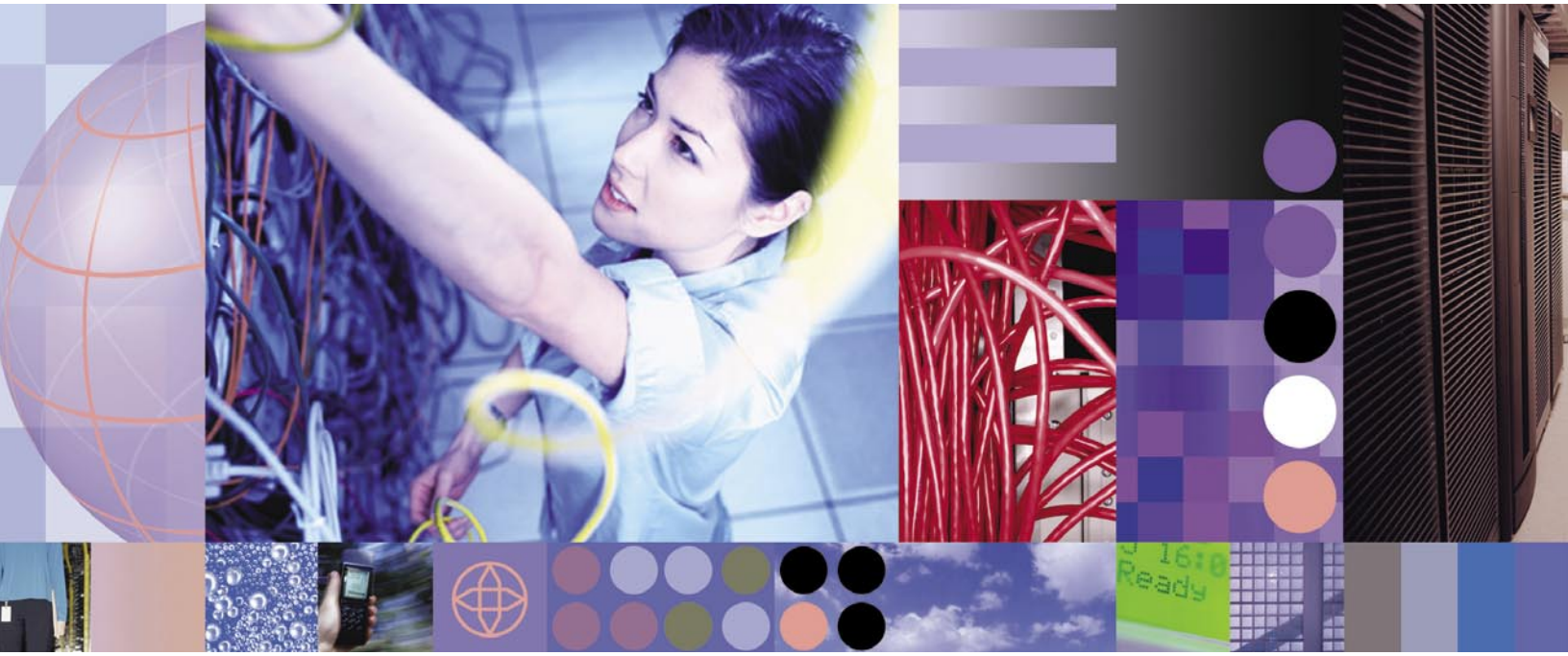
IBM CICS Transaction Server
To support your IT objectives



Bringing together an industry-leading transaction-processing platform with the innovative capabilities of SOA.

ON DEMAND BUSINESS™

A meeting of technologies

The promise of technology innovation has always been to deliver improvements that make businesses competitive. And with service oriented architectures (SOAs) maturing, IT departments now have the potential to deliver information infrastructures that can keep pace with management innovation. At the same time, the opportunity for IBM CICS® Transaction Server users to realize the full potential of their CICS systems has never been so great. The convergence of CICS innovation and SOA technology helps make flexible information infrastructures possible, while preserving the qualities of performance and reliability that your enterprise depends on.

SOA is a concept whose time has come. A *service* is simply a repeatable business task (the sort of work for which CICS transactions are so effective), and an SOA is an IT architectural style that enables you to integrate your business by linking services. You can use an SOA to help increase business flexibility and extract maximum value from your existing assets through reuse.

