



Integrating CICS with the Web: Using the CICS Transaction Gateway

21/01/03

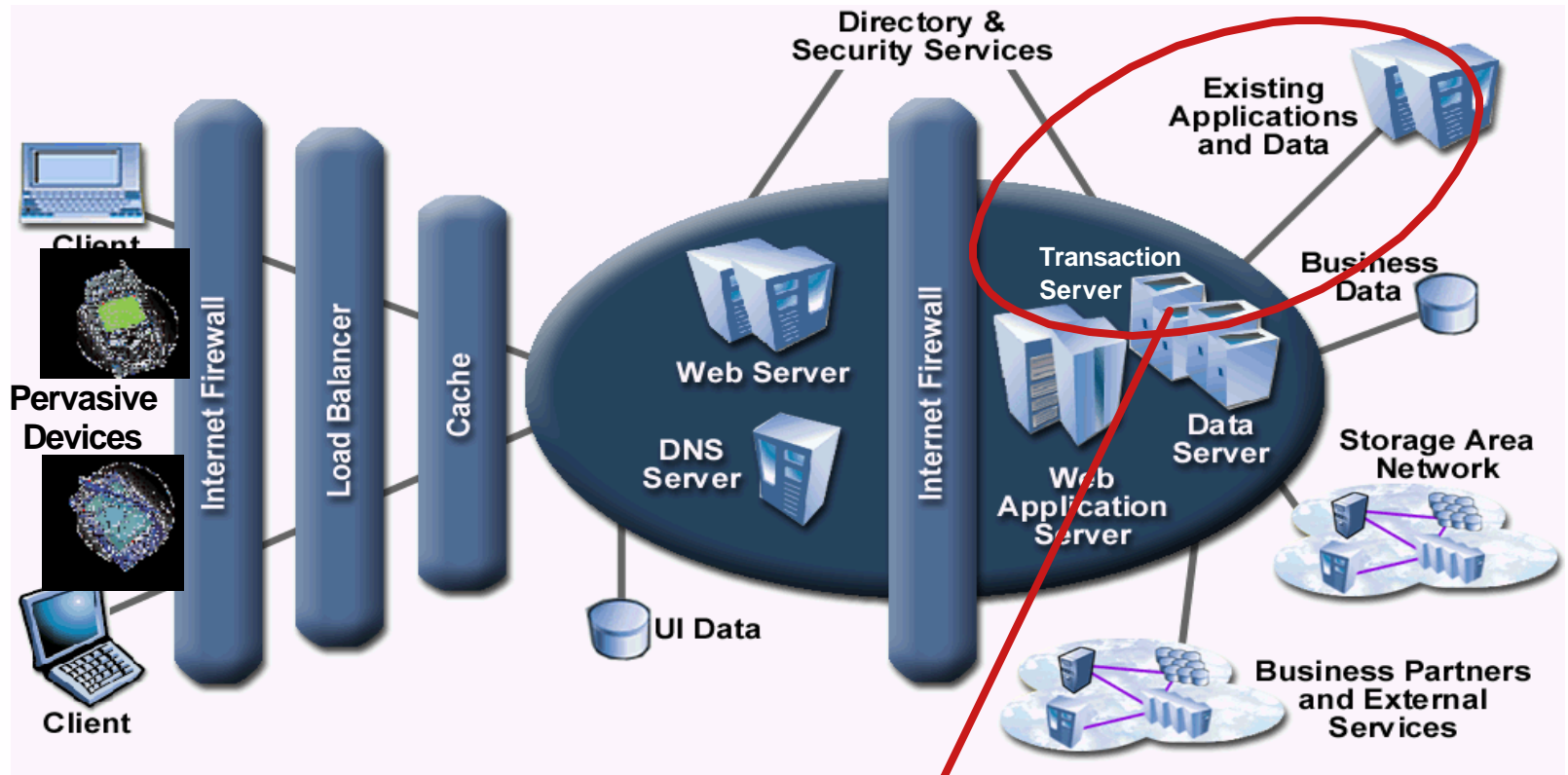
Geoff Sharman

