IBM CICS Transaction Server for OS/390 V1R3 — Develop New e-business Applications While Leveraging your Existing CICS Applications

Overview

CICS® Transaction Server for OS/390® (CICS TS) is the base for the future growth of general purpose and large scale or complex transaction processing. With more than 25 years experience running the world’s business, CICS has already proven itself to be the industry’s most successful application server.

Now CICS is even better with the ability to execute server Java™ applications from its proven, scalable subsystem. This lets customers marry the capabilities of their existing CICS systems with the latest developments in Java to create new applications that help them to stay competitive. This is a major step in our customers’ evolution to e-business.

Unique Advantages/Customer Benefits: CICS TS Release 3 balances the need to create new e-business applications with the need to leverage existing CICS applications. It provides users with the unique ability to execute server Java code alongside existing CICS applications written in languages such as COBOL and PL/1.

New Functions Provided in Release 3:
- Application Enablement
  - Java application support
  - OS/390 Java Virtual Machine support*
  - Object-oriented interface to CICS services for C++
  - CICS business transaction services
  - Support for open transaction environment*
  - Long temporary storage queue names
- e-business Enablement
  - Support for Secure Socket Layer function in OS/390*
  - CORBA client support
  - CICS Web interface enhancements
  - CICS EXCI enhancement for resource recovery
  - 3270 Bridge interface enhancements
  - New CICS Transaction Gateway and CICS Universal Clients
  - CICS Transaction Gateway for OS/390*
- Enterprise Scalability
  - Dynamic routing and load balancing of distributed program link (DPL) and EXEC CICS START requests
  - Coupling facility data tables support
  - Sysplex Wide Enqueue (ENQ) and Dequeue (DEQ)
  - Named Counter Server
- Enterprise Management
  - CICSPlex® System Manager enhancements
  - Resource definition online (RDO) for CICS temporary storage
  - Autoinstall for MVS™ consoles
  - Enhancements to CICS monitoring and statistics
  - CICSPlex SM Web User Interface*
  - Tivoli Ready*
- Were not previously announced in 1998

At a Glance

IBM CICS Transaction Server for OS/390 Release 3:
- Is an easy-to-use S/390® application server package
- Provides application enablement, e-business enablement, enterprise scalability, and enterprise management
- Enables you to execute server Java code alongside existing CICS applications
- Protects your investment in existing CICS applications and skills
- Reduces your cost of computing by exploiting IBM S/390 Parallel Sysplex clustering technology
- Improves developer productivity by enabling re-use of existing CICS applications for deployment on the World Wide Web
- Includes The CICS Transaction Gateway Version 3.0, which enables users to access business-critical applications running on CICS servers from a Web browser or Network Computer

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Description

**Key Prerequisites**

- OS/390 Version 2 Release 5 or later
- A coupling facility for Parallel Sysplex®, if not using DASD-only logging for a single-system sysplex

**Planned Availability Dates**

CICS TS for OS/390 Release 3: March 26, 1999

Support for Secure Socket Layer function in OS/390 will be enabled via the service process in May 1999.

The CICS Transaction Gateway for OS/390 will be available September 24, 1999, from the Web.

The CICSPlex SM Web User Interface will be available November 26, 1999.

**Additional Functions in Release 3**

Since the original announcement of CICS Transaction Server for OS/390 Release 3, (refer to Software Announcement 298-318, dated September 8, 1998), the following additional functions are provided for the release availability.

**Application Enablement**

**OS/390 Java Virtual Machine Support:** Enables CICS application programs written in Java, and compiled to bytecode by any standard Java compiler, to run in a CICS address space under the control of a Java virtual machine (JVM). This support makes CICS fully Java compliant, and enables user application programs written in Java to use all the core Java classes. Direct access to CICS resources is via the new JCICS classes.

**Support for Open Transaction Environment:** With this release of CICS the internal architecture is enhanced to enable specified user tasks to run under their own task control block (TCB). The initial beneficiary of this change are Java application programs that run under a Java virtual machine (JVM). Follow-on support will be for resource managers that, under the existing TCB structure, are forced to perform TCB switching to avoid unacceptable suspension of the TCB under which user tasks generally execute for most of their task lifetime.

The new TCBs under which tasks, optionally, can run are known as open TCBs. These form the basis for CICS becoming an open transaction environment in the longer term.

**e-business Enablement**

**Support for Secure Sockets Layer Function in OS/390:** OS/390 has introduced the OS/390 System Secure Sockets Layer (System SSL), with OS/390 Version 2 Release 7. Refer to Software Announcement 299-042, dated February 23, 1999. CICS will use this facility to enable applications designed for interface to the Web in the emerging Internet, intranet and extranet application domains, to be used with confidentiality and integrity, together with authentication.

**Enterprise Management**

**CICSPlex SM Web User Interface:** A new interface for the management of CICS objects is provided using a Web front end. The Web User Interface provides an alternative to the operational views of the TSO end user interface for CICSPlex SM and hence the CICS regions managed by it. This is aimed at operations and help-desk staff (customizable, easy to use). This supports IBM’s strategy for Web-based systems administration, and provides a limited amount of national language support (NLS) enablement for CICSPlex SM.

**Base CICS Enhancements**

- Provide support for long-lived TCP/IP connections*.
  - The CPU costs involved in setting up a TCP/IP connection for each incoming request or data post to the CICS server are high. In a conversational or pseudo conversational business transaction, which has multiple requests and posts, customers can reduce CPU costs if all flows after the first are made without the need to re-establish the connection. With this support, performance of both the CICS Web interface and IIOP is improved.
- Enhance the CICS-DBCTL operator transaction (CDBM) to support issuing IMS™ commands from a file rather than just screen input, with the ability to update and maintain the file.
- Enable run-unit work area storage to be reused for EXEC CICS LINK for programs running under Language Environment (LE).
- Provide support for explicit TCP/IP address per IP service.
- Euro: provide support for including the new euro-capable code pages.
- Support the Connection Quiesce Protocol for APPC connections.
- Workload management for non-terminal tasks*
- Provide support for explicit TCP/IP address per IP service*
- Dynamic DNS registration for TCP/IP*
- CICS business transaction services support for 3270 bridge application*
- CICS command-level interface added for Named Counter Server*
- CICS BTS Repository print utility*
- Quiesce CICS BTS function*
- CICSPlex SM support for front-end programming interface (FEPI)*
- Implement USERDEFINE command using DFHCSDDUP*

Refer to the **CICS Release Guide** (GC34-5352) for more information.

**Enhancements Available on Prior Release:** This release includes the following items, provided via the service process on the current release of CICS TS.

- Support for BMS maps on LU6.2 sessions, via new MAPPINGDEV option. The new API enables applications to perform BMS data mapping in the absence of a suitable principal facility terminal.
- Support for VTAM® MultiNode Persistent Sessions (MNPS)*
  - This support allows CICS to take full advantage of VTAM MNPS. Persisting Sessions can now be restored after a VTAM failure. They can also be restored if...
CICS is ‘shut immediate’ or cancelled and brought up on another MVS image in the same PLEX.

- Improve processing of unforgotten units of work (UOWs)*
- to reduce the number of records to be read from the MVS logstream during a restart.
- New loader exit support: *
- Two new Global User Exits (GLUEs) are added to the CICS loader — one to get control at program load time and the other to get control at program delete time. These enable users to perform any functions which need to be done in direct relation to a load module entering or leaving CICS storage.
- * Were not previously announced

**New CICS Gateway and Clients**

**CICS Universal Clients Version 3.0:** IBM CICS Universal Clients Version 3.0 is developed from the CICS Clients Version 2. They are an all 32-bit product, delivered for the OS/2®, Windows NT®, Windows 98, AIX® and Solaris® platforms. They bring the any-to-any communication capabilities (previously available only on Intel-based platforms) to AIX and Solaris.

CICS Universal Clients also provides a range of functional enhancements, including a Security API, improvements to installation, and an application for workload management.

**CICS Transaction Gateway Version 3.0:** The IBM CICS Transaction Gateway uses both HTTP and Java-based technologies to link Web browsers on the Internet or an intranet to CICS Transaction Server for OS/390, or other CICS servers.

The CICS Transaction Gateway is provided for the OS/2, Windows NT, AIX, and Solaris platforms; it also supports Windows 98 for application development. It runs on the same system as the Web server, and is capable of supporting a large number of concurrent users. It is an integrated product which incorporates the functions provided by the CICS Universal Clients Version 3.0, enabling communication with a wide range of CICS Servers. The CICS Transaction Gateway for OS/390 Version 3.0, which runs directly on OS/390 using OS/390 UNIX®, services, will be available as a “technology release” for download from the Web via:

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

**Tivoli Ready**

This product is Tivoli-Ready.

CICS TS Release 3 is a Tivoli-Ready product that includes Tivoli Global Enterprise Manager (GEM) — CICSPlex SM Instrumentation. This is a Tivoli GEM Version 2 Release 2 agent that uses the CICSPlex SM API to:

- Gather information about CICS regions managed by CICSPlex SM
- Monitor the operational state of the managed CICS regions and display their status
- Provide notification when the state of a managed CICS system changes
- Raise Tivoli events on error conditions
- Exploit real-time analysis (RTA) definitions.

The agent also provides feedback to Tivoli on the state of the agent and the CICSPlex SM address spaces (CMAS and CAS).

Customers will benefit from the seamless integration between the CICS TS Release 3 and Tivoli management software, as well as being able to interoperate with other Tivoli Ready products. Using the CICSPlex instrumentation for Tivoli GEM, extends the scope of management services to include other Tivoli applications, such as task automation, event management and resource monitoring.

**Year 2000**

This product is Year 2000 ready. When used in accordance with its associated documentation, it is capable of correctly processing, providing, and/or receiving date data within and between the twentieth and twenty-first centuries, provided that all products (for example, hardware, software, and firmware) used with the product properly exchange accurate date data with it.

### Product Positioning

**CICS as an Application Server**

The transaction processing strengths of CICS in an enterprise computing environment are appreciated and exploited worldwide. This new release of the CICS Transaction Server for OS/390 — Version 1 Release 3 — complements these strengths. With more than 25 years experience running the world’s business, CICS has already proven itself to be the industry’s most successful application server.

Now with CICS TS Release 3 CICS is even better with the ability to execute server Java applications from its proven, scalable subsystem. This lets customers marry the capabilities of their existing CICS systems with the latest developments in Java to create new applications that extend their business. This new release positions CICS TS as a premier enterprise server for e-business.

CICS TS Release 3 allows customers to leverage existing applications and skills, while providing a robust environment to create new e-business applications. Users have the unique ability to execute server Java code alongside existing CICS applications written in languages such as COBOL and PL/I. In addition, CICS TS Release 3 contains features that exploit IBM S/390 Parallel Sysplex clustering technology to reduce the cost of computing and supports the re-use of existing CICS applications for deployment on the World Wide Web.

CICS views an application and all its associated services as an entity. It manages and coordinates all the different resources needed by applications, such as databases, files and message queues, to ensure completeness and integrity of data. CICS is a true application server.

The four main themes of this release are aimed at providing a balance of solutions to meet customer needs. These are:

- Application Enablement
- e-business Enablement
- Enterprise Scalability
- Enterprise Management

Each theme contains specific product items that provide potential business benefits in resolving critical business issues. These are:

- Reduced costs — Development productivity.
• Improved time to market — Programmer productivity, design and reuse.
• Reduced production costs — Efficient use of existing skills and components, efficient integration and reuse of existing data and processes.
• Improved business efficiency — Efficient design and reuse of business and IT processes.
• Extended reach to market — Extending business processes to the Web.
• Improved user productivity, look and feel — Intuitive look and feel of GUI.
• Improved performance and manageability.
• Increased scalability of business.

With CICS Transaction Server for OS/390 Release 3 and OS/390, customers can make the correct decision for developing applications for the S/390, leveraging the best mix of features in which an organization can invest, bringing real business benefits.

CICS Transaction Server for OS/390 Release 3 provides improved productivity for application developers with:
• The CICS Business Transaction Services
• Easier operational and systems management capabilities
• Increased price performance and manageability

In addition, CICS Transaction Server for OS/390 Release 3 attracts customers and vendors to new technologies via the Internet and Java.

Additional Enterprise Integration Facilities: Bridge system boundaries to allow your customers to connect to systems wherever they may be, and free your enterprise to grow the way you want, for example, the new API for resource definitions.

Parallel Computing Support: Make the benefits of parallelism and new technology immediately available. The first release provided additional data sharing. It made more use of VTAM generic resource function, and used IBM’s coupling technology for improved handling of log streams. It also enhanced recovery for data sharing. This release extends that support with more functions, such as the dynamic routing of DPL and EXEC CICS requests.

Greater Availability and Capacity in a Parallel Sysplex Environment: Substantial enhancements have been made to CICS and other systems components with the use of the MVS logging function, the new recovery manager (CICS TS Release 2), and CICS data tables in a coupling facility (CICS TS Release 3). This improves availability and capacity in a Parallel Sysplex.

Enhanced Systems Management Facilities: Increases your operational efficiency, and allows you to improve your service level commitments. Enhancements include: resource definition online (RDO) for DB2® resources (CICS TS Release 2), temporary storage (CICS TS Release 3), transient data, and centralized log management.

CICS Transaction Server for OS/390 provides all of the function announced for prior versions of CICS, (refer to the Compatibility section for differences).

Connectivity to all other CICS family members is the same as that for CICS/ESA 4.1. Extension to CICS connectivity support provide support for the CICS interfaces in clients (EPI, ECI), CICS Transaction Gateway and for inbound ONC RPC calls.

In addition to the new application support enhancements in this release, more command-level function, previously available only at macro level, has been added to CICS TS (including API for RDO resources (CICS TS Release 2)). This makes migration to command level easier. The migration aid, CICS Application Migration Aid (5695-061) (Software Announcement 290-736, dated November 27, 1990), an element of CICS Transaction Server for OS/390, can be used to assist users converting macro-level programs to command-level programs, so that these applications can be migrated to CICS/ESA® Version 4 and to CICS Transaction Server for OS/390.

CICS TS is the base for future growth of general purpose, large scale or complex transaction processing.

All command-level applications should be migrated to either CICS Transaction Server for OS/390 or CICS/ESA Version 4 now, because these are the Year 2000 ready CICS products.

CICS support for data sharing, MRO use of MVS cross-system coupling facility (XCF), combined with VTAM persistent sessions and the MVS Automatic Restart Manager (ARM), provides a flexible alternative to the CICS Extended Recovery Facility (XRF).

Hardware and Software Support Services

SmoothStart™/Installation Services

With IBM SmoothStart Services for OS/390 Internet Enablement, IBM helps you in building an OS/390 test environment that simulates an advanced application deployment on the World Wide Web. With this service, an IBM services specialist will assist you in setting up the Lotus® Domino™ Go Webserver connection between this test environment and your data that resides on an existing OS/390 CICS (or DB2 or IMS, or MQSeries®) database.

IBM Global Services provides a set of services, at an additional cost, to support specific product themes of CICS Transaction Server for OS/390 V1.3. Examples of these services are:

• Planning Services for CICS Application Migrations

With IBM Planning Services for CICS Application Migrations, IBM Global Services helps customers plan the migration of their existing applications through to the latest release of CICS Transaction Server for OS/390 (Version 1 Release 3).

IBM Global Services provides an executable plan to manage the migration of CICS applications from existing versions to new CICS production systems.

An IBM Global Services migration specialist helps make sure that the application software migration plan is tailored to meet your requirements. During the planning phase, you can assign personnel to work with the migration specialist to help tailor the application software migration plan.