IBM intended IBM CICS Transaction Server for z/OS, Version 3.1 to align fully with SOA principles, so that it enables business flexibility through IT simplification. Together with its portfolio of tools, CICS Transaction Server features and capabilities fall into the following categories:

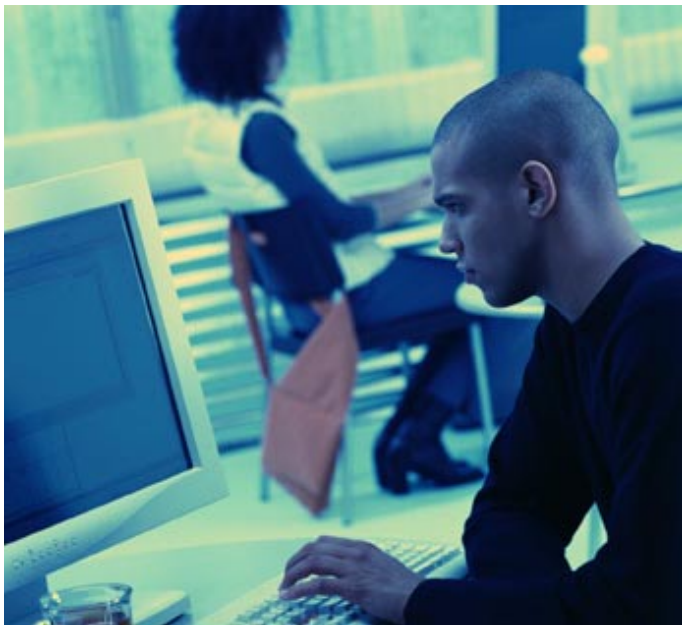
- CICS integration, *which enables reuse of CICS applications, within a flexible IT infrastructure, using standard application programming interfaces (APIs) and protocols*
- Application transformation, *which enables enhancement of existing applications and construction of new applications, using contemporary programming languages, constructs and tools*
- Enterprise management, *which enables effective management of large runtime configurations using modern user interfaces, so you can meet demanding service-level objectives.*

Making the most of all your IT assets with CICS Transaction Server and SOA

For many companies, custom CICS applications implement the core business of the enterprise—and the qualities of service that those applications provide represent the very best of enterprise service delivery. It's vital to preserve these qualities of service, even as you extend and transform those applications to support new solutions.

Web services is a standards-based technology that enables existing programs to be reused flexibly in a distributed systems environment, while preserving their essential qualities. CICS Transaction Server for z/OS, Version 3.1 extends its Web services support beyond the SOAP for CICS function that was available optionally with CICS Transaction Server for z/OS, Version 2. Along with a range of enhancements and new capabilities, this support now enables CICS business logic to be exposed as Web services, as part of an SOA. Implementing SOAP support on CICS Transaction Server is specifically intended to help optimize the CICS environment to preserve CICS qualities of service.

CICS applications can naturally act in the role of both service provider and service requester. The ability of CICS Transaction Server to act as a service provider enables you to relatively easily transform an existing CICS application into a Web service. Conversely, acting as a service requester means that a CICS application can issue a single CICS command to use a Web service provided by any external provider. This flexibility removes virtually any constraint on how you can reuse your CICS applications as services—and vastly broadens your ability to design new solutions based on existing CICS functionality.



Integration capabilities

Enterprise application integration (EAI) has been a high priority in IT since the 1990s, and CICS Transaction Server is positioned as an instrumental component in helping to make application integration easier. With this release, CICS Transaction Server for z/OS, Version 3.1 and its associated products continue to enhance CICS integration capabilities through new functionality.

The major new feature is the CICS service-flow feature, an evolution of the functions previously provided as an optional feature, SOAP for CICS. This feature enables you to integrate CICS applications with an SOA, so that they can be exposed as Web services by using the Web services assistant (for COBOL, C/C++ and PL/I applications) supplied by CICS Transaction Server. In most cases, you won't have to make any changes to the code, so you can start to integrate CICS applications into new business processes quickly and with less risk.

Simplify your distributed CICS environment

IBM TXSeries® for Multiplatforms is an entry-level non-J2EE transaction server and a rapid-deployment non-J2EE integration server. Using CICS Transaction Gateway, J2EE developers can build highly sophisticated Web and Web service front ends to TXSeries applications. You can also connect these applications to your enterprise service bus (ESB) to power your SOA.