geoff_sharman@uk.ibm.com

IBM Software Group

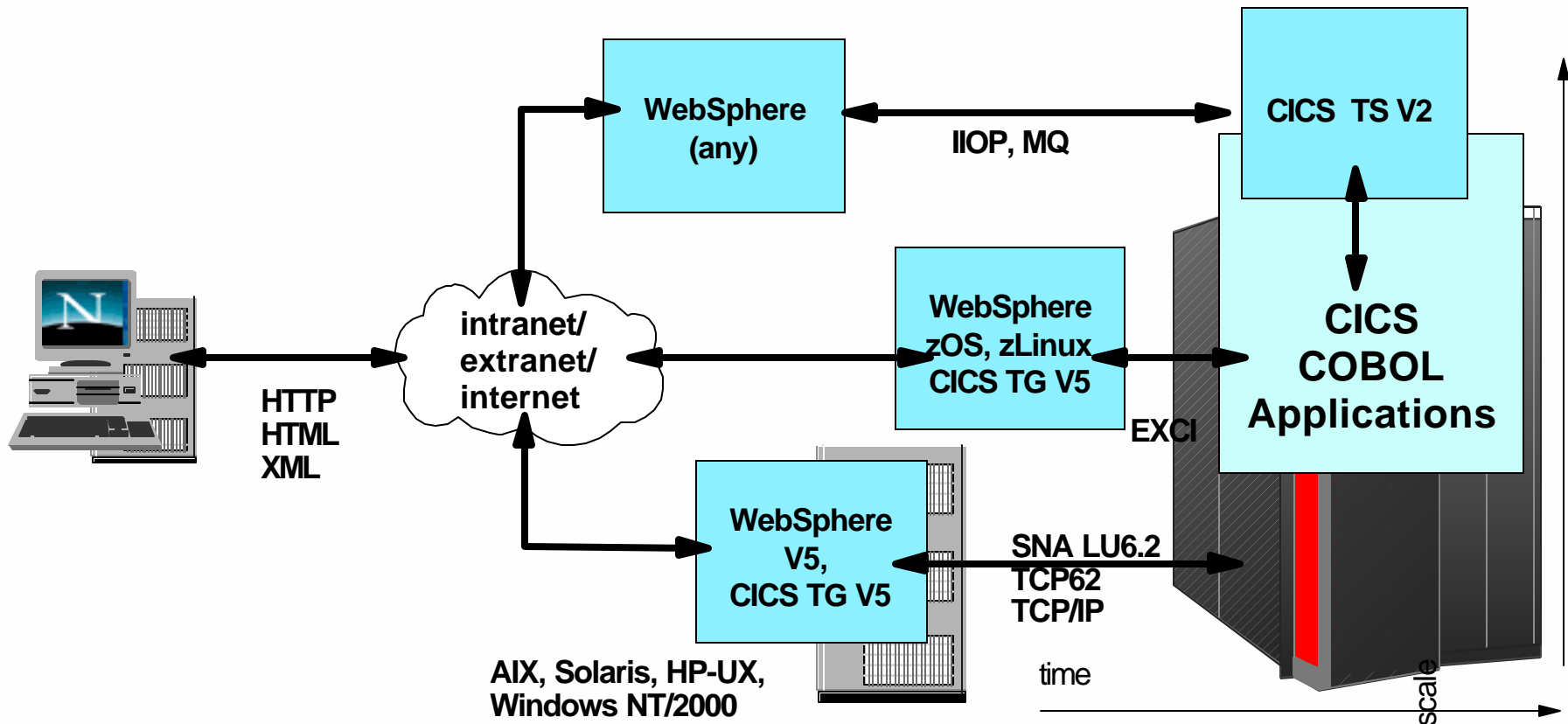
CICS and the Web Jan 21 Webcast Presentation.PRZ

