Licensed Program Specifications

CICS Transaction Server for OS/390 Release 3 Program Number 5655-147

CICS* Transaction Server for OS/390* Release 3 is the base for the future growth of general purpose and large scale or complex transaction processing. This flexible and easy to use client/server package is the delivery vehicle for CICS products on S/390*, containing CICS-enabling functions, orderable with one program number and delivered as one product, with one price.

As part of IBM* Server strategy, CICS Transaction Server for OS/390 (CICS TS) 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. Both this element, the CICS successor to CICS/ESA* 4.1, and the CICSPlex SM element (CICSPlex 1.4) are exclusive. Generally applicable function added to these exclusive elements includes:

- Application Enablement - Java application support, object-oriented interface to CICS services for C++, CICS business transaction services, open transaction environment, and 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.
- 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), and named counter server function.
- Enterprise Management - CICSPlex System Manager (CICSPlex SM), resource definition online (RDO) for CICS temporary storage, autoinstall for MVS consoles, enhancements to CICS monitoring and statistics, CICSPlex SM Web user interface and Tivoli ready.

Functions already in the product include:

- Single MVS image support uses DASD-only logging function of OS/390, 3270 bridge supports using 3270-based transactions other than from a terminal, World Wide Web support for 3270-based transactions, facility for defining and installing CICS resources across multiple CICS occurrences improves S/390 Parallel Sysplex* support, DB2* resource definitions with resource definition on-line (RDO) as alternative to resource control table (RCT) definitions allowing 7 by 24 hour availability, and added client/server capability.

Both CICS and CICSPlex SM are exclusive elements, available only with CICS Transaction Server for OS/390.

Non-exclusive elements of the product, also available as separate products, are:

- REXX Development System for CICS/ESA (5655-086)
- REXX Runtime Facility for CICS/ESA (5655-087)
- CICS Distributed Data Management (DDM) (5665-463)
- CICS Application Migration Aid 1.1 (5695-061)
- CICS Universal Clients Version 3.0 (5648-B42)
- Tivoli Global Enterprise Manager Version 2 Release 2 – CICSPlex SM Instrumentation (5697-GEM)

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A non-exclusive element of the product but not available as a separate product is:

- CICS Transaction Gateway Version 3.0

CICS Transaction Server for OS/390 Release 3 is a member of the CICS family of transaction processing products, which includes releases of CICS/ESA Version 4 (5655-018), CICS Transaction Server for VSE* (5648-054), CICS/VSE* (5686-026), CICS Transaction Server for OS/2 Warp, Version 4.1 (5622-808), CICS Transaction Server for OS/2 Warp, Version 4.0 (5622-808), Transaction Server for AIX*, Version 4 (5697-251), and CICS on many other platforms. They provide a common application programming interface with significant source compatibility for writing terminal-oriented applications, with common intersystem communication facilities, and for Web applications.

CICS provides many of the facilities necessary for applications such as inquiry, order entry, data entry, data collection, message switching, broadcasting, order distribution, and database browsing.

CICS is a general-purpose transaction-processing interface between the operating system and application programs written in COBOL, PL/I, C/370*, Java++ or assembler language. A high-level programming interface (command level) is provided to allow the application programs to request CICS facilities, such as task and terminal management, to format data to terminals, and to interface with CICS system service programs. User exits are provided for optional processing.

The essential services provided by CICS are data management and terminal management. CICS uses the services of other programs to support this activity.

By using standard data access methods, CICS provides comprehensive file handling that is satisfactory for many applications. For transactions that require high speed, direct access to data in memory, using either specific or generic keys, CICS provides a shared data tables function, and support for coupling facility data tables.

Fuller data-management capabilities can be obtained by using a database manager with CICS. IMS/ESA* Transaction Manager and Database Manager Version 6 (5655-158), IMS/ESA Transaction Manager and Database Manager Version 5 (5695-176), and DATABASE 2* (DB2*) Version 6 (5645-DB2), DATABASE 2 Version 5 (5655-DB2), DATABASE 2 Version 4 (5695-DB2), DATABASE 2 Version 3 (5685-DB2), are supported with CICS.

For S/390 Parallel Sysplex environment, facilities are provided to share data with integrity. VSAM record-level sharing and CICS temporary storage data sharing are supported as well as data managed by a database manager.