There are three migration plans:

• CICS Application Migration Planning to CICS Transaction Server for OS/390 Version 1 Release 3

• CICS Application Migration Planning to CICS Transaction Server for OS/390 Version 2 Release 1

• CICS Application Migration Planning to CICS Transaction Server for OS/390 Version 2 Release 2
Offering: Planning process to manage the migration of customer applications to new versions of CICS:

- CICS/OS/VS Version 1 to CICS Transaction Server for OS/390 Version 1 Release 3
- CICS/MVS® Version 2 to CICS Transaction Server for OS/390 Version 1 Release 3
- CICS/ESA Version 3 to CICS Transaction Server for OS/390 Version 1 Release 3
- CICS/ESA Version 4 to CICS Transaction Server for OS/390 Version 1 Release 3
- Macro to Command Conversion Assessment for CICS Applications

Offering: Plan the conversion of one or more of CICS applications from macro to command level.

Preparing for Dynamic Workload Balancing

Offering: Development of a migration plan and analysis of the performance of selected applications by assessing the affinities and interdependences of the applications.

This may include one week of CICSPlex SM on-site SmoothStart assistance.

The migration specialist has the knowledge and expertise to help plan the application software migration.

- IBM Planning Services for CICS Web Enablement

This offering provides on-site assistance from our services specialist to guide you through the process of selecting the appropriate alternatives for Web enabling your existing or new CICS applications. The service includes an analysis of your organization’s environment and infrastructure, business requirements for e-business, general Internet strategy, and candidate CICS applications for Web enablement. The components that help make up the alternatives or approaches for making your CICS applications Web friendly include:

- CICS Transaction Gateway
- CICS Web Interface
- CICS 3270 Bridge
- NetCICS
- CICS native IIOP interface
- Host on Demand

You can choose a CICS Web enabling mechanism that matches your e-business requirements. And, we provide you with the planning assistance you need to guide you through the e-business Web enablement process.

- Parallel Sysplex Services

The Enhanced S/390 Parallel Sysplex Offering (EPSO) provides an attractively priced package integrating hardware, maintenance and services, with competitive financing options, to assist you in migrating to S/390 Parallel Sysplex.

The IBM migration and implementation services address the traditional lengthy migration process when many software products must be upgraded in order to have a working Parallel Sysplex data sharing environment. It is the intent of the services to migrate a selected application to Parallel Sysplex and be in a production data sharing environment within one year.

EPSO services include two comprehensive modules: Systems Enablement and Application Enablement. The objective of Systems Enablement is to establish a Parallel Sysplex environment. IBM provides assistance and guidance in building the system, validating the hardware, and implementing some system functions in the Coupling Facility.

IBM is responsible for project management and provides guidance in migration planning and detailed implementation tasks. The system capabilities of a Parallel Sysplex are enabled providing a validation of the Parallel Sysplex environment.

In Application Enablement, one customer application is enabled for Parallel Sysplex exploitation. IBM assists in selecting the application, developing a plan, and migrating the selected application to a Parallel Sysplex environment. IBM is responsible for project management and provides support and guidance in implementing data sharing and dynamic transaction routing, testing the application, migrating the application to production, and establishing a Parallel Sysplex in a production environment.

For more information, check the EPSO package on MKTTOOLS.

For additional information, contact an IBM Global Services representative. Additional information on IBM Global Services can be found by visiting:

http://www.ibm.com/services

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As part of the IBM server strategy, CICS® Transaction Server for OS/390® has both exclusive and non-exclusive elements. The base CICS element of CICS TS is CICS 5.3, the third release of the latest CICS version, first available as CICS 5.1 in the first release of CICS TS. This element, the CICS successor to CICS/ESA® Version 4 Release 1, is exclusive and includes features and products available with prior CICS versions and releases:

- CICSplex® SM
- CICS Web Interface
- Open Network Computing Remote Procedure Call (ONC RPC)
- CICS Transaction Affinities Utility
- CICS-DB2® attachment facility
- The non-exclusive elements of the product, also available as separate products, are:
  - REXX Development System for CICS/ESA
  - REXX Runtime Facility for CICS/ESA
  - CICS Distributed Data Management (DDM)
  - CICS Application Migration Aid Version 1.1
  - CICS Universal Clients Version 3.0
  - Tivoli Global Enterprise Manager Version 2 Release 2 — CICSplex SM Instrumentation
- A non-exclusive element of the product, but not available as a separate product, is:
- CICS Transaction Gateway Version 3.0

**Release 3 Items Previously Announced**

**Application Enablement**

**Java™ Application Support:** CICS introduces support for a new programming interface for use in CICS application programs written in Java.

CICS support for the Java programming language is similar to the CICS language support for COBOL or C++. The normal CICS program execution model is used, in place of a long-lived Java Virtual Machine (JVM). Access to a range of CICS services, traditionally available through the CICS command-level API, is via a set of Java classes. The CICS translator is not required for Java. The application program is developed and compiled, using a Java compiler (such as VisualAge® for Java) on a workstation or in the OS/390 UNIX® Systems Services (OS/390 UNIX) environment on MVS™. The compiler output is then processed by the IBM VisualAge for Java, Enterprise Edition for OS/390 product in OS/390 UNIX to create program objects in MVS partitioned data set (PDSE) libraries.

When invoked, CICS loads the program from the PDSE and executes as a Language Environment (LE) run-unit, similar to C++.

**Object-Oriented Interface to CICS Services for C++:** CICS introduces a new C++ Object-Oriented (OO) Programming Interface, enabling application programmers to have access to those CICS services previously only available using the CICS command-level application programming interface (API). The CICS OO API, based on the CICS C++ foundation classes, gives a C++ programmer the choice of writing CICS application programs using either the traditional CICS command-level API or the CICS OO API classes.

**CICS Business Transaction Services:** CICS Business Transaction Services (CICS BTS) provides an API and support services that simplify the development and management of complex business transactions. Organizations can focus on the development of business logic, without needing to implement complex support infrastructures.

A real-world business transaction, for example, the booking of a holiday, may involve multiple actions that take place over an extended period. Traditionally, the individual actions that make up a complex business transaction have been mapped onto CICS transactions. The CICS Business Transaction Services provide a better way of modelling and managing complex business transactions.

Using CICS Business Transaction Services, each action that makes up the business transaction is implemented as one or more CICS transactions. CICS BTS is used to control the overall progress of the business transaction, managing the interrelationship, ordering, parallel execution, commit scope, recovery, and restart of the actions that make up the business transaction.

**Long Temporary Storage Queue Names:** The CICS temporary storage (TS) facility is enhanced to allow TS queues to have names up to 16 characters long, providing much greater flexibility in user application programs. For example, 16-character names allow you to generate queue names of the form “ttttSuuuuuuu”, where tttt is the transaction identifier, S can represent a sequence character (allowing you to have more than one queue for each transaction) and Suuuuuuu is the user id.

Support for longer TS queue names removes many of the restrictions and difficulties that face application designers caused by the 8 character limit.

**e-business Enablement**

**CORBA Client Support:** The Internet Inter-ORB protocol (IIOP) is a standard for use when providing communication between object-oriented applications programs executing on different processors. It is part of the Common Object Request Broker Architecture (CORBA) ’V2.0’ specification. CICS TS Release 3
supports inbound requests to Java application programs, using the IIOP protocol. CICS has not implemented the full function Object Request Broker (ORB), because of the following limitations:

- Objects may not have any implicit (system-managed) persistent state.
- State is initialized at the start of each method call.
- Application state must be referenced by explicit method parameters.
- Outbound object references are not supported — results in runtime errors.

Each method call is implemented as a CICS transaction, retaining the existing TOR/AOR structure.

CICS Web Interface Enhancements: The CICS Web Interface (CW) is enhanced with a number of major improvements, including support for work-load management (WLM).

- The CICS Web Interface has been restructured as a CICS domain, providing improved reliability and serviceability.
- Addition of new EXEC CICS application programming interface commands for the manipulation of Web entities.
- Improvements to the definition and management of HTML templates.
- CICS Web interface work can be sysplex-enabled.
- More than 32 K of data can be handled, inbound and outbound.
- Uses the 3270 Bridge enhancements in a Web 3270 environment.

CICS EXCI Enhancement for Resource Recovery: CICS supports MVS Recoverable Resource Management Services (RRMS), using MVS context services, for applications that use the external CICS interface (EXCI). This enables applications using EXCI, such as DCE as/CICS servers, to participate in full recovery of a distributed unit of work, enabling seamless integration with other work managers within the enterprise, and ensuring a greater return on investment for your mission critical applications. CICS inbound Transactional Remote Procedure Calls (TRPC) support will be added to DCE AS and Encina Toolkit Executive to enable AS/CICS servers to participate in Encina distributed transaction processing applications.

In earlier releases, EXCI enforces a syncpoint by the CICS server region before returning control to the EXCI client program. With use of MVS RRMS, an extended mode of EXCI operation (transactional) now provides:

- The unit of work, within which the CICS server program changes recoverable resources, becomes part of the MVS unit of recovery associated with the EXCI client program.
- The CICS server unit of work is not committed when the server program returns control to the client. This unit of work continues over multiple EXCI DPL calls, until the EXCI client decides to commit or backout the unit of recovery.

3270 Bridge Interface Enhancements: The 3270 Bridge is enhanced with:

- New options of the START command are provided to initiate a user transaction and to establish the Bridge environment. A Bridge Transaction is no longer needed for this purpose.
- Removal of some restrictions on the CICS commands used by a user transaction. Support is added for:
  - START TRANSID TERMID commands, where TERMID is the bridge facility and TRANSID is local.
  - RETURN IMMEDIATE.
  - INPUTMSG on RETURN, XCTL and LINK.
  - SET TERMINAL ATISTATUS.

Applications written for 3270 terminals can be run on CICS systems without VTAMs. The bridge can process commands faster than existing front end methods, such as FEPI and EPI, because the terminal emulation is part of the same CICS transaction. There is only a single unit of work, simplifying recoverability.

Enterprise Scalability

CICS support for Parallel Sysplex® environments is extended with the following new function:

Dynamic Routing and Load Balancing of Distributed Program Link (DPL) and EXEC CICS START Requests: CICS dynamic routing facility is extended to provide mechanisms for dynamically routing transactions started by distributed program link (DPL) requests, and a subset of START commands. Dynamic balancing for DPL includes:

- DPL requests from an external CICS interface (EXCI) client.
- External Call Interface (ECI) requests from any of the CICS Client workstation products.

The routing mechanisms allow workload balancing to be managed by CICSplex SM, allowing integrated workload balancing for EXCI clients, CICS clients, and started tasks.

The ability to dynamically route all types of program link requests improves the performance and reliability of:

- CICS Web Interface.
- CICS Gateway for Java.
- EXCI calls.
- CICS Client ECI calls.
- DCE/RPC.
- ONC/RPC.
- Any function that issues an EXEC CICS LINK Program request.

Similarly, the performance and reliability of applications that use the subset of START commands, which can be dynamically routed, is improved.

Coupling Facility Data Tables Support: CICS coupling facility data tables support allow user applications running in different CICS regions that reside in one or more MVS images within a Parallel Sysplex, to share working data with update integrity.

Data in a coupling facility data table is accessed through the CICS file control API, enabling existing applications to use it, either without any modification, or with minimum changes, depending on the level of function required. Coupling facility data tables provide efficient sharing of data with integrity, and behave much like a sysplex-wide equivalent of user-maintained data tables. Key lengths greater than 16 bytes are not supported. For contention model coupling facility data tables where the maximum record length is less than or equal to 63, the data will be
Extensions to CICSplex system management functions

**Sysplex Wide Enqueue (ENQ) and Dequeue (DEQ):** The Sysplex wide (global) enqueue and dequeue function enables CICS transactions running in the same region, or in different regions within a sysplex, to serialize on a named resource using the existing CICS API. By extending the scope of the CICS enqueue mechanism, a major source of inter-transaction affinity is removed, enabling better exploitation of Parallel Sysplex environments, improving price/performance, capacity and availability.

For example, serialization makes it possible for concurrent updates to shared Temporary Storage queues by multiple CICS transaction instances, while locking a shared Temporary Storage queue against concurrent updates. This eliminates the race problem created by relying on serial reuse of a principal facility.

**Named Counter Server:** A utility program is provided for the efficient generation of unique sequence numbers (for example, the next order number) in a parallel sysplex environment. The CICS command-level interface has been extended for the named counter server. This is the recommended interface to this function. Refer to the CICS Application Programming Reference (SC33-1688) for more information.

**Enterprise Management**

**CICSPlex System Manager Enhancements:** The CICSPlex System Manager has been enhanced to work with the new CICS functions of this release.

The CICSPlex System Manager is now an exclusive element of CICS Transaction Server for OS/390, being fully integrated with the base CICS product. Stand-alone releases of the CICSPlex SM product (5695-081) do not support CICS TS Release 3. All the CICSPlex SM functions are available, including:

- Business Application Services (BAS) for defining and installing CICS resources across multiple CICS occurrences on S/390® systems.
- Generating messages and generic alerts for triggering automation actions.
- Runtime analysis (RTA) for detecting potential CICS problems and taking automatic corrective actions.
- As well as managing CICS systems in different MVS images and regions, CICS/VSE® Version 2.3 (5686-026), CICS Transaction Server for OS/2® Warp Version 4.1 (5622-808), can be managed from a CICSPlex System Manager managing address space (CMAS).
- Extensions to CICSPlex system management functions include:
  - Enable Userkey CICSPlex SM API applications
  - Enable CAS to CAS communication via XCF

**Resource Definition Online (RDO) for CICS Temporary Storage:** Instead of coding macros to define a temporary storage table (TST), CICS provides TSMODEL resource definitions for temporary storage (TS) queues in the CICS system definition (CSD) file. The define command on the CEDA transaction is used for this resource definition online (RDO) facility, and in the DFHCSDup utility program. Temporary storage model definitions can also be discarded while CICS is running.

RDO for temporary storage eliminates the need to prepare a temporary storage table (TST) for batch assembly and link-edit. There is now no need to shut down and restart CICS in order to make changes to TS queue definitions. RDO support for TS queues is part of the CICS high availability and continuous operations strategy.

**Autoinstall for MVS Consoles:** Autoinstall for terminals is extended to include MVS consoles, removing the need to define MVS consoles to CICS, with full CICSPlex SM support. Autoinstall for consoles can use the same autoinstall control program as for terminals. This saves a considerable amount of system programmer effort for defining and maintaining individual console resource definitions.

**Enhancements to CICS Monitoring and Statistics:** Additional information is provided by CICS monitoring and statistics for many of the changes and new functions introduced in CICS.

### Key Features of CICS Business Transaction Services

- Extends pseudo-conversational mechanisms to non-terminal initiated transactions, including browsers, RPCs and messages.
- Management and control is maintained at the business transaction and activity level.
- Separation of business logic from control logic.
- Individual CICS transactions are transparent from the "before and after" actions.
- Programmer productivity in developing encapsulated business logic.
- The processes and activities of CICS Business Transaction Services can be monitored and/or statistical information gathered.
- Resources can be analyzed at the business or CICS transaction level.
- In a CICSPlex, CICS Business Transaction Services processes and activities can take full advantage of CICSPlex SM facilities.
- Systems management workload separation and workload balancing is available.
- CICS Business Transaction Services processes can be used as servers in a client/server environment.
- Implementation of an efficient concurrency model.
- Separation of the contextual information from the business logic.
- Access to existing transactions from the CICS Business Transaction Services environment.
- Ease restriction on size of communications buffer to 32K.
JAVA Support with CICS TS Release 3

Before CICS TS Release 3, running a JAVA program in a System/390® with access to CICS resources, required use of EXCI via CICS Gateway for JAVA. These programs can access all of the JAVA System services, run under the OS/390 JVM and are started like an UNIX process.

