



IBM Software Group

IBM CICS TS V2.3 & CICS Tools Seminar

Are you ready to exploit CICS Transaction Server V2 and CICS Tools?



@business on demand software

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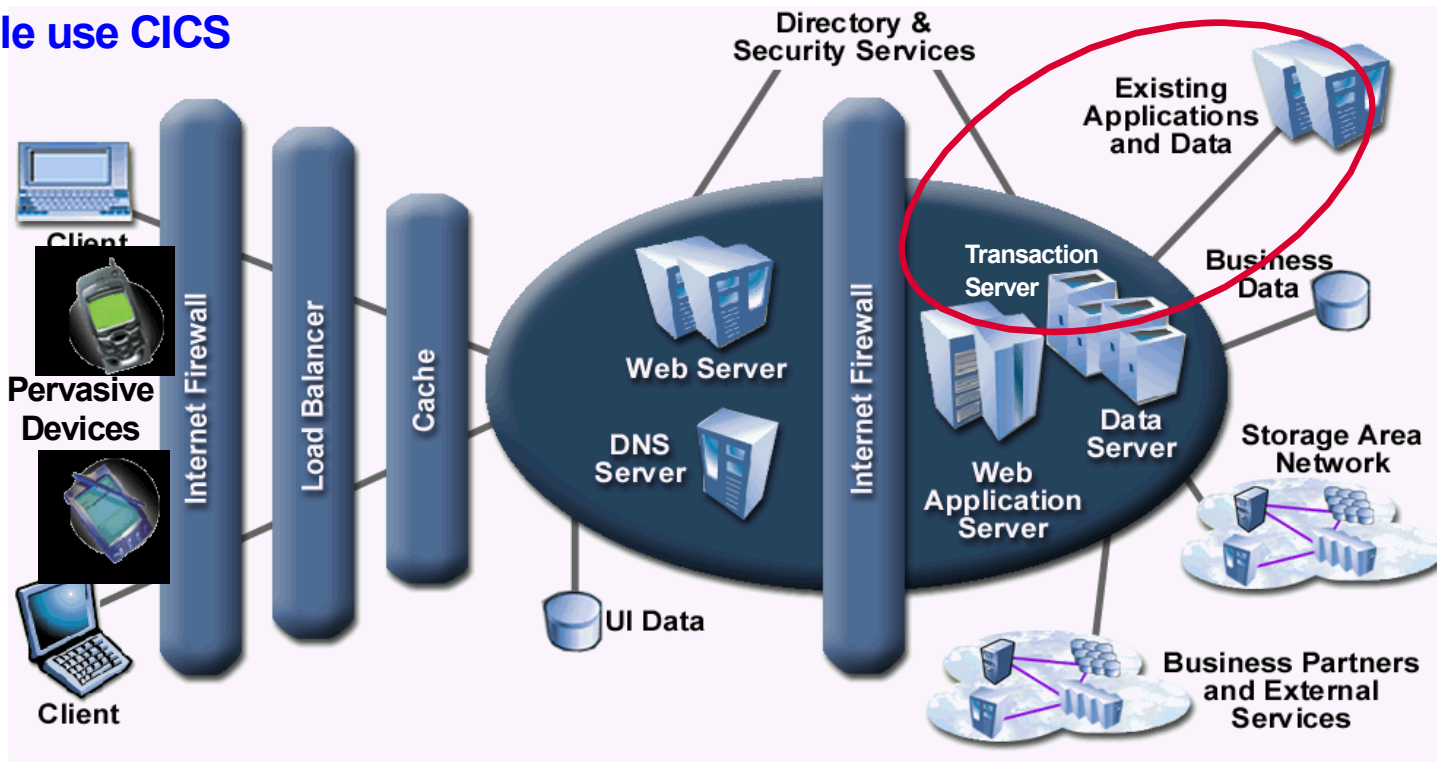
Agenda

- CICS Transaction Server for z/OS V2.3
 - ▶ e-Business Access to CICS Applications
 - ▶ Application Modernization
 - ▶ Enterprise Management
- CICS Tools support for:
 - ▶ e-Business Access to CICS Applications
 - ▶ Application Modernization
 - ▶ Enterprise Management



- ✓ Over 30 years and \$1 Trillion invested in Applications ... IDC
- ✓ Over \$1 trillion processed/day
- ✓ Over 30 billion transactions/day
- ✓ Most people use CICS

CICS Today



Among the highest revenue earning software products in the world

Through 2005, CICS Transaction Server will be the platform of choice for high-end and ultra-high-end OLTP applications, accounting for more than 65% of new mainframe deployments." (0.8 probability)

(Gartner, Inc., CIO Update: A Look at What's Ahead in Servers for Transaction Processing, Y. Natis, M Pezzini, June 2003)



CICS TS V2.3 Customer Beta

- **Acxiom/TransUnion**

- ▶ *We are in the development stages of moving our large database to DB2 with a substantial portion of the code written in Java using SQLJ. This has been a major undertaking over the past couple of years. CICS TS2.3 with the continuous JVM provides the environment that will provide us with the performance we need to make the project successful.*

- **Southern Californian Edison**

- ▶ *The advent of the WUI to replace the CPSM TSO interface was instrumental in helping us to make our network operations staff more aware of the state of our production CICS regions. This helped to reduce the time that the Tech Support staff had to spend monitoring production systems. The new enhancements to the WUI administration views that allow us to create and install CICS resource definitions will also help to reduce the time necessary to administer the production systems.*
- ▶ *The addition of EXEC CICS ASKTME and FORMATTIME to CICS threadsafe commands will also help in our goal to reduce response time and CPU time for our DB2 intensive transactions.*



CICS TS V2.3 Customer Beta

- **Kela**
 - ▶ ***We have a long history with CICS, over 30 years. We want high scalable and reliable application server environment on z/OS –platform. .We are currently running 6 million transactions a day. We want to integrate our existing and future applications using CICS/EJB. CICS/EJB gives possibilities to build new applications for the Internet. Our high performance web application platform.***
- **University of Florida**
 - ▶ ***We've had very good and positive experiences with CICS TS 2.3.***
- **Vestigo**
 - ▶ ***Big improvement for Java in CICS.***
- **Large financial customer**
 - ▶ ***With CICS TS 2.3 one of our major JAVA-application revealed a performance boost in throughput of up to 100%. In the next step we will exploit the master/worker-JVM-architecture to enhance the throughput in reducing the footprint of a single worker-JVM.***
 - ▶ ***The enhanced CPSM WUI for defining CICS resources is a step in the right direction to a full function administration user interface, which will help us in replacing the traditional CSD-definitions with a modern resource-model.***

CICS customer wants and needs

- ▶ **Increased return on *existing* investments**
 - ▶ Improved reuse of CICS-based IT assets
 - ▶ Simplified access
 - ▶ Better WebSphere integration

- ▶ **Improved development and systems management**
 - ▶ Improved AD productivity
 - ▶ Leading customers want Web Services and XML now!
 - ▶ Easier systems management (nb. skills)

- ▶ **And an attractive & evolving CICS product**
 - ▶ Protection of existing (and new !) investments
 - ▶ Assurance of CICS longevity
 - ▶ Exploitation of new technology

Strategic Themes for CICS TS v2

e-Business Access to CICS Applications

- ▶ enable re-use of CICS applications within broader e-Business scenarios, via standard APIs and protocols

Application Modernization

- ▶ enable enhancement of existing applications, and construction of new applications, using contemporary programming languages, constructs and tools

Enterprise Management

- ▶ enable effective management of CICS runtime configurations via intuitive user interfaces, so that demanding service level objectives can be met



CICS TS 2.3 Continues the Strategy ...

CICS TS V2.2

CICS TS V2.3

	e-Business Access to CICS Applications	Application Modernization	Enterprise Management
	Java SDK 1.3.1 ECI over TCP/IP LINK3270 Bridge XML capability for COBOL and PL/I	EJB Security (Roles) support JNDI (LDAP service provider) WAS Appl Assembly Tool Simplified EJB deployment Remote debug for Java Record level sharing for FC JDBC 2.0	Signon retention CF mngd rebuild /duplexing DB2 group attach CICS-DB2 Performance RMI purge CEMT INQ DB2 FC GLUE CPSM NT Agent
	Java evolution Java SDK 1.4.1 EJB hardening SOAP for CICS	Common Client Interface JCICS APIs for WEB, DOCUMENT and EXTRACT End-to-end debug for Java and COBOL DB2 restart-light support Samples supplied compiled	CPSM definitional WUI WLM for LINK3270 Bridge CPSM new function support CPSM architectural limits MRO Timeout Display TN3270 IP address Java and EJB trace/ srvcblty Statistics enhancements NLS support for GB18030 Info Center enhancements



CICS TS V2.3 new features



▪ **e-business Access to CICS**

- ▶ Java evolution including the SDK 1.4.1
- ▶ EJB hardening and performance
- ▶ Enhancements to IIOp authentication and encryption

▪ **Application Modernization**

- ▶ New JCICS classes for the CICS APIs WEB, DOCUMENT, and EXTRACT
- ▶ New CCI Connector for CICS TS
- ▶ Interactive end-to-end debugging enhancements
- ▶ DB2 restart-light and JDBC support
- ▶ SOAP for CICS feature

