



WebSphere Software

# Open SOA access to CICS applications with the CICS Transaction Gateway V7.1

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*SOA on your terms and our expertise*

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# Today's Agenda – CICS TG and your SOA

## *Topics for consideration*

- **What is the CICS Transaction Gateway?**
- **What deployment platform should I choose?**
- **How does the CICS TG fit into a SOA?**
- **Why should I buy, or upgrade to CICS TG V7.1?**
- **Any questions? Need more?**

# Introducing the CICS Transaction Gateway

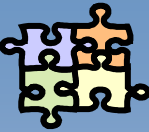
*Rapidly deploy existing CICS applications in a SOA*



*Primary connector to CICS*

**Interconnectivity**


- High performing and scalable inbound connector to CICS applications
- Provides connectors to COMMAREA, CONTAINER and 3270-based CICS applications



*Java and non-Java API's*

**Interfaces**

- Standard JCA interface is strategic and provides best Qualified of Service
- Base Java, C, C++, COBOL and COM interfaces are supported but stabilized



*WebSphere, CICS and others*

**Integration**

- Every in support CICS server on every platform
- WebSphere Application Server, WebSphere ESB, WebSphere Process Server (+ WebLogic)

Dist	Dist	Dist	z/OS	Dist	z/OS	z/OS	z/OS
WAS	CICS	WAS	CICS	WAS	CICS	WAS	CICS
CICS TG		CICS TG		CICS TG		CICS TG	
CICS TG for Multiple Platforms				CICS TG for z/OS			

Good
←
→
Best

Qualities of Service

**8 x Supported Platforms**

- IBM's flagship z/OS**
- Linux System z, POWER & Intel.
- AIX, Solaris, HP-UX RISC and Itanium
- Windows

# Key characteristics of IBM CICS Transaction Gateway

## *The Business Value Proposition*

- Popular with the business community because:
  - **High performing**
    - Can support thousands of Transactions Per Second (TPS) with optimised data handling
  - **Secure**
    - Industry standard Secure Socket Layer (SSL) implementation and good integration with CICS and z/OS
  - **Scalable**
    - Multi-Threaded technology and load balancing capabilities maximise scalability and availability
- Popular with the technical community because:
  - **Ease of System Administration**
    - Minimal changes to CICS and usually no changes to CICS applications
    - Simple, familiar mechanisms to configure and manage your gateway
  - **Ease of Application Development**
    - Implements the industry standard J2EE Connector Architecture (JCA) interface
    - Transactional scope, connection pooling and security context all managed outside of the application for easier development

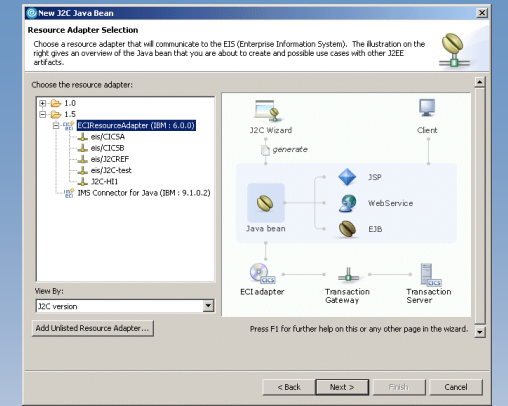
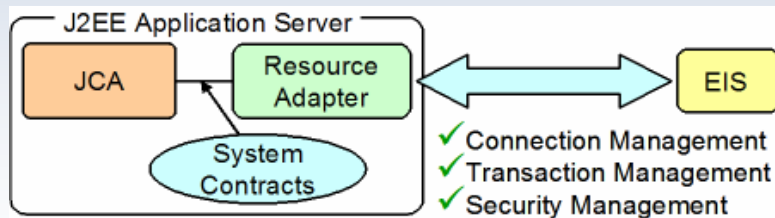
### **In summary, IBM CICS Transaction Gateway delivers:**

- High-performing, security-rich and scalable J2EE standards-based access to CICS applications
- Requiring minimal changes to CICS systems and usually no changes to existing CICS programs

# The J2EE Connector Architecture (JCA)

## *J2EE standards based access to Enterprise Information Systems*

- A component of the Java™ 2 Platform Enterprise Edition specification, alongside other standard services, such as JMS, JDBC and JNDI
- Standard programming interface to all Enterprise Information Systems (EIS), such as CICS, IMS and SAP
- Widely supported in education materials and software tooling from IBM and non IBM vendors
- Delegated management of Connections, Transactions and Security for better, faster application development