With CICS TS Release 3 there are two alternative choices:

1. Programs have direct access to CICS resources via the new JCICS classes, and run under the OS/390 JVM (at JDK 1.1.6 or higher), attached by CICS under a new TCB. CICS will use the Java Native Interface (JNI) to invoke the JVM.
   - Programs are started by either
     - a CICS Transaction
     - a CICS LINK
   and are stored in HFS format.

2. Write simplified JAVA programs to be in conformance with CICS programming requirements, compile them from bytecode to machine code, store them in PDSE format, and run them with Language Environment (LE) like a C++ one.
   - programs should not access the JAVA System facilities like:
     - AWT, File I/O HFS, Socket I/O, RMI, Applets, ClassLoader.
   - these programs should be checked with the JPORT tool to verify CICS conformance.
   - there is no need of OS/390 UNIX System Services to run them.
   - there is no need of a CICS JVM to run these programs
   - a JAVA program in byte code is 100% pure JAVA (case 1)
   - a JAVA program in machine code runs faster than the previous case, but has limited JAVA functions.

CORBA Client Support Features

CICS support for inbound requests using the IIOP protocol provides:
- Improved application development productivity. Use of a distributed object model gives well defined (strongly typed) interfaces for applications with inheritance and polymorphism characteristics.
- Stronger type checking at compile time and reduction in application error compared with the use of untyped COMMAAREAS used in CICS ECI calls. Run-time type checking is also enabled for use in polymorphic implementations.
- The use of vendor-independent client platforms, giving true separation of server and client environments.

New CICS Universal Clients and CICS Transaction Gateway Detail

CICS Universal Clients Version 3.0

IBM CICS Universal Clients Version 3.0 replaces the previous CICS Clients Version 2. It is for 32 bit platforms only, and introduces CICS Universal Clients on the AIX® and Solaris platforms. This means that Clients on these platforms may now communicate directly with the wide range of CICS servers supported by the CICS Universal Clients.

The CICS Universal Clients Version 3.0 for AIX and Solaris provide most of the same CICS Universal Client functions as are provided on the OS/2, Windows NT® and Windows™ 98 (including Windows 95) platforms. Supported functions include:
- Support for concurrent ECI and EPI
- Provision of ECI and EPI System Management exits
- Support for API tracing
- The ability to link to, connect, and to disconnect concurrently from multiple CICS servers, concurrently, using one or more transport protocols for these connections.

For differences in supported functions, refer to the Migration and Compatibility section.

CICS Universal Clients Version 3.0 introduces a security API. The External Security Interface (ESI) provides a client interface to APPC password expiration management (PEM).

The ESI is intended for use by CICS client applications that need to verify and change the password recorded by an external security manager for a specified userid. The external security manager is assumed to be accessible from a CICS server to which the CICS Universal Client is connected. The functions are:
- CICS_VerifyPassWord
- CICS_ChangePassWord

Use of the ESI eliminates the need for client application programmers to understand PEM data formats and communications server interfaces. These interfaces are described in detail in the CICS RACF® Security Guide: (SC33-1701).

CICS Universal Clients Version 3.0 for Windows NT and Windows 98/95 have moved to industry-standard installation by InstallShield. Benefits include installation in national languages.

Enhancements to the function of the CICS Universal Client for Windows NT as a Windows NT service allow (a) the entry of start-up parameters when started from the Service Control Panel; (b) the sending of CICS Client controls when running, where these do not require a parameter or have a default parameter.

The CICS Universal Clients for Windows NT and Windows 98/95 introduce a client program for workload management and failure handling between multiple CICS servers and CICS regions. The workload management program is driven by ECI and EPI user applications as well as CICSTERM and CICSPRNT.

CICS Universal Clients Version 3.0 is supported for a single user only at an end-user workstation connected to a CICS server in a configuration of two or more tiers. For functions involving multiple users, the CICS Transaction Gateway Version 3.0 should be used. The CICS Transaction Gateway incorporates the CICS Universal Clients for the respective platforms.
Table 1: CICS Universal Clients & CICS Transaction Gateway V3 Comms Support

The following table shows the communication capabilities with CICS servers for the CICS Universal Clients Version 3.0 and the CICS Transaction Gateway Version 3.0.

<table>
<thead>
<tr>
<th>CICS Server</th>
<th>Platform (1)</th>
<th>Comm. Protocol</th>
<th>T=TCP/IP</th>
<th>A=SNA</th>
<th>N=NetBIOS</th>
<th>D=DCE RPC</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS/ESA V4R1</td>
<td>OS/2</td>
<td>A, X</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>CICS 3270 EmuLin, TN-3270, Auto-Install</td>
</tr>
<tr>
<td>Transaction Server for OS/390 V1R1 and later</td>
<td>WindowsNT Windows98</td>
<td>A(4), X</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX</td>
<td>A</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td>Y(2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solaris</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CICS Transaction Server for VSE V1R1</td>
<td>OS/2</td>
<td>A</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WindowsNT Windows98</td>
<td>A(4)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX</td>
<td>A</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solaris</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CICS/VSE V2R3</td>
<td>OS/2</td>
<td>A</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WindowsNT Windows98</td>
<td>A(4)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX</td>
<td>A</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(3)</td>
<td>Y(5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solaris</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CICS/400(R) V3R1 and later</td>
<td>OS/2</td>
<td>A</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WindowsNT Windows98</td>
<td>A(4)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX</td>
<td>A</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solaris</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transaction Server for AIX V4 (7); for Solaris V2.1.1; CICS for HP-UX V2.1.1; Trans for Windows NT V4(8); TXSeries (TM) V4.2 for Windows NT, AIX, Solaris, and HP-UX</td>
<td>OS/2 Windows98</td>
<td>T, A(6)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WindowsNT T, A(6), D(12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX</td>
<td>T, A(6)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solaris</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transaction Server for OS/2 Warp V4(9); CICS Transaction Server for for OS/2 Warp V4.1 (11); VisualAge CICS Enterprise App Development for OS/2 and for Windows(11)</td>
<td>OS/2 WindowsNT Windows98</td>
<td>N, T, A</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIX</td>
<td>T, A</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solaris</td>
<td>T</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

(1) The CICS Transaction Gateway for Windows 98 (including Windows 95) has the same functions as the CICS Transaction Gateway for Windows NT, but is supported for application development only.
(2) The CICS/ESA V4R1 host requires PTFs UN90142 and UN90143.
(3) The CICS/VSE V2R3 host requires PTFs UN90168 and UN90169.
(4) Including via NetWare for SAA.
(5) Only for dependent LU6.2 sessions.
(7) Transaction Server for AIX V4.1 contains CICS for AIX V2.1.1.
(9) Transaction Server for OS/2 Warp V4.0 contains CICS for OS/2 V3.0.
(10) CICS Transaction Server for OS/2 Warp V4.1 contains CICS for OS/2 V3.1.
(11) In VisualAge COBOL V2.2 and VisualAge PL/I V2.1.
(12) Only with TXSeries Version 4.2 for AIX, Windows NT, Solaris and HP-UX.

CICS Transaction Gateway V3.0

The IBM CICS Transaction Gateway Version 3.0 is a key e-business enabling feature of CICS Transaction Server for OS/390. It provides a robust, scalable, easy-to-use and secure complement to a Web server, enabling multiple users at Web browsers or Network Computers to access business critical applications running on IBM CICS servers, including CICS Transaction Servers and TXSeries servers, using standard Internet protocols, in a range of configurations.

The CICS Transaction Gateway Version 3.0 incorporates, in a single integrated product, the CICS Universal Clients Version 3.0, which provide its functions for communication with CICS servers. There is no requirement for the separate installation of the CICS Universal Clients. All CICS Universal Client functions are available at a machine running the CICS Transaction Gateway.

The CICS Transaction Gateway also replaces and integrates two previous gateway functions: the CICS Internet Gateway (delivered, for the OS/2 and Windows NT platforms, as part of the CICS Clients Version 2); and the CICS Gateway for Java (available for download from the Internet, for use with the respective CICS Clients Version 2 or CICS for UNIX Clients). The CICS Transaction Gateway is based on many years of experience with CICS Clients and Gateways in large numbers of demanding customer applications, and represents a streamlined and efficient implementation of the gateway functions.

The CICS Transaction Gateway Version 3.0 is provided for the OS/2, Windows NT, AIX, and Solaris platforms.

- In addition, the CICS Transaction Gateway supports the Windows 98 platform (also Windows 95), for application development only; it is not supported for production use on this platform.

The CICS Transaction Gateway Version 3.0:

- Provides the widest possible access to CICS business applications

CICS Transaction gateway enables any Web browser, Network Computer or Internet-enabled consumer device to access business applications running on CICS servers, using one of three possible methods:

1. All Web browsers support HTTP. The CICS Transaction Gateway will render existing CICS
Provides high performance and scalability

The CICS Transaction Gateway is a highly optimized, multi-threaded Java application that can concurrently support large numbers of connected browsers with sub-second response times. It exploits the capabilities of the embedded CICS Universal Clients Version 3.0 for efficient communication with CICS servers, and can exploit the capabilities of SMP (Symmetric Multi-Processor) hardware for high transaction throughput. It also incorporates a sophisticated workload balancing facility which allows the transaction workload from a large population of browsers to be distributed across multiple CICS regions or CICS servers.

Provides comprehensive security capabilities

The CICS Transaction Gateway provides comprehensive support for multiple aspects of security, which are critical to successful Internet operation. These are:

1. Privacy, via implementations of SSL (Secure Sockets Layer), and of HTTP-S (HTTP over SSL). These encrypt data flowing between the browser and the Gateway server.

2. Authentication, via built-in support for user ids and passwords that are authenticated by CICS application servers. In addition, it provides an External Security Interface (ESI), which enables customer applications to verify user ids and passwords and to change expired passwords.

3. Authorization, which is provided as a standard function of each CICS server, enabling customers to control what transactions a given end user can run and what data that user can access.

Provides robust, multi-platform implementation

The CICS Transaction Gateway provides a single, consistent Java implementation across multiple server platforms, exploiting the “write once, run anywhere” capability of Java, and based upon the new CICS Universal Clients Version 3.0, with their common 32-bit implementation running on multiple operating systems and communications protocols.

The CICS Transaction Gateway includes a set of Java EPI Beans for creating Java front ends for existing CICS 3270 applications, without any programming. This enables Java applications or applets to be created, simply by the use of a tool such as VisualAge for Java, which enables existing CICS applications designed for the use of 3270 terminals to interface with the Web browser or Java enabled environment.

CICS Transaction Gateway for OS/390: In addition to the CICS Transaction Gateway Version 3.0 for OS/2, Windows NT, Windows 98, AIX and Solaris, previously announced, the CICS Transaction Gateway for OS/390 Version 3.0 will be available as a “technology release” for download from the Web via:

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

The CICS Transaction Gateway for OS/390 Version 3.0 enables customers to provide support for end-users at Web Browsers in a two-tier configuration. It was developed from and replaces the CICS Gateway for Java (MVS), which was shipped as a component of the CICS Transaction Server for OS/390 1.2. It provides an API which enables Java applets and Java servlets to communicate using the CICS ECI interface. The CICS Transaction Gateway for OS/390 converts this ECI communication to access the CICS Transaction Server for OS/390 using the External CICS Interface (EXCI).

Support for Transactional EXCI, which uses OS/390 Resource Recovery Management Services (RRMS) to support extended units of work, will be made available at a later time.

The CICS Transaction Gateway for OS/390 runs in the same operating environment as CICS Transaction Server for OS/390, using the UNIX System Services (formerly known as OpenEdition®) of the OS/390 Operating System. It is supported with both CICS Transaction Server for OS/390 1.2 and 1.3, but will not be shipped to CICS TS 1.2 or 1.3 customers.

The following Web Servers provide HTTP and servlet support for the CICS Transaction Gateway for OS/390 Version 3.0:

- Domino™ Go Webserver 4.6.1 and 5.0 for OS/390

Related Client and Gateway Products

CICS Clients Version 2: The CICS Clients Version 2 continues to be available as a program package, for download from the Internet, and packaged with certain servers. In particular, it is the only source of CICS Clients for the 16-bit platforms Windows 3.1 and DOS. It can be used for communication with CICS TS Release 3.

CICS Gateway for Java: The CICS Gateway for Java Version 2.0.2 remains available for download from the Internet, but it is only supported with the CICS Clients Version 2 and the CICS for UNIX Clients for the
respectively platforms, which also remain available. It is not supported with the CICS Universal Clients Version 3.0.

**CICS Internet Gateway:** The CICS Internet Gateway remains available for the OS/2 and Windows NT platforms in the CICS Clients Version 2, and for AIX in the Transaction Server for AIX, Version 4.1, the TXSeries, Version 4.2 for AIX, and on the CICS Clients Version 2 CD-ROM. It is not supported for use with the CICS Universal Clients Version 3.0.

For more information and for download of the above products, refer to:

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

**CICS and Lotus Notes®:** Although the IBM CICS Link (Gateway) for Lotus Notes (for OS/2 and Windows NT) remains available in the CICS Clients Version 2.0, it is recommended that customers use the MQSeries® Enterprise Integrator, which includes a number of enhancements. It offers a common API that can be used to integrate Lotus Notes with IMS™ or MQSeries as well as CICS; it supports the EPI as well as the ECI; and it can be driven directly from a web browser connected to Domino. (It does not require the use of MQSeries in order to access CICS.) MQSeries Enterprise Integrator Version 1.0 is included in MQSeries and CICS Connections for Domino, part of the Lotus® Domino.Connect™ family. For more information, refer to:

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

For the licensing of the CICS Transaction Gateway and CICS Universal Clients for use with different CICS servers, refer to the Terms and Conditions section.

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**Education Support**

The CICS curriculum, that includes a migration class, is available.

Descriptions of all classroom and self-study courses are contained in the Catalog of IBM Education and Training.

Call IBM Education and Training at 800-IBM-TEACH (425-8322) for education catalogs, schedules, and enrollments.

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**Open Blueprint®**

CICS Transaction Server for OS/390 provides the capability for distributed parts of an application to "converse" with one another. Its implementation is consistent with the Conversational function described in IBM's Open Blueprint. It provides the Common Programming Interface for Communications (CPI-C) industry-standard interface from X/Open. It supports the Advanced Program-to-Program Communication (APPC) protocol from IBM to facilitate open, distributed, multivendor interoperability.

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**Technical Information**

**Specified Operating Environment**

**Hardware Requirements**

Processors: CICS Transaction Server for OS/390 runs on any IBM S/390 processor that supports OS/390 Version 2 Release 5 (or later) and has enough processor storage to meet the combined requirements of the host operating system, CICS TS, the access methods and the application programs.

These include:

- All models of the S/390 Parallel Enterprise Servers or S/390 Parallel Transaction Servers (IBM 9x72, IBM G5)
- All models of the S/390 Multiprise™ 2000
- All models of the IBM ES/9000® Processor Unit 9021, the 9121, or the 9221
- An IBM ES/3090™-900T processor (Models 15T, 17T, 18T, 25T, 28T) that supports IBM Enterprise Systems Architecture/370™ (ESA/370) and must have the optional ESA/390™ facilities
- PC Server System/390 or RS/6000™ and System/390 Server-on-Board

CICS TS is dependent on the MVS logging function, requiring either the DASD logging function for a single-system or a coupling facility for a Parallel Sysplex system.

**Coupling Facility:** A CICS Transaction Server for OS/390 on a Parallel Sysplex system must have one or more coupling facilities with their associated coupling links installed, unless using the Integrated Coupling Migration Facility (ICMF) or Internal Coupling Facility (ICF).

However, a coupling facility is not required for a single MVS image when using the "DASD-only option" of the MVS system logger. This option provides support for single or multiple sysplexes that do not include a coupling facility (non-parallel sysplex).

