IBM®

IBM CICS Transaction Gateway V8.1

Recent enhancements

- Improved high availability solutions including policy-based dynamic server selection and support for AIX Workload Partitioning

- Improved password management and password phrase support

- Enhanced Microsoft .NET API including CICS channels and containers and 64 bit support

- JCA 1.6 exploitation supporting WebSphere® Application Server V8 and other JEE 6 certified application servers

- Enhanced plug-in for IBM® CICS Explorer®

- New platform support including AIX V7 and Red Hat Enterprise Linux V6

- Enhanced support for IBM CICS® Transaction Server for z/OS® V4.2 (CICS TS)

- Improved fail-over for IPIC connections

Features

- Optimized for WebSphere Application Server, plus channels and containers support for the .NET API for handling larger amounts of data.

- Open integration with extended support for .NET environments

- Extended interoperability and simplified security with CICS TS V4.2

- Integration with CICS Explorer

Benefits

- Proven connectivity—distributed platforms integrate with any CICS server

- Skills match for today—bridges the skill gap

- Inter-operable—rich programming APIs to drive CICS transactions

- Flexible—from the Desktop Edition through Multiplatform to the z/OS version

- Non-invasive—no changes to CICS applications

- Scalability and availability—secure, scalable, and highly available connectivity

- Instrumentation—monitoring and statistical facilities give insight into workload patterns

IBM's premier connector to CICS

Much of the world's data is processed on mainframes, using the qualities of service of proven transaction servers such as CICS TS. Delivering access to CICS applications through standards-based interfaces is becoming a key requirement in many of today's sophisticated service-oriented solutions.

CICS Transaction Gateway (CICS TG), a market-leading Enterprise connector, is production proven by over a thousand customers as a high-performing, security-rich, and scalable method of service-oriented architecture (SOA) access to CICS, which:

- Delivers JEE standards-based access to CICS applications, while requiring minimal changes to CICS and usually no changes to existing CICS applications

- Provides quick and easy connector access to CICS applications from a wide variety of environments, including Java, C/C++, Microsoft .NET, and COBOL run times

- Allows the reuse of existing CICS applications as services in comprehensive and sophisticated JEE and Web services solutions hosted on powerful application servers such as WebSphere Application Server

Implementing CICS TG requires minimal changes to CICS systems and usually no changes to CICS applications. CICS TG is available on a range of platforms and can be deployed in a number of different topologies (see Figure 1).
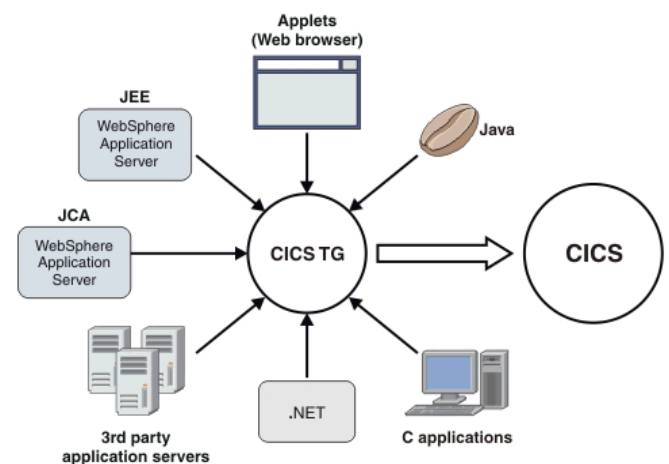

Figure 1 CICS TG topologies

CICS TG supports common programming frameworks allowing a wide variety of application platforms to securely integrate with CICS. Whilst Java Connectivity Architecture (JCA) provides the highest qualities of service (connection pooling, transaction management, etc) for applications deployed to a JEE application server such as WebSphere Application Server, the CICS TG APIs for Microsoft .NET and C, COBOL, and Java applications allow Windows, UNIX, and Linux platforms to exploit the robust and scalable connectivity available through CICS TG.

IBM CICS Transaction Gateway (CICS TG) V8.1 provides significant enhancements over previous releases in the key areas of open integration, high availability, and support for CICS TS V4.2.

The ability to reuse CICS applications in mixed CICS, Java, and other workloads, delivers real business value by increasing system flexibility and by helping to reduce costs.

Deployment options

CICS Transaction Gateway is available in three product options, to best match your requirements.

- CICS TG for z/OS V8.1 provides highly-scalable, multi-user access to CICS TS for z/OS, and is the recommended deployment platform when the highest qualities of service—availability, performance, security, and transactionality—are required.

- CICS TG for Multiplatforms V8.1 delivers scalable, multi-user access to CICS TS for z/OS, CICS TS for VSE, TXSeries, and CICS TS for i. It is an ideal deployment option for less-demanding environments, or when managed by distributed system administrators.