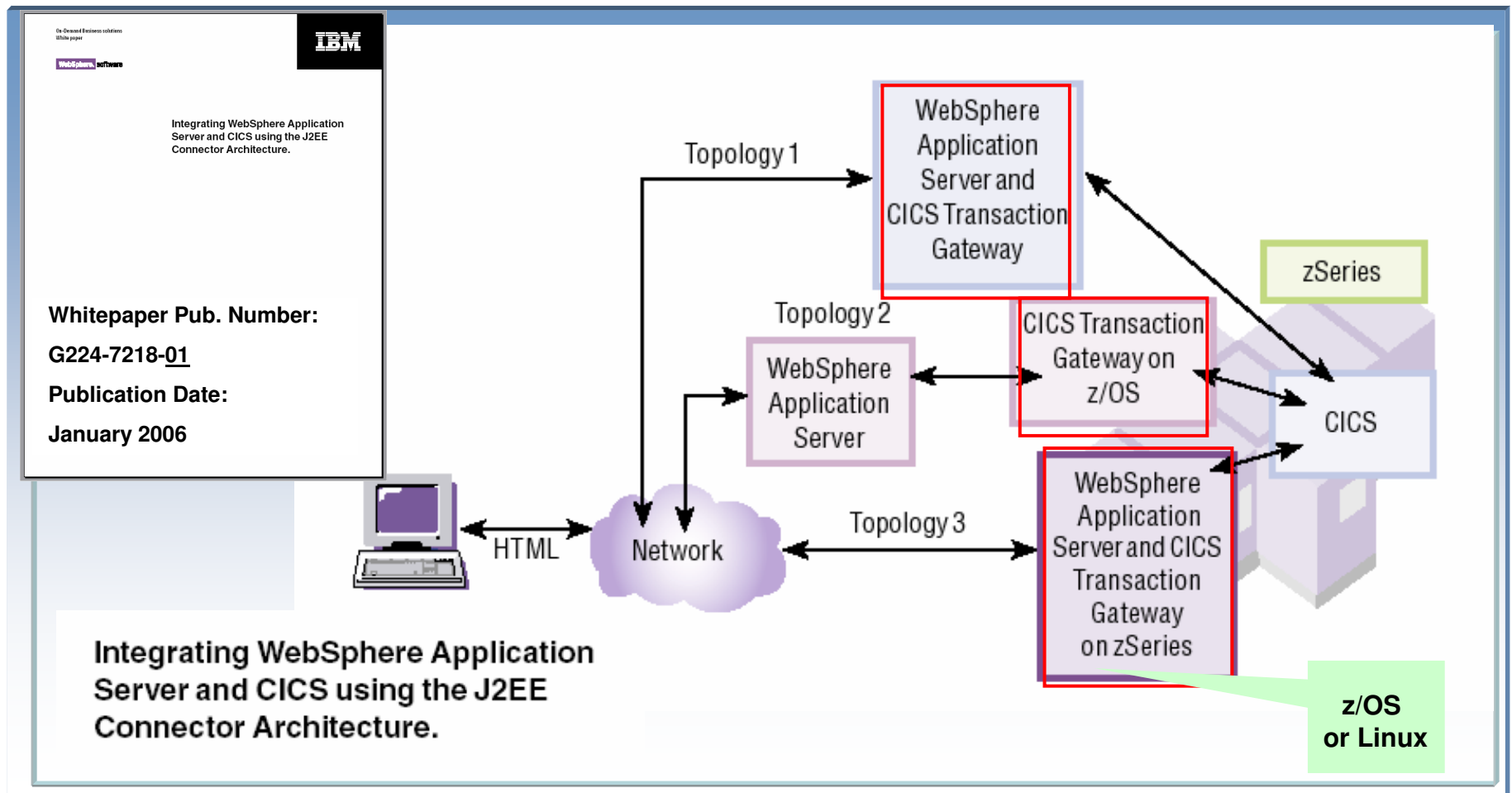


### **In summary, the J2EE Connector Architecture (JCA):**

- Enables better applications to be developed faster and deployed into an enterprise wide SOA

# Three CICS Transaction Gateway Deployment Scenarios

*Identifying the appropriate architecture*



# CICS TG for z/OS or CICS TG for Multiplatforms?

*A choice of architectures to meet your unique business requirements*

- CICS TG for z/OS
  - **Functionality**
    - **JCA** and **Java** interfaces
    - **COMMAREA** and **CONTAINER** interfaces
    - **TCP/IP** networking
  - **Unique Qualities of Service**
    - Maximum **performance**, highest **availability** and massive **scalability**
    - z/OS specific optimisations including **WLM**, **Parallel Sysplex**, **zAAP**, etc
    - Tightly integrated with **z/OS security** including **RACF** and **Cryptos**
    - Full **two phase commit** with **distributed WebSphere**
- CICS TG for Multiplatforms
  - **Functionality**
    - **JCA**, **Java**, **C/C++**, **COBOL**, **COM**
    - **COMMAREA**, **CONTAINER** and **3270** interfaces
    - **TCP/IP** and **SNA** networking
  - **Unique Qualities of Service**
    - Most **flexible configurations**, including all supported CICS servers (i.e. **TXSeries**, **VSE**)
    - Access from **non-Java clients** and to **3270** and **COMMAREA** applications
    - **Lower TCA / TCO** for **smaller deployments**