A coupling facility can be defined in one of three ways:

1. A stand-alone IBM 9674
2. A PR/SM™ logical partition (LPAR) running the coupling facility control code. Processors that can enable the coupling facility function in a logical partition include:
   - ES/9000 9021 711-based models
   - ES/9000 9121 511-based models
   - S/390 Parallel Enterprise Servers (9672)
   - For the 9121 511-based models, it is necessary to use ICMF in this configuration to provide coupling facility functions.
3. A PR/SM™ logical partition with ICMF for both the 9021 711-based and 9121 511-based processors, or the S/390 Parallel Enterprise Servers (9672). This latter configuration does not require the coupling links.

In general, a stand-alone coupling facility is recommended for a production environment to eliminate a single point of failure and two coupling facilities are recommended for high availability.

For customers intending to open data sets in RLS mode, further hardware information is provided.

An upgrade to the coupling facility to CFLEVEL=2, is necessary to run in the RLS environment. In order to upgrade to this licensed internal code, the following upgrades to the coupling facility are required:

- 9674-C01 or 9672-R1 level machines:
  
  E/C D79756 (SE) MCLS 033,034,035 for DR46
  E/C D79533 (SE) MCLS 058,059,060 for DR44
• 9674-C02/C03 or 9672-R2/R3 level machines:
  E/C E45568 (SE) MCLS 058,059,060 for DR66
  E/C E12981 (SE) MCLS 082,083,084 for DR64

• ES/9000 9021 711-based machines:
  SEC 236422 CFCP0048-54

• ES/9000 9121 511-based machines:
  SEC C35956 CFCP0041-47

Other Sysplex Hardware: Customers migrating to S/390 Parallel Sysplex, and with multiple processors sharing data across MVS images also require:
• The IBM Sysplex Timer® to provide a common external time source
• DASD controllers with enough paths to dedicate one to each processor (CPC) in the Sysplex, or a director to provide the paths

Storage: Compared with the prior release of CICS TS, central storage usage will not change significantly.

Terminals: Current and new terminals will be supported by CICS Transaction Server for OS/390 if they are accessed through VTAM or TCAM(DCB).

TCP/IP attached systems or workstations will be supported, if either the CICS ONC RPC function of CICS or the CICS basic TCP/IP sockets feature of OS/390 Version 2 (5647-A01) are used. Access via TCP/IP is also provided with CICS Internet support and with the TCP62 protocol support.

The list of current terminal types, with modes of connection, is documented in the CICS Resource Definition Guide (SC33-1684).

DASD: Support for any new disk device will be completely transparent to CICS Transaction Server for OS/390. Support is provided in the standard access methods used by CICS.

Customers needing the concurrent copy of active files or databases will need to install IBM 3990 Model 3 or Model 6 DASD controllers.

Tapes: CICS Transaction Server for OS/390 will continue to support current tape devices, including IBM 3480. There is no support for tape logging. There are no restrictions on the use of tapes for extra partition transient data.

Printers: Support for any new VTAM attached printers will be completely transparent to CICS Transaction Server for OS/390, assuming these printers are compatible with currently supported models.

CICS Universal Clients and CICS Transaction Gateway: The CICS Universal Clients Version 3.0 will run on any hardware capable of running the appropriate operating system and other prerequisite software.

The support for the CICS Universal Clients Version 3.0 for OS/2, Windows NT, and Windows 98 is for any IBM compatible machine.

Requirements for hard-file space for the CICS Universal Clients Version 3.0 are in the region of:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Hard File Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/2</td>
<td>8 MB</td>
</tr>
<tr>
<td>Windows NT</td>
<td>8 MB</td>
</tr>
<tr>
<td>Windows 98/95</td>
<td>8 MB</td>
</tr>
<tr>
<td>AIX</td>
<td>4 MB</td>
</tr>
<tr>
<td>Solaris</td>
<td>4 MB</td>
</tr>
</tbody>
</table>

The CICS Transaction Gateway Version 3.0 will run on any hardware capable of running the appropriate operating system and other prerequisite software.

Requirements for hard-file space for the CICS Transaction Gateway Version 3.0 are in the region of:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Hard File Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/2</td>
<td>11 MB</td>
</tr>
<tr>
<td>Windows NT (also Windows 98)</td>
<td>11 MB</td>
</tr>
<tr>
<td>AIX</td>
<td>8 MB</td>
</tr>
<tr>
<td>Solaris</td>
<td>8 MB</td>
</tr>
</tbody>
</table>

Software Requirements

Minimum Infrastructure for CICS Transaction Server for OS/390 Release 3: Requirements are the same as CICS TS Release 1, except as noted by an (*), where the later level is the minimum required. Refer to Software Announcement 296-349, dated September 10, 1996.

• CICS Transaction Server for OS/390 Release 3
OS/390 Version 2 (5647-A01) Release 5 or later *

The Binder PTF for APAR OW36582 must be applied to the DFSMS/MVS® Program Management component (5695DF108), together with the IEBCOPY PDS/E PTFs UW49740 and UW54887, before installation.
The following products, as required by the customer for related functional purposes:

- **ACF/TCAM (DCB)** (5735-RC3) Version 2.4 + PTFs
- **ACF/TCAM (DCB)** (5665-314) Version 3.1 + PTFs

**IMS/ESA® Database Manager**
- (5695-176) Version 5.1
- (5655-158) Version 6.1 *
- DB2 (5695-DB2) Version 4.1 *
- DB2 (5655-DB2) Version 5.1 *
- DB2 (5645-DB2) Version 6.1 *
- OS PL/I-R/T (5668-910) Version 2.3

**Tivoli Performance Reporter for OS/390** (5695-101) Version 1.4 * (Requires PTF for APAR PQ23257)

**CICS Clients** (5639-001) Version 2.0.4, with service level 7 applied, or later *

**NetView® for MVS/ESA™ Version 3 Release 1** (5655-007), or later, required to provide a Resource Object Data Manager (RODM) repository that CICSPlex System Manager exploits through the use of NetView MultiSystem Manager Version 2 Release 2 (5655-126) *

**Note:** OS/390 Version 2 Release 5 (5647-A01) includes many products required by CICS as exclusive elements of OS/390.

**Tivoli GEM — CICSPlex SM Instrumentation**

**New Function Description (Introduced in CICS Transaction Server for OS/390) Prerequisite Software**

- **Long Temporary Storage Release 6** * Queue Names, with security checking
- **CICS enhancement to EXC1 for resource recovery using MVS recoverable resource management services (RRMS)**
- **Java Language Support**
  - Java Client Support
  - OS/390 Version 2 Release 5 * + PTF UW46914
  - IBM VisualAge for Java, Enterprise Edition for OS/390 (5655-JAV), Version 2.0 * + PTFs UQ23040, UQ23998, and UQ23042 for runtime library OS/390 (5647-A01) Version 2.5 * for Java Developer Kit/Runtime 1.1
  - Java for OS/390 (5655-A46)
  - CICS Gateway for Java (MVS) V2.1.0 *
- **MQSeries Messaging Mechanism for Use with 3270-bridge**
- **Support for Secure Sockets Layer Function in OS/390 on OS/390 —**
  - OS/390 Version 2 Release 7 * CICS enabling APAR PQ23421 * (Post General Availability)

**Note:** The following VTAM information advises on what service is recommended for any Parallel Sysplex:

- Information APAR II08658 relates to Advanced Peer-to-Peer Networking® (APPN®) on ACF/VTAM® 4.2.
- Information APAR II01501 relates to service for multi-path channel and APPN host-to-host channel.
- The SYSPLEX — PSP Bucket for DATASHARING has a VTAM subset. This includes Generic Resource recommendations.

**Requirements Beyond Minimum Function**

**New Function Description Introduced in CICS Prerequisite Software**

<table>
<thead>
<tr>
<th>New Function Description</th>
<th>Introduced in CICS</th>
<th>Prerequisite Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS DB with SSP Data Sharing</td>
<td>Version 3.3</td>
<td>IMS/ESA Database Manager (5695-176) Version 5.1</td>
</tr>
<tr>
<td>Database2 (DB2) Data Sharing</td>
<td>—</td>
<td>DB2 (5695-DB2)</td>
</tr>
</tbody>
</table>

**Note:** Refer to **CICS Migration Guide** (GC34-5353) for guidance on MRO coexistence within a Parallel Sysplex. DFHIRP is used for XCF MRO when using MVS Cross System Coupling Software.

**Note:** The following PTFs are required, if not already installed on OS/390 and associated products:

- **Binder fix prereq. — PTF for APAR OW36582 must be applied to the DFSMS/MVS Program Management component (5695DF108), together with the IEBCPY PDS/E PTFs UW49740 and UW54887, before installation.**
The Program directory (GI10-2506) contains more details on other product APARS and PTFs required for this release of CICS TS.

The Program directory also contains information on compatibility/coexistence APARS for lower level CICSPlex SM systems before communicating with the latest level of CICSPlex SM.

PQ23027 for CICSPlex SM is required to allow Work Load Manager (WLM) fencing for CICS BTS workloads.


- RRMS (OS/390 V2 R5) UW46914
- RACF certificate support PTFs UW91119, UW91120
- RACF APAR OW35612 For long TS queue name support

The following PTFs must be applied before using the Java Compiler:

- PTFs UQ23040, UQ23998, and UQ23042 for the runtime library.

Enhancements being provided with the Java Compiler are also recommended:

- APARs PQ23612, PQ23614 (PTFs UQ90004, UQ90005).

The following APARs are required before using Java Language support:

- OW31036 bind with long object names
- OW31718 DFSMS™ 1.4 invalid loader storage check
- OW31924 IEW2333E Invalid syntax in IMPORT control statement
- OW32111 IEW2900T E913 Binder abnormal termination 3D052900 2010 16
- OW32261 IEW2900T E913 Binder abnormal termination 3D052900 1077952576 16
- OW32334 IEW2900T E913 Binder abnormal termination 35602900
- OW33782 DFSMS 1.4 DESERV to set output buffer length for PDSE access
- OW34052 Load optimization for C_WSA for DLLs in dynamic LPA

OW34052 affects the program object size recorded by the Binder in the PDSE directory, and hence the amount of storage CICS allocates for a directed load.

- PQ08747 In order for LE to support double precision floating-point in single thread environment
- PQ17512 0C4 when signal occurs in stack extension boundary
- Info APAR (II11025) on RETAIN®, lists all the CICS TS and LE 1.8 compatibility fixes
- New Info APAR (II11597) on RETAIN, to list other product required PTF’s

To run CICS with TCPIP=YES, apply the required PTF for APAR PQ21197. The required PTFs are:

- UQ23829 for OS/390 Version 2 Release 5
- UQ23630 for OS/390 Version 2 Release 6
- UQ23628 for OS/390 Version 2 Release 7

PQ19340 CICS ABEND failure caused by LE condition handler

The following APARs are recommended when using CICS LINK:

- LE APAR PQ14883 + COBOL APAR PQ16794
- LE APAR PQ14888
- LE APAR PQ17931

The following APARs are required for TCP/IP:

- APAR PQ14815 TCP/IP return code settings

CICS VSAM Recovery Version 2 Release 3 (5695-010) (CICSVR 2.3) is required for VSAM forward recovery with the logging function in MVS.

The later level of software and its prerequisites are required only to support the indicated new functions.

PTFs may be required for any of these new functions.

CICS Universal Clients and CICS Transaction Gateway: CICS Universal Clients Version 3.0 supports the following Operating Systems:

For the CICS Universal Client for OS/2:

- OS/2 Warp Version 4
- OS/2 Warp Server Version 4

For the CICS Universal Client for Windows NT:

- Windows NT Workstation Version 4.0, with Service Pack 3 applied, or later
- Windows NT Server Version 4.0, with Service Pack 3 applied, or later (including versions for DBCS languages)

For the CICS Universal Client for Windows 98:

- Windows 95
- Windows 98

For the CICS Universal Client for AIX:

- AIX Version 4.2.1, or later
- AIX Version 4.3.1, or later

For the CICS Universal Client for Solaris:

- Solaris Version 2.5.1, or later

For SNA Communications from CICS Universal Clients Version 3.0, the following communications products are required:

<table>
<thead>
<tr>
<th>Universal Client Platform</th>
<th>Supporting products — one of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/2</td>
<td>IBM Communications Server, for OS/2 Warp, Version 4.0, or later (including IBM eNetwork(TM) Communications Server for OS/2 Warp, Version 5.0)</td>
</tr>
<tr>
<td>Windows NT</td>
<td>Microsoft(TM) SNA Server, Version 3.0, or later</td>
</tr>
<tr>
<td></td>
<td>IBM Communications Server for Windows NT, Version 5.0, or later (including IBM eNetwork Communications Server for Windows NT, Version 5.0)</td>
</tr>
<tr>
<td></td>
<td>IBM Personal Communications AS/400(R) and 3270 for Windows NT, Version 4.11 with APAR IC16672, or eNetwork Personal Communications Version 4.2 or 4.3</td>
</tr>
<tr>
<td></td>
<td>Netware for SAA Version 2.20, with APAR JP10793, or later</td>
</tr>
<tr>
<td></td>
<td>IntranetWare for SAA, Version 3</td>
</tr>
</tbody>
</table>

For the CICS Universal Client for AIX:

- AIX Version 4.2.1, or later
- AIX Version 4.3.1, or later

For the CICS Universal Client for Solaris:

- Solaris Version 2.5.1, or later

For SNA Communications from CICS Universal Clients Version 3.0, the following communications products are required:

Universal Client Platform
<table>
<thead>
<tr>
<th>Supporting products — one of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/2</td>
</tr>
<tr>
<td>Windows NT</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
For TCP/IP communication from CICS Universal Clients Version 3.0 on all platforms, support is included in the Operating System.

For NetBIOS communication from CICS Universal Clients Version 3.0 for OS/2, Windows NT, or Windows (98/95), support is included in the Operating System.

TCP62 support for the CICS Universal Client for OS/2 requires IBM eNetwork Communications Server for OS/2 Warp, Version 5.0; APAR JR11589 must be applied (which is part of fixpack csa5028).

With the CICS Universal Clients Version 3.0 for Windows NT and Windows 98, if SNA communications are required as well as TCP62, IBM e-Network Personal Communications, Version 4.2 should be used.

