e-business solutions
To support your IT objectives

Combining the reliability and security of CICS software with the flexibility of e-business technology.

The challenges of a volatile, fast-paced economy put pressure on every enterprise. Your IT resources must provide optimal support for your business-growth objectives, based on flexible business models, acquisitions, new value creation, and better collaboration with partners and suppliers. All of these combined can help you reduce costs and improve your profit margins. Perhaps IT has determined the speed with which your organization could adapt to evolving market and customer demands—or impeded your growth initiatives altogether. However, robust, Web-enabled middleware provides a new way to conduct business, helping your enterprise be prepared for the changes inherent in today's marketplace.

e-business on demand™, fueled by Web clients, Web services and other service-oriented architecture implementations, represents the next generation of transaction processing. Web services serve as the building blocks that can enable you to construct distributed Web-based applications. They also help you quickly and easily connect applications, inside your business and outside, to suppliers and trading partners. Your organization can interact with marketplaces more efficiently. You can deliver business functions to a broader set of customers and partners. And you can pursue new business models by combining applications in a new, dynamic way.

Next-generation transaction processing

e-business on demand has ushered in the next generation of transaction processing—conducting business transactions over the Web. CICS® software from IBM is well-positioned to leverage its core competency in transaction processing to deliver scalable, secure Web-based transactions.

Successful businesses leverage Java™ technology to take advantage of e-business on demand opportunities and reach customers in an emerging global marketplace. The Web continues to offer innovative ways to connect to trading partners and suppliers, tap into new markets and build lasting customer relationships. And developers have helped establish Java technology as a predominant e-business building block, pushing the "write once, run anywhere" promise of reduced programming costs and faster time to market closer to reality.

But there's still a lot of uncharted territory in e-business, and adopting unproven technologies can be risky. To help you develop a winning business strategy that increases market share and capitalizes on new revenue sources, IBM supports leading-edge technologies and builds on the strength and reliability of CICS software to significantly enhance IBM CICS Transaction Server for z/OS. The latest version—IBM CICS Transaction Server for z/OS, Version 2.3—offers a complete solution to boost profitability, improve customer satisfaction and give your growing e-business a jump on the competition.

CICS Transaction Server for z/OS combines the strength of CICS software with the flexibility of these new technologies to help you meet the demands of rapid e-business development. Around-the-clock reliability allows you to quickly and easily create new applications and enable existing ones for the Web. Securely and reliably manage tens of thousands of connected users. And scale to dynamically meet growing customer demand—on and off peak-usage times.

CICS Transaction Server, Version 2.3 can help you make the transition to on demand computing through:

- *Better integration with other products and platforms.*
- *Combining the best of new and existing technology.*
- *Support for open standards.*
- *Improved manageability and simplified user interfaces for administration and reduction of outages—and through autonomic computing features, such as workload balancing.*
- *Extensible capacity through virtualization of server resources, enabling you to increase server capacity as needed to handle spikes in workload demand—providing flexibility to accommodate growth and expansion.*

Access business-critical CICS applications through the Web

CICS support for Java technology has evolved through a number of stages. CICS Transaction Server, Version 2.3 now provides a robust, high-performance environment for enterprise applications written in Java code. It combines the innovative IBM Software Development Kit for z/OS, Java 2 Technology Edition, Version 1.4 software with an architecture that helps isolate Java applications to give you an execution speed comparable with C++. CICS Transaction Server, Version 2.3 has enhanced Java execution by improving performance during peak-demand periods, reducing storage and startup requirements for a Java Virtual Machine (JVM) and increasing the Java transaction throughput.

This JVM technology supports techniques that enable system and middleware code to reinitialize the JVM before it is reused for the next Java program. CICS Transaction Server, Version 2.3 offers a choice of operation modes for the JVM. Running the JVM in reset mode provides a high level of isolation from one transaction to the next. Or you can run the JVM in continuous mode, if your application architecture allows, to reduce the level of isolation of application state between transactions that reuse the same JVM and to maximize the performance of your JVM infrastructure. 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 having to restart CICS Transaction Server.