Because TXSeries delivers a managed environment for enterprise applications, developers can focus on business logic rather than failure detection, failure recovery and synchronizing access to shared data. It is the only distributed transaction-processing solution designed to enable you to scale your applications to CICS Transaction Server on the mainframe if your business requirements grow. And because it follows the CICS programming paradigm, it is an ideal companion product for mainframe CICS users with distributed application or integration requirements.

The release of TXSeries for Multiplatforms, Version 6 includes vastly simplified installation, configuration and administration through the complete removal of the DCE and IBM Encina® prerequisites. Security integration with IBM @server® zSeries® and IBM System z9™ server enables users to be centrally defined and maintained in a Resource Access Control Facility (IBM RACF®) repository, which helps to simplify security management.

With TXSeries as a core component of your enterprise's IT architecture, your organization can have a highly responsive cross-platform, composite-application-serving infrastructure. You can capitalize on your enterprise-wide skills and assets, optimize them across a range of platforms, and deploy them in an On Demand Business environment.

Exposing CICS applications as Web services in this way enables you to provide a new level of interoperability between applications. Your trusted and proven CICS applications can cooperate as peers with other systems in mixed application environments. This capability is particularly valuable for integrating proven CICS applications in, for example, COBOL, with applications in current programming styles like Java™ 2 Platform, Enterprise Edition (J2EE) that you're building in an IBM WebSphere® environment.

CICS Transaction Server for z/OS, Version 3.1 also provides distributed transaction coordination to maintain full CICS integrity with counterparts complying with the WS-Atomic Transaction specification. New HTTP capabilities as part of CICS Web support lift the specification supported to HTTP, Version 1.1, and add outbound HTTP function, so that your CICS systems can request Web services as well as provide them. And security enhancements to the existing support for Secure Sockets Layer (SSL), such as support for the Transaction Layer Security, Version 1.0 protocol, provide the high levels of data integrity and security you require to conduct business with confidence.

As a CICS user, you have a huge investment in CICS business transactions, and a critical dependency on them to run your core business. And IBM is focused on helping to ensure that the robust and resilient qualities of service that you expect from your CICS systems can be extended fully into the SOA runtime environment. The ability to use your CICS investments easily in new business processes makes them even more valuable, and helps ensure that CICS Transaction Server continues as an essential component in your organization's IT infrastructure.

Connecting applications using CICS Transaction Gateway

To help support an end-to-end On Demand Business environment, IBM CICS Transaction Gateway is a production-proven, high-performing, security-rich and scalable J2EE connector that requires minimal changes to CICS systems and usually no changes to existing CICS applications. It allows you to rapidly service-enable your CICS applications by connecting them to new environments—such as the ESB that is at the heart of your SOA.

To enable comprehensive composite-application-serving infrastructures, CICS Transaction Gateway provides connectivity from WebSphere Application Server to CICS Transaction Server and TXSeries for Multiplatforms. The strategic interface within CICS Transaction Gateway that enables this connectivity is the J2EE Connector Architecture (JCA) adapter, a core component of J2EE that defines a programming standard to all enterprise information systems (EISs). JCA has become a very popular method of J2EE connectivity because of its ease of implementation and high qualities of service.

JCA adapters are widely supported in education materials and software tools from both IBM and non-IBM vendors. Another major advantage for application developers is that JCA provides delegated management of connections, transactions and security that are transparent to application developers. As a result, developers do not have to implement these services themselves. In a managed environment like that of WebSphere Application Server, system contracts enable these management capabilities—and help make the JCA a robust solution for integrating communications area (COMMAREA) and 3270 technology-based CICS applications with J2EE applications running in WebSphere Application Server.

JCA, along with other J2EE standard services such as Java Message Service (JMS) and Java Database Connectivity (JDBC), is a more *tightly coupled* connectivity method. Tightly coupled connectivity solutions and *loosely coupled* Web services coexist to fully take advantage of the agility of On Demand Business. When deciding which connectivity style to use, you must determine whether you want to use existing application interfaces, or create new application interfaces. You also need to decide whether you consider speed to market or flexibility as more important. And you need to choose whether your primary Web services deployment platform should be CICS Transaction Server or WebSphere Application Server. More often than not, these decisions are going to depend on your business requirements—and you will probably end up implementing a combination of both.