Positioning in e-business Infrastructure



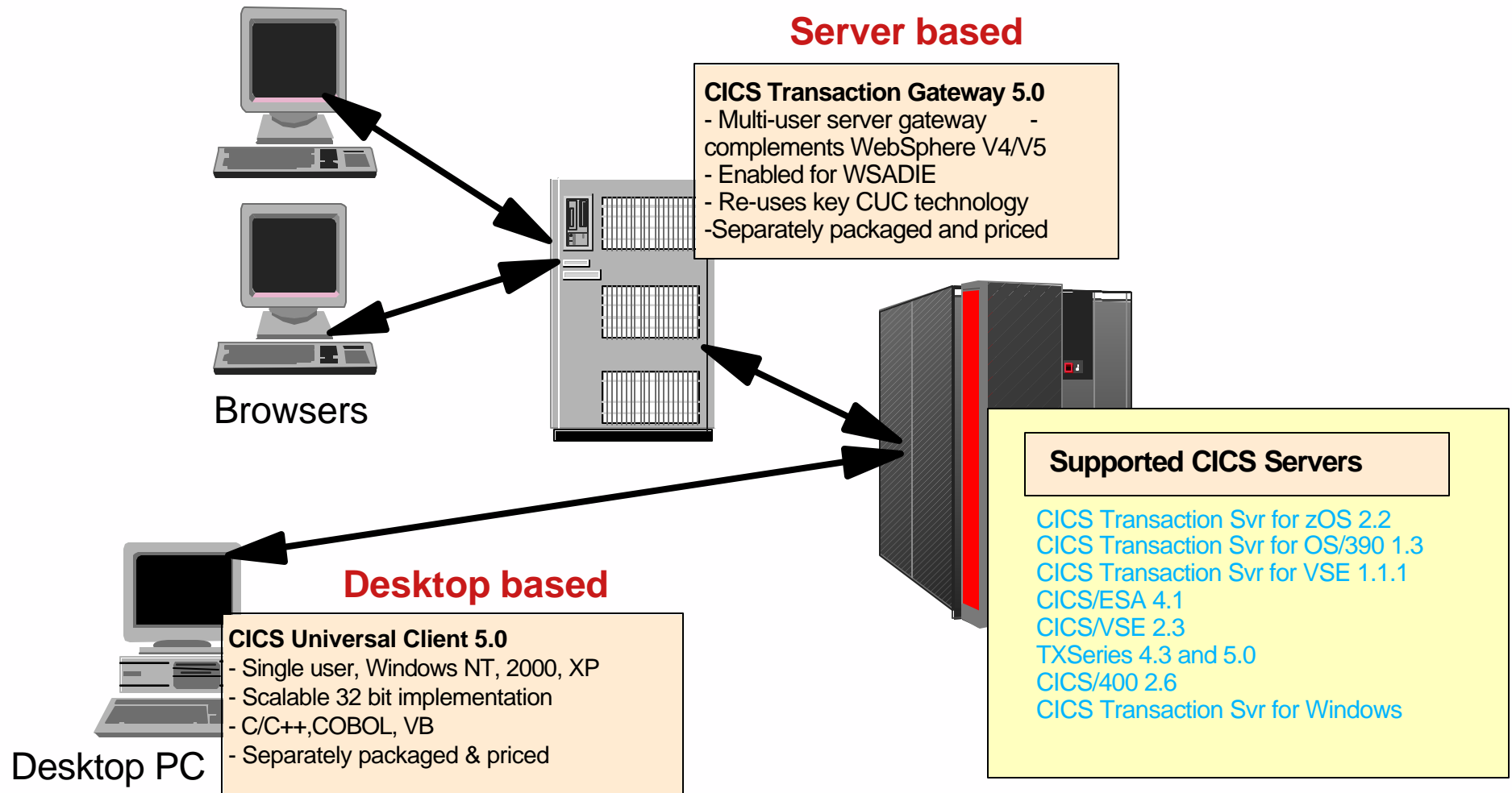
CICS fits here

Using CICS Transaction Gateway



- ***CICS Transaction Gateway is the primary option for connecting Web app servers to CICS applications***
 - *using J2EE Connector Architecture*
- ***Other options will be discussed***