## In summary,

- CICS Transaction Gateway provides a flexible choice of architectures to meet your requirements
- CICS Transaction Gateway on z/OS provides the highest QoS for the most demanding deployments

# CICS applications in your Service Oriented Architecture

*Linking repeatable CICS business tasks as services*

## ... a service?

A **repeatable business task** – e.g.,  
check customer credit;  
open new account

## ... service orientation?

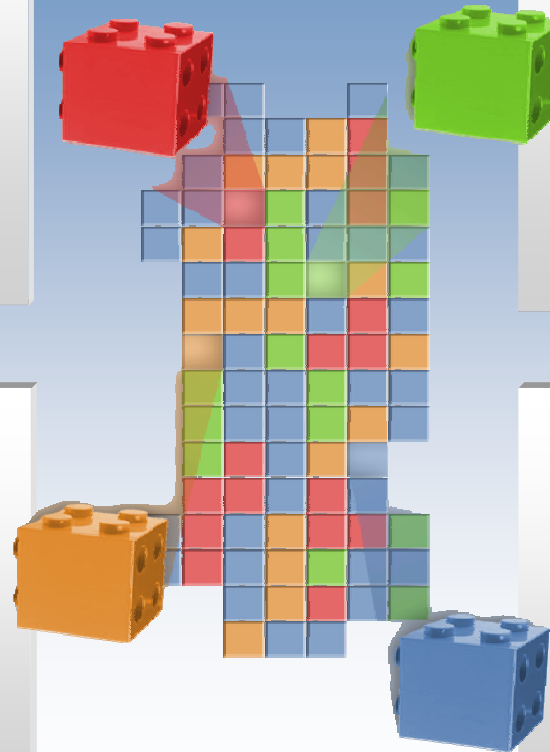
A way of integrating your  
**business as linked services**  
and the outcomes that  
they bring

## ... service oriented architecture (SOA)?

An IT **architectural style** that supports  
service orientation

## ... a composite application?

A set of **related & integrated** services that  
support a business  
process built on an SOA



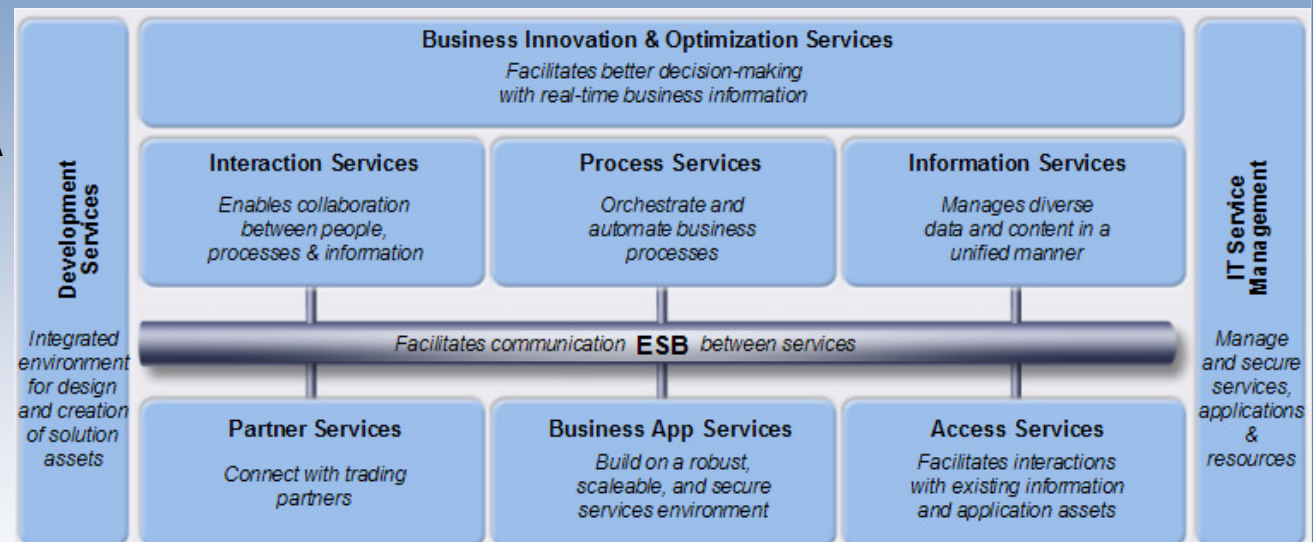


# SOA Reference Architecture

*Enabling end to end mixed language solutions*

**JCA adapters service-enable your applications by connecting them to the Enterprise Service Bus, which powers your Service Oriented Architecture.**