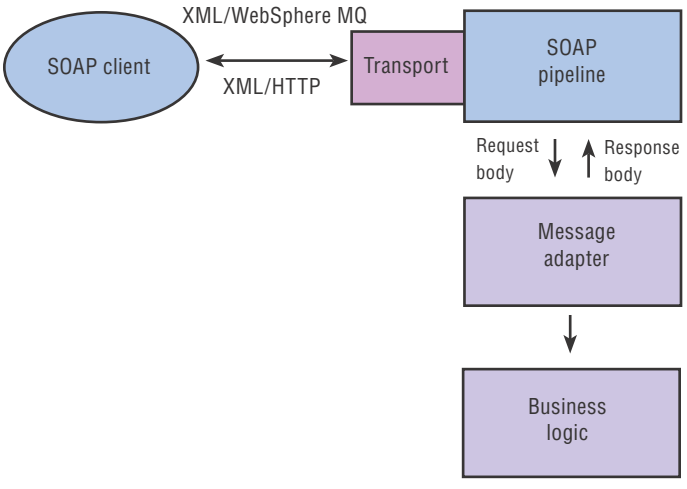
Other enhancements that exploit the JVM infrastructure include:

- *Reducing the storage and startup requirements for a JVM.*
- *Offering a choice of JVM operation modes to optimize JVM performance, depending on application design.*
- *Introducing a dedicated storage monitor for the JVMs to improve behavior when a CICS region is short on storage used by the JVMs.*
- *Providing a new selection mechanism that allows you to create, manage and allocate work into the JVMs to increase system-resource usage and improve performance under stress.*
- *Improving tracing and problem determination for the JVMs.*
- *Offering new features to help you manage JVM profiles.*

CICS Transaction Server, Version 2.3 has been significantly optimized to reduce the path length when launching the JVM. For example, it will only load EJB support when required. Adoption of the latest IBM Software Development Kit (SDK) includes performance enhancements inherent in the base SDK.

Use Web services to extend the reach of your CICS applications

CICS Transaction Server, Version 2.3 includes a Simple Object Access Protocol (SOAP) processor, which enables new or existing CICS applications, written in any supported programming language, to be accessed as Web services within a service-oriented architecture. This feature enables a user-written, message-adapter layer to map the XML-based SOAP message into a COMMAREA, thus enabling access to COMMAREA-based applications using SOAP messages. A SOAP request can invoke the applications using either HTTP or IBM WebSphere® MQ software, without the need for an intermediary application server. The SOAP for CICS feature also enables CICS applications to invoke Web services that are hosted on other systems to provide another form of connectivity appropriate for business-to-business (B2B) applications.



The SOAP for CICS feature helps to maximize the reuse of enterprise assets using standard interfaces, enhancing the value of existing applications in the CICS environment.

Take advantage of application-modernization tools to make the most of your CICS systems

A range of Java services enables you to continue to exploit the strengths of CICS applications through open-standards-based Java application programming interfaces (APIs), so you can seamlessly connect your Java technology-based applications to CICS systems through CICS Transaction Server. These Java services include:

EJB support

CICS Transaction Server, Version 2.3 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 Enterprise JavaBeans (EJB) applications and COBOL applications can access existing and new IBM DB2® and IBM IMS™ database and Virtual Storage Access Method (VSAM) data concurrently, with complete integrity. By allowing new enterprise beans to run simultaneously in the same managed run-time environment as, for example, traditional 3270 system-based applications, CICS Transaction Server enables the same operations personnel to support multiple styles of applications.

By supporting EJB session beans, CICS Transaction Server provides another dimension for application architects. You can view stateful session beans as a contemporary equivalent of pseudo-conversational programs and use them for a wide range of applications. This technology also enables transactional peer-to-peer interoperation with IBM WebSphere Application Server and other Common Object Request Broker Architecture (CORBA)-compliant servers using Internet Inter-ORB Protocol (IIOP), which can be used as an advanced connector. The WebSphere Application Server EJB container enables CICS Transaction Server to construct reusable business logic components that are binary-portable between CICS Transaction Server and WebSphere Application Server. This capability can 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 Transaction Server enables this mixed-language component to run in a single execution environment, improving robustness and manageability in the process.

Common Client Interface Connector for CICS Transaction Server

CICS Transaction Server, Version 2.3 provides a new method for invoking a procedural application from a Java client. This function uses the standard interface defined in the Java 2 Platform, Enterprise Edition (J2EE) Connector Architecture (JCA) specification, Version 1.0, called the *Common Client Interface (CCI) Connector.* It replaces the CICS Connector for CICS Transaction Server introduced in CICS Transaction Server, Version 2.1. The CCI Connector for CICS Transaction Server enables you to build robust server components that can leverage existing applications. Java programmers with little or no knowledge of CICS technology can easily reuse CICS applications. Java client applications can be ported between Java technology-enabled platforms with little or no modification; and, in particular, they can be ported from a non-CICS environment, such as WebSphere Application Server, into your CICS environment.