- CICS TG Desktop Edition V8.1 provides low-cost, single-user access to CICS. It includes all the function of CICS Universal Client V7.1 with the addition of the latest operating system and compiler support.

External Call Interface (ECI) applications developed for use with CICS TG Desktop Edition can be deployed as remote client applications using CICS TG for Multiplatforms or CICS TG for z/OS.

See Table 1, in the specifications section at the end of this data sheet, for a detailed comparison of the three different products.

Open integration

CICS TG provides extended support for Java Enterprise Edition (JEE) application servers and Windows .NET environments. CICS TG is the premier connector for integration with WebSphere Application Server, and is optimized for use with

WebSphere Application Server on host and distributed systems.

JEE integration

CICS TG V8.1 supports any JEE 6 certified application server, and is backward compatible with J2EE 1.4 and JEE 5 application servers. Exploitation of the enhanced JCA 1.6 specification (part of JEE 6) in CICS TG V8.1 enables a single CICS TG resource adapter to provide both one-phase and two-phase commit support, reducing confusion about which resource adapter to pick, reducing maintenance overheads, and increasing flexibility in deployment.

A JEE application server installation verification test (IVT). This allows simple verification of the CICS JCA resource adapters for usage in any application server that complies with the J2EE 1.4 specification.

.NET support

CICS TG APIs are usable in a wide variety of client runtime environments, including Microsoft .NET, COBOL, and C++. CICS TG enables a broad range of .NET applications, for example C# or Visual Basic .NET clients to connect to CICS through the ECI API in remote mode topologies. CICS TG V8.1 clients are now interoperable with 32-bit and 64-bit .NET compilers and run time environments.

Powerful APIs

The CICS TS channels and containers programming model provides a simple method for CICS TG applications to exchange data with CICS programs, in amounts that far exceed the 32 KB limit that applies to the COMMAREA, and additionally provides an optimized and more structured data interface. In CICS TG V8.1 the .NET remote client ECI API now provides support for the CICS TS channels and containers programming model.

The ECIv2 API can be used in a wide variety of client runtime environments, including Microsoft.NET, COBOL, and C++, and extends the capability for migration of CICS Universal Client ECI applications to a lightweight client footprint.

Java

CICS TG can operate in local mode within 64-bit Java runtime environments. Support is provided through the ECI resource adapters and enables a direct IPIC connection to a CICS server in a 2 tier environment. This provides enhanced compatibility and scalability for local deployment

with 64-bit JEE application servers, such as WebSphere Application Server for Multiplatforms.

Java applets can also access CICS TG, using the Secure Sockets Layer (SSL), encrypted SSL, or Transport Layer Security (TLS) connections to a remote Gateway daemon, supporting encryption and authentication capabilities and better interoperation with a variety of secure clients.

Enhanced IPIC connection support

Customers wishing to standardize on modern networking protocols, can benefit from the CICS Internet Protocol Inter-connectivity (IPIC) support available with CICS TG.

In the event that connections to CICS servers fail, it is important that the CICS TG is able to detect and respond to such failures quickly. New in CICS TG V8.1, a customizable server retry interval for IPIC connections shortens time-to-failure, allowing faster fail-over to an alternate CICS server when used with dynamic server selection in a high availability configuration.

Security

CICS TG provides a range of security mechanisms to provide end to end security solutions, including SSL, identity propagation and user authentication.

The External Security Interface (ESI) API is now available from ECIv2 and .NET applications and ESI requests can now be used with IPIC connections where previously they were supported only over SNA connections.

CICS TG V8.1 also adds support for password phrases with both the ECI and ESI APIs when connecting to CICS TS V4.2 using IPIC connections. Password phrases allow longer and more complex strings of mixed-case characters to be used to authenticate a user ID and can provide improved system protection since they are less likely to be guessed and require more processing power to sustain an attack.

High availability

CICS TG provides a number of options for implementing highly available environments. With CICS TG for z/OS, it is possible to create a sysplex-wide highly available Gateway solution incorporating XA transactions, maintaining transactional scope with CICS systems across the IBM Parallel Sysplex® whilst ensuring that confidence in system up-time is maximized (see Figure 2).
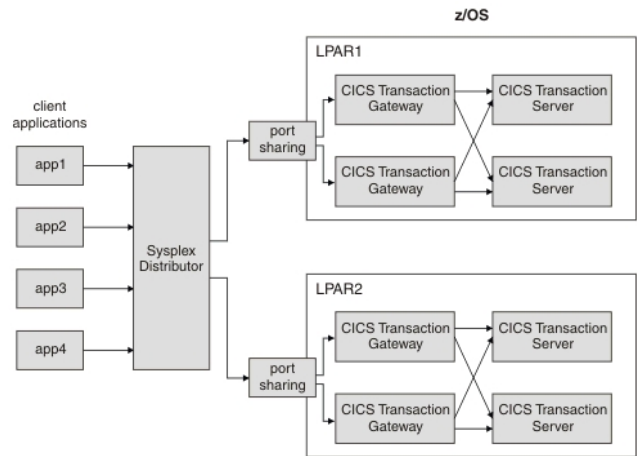