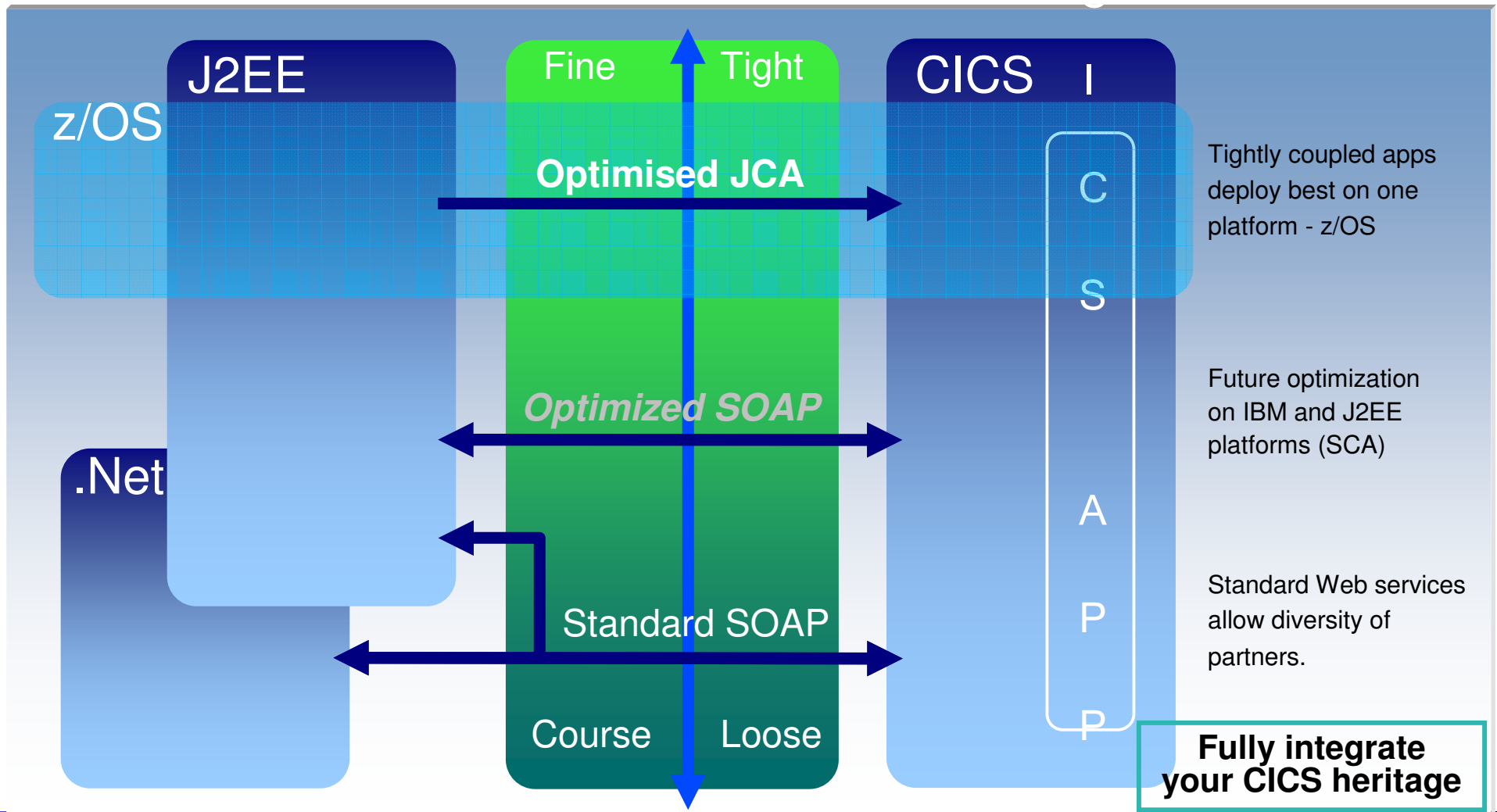
- The CICS TG provides a JCA interface from the following WebSphere SOA server products to CICS TS and TXSeries:
  - WebSphere Application Server
  - WebSphere ESB
  - WebSphere Process Server
  
- IBM provides a number of JCA adapters to connect to multiple Enterprise Information Systems



- IBM CICS Transaction Gateway
- IBM IMS Connect / Connect Extensions
- IBM WebSphere Adapters

# Architectural Coupling and Connectivity

- Choice dependent on specific application requirements



# SOA is not just for new development

*Bank of Montreal assembles mainframe-based assets*



## *What is the business challenge?*

Revitalize customer relationship management across multiple banking channels

### ***Benefits***

- Unified view of customer for personal banking line of business
- Existing investments preserved and re-used

### ***Action taken***

- Re-used and assembled CICS assets with new Web services interfaces into new CRM business process
- Used CICS Transaction Server, CICS Transaction Gateway and IBM Application Development tooling
- Web service interfaces deployed on WebSphere Application Server on zSeries to access CICS assets

