with the previous releases.

Feature number	Distribution medium
5841	9/6250 Magnetic Tape*
5842	3480 Tape Cartridge*
6205	4-mm DAT Cartridge*

* Contains "**Restricted Material of IBM**"

Publications

Information center: The Information Center can be run from the CD-ROM or can be installed onto a workstation or Web server. A number of important enhancements have been made to the Information Center:

- In addition to running on Windows 2000 and Windows XP, the Information Center now runs on AIX.
- Installation of the Information Center now uses InstallShield Multiplatform (Java-based), which makes installation simpler.
- Tables in the Information Center are now interactive. The user can sort the rows of a table and display only those rows meeting a search criterion.
- Searches are now saved across sessions.
- There are now lookup tables for CICS transactions, figure titles, and table titles.
- There are usability improvements, including options for changing screen layouts, and the ability to display search results in the navigation panel.

Many of these enhancements were delivered in the new level of the Information Center made available in July 2003.

The requirements for a browser suitable for use with the Information Center are given in the **Software Requirements** section.

One copy of the CICS Information Center CD-ROM is automatically shipped as part of the product. Further copies can be ordered, at no additional charge, by specifying the following feature:

Title	Feature number
CICS Information Center CD-ROM, publication number SK3T-6957	7014

The Information Center (without the licensed publications) may also be ordered on CD-ROM, publication number SK3T-6958, or downloaded over the Internet, from:

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

The navigation frames, help information, and home information of the Information Center are translated to French, German, and Korean; these translations are included on the Information Center CD-ROM.

Printed publications: In addition to the softcopy information in the Information Center, the following printed documentation is delivered as hardcopy with the product. Note that this list of printed publications has changed, and also that the order numbers have changed from those applicable to the previous release.

Title	Order number
CICS Transaction Server for z/OS V2.3: Release Guide	GC34-6218
CICS Transaction Server for z/OS V2.3: Installation Guide	GC34-6224
CICS Transaction Server for z/OS V2.3: Licensed Program Specifications	GC34-6225
CICS Transaction Server for z/OS V2.3: Memo to Licensees	GI10-2559
CICS Transaction Server for z/OS V2.3: Program Directory	GI10-2560

Additional printed copies of these books may be purchased for a fee. Contact your IBM representative, or go to the online IBM Publications Ordering System, at:

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

A PDF version of the *Release Guide for CICS TS V2.3* is available now at:

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

In addition to the books listed above, the following unlicensed publications are provided within the Information Center. These publications are not available for purchase from IBM. If hardcopy is required, they may be printed from the PDF files provided in the Information Center.