▪ **Enterprise Management**

- ▶ CICSplex SM enhancements
 - Definitional web user interface
 - Workload management for the LINK3270 Bridge

Java evolution - increasing performance

■ **Reduced JVM startup time**

- ▶ CICS TS V2.2 builds middleware infrastructure for EJB + CORBA requests for JVMs
 - Not required for basic Java programs in CICS
 - Overhead in CPU, storage and garbage collection
- ▶ CICS 2.3 JVMs build the minimum set of objects to process a Java transaction
 - EJB and CORBA infrastructure build when first required
 - Faster JVM startup times
 - Reduced objects in heap, leading to reduced time for reset
 - Reset times are lower because there are fewer objects in the heap
- ▶ Also delivered on CICS TS V2.2 in APAR PQ68286

■ **Enhanced mechanism for allocating free JVMs**

- ▶ Avoids where possible having to stop restart JVMs to match profile + execution key
 - More efficient dispatching of free JVMs
 - Wait some Java programs based recent usage and urgency
- ▶ Results in greater overall throughput of Java programs



Java evolution - increasing flexibility and faster resets

Three modes of reuse for the JVM:

1. **Single use** - destroyed at task termination
2. **Resettable** - undergoes a JVM reset between transactions
3. **Continuous** - no reset between transactions – recommended for production

The continuous JVM has a greater transaction throughput and lower CPU usage than the resettable JVM



Java evolution - improving robustness

- **Protection against short-on-storage conditions**
 - ▶ CICS tracks MVS storage requests (Batch LE)
 - ▶ Normal CICS short-on-storage protection when fixed storage cushion breached
 - eg. Notify domains, wait transactions, throttle creation of new JVMs by acting as if MAXJVMTCBs was reached

- **Storage protection for Java programs**
 - ▶ Extends CICS storage protection
 - ▶ USER key mode for Java applications can be specified on Java PROGRAM RDO
 - ▶ CICS key programs continue to run on J8 TCB
 - may be required if TASKDATA storage is in CICS key



Java evolution - enhancing the management of Java

- **Invoke multiple Java programs in the same CICS task**
 - ▶ Removal of one JVM per stack restriction
 - ▶ Enables development of Java programs without worrying about the calling stack
 - ▶ A strategy for piece-by-piece replacement of COBOL / PLI / C

- **Flexible tracing from the Java environment**
 - ▶ USEROUTPUTCLASS=*classname* allows STDERR and STDOUT to be redirect
 - e.g. to CICS transient data queue
 - consolidate / merge log files, prefix / suppress records
 - ▶ STDOUT primarily used for development / debug
 - ▶ STDERR useful in production for early problem detection and automation
 - ▶ Activate JVM trace dynamically using CETR

- **JVM profile management simplified**
 - ▶ JVM profile **and** properties files stored on the HFS
 - No longer split over PDS and HFS files
 - ▶ Referenced by Java PROGRAM RDO
 - ▶ Bring in a new JVM profile dynamically using CEMT

J2EE EJB session beans

■ Performance enhancements

- ▶ WebSphere AAT generated code in deployed EJB-JAR loaded as middleware
 - Implementation of the beans' home and component interfaces
 - Reused when a JVM reused for same enterprise beans
- ▶ JNDI cache
 - Improves the performance of JNDI lookups of Enterprise Javabeans
- ▶ Improved DJAR loading performance
 - EJB 2.0 deployment descriptor toleration allows use of EJB 2.0 tools, such as WebSphere Studio V5 for the deployment of EJB 1.1 session beans

■ Enable and disable CORBASERVERS

- ▶ New SPI to dynamically quiesce CORBASERVERs to install new enterprise beans
 - No need to shut down CICS
- ▶ Recommended procedure to maintain continuous availability

■ Tracking IOP tasks

- ▶ New 'stack' counts and request information to trace enterprise bean work in CICS
- ▶ Track chain of requests multiple method requests
- ▶ New SPIs for INQUIRE / SET WORKREQUEST



IIOp authentication and encryption enhancements

■ Authentication

- ▶ Supports the following authentication for IIOp clients
 - SSL client certificate authentication
 - Supported in CICS TS V2.2
 - Asserted identity authentication
 - Used when an IIOp client communicates with the target server through an intermediate server

■ Encryption

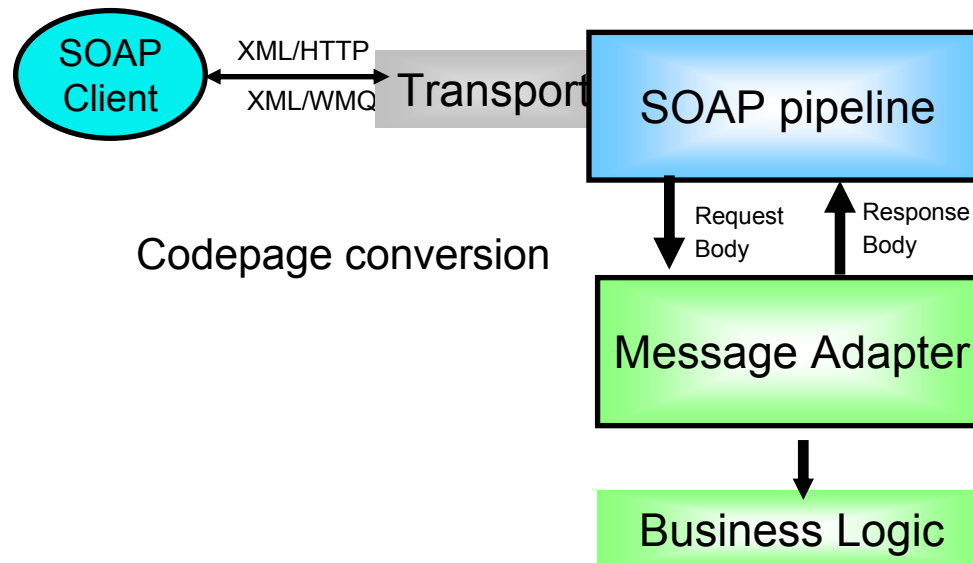
- ▶ CICS uses cipher suites supported by z/OS or OS/390
- ▶ Enables secure inter-operation between CICS and IBM and non-IBM systems
- ▶ Supports a variety of authentication protocols



SOAP for CICS feature

Why process SOAP in CICS?

- ▶ Easily and efficiently reuse CICS assets from SOAP clients
 - drive existing CICS programs with user supplied XML<->COMMAREA mapping
 - Supports IBM WSED generated code for mapping
- ▶ Performance focused
- ▶ Language neutral approach, works for COBOL, C and Java
- ▶ Synergy with WebSphere and industry direction for Web Services



SOAP for CICS

- Transport
- Envelope parsing
- URI mapping
- Envelope building

COBOL code

- generated by WSED

SOAP for CICS feature

▪ Enables CICS to be a SOAP 1.1 server and client

- ▶ SOAP over HTTP uses the proven and easy to use CICS Web support, incl. SSL support
 - ▶ CICS TS V2 required to initiate outbound HTTP
- ▶ SOAP over WebSphere MQ provides guaranteed delivery
- ▶ Simple SOAP processing node - limited SOAP header processing

▪ SOAP for CICS optional feature

- ▶ Free orderable feature with CICS TS V2.2 and V2.3
- ▶ Inbound and outbound HTTP support
- ▶ Fully supported for production use by normal IBM CICS service

▪ SOAP for CICS SupportPac CA1M

- ▶ Free download from ibm.com/software/http/cics/soap/index.html
- ▶ Requires CICS TS V1.3 or above
- ▶ Supplied AS-IS and unsupported although there is a public newsgroup

▶ Requirements

- ▶ OS/390 V2R10 LE with APAR PQ65085 or above
- ▶ Some means to parse XML eg. Enterprise COBOL or Enterprise PL/I in user program

CICS TS V2.3 new features

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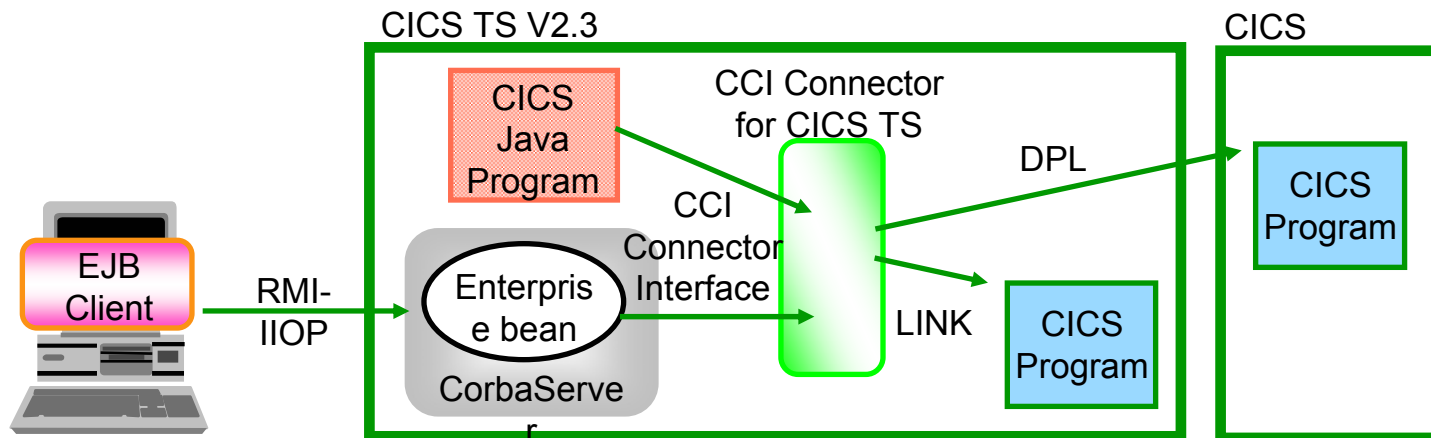
New CICS Java classes for Web support

