IBM

Offering cost-effective solutions to improve business-process integration with CICS applications.

Reuse existing assets in modern e-business on demand architectures

Most of the world's data is processed on mainframes using the qualities of service of proven transaction servers such as IBM CICS®. Hundreds of billions of lines of COBOL are currently in place, with billions of new lines added yearly. These represent not only the core assets companies use to run their businesses, but also the cornerstone of e-business on demand™ architectures.

IBM Enterprise Transformation solutions enable flexible and fast process adaptation by reusing existing applications and data. It allows organizations to leverage all their enterprise skills to cost-effectively deliver new e-business on demand architectures.

Leveraging IBM Enterprise Transformation solutions with CICS applications

As a CICS user, your most important goal in this transformation is to deliver access to new and existing CICS applications using open-standards-based interfaces, providing the integration capabilities you need to build an e-business on demand architecture. A key concept of the Enterprise Transformation *adapt* style is that applications are reused programmatically. Along with the native support available in IBM CICS Transaction Server, IBM provides two CICS connectors that support the *adapt* style of modernization.

IBM SOAP for CICS

SOAP for CICS is a no-charge, separately orderable feature of CICS Transaction Server, Version 2. It enables new or existing CICS applications to be accessed as Web services within a service-oriented architecture (SOA). The feature also enables CICS applications to invoke Web services hosted on other systems, providing another form of connectivity appropriate for business-to-business (B2B) applications.

IBM CICS Transaction Gateway

CICS Transaction Gateway is a Java™ 2 Platform, Enterprise Edition (J2EE) connector for CICS applications. It enables you to use your CICS applications in comprehensive and sophisticated J2EE and Web services solutions hosted on powerful application servers, such as IBM WebSphere® Application Server.

In addition to connectors that support the *adapt* style of modernization, IBM also offers IBM CICS Universal Client to enable simple and low-cost integration with CICS from Microsoft® Windows® and Linux on Intel® desktop systems.

## Expand established systems to new business environments

The Web is increasingly being used beyond its traditional information-retrieval and information-update boundaries. Web services and other XML technologies are making Internet-based application-to-application communication a reality. This type of integration provides greater business process automation, easier enterprise application integration, more complete B2B communication, increased flexibility in application construction and a wider choice of deployment platforms — all at lower overall cost.

IBM delivers SOAP for CICS as a no-charge, separately orderable feature of CICS Transaction Server, Version 2, which enables your CICS applications to participate in SOA-based solutions. This Simple Object Access Protocol (SOAP)-based connector gives you an XML-based connectivity solution that fully integrates with CICS Transaction Server, Version 2 — allowing your enterprise to react quickly to new business opportunities, while simultaneously reducing the cost and resources associated with business integration and application development.

Web services implementation

Web services are already helping organizations generate revenue and reduce costs. The SOAP for CICS feature enables CICS applications to interact with Web services as a service provider and a service requestor. A Web services client can now access CICS business logic residing on your mainframe, independent of the underlying technology.

Any Web services provider or requestor

HTTP WebSphere MQ

CICS Transaction Server, Version 2 for z/OS

SOAP for CICS
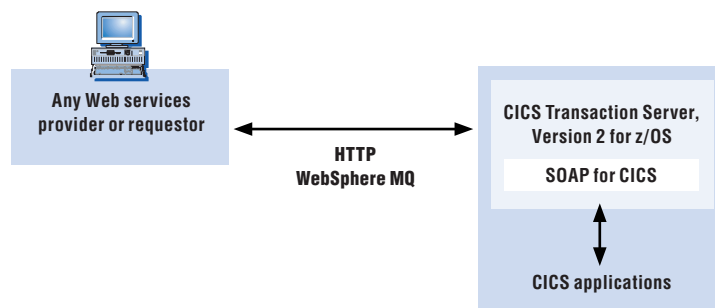
CICS applications

SOAP for CICS is an XML-based connectivity solution that fully integrates with CICS Transaction Server, Version 2 for z/OS.

The SOAP for CICS feature enables a user-written application layer to map the XML-based SOAP message to and from a COMMAREA, enabling access to COMMAREA-based applications using SOAP messages. SOAP for CICS permits existing CICS COMMAREA-based applications to be executed, and it can also be used for new XML-aware applications that are driven using SOAP messages. This feature also enables CICS applications to issue outbound SOAP messages targeted to remote applications.