Figure 2 CICS TG for z/OS high availability

Dynamic server selection

CICS TG for z/OS supports dynamic server selection for all types of ECI requests, including two-phase commit requests using the XA protocol. New in CICS TG for z/OS V8.1 is policy-based, configurable dynamic server selection, providing out-of-the-box high availability support for ECI and ESI workloads, and a simplified mechanism for creating CICS high availability solutions that do not require the provision of user exit code.

CICS request exit

High availability is extended to distributed platforms through the support of the CICS request exit with CICS TG for Multiplatforms, and CICS TG Desktop Edition. CICS SupportPac CA1T provides a working sample CICS request exit for deployment into the Gateway daemon, enabling remote Java, Microsoft .NET and ECIv2 clients to exploit a CICS high availability infrastructure.

AIX Workload Partitioning

CICS TG V8.1 now supports the use of IBM AIX virtualization through Workload Partitioning (WPAR), both for client applications and for CICS TG daemon processes. CICS TG supports using application WPARs for client applications in remote mode or, where the IPIC protocol is used, in local mode. Client applications running in application WPARs have their own isolated environment, complete with their own network stack, so any problem occurs will not affect the rest of the LPAR or any other WPARs running within it.

Support for CICS TS V4.2

CICS TS for z/OS V4.2 introduced transaction tracking to assist customers in diagnosing problems that sometimes occur when complex distributed transactions spread across a CICSplex. CICS TG V8.1 now builds on this capability by providing access to transaction origin data from within request monitoring exits deployed in Java

client topologies, and allowing ECIv2 clients the ability to set the CICS TG client APPLID which can then be accessed within the origin data section of the CICS task association data.

CICS Explorer integration

The CICS Explorer is the new systems management tool framework for CICS, for use with CICS TS V3 and CICS TS V4.

The CICS Explorer provides an intuitive, easy-to-use way of managing one or more CICS regions. A plug-in for the CICS Explorer provides the ability to manage Gateway daemons at version V7.1 or later on any platform. Recent updates to the plug-in provide an improved set of views and customizations, together with integrated connection management and built-in Gateway and CICS test functions.

For more information about IBM CICS Explorer, see: ibm.com/cics/explorer

Performance and availability monitoring

CICS TG for Multiplatforms and for z/OS record usage statistics, enabling capacity planning and performance monitoring. CICS TG for z/OS these statistics to z/OS System Management Facilities (SMF) using a SMF type-111 record for in-depth, offline analysis using IBM CICS Performance Analyzer for z/OS.

In addition, IBM Tivoli OMEGAMON® XE for CICS on z/OS uses the monitoring function in CICS TG for z/OS to support real-time performance management, monitoring and troubleshooting with charts, alerts, advice, and automated scripts.

Scenario: Bank branch offices

A major national bank with 1000's of branch offices, 10,000's of connected users and with stringent quality of service requirements. The bank uses desktop ECIv2 client applications, written in C/C++, to access home-grown core-banking applications running on CICS TS for z/OS using CICS TG for z/OS.

Scenario: Insurance package access

An insurance company uses a vendor-provided JEE-based package deployed using WebSphere Application Server on AIX to provide branch and direct customer access to front-office systems for customer and order management. The package connects to CICS-based, back-office, policy-management applications with full transactional integrity using CICS TG for Multiplatforms.

Scenario: Retail chain

A large chain of retail stores uses CICS TG Desktop Edition to run ECI applications to connect directly to CICS. Using remote clients to connect to a centralized CICS is useful approach, where networks can be unreliable.

IBM tools—your pathway to success

CICS TG is a part of an extensive portfolio of IBM tools, for System z® and other platforms, including CICS tools, problem determination (PD) tools, application development tools, and data and systems management tools. The tools support the entire application life cycle, which helps you to build, test, deploy, and manage enterprise solutions. As a result, you can make the most of your IT investments and take advantage of the latest functions introduced in CICS Transaction Server, Version 4.