For use of DCE with the CICS Universal Client for Windows NT, DCE Runtime Services are required. The DCE products supported are:

- IBM DCE for Windows NT Version 1.1.1 or 2.0
- Gradient PC-DCE Version 2.0 for Windows NT/95

Products with which LU alias names may be used are:

<table>
<thead>
<tr>
<th>Product</th>
<th>OS/2 WIN NT</th>
<th>Windows NT 98/95</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Personal Communications</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Microsoft SNA Server — Client</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Microsoft SNA Server</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>IBM Communications Server for Windows NT — Client</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>IBM Communications Server for Windows NT</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>IBM Communications Server for OS/2 Warp, Version 4, or later</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>NetWare for SAA Client (Note that with NetWare for SAA, LU names can only be aliases)</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Password management using the PEM service transaction is supported using the following protocol drivers:

<table>
<thead>
<tr>
<th>Client Platform</th>
<th>TCP62</th>
<th>SNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/2</td>
<td>CCLTCP62</td>
<td>CCLIBMSSN</td>
</tr>
<tr>
<td>Windows NT</td>
<td>CCLTCP62</td>
<td>CCLIBMSN</td>
</tr>
<tr>
<td>Windows 98</td>
<td>CCLTCP62</td>
<td>CCLIBMSN</td>
</tr>
</tbody>
</table>

The CICS Transaction Gateway Version 3.0 supports the following Operating Systems:

For the CICS Transaction Gateway for OS/2:
- OS/2 Warp Version 4
- OS/2 Warp Server Version 4

For the CICS Transaction Gateway for Windows NT:
- Windows NT Workstation Version 4.0, with Service Pack 3 applied, or later
- Windows NT Server Version 4.0, with Service Pack 3 applied, or later
  (Including versions for DBCS languages)

For the CICS Transaction Gateway for Windows 98:
- Windows 98
- Windows 95
  (Including versions for DBCS languages)

For the CICS Transaction Gateway for AIX:
- AIX Version 4.2.1, or later
- AIX Version 4.3.1, or later

For the CICS Transaction Gateway for Solaris:
- Solaris Version 2.5.1, or later

The CICS Transaction Gateway Version 3.0 runs on a Java-enabled platform, and requires the following minimum levels of Java Development Toolkit (JDK) installed:
- OS/2: JDK 1.1.6, or later
- Windows NT: JDK 1.1.6, or later, with JIT update
- Windows 98/95: JDK 1.1.6, or later, with JIT update
- AIX: JDK 1.1.6, or later
• Solaris: JDK/JIT V1.1.6 for SPARC-based machines, or later, with native threads support for Solaris Version 2.5.1, or later

The CICS Transaction Gateway requires, for servlet functions, a Web server that supports servlets. It has been tested with the following Web servers:

• Lotus DominoGoWeb Server Release 4.6.2 (for OS/2 Warp, Windows NT, AIX, or Solaris)
• Microsoft Internet Information Server (IIS) Version 4.0 (for Windows NT and Windows 98/95)
• IBM Websphere Version 1.0 (for Windows NT, AIX, or Solaris)
• Apache Version 1.3 (for AIX and Solaris)
• Sun WebServer Version 1.0 (for Solaris)

The CICS Transaction Gateway may be used for HTML/HTTP functions with any Web browser that supports HTML Version 3. For use with Java functions, a JDK 1.1 is required. It has been tested with the following Web servers:

• OS/2: Netscape Navigator Version 2.0.2 with 1.1 patch
• Windows NT, 98, 95: Internet Explorer Version 4.0.1
• Windows NT, 98, 95: Netscape Version 4.0.3 with 1.1 patch
• AIX: Netscape Navigator Version 4.0.4
• Solaris: Sun HotJava™ Browser, Version 1.1

The data for CICS Transaction Gateway for supporting products for communications, and for supported compilers and application development tools, is the same as that for CICS Universal Clients. Refer to material on the CICS Universal Clients above for this information.

Compatibility: CICS Transaction Server for OS/390 provides compatibility with prior versions of CICS as indicated.

Application Programming: CICS Transaction Server for OS/390 provides upward compatibility from CICS/ESA Version 4 Release 1, and CICS/ESA Version 3 Release 3, at both source and object level for CICS application programs and maps, subject to the exceptions and comments summarized below and further described in the CICS Release Guide (GC34-5352). Any other exceptions that are identified will be documented in CICS publications.

• Command-level programs are upward compatible at both source and object level, provided the function is still supported. However, support for the EXEC CICS ADDRESS CSA command was discontinued (CICS/ESA Version 3 Release 2.1).

• EXEC CICS API for the CICS Web Interface

The current interface to the Template Manager uses an EXEC CICS LINK to program DFHWBTL. A suite of new EXEC CICS commands is provided to allow user applications to retrieve information from inbound HTTP requests, and to build appropriate HTTP responses.

• Coupling facility data tables do not support key lengths greater than 16 bytes.

• Application programs that refer to old logs and journals should be reviewed in the light of the CICS use of the MVS logger.

• Support is retained for CALL DL/I statements as well as EXEC DLI.

• For access to IMS databases from CICS Transaction Server for OS/390, customers must use the IMS/ESA DB Control (DBCTL) interface.

• IMS/ESA Version 3 Release 1 and IMS/ESA Version 4 Release 1 databases cannot be accessed using local DL/I from CICS Transaction Server for OS/390. CICS/ESA Version 4 Release 1 was the last CICS release, and IMS/ESA Database Manager Version 4 Release 1 was the last IMS release, with support for CICS local DL/I and batch shared database access.

• Macro-level program support was discontinued (not supported after CICS/MVS® Version 2 Release 1.2).

The DFHMSSCAN utility program, available now with all current releases, is recommended for reviewing CICS application program libraries. The DFHMSSCAN utility program can be used to check on use of the EXEC CICS ADDRESS CSA command.

• Basic mapping support (BMS) maps that are defined using CICS-supplied macro instructions, or defined online using Screen Definition Facility II (5665-366), are upward compatible.

CICS Universal Clients and CICS Transaction Gateway: ECI and EPI applications written for the CICS Clients on Intel platforms can be easily ported to the CICS Universal Clients for AIX and Solaris.

Application code written for the CICS for UNIX Clients for the AIX and Solaris platforms can be easily ported to the CICS Universal Clients for those platforms, but will usually require some minor recoding to allow for differences in names.

The CICS Universal Clients for AIX and Solaris, unlike the CICS for UNIX Clients for those platforms, do not have the Local Client interface for operating with the CICS servers on these platforms; they can only operate as local clients by using the TCP/IP interface.

Unlike the CICS for UNIX Clients for AIX and Solaris, the CICS Universal Clients for AIX and Solaris neither require nor support DCE.

The following are some of the principal differences between the CICS Universal Clients for AIX and Solaris, and those for Intel platforms:

• The CICS 3270 emulators in the CICS Universal Clients for AIX and Solaris are 24x80 alphanumeric screens. There is no GUI support.

• The CICS 3270 emulator in the CICS Universal Clients for AIX and Solaris does not support keyboard remapping for Alt shifted keys, Ctr/Act, Print Screen, Scroll Lock, or Pause.

• The CICS Universal Clients for AIX and Solaris do not support NetBIOS or TCP/IP communication.

• At present, the CICS Universal Client for Solaris Version 3.0 does not support SNA communication.

• The CICS Universal Client for AIX uses the AIX SNA Side Information Profile to provide partner LU information.

• The CICS Universal Clients for AIX and Solaris have a command line interface only.
• The CICS Universal Clients for AIX and Solaris do not support REXX.
• The CICS Universal Clients for AIX and Solaris do not have field outlining on CICSTERM.

Sample HTML pages are supplied to assist you in getting started in using a Web browser as an emulator for a 3270 CICS application. These may also be used to assist in migrating from the CICS Internet Gateway to the CICS Transaction Gateway.

Applications and applets written for use with any level of the CICS Gateway for Java will work with the CICS Transaction Gateway Version 3.0.

EPI and ECI applications written for the CICS Clients Version 2 for OS/2 or Windows NT, or for the CICS for UNIX Clients for AIX or Solaris, will work with the CICS Transaction Gateway Version 3.0.

Applications and applets written for use with the CICS Gateway for Java (MVS) will work with the CICS Transaction Gateway for OS/390 Version 3.0.

**Systems Programming:** If migrating from a version of CICS before Version 3, the following guides should also be obtained:

- *Both these will continue to be available in softcopy when the CICS/ESA Version 3 bookshelf is withdrawn, but within the CICS/ESA Version 4 bookshelf.*

Both these provide guidance and details about operational and systems programming procedures. These are not covered in the new CICS Migration Guide (GC34-5353).

The SupportPac CA1C for migration to CICS Transaction Server for OS/390 is recommended, as well as the SupportPac CA1B for migration from CICS/MVS Version 2 Release 1.2 to CICS/ESA Version 4 Release 1.

HTML templates are now a CICS resource, definable using RDO or the EXEC CICS CREATE command, and can be stored in CICS Temporary Storage or CICS-managed files.

The CICS Migration Guide (GC34-5353) includes discussion on planning for migration to a VSAM record-level sharing environment from a CICS configuration that uses one or more CICS file-owning regions (FORs) in order to share VSAM files. The following are covered:

- Data set eligibility
- Read integrity
- The LOCKED exception condition
- Restricting switching between RLS mode and non-RLS mode access
- Defining the coupling facility structures
- Defining the sharing control data sets
- Defining SMS storage classes
- Changes to deadlock detection

The guide also covers the migration from a CICS region with local DL/I support to a CICS that uses IMS Database Control (DBCTL) to access DL/I databases.

The utility program, DFHLSCU, was enhanced for DASD-only log streams to help estimate staging data set sizes for CICS system and general logs (CICS TS Release 2).

For coupling facility log streams (Parallel Sysplex), the utility program DFHLSCU provides help to establish values for the following parameters used to define the structure for log blocks in a coupling facility for CICS log streams.

- **AVGBUFSIZE** — average buffer size of the log stream
- **INITSIZE** — initial amount of space allocated in CF for the structure
- **SIZE** — maximum size of log stream structure
- **STG_SIZE** — size of staging data set required by the log stream

These control the efficient use of space within the structure, and can prevent undue DASD offloading.

While DFHLSCU is supplied with CICS TS, it is also available as a SupportPac, CD14, to run on your CICS Version 3/Version 4 systems to aid in planning for coupling facility use with CICS TS and the MVS Logger.

For details on how to use DFHLSCU, refer to the *CICS Operations and Utilities Guide* (SC33-1685).

A sample log stream utility program, SAMLSUP, available in SupportPac CS1D, formats, copies, prints or deletes a log stream.

Other useful SupportPacs include:
- **CE19:** Replicating Shared Data Tables across a sysplex
- **CA1E:** CICS Transaction Server for OS/390 3270 Bridge Passthrough Transaction.
- **CA86:** An enhanced CICS Web Interface analyser
- **CA87:** A CICS Web Interface to REXX for CICS/ESA

A utility program, DFHBMSUP, is provided to disassemble BMS maps in a loadlib, to aid BMS map regeneration for use with 3270 bridge.

The CICSPlex SM element of CICS TS Release 3 does not support the following levels of CICS, (some of these were supported by earlier levels of CICSPlex SM):

- CICS/MVS Version 2 Release 1.2 (5665-403)
- CICS/ESA Version 3 Release 3 (5685-083)
- CICS/VSE Version 2 Release 2 (5686-026)
- CICS for OS/2 Version 2.0.1 (5648-036)

The following functions previously available in CICS/ESA Version 4 are discontinued:

- Control of CICS-DB2 interface using macro-defined, assembled and linked CICS Resource Control Table (RCT). (Refer to the Planning Information section)
- Support for local DL/I and batch shared database access. Database access will continue to be supported with the DBCTL interface.
- Support for the PROTECT option for VTAM terminals. Full protection of application and business logic is supported with the use of APPC function.
- Support for logging or journal output to tape.
- Support for journal exits and journal user replaceable modules. Any programs that refer to old logs and
journals should be reviewed in the light of the MVS logger support.

Also formats of several of the system log record types are changed. (Details are provided in the current documentation of this product.)

• Some of the CICS utility programs provided with prior versions are now obsolete. Refer to the CICS Migration Guide (GC34-5353) for more information.

The following functions previously available in CICS/ESA Version 3 were discontinued in Version 4:

• Direct addressing of CICS control blocks by any means, even for exits.

• Control of maximum tasks (CMXT/CMXTLIM) is replaced by resource definition (RDO) transaction class objects.

• The sign-on table (SNT).

The following functions previously available in CICS/MVS Version 2 and CICS/OS/VS Version 1 were discontinued in Version 3:

• Support for macro-level execution

• Direct addressing of CICS control blocks (other than the EIB and user areas such as CWA) from within CICS applications

• EXEC CICS ADDRESS CSA command

• CICS internal security (refer to the Planning Information section)

• DFHXSP and DFHXSE as user-replaceable modules

• CSMT, CSST, CSOT, CSSN and CSSF transactions

• System initialization modifications (SIMODs)

• PCT, PPT and TCT, generated by resource definition macros

TCT definition for TCAM (DCB), remote BTAM devices and sequential terminals must be done with DFHTCT macros. There is no support for the graphical access method (GAM).

**Discontinued Device Support:** There is no support for devices and controllers accessed using BTAM, GAM or TCAM (ACB), in any CICS version after CICS/MVS Version 2 Release 1.2. TCAM (DCB) will continue to be supported.

**Limitations:** A hardware failure without a stand-alone coupling facility could cause a double failure (both in the MVS and in the coupling facility), causing a “lost locks” condition for data sets currently opened in RLS mode by CICS.

Only files that have lost locks will not be able to be accessed. Transactions without references to these files will continue to execute.

**Note:** “Lost locks” recovery consists of backout of in-flight transactions and resolution of any in doubt or backout-failed transactions. No CICS can execute any new transactions that try to access a data set that has suffered a lost locks condition until all of the CICSs have completed lost locks recovery for that data set. Each data set can be used by new transactions as soon as its lost locks recovery is completed.

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**Performance Considerations**

**Throughput:** Comparisons with CICS Transaction Server for OS/390 Release 2, using an IBM Internal Benchmark, show that the Internal Transaction Rate (ITR) achieved with CICS TS Release 3 using coupling facility log streams shows a degradation between 0-3% compared to CICS TS Release 2. Similar comparisons made for CICS TS Release 2 using DASD only log streams were between 0-5% less depending on the hardware configuration used. More detail will be available later when performance information can be obtained.

**Java performance in the CICS/390 environment:** Some implementations of Java applications acquired a bad reputation because the early JVM implementations performed poorly. A great deal of work has been done to improve the JVM performance, including development of JIT compilers, and further improvements are in the pipeline. Nevertheless, because of the necessity to maintain its high reputation for good performance, this concern is of particular relevance to CICS. And it is the reason CICS TS V1.3 supports the new Java compiler provided by VisualAge for Java.

However it has to be accepted that the performance of CICS applications written in Java, even when compiled using the new Java compiler, will not be as good as their COBOL counterparts. There are basically two reasons for this. Firstly it is unreasonable to expect the performance of a relatively new technology such as Java to be able to compete with a mature technology such as COBOL given the time and effort invested over the past decades to improve COBOL compilers and the run-time performance of the generated code. But, more importantly, there is a performance cost to be paid for the higher level of abstraction of Java or, indeed, any OO language. This is inevitable because of the extra layering and more dynamic binding that is a necessary part of such languages. There is a tradeoff to be made here. The benefit of the higher levels of abstraction are improved programmer productivity and better quality code: these benefits come about because of the greater opportunity for reuse and ability to exploit the latest visual programming tools. The cost is performance.

But you should not be too concerned about performance. Although there is a significant initialization cost, even for a Java program compiled with the new Java compiler, that cost is entirely CPU cost and amounts to only a few milliseconds of CPU time on the latest S/390 G5 processors. The end user will not discern a noticeable increase in response time for a transaction written in Java. On the other hand, there will be a significant, and noticeable, increase in CPU utilization. But it is possible to take advantage of the scalability of the CICSplex architecture, and in particular, its parallel sysplex capabilities, to scale to transaction rates well beyond any requirements we have seen to date. And, although the processor cost to support a given transaction rate will be greater for Java applications, remember that the processor cost is only a small contributor to the overall cost-of-computing.

Note also that Java applets are interpretive byte codes, which are downloaded on demand, and executed on the requesting web browser. Since browser/server interactions are dramatically reduced, given the ability of the Java applet providing programmed intelligence to the browser, performance is actually improved overall. The browser can manipulate the data without server interaction, using the processing power of the browser’s environment, and not consuming network and server resources for trivial application functions (for example, page up/down, re-order data, print, and so forth).
Performance considerations of coupling facility datatables: Although not as fast as a local non-RLS file access, coupling facility datatables is significantly faster than accessing data using function shipping or other remote file access. For a typical single file access the path length is about 9K.