JDBC, Version 2.0 support

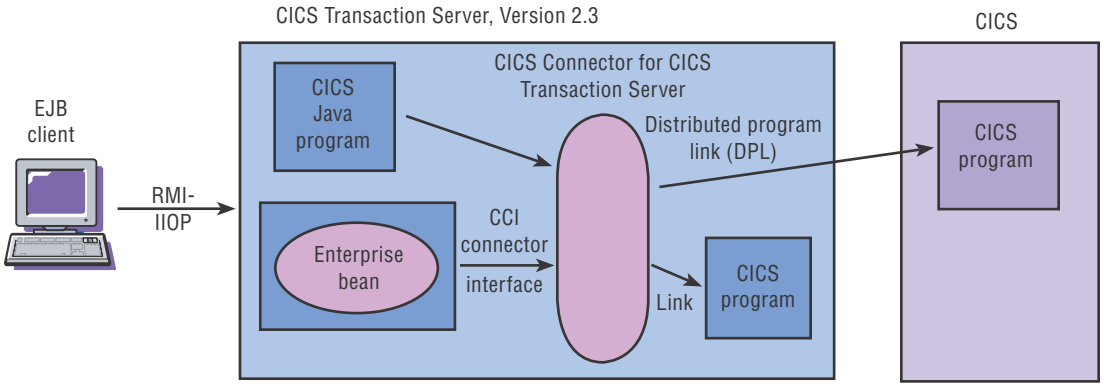
CICS Transaction Server, Version 2.3 supports Java Database Connectivity (JDBC), Version 2.0. Using the JDBC, Version 2.0 driver in IBM DB2® Universal Database™, Version 7 systems provides significant performance improvements when compared with using the JDBC, Version 1.2 driver. Java applications or enterprise beans, written to use either the JDBC, Version 1.2 or the JDBC, Version 2.0 API, can leverage these performance enhancements to improve developer productivity and increase your organization's operational efficiencies. JDBC, Version 2.0 support allows you to use standard JDBC tools to develop CICS applications.

IBM WebSphere Studio Application Developer supplies a library of data access beans called *DB beans*,[1] which provides applications with an easy alternative to directly using the JDBC interface for database access. Because these beans use the JDBC standard, they can access any database that has a JDBC driver. And a host of capabilities already incorporated in DB beans means you don't have to implement each capability separately in each JDBC application, such as caching the rows of a result set in memory and updating or deleting rows of a result set.

JCICS Web support

A range of Java services enables applications to exploit the strengths of CICS using open Java enterprise software APIs. You can use IBM WebSphere Studio software to develop these applications and deploy them under CICS—with no special tools required.

Java applications running in CICS have direct access to CICS services and resources through a set of Java classes known as *JCICS*, which provides equivalent function to the EXEC CICS interface used by applications in other languages. CICS Transaction Server, Version 2.3 provides new JCICS equivalent to the EXEC commands for CICS Web support. These classes enable Java applications to use CICS WEB, DOCUMENT and EXTRACT APIs. They also enable programs written in Java to be driven by CICS Web support.



The CCI Connector for CICS Transaction Server enables you to build robust server components that can leverage existing applications.

Strong system management capabilities

The IBM CICSPlex® System Manager, an integral part of CICS Transaction Server, 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. CICSPlex System Manager also works in unison with Tivoli® software from IBM to meet the need for end-to-end management and automation of CICS with IBM z/OS® environments and your network. CICS Transaction Server continues to provide strong systems management capabilities through support of the EJB standard. You can view the attributes of new EJB component-related CICS system resources, and a browser interface is provided to access CICS system resources in this environment. This approach allows you to continue using existing operational procedures when using EJB components. CICSPlex System Manager also provides dynamic workload balancing of EJB components by extending the distributed routing program model and includes workload separation and failure-management facilities for invoking EJB programs.

This version further enhances systems management issues like simplification, monitoring and workload management. Through the CICSPlex System Manager Web user interface, CICS Transaction Server has a modern, intuitive interface to give you workload balancing to optimize systems management.