In addition to managing CICS TS address spaces, CICSPlex SM can manage, from the same control point, enterprise wide, a collection of CICS systems (known as a "CICSplex"). It provides:

- A single system image, allowing a whole CICSplex to be managed as if it were a single CICS system. CICSPlex SM dynamically keeps track of all CICS resources and CICS resource changes, in a CICSplex that can include CICS/ESA, CICS/VSE and CICS Transaction Server for OS/2 Warp Version 4 systems.
- A single point of control for all tasks.
- Operations, for the entire CICSplex, from any point of control.
- Business Application Services (BAS), for definition of CICS applications.
- Single point of definition and installation.
- Monitoring, to gather status information and statistics for CICS resources in a CICSplex.
- Real-time analysis (RTA), for management by exception.
- Workload management, to optimize service to CICS end-users by automatically routing transactions to the most appropriate CICS address space in the CICSplex, thereby improving throughput, availability and service levels.
- A starter set. This is primarily a set of sample CICSPlex SM configuration definitions; sample

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JCL; and sample specifications for workload management, real-time analysis, and monitoring.

- Support for New CICS features

  The CICSPlex SM element of CICS TS supports the new CICS resources introduced in CICS Transaction Server for OS/390 Release 3. If a CICSplex containing CICS Transaction Server for OS/390 Release 3 is to be controlled from CICSPlex SM running on an earlier release of CICS, the control-point CICSPlex SM should be upgraded to the CICSPlex SM CICS TS 1.3 level, to provide control of the new CICS resources.

  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 2.01 (5648-036)

- Enable Userkey CICSPlex SM API applications.

By using standard communication access methods, CICS gives application programs the ability to communicate with a wide range of terminals.

CICS supports multi-region operation (MRO), for the user to run multiple connected CICS regions (multiple address spaces) within an MVS* system. Use of multiple CICS regions can simplify testing of user application programs, improve integrity and availability, and provide virtual-storage constraint relief. CICS, in conjunction with OS/390* Version 2, supports MRO links across MVS images using MVS cross-system coupling facility (XCF). CICS Web facilities include support for terminal-oriented transactions, applications using the external CICS interface (EXCI), and Java++ client support for two-tier configurations.

CICS provides intersystem communication facilities for communication between connected systems. CICS-managed resources, for example files and databases, may be distributed between connected CICS systems and accessed by application programs without needing to take account of the location of these resources. Alternatively a CICS transaction may communicate directly with a transaction on another system, so supporting distributed transaction processing. CICS may communicate with IMS* systems that support intersystem communication.

CICS provides facilities to help prevent unauthorized access to information. For these security facilities a separate security-management program is required to use the interface provided in CICS. Resource Access Control Facility (RACF*) (5695-039) can be used to control access to CICS and its transactions.

CICS is an evolutionary development of its predecessor products (CICS/ESA Version 4, CICS/ESA Version 3 and CICS/MVS Version 2) and is built on the facilities of the MVS operating system, but retains the capabilities of the prior operating systems and supporting products, such as the extended recovery facility (XRF) capabilities of MVS, VTAM* and NCP. CICS uses the facilities of the IMS/ESA Database Manager Version 5 (5695-176), or later, database control function (DBCTL) to provide access to IMS databases. CICS addresses many CICS user requirements while maintaining upwards compatibility for applications written to the command-level programming interface, and maintaining the functional capabilities of its predecessors, CICS/ESA 4.1, CICS/ESA Version 3, CICS/MVS Version 2 Release 1 and CICS/OS/VS Version 1 Release 7.

The CD-ROM for the On-line Books: Collection Kit for Transaction Processing and Data products is updated with unlicensed manuals for this release as displayable softcopy BookManager* built BOOKs. A separate product kit on CD-ROM containing both the licensed and unlicensed manuals for CICS Transaction Server for OS/390 Release 3 only in softcopy format is available for a fee to licensees of CICS Transaction Server for OS/390 Release 3 with the basic product material.

Specified Operating Environment

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

Machine Requirements

CICS Transaction Server for OS/390 Release 3 runs on any IBM S/390*-capable processing system that supports the MVS operating system listed under "Programming Requirements", and has enough processor storage to meet the combined requirements of CICS, the host operating system, access methods, and user applications.

Coupling Facility: CICS TS is dependent on the MVS logging function, requiring either the DASD logging function for a single-system image or a coupling facility. The DASD logging function is available with OS/390 Version 2 Release 5. 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 a standalone IBM 9674 or a PR/SM* logical partition (LPAR) running the coupling facility control code in ES/9000* 711-based models and the S/390 Parallel Enterprise Servers (9672). As an alternative, the coupling facility control code can be run in a PR/SM LPAR with the integrated coupling migration facility (ICMF) on ES/9000 711-based and 511-based models or S/390 9672 processors, eliminating the requirement for coupling links.