Performance using VSAM data sharing (RLS): The performance of VSAM data sharing is consistent with that of IBM’s other two data sharing solutions: IMS and DB2. Slightly more CPU cycles are required per request than MRO function shipping. But, with the ability to run many engines against one dataset, rather than about 1.5 (with subtasking), we can now run (with sysplex) 100s of times as many transactions/second against a single dataset, if needed, and if access to the dataset is not constrained by contention for records.

Performance information will be provided at product availability.

In order to assist in the capacity planning in a VSAM Record Level Sharing (RLS) environment, Quicksizer and CP90 are available.

Disclaimer: Performance benefits to be obtained in user installations are dependent on the CICS workload characteristics and on its usage within the total system environment.

User Group Requirements: This announcement satisfies or partially satisfies seven requirements from one or more of the worldwide user group communities, which include Australasian SHARE/GUIDE (ASG), COMMON, COMMON Europe, GUIDE International, G.U.I.D.E. Europe, Japan GUIDE/SHARE (JGS), Guide Latin American (LAG), SHARE EUROPE, and SHARE Incorporated.

In addition, 23 requirements submitted by customers through their IBM representatives are satisfied.

Long TS Queue Names:
- EBCICD89012 (237): Queue names shall be 16 characters

CICS Web interface enhancements
- PASR R066279-1 (4139): Remove 32 K byte inout limitations of CWI
- PASR R066279 (4140)
- PASR R067918 (3166)

Global enqueue (ENQ) and dequeue (DEQ)
- GBCICS93002 (3031): (CEMT I UOWENQ extended)
- EBCICU92005 (3080): CICSPlex-wide ENQ and DEQ mechanism
- GBCICS93030 (3138): Provide extended ENQ DEQ facility
- PASR R044415 (3451): SPI to support an ENQ
- SSCICS96002 (3894): Implement ENQUEUE and DEQUEUE across multiple regions
- PASR R062815 (4035): CICS Global ENQ/DEQ

Parallel Sysplex support extensions
- PASR R014899-2 (3455): Restore ability to invoke CICS Dynamic Transaction Routing
- PASR R047654 (3580): DFHDYP should support ATI tasks

Other Sources or Confirmation of Requirements
- Key Customer Requirements
  - Support for complex business transactions
  - Secure Sockets Layer support for Internet interfaces
  - EXEC CICS API for Web document creation
  - HTML templates as a true CICS resource
  - Send and receive more than 32 K bytes of data in HTTP requests and responses
  - Web error program to allow users to override CICS default actions in the event of a failure
  - Shared data tables in the coupling facility
- Enable CICSPlex System Manager applications from user-key
- Scrolling CICSPlex System Manager help panels

Planning Information

Customer Responsibilities

Discontinued Device Support: There is no support for devices and controllers accessed using BTAM, GAM or TCAM (ACB). TCAM (DCB) will continue to be supported. There is no support for the IBM 7770 device. You should consider the IBM 9270 VRU, Voice Response Unit, as an alternative.

Programming and Operation Interfaces

- CICS/ESA 4.1 removed the addressability to and changed the content of CICS control blocks. CICS exits do not have access to control blocks. Functions are available for exits to obtain information about the status of CICS facilities.
  - The API/SPI of CICS will continue to be enhanced to provide access to the required CICS control information and, where appropriate, the ability to manipulate that information.
  - Improvements are made for the continued protection of system control blocks against unauthorized access.
  - ‘Global User Exits’ are provided, with improvements to the API/SPI available within them, so that information about CICS can be obtained without direct reference to CICS control blocks. However, these exits are product specific programming interfaces and may change in number and function from release to release. Compatibility of exits between releases is never guaranteed. Compatibility is provided for the API/SPI commands.
  - Users exit programs will abend if reference to the CSA or TCA is made.

- Transaction CWBC is removed in CICS TS Release 3.
- VSAM data set DFHWBCD is removed in CICS TS Release 3. It is replaced by the TCIPSERVICE resource type. Sample TCIPSERVICE definitions are supplied in the CSD group DFHS$OT.
  A new shared temporary storage queue, DFHWBxx, is provided, with definition in DFHCURDI.
- The sign-on table (SNT) has been discontinued.
- CICS internal security was discontinued with CICS/ESA Version 3 Release 3. CICS supports the external security manager interface, that can be used with RACF (or an equivalent security manager package) for security and for CICS operator data.
- Trace interpretation tables, that were in the CICS Diagnosis Reference (LY33-6088) for the first release, and in the CICS User’s Handbook (SX33-6104) for the prior release, are now in the CICS Trace Entries (SC34-5446).
- CICS TS Release 2 was the last release of CICS to support running the CICS-DB2 interface using a macro-defined, assembled and linkededit CICS Resource Control Table (RCT). CICS TS only provides resource definition online (RDO) support for the RCT, with the RCT macro shipped only to allow macro-generation for migration of the RCT to the CSD.
- In CICS TS Release 2, transactions in a bridge environment are run by starting a transaction known as a bridge transaction.
- In CICS TS Release 3 the prior method of running a transaction in a bridge environment is no longer supported and is superseded by the new START TRANSID BREXIT command. The newer design alleviates a number of security restrictions and useability problems caused by the number of bridge transaction definitions required to use the bridge.
- Functions already discontinued include, among others:
  - The local DL/I interface to IMS/ESA, leaving DBCTL as the only supported interface. Changes made in CICS/ESA Version 4 Release 1 and available with CICS Transaction Server for OS/390 provide a number of enhancements to the CICS-DBCTL interface, notably an installation verification procedure (IVP) to ease migration to DBCTL, and a CICS-supplied transaction, CDBM, to simplify operator communication between CICS and DBCTL.
  - Support for the PROTECT option for VTAM terminals. Full protection of application and business logic is supported with the use of APPC function.
  - Support for logging or journal output to tape.
  - Support for journal exits and journal user replaceable modules. Any program that refers to old logs and journals should be reviewed because CICS uses the MVS logger support.
  - The formats of several system log record types have been changed. (Details will be provided in the early documentation of this release.)
  - Some of the CICS utility programs provided with prior version are now obsolete. Refer to the CICS Migration Guide (GC34-5353) for more information.
- CICS is dependent on the MVS logging function, requiring either the DASD-only logging function for a single-system MVS image, or a coupling facility. The DASD-only logging function is provided with OS/390. For a Parallel Sysplex system, CICS Transaction Server for OS/390 systems require a coupling facility, or coupling facility control code in a PR/SM LPAR.
- If a customer has a BATCH requirement for VSAM RLS, as well as from the online CICS system, the latest level of the language environment (LE) run-time libraries will be required. Refer to the CICS Release Guide (GC34-5352) for a discussion on improved shared of data sets between CICS and batch. For example, batch jobs can read and update, concurrently with CICS, non-recoverable VSAM data sets that are opened by CICS in RLS mode. Batch jobs can read (but not update) a recoverable data set in the RLS mode when it is concurrently accessed by CICS in RLS mode. With APAR OW25251 and OW25252, recoverable data sets defined with SHROPTIONS(2) can be concurrently accessed for input by batch programs using non-RLS mode (NSR, LSR) and by CICS for input or output in the RLS mode.
- If using the cross-system coupling facility (XCF) of MVS/ESA SP™ Version 4 (and later releases) to take advantage of the improved MVS and PR/SM functions, operator intervention will be required to restart DBCTL after a CICS XRF region switch.
- The CICS global ENQ/DEQ function uses MVS Global Resource Serialization (GRS) services. For guidance
on use of and setting up of ENQ/DEQ, refer to the CICS Resource Definition Guide (SC33-1684).

Note: Normally, all communicating CMAS should be at the same level. However, during the migration of a CICS region below CICS/ESA Version 4 Release 1, such as CICS/MVS Version 2 Release 1.2, a CMAS at CICSPlex SM Version 1 Release 3 level should be used for controlling this lower level CICS, because the CICSPlex SM element of CICS TS Release 3 does not support the following levels of CICS:

- CICS/MVS Version 2.1.2 (5665-403)
- CICS/ESA Version 3.3 (5685-083)
- CICS/VSE Version 2.2 (5686-026)
- CICS for OS/2 Version 2.0.1 (5648-036)

Vendor Products: Customers are advised to contact the suppliers of any third-party software used with CICS to ensure that critical packages run with CICS Transaction Server for OS/390.

To enable software vendors to adapt products to the changed programming interfaces in CICS, in 1996, IBM invited software vendors to participate in an Early Test Program, prior to the general availability of CICS Transaction Server for OS/390. A similar, new testing offering for this release was available from the beginning of April 1998. The Early Test Program is offered through the IBM Software Vendor System Support Center in Dallas, Texas. Call 800-627-8363 for more information.

Prior to this announcement, IBM disclosed information to many software vendors, for whom additional and early support has been provided.

Installability: The CICS installation process, and some of the new CICS function, requires the MVS Unix system services (previously OpenEdition) address space to be IPLed in full-function mode.

The Binder PTF for APAR OW36582 must be applied to the DFSMS/MVS Program Management component (5695DF108), together with the IEBCOPY PDS/E PTFs UW49740 and UW54887, before installation.

For full-function mode, use the OMVS parameter to specify the parmlib member, or members, to be used at MVS IPL time to locate the parmlib members used to configure the Unix system services (OpenEdition) kernel.

Packaging: The base media for the CICS Transaction Server for OS/390 is shipped via MVS Custom-Built Product Delivery Offering (CBPDO) (5751-CS3) at planned availability, and via the OS/390 ServerPac (5751-CS9) delivery option, with the next ServerPac offering refresh within two months of product availability. The basic object material is shipped either on 9/6250 tape, 3480 tape cartridge or 4-mm DAT cartridge.

CICS Transaction Server for OS/390 and OS/390, itself, are not available via MVS Custom Built Installation Process Offering (CBIPO) (5751-CS1). CBIPO support for two of the earlier versions of CICS, CICS/MVS Version 2 Release 1.2 and CICS/ESA Version 3 Release 3, was withdrawn concurrent with the availability of the first release of CICS Transaction Server for OS/390. CICS/ESA Version 4 Release 1 continues to be available via CBIPO.

The CICSPlex SM Web User Interface will be available November 26, 1999, when it will become part of the base CICS element of CICS TS Release 3. Customers who have ordered the product prior to this date will receive this function automatically.

Optional source material, excluding object code-only modules, is provided on the same media as the basic material except for 3480 compressed media. Optional source material is not available on 3480 compressed media. If an order includes both optional source material and 3480 compressed media, the optional source code will be shipped on regular 3480 media and the basic material will be shipped on the requested 3480 compressed media.

This release provides the optional source material with the same restrictions as for prior version and releases of CICS. The Licensed Optional Machine-Readable Material consists of an unloaded partitioned data set containing generated assembler source for those modules that are distributed in Licensed Basic Machine-Readable Material in object form only. This source will not be updated with service. Source for object code only (OCO) modules is not available.

The base media are not available via stand-alone order, only via CBPDO. However, there are three optional items that are presented under supplemental base material by the configurator, when ordering the base using CBPDO:

- CICSPlex SM VSE agent code (# 5331/5332/5723)
- Optional Source (# 5831/5832/5724)
- Supplementary Data Areas softcopy files (# 5841/5842/5725)

These optional items are shipped either on 9/6250 tape or on 3480 tape cartridge or 4-mm DAT cartridge. The Supplementary Data Areas softcopy files are separately chargeable.

If a customer only orders the base with the initial order, and then later chooses to order one of the optional components, an MES order must be used to place the order on the stand-alone product 5655-147 for the additional material.

In addition, softcopy versions (displayable manuals) of the documentation for the release, licensed and unlicensed, may be ordered as a priced feature as displayable softcopy BookManager®-built books, in a product kit. The product kit is available on CD-ROM, 3480 Tape Cartridge, 9/6250 Magnetic Tape and 4-mm DAT cartridge. Softcopy of the licensed publications for the release are available only on this product kit (# 8173/8174/8175/8176). A description of the product kit (GC33-1982) is provided with each copy.

The unlicensed softcopy documentation as displayable manuals are part of the no-charge CD-ROM feature number 7063 for the online books — Collection Kit for Transaction Processing and Data products.

The code for the CICS Universal Clients Version 3.0 (5648-B42), and CICS Transaction Gateway Version 3.0, is shipped on separate media (CD-ROMs) with the base material.

The CICS Transaction Gateway is not available separately. It is delivered as part of certain CICS server products, including the CICS Transaction Server for OS/390 Version 1 Release 3, the CICS Transaction Server for VSE Version 1 Release 1, TXSeries Version 4.2 for AIX, Windows NT, Solaris and HP-UX. For use for application development, it is available in IBM VisualAge for Java Version 2.0.

The CD-ROM for the CICS Transaction Gateway is also delivered with other products, such as TXSeries Version 4.2 for AIX, Windows NT, Solaris and HP-UX.
The MQSeries-CICS Bridge with CICS TS Release 2.

or program call instruction. All other CICS modules and
High Performance Option (HPO) or if the CICS Type 6 SVC
The above integrity statement does not apply with the
unauthorized.

Some CICS modules run authorized when they receive
control as a result of the execution of a supervisor call
or program call instruction. All other CICS modules and
all application programs are intended to run
unauthorized.

The above integrity statement does not apply with the
High Performance Option (HPO) or if the CICS Type 6 SVC
has been installed. Customers wishing to avoid any
potential MVS system integrity problem should run
without HPO, and should not install the Type 6 SVC
provided by CICS on their systems.

Security, Auditable, and Control

The security and auditability features of the announced
program include support for:
• An external security management program
• User exit authorization
• Resource-level security
• Terminal operator identification
• Intersystem communication security
• Journaling
• Monitoring
• Trace facilities

If sensitive data is sent over external communication
facilities, user management may wish to consider the
application of cryptography.

CICS XRF sessions using VTAM data encryption can be
switched automatically, only if the latest levels of
ACF/VTAM and NCP are installed. Otherwise, XRF
sessions using VTAM data encryption can only be
automatically restarted.

The customer is responsible for evaluation, selection, and
implementation of security features, administrative
procedures, and appropriate controls in application
systems and communication facilities.

Ordering Information

Current Licensees

Current licensees of CICS Transaction Server for OS/390
will be sent a memo to licensees, that includes ordering
information for the MVS Custom-Built Product Delivery
Option (MVS CBPDO—Program Number 5751-CS3).

The base CICS TS product code can only be ordered
under CBPDO 5751-CS3. It is not available via a stand
alone 5655-147 product order. These memos to licensees
are scheduled to be mailed by April 9, 1999.

When Release 3 is available, Release 2 will no longer be
available from IBM Software Delivery Solutions (SDS).

New Licensees

Orders for new licenses will be accepted now.

Shipment will begin on the planned availability date.

• Orders that ship before the planned availability will
receive CICS Transaction Server for OS/390
Release 2.

• Orders that ship after the planned availability date will
receive CICS Transaction Server for OS/390
Release 3.

New users of CICS Transaction Server for OS/390 should
order the base CICS TS product under CBPDO 5751-CS3.

The ordering information for IBM CICS Transaction Server
for OS/390 (5655-147), as previously announced (refer to
Software Announcement 296-349, dated September 10, 1996),
is unaffected by this announcement except that the additional feature codes
introduced by the announcements made on
September 29, 1998, are included in the tables where

Note:
MQSeries Version 2 Release 2, does not support
the MQSeries-CICS Bridge with CICS TS Release 2.

System Integrity

IBM will accept APARs where the installation of this
licensed program causes an exposure to the system
integrity of MVS.

MVS System Integrity Applies: Yes

Some CICS modules run authorized when they receive
control as a result of the execution of a supervisor call
or program call instruction. All other CICS modules and
all application programs are intended to run
unauthorized.