"We found the bidirectional Web services support a big improvement over SOAP for CICS in Version 2. It is easy to develop new Web services with the tooling provided."

–Eija Määttä, Kela, Finland

CICS Transaction Gateway currently runs in eight different operating environments, each providing a high-performing, security-rich and scalable solution. The IBM z/OS® configuration provides the highest qualities of service, as well as higher performance and improved management of connections, security and transactions. CICS Transaction Gateway for z/OS also provides the ability to architect a full two-phase-commit transaction with distributed WebSphere Application Server.

Tools to help CICS SOA implementation

There are four stages in the SOA life cycle: model, assemble, deploy and manage. Developers start in the *model* stage by gathering business requirements and designing business processes. Next, they *assemble* the applications, or implement them by combining new and existing services. Then, developers *deploy* these assets into a highly secure and integrated environment. Finally, they can *manage* and monitor processes from both an IT and a business perspective. IBM provides a complementary set of CICS and WebSphere tools that can be valuable during each stage of the SOA life cycle by helping to increase the efficiency in building and deploying new composite applications from new and existing programs.

One of the key attributes of an SOA is its ability to reuse existing program assets. That's why it's important to start with discovering which program assets you already have that you can reuse in new applications. IBM WebSphere Studio Asset Analyzer helps you discover these hidden assets by determining which programs are good candidates for reuse in Web applications based on the number and type of changes required.

JCA can be used by a number of IBM Rational®, IBM Tivoli® and WebSphere products to assist application developers to model, assemble, deploy and manage composite CICS and WebSphere applications that can then communicate through the JCA.

Other tools can also help you to reuse your existing applications. Because many enterprises use CICS Transaction Server to run their core business, they have large amounts of reliable and trusted CICS code. IBM CICS Interdependency Analyzer for z/OS helps you understand runtime resource relationships within your CICS applications. This information helps you determine how CICS components can be aggregated to form services for CICS applications. Also, IBM Asset Transformation Workbench helps you identify the business rules coded within your core applications, and helps in restructuring large applications into more-manageable segments and removing dead code.

After you have a clear idea of the assets that you have available and where they can be used in new business processes, the next stage is to create services and assemble them into deployable composite applications. IBM WebSphere Developer for zSeries, Version 6.0.1 includes capabilities that make traditional mainframe development, Web development, and composite-application development faster and more efficient. If you use CICS, IBM IMS™ or WebSphere transactional environments, WebSphere Developer for zSeries simplifies the development of new Web user interfaces, traditional terminal interfaces and back-end business logic. You can wrap your CICS and IMS transactions as Web services, and because so much business is transacted using CICS applications, you can model and reuse core assets from CICS systems with the WebSphere Developer for zSeries service-flow modeler. This feature models and renders CICS transactions of all kinds into callable Web services.

The service-flow modeler provides graphical modeling work spaces to compose a sequence of CICS application interactions into a business service. It is a key component of the CICS Transaction Server, Version 3 service-flow feature. Another component, the service-flow run time, provides optimized adapters that exploit CICS interfaces to invoke the CICS terminal-oriented transactions and COMMAREA programs required by the service-flow model.

IBM CICS Business Event Publisher for MQSeries provides a different style of integration. It enables you to create WebSphere MQ messages based on events within your applications, allowing you to rapidly integrate and extend existing CICS, IBM DB2® and IMS applications and data without the need to change application code. Through a Microsoft® Windows® technology-based GUI, you can easily define rules to control the selection of events that generate messages and determine the contents of the resulting message. For instance, you can define a rule such that, if stock on hand falls below a predefined level, CICS Business Event Publisher sends a message to notify that action needs to be taken.

By providing a bridge between your applications, data brokers and message brokers, CICS Business Event Publisher offers a simple, cost-effective solution to extend your CICS, DB2 and IMS applications and data. Through CICS Business Event Publisher, you can help increase the value of your existing core business systems, by making it possible for your familiar applications to participate in new business processes and exploit new technology (for example, mobile technology). And without the need to change base code, you can reduce implementation time and lower your development costs.