- **Enables CICS Web support applications to be written in Java**
 - ▶ Import JCICS class library onto any Java workstation IDE
 - Javadoc included
 - Growing set of CICS APIs now available in Java

- **New JCICS classes**
 - ▶ WEB
 - WEB READ / WRITE
 - WEB SEND / RECEIVE
 - WEB RETRIEVE
 - WEB STARTBROWSE / READNEXT / ENDBROWSE
 - WEB EXTRACT
 - ▶ DOCUMENT
 - DOCUMENT CREATE / INSERT / RETRIEVE / SET
 - ▶ EXTRACT
 - EXTRACT CERTIFICATE / TCPIP / WEB

CCI Connector for CICS TS

- **Common Client Interface (CCI) part of J2EE 1.3 Connector Architecture (JCA) standard**
- **Strategic API for synchronous access to CICS programs from Java**
 - ▶ Migrate from the Common Connector Framework (CCF) to CCI
 - ▶ Supports the calling of CICS programs only
 - ▶ Optimized for execution within CICS resulting in a standard LINK / DPL
 - 2 Phase Commit
 - ▶ Supported by WebSphere Studio family
 - note Enterprise Services Toolkit is not supported in CICS



Interactive debugging enhancements

- **Debug CICS application end-to-end using tools**
 - ▶ Debugger client
 - GUI tool that runs on the workstation
 - WebSphere Studio integrated debugger
 - IBM Distributed Debugger
 - 3270 client
 - IBM Distributed Debugger
 - ▶ Debugger server
 - Runs on the same system as the application program
 - Communicates with the debugger client
 - For compiled languages
 - IBM Debug Tool
 - User-written or vendor-written debugging tools
 - For Java programs
 - Executing in the JVM in debug mode



Interactive debugging enhancements

▪ **Simplified setup for Debug Tool**

- ▶ Removed requirement for CICS TCP/IP Socket Interface
- ▶ Removed requirement for LE use exit CEEBXITA

▪ **Improved management of debugging profiles**

- ▶ In earlier releases, profiles are managed by Debug Tool
- ▶ In CICS TS V2.3, CICS manages debugging profiles
 - Store profiles in a VSAM file - can be shared and not discarded on CICS shutdown
 - Supports Java programs as well as other languages
 - Multiple profiles can be active at one time
 - Web-based and 3270 interfaces

▪ **Greater integration when debugging mixed languages**

- ▶ Compiled languages incl. COBOL, PL/I, C, C++ and Assembler
- ▶ Java programs
- ▶ Combination of compiled languages Java

▪ **Dynamic activation of JVM profiles**

- ▶ Debugging on and off for a Java program dynamically



DB2 restart-light support

- **Enhanced DB2 restart-light for improved recovery**

- ▶ Introduced in DB2 V7
- ▶ Provides the ability to cross-system restart a DB2 data sharing member quickly, with a minimal storage footprint
- ▶ Release the retained locks quickly, and then terminate
 - No new work will be accepted

- **Enhanced DB2 restart-light**

- ▶ DB2 V8 supports indoubt UOW, not only inflight UOW
- ▶ If indoubts are outstanding then it stays up long enough for CICS to connect to it and resynchronize indoubts before terminating
 - Stop new work being flowed into DB2



DB2 JDBC V2 driver

- **Delivered with DB2**
 - ▶ Many performance improvements within the driver
 - ▶ Downward compatible with JDBC 1.2
 - ▶ DB Beans supported and conform more closely to the JDBC V2.0 rowset specification

- **CICS TS V2.2 and V2.3 JVM environment only**
 - ▶ HPJ supports JDBC 1.2 only

- **Exploit CICS TS V2.3 shared class cache support feature of prJVM**



CICS TS V2.3 new features

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CICSplex SM enhancements

■ CPSM Definitional WUI

- ▶ Manage CICS resource definitions from the web
- ▶ Supports CREATE, UPDATE and REMOVE
- ▶ Improved starter set of views for definitions
- ▶ Improved security for WUI view and menus
 - RACF profile to READ/UPDATE custom views
 - Audit trail of updates
- ▶ Usability and accessibility improvements
 - Accessibility, tabular views, multiple record selection
- ▶ Separate CICS region (LMAS) as WUI server

■ CPSM Operations WUI

- ▶ NLS enabled
- ▶ Customizable
 - By resource category / user task / application (dynamic filters)
 - Add explanatory annotations, add hyperlinks
 - Control updates (by restricting views)
 - Customizable help referring to e.g. documentation about procedures

CICSplex SM Web User Interface

Context: FVPLEX2
Scope: BLMAS2

CICS operations views

- [CICS Business Transaction Services \(BTS\) operations views](#)
- [CICS region operations views](#)
- [Connection operations views](#)
- [DB2 and DBCTL operations views](#)
- [Document template operations views](#)
- [Enqueue model operations views](#)
- [Enterprise Java component operations views](#)
- [Exit operations views](#)
- [FEPI operations views](#)
- [File operations views](#)
- [Journal operations views](#)
- [Program operations views](#)
- [Task operations views](#)
- [TCP/IP service operations views](#)
- [Temporary storage queue \(TSQ\) operations views](#)
- [Terminal operations views](#)
- [Transient data queue \(TDQ\) operations views](#)
- [Transaction operations views](#)
- [Unit of work \(UOW\) operations views](#)

Related resources

- [Monitoring views](#)

Menu name: EYUSTARTOPERATE

Kill functionality

- Users needed the ability to remove problem tasks under all circumstances
- Situations can arise where a user cannot list tasks in a region or cancel a problem task
 - ▶ A waiting or looping CICS task can bring the CICS region to a halt
 - This may impact CICS PM because the CPSM listener runs under QR TCB
- Kill function provided by various vendor products partially addresses these requirements
 - ▶ Used as a last resort before recycling the system
 - ▶ May keep system up and allow SLAs to be met

Kill functionality

- Two main elements to IBM solution from November 2003
 - ▶ Significant enhancements to PURGE and FORCEPURGE
 - Earlier and more frequent detection of deferred purge
 - Reduces the need for Kill
 - Provides a more reliable method of removing problem tasks without comprising system integrity
 - ▶ Kill function implemented
 - Via new keyword available on the CEMT INQUIRE and SET commands
 - Via the MVS console (transaction CEKL)
 - Requests executed under a TCB other than the QR TCB
 - Addresses looping tasks
 - Provides audit trail on transactions that have been Killed
- Delivered in CICS Transaction Server V2.2 via the service channel
- Included in CICS Transaction Server V2.3
- Invokable from CICS PM

CICSplex SM enhancements

- **Workload management for LINK3270 Bridge**
 - ▶ with CPSM dynamic routing program, EYU9XLOP
 - Dynamic routing
 - Workload balancing
 - Workload separation

- **Architectural improvements**
 - ▶ Removal of internal architectural constraints
 - Shutdown entire CICSplex for some service operations
 - Coexistence of multiple levels of CICS and CPSM in the same CICSplex



Additional enhancements

- **Additional CICS APIs made threadsafe**
 - ▶ EXEC CICS DOCUMENT + ASKTIME + FORMATTIME
 - ▶ Change task commands

- **Display TN3270 IP address**
 - ▶ CICS supplies the IP address of terminals in message
 - ▶ For autoinstalled terminals connecting through TN3270

- **Outbound HTTP**
 - ▶ Program LINK interface (also available on CICS TS V2.2 with APAR)
 - ▶ Will be replaced with equivalent function in a future CICS TS release

- **Sympathy Sickness prevention for improved availability**
 - ▶ Read time-out for MRO
 - Purge waiting task if waiting too long
 - As specified on corresponding PROFILE definition
 - 1 second granularity
 - Applies to all MRO and SNA connections

Information Center enhancements

■ CICS documentation organized into



Task guides



Concepts



References

■ Task Guides

- ▶ CPSM configuration
- ▶ Migration scenarios
 - CICS/ESA V4.1 to CICS TS V2.3
 - CICS TS V2.2 to CICS TS V2.3
- ▶ Updated EJB task guides

■ Tables now interactive

- ▶ Sort order + limit lines displayed

■ Searches saved across sessions

■ Supported on Windows 2000 / XP, AIX

■ (soon to be) Available online

- ▶ <http://publib.boulder.ibm.com>

IBM CICS[®] Transaction Server for z/OS[™]