299-057 -18-
applicable. However, effective January 1, 1999, no more One-Time Charge licenses can be ordered, refer to Withdrawal Announcement 998-294, dated September 29, 1998. No Graduated One-Time Charge feature numbers are shown in the following tables. Measured Usage Licence Charge feature numbers have been replaced by S/390 Usage Pricing (Usage License Charge) features.

For the other changes to pricing and ordering information, refer to:

- Software Announcement 298-355, dated September 29, 1998
- Software Announcement 298-357, dated September 29, 1998

Although the base CICS TS product code can only be ordered under CBPDO 5751-CS3, an MES order may be used for optional components that are not specified on the base order. For these orders, specify:

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5655</td>
<td>147</td>
</tr>
</tbody>
</table>

**Basic License:** To order a basic license, specify the program number and feature number 9001 for asset registration. For a graduated monthly license charge, specify the feature number below that corresponds to the group that contains the designated machine.

Also, specify the feature number of the desired distribution medium, either for the base or for the language feature, if required. The base media must be ordered under CBPDO 5751-CS3, or via the OS/390 ServerPac 5751-CS9 (two months after availability).

Ordering a basic license also permits the CICS inter-region communication SVC (DFHIRP) from this version to be copied to a prior version of CICS, on a different machine in the same Parallel Sysplex, for communicating with this new version of CICS.

<table>
<thead>
<tr>
<th>Group</th>
<th>Basic Graduated Monthly License Charge Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>0163</td>
</tr>
<tr>
<td>20</td>
<td>0164</td>
</tr>
<tr>
<td>25</td>
<td>0165</td>
</tr>
<tr>
<td>28</td>
<td>0166</td>
</tr>
<tr>
<td>29</td>
<td>0167</td>
</tr>
<tr>
<td>30</td>
<td>0168</td>
</tr>
<tr>
<td>31</td>
<td>0169</td>
</tr>
<tr>
<td>32</td>
<td>0170</td>
</tr>
<tr>
<td>35</td>
<td>0171</td>
</tr>
<tr>
<td>38</td>
<td>0172</td>
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<tr>
<td>40</td>
<td>0173</td>
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<tr>
<td>50</td>
<td>0174</td>
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<tr>
<td>60</td>
<td>0175</td>
</tr>
<tr>
<td>70</td>
<td>0176</td>
</tr>
<tr>
<td>80</td>
<td>0177</td>
</tr>
</tbody>
</table>

**Multiple Operating System — PR/SM (MOSP):** For a graduated monthly license charge, specify the feature number below that corresponds to the group that contains the designated machine.

- **MOSP Basic Graduated Monthly License Charge**
  - Group 18: 0223
  - Group 20: 0224
  - Group 25: 0225
  - Group 28: 0226
  - Group 29: 0227
  - Group 30: 0228
  - Group 31: 0229
  - Group 32: 0230
  - Group 35: 0231
  - Group 38: 0232
  - Group 40: 0233
  - Group 50: 0234
  - Group 60: 0235
  - Group 70: 0236
  - Group 80: 0237

**Entry Support License (ESL):** To order an ESL license, specify the program number, feature number 9001 for asset registration, and the applicable ESL OTC feature number. Also specify the feature number of the desired distribution medium.

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Description</th>
<th>ESL One-Time Charge Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5655 147</td>
<td>ESL</td>
<td>0633</td>
</tr>
</tbody>
</table>

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

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

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

Also, specify the feature number of the desired distribution medium, either for the base or for the language feature, as required.

Ordering a basic license also permits the CICS inter-region communication SVC (DFHIRP) from this version to be copied to a prior version of CICS, on a different machine in the same Parallel Sysplex, for communicating with this new version of CICS.

<table>
<thead>
<tr>
<th>Machines</th>
<th>PSLC Feature Number</th>
<th>PSLC Basic License Feature Number</th>
<th>MLC Feature Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSU Capacity</td>
<td>0636</td>
<td>PSLC Base, 1 MSU</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0637</td>
<td>PSLC Base, 2 MSUs</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0114</td>
<td>PSLC Base, 3 MSUs</td>
<td></td>
</tr>
<tr>
<td>4 — 45</td>
<td>0115</td>
<td>PSLC Level A, 1 MSU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0116</td>
<td>PSLC Level A, 42 MSUs</td>
<td></td>
</tr>
</tbody>
</table>
Example 1: For a single machine with 11 MSUs, the PSLC features would be 0114 — quantity 1 and 0115 — quantity 8.

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

- PSLC chargeable license #1: 0114 — quantity 1, 0116 — quantity 1, 0117 — quantity 5, and 0118 — quantity 1
- PSLC no-charge license #2: 0120 — quantity 1

Indexed Monthly License Charge (IMLC) Basic License:
To order a basic license, specify the program number and feature number 9001 for asset registration. Specify the IMLC Base 80 MSU feature and the applicable additional IMLC MSU features and quantity corresponding to the MSU rating of the designated machine.

Also, specify the feature number of the desired distribution medium, either for the base or for the language feature, as required.

Ordering a basic license also permits the CICS inter-region communication SVC (DFHIRP) from this version to be copied to a prior version of CICS, on a different machine in the same Parallel Sysplex, for communicating with this new version of CICS.

S/390 Usage Pricing (Usage License Charge) Basic License:
To order a basic license, specify the appropriate program and feature number 9001, if required, for asset registration. Specify the applicable S390 Usage Pricing feature. Also, specify the feature number of the desired distribution medium, either for the base or for the language feature, as required.

Ordering a basic license also permits the CICS inter-region communication SVC (DFHIRP) from this version to be copied to a prior version of CICS, on a different machine in the same Parallel Sysplex, for communicating with this new version of CICS.

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

The customer pricing will be determined by selecting either:

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

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

Example for ordering:
A customer with a measured usage (from the IBM Measured Usage report) of 0.3 MSU would:
Order quantity 1 of the 0.26 to 0.5 MSU base feature
A customer with 6.6 MSUs (from the IBM Usage report) would:
Be rounded up to 7.0 MSUs
Order quantity 1 of the “0.51 to 1.0 MSU” base feature
Order quantity 6 of the Level A 1 MSU feature
A customer with 15 MSUs (from the IBM Usage report) would:
Order quantity 1 of the “0.51 to 1.0 MSU” base feature
Order quantity 10 of the Level A 1 MSU feature
Order quantity 4 of the Level B 1 MSU feature
A customer with 50 MSUs (from the IBM Usage report) would:
Order quantity 1 of the “0.51 to 1.0 MSU” base feature
Order quantity 10 of the Level A 1 MSU feature
Order quantity 33 of the Level B 1 MSU feature
Order quantity 6 of the Level C 1 MSU feature

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

Version-to-Version Upgrade Credit: To upgrade from a prior program acquired for a one-time charge (OTC) to a replacement program using a version-to-version upgrade credit, the customer must notify and identify to IBM the applicable prior program and replacement program participating in the upgrade credit.

Basic Machine-Readable Material: To order, select the feature number of the desired distribution medium:

The base media must be ordered under CBPDO 5751-CS3.
<table>
<thead>
<tr>
<th>Environment</th>
<th>Feature Number</th>
<th>Distribution Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVS 5801</td>
<td>9/6250 Magnetic Tape</td>
<td>3480 Tape Cartridge</td>
</tr>
<tr>
<td>MVS 5802</td>
<td>4-mm DAT Cartridge</td>
<td></td>
</tr>
</tbody>
</table>

A separate tape/cartridge will have the CICSPlex SM Web User Interface as part of the base. Existing users of CICS TS Release 3 will receive this at availability of this function.

**Basic Translated Machine-Readable Material:** To order the additional message table with messages in Japanese (Kanji), select the feature number of the desired distribution medium below, instead of the base:

<table>
<thead>
<tr>
<th>Environment</th>
<th>Feature Number</th>
<th>Distribution Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVS 5811</td>
<td>9/6250 Magnetic Tape (NLV JPN + ENG) (CICS 9/6250 MT NLV JPN + ENG)</td>
<td>3480 Tape Cartridge (NLV JPN + ENG) (CICS 3480 TC NLV JPN + ENG)</td>
</tr>
<tr>
<td>MVS 5812</td>
<td>4-mm DAT Cartridge (NLV JPN + ENG) (CICS 4-mm DAT C NLV JPN + ENG)</td>
<td></td>
</tr>
</tbody>
</table>

To order the additional message table with messages in Simplified Chinese, select the feature number of the desired distribution medium below, instead of the base:

<table>
<thead>
<tr>
<th>Environment</th>
<th>Feature Number</th>
<th>Distribution Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVS 5821</td>
<td>9/6250 Magnetic Tape (NLV CHI + ENG) (CICS 9/6250 MT NLV CHI + ENG)</td>
<td>3480 Tape Cartridge (NLV CHI + ENG) (CICS 3480 TC NLV CHI + ENG)</td>
</tr>
<tr>
<td>MVS 5822</td>
<td>4-mm DAT Cartridge (NLV CHI + ENG) (CICS 4-mm DAT C NLV CHI + ENG)</td>
<td></td>
</tr>
</tbody>
</table>

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

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

**Initial Shipments**
- Serial Number Only (suppresses shipment of media and documentation) 3444
- Ship Media Only (suppresses initial shipment of documentation) 3470
- Ship Documentation Only (suppresses initial shipment of media) 3471

**Update Shipments**
- Ship Media Updates Only (suppresses update shipment of documentation) 3480
- Ship Documentation Only (suppresses update shipment of media) 3481
- Suppress Updates (suppresses update shipment of media and documentation) 3482

**Expedite Shipments**
- Local IBM Office Expedite (for IBM use only) 3445
- Customer Expedite Process Charge ($30 charge for each product) 3446

Expedite shipments will be processed to receive 72-hour delivery from the time SDS receives the order. SDS will then ship the order via overnight air transportation.

**Optional Machine-Readable Material:** Unless ordered with the base material, an MES order must be used to place the order on the stand-alone product 5655-147 for the optional machine-readable material (not under CBPDO).

To order, select the feature number for the desired distribution medium:

**CICSPlex SM VSE Agent Code**

<table>
<thead>
<tr>
<th>Environment</th>
<th>Feature Number</th>
<th>Distribution Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVS 5331</td>
<td>9/6250 Magnetic Tape*</td>
<td></td>
</tr>
<tr>
<td>MVS 5332</td>
<td>3480 Tape Cartridge*</td>
<td></td>
</tr>
<tr>
<td>MVS 5723</td>
<td>4-mm DAT Cartridge*</td>
<td></td>
</tr>
</tbody>
</table>

**Optional Source (excludes Object-Code Only modules)**

<table>
<thead>
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<th>Environment</th>
<th>Feature Number</th>
<th>Distribution Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVS 5831</td>
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<tr>
<td>MVS 5832</td>
<td>3480 Tape Cartridge*</td>
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</tr>
<tr>
<td>MVS 5724</td>
<td>4-mm DAT Cartridge*</td>
<td></td>
</tr>
</tbody>
</table>

* Contains RESTRICTED MATERIAL OF IBM

**DSLO License:** To order a DSLO license, specify the program number, feature number 9901 for asset registration, and the feature number below for a graduated monthly license charge, that corresponds to the group containing the designated machine.
Multiple Operating System — PR/SM (MOSP): For a graduated monthly license charge, specify the following feature number below that corresponds to the group that contains the designated machine.

### MOSP DSLO Graduated Monthly License Charge

<table>
<thead>
<tr>
<th>Group</th>
<th>Feature Number</th>
</tr>
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<tbody>
<tr>
<td>18</td>
<td>0238</td>
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<tr>
<td>20</td>
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<td>25</td>
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<td>70</td>
<td>0251</td>
</tr>
<tr>
<td>80</td>
<td>0252</td>
</tr>
</tbody>
</table>

Ordering a DSLO feature will result in IBM maintaining a record of this customer location as a DSLO user only. All material for the DSLO license will be provided through the basic license location. If a user selects DSLO, no other feature numbers are valid for this order and no program materials or updates will be shipped.

Unlicensed Documentation: A memo (GI10-2509), Program Directory (GI10-2506) and one copy of the following publications are supplied automatically with the basic machine-readable material:

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS Transaction Server for OS/390 Release Guide</td>
<td>GC34-5352</td>
</tr>
<tr>
<td>CICS Transaction Server for OS/390 Migration Guide</td>
<td>GC34-5353</td>
</tr>
<tr>
<td>CICS Transaction Server for OS/390 Licensed Program Specifications</td>
<td>GC33-1707</td>
</tr>
<tr>
<td>CICS Transaction Server for OS/390 Installation Guide</td>
<td>GC33-1681</td>
</tr>
<tr>
<td>CICS System Definition Guide</td>
<td>SC33-1682</td>
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<tr>
<td>CICS Customization Guide</td>
<td>SC33-1683</td>
</tr>
<tr>
<td>CICS Resource Definition Guide</td>
<td>SC33-1684</td>
</tr>
<tr>
<td>CICS Operations and Utilities Guide</td>
<td>SC33-1685</td>
</tr>
<tr>
<td>CICS Applications Programming Reference Guide</td>
<td>SC33-1687</td>
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<tr>
<td>CICS Application Programming Guide</td>
<td>SC33-1688</td>
</tr>
<tr>
<td>CICS System Programming Reference</td>
<td>SC33-1689</td>
</tr>
<tr>
<td>CICS External Interfaces Guide</td>
<td>SC33-1944</td>
</tr>
<tr>
<td>CICS Internet Guide</td>
<td>SC34-5445</td>
</tr>
<tr>
<td>CICS RACF Security Guide</td>
<td>SC33-1701</td>
</tr>
<tr>
<td>CICSPlex SM Concepts and Planning</td>
<td>GC33-0786</td>
</tr>
<tr>
<td>CICSPlex SM Administration</td>
<td>SC34-5401</td>
</tr>
<tr>
<td>CICS Transaction Server for OS/390 Planning for Installation</td>
<td>GC33-1789</td>
</tr>
<tr>
<td>CICS Universal Clients V3 (CD-ROM)</td>
<td>SK2T-1790</td>
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<tr>
<td>CICS Transaction Gateway V3 (CD-ROM)</td>
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<td>GC34-5465</td>
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<td>LI CICS Transaction Gateway V3</td>
<td>GC34-5466</td>
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<tr>
<td>International Program License</td>
<td>Z125-3301</td>
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<td>Agreement (IPLA)</td>
<td></td>
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<tr>
<td>Book Pointer Sheet (Clients)</td>
<td>SC34-5552</td>
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<tr>
<td>Book Pointer Sheet (Gateway)</td>
<td>SC34-5553</td>
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<tr>
<td>IPLA Pointer Sheet</td>
<td>Z127-1000</td>
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<tr>
<td>Vendor Partner Booklet</td>
<td>GC34-5527</td>
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<tr>
<td>with CD-ROM</td>
<td>SK2T-1798</td>
</tr>
</tbody>
</table>

Optional Hardcopy Unlicensed Publications: The following unlicensed publications are optional. Printed copies of a complete set of these will only be shipped with the basic machine-readable material for a fee of $250 (dollars), if the feature number 8149 is specified.

Note that the optional unlicensed publications are available in the Online Books; Collection Kit for Transaction Processing and Data products. One copy of this CD-ROM is free. Refer to the following section on Displayable Softcopy Publications.