Application transformation

CICS Transaction Server for z/OS, Version 3.1 provides new capabilities that enable you to generate new applications and develop existing applications using contemporary programming languages and techniques. One of these is the *containers* and *channels* approach. Traditionally, CICS programs have used COMMAREAs to exchange data. With the containers and channels approach, CICS Transaction Server for z/OS, Version 3.1 provides a straightforward and flexible mechanism to exchange large volumes of structured parameter data between CICS programs. By using this approach, you can enable CICS programs to easily exchange unlimited data with virtually any Web-based program. The containers and channels approach removes the constraint of the 32KB COMMAREA limit. It also promotes easy linkage between the valuable and time-proven core business processes of your enterprise and the new business models that can extend the core business to help you achieve competitive advantage.

Think of containers as named COMMAREAs. They can be grouped together in channels, analogous to a parameter list. The container and channel model has several advantages over COMMAREAs:

- *Unlike COMMAREAs, channels are not limited in size to 32KB. The number of containers that can be added to a channel is not limited, and the size of individual containers is limited only by the amount of storage available.*
- *Because a channel comprises multiple containers, it can be used to pass data in a more structured way. In contrast, a COMMAREA is a monolithic block of data.*
- *Unlike COMMAREAs, channels don't require the programs that use them to know the exact size of data returned.*

Channels can be used by CICS application programs written in any of the CICS supported languages. For example, a Java client program on one CICS region can use a channel to exchange data with a COBOL server program on a different application-owning region.

"Web services in CICS Transaction Server for z/OS, Version 3.1 is the number-one integration technology. It's easy to implement, a good interface for existing CICS applications, and you can apply it step by step without touching the existing infrastructure and CICS applications. Web services in CICS Transaction Server for z/OS, Version 3.1 are well-documented and very easy to use. This technology is mature enough for immediate use in production."

–Dejan Ternjej, product manager, Vestigo, Croatia

"The ability to move large data objects between programs through the containers and channels capability is a valuable addition. It's easy to use, with no learning curve, and it opens up the possibility of new projects."
–Eija Määttä, Kela, Finland

With CICS Transaction Server for z/OS, Version 3.1, all the EXEC CICS Web API commands have been made threadsafe, and support for the XPLink feature of z/OS helps improve performance of applications written in C/C++. More efficient use of z/OS multiprocessor capabilities is enabled by extending Open Transaction Environment (OTE) support to use open task-control blocks (TCBs).

Also, a new Eclipse technology-based information center provides an improved user interface, which is standard across most new IBM software products. It includes enhanced search techniques, such as the ability to search all installed Eclipse technology-based IBM information centers in one search. You can install it individually on users' client workstations, on a dedicated server or view it online from the ibm.com® Web site.

Extend existing applications quickly and efficiently with HATS
IBM WebSphere Host Access Transformation Services (HATS) provides the tools you need to quickly and easily extend existing applications to business partners, customers and employees. HATS helps make your 3270 and 5250 applications available as HTML through most popular Web browsers, while converting your host screens to a Web-like interface. And because HATS provides a zero-footprint Web-to-host solution, the only software needed on the client is a Web browser.

A key advantage in implementing HATS is ease of use. One or more host screens are converted to GUIs in real time. And with the HATS rules-based transformation engine, you can easily improve the workflow and navigation of host applications without having to access or modify source code. As a result, you can usually have your host applications online with a familiar Web interface within a day of loading the program.

With HATS, you can add drop-down lists, tables, radio buttons, tabbed folders and other features to your host screens to help users become more productive. Users can point and click their way through your entire host application—just as they can on the Web. Instead of having to use their keyboards, users can click PF keys. They can also click the word that describes a key's function. For example, when users need assistance, they can simply click the word *Help*. A user can also access input fields with the mouse instead of having to use tabs or arrow keys to navigate the screen. With HATS, users of your existing applications have the same familiar experience they have when using other Web applications.

IBM HATS Toolkit is fully integrated within the Eclipse technology-based IBM Rational® Software Development Platform. It offers an intuitive interface and easy-to-use wizards for customizing the rules for transforming existing screens. The Eclipse platform is an industry-standard application-development environment, providing the benefits of a common framework and reusable skill set for development of Web-based applications. Integration within Rational Software Development Platform delivers a common tooling family for your On Demand Business needs. The application-development features provide a variety of other benefits, such as team-development facilities that enable code management across multiple developers.