Title	Order number
CICS Transaction Server for z/OS V2.3: Migration from CICS/ESA V4.1	GC34-6219
CICS Transaction Server for z/OS V2.3: Migration from CICS Transaction Server for OS/390 V1.2	GC34-6220
CICS Transaction Server for z/OS V2.3: Migration from CICS Transaction Server for OS/390 V1.3	GC34-6221
CICS Transaction Server for z/OS V2.3: Migration from CICS Transaction Server for z/OS V2.2	GC34-6223
CICS Transaction Server for z/OS V2.3: Application Programming Guide	SC34-6231
CICS Transaction Server for z/OS V2.3: Application Programming Reference	SC34-6232
CICS Transaction Server for z/OS V2.3: Customization Guide	SC34-6227
CICS Transaction Server for z/OS V2.3: Intercommunication Guide	SC34-6243
CICS Transaction Server for z/OS V2.3: Internet Guide	SC34-6245
CICS Transaction Server for z/OS V2.3: Operations and Utilities Guide	SC34-6229
CICS Transaction Server for z/OS V2.3: Resource Definition Guide	SC34-6228
CICS Transaction Server for z/OS V2.3: CICS Supplied Transactions	SC34-6230
CICS Transaction Server for z/OS V2.3: System Definition Guide	SC34-6226
CICS Transaction Server for z/OS V2.3: System Programming Reference	SC34-6233
CICS Transaction Server for z/OS V2.3: Problem Determination Guide	SC34-6239
CICS Transaction Server for z/OS V2.3: Messages and Codes	GC34-6241
CICS Transaction Server for z/OS V2.3: Trace Entries	SC34-6242
CICS Transaction Server for z/OS V2.3: External Interfaces Guide	SC34-6244
CICS Transaction Server for z/OS V2.3: Business Transaction Services	SC34-6237
CICS Transaction Server for z/OS V2.3 Front End Programming Interface User's Guide	SC34-6234
CICS Transaction Server for z/OS V2.3: C++ OO Class Libraries	SC34-6235
CICS Transaction Server for z/OS V2.3: CICS DB2 Guide	SC34-6252
CICS Transaction Server for z/OS V2.3: Distributed Transaction Programming Guide	SC34-6236
CICS Transaction Server for z/OS V2.3: IMS Database Control Guide	SC34-6248
CICS Transaction Server for z/OS V2.3: Java Applications in CICS	SC34-6238
CICS Transaction Server for z/OS V2.3: Performance Guide	SC34-6247
CICS Transaction Server for z/OS V2.3: RACF Security Guide	SC34-6249
CICS Transaction Server for z/OS V2.3: Recovery and Restart Guide	SC34-6246
CICS Transaction Server for z/OS V2.3: Shared Data Tables Guide	SC34-6250
CICS Transaction Server for z/OS V2.3: Transaction Affinities Utility Guide	SC34-6251
CICSPlex SM: Administration	SC34-6256
CICSPlex SM: Application Programming Guide	SC34-6262
CICSPlex SM: Application Programming Reference	SC34-6263
CICSPlex SM: Concepts and Planning	SC34-6253
CICSPlex SM: Managing Business Applications	SC34-6261
CICSPlex SM: Managing Resource Usage	SC34-6260
CICSPlex SM: Managing Workloads	SC34-6259
CICSPlex SM: Messages and Codes	GC34-6265
CICSPlex SM: Monitor Views Reference	SC34-6258
CICSPlex SM: Operations Views Reference	SC34-6257
CICSPlex SM: Problem Determination	GC34-6266
CICSPlex SM: Resource Tables Reference	SC34-6264
CICSPlex SM: User Interface Guide	SC34-6254
CICSPlex SM: Commands Reference Summary	SX33-6122
CICSPlex SM: Web User Interface Guide	SC34-6255
CICS Family: Interproduct Communication	SC34-6267
CICS Family: Communicating from CICS on System/390®	SC34-6268

Note that neither the CICS Glossary nor the CICS User's Handbook now exist as books. Their content has been incorporated elsewhere.

Collection Kit for transaction processing and data products: This Collection Kit is a CD-ROM, containing books in BookManager® form for a range of IBM transaction processing and data products, including CICS TS V2.3 and other members of the CICS family.

One copy of the Collection Kit for Transaction Processing and Data products CD-ROM (SK2T-0730) will be shipped, free of charge, with this product if feature number 7022 is specified in the order.

Further copies of the Collection Kit are also available from the online IBM Publications Ordering System.

Licensed documentation: The following Licensed Publications are provided:

Title	Order number
CICS Transaction Server for z/OS V2.3: Diagnosis Reference	LY33-6102
CICS Transaction Server for z/OS V2.3: Data Areas	LY33-6103
CICS Transaction Server for z/OS V2.3: Supplementary Data Areas	LY33-6104
CICS Transaction Server for z/OS V2.3: Debugging Tools Interface Reference	LY33-6105

The licensed books are delivered, in PDF format, on the CICS Information Center CD-ROM. Note that the Debugging Tools Interface Reference is newly introduced with this release. Note also that the licensed books are no longer orderable in hardcopy. If hardcopy is required,

the books may be printed from the PDF files provided on the Information Center CD-ROM.

Note also that the **Supplementary Data Areas** is no longer available in softcopy on tape. Like the other licensed books, it is provided in PDF format on the Information Center CD-ROM.

Withdrawal of features: The following features, formerly providing for a fee the hardcopy Licensed Publications and the Supplementary Data Areas on tape, are withdrawn with the introduction of this release:

8051
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Licensed Product Kit: In addition, the licensed Product Kit is provided for customers who wish to use BookManager for softcopy publications. The number of this Product Kit is LK3T-6959. It provides both licensed publications and unlicensed publications for this release, in BookManager softcopy form on CD-ROM. Licensees of CICS TS V2.3 can order, at no charge, one copy of the licensed Product Kit by specifying feature code 7023. Further copies may be ordered, for a fee of 40 dollars, by specifying feature code 8057.