Home | **Tasks** | Concepts | Reference | Searches | Bookmarks | Help

Search for in the whole library

- ▶ Installation and migration
- ▶ Setting up your system
- ▶ Developing applications
- ▶ **Using Java applications**
 - ▶ [Java development roadmaps](#)
 - ▶ [CICS Java programming](#)
 - ▶ [Setting up and using JVMs](#)
 - ▶ [Accessing data from CICS Java programs](#)
 - ▶ [Configuring for IIOP](#)
 - ▶ [Setting up a CICS EJB server](#)
 - ▶ [Running the EJB IVP](#)
 - ▶ [Running the sample EJB applications](#)
 - ▶ [Writing enterprise beans](#)
 - ▶ [Deploying enterprise beans](#)
 - ▶ [Using connectors](#)
 - ▶ [Dealing with enterprise bean problems](#)
 - ▶ [Dealing with Java Virtual Machine \(JVM\) problems](#)
 - ▶ [Managing enterprise bean security](#)
 - ▶ [Developing stateless CORBA objects](#)
 - ▶ [Using VisualAge for Java ET/390 \(hpl\)](#)
- ▶ Running applications
- ▶ Managing your system
- ▶ Customizing your system
- ▶ Improving performance
- ▶ Diagnosing problems

Using Java applications in CICS

This section of the information center tells you how to write Java applications for CICS; how to set up the CICS environment and run Java applications using a Java Virtual Machine (JVM) or the VisualAge for Java Enterprise Toolkit for OS/390. It tells you how to develop and run the following types of Java application:

- Java applications that use the JCICS Java classes to access CICS resources and services
- Stateless CORBA objects that are accessed by client programs using IIOP protocols
- Enterprise beans that are accessed by client programs using IIOP protocols

For information about the JCICS Java classes, stateless CORBA objects, and enterprise beans, see [Concepts - Java applications in CICS](#).

In the navigation panel on the left, if a topic title is underscored then there is an information unit linked to that topic. If there is a right-pointing "twisty" to the left of a topic, click on the twisty to open an additional level of detail. If there is a downward-pointing "twisty" to the left of a topic, click on the twisty to close the list of sub-topics.

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CICS Performance Monitor support for CICS TS 2.3

- CICS PM is built on the infrastructure of CICSplex SM
- It uses the published CICS SPI and CPSM API interfaces
- Provides support for the Enterprise Java implementation in CICS TS Version 2
 - ▶ JVM Pool
 - ▶ CICS deployed JAR files
 - ▶ CORBA Server
 - ▶ Java Virtual Machine
- Aims to provide timely supports for the new versions of CICS TS
- Enables performance management at a Sysplex level, i.e., the single system image view

IBM CICS Performance Monitor for z/OS

Monitor Topology Event List Status Window Help

- STPLXSM
- AOR
- IYETSSSS
- IYETSUSS
- IYETSUSU
- IYETSUSS
- IYETSVSU
- IYETSVS3
- IYETSVS4
- IYETSVS5
- IYETSVS6
- IYETSVS7
- IYETSVS8
- IYETSVS9
- FOR
- SET1
- SET2
- SET3
- TOR
- XSC3CG01
- XSC3CG02
- XSC3CG03
- XSC3CG04
- XSC3CG05
- XSC3CG06
- XSC3CG07
- XSC3CG08
- XSC3CG09
- XSC3CG10
- Other systems
- STPLXST
- STPLXSW
- XSC3PLX1
- XSC3PLX2
- XSC3PLX3

System Activity Monitor

SAM System busy	📄	✅
SAM Transaction dumps	📄	✅
SAM Max tasks	📄	✅
SAM Short on storage	📄	✅
SAM System dumps	📄	✅
SAM System unavailable	📄	✅

Activity

File usage by task	📄	✅
Active task	📄	⚠️
Interval control element	📄	✅
Recovery Manager	📄	✅
Work Request	📄	✅
TSQ usage by task	📄	✅
Task storage elements	📄	✅
Task subpool	📄	✅
RMI usage by task	📄	✅

Connectivity

FEPI target	📄	✅
3270 bridge facility	📄	✅
FEPI pool	📄	✅
Partner	📄	✅
FEPI connection	📄	✅
TCP/IP global status	📄	✅
LU 6.2 mode name	📄	✅
Profile	📄	✅
FEPI property set	📄	✅
Terminal	📄	✅
ISCMRO connections	📄	✅
FEPI node	📄	✅
TCP/IP service	📄	⚠️

Topology

Runtime MAS display	📄	✅
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Programs

Program	📄	⚠️
DFHRPL Data Set Names	📄	✅

Queues

Intrapartition transient data queue	📄	⚠️
Global temporary storage attributes	📄	✅
Temporary storage pool	📄	✅
Global transient data queue attributes	📄	✅
Shared temporary storage queue	📄	✅
Long temporary storage queue	📄	✅
Remote transient data queue	📄	✅
Indirect transient data queue	📄	✅
Extrapartition transient data queue	📄	✅

Regions

MVS storage elements	📄	✅
CICS region	📄	⚠️
CICS Dispatcher global	📄	✅
MVS TCBs	📄	✅
Global user exit	📄	✅
CICS History recorder Status	📄	✅
Enqueue Manager	📄	✅
CICS loader	📄	✅
MVS Workload management	📄	✅
CICS Dispatcher TCB pool	📄	⚠️
CICS transaction dump code	📄	✅
Global MVS TCBs	📄	✅
CICS Dispatcher TCB mode	📄	✅
CICS system dump code	📄	✅
Domain subpool	📄	✅
CICS Storage	📄	⚠️
CICS Monitoring and Statistics	📄	✅

Miscellaneous

Process type	📄	✅
Document template	📄	✅

Files & databases

Physical data set for a file	📄	✅
Local file	📄	✅
Remote file	📄	✅
Coupling facility data tables pool	📄	✅
DB2 connection	📄	✅
DB2 transaction	📄	✅
VSAM LSRPOOL buffers	📄	✅
DB2 entry	📄	✅
Data table	📄	✅
VSAM LSR pool	📄	✅

Logging

Journal name	📄	✅
Log stream manager	📄	✅

Transactions

Transaction class	📄	✅
Remote transaction	📄	✅
Request model	📄	✅
Local or dynamic transaction	📄	✅

Models

Enqueue model	📄	✅
Journal model	📄	✅
Autoinstalled model	📄	✅
Temporary storage model	📄	✅

Enterprise Java

Class Cache	📄	⚠️
JVMPool	📄	⚠️
CICS-deployed JAR file	📄	✅
JVM Profile	📄	⚠️
CorbaServer	📄	⚠️
Java Virtual Machine	📄	✅

Other

Other resources	📄	✅
-----------------	---	---

Resources Summary Region Histories

Status for scope: AOR Filter: None

Event	Region	Resource	Identifier	Attribute	Operator	Reference value	Current value	Severity	Priority	Time	De-
CMZA8741	IYETSVSU	CICS Storage	IYETSVSU	URATESTORV	LE	1.000	0.000	⚠️ HWV	1	09-Feb-2004 11:27:20 GMT	URATESTORV
CMZC6086	IYETSVSU	CICS Dispatcher TCB pool	HOTPOOL	DSGPMWVS	GE	0	0	⚠️ HWV	1	09-Feb-2004 11:27:20 GMT	Peak TCB mismatch wa
CMZC6086	IYETSVSU	CICS Dispatcher TCB pool	JVM	DSGPMWVS	GE	0	0	⚠️ HWV	1	09-Feb-2004 11:27:20 GMT	Peak TCB mismatch wa

CICS PM JVM Profile Management

CICSPlex SM Web User Interface - IYETSVSO - DMKEY2 - Microsoft Internet Explorer

Address: http://winmvs55.hursley.ibm.com:44700/CICSPLEXSM/DMKEY2?STUB=BAD3C3C41DC748480002000074D88AD2B25A0000000000000

JVM Profile

EYUVC12801 4 records collected at 25/02/04 11:55:45.

Context: STPLXSM
 Scope: AOR
 Name as used in a program definition: [dropdown]
 ClassCache Status: [dropdown] Automatic refresh: 60 seconds
 JVM reuse status: [dropdown]

4 records on 1 pages.

Record	CICS system name	Name as used in a program definition	ClassCache Status	JVM reuse status
		▼▲▲	▼▲▲	▼▲▲
1 <input type="checkbox"/>	IYETSVS6	DFHJVMCD	NOCLASSCACHE	RESET
2 <input type="checkbox"/>	IYETSVS7	DFHJVMCD	NOCLASSCACHE	RESET
3 <input type="checkbox"/>	IYETSVS8	DFHJVMCD	NOCLASSCACHE	NOREUSE
4 <input type="checkbox"/>	IYETSVS9	DFHJVMCD	NOCLASSCACHE	NOREUSE

4 records on 1 pages.