Other tools for application transformation

A number of other IBM tools are especially useful in speeding time to value in an application-transformation project. By accelerating new application development—or enabling integration of CICS applications and data unchanged—they extend and modernize CICS applications efficiently and enable your IT systems for SOA.

- *CICS Business Event Publisher for MQSeries transforms CICS applications into data sources for message brokers without changing code. IBM WebSphere Message Broker, for instance, is at the heart of an enterprise SOA, but for complete enterprise coverage, it needs mainframe applications to supply messages. CICS Business Event Publisher handles this requirement.*
- *IBM CICS VSAM Transparency enables you to migrate Virtual Storage Access Method (VSAM) data to DB2 without rewriting your applications. You can select individual VSAM files to be migrated, and leave others as they are.*
- *CICS Interdependency Analyzer can help you change, reuse and maintain your CICS applications more efficiently. When documentation is lost or incomplete, or source code is unavailable, CICS Interdependency Analyzer automates detection of runtime relationships within your CICS system, records this data in an DB2 database, and enables you to analyze the collected information, build a relationship road map and use this data in application transformation projects or to improve day-to-day maintenance.*
- *WebSphere Studio Asset Analyzer provides up-to-date information about application components and their relationships based on the source-code information. It helps create new components and provides impact analysis to help ensure a thorough understanding of proposed changes.*

The combined information provided by WebSphere Studio Asset Analyzer and CICS Interdependency Analyzer can help you manage application change more effectively, while maintaining and even improving the high level of back-end system performance.

Complementary tools for CICS development

- IBM File Manager for z/OS, Version 5.1 is designed to deliver enhanced features to Interactive System Productivity Facility (ISPF) for creating, changing, reformatting, comparing and printing data in the IBM OS/390® queued sequential access method (QSAM) and VSAM file formats. The extensive functionality of File Manager software helps enhance application developer efficiency during testing and deployment stages of application development.
- IBM Fault Analyzer for z/OS, Version 5.1 is an "expert system" that encapsulates the experience of leading IBM software architects, developers and testers. It enables application developers to successfully diagnose program abends during debugging, testing and deployment stages of application development.
- IBM Debug Tool for z/OS, Version 5.1 is the IBM debugger for compiled applications. Debug Tool supports applications written in CC++,COBOL, High Performance Java (HPJ) and PL/I.

Enterprise management

IBM CICSPlex® System Manager is an integral part of CICS Transaction Server. It is designed to help reduce the complexity of managing CICS systems by presenting them as a simple and integrated whole. It integrates all major CICS management functions into one interface, and cooperates with IBM Tivoli® products to help automate integrated management function between CICS and z/OS.

With this release, CICS Transaction Server, Version 3.1 includes improvements to the CICSPlex System Manager Web user interface (WUI). The screen design has been enhanced to improve usability, while the business application scoping (BAS) administration views have been restructured to improve their accessibility. Now, you can completely configure CICSPlex System Manager using this interface, which helps you get to production quickly, and helps reduce the complexity of migration.

"The easy-to-use CICSPlex System Manager WUI has reduced our response and fix times. It's allowed us to give access to the help desk, so that diagnosis can start much earlier, and if the issue can't be resolved at the first stage, the service technician can begin immediately with more complicated diagnostics."

–Chief systems programmer, major U.S. electricity company

A new interface has also been provided for the CICSPlex System Manager data repository batch update facility, enabling you to configure, set up and run CICSPlex system manager without involving time-sharing option (TSO) or coordinating address space (CAS) components, which can help save time and effort for both existing and new users.

Tools for enterprise management

You might need to understand runtime cross-system resource relationships within your CICS applications. This information can be critical to your ability to maintain and change these applications, including changes for SOA implementations. Documentation and source code might not be available, and manual investigation of these relationships might not be an option because of project-schedule constraints.

CICS Interdependency Analyzer can help address these challenges. This runtime tool automates the detection of runtime relationships within your CICS system, records this data in a DB2 database, and enables you to analyze the collected information, build a relationship road map and use this data in your daily operations. Information provided by CICS Interdependency Analyzer can help you improve the availability of your CICS applications, reduce the cost and increase the speed of CICS application maintenance, as well as help reuse existing CICS applications, so that you can gain better understanding of how CICS components can be aggregated to form services for SOA implementations.