Open-standards-based integration
Your enterprise faces ever-changing technology, strategic business partner relationships, and corporate mergers and acquisitions. To remain competitive, you need to integrate your business processes using open standards. Protect your organizational assets from an uncertain tomorrow. And increase your return on investment (ROI) from existing assets. SOAP for CICS provides an open-standards-based interface that allows applications on disparate systems to communicate with CICS applications using SOAP technology. Data is passed between applications using XML, and message transport is provided over HTTP and includes support for Secure Sockets Layer (SSL) through HTTP over SSL (HTTPS).

Web services standards continue to evolve, with new specifications for enhanced transaction services, reliable messaging and advanced authentication still being proposed. Message transport is also provided over industry-leading IBM WebSphere MQ software (formerly IBM MQSeries®). Providing this transport mechanism allows CICS regions to process highly secure and reliable Web services ahead of emerging industry standards. The architecture is loosely coupled, so the transport mechanism can easily be switched at a later time without rewriting your applications.

Capitalize on rapid distributed application development capabilities
The availability and high cost of skilled employees to develop enterprise-class applications often mean the difference between the success or failure of an application development project. Utilizing open-standards-based Web services technology allows developers to create applications that interact with CICS applications, independent of platform, environment or application language. This flexibility enables your enterprise to maximize widely available skills and reuse existing assets.

SOAP for CICS allows non-CICS developers to select their deployment platform and programming language. So they can rapidly build open standards-based, two-tier or three-tier applications, based on frameworks, such as Microsoft .NET, AXIS and JAX-RPC. Because these applications are independent of the CICS services they interact with, your IT staff are free to concentrate on developing and maintaining core CICS business logic. By allowing them to work together with few interdependencies, you maximize the efficiency of both CICS and non-CICS personnel.

IBM CICS Transaction Gateway, Version 5.1

Highlights

Connects WebSphere software with CICS applications

Provides an industry-leading implementation of the J2EE Connector Architecture

Offers a choice of application-server programming models to deploy across most industry platforms

Delivers best-of-breed performance and scalability by using memory-based access to optimize connections to CICS applications

Offers a comprehensive, security-rich environment for optimal authentication and authorization

### Extend core business processes and applications to the Web faster

The key to a successful on demand business — that attracts and retains customers, closes sales and minimizes cost — is to extend your core business processes and applications to the Web. Offer the products and services customers want, when they want them. Give your employees the tools they need to work efficiently. And build engaging, security-rich Web applications that quickly and easily connect self-service-oriented consumers to your company.

CICS Transaction Gateway provides a solution that can help you integrate your Web site with your core business application systems running on CICS servers — enabling you to quickly and easily increase efficiency and productivity, in a highly scalable environment that can accommodate future business growth.

Industry-leading J2EE support

Today's IT focus is on building e-business applications based on open standards. The J2EE specification offers an industry-leading blueprint for end-to-end solutions. CICS Transaction Gateway implements the J2EE Connector Architecture (JCA), enabling it to operate smoothly with WebSphere Application Server.

CICS Transaction Gateway implements the Common Client Interface (CCI) defined by JCA, allowing you to create applications with tools, such as IBM WebSphere Studio Application Developer Integration Edition, to provide adapters for CICS COMMAREA-based applications or 3270 data-stream-based-based transactions. You can now create more thoroughly integrated solutions, even faster.
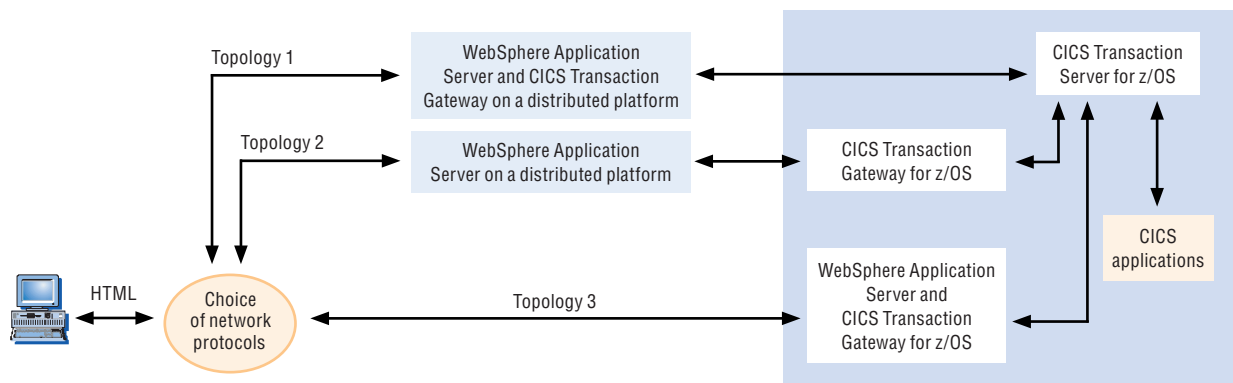
CICS Transaction Gateway provides the flexibility to choose a deployment that suits your needs. This figure shows three common topologies you can use to connect to CICS Transaction Server for z/OS.