# Enhancing the core value proposition

*CICS TG V6 and CICS TG V7 have continued to enhance core capability*

- Increasing the value to the business community:
  - **High performing**
    - Continued drive for performance optimisations in the base product and across the wire protocol,...
  - **Secure**
    - SSL and TLS enhancements, RACF keyrings, Crypto-support,...
  - **Scalable**
    - Pipe limit enhancements, IPv6, WLM, NPTL, High availability XA,...
- Increasing the value to the technical community:
  - **Ease of System Administration**
    - Systems Monitoring capability, request tracing, dynamic log management, alignment with native operating systems, standard installations,...
  - **Ease of Application Development**
    - JCA compatibility, support for CICS containers, two phase commit with distributed WebSphere, integration with RAD J2C tooling, integrated information centers,...

## In summary, IBM CICS Transaction Gateway continues to:

- Drive enhancements in performance, security, scalability, administration and development
- Deliver enhancements across all platforms, with a primary focus on the flagship z/OS environment

# CICS Transaction Gateway Version 7.0

*Delivered major enhancements in three key value areas*

## Systems Monitoring

- Real time monitoring of CICS TG systems provides the ability to analyse system utilisation metrics and perform online problem determination.
- Access to key statistics about Gateway daemon, CICS Status, Connections, Threads and Protocol handlers via command line or API
- The proximity of workload to the levels set in the configurable limits can be obtained and appropriate action taken, helping to avoid downtime
- Increased availability through support for IBM Tivoli System Automation for z/OS, allowing systems to take predefined courses of action

## Extended Networking

- On z/OS, WLM support now enable intelligent distribution of workload across a sysplex, providing increased systems availability
- The ability to process IPv6 connections can provide better routing, enhanced security, and global scalability

## Advanced Security

- Latest TLS (SSL) security enables more stringent encryption capabilities and better interoperability with a variety of secure clients.
- Further integration with RACF and System z hardware allows for higher levels of security and increased throughput of security requests

IBM CICS Transaction Gateway for Multiplatforms V7.0

IBM CICS Transaction Gateway for z/OS V7.0

Software Announcement 206-303

Software Announcement 206-297

Nov. 21, 2006

Nov. 21, 2006

# CICS Transaction Gateway Version 7.1

*Will deliver major enhancements in three key value areas*

## Systems Monitoring

- Extended **real time monitoring** of CICS TG provides advanced capacity planning and problem determination facilities
- **Interval based statistics**, and off-line recording to **SMF**, provides for off-line monitoring and trend analysis via the CICS PA tool
- **Request monitoring exits** provide simple and efficient infrastructure for advanced problem determination

## Extended Integration

- Support of CICS TS V3.2 IPIC connectivity provides:
  - Exchange of large data areas >32KB using **containers/channels**
  - Simplified topologies for **SSL** and **XA** connectivity
  - Support of **EWLM** delivers enterprise wide workload monitoring
- Fine grained control of **health** updates to **WLM** reducing likelihood of storm-drain style scenarios
- **Optimised TCP/IP** networking providing faster response times in high bandwidth networks
- **64-bit operating system** toleration for Windows and Linux
- **Extensions to SNA** support assisting migration from TCP62 environments to Enterprise Extender
- Support of time change protocols

## Interoperability

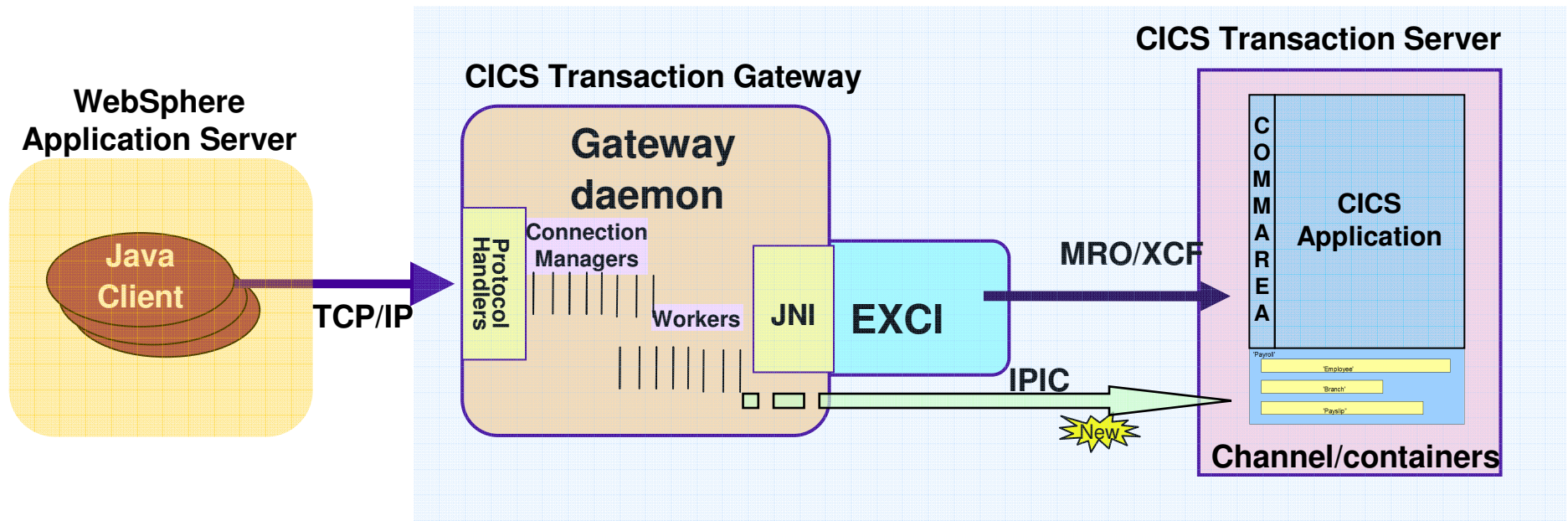
IBM CICS Transaction Gateway for Multiplatforms V7.1  
 IBM CICS Transaction Gateway for z/OS V7.1