If you run batch programs, IBM CICS Batch Application Control software can make it easier to manage batch processes that have to coexist and share resources with CICS online transaction systems. It's a complex task for a system administrator to schedule batch processing around online CICS applications, but this tool manages and logs the allocation of resources to the batch job, then the allocation back to the CICS application at the end of the batch job. Not only are your CICS programmers free to do more critical tasks, but your batch window can also potentially be reduced.

In the past, gathering an accurate snapshot of VSAM business information for offline analysis required that you either keep the application available and have an inconsistent copy, or have the application unavailable while a consistent copy is made. Now, with IBM CICS VSAM Copy software, you can produce consistent copies online while keeping the application available to users. You can make copies without interrupting the online user, who can continue to update the VSAM data sets that are being copied. The user is unaware that the copy takes place, as there is no effect on transaction response time in typical user situations.

IBM CICS VSAM Recovery is for organizations where the availability and integrity of VSAM data is vital. This tool lets you automate the recovery of damaged or lost VSAM data sets (caused by catastrophic hardware failure, software failure or human error), whether you are using them in a CICS, batch or a combined environment. The latest version increases the focus on automation and backup management. Automation allows users to automate the process of recovering a data set following a backout failure in CICS, whereas backup management enables users to initiate a backup process using the panel interface.

CICS performance and availability management

IBM offers a comprehensive set of tools for CICS performance management, which meets requirements necessary for CICS performance measurement, monitoring, analysis and planning.

IBM Tivoli OMEGAMON XE for CICS on z/OS

This product is a real-time performance management and monitoring tool. It is designed to help you proactively manage complex CICS systems—including CICS resources in an IBM Parallel Sysplex® environment—to achieve high performance and avoid costly downtime. You can monitor and manage CICS transactions at high and granular levels, as well as interaction with other applications, within a single interface. You can use IBM Tivoli® OMEGAMON® XE for CICS on z/OS to detect problems quickly and take action in real time to speed problem resolution.

IBM CICS Performance Analyzer for z/OS

This product is a robust offline reporting tool that analyzes the System Management Facilities (SMF) records created by the CICS Monitoring Facility (CMF), CICS statistics, CICS server statistics, DB2 and WebSphere MQ accounting records and z/OS system logger data to produce a wide range of reports and extracts that help you tune and manage your CICS systems. CICS Performance Analyzer provides comprehensive reports on all aspects of CICS systems, as well as historical database capabilities for trend analysis and capacity planning. These reports can be easily tailored to your specific analysis requirements. You can use this product to help identify and eliminate the cause of online performance issues, tune CICS systems for optimal performance, and analyze trends for capacity planning and performance bottlenecks.

IBM CICS Configuration Manager for z/OS

This product provides definitional support, reporting and change management facilities, which enable you to manage CICS resource definitions in CICS system definition data sets (CSDs) within your enterprise from a single point of control and manipulate definitions seamlessly across CSD files and CICSPlex System Manager data repositories. It helps handle the complexities and potential problems in the administration and maintenance of resource definitions for CICS Transaction Server, across multiple CICS regions, offering comprehensive control and audit capabilities.

Along with the ability to create, edit, compare, copy, move and remove definitions, individually or in groups, you can migrate multiple definitions while automatically transforming them to match the target environment. CICS Configuration Manager provides an audit trail to generate reports and back out changes to any previous version of the definitions. Reporting facilities are available to create reports to analyze resource-definition status, relationships and history, across any combination of CSD files and and CICSPlex System Manager data repositories. You can use optional change control where approval is required from authorized users before migrating definitions. You can also help simplify migration from a CSD to a CICSPlex System Manager environment, and across CICS Transaction Server releases by using CICS Configuration Manager.

A firm foundation for On Demand Business

On Demand Business is about dynamically transforming your business to meet your customers' needs. With CICS Transaction Server and its comprehensive tools portfolio, you have an excellent foundation for success. Bring together your existing investment in skills and applications to build an SOA to meet your business needs. And reap the benefits of a successful On Demand Business by seamlessly blending core business assets with new and composite applications.

For more information

To learn more about IBM CICS Transaction Server for z/OS, Version 3.1 and other products in the CICS portfolio, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/cics

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

Produced in the United States of America
01-06

G224-7571-00