Displayable Softcopy Publications

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
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<tbody>
<tr>
<td>All the manuals in this list as a set</td>
<td>8419</td>
</tr>
<tr>
<td>CICS Family: Interproduct Communication</td>
<td>SC33-0824</td>
</tr>
<tr>
<td>CICS Family: Communicating from CICS on System/390</td>
<td>SC33-1697</td>
</tr>
<tr>
<td>CICS Application Programming Guide</td>
<td>SC33-1687</td>
</tr>
<tr>
<td>CICS Distributed Transaction Programming Guide</td>
<td>SC33-1691</td>
</tr>
<tr>
<td>CICS Front End Programming Interface User’s Guide</td>
<td>SC33-1692</td>
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<tr>
<td>CICS Problem Determination Guide</td>
<td>GC33-1693</td>
</tr>
<tr>
<td>CICS Messages and Codes</td>
<td>GC33-1694</td>
</tr>
<tr>
<td>CICS Transaction Server for OS/390 Intercommunication Guide</td>
<td>SC33-1695</td>
</tr>
<tr>
<td>CICS Recovery and Restart Guide</td>
<td>SC33-1698</td>
</tr>
<tr>
<td>CICS Performance Guide (Refer to note below)</td>
<td>SC33-1699</td>
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<tr>
<td>CICS Business Transaction Services</td>
<td>SC34-5258</td>
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<td>CICS C++ OO Class Libraries</td>
<td>SC34-5455</td>
</tr>
<tr>
<td>CICS DB2 Guide</td>
<td>SC33-1939</td>
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Order Number
CICS IMS Database Control Guide SC33-1700
CICS Shared Data Tables Guide SC33-1702
CICS Master Index SC33-1704
CICS User’s Handbook SX33-6104
CICS Trace Entries SC34-5446
CICS Transaction Affinities Utility Guide SC33-1777
CICS Distributed Data Management User’s Guide SC33-0695
CICS Application Migration Aid Guide SC33-0768
IBM REXX Development System for CICS/ESA and REXX Runtime Facility for CICS/ESA Guide and Reference SH21-0482
CICSPlex SM Operations Views Reference SC33-0789
CICSPlex SM View Commands Reference Summary SC33-0789
CICSPlex SM Application Programming Guide SC34-5457
CICSPlex SM Application Programming Reference SC34-5458
CICSPlex SM Resource Tables Reference SC33-1220
CICSPlex SM User Interface Guide SC33-0788
CICSPlex SM Messages & Codes SC33-0790
CICSPlex SM Problem Determination SC33-0791
CICSPlex SM Managing Workloads SC33-1807
CICSPlex SM Managing Resource Usage SC33-1808
CICSPlex SM Managing Business Applications SC33-1809
CICSPlex SM Monitor Views Reference SC34-5402
CICSPlex SM Master Index SC33-1812
CICS Clients Administration SC33-1792

Note: The CICS Performance Guide (SC33-1699) will initially be available in softcopy only. Three months after product availability, the CICS Performance Guide (SC33-1699) will be refreshed, and available in hardcopy. From that date this guide becomes part of the optional set of unlicensed publications.

The CICSPlex SM Web User Interface Guide (SC34-5403) for the CICSPlex SM Web User Interface will be available November 26, 1999. From that date this reference manual becomes part of the optional set of unlicensed publications.

Additional copies of unlicensed publications, will be available individually for a fee after availability. These copies may be ordered from your IBM representative, through the System Library Subscription Service (SLSS) or by direct order.

The new CICS Trace Entries (SC34-5446) contains information formerly in the CICS User’s Handbook (SX33-6104).

The CICSPlex SM Setup (GC33-0784), is retitled CICSPlex SM Administration (GC34-5401) and the set up information is now in the CICS Transaction Server for OS/390 Installation Guide (GC33-1681).

The Internet and External Interfaces Guide (SC33-1944), new with last release, superceded the following books:

• CICS External CICS Interface (SC33-1703)
• CICS ONC RPC Guide (SC33-1778)
• CICS Server Support for CICS Clients (SC33-1779)
• CICS Web Interface Guide (SC33-1825)

and is now split into two books, CICS External Interfaces Guide (SC33-1944) and CICS Internet Guide (SC34-5445).

The following books may only be ordered, by form number, from your IBM representative, through the System Library Subscription Service (SLSS) or by direct order.

CICS Universal Clients and CICS Transaction Gateway: The following publications apply to the CICS Universal Clients Version 3.0:

Book Order Number
CICS Universal Clients Version 3 for OS/2: Administration SC34-5450
CICS Universal Clients Version 3 for Windows: Administration SC34-5449
CICS Universal Clients Version 3 for AIX: Administration SC34-5348
CICS Universal Clients Version 3 for Solaris: Administration SC34-5451
CICS Universal Clients Version 3: Messages (softcopy only)
CICS Family: Client/Server Programming SC33-1435
CICS Family: OO Programming in C++ for CICS Clients SC33-1923
CICS Family: OO Programming in BASIC for CICS Clients SC33-1924

Hardcopy of these books (except CICS Universal Clients Version 3: Messages) will be available for purchase. To order, contact your IBM representative or your dealer.

The following publications apply to the CICS Transaction Gateway Version 3.0:

Book Order Number
CICS Transaction Gateway Version 3: Administration SC34-5448
CICS Universal Clients Version 3 for OS/2: Administration SC34-5450
CICS Universal Clients Version 3 for Windows: Administration SC34-5449
CICS Universal Clients Version 3 for AIX: Administration SC34-5348
CICS Universal Clients Version 3 for Solaris: Administration SC34-5451
CICS Universal Clients Version 3: Messages (softcopy only)
Hardcopy of these books (except CICS Universal Clients Version 3: Messages) is available for purchase. To order, contact your IBM representative or your dealer.

The following publication is provided for the CICS Transaction Gateway for OS/390 Version 3.0:

CICS Transaction Gateway for OS/390 Version 3.0: Administration

This publication is provided (along with the other publications which apply to the CICS Transaction Gateway) on the CICS Transaction Gateway CD-ROM, in HTML format (filetype .HTM) for viewing using a Web browser; and in Acrobat format (filetype .PDF), for viewing and printing using an Adobe Acrobat reader. The Adobe Acrobat reader is shipped on the CD-ROM.

The information in this publication is also included in:

CICS Transaction Server for OS/390: SC34-5445

CICSPlex SM View Commands Reference Summary (SX33-6099)

The CICS Glossary (GC33-1705) is provided in displayable softcopy only.

The unlicensed displayable manuals are part of the no-charge CD-ROM feature number 7063 for the Online Books: Collection Kit for Transaction Processing and Data Products.

Note: On the next available reissues of the Transaction Processing and Data products, OS/390 and MVS collection kits, the following prior CICS version books will be included:

• CICS/ESA 3.2 Release Guide (GC33-0655) (also covers 3.1)
• CICS/ESA 3.2 Migration Guide (GC33-0656) (also covers 3.1)
• CICS/ESA 3.3 Release Guide (GC33-0792) (this would otherwise have been dropped from the end of 1998).

With the withdrawal of the Version 3 bookshelf, these will be included within the CICS/ESA Version 4 bookshelf.

Licensees of CICS TS can order, for a fee, a copy of the product kit which contains softcopy versions (displayable manuals) of both licensed publications and unlicensed publications, for the release. The product kit is available on CD-ROM, 3480 Tape Cartridge, 9/6250 Magnetic Tape and 4-mm DAT cartridge. A description of the Product Kit (GC33-1982) is provided with each copy. Softcopy of the licensed publications for the release are available only on this product kit.

### Kit Copies

<table>
<thead>
<tr>
<th>Title</th>
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<th>Feature Number</th>
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<td>$40</td>
</tr>
<tr>
<td>9/6250 Magnetic Tape</td>
<td>8174*</td>
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<tr>
<td>3480 Tape Cartridge</td>
<td>8175*</td>
<td>40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>4-mm DAT Cartridge</td>
<td>8176*</td>
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</tr>
</tbody>
</table>

* Contains RESTRICTED MATERIAL OF IBM

These displayable manuals can be used with the BookManager READ licensed programs in any of the supported environments. Terms and conditions for use of the machine-readable files are shipped with the files.

Copies of the Collection Kit for Transaction Processing and Data products can be ordered in the following ways:

• By specifying feature number 7063 on your order to get your first copy, free of charge, shipped with your basic machine-readable material. Subsequent updates will be shipped free of charge.
• By specifying feature number 8148 on your order to get additional copies for a fee, shipped with your basic machine-readable material.
• By ordering feature numbers 2023 with 5023 of product number 5636-PUB, and paying an annual subscription fee. This fee will cover any updates during the year.
• Through SLSS, by paying an annual subscription charge and ordering SK2T-0730. This will ensure that you automatically receive any updates throughout the year.
• Through PUBORDER, by paying a one-time fee and ordering SK2T-0730. You will have to order any subsequent editions of the kit explicitly, paying a further fee.

Online books supplied as part of the collection kit can be used with both IBM Library Reader™, which is included on the CD-ROM, and with the BookManager READ licensed programs in any of the supported environments. Terms and conditions for the use of the machine-readable files are shipped with the files.


### Single Additional Copy

<table>
<thead>
<tr>
<th>Title</th>
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<th>Single Copy Feature Number</th>
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<tbody>
<tr>
<td>Collection Kit for Transaction Processing and Data Products CD-ROM</td>
<td>SK2T-0730</td>
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<td>$100</td>
</tr>
</tbody>
</table>
CICS Universal Clients and CICS Transaction Gateway:
All the books applicable to CICS Universal Clients and to
CICS Transaction Gateway will be shipped as part of the
product in HTML format (filetype .HTM) for viewing using
a Web browser; and in Acrobat format (filetype .PDF), for
viewing and printing using an Adobe Acrobat reader. The
Adobe Acrobat reader is shipped with the product.

In addition, programming reference information is
supplied with the product in HTML format.

Licensed Documentation: The following licensed material
will be available from IBM at product availability. To
order, contact your IBM representative.

The first copy is available at no charge to licensees of
basic material by specifying the 7XXX feature number.
Use the 8XXX feature number to order additional copies
for a fee.

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
<th>Single Copy Feature Number</th>
<th>Additional Copies Feature Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis Reference</td>
<td>LY33-6088</td>
<td>7061</td>
<td>8145</td>
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<tr>
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<td>LY33-6089</td>
<td>7062</td>
<td>8146</td>
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In addition, the following features are only available for
the fee indicated:

<table>
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<tr>
<th>Title</th>
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<th>Single Copy Feature Number</th>
<th>Additional Copies Feature Number</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Supplementary Data Areas</td>
<td>LY33-6090</td>
<td>—</td>
<td>8147</td>
<td>$104</td>
</tr>
</tbody>
</table>

To order the Supplementary Data Areas (LY33-6090)
(printed copy) with softcopy of these data areas, specify
the feature number of the desired distribution medium.
This is separately chargeable.

<table>
<thead>
<tr>
<th>Title</th>
<th>Single Copy Feature Number</th>
<th>Additional Copies Feature Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/6250 Magnetic Tape</td>
<td>—</td>
<td>5841*</td>
<td>$1,040</td>
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<tr>
<td>3480 Tape Cartridge</td>
<td>—</td>
<td>5842*</td>
<td>1,040</td>
</tr>
<tr>
<td>4-mm DAT Cartridge</td>
<td>—</td>
<td>5725*</td>
<td>1,040</td>
</tr>
</tbody>
</table>

* Contains RESTRICTED MATERIAL OF IBM

Source Listings: There are no source listings provided for
CICS Transaction Server for OS/390. If you require
access to such listings, use the View Program Listings
(VPL) system. For further information on how to use the
VPL system, refer to the VPL Users Guide dated
January 1993.

Subsequent updates (technical newsletters or revisions
between releases) to the publications shipped with the
product will be distributed to the user of record for as long
as a license for this software remains in effect. A
separate publication order or subscription is not needed.

Terms and Conditions

The terms for IBM CICS Transaction Server for OS/390
(5655-147), as previously announced (refer to Software
Announcement 296-349, dated September 10, 1996),
licensed under the IBM Customer Agreement are
unaffected by this announcement except as noted below:

Licensing of CICS Universal Clients Version 3.0: The
following conditions apply:

CICS Universal Clients Version 3.0 may be copied free
of charge to enable communication with any supported
IBM CICS server, Transaction Server, CICS Transaction
Server, or TXSeries server, with the exception of the
servers listed below. Provided CICS Universal Clients is
used only with servers which are not on the exceptions
list, customers are authorized to make copies of the CICS
Universal Clients as program features. The exceptions are:

- CICS/ESA Version 4.1
- CICS/VSE Version 2.3

Note: Earlier versions of these two servers are not
supported with CICS Universal Clients Version 3.0.

If they are used to enable communication with either of
these servers, a license is required for every copy made
of CICS Universal Clients. Refer to Software

When the CICS Universal Clients Version 3.0 program is
not directly connected to IBM CICS Transaction Server for
OS/390 the appropriate number of use-based features (if
applicable) for the server, to which the CICS Universal
Clients are connected, are required.

The CICS Clients V2.0.4, with service level 7 or later
applied, for OS/2, Windows 3.1, Windows 95, Windows NT
and DOS may be copied without charge for use with the
CICS Transaction Server for OS/390, but there are
restrictions on copying for use with certain other CICS
servers.

Licensing of CICS Transaction Gateway Version 3.0:
Since the first announcement of CICS TS Release 3, refer
to Software Announcement 298-318, dated September 8, 1998, the terms for the CICS Transaction
Gateway Version 3.0 have changed.

The following conditions apply:

A license entitlement (subject to the Terms and
Conditions of the IBM International Program License
Agreement) to use the CICS Transaction Gateway
Version 3.0 is included at no additional charge with a
license for any of the following IBM products:

- TXSeries, Version 4.2, for AIX, Solaris, Windows NT,
or HP-UX*
- CICS Transaction Server for OS/2, Version 4.1*
- CICS Transaction Server for OS/390 Version 1.1, or
later*
- CICS Transaction Server for VSE, Version 1.1*

* In the event that the customer ceases to be authorized to use
this program, then the customer is no longer authorized to
use the CICS Transaction Gateway Version 3.0.

A customer who has a license entitlement to use the CICS
Transaction Gateway Version 3.0 may:
• Use the CICS Transaction Gateway Version 3.0 to enable communication with any supported IBM CICS server, IBM CICS Transaction Server, IBM Transaction Server, or IBM TXSeries server

• Make any number of copies of the CICS Transaction Gateway for use within his enterprise, without charge or further licensing requirement

• Use the CICS Transaction Gateway for any number of users, without charge or further licensing requirement.

When the CICS Transaction Gateway is used in connection with a server which has use-based pricing, the appropriate number of use-based features for that server must be licensed.

Customers wishing to develop Java applications using the CICS Transaction Gateway should license IBM VisualAge for Java Version 2.0.

For further information on IBM VisualAge for Java Version 2.0, refer to Software Announcement 298-277, dated August 11, 1998.


Program Currency: CICS Universal Clients and CICS Transaction Gateway available until January 31, 2001

These program services apply to service on both the CICS Transaction Gateway Version 3.0 and the CICS Universal Clients Version 3.0, as delivered by any means.

To obtain the latest service level, contact the Service Support Center for your country. Alternatively, information on service support status and service levels can be obtained and the latest service levels can be downloaded from the Internet at:


Support Line: S/390

Entry Support License OTC: An OTC authorizes use only on IBM Entry End User/390 Machines.

Charges

The charges for IBM CICS Transaction Server for OS/390 (5655-147) are unaffected by this announcement.

For the recent changes to pricing information, refer to:

• Software Announcement 298-355, dated September 29, 1998

• Software Announcement 298-357, dated September 29, 1998

• Withdrawal Announcement 998-273, dated September 29, 1998

• Withdrawal Announcement 998-294, dated September 29, 1998

• Withdrawal Announcement 998-295, dated September 29, 1998

For additional product information, refer to:

• Software Announcement 296-349, dated September 10, 1996

• Software Announcement 296-427, dated November 5, 1996

• Software Announcement 297-353, dated September 9, 1997

• Software Announcement 298-318, dated September 8, 1998

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Note: Shipments will begin after the planned availability date.

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