Resource name: JVMPROF. View name: IBM_CMZJVMPROF.TABULAR

Special
[View editor](#)
[New window](#)
[Close window](#)
[Sign off](#)

Address: http://winmvs55.hursley.ibm.com:44700/CICSPLEXSM/DMKEY2/VIEW/IBM_CMZJVMPROF.DETAILED?STUB=BAD3C3C41DC8CE480103000074D88AD2B25A

CICS PM JVM Profile Management - Details

CICSPlex SM Web User Interface - IYETSVS0 - DMKEY2 - Microsoft Internet Explorer

Address: [http://winmvs55.hursley.ibm.com:44700/CICSPLEXSM/DMKEY2?STUB=BAD3C3C41DC748480002000074D8BAD2B25A0000000000000](http://winmvs55.hursley.ibm.com:44700/CICSPLEXSM/DMKEY2?STUB=BAD3C3C41DC748480002000074D8BAD2B25A000000000000)

JVM Profile

EYUVC1280I 4 records collected at 25/02/04 11:55:45.

[Refresh](#)

CICS system name: IYETSVS6

Name as used in a program definition: DFHJVMCD

Full path name of the HFS file: /u/cts/CICSHome/IYETSVS6/JVMProfiles/DFHJVMCD

ClassCache Status: NOCLASSCACHE

JVM reuse status: RESET

JVM Profile Statistics

	CICS Key	USER Key
JVM Profile request count	0	0
Current JVM Profile use count	0	0
Peak JVM Profile use count	0	0
No. new JVMs created	0	0
No. JVMs Unresetable	0	0
No. times mismatch stealer	0	0
No. times mismatch victim	0	0
LE heap high water mark used by JVMs	0	0
Nonsystem heap high water mark for JVMs	0	0
No. times JVMs destroyed by 'SOS' action	0	0
JVM Profile - Xmx value		

Resource name: JVMPROF. View name: IBM_CMZJVMPROF.DETAILED

CICS PM Work Requests Thresholds

IBM CICS Performance Monitor for z/OS

Monitor Threshold groups Resources Thresholds Window Help

Threshold gr... CICS resources

- CMZBase
- ATKINC
- ATKINC - CICS1
- ATKINC - X2TAS
- ATKINC-BRFACIL
- ATKINC2
- D031120
- D031120 2
- D031120 3
- D031120 4
- D031120 4
- D031126 G1
- DCR7440 Scenai
- DEF9324 Install
- DJV3
- DJV_Exploit01
- DMK 81955
- DMK 9229
- DMK 9324
- DMK A
- DMK CPSM-PTF1
- DMK D031201 A
- DMK D031203 A
- DMK D031208 A
- DMK Def5819
- DMK Def9443/4
- DMK I47
- Def9628
- Demo**
- Ivan
- Ivan2
- Jeff
- New Grp2 D031
- NewGrp3
- NewGrpA
- Srw1
- al1
- djw1
- djw2
- djw4
- dmk 9628
- new grp D03112
- testy

CICS resources

- All resources
 - Activity
 - File usage by task
 - Active task
 - Interval control element
 - Recovery Manager
 - Work Request**
 - TSQ usage by task
 - Task storage elements
 - Task subpool
 - RMI usage by task
 - Alerts
 - Connectivity
 - Enterprise Java
 - Class Cache
 - JVMPool
 - CICS-deployed JAR file
 - JVM Profile
 - CorbaServer
 - Java Virtual Machine
 - Files & databases
 - Logging
 - Miscellaneous
 - Models
 - Monitoring
 - Programs
 - Program
 - DFHRPL Data Set Names
 - Queues
 - Regions
 - Topology
 - Transactions

Thresholds

Name	Resource identifier	Description	Sample
NewThreshold	*	\WorkRequest Threshold	60 seconds

Resource	Attribute	Operator	Eval Data	Event severity
Work Request	PURGETYPE	Eq	PURGE	HW HS VHS
		NE		

Changes pending

Current CICSplex: STPLXSM Save Install Group

CICS PM Active Tasks Thresholds: Kill

IBM CICS Performance Monitor for z/OS

Monitor Threshold groups Resources Thresholds Window Help

Threshold gr... CICS resources

- CMZBase
- ATKINC
- ATKINC - CICSS1
- ATKINC - X2TAS
- ATKINC-BRFACIL
- ATKINC2
- D031120
- D031120 2
- D031120 3
- D031120 4
- D031120 G1
- DCR7440 Scena
- DEF9324 Install
- DJW3
- DJW_Exploit01
- DMK 81955
- DMK 9229
- DMK 9324
- DMK A
- DMK CPSM-PTF1
- DMK D031201 A
- DMK D031203 A
- DMK D031206 A
- DMK Def5819
- DMK Def9443/4
- DMK I47
- Def9628
- Demo**
- Ivan
- Ivan2
- Jeff
- New Grp2 D031
- NewGrp3
- NewGrpA
- Srw1
- all
- djw1
- djw2
- djw4
- dmk 9628
- new grp D03112
- testy

Thresholds

Name	Resource identifier	Description	Sample
NewThreshold *		KILL as Demo	60 seconds

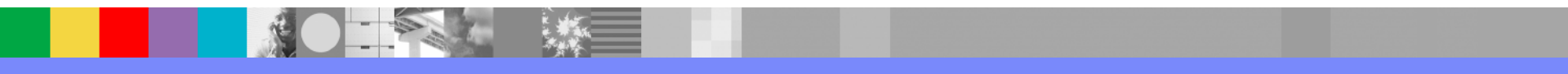
Resource	Attribute	Operator	Eval Data	Event severity
Active task	PURGETYPE	EQ	KILL	HW HS VHS
		NE	FORCEPURGE	
			KILL	
			PURGE	

Changes pending

Current CICSplex: STPLXSM Save Install Group

CICS Performance Analyzer Support for CICS TS V2.3

- **CICS Performance Analyzer provides customized reports ...**
 - ▶ Custom reports are provided which enable extensive performance analysis of the many new functions introduced in CICS Transaction Server V2.3
 - ▶ Detailed and summary reports provided include ...
 - Transaction CPU Analysis – including J8/J9 TCB usage by JVMs
 - JVM performance analysis – including initialization, method and reset time
 - EJB Usage – Bean creation and removal, method calls, ...
 - SOAP for CICS Usage
 - ▶ Supplied reports also enable transaction performance analysis to be performed by ..
 - CorbaServer name, TCP/IP Service name, ..



File Confirm Samples Options Help

Report Forms

5 members added

Command ==> _____ Scroll ==> CSR

Report Forms Data Set . . . : CBAKER.CICSPA.FORMS

Name	Type	Description	Changed	ID
CPULST	LIST	Transaction CPU Analysis	2003/11/24 00:00	CICSPA
CPULST1	LIST	Transaction CPU Analysis (1)	2003/11/24 00:00	CICSPA
CPUSEXTR	SUMMARY	CPU Analysis and Extract	2003/11/24 00:00	CICSPA
CPUSUM	SUMMARY	Transaction CPU Analysis	2003/11/24 00:00	CICSPA
CPUSUM1	SUMMARY	Transaction CPU Analysis (1)	2003/11/24 00:00	CICSPA
EJBLST	LIST	Enterprise Java Bean Analysis	2003/11/24 00:00	CICSPA
EJBSUM1	SUMMARY	Enterprise Java Bean Analysis(1)	2003/11/24 00:00	CICSPA
EJBSUM2	SUMMARY	Enterprise Java Bean Analysis(2)	2003/11/24 00:00	CICSPA
JVMLST	LIST	Java Virtual Machine Analysis	2003/11/24 00:00	CICSPA
JVMSUM	SUMMARY	Java Virtual Machine Analysis	2003/11/24 00:00	CICSPA
SOAPLST	LIST	SOAP for CICS Usage - Detail	2003/11/24 00:00	CICSPA
SOAPSUM	SUMMARY	SOAP for CICS Usage - Summary	2003/11/24 00:00	CICSPA

***** End of list *****



CICS Tools Support For Strategic Themes for CICS TS V2

e-Business Access to CICS Applications

- ▶ provide tools to enable rapid integration of CICS applications into the e-Business environment

Application Modernization

- ▶ provide tools to enable cost-effective maintenance and enhancements of existing applications and data, and construction of new applications

Enterprise Management

- ▶ provide intuitive and easy to use tools for cost effective management of your CICS systems, improved application and resource availability





CICS Tools for Improved System Efficiency and Availability

- Reduce down time
- Use CICS resources more efficiently
- Control software cost
- Extend and modernize CICS applications easily
- Improve end-user productivity
- Increase customer satisfaction

CICS Performance Monitor

- real-time performance management, monitoring and troubleshooting for increased availability

CICS Performance Analyzer

- comprehensive batch performance reporting and analysis for tuning and capacity planning

Session Manager

- Secure, reliable, and easy access to multiple z/OS and OS/390 applications from a single terminal

CICS Online Transmission Time Optimizer

- 3270 data streams optimization for increased system performance

CICS Business Event Publisher for MQSeries®

- Outbound event management using WebSphere MQ for accelerate application reuse

CICS Interdependency Analyzer

- Understanding of active application inventory for efficient maintenance and upgrade