Redbooks™: The following Redbooks are relevant to CICS TS V2.3:

- CICS Transaction Gateway V5: The WebSphere Connector for CICS, SG24-6133-01
  - Published August 22, 2002
- Java Connectors for CICS: Featuring the J2EE Connector Architecture, SG24-6401-00
  - Published March 22, 2002
- Revealed! Architecting Web Access to CICS, SG24-5466-03
  - Published October 8, 2002
- Enterprise JavaBeans for z/OS and OS/390 CICS Transaction Server V2.2, SG24-6284-01
  - Published July 31, 2002
- From code to deployment: Connecting to CICS from WebSphere for z/OS, REDP0206
  - This is a Redpaper, published May 14, 2002
- Workload Management for Web Access to CICS, SG24-6118-00
  - Published February 13, 2001
- Securing Web Access to CICS, SG24-5756-00
  - Published June 1, 2000
- IBM Tools: CICS Performance Monitor V1.1, SG24-6922-00
  - Published April 30, 2003
- IBM Tools: CICS Performance Analyzer V1.2, SG24-6882-00
  - Published January 15, 2003

For further information on Redbooks, go to:

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

Source information

Source listings: No source listings are provided for CICS TS V2. If you require access to such listings, use the View Program Listings (VPL) system. Those customers without access to VPL can contact their IBM representative.

Optional Source (excludes Object-Code Only modules): Refer to the **Optional machine-readable material** section.

Customized offerings

This product is shipped only via Customized Offerings (CBPDO, ServerPac, and SystemPac). Non-customized items (such as CD-ROMs, Memo to Licensees, licensing materials, and hardcopy publications) continue to be shipped via the stand-alone product order.

Terms and conditions

The Terms and Conditions for CICS Transaction Server for z/OS V2.3, which are based on those originally announced for CICS TS V2.1, with some changes for CICS TS V2.2 and CICS TS V2.3, are here restated in full.

Information Center: Customers with a license for CICS Transaction Server for z/OS V2.3 are licensed, at no additional charge, to install and run the Information Center on suitable workstation or server machines, which are not the designated machine, within the same enterprise. It may be run on as many machines as are reasonably necessary for use in conjunction with CICS TS V2.3.

Restricted use: WebSphere Application Server V5: This Program is accompanied by a copy of WebSphere Application Server V5 (WAS), with five Proofs of Entitlement. For each Proof of Entitlement (PoE), you are entitled to install and use, from the media provided with the Program, one copy of each of the WAS components required to support your licensed use of the Program. Your use of the WAS components is limited to use in support of your licensed use of the Program, and is subject to the terms and conditions of the license agreement (except as limited in this paragraph) which accompanies WAS. The WAS components may not be used for any other purpose.

WebSphere Studio Enterprise Developer V5: This Program is accompanied by a copy of WebSphere Studio Enterprise Developer V5 (WSED), with one Proof of Entitlement. This entitles you to install and use WebSphere Studio Enterprise Developer V5 for any purpose, subject to the terms and conditions of the license agreement which accompanies WebSphere Studio Enterprise Developer V5. There are no additional restrictions on its use.

CICSPlex SM remote MAS agents: Customers with a license for CICS Transaction Server for z/OS V2.3 are licensed to make and use any number of copies of the CICSPlex SM remote MAS agent for Windows NT, subject to their use being in conjunction with the licensed CICS TS V2.3. If required, the agent may be copied to secondary media for convenience of installation.

Connectivity code: Customers with a license for CICS Transaction Server for z/OS V2.3 may copy, free of charge, the following connectivity code to any S/390 or zSeries machine to enable communication with the licensed CICS TS V2:

- CICS External Communication Interface (EXCI — Load Library SDFHEXCI)

They may also copy, free of charge, the CICS inter-region communication SVC (DFHIRP) from this version to a prior version of CICS, on a different machine in the same Parallel Sysplex, for communicating with CICS TS V2.3.