Choosing the right deployment

Whether your solution requires simple Web-based access to CICS transactions or more comprehensive and sophisticated Web applications, the CICS Transaction Gateway delivers a solution that can address your unique requirements. Using Java servlets, Enterprise JavaBeans (EJB) components or COM objects, CICS Transaction Gateway can utilize the external call interface (ECI) and external presentation interface (EPI) provided by the CICS Transaction Gateway to allow access to CICS COMMAREA-based applications and 3270 data-stream-based transactions. Besides the Java language, CICS Transaction Gateway also supports COBOL, C, C++ and Microsoft Visual Basic languages.

Choosing the right deployment platform for your gateway is equally important. Linux on Intel is the latest addition to the increasing number of supported run-time environments. CICS Transaction Gateway can also be deployed on Microsoft Windows and popular UNIX® technology-based platforms. Support for mainframe systems is provided on IBM z/OS® and Linux on IBM @server® zSeries® systems.

With CICS Transaction Gateway, you also have a comprehensive range of networking options to connect to your CICS systems, including native TCP/IP, TCP62, SNA LU 6.2 and memory-based protocols.

Performance and scalability

As your business grows, business-critical system workloads can become highly demanding. Your systems need to adjust quickly to unpredictable peaks and manage thousands of transactions per second — while achieving exceptionally high system availability. CICS Transaction Gateway delivers in all these areas.

CICS Transaction Gateway uses multithreaded daemons to handle communication with front-end application servers and back-end CICS systems. Deployment code is optimized, enabling support for large numbers of concurrent requests and subsecond response times to end users. CICS Transaction Gateway can also make the most of the hardware architecture of both symmetric multiprocessor (SMP) and clustered server systems to provide a high-performance, scalable solution.

In the z/OS environment, CICS Transaction Gateway can support workloads in excess of 1,000 transactions per second using multiple gateway regions and by reusing memory-based external CICS interface (EXCI) pipes. Load-balancing and failover facilities enable transactional workloads to be distributed across a number of CICS regions.

Providing a security-rich environment

CICS Transaction Gateway provides comprehensive security features including support for SSL. This enables up to 128-bit data-flow encryption between the application server and the gateway. It also delivers highly secure authentication with support for X.509 client certificates. On z/OS systems, these certificates identities can be mapped to IBM RACF® user IDs, providing integration with existing CICS security mechanisms.

To facilitate the management of user IDs and passwords, the external security interface (ESI) enables customer applications to verify user passwords, as well as process expired passwords. CICS Transaction Gateway also enables the standard CICS server-authorization mechanisms to operate, allowing more control over end-user access to both transactions and data.

IBM CICS Universal Client, Version 5.1

Highlights

Connects Windows and Linux on Intel desktop applications to CICS systems

Offers a cost-effective integration solution

Enhances performance of data transfers

Connect Windows and Linux on Intel desktops directly to CICS systems

As your enterprise grows, your IT team faces increased demand for enhanced system efficiencies. To keep pace, you need to help your CICS users access business-critical information faster, and in new, more efficient ways. IBM CICS Universal Client is a cost-effective way to facilitate communication between single-user Windows or Linux on Intel workstation applications and multiple CICS servers.

Each client can be independently configured to support a workstation's existing graphical and multimedia interfaces to improve usability and productivity — without changing the back-end application. CICS Universal Client provides programming interfaces in C, C++, Microsoft Visual Basic and COBOL.

### Optimize client and servers to work efficiently

CICS Universal Client communicates with CICS servers through ECI, EPI and ESI. ECI helps optimize client and server operation — and improve programmer flexibility — by keeping business logic on the server and presentation logic on the client. Using ECI, applications can be easily written to connect PC workstations with CICS servers. CICS Universal Client can support a large number of concurrent ECI calls to a CICS server over a wide range of communication protocols.

Enhance data display to improve usability

You can use EPI to integrate modern desktop applications with existing 3270 data-stream-based CICS programs. CICS Universal Client enables the client to programmatically interact with 3270 data-stream-based transactions, without changing the original CICS application. CICS Universal Client also features CICS 3270 emulation capabilities. A workstation can function as a 3270 display or printer for CICS applications, without the need for a separate 3270 emulator.