CICSPlex System Manager Web user interface enhancements

CICSPlex System Manager Web user interface function has been extended to enable you to create and update definitional resources, as well as to work with operational resources and view definitional resources.

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 similar to that of the Interactive System Productivity Facility (ISPF) end-user interface to allow easy migration to the Web user interface (WUI). The starter sets of views and menus now include administration views you can use to create, update and remove CICS and CICSPlex System Manager 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 be controlled at the individual user level. It also makes the view editor available to more users, while preventing them from modifying specific view sets and menus. An audit trail records all changes made to view sets and menus.

Workload balancing of 3270 bridge using CICSPlex System Manager

The CICSPlex System Manager workload-management component is enhanced in this release to provide dynamic-routing capability for the 3270 bridge enhancements that were introduced in CICS Transaction Server, Version 2.2. These enhancements deliver support for the dynamic routing exit, so users don't have to code their own. As with existing workload-management support, this facility provides benefits, including workload balancing, workload separation and server consolidation.

CICSPlex System Manager architectural improvements

Architecture improvements in CICSPlex System Manager help remove the need for simultaneous shutdown and upgrade to all CICS systems within a CICSPlex when applying service to resource tables.

Using the kill function

CICS users asked for the ability to cancel suspended or looping tasks without having to cancel and restart the CICS region when tasks cannot be cancelled using, for example, existing CEMT commands. Currently, the purge function allows you to cancel a task while maintaining data and system integrity. With the forcepurge function, you can cancel a task, while maintaining system integrity; however, data integrity may be lost. The new kill function allows you to cancel a task in situations where the purge and forcepurge functions are ineffective, enabling you to maintain your CICS systems around the clock. An audit trail is provided for transactions that have been subjected to the kill function.

Improved support for interactive debugging

CICS Transaction Server, Version 2.3 provides extensive and important improvements for the interactive debugging of CICS application programs. It enables access through the IBM Distributed Debugger to debug executing CICS application modules. When used with workstation-based debugging tools, CICS Transaction Server provides integration of debugging tasks for mixed-language applications (such as Java and COBOL). Support to set up and run the IBM Debug Tool is also improved for use with CICS Transaction Server. This support is applicable to other debug tools, such as IBM WebSphere Studio Enterprise Developer, Version 5; IBM WebSphere Studio Application Developer, Version 5; and IBM Debug Tool for z/OS and OS/390, Version 3.

CICS interactive debugging facilities apply to:

- *IBM Language Environment® technology-enabled CICS application programs (written in COBOL, PL/I, C, C++ or IBM Language Environment Assembler)*
- *Java classes*
- *EJB components*
- *CORBA stateless objects*

Debugging is controlled by means of debugging profiles stored in a VSAM file, and can be shared across many CICS regions. Consequently, the debugging profiles persist over a CICS region restart. Debugging application programs within CICS Transaction Server, Version 2.2 required you to link the programs 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 Transaction Server, Version 2.3.

If you're using IBM WebSphere Studio Enterprise Developer to generate CICS COBOL or PL/I applications, the WebSphere Studio Enterprise Developer 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. The WebSphere Studio Enterprise Developer debugger can also follow execution flow through different environments (such as WebSphere Application Server) both before and after the CICS component is executed, to provide an end-to-end debugging facility.

Enhanced DB2 data recovery

Support for IBM DB2 restart light is introduced in CICS Transaction Server, Version 2.3.[2] Together with the DB2 Group Attach support (already provided in CICS Transaction Server, Version 2.2), this enhancement improves DB2 availability for CICS applications and provides better recovery after a logical partition (LPAR) failure.

Combine the best of new and existing technology

CICS Transaction Server allows your company to scale as your business evolves. Support for e-business on demand technology means you can extend your existing, proven core applications to new audiences and create new business opportunities. Reuse of existing application logic helps reduce application development costs and saves time and effort in solution testing. And you can exploit your existing skills base while benefiting from new technology. Your risk is reduced as you gain competitive advantage in an ever-changing global marketplace.

For more information

To learn more about how CICS Transaction Server for z/OS can help your business, visit:

ibm.com/software/cics

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[1] DB beans require JDBC, Version 2.0 support.

[2] IBM DB2 Restart Light support requires DB2 Universal Database for z/OS, Version 8.

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