CICS TG & CICS UC Positioning



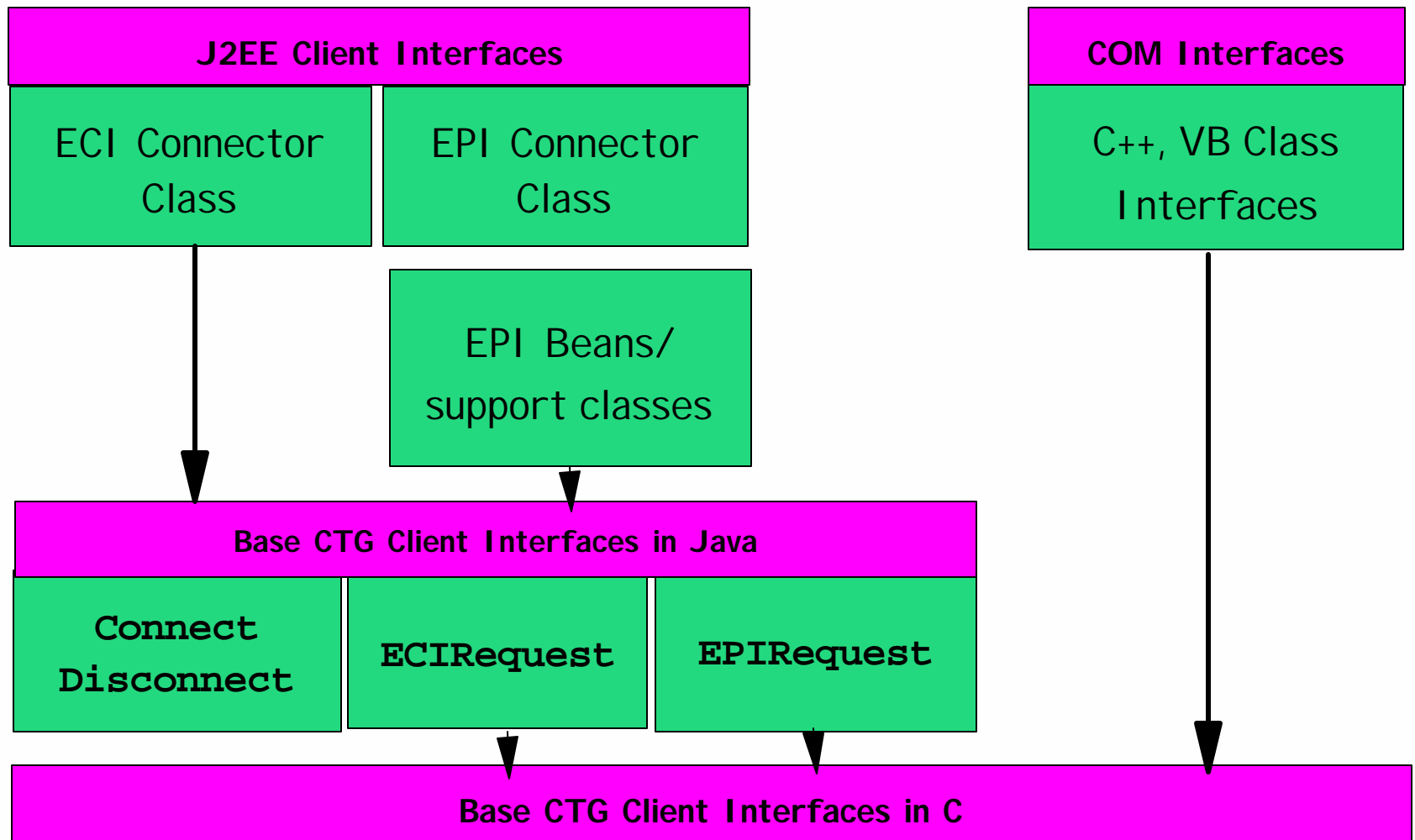
Customers using CICS TG

- ▶ KeyBank Corp, USA
 - ▶ TransAmerica Corp, USA
 - ▶ Heritage Mutual Insurance, USA
 - ▶ Local Government of Bologna, Italy
 - ▶ RaboBank, Netherlands
 - ▶ CenE Bankiers, Netherlands
 - ▶ Revenue Canada
 - ▶ Zurich Insurance, UK
 - ▶ Union Central Insurance, Switzerland
 - ▶ Kyushu Cellular Phone, Japan
 - ▶ Scottish Equitable, UK
 - ▶ Quelle, Germany
 - ▶ Hewitt Associates, USA
 - ▶ SOGO, Japan
 - ▶ Government of Luxembourg
 - ▶ Embratel, Brazil
 - ▶ Receivable Management Services (formerly Dun & Bradstreet), USA
 - ▶ and many others ...
- See:**
[ibm.com/cics/case studies/](http://ibm.com/cics/case%20studies/)
ibm.com/cics/library/ts390/vol1iss12/article4.html