Offer tighter security

ESI enables appropriate user applications to verify that a password corresponds to an existing user ID, and allows passwords to be changed to facilitate better user ID and password management.
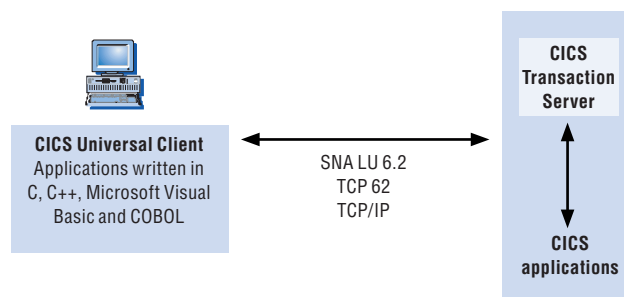
CICS Universal Client is a low-cost way to facilitate communication between single-user Windows or Linux on Intel workstation applications and multiple CICS servers.

CICS connectors at a glance[1]

Operating systems	**SOAP for CICS[2]** • IBM OS/390®, Version 2.10 • z/OS, Version 1.1 or higher • IBM SMP/E for z/OS and OS/390, Version 3.1 or higher **CICS Transaction Gateway** • Microsoft Windows NT®, Windows 2000, Windows XP, Windows 2003 • Linux on Intel using Red Hat Enterprise Linux, Version 2.1, or SuSE Linux Enterprise Server, Version 8 • IBM AIX®, Version 5.1 or Version 5.2 • Sun Solaris operating system, Version 7, Version 8 or Version 9 • HP-UX, Version 11.0 or 11i • Linux on zSeries, using SuSE Linux Enterprise Server, Version 8 • OS/390, Version 2.10 or z/OS, Version 1.2 or higher **CICS Universal Client** • Windows NT, Windows 2000, Windows XP, Windows 2003 • Linux on Intel using Red Hat Enterprise Linux, Version 2.1 or SuSE Linux Desktop, Version 1.0
Supported CICS servers	**SOAP for CICS** • CICS Transaction Server for z/OS, Version 2.2 or Version 2.3 **CICS Transaction Gateway** • CICS Transaction Server for z/OS, Version 2.2 or Version 2.3 • CICS Transaction Server for OS/390, Version 1.2 or Version 1.3 • CICS Transaction Server for IBM VSE/ESA™, Version 1.1.1 • CICS Transaction Server for IBM @server iSeries™, Version 5.1 or Version 5.2 • IBM TXSeries® for Multiplatforms , Version 5.0 **CICS Universal Client** • CICS Transaction Server for z/OS, Version 2.2 or Version 2.3 • CICS Transaction Server for OS/390, Version 1.3 • CICS Transaction Server for VSE/ESA, Version 1.1.1 • CICS Transaction Server for iSeries, Version 5.1 or Version 5.2 • TXSeries for Multiplatforms, Version 5.0
Supported application servers	**SOAP for CICS** • Services that use the SOAP for CICS interface can interact with WebSphere Application Server, or any other application server that supports Web services capabilities. **CICS Transaction Gateway** • WebSphere Application Server, Version 4.0, Version 5.0 or Version 5.1 • WebSphere Application Server for z/OS and OS/390, Version 4.0.4 or Version 5.0

Supported network protocols	**SOAP for CICS** • HTTP, Version 1.0 • MQSeries for MVS/ESA™, Version 2.1 • MQSeries for OS/390, Version 5.2 • WebSphere MQ for z/OS, Version 5.3 or higher **CICS Transaction Gateway** • TCP/IP • TCP62 • SNA LU 6.2 • Multiregion operation (MRO)/EXCI • Windows Named Pipes **CICS Universal Client** • TCP/IP • TCP62 • SNA LU 6.2 • Windows Named Pipes
Other specifications	**SOAP for CICS** • SOAP, Version 1.1 **CICS Transaction Gateway** • IBM Software Development Kit (SDK), Level 1.4.1 or Level 1.3.1 • Sun Java SDK, Level 1.4.1 or Level 1.3.1 • HP Java SDK, Level 1.4.1 or Level 1.3.1

[1] This at-a-glance section is for general guidance only. For detailed information about the platforms supported, including specific releases, service packs, PTFs and kernel levels, please refer to the product announcement letters.

[2] Services that use the SOAP for CICS interface can interact with Web service clients on any operating system.

For more information

To learn more about how IBM CICS connectors can support your e-business on demand architectures, visit:

ibm.com/cics/connectors

A number of useful books, white papers and presentations about CICS connectors are available on the CICS online library page at:

ibm.com/cics/library

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