CICS VSAM Recovery

- Automated recovery of lost VSAM data

CICS VSAM Transparency

- VSAM to DB2 migration without rewriting applications

CICS Tools Support for CICS Transaction Server V2.3

CICS Tool	Support for CICS TS 2.3	APAR number	Migration effort (to the latest release of the tool)
CICS Performance Monitor V1.2	Supported, PTF required (toleration support without the PTF)	PQ81955, PQ18937	Little (installation, definitions migration, sample job supplied)
CICS Performance Monitor V1.1	Not supported		
CICS Performance Analyzer V1.3	Supported, PTF required	PQ79013	Little to none (installation, dialog familiarisation)
CICS Performance Analyzer V1.2	Not supported		
CICS Performance Analyzer V1.1	Not supported		
CICS Interdependency Analyzer V1.2	Supported, PTF required	PQ 79057	Little (installation, data migration, sample job supplied)
CICS Interdependency Analyzer V1.1	Not supported		
CICS VSAM Recovery V3.2	Supported	None	
Session Manager V1.1	Supported	None	
CICS Business Event Publisher V1.1	Supported, PTF required	PQ79056	
CICS OTTO V1.1	Supported	None	
CICS VSAM Transparency V1.1	Supported	None	

CICS Tools Support For Strategic Themes for CICS TS V2

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CICS Business Event Publisher for MQSeries

Supporting e-Business access to CICS applications

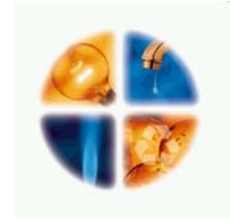
- Monitors events occurring within CICS applications
 - ▶ Based on user-specified selection criteria created using GUI administrator
- Creates messages for selected events
 - ▶ Based on user-specified message content rules
- MQPUTs messages to MQSeries queue
 - ▶ User-specified
 - Queue name / queue manager name
 - MQSeries MQPUT options

Benefits

- Lets CICS applications play in business to business integration
- Enables Enterprise Application Integration
- Enables a Message Broker front end to CICS
- Allows CICS applications to drive new business processes
 - quickly
 - without code changes



CICS Business Event Publisher scenario



■ Customer Pain

- ▶ Two utility providers (gas and electricity) have merged to offer joint services to customers. They have two different infrastructures based upon CICS and are having difficulties merging the customer information to be able to provide single billing.

■ The Solution

- ▶ CICS Business Event Publisher takes customer usage information and records from CICS systems in both companies and publishes the details as WebSphere MQ messages. WebSphere MQ integrates the information so that there is a consolidated bill provided for customers, both on the web and by post. Built on the existing infrastructure, the two companies realize they can create automation by providing engineers with customer information on their PDAs so that as they visit houses to test/monitor meters, the information is right there in front of them. Should the engineers be called out in an emergency records can be sent out with no need to return to the branch or office.

■ The Benefits

- ▶ There is no need for a great deal of expense on creating a new infrastructure, this solution allows the companies to leverage what they already have. New business opportunities arise from being able to publish information held in back end systems out to the extended enterprise.

CICS Tools Support For Strategic Themes for CICS TS V2

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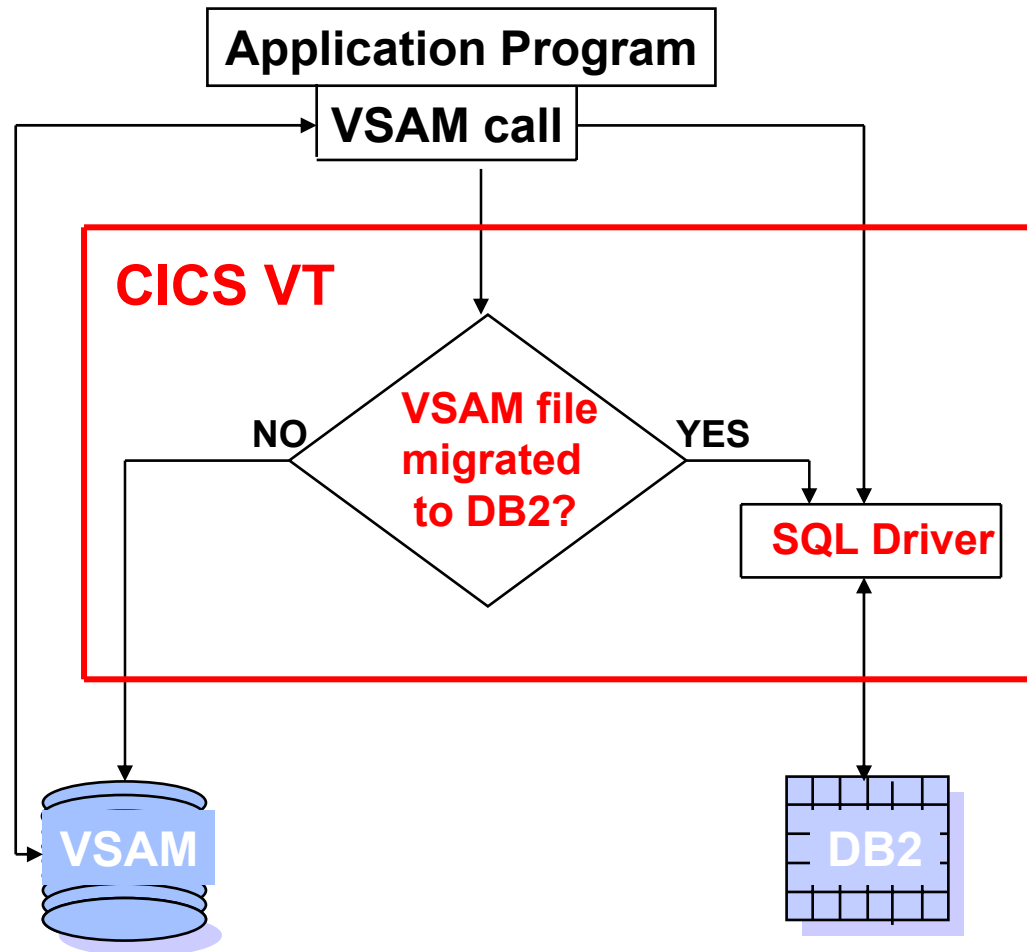
CICS VSAM Transparency

Supporting CICS application modernization

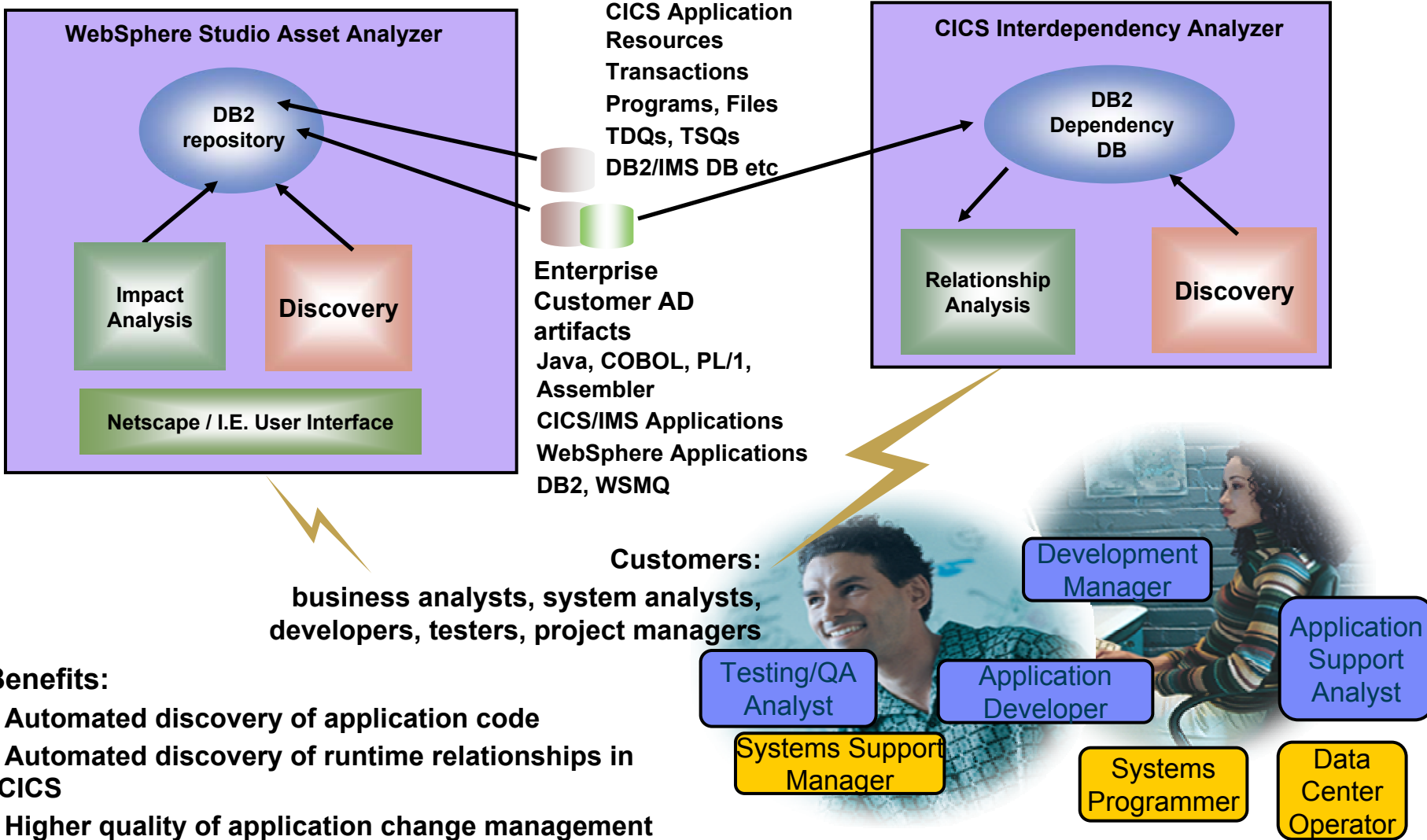
- Allows data migrations from VSAM to DB2 – **with no change to CICS/VSAM applications**
- Set of conversion tools and a runtime management component
- Why migrate to DB2?
 - ▶ 24x7 availability
 - ▶ Integration with new e-business apps based on DB2 technology
 - ▶ Ability to run adhoc queries
 - ▶ Ability to perform data analysis
 - ▶ Visual information, such as executive dashboards
 - ▶ Exploitation of database management tools
- CICS VT provides
 - ▶ Maintenance of a single source of production data
 - ▶ Migration of individual VSAM files as required
 - ▶ Access to DB2 for new applications
 - ▶ Preserved investments in longstanding CICS applications