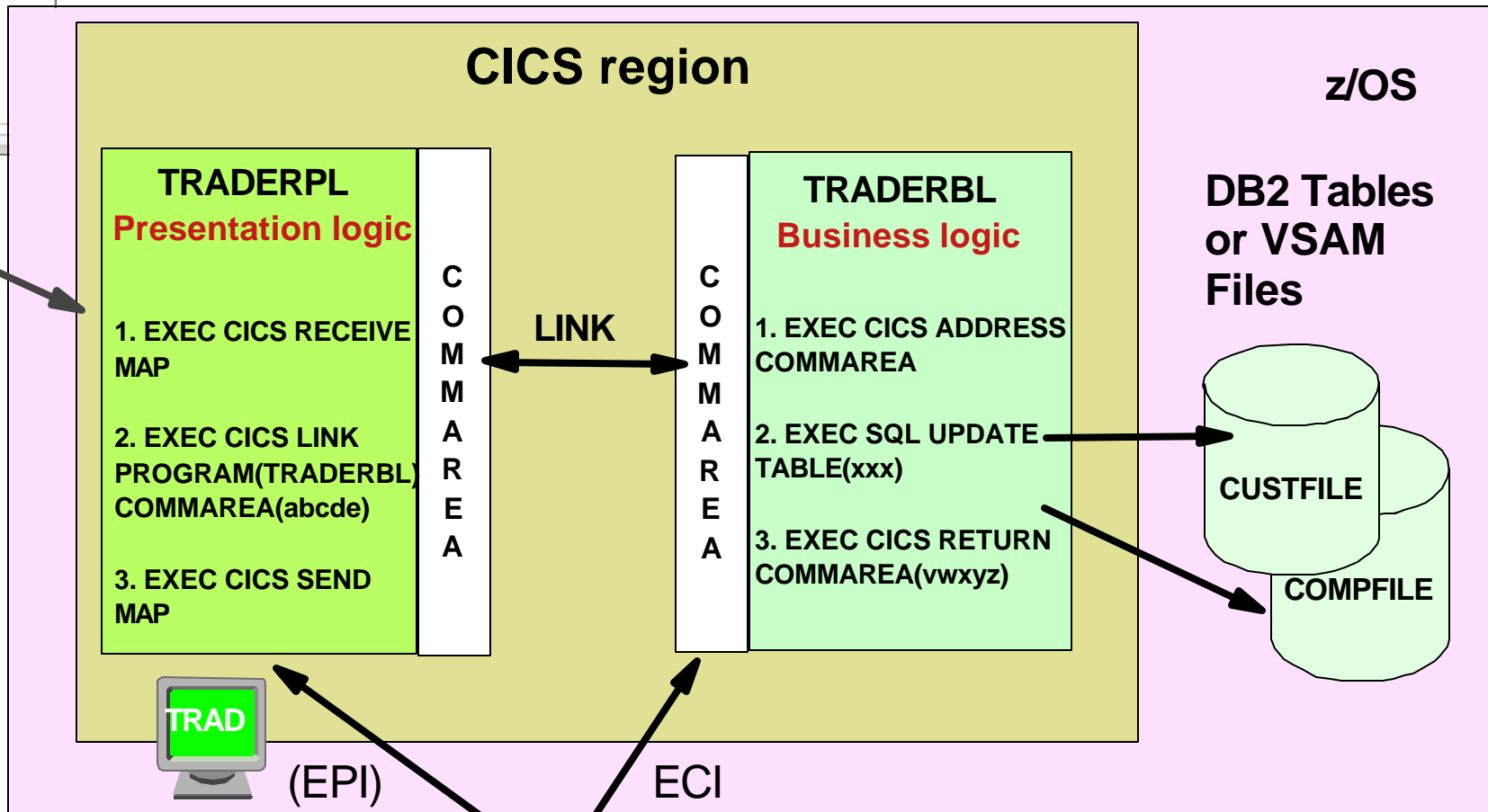
Using CICS TG: Basic Functions

CICS TG Basics: Supported Interfaces

Can work with any App Server, even Microsoft ...