Software Announcement 207-274  
 Software Announcement 207-277

**Nov. 06, 2007**  
**Nov. 06, 2007**

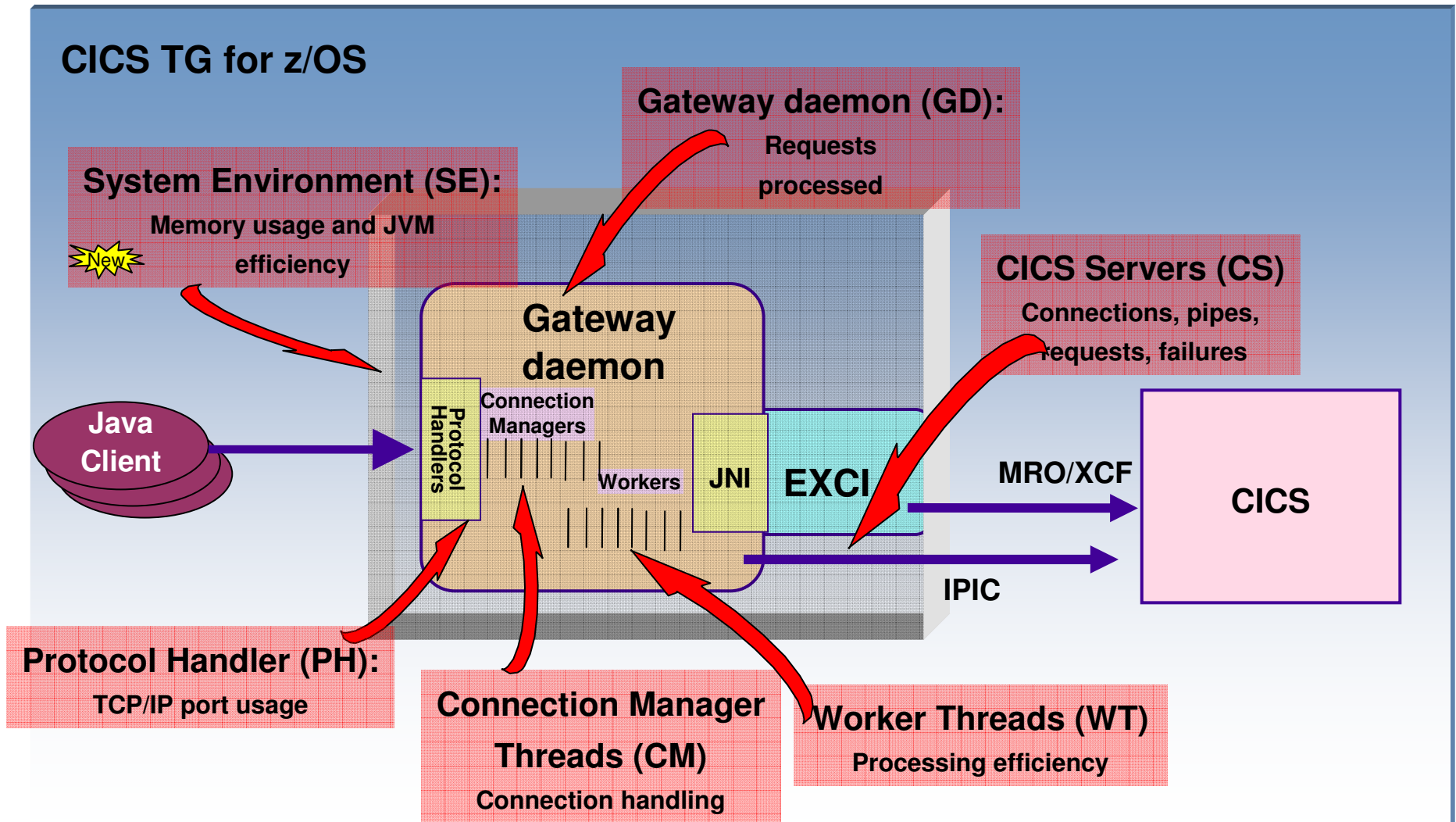
# IPIC support for CICS TS V3.2

*Providing access to CICS containers/channels for payloads >32KB*



- IPIC is a new IP based protocol for interconnectivity with CICS TS V3.2
- Supports exchange of data using CICS channels/container or COMMAREAs
  - Allows exchange of data far in excess of traditional 32KB COMMAREA limit
  - IPIC allows for increased off-load of CICS TG z/OS MIPs to zAAP engines compared to EXCI
- Supports EWLM for enterprise workload monitoring of JCA requests from WebSphere
- Provides simplified topologies for XA and SSL support directly into CICS TS
- CICS TG will provide Java and JCA APIs for sending containers/channels with ECI flows

# Systems Monitoring – *A Window into the 'Black Box'*





# Systems Monitoring – Administration Interface

## A Window into the 'Black Box'

Display Filter View Print Options Help

---

SDSF DA MV2C MV2C PAG 0 CPU/L 37/ 37 COMMAND ISSUED

COMMAND INPUT ==> /F CTGPW2,APPL=STATS,GS=GD,ST=S:C:I SCROLL ==> CSR

RESPONSE=MV2C

BPXM023I (CTGUSER)

CTG8239I Response received from CICS Transaction Gateway

GD\_CSTATUS=RUNNING (Gateway daemon status)

GD\_IALLREQ=2 (Number of requests processed)

GD\_IXATXNC=0 (XA commit requests successfully processed)

GD\_IXATXNR=0 (XA rollback requests successfully processed)

GD\_ILUWTXNC=0 (Extended LUW transactions committed)

GD\_ILUWTXNR=0 (Extended LUW transactions rolled back)

GD\_ISYNCTXN=2 (Successful SYNCONRETURN transactions)

GD\_CSYNCTXN=0 (Number of SYNCONRETURN transactions)

GD\_CLUWTXN=0 (Number of Extended LUW transactions)

GD\_CXATXN=0 (Number of XA transactions)

GD\_IXAREQ=0 (Number of XA requests)