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

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). When running CICS Transaction Server for OS/390 in an XRF configuration, machine requirements depend on the level of failure protection required.

CICS/VSE systems managed by CICSPlex SM can run on any System/390 system that can support CICS/VSE Version 2 Release 3.

Guidance information on environmental requirements is contained in the *CICS Release Guide* (GC33-1570).

CICS can also operate in a VM/XA* virtual machine. In doing so, it will run as though on a real machine, using an operating system fitting the description given under "Programming Requirements". It is bound by any limitations on the use of the operating system in the chosen VM environment.

The flexibility provided by CICS allows users to configure a very wide range of systems, each having different performance characteristics. In designing any given configuration, a user may have to make trade-offs, usually involving response time and system storage. Factors influencing the need for such trade-offs include, for example, transaction rates, volumes of data managed, application program design, and use of optional facilities such as intersystem communication.

CICS also needs online storage for system output, residence, and data sets. The CICS distributed and generated libraries require direct access storage when the user generates the CICS system.

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Programming Requirements

Any CICS Transaction Server for OS/390 Release 3 modules that need generation require the use of High Level Assembler/MVS & VM & VSE (5696-234) with current maintenance.

CICS Transaction Server for OS/390 Release 3 is designed to run with the following operating system releases and their appropriate prerequisites:

- OS/390 Version 2 (5647-A01) Release 5 or later

Note: Many products required by CICS are provided with OS/390 Version 2 Release 5 (5647-A01), as base elements of OS/390.

CICS will also run on subsequent releases or modifications of these operating systems unless otherwise stated. CICS does not support prior releases of these operating systems and products.

Note: The CICS installation process, and some of the new CICS function, requires the MVS Unix system services 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.

Current or later releases of one or more of the following products are required:

- Database support is provided with IMS/ESA Database Manager Version 5 (5695-176) or later, and IBM DATABASE 2 (DB2) Version 3 Release 1 (5685-DB2) or later.

  The CICS Transaction Server for OS/390 Release 3 does not support local DL/I.

MRO and ISC Considerations

CICS supports multi-region operation (MRO) communication with CICS, CICS/ESA Version 4, CICS/ESA Version 3 Release 3, and CICS/MVS Version 2 Release 1.2 systems.

CICS supports intersystem communication (ISC) links with:

- Other CICS Transaction Server for OS/390 (5665-147) systems
- CICS/ESA Version 4 Release 1 (5665-018)
- CICS/ESA Version 3 Release 3 (5685-083)
- CICS/MVS Version 2 Release 1.2 (5665-403)
- CICS Transaction Server for VSE (5648-054),
- CICS/VSE Version 2 Release 3 (5686-026)
- IMS/ESA Version 6 (5655-158)
- IMS/ESA Version 5 (5695-176)
- IMS/ESA Transaction Manager Version 4 Release 1 (5685-013)
- All versions of CICS for OS/2, including CICS Transaction Server for OS/2 Warp Version 4, CICS/400* and CICS on Open Systems, including TXSeries Version 4.2 for Windows NT, AIX, Solaris and HP-UX.

The function provided on any MRO/ISC connection is that of the lower release involved in the connection.

CICS provides host support for transaction routing, function shipping and distributed transaction processing requests using LU6.2, as well as distributed program link from and to other CICS family members.

Transaction routing and function shipping requests from and to CICS/VSE are supported by CICS.

CICS running in a guest MVS/ESA virtual machine under the control of VM/XA System Product (5664-308) is supported.

Other Considerations

- The softcopy information (displayable manuals) for this release, available on the Collection Kit for Transaction Processing and Data Products (SK2T-0730), may be read using the IBM Library Reader* provided on the CD-ROMs, or using one of the BookManager READ 1.2 licensed programs in any of the supported environments (READ/MVS, READ/2, READ for WINDOWS, READ/DOS or READ/VM).

  Terms and conditions for the machine-readable softcopy files are shipped with the files.
- CICS VSAM Recovery MVS/ESA (CICSVR MVS/ESA) Version 2 (5695-010) Release 3 can be used with CICS Transaction Server for OS/390 releases.
- For MRO-connected systems, to enable analysis of DFHIRP control blocks in any dumps taken by a CICS/MVS 2.1 region, a prerequisite PTF (UL94292) for APAR PL78011 must be applied.