CICS VSAM Transparency

Supporting CICS application modernization



Responding to change - *Understanding Applications Speeds Time to Market*



CICS Interdependency Analyzer

Helping Maintain and Enhance CICS Applications

- Understand Active Application Inventory quickly and efficiently
 - ▶ Merger / Acquisition / Outsourcing
 - ▶ Lost or incomplete documentation
 - ▶ Vendor Applications
- Maintain or Enhance Applications more easily
 - Understand cross-system applications and dependencies
 - Know the resource topology within a particular CICS region
 - Identify the resource flow following a transaction abend
 - Understand the effect of opening and closing files
 - Know the last time a particular resource was used
- Change or upgrade an application quickly and efficiently
 - ▶ identify resources that are affected directly and indirectly
 - ▶ Transactions, programs, data elements: Files, Queues, Screens, ...
 - ▶ What to change, what to build, what to test, what needs to be communicated to roles involved
- Look across boundaries, including through shared data



CICS Tools Support For Strategic Themes for CICS TS V2

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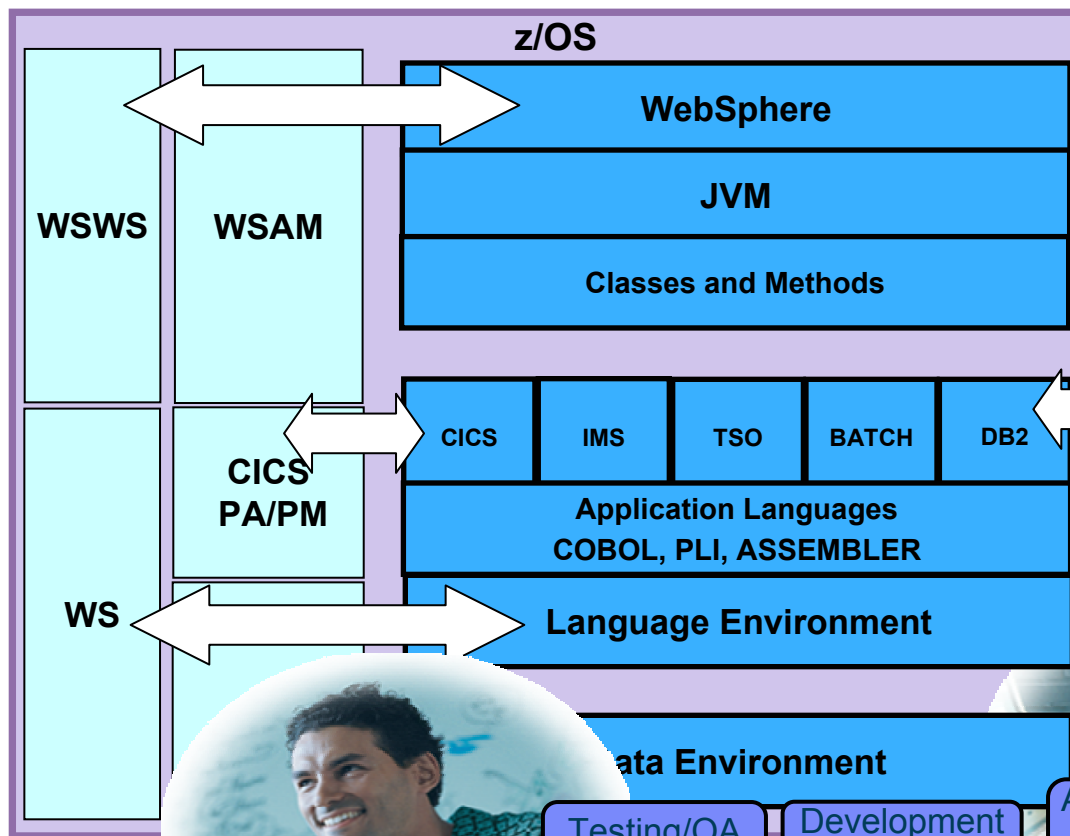


Performance Monitoring Infrastructure - *Enables Highest QOS and Maintainability of Mixed Workload Applications for z/OS*

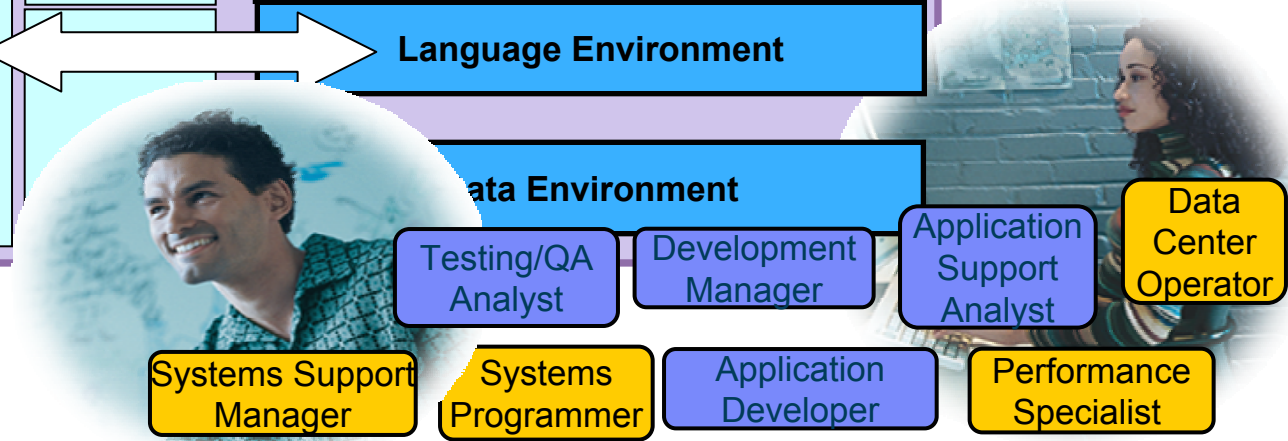
WSWS and WSAM
used to drive and monitor J2EE performance on both WAS servers

CICS PM/PA
provide CICS resource monitoring

zSeries WS and AM
used to drive and monitor CICS transactions and DB2 performance for COBOL / PLI applications



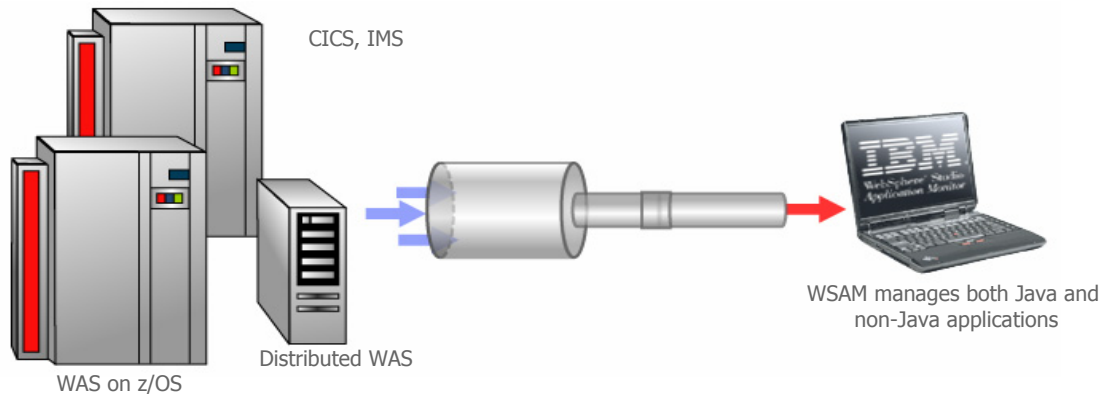
DB2 PM
provides DB2 resource monitoring



Monitoring Composite Applications

WebSphere Studio Application Monitor (WSAM)

Provides trouble-shooting and performance monitoring for mixed-workload applications



WSAM Benefits:

- **Real-time problem determination for mixed-workload applications**
Drill-down capabilities provide in-depth views into mixed-workload applications (e.g., WebSphere transaction branching into CICS)
- **Non-intrusive architecture: no instrumentation required**
WSAM does not modify application code and easily profiles “black-box” applications
- **Performance management through a rich set of historical analysis functions**
Performs historical analysis for fine-tuning the applications or the environment, analyzing systems resources and planning for future growth

CICS Performance Monitor

Performance monitoring across the enterprise, integrated with Tivoli.