GD\_IREQDATA=291 (Amount of Java client request data)

GD\_IRESpdata=318 (Amount of Java client response data)

GD\_IAVRESP=154 (Average Gateway daemon response time)

GD\_CHEALTH=100 (Gateway daemon health)

GD\_CNEXTRESET=230000 (End of interval time HHMMSS)

GD\_IRUNTIME=1360 (Interval running time)

**Via Command Line Console**

**Via API**

**Current values**

**Interval recording** New

**Configuration values**

**High water-marks** New

System ID	Gateway	Start Date	Total CPU Time	IO Count	SQL_Pool	TCP_Pool	Heaps	Number of Requests Processed	Requests Per Minute	Users	Region Type	CPU Utilization
MV2C	OMEOCT03	050307 13:48:12	00:48:58.53	463197	N/A	5114	89	157430	443	OMEO TASK	STC	~1.5
MV2C	OMEOCT02	050307 15:35:01	00:25:21.51	1237	N/A	5124	89	18965	581	OMEO TASK	STC	~1.0
MV2C	OMEOCT04	050307 15:35:18	00:24:00.82	13417	N/A	5144	100	9475	887	OMEO TASK	STC	~1.0
MV2C	OMEOCT01	050407 01:00:15	00:25:02.24	13107	N/A	5104	100	0	0	BRWAS	Batch	~0.5

# IBM Tivoli OMEGAMON XE for CICS TG on z/OS

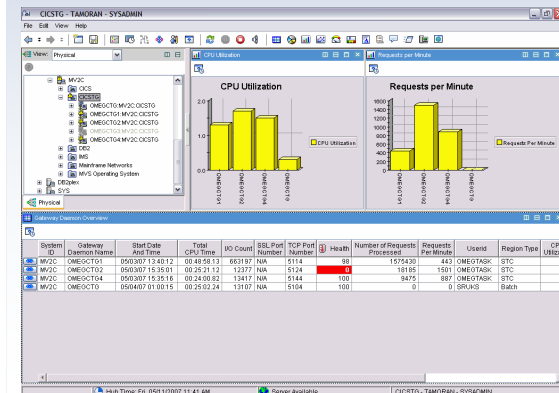
*Proactive monitoring and management*

## Real-time monitoring

## Transaction throughput analysis

## Enterprise wide management

- Early warning of communication issues with CICS
- Product-provided situations cover aspects of health and status
- Reliable up-to-the minute statistical data
- Quickly ascertain the availability, health and current workload of each of your Gateways running within the sysplex
- Graphs to visually display the correlation between CPU usage and requests executed
- Dynamic workspace linking provides integration with other OMEGAMON XE products
- Automatic discovery of active Gateway daemons
- Historical information via the Tivoli Data Warehouse repository, for trend analysis and capacity planning