The comprehensive portfolio of IBM CICS tools offers you the opportunity to realize the full potential of your CICS systems, whatever your business strategy. You have the potential to maintain and manage your core CICS applications more easily and at a lower cost. CICS tools enhance IBM service management initiatives to optimize IT processes, maximize CICS system availability, reduce total cost of ownership (TCO), and transform CICS applications to achieve greater business flexibility. Moreover, in today's world of increasing governance, CICS tools can help to meet growing demands for reporting and audit compliance, and improve control over CICS runtime environments.

All IBM CICS, PD, and application development tools support the latest releases of CICS Transaction Server.

For more information

For more information

Contact your IBM representative or IBM Business Partner or visit:

ibm.com/cics/ctg

To learn more about other IBM CICS Tools, visit:

ibm.com/cics/tools

CICS Transaction Gateway V8.1			
Features	**Desktop Edition**	**for Multiplatforms**	**for z/OS**
Number of users	Single-user	100's to 1000's	1000s +
Programming interfaces	ECI, EPI, ESI	ECI, EPI, ESI	ECI, ESI
Programming languages	Java, .NET, C/C++, COBOL	Java, .NET, C/C++, COBOL	Java, .NET, C
Networking options	TCP/IP, IPIC, SNA	TCP/IP, IPIC, SNA	EXCI
Request monitoring and statistics functions	Y	Y	Y (With CICS PA and/or OMEGAMON XE)
Application Servers	.NET only	.NET, JEE	.NET, JEE
CICS Explorer	Y	Y	Y
Application style	Desktop	Desktop Application server	Desktop Application server
Operating systems — **Client**	Windows, Linux, UNIX	Windows, Linux, UNIX	Windows, Linux, UNIX
Operating systems — **Gateway**	Windows, Linux, UNIX	Windows, Linux, UNIX	z/OS
2-phase commit	N	JCA (XA)	JCA (XA)
High Availability	Dynamic server selection (User exit) Windows workload manager	Dynamic server selection (User exit) Windows workload manager	Dynamic server selection (Out of the box)

Table 1 CICS Transaction Gateway product comparison

IBM CICS Transaction Gateway V8.1

At a glance

Hardware requirements

CICS TG V8.1 runs on any of the following hardware, supported by an operating system listed below:

- IBM AIX: 32-bit or 64-bit IBM System p machine supported by IBM AIX

- IBM z/OS: IBM System z

- Linux: 32-bit or 64-bit Intel Pentium, AMD Opteron or Intel EM64T supported by Linux; 64-bit IBM System p supported by Linux; IBM System z supported by Linux

- Oracle Solaris: 32-bit or 64-bit SPARC system supported by Oracle Solaris Operating Environment

- HP-UX: 64-bit HP Itanium

- Microsoft Windows: 32-bit or 64-bit Intel Pentium, AMD Opteron or Intel EM64T supported by Microsoft Windows

Software requirements

Supported operating systems

- IBM z/OS V1.11, or later

- IBM AIX V5.3 (32- or 64-bit), IBM AIX V6.1 (64-bit), or later

- Linux on System z: RHEL 5, RHEL 6, SLES 10, or SLES 11 (64-bit)

- Linux on Intel: RHEL 5, RHEL 6, SLES 10, or SLES 11 including Desktop versions (32- or 64-bit)

- Oracle Solaris V10 (32- or 64-bit)

- HP-UX 11i V2 or V3 (64-bit) for Itanium

- Microsoft Windows Vista, Windows 7 Business, Professional, Enterprise and Ultimate Editions (32- or 64-bit)

- Microsoft Windows 2008 and Windows 2008 R2 Standard (including Small Business Server), Enterprise and Datacenter Editions (32- or 64-bit)

Supported CICS systems

CICS Transaction Gateway is designed to provide interoperability with all supported levels of CICS. The following list summarizes the CICS servers currently supported by IBM:

- IBM CICS Transaction Server for z/OS V3.1, or later

- IBM TXSeries for Multiplatforms V6.1, or later

- IBM CICS/VSE V2.3

- IBM CICS Transaction Server for VSE V1.1.1

- IBM CICS Transaction Server for i5/OS® V5.4, or later

- IBM CICS Transaction Server for i V7.1

Supported application servers

Not applicable to CICS Transaction Gateway Desktop Edition.

- IBM WebSphere Application Server V8.0

- Other JEE application servers that are JEE 6 certified compliant. Use the Installation Verification Test (IVT) provided with CICS Transaction Gateway V8.1 to check if a specific JEE application server can be used.

- JEE application servers that are J2EE 1.4 certified compliant are supported in remote mode with the CC03 SupportPac.

Full details of the hardware and software requirements CICS Transaction Gateway can be found at: ibm.com/cics/ctg/reqs

IBM United Kingdom Limited
Hursley Park
Winchester
Hampshire
UK SO21 2JN
United Kingdom

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