- GDDM* applications require GDDM/MVS Version 2 Release 3, together with APAR PL77753, (PTF is UL95627), in order to run with CICS Transaction Server for OS/390 Release 3.
- Resource Access Control Facility (RACF) (5695-039), an element of OS/390 (or an equivalent security manager package) is required for security and for storing CICS operator data.
- TIVOLI Performance Reporter for OS/390 1.4 (5695-101), serviced with APAR PQ23257, is required when a performance reporter product is needed. CICS does not support earlier versions.
- CICS/ESA 4.1 (5655-018), serviced with APAR PQ02462, is the lowest level of CICS in which resources can be installed through CICSPlex SM business application services.
- A CICS/VSE 2.3 (5686-026) managed address space requires the VTAM release provided in the VSE/ESA* package.
- A CICS Transaction Server for OS/2 Warp Version 4 (5622-808) managed address space requires OS/2 Communications Server for OS/2 Warp Version 4 or later including eNetwork Communication Server for OS/2 Warp Version 5.
- System Modification Program Extended (SMP/E) 1.8 (5668-949) or later is required for installation and service of CICSPlex SM. MSHP is used to install and service the CICSPlex SM agent on CICS/VSE.
- NetView (R) for MVS/ESA Version 3 Release 1 (5655-007), or later, is 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)
- Specified language compilers and assembler are required:

  CICS Transaction Server for OS/390 Release 3 supports the following assembler, COBOL, PL/I, and C/370 compilers:

  – High Level Assembler/MVS & VM & VSE (5696-234)
  – IBM COBOL for MVS and VM (5688-197)
  – VS COBOL II Release 2 (5668-958 and 5688-023) Requires PTFs for APAR PN43097 – see "PTFs for APAR PN43097" below for details.
  – IBM PL/I for MVS and VM (5688-235)
  – OS PL/I Optimizing Compiler Version 2 Release 1 (5668-910) or later
  – OS PL/I Optimizing Compiler Version 1 Release 5.1 (5734-PL1)
  – IBM C/C++ for MVS/ESA (5655-121)
  – C/370 Compiler (5688-040).
  – C/370 Compiler Version 2 Release 1 (5688-187).

  CICS also supports OS/390 Language Environment*, with the following IBM SAA* AD/Cycle* COBOL, C/370, and PL/I SAA AD/Cycle compilers:
  – SAA AD/Cycle COBOL/370* (5688-197)
  – SAA AD/Cycle C/370 (5688-216)
  – SAA AD/Cycle PL/I (5688-235)
  – VisualAge for Java, Enterprise Edition for OS/390 (5655-JAV), Version 2.0

    Java language support requires that service is applied to Language Environment, before using Java with CICS. For OS/390 Release 5 current service as of March 1999 is required.

    The following PTFs must be applied before using the Java Compiler:
    PTFs UQ23040, UQ23998, and UQ23042 for the runtime library.

    Enhancements provided via the service process with the Java Complier are also recommended:
    APARs PQ23612, PQ23614 (PTFs UQ90005, UQ90005).

  The C/370 Library (5688-188) Version 2 Release 2 can be used for C/370 run-time.

  PTFs for APAR PN43097 To prevent OC4 abends caused by IGZECIC returning to CICS with an incorrect mode, the requisite PTFs for APAR PN43097 must be applied. These are:

  – PTF UN48282 for FMID JCL1331
  – PTF UN48283 for FMID JCL1341
  – PTF UN48284 for FMID JCL1403

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CICS REXX PTF for command table: APAR OW35276 brings the REXX command table up to the same level as the base CICS component.

For further information on compilers and assemblers refer to the *CICS Migration Guide* (GC33-1571).

Licensed Program Materials Availability

Restricted materials – Yes. This licensed program is available with source licensed-program materials for some modules designated as "RESTRICTED MATERIALS OF IBM." In addition, some modules are available without source licensed-program materials. These modules are available in object code. The remaining modules are available with source licensed-program materials.

Source licensed-program materials are not available for some modules. Refer to the *CICS Release Guide* (GC33-1570) for the identity of those functional areas with some or all modules available without source licensed-program materials.

Source code for management modules is in System/370* assembler language. Sample program source code is in COBOL, C/370, Java, PL/I, and System/370 assembler language. License Information for CICS Universal Clients (GC34-5465) and License Information for CICS Transaction Gateway (GC34-5466) is supplied with the products.

Supplemental Terms

Designated Machine Identification

Designated Machine Identification Required: Yes

Testing Period

Basic License: Two months
DSLO: Not Applicable

Installation/Location License

Not applicable. A separate license is required for each designated machine on which the licensed program materials will be used.

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