IBM Tivoli OMEGAMON XE for CICS TG on z/OS

Software Announcement 207-156

July 17 2007

## Key dates and information

### Getting Ready

- CICS TS V3.2 – (For container and EWLM support)
- WebSphere Application Server V6.1 (For container or EWLM support)
- z/OS V1R7
- Linux: SLES9/10, RHEL4/5
- AIX V5.3/V6.1
- Solaris V9/10
- HP-UX 11iv2/3
- CICS PA V2.1 support by APAR: PK53163

■ Software  
Announcement

**US Letters:**

**207-277/274**

**Multi-platform eGA:**

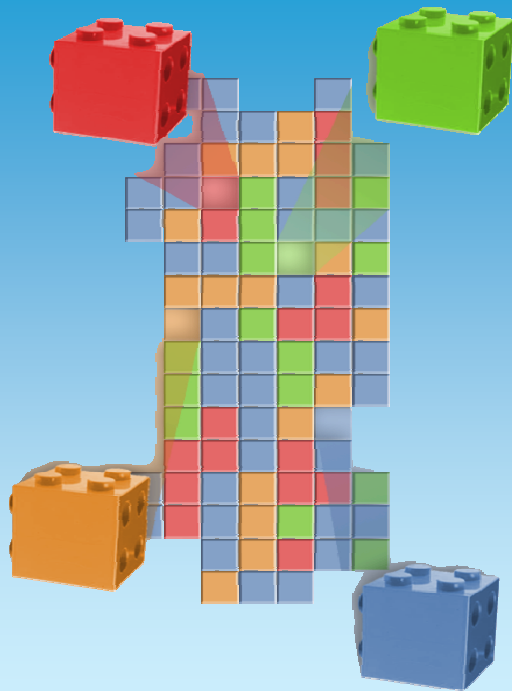
**November 30 2007**

**GA:**

**December 07 2007**

# Summary – What we talked about

*Rapidly deploy existing CICS applications into a SOA*



- Service Oriented Architecture
  - ▶ What is a Service Oriented Architecture
  - ▶ Modernizing your most valuable assets
  - ▶ IBM SOA Foundation and zSeries
- IBM CICS Transaction Gateway
  - ▶ Key Characteristics of CICS Transaction Gateway
  - ▶ The J2EE Connector Architecture (JCA)
  - ▶ Deploy on z/OS or on a Distributed Platform?
  - ▶ Direct Connection or Web Service into CICS?
  - ▶ Enhancements in Version 7.0 and Version 7.1
- CICS Transaction Gateway V7.1 themes
  - ▶ Advanced Systems Monitoring
  - ▶ Extended Interoperability
  - ▶ Link with Containers/channels for data >32K

## Core takeaway:

- SOA is about moving to a more flexible infrastructure - start that journey now!

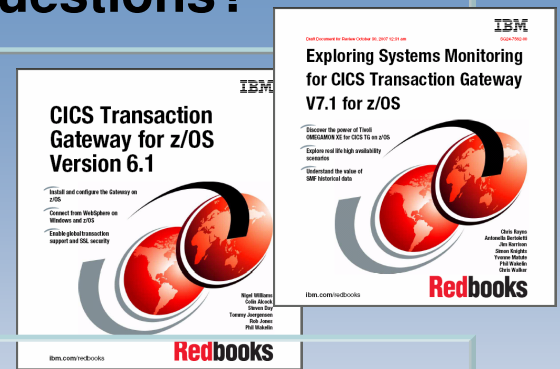
# Questions and More Resources

*Rapidly deploy existing CICS applications into a J2EE-based SOA*

[www.ibm.com/cics/ctg](http://www.ibm.com/cics/ctg)

The screenshot shows the IBM website page for CICS Transaction Gateway. The main heading is "CICS Transaction Gateway". Below it, there is an "Overview" section with text describing the gateway's capabilities. A diagram below the text shows four different SOA architectures: "CICS TG for Multiple Platforms", "CICS TG for z/OS", and two variations of "CICS TG" connecting to "WAS" and "CICS" components. A horizontal axis labeled "Qualities of Service" ranges from "Good" to "Best".

## Any Questions?



- **Web is the best place for up to date customer information:**
  - ▶ Announcement Letters
  - ▶ Datasheets/Brochures
  - ▶ Redbooks
  - ▶ Whitepapers
  - ▶ Presentations
  - ▶ Technical Library
  - ▶ And more....

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