The service and support entitlement under the license for the CICS TS V2.3 extends to copies of the above items when they are running on a different S/390 or zSeries machine for this purpose.

Application development utilities: To assist developing, testing, or analyzing their applications off-line from their production CICS systems, customers with a CICS Transaction Server for z/OS V2.3 license may copy the following utilities, free of charge, to any S/390 or zSeries machine within the same enterprise:

- The CICS Translator (modules DFHEAP1$, DFHEDP1$, DFHECP1$, and DFHEPP1$, which are to be found in SDFHLOAD)
  - The Statistics utility program (DFHSTUP)
  - The Trace utility program (DFHTUP)
  - The Dump utility program (DFHDUP)
  - The IPCS Dump Exit module (DFHPD630)
  - The IPCS trace formatting modules (DFHTU630 and DFHTG630)
  - The Monitoring utility program (DFHMNDUP)
  - The System Definition File utility program (DFHCSDUP)
  - The CICS Transaction Affinities utility program (formerly 5696-582, now part of the CICS element)

The service and support entitlement under the license for the CICS TS V2.3 extends to copies of these utilities when they are running on a different S/390 or zSeries machine within the same enterprise.

Translator use with CICS TS V2.3: The translators which are shipped with CICS TS V2.2 cannot be used with some earlier (pre-Language Environment) compilers. With respect to any translator which can be used with earlier compilers, the following conditions apply:

> (a) Provided the customer has a current license for both CICS TS V2.3 and the applicable compiler, the customer may retain, and continue to use, any translator shipped with any earlier level of CICS; and (b) Customers do not require a license for earlier levels of CICS merely in order to support any such use or retention of translators.

Note: if used in this way, any translator which was shipped with a level of CICS that is not (or no longer) in service is unsupported.

Jar files: Customers with a license for CICS Transaction Server for z/OS V2.3 are licensed to make and use as many copies of applicable jar files as they require in conjunction with their use of the licensed CICS TS V2.3. These are:

- The JCICS classes: dfjcics.jar
- CICSEJBClient.jar

Program Services for CICS TS V2.3

Support Center applies: Yes

Access available through the IBM Support Center

Available until discontinued: 12-months written notice

Delivery of service for the Information Center is by download over the Web. To locate service updates, go to:

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

WebSphere Application Server V5, delivered with this product, is provided with entitlement for software defect support. Requests for defect service should be reported through the normal WebSphere problem process.

WebSphere Studio Enterprise Developer V5, also delivered with this product, is provided "as is". It has no entitlement for software defect support.

IBM Operational Support Services — Support line: Yes

IBM Electronic Services

IBM Global Services has transformed its delivery of hardware and software support services to put you on the road to higher systems availability. IBM Electronic Services is a Web-enabled solution that provides you with an exclusive, no-additional-charge enhancement to the service and support on the IBM @server. You should benefit from greater system availability due to faster problem resolution and pre-emptive monitoring. IBM Electronic Services is comprised of two separate but complementary elements: IBM Electronic Services news page and IBM Electronic Service Agent™.

IBM Electronic Services news page provides you with a single Internet entry point that replaces the multiple entry points traditionally used by customers to access IBM Internet services and support. By using the news page, it enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The IBM Electronic Service Agent is no-additional-charge software that resides on your IBM @server system that is designed to proactively monitor events and transmit system inventory information to IBM on a periodic customer-defined timetable. The IBM Electronic Service Agent tracks system inventory, hardware error logs and performance information. If the server is under a current IBM maintenance service agreement or within the IBM Warranty period, the Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to provide proactive service that maintains higher system availability and performance. In addition, information collected through the Service Agent will be made available to IBM service support representatives when they are helping answer your questions or diagnosing problems.

To learn how IBM Electronic Services can work for you, visit:

http://www.ibm.com/support/electronic

Prices

Prices for CICS Transaction Server for z/OS V2.3 are unchanged from those already applicable to CICS Transaction Server for z/OS V2.2. For price information, contact your IBM representative.

Global Financing

IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Our offerings include financing for IT acquisition, including hardware, software, and services, both from IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit the Web at:

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