New in CICS PM 1.2

- Historical task data
 - ▶ View and manage collection criteria
 - ▶ Extensive filtering capabilities, to help diagnose:
 - Current problems to identify the symptoms
 - Recent problems to prevent future reoccurrence
- Significant data coverage enhancements:
 - ▶ Current CICS storage detail
 - ▶ TCB storage and CPU time usage
 - ▶ Additional transaction resource monitoring
- Extensive changes to enhance usability of the end-user interface
- Support for enhancements to removing problem tasks delivered in November 2003
- Support for IBM integrated performance management for zSeries
- Full support for CICS Transaction Server V2.3

Benefits

- Enhanced problem diagnosis
- Faster problem determination and improved ability to prevent downtime
- Easier access to the status information for multiple CICS regions from a single view
- Improved availability and system integrity
- Improved ability to monitor status of multiple platforms from a single view



CICS Performance Analyzer

Performance analysis across the enterprise – supporting runtime application understanding and deployment flexibility

New in CICS PA V1.3

- Historical performance data base repository
- More performance analysis data and reports:
 - ▶ Performance wait (bottleneck) analysis
 - ▶ New Transaction Resource Usage Reports
 - Temporary Storage
 - ▶ WebSphere MQ information
- ISPF Dialog Interface enhancements for added ease of use
- Enhanced report forms capability

Benefits

- ▶ Powerful trending and capacity planning capabilities for optimal performance
- ▶ Uncover more trends leading to poor CICS performance to prevent outages
- ▶ Greater flexibility to get started quicker
- ▶ Tailor the analysis to your needs more easily to proactively tune your systems

Full support for CICS Transaction Server V2.3

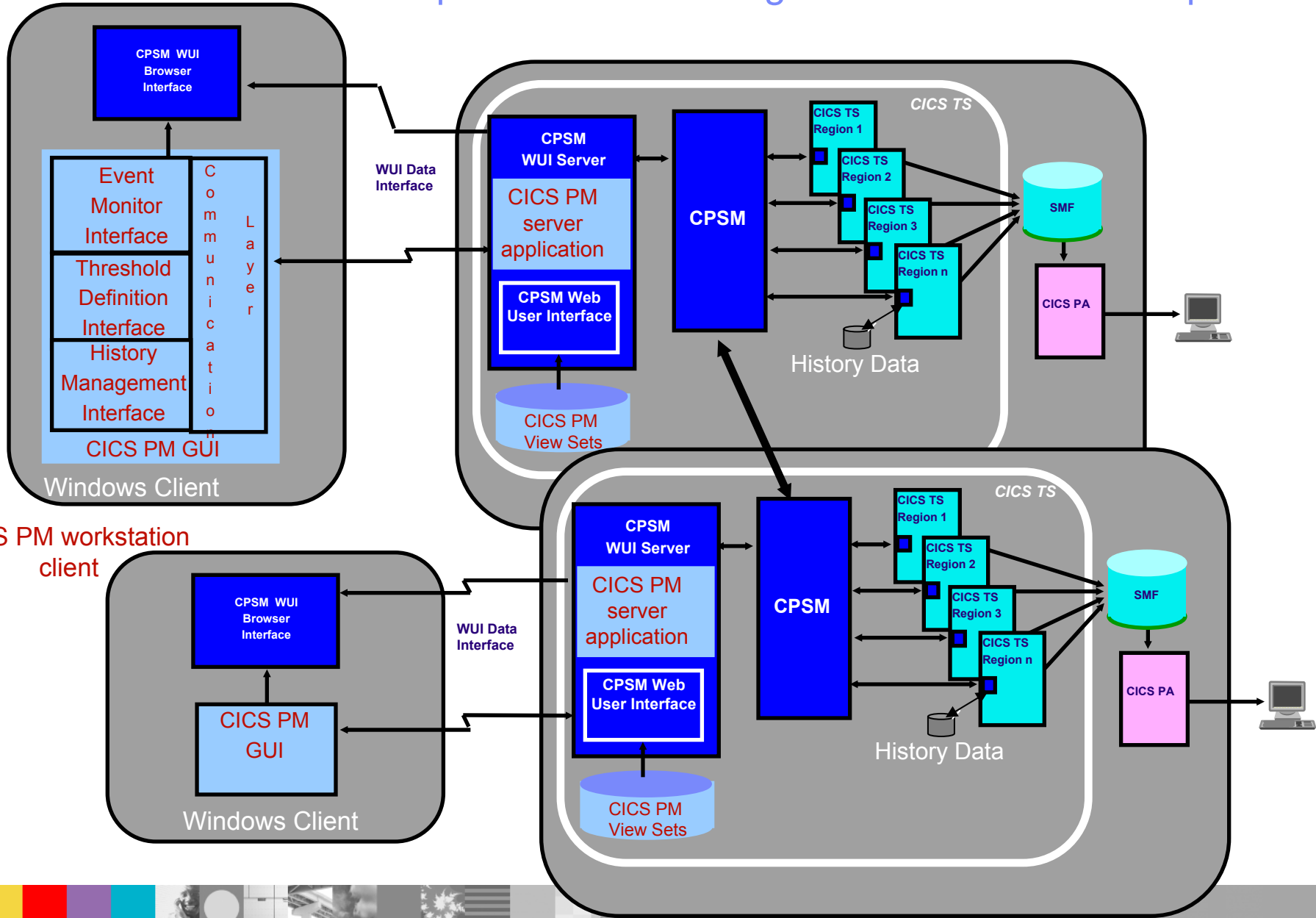


New CICS Performance Analyzer PTF available from December 2003

- CICS Transaction Server V2.3 exploitation to help speed up migration
 - Support for all new CMF Performance Class data fields ...
 - Performance List, ListX, and Summary Reports and Extracts
 - Performance Record Selection Criteria
 - Revised Performance Totals Report
 - Revised Performance Wait Analysis Report
 - Additional Summary Report and Extract By keywords
 - Additional Performance ListX Report By and Limit keywords
 - Revised Cross-System Work Extract default record format
 - Revised Performance Data Extract default record format
 - Additional Sample Report Forms
 - Documentation Refresh

- Improved analysis and flexibility enhancements
 - Improved export to spreadsheets (Performance Summary Data Extract)
 - Easier to read and export reports
 - Option to exclude totals
 - System Logger report by time
 - Improved DB2 reporting

CICS PM and CICS PA for performance management across the enterprise



IBM Session Manager

Supporting Enterprise Management

- Single point of access to multiple zSeries systems
- VTAM or TCP/IP applications
- Supports access from terminal sessions in both SNA and TCP/IP networks
- Runs on z/OS or OS/390 and normally runs as a VTAM application
- Supports External Security Manager for user authentication

Benefits

- Improves productivity, thereby lowering costs of enterprise computing.
 - ▶ Adds value to session management with facilities for user productivity
 - ▶ Uses a single network connection to establish multiple concurrent sessions
 - ▶ TCP/IP and VTAM application access



CICS Online Transmission Time Optimizer

Supporting Enterprise Management

- 3270-type data stream optimization
 - ▶ Examines outgoing data streams and dynamically compressing them
- CICS-specific solution
- Interface, familiar to any CICS systems programmer
- Statistics maintained
- Optimization features are easily controlled

Benefits

- Reduces network load
- Helps to increase the productivity of the network without rewriting applications
- Minimizes the need for new communications equipment
- Easy to install, customize and use



CICS VSAM Recovery

Supporting Enterprise Management

- CICSVR improves CICS data availability
- CICSVR provides automated recovery of lost VSAM data, adding even more integrity to your CICS solution
- CICSVR maintains data availability during backups
- CICSVR recovers multiple VSAM datasets concurrently to reduce down time
- CICSVR automates journaling and logging registration and management

Business Benefits

- Drive down costs of outages
- Reduce risk of business interruption due to critical data loss
- Achieve faster recovery after critical application failures



Further reading

- **Announcement letter, Release Guide, Migration Guide, Info Center, Technical papers**
 - ▶ ibm.com/cics

- **SOAP for CICS**
 - ▶ ibm.com/cics/soap

- **IBM Developer Kit for z/OS, Java 2 Technology Edition V1.4.1**
 - ▶ ibm.com/servers/eserver/zseries/software/java

- **z/OS**
 - ▶ ibm.com/servers/eserver/zseries/zos

- **CICS Announcement letters, User's Guides, Technical presentations**
 - ▶ ibm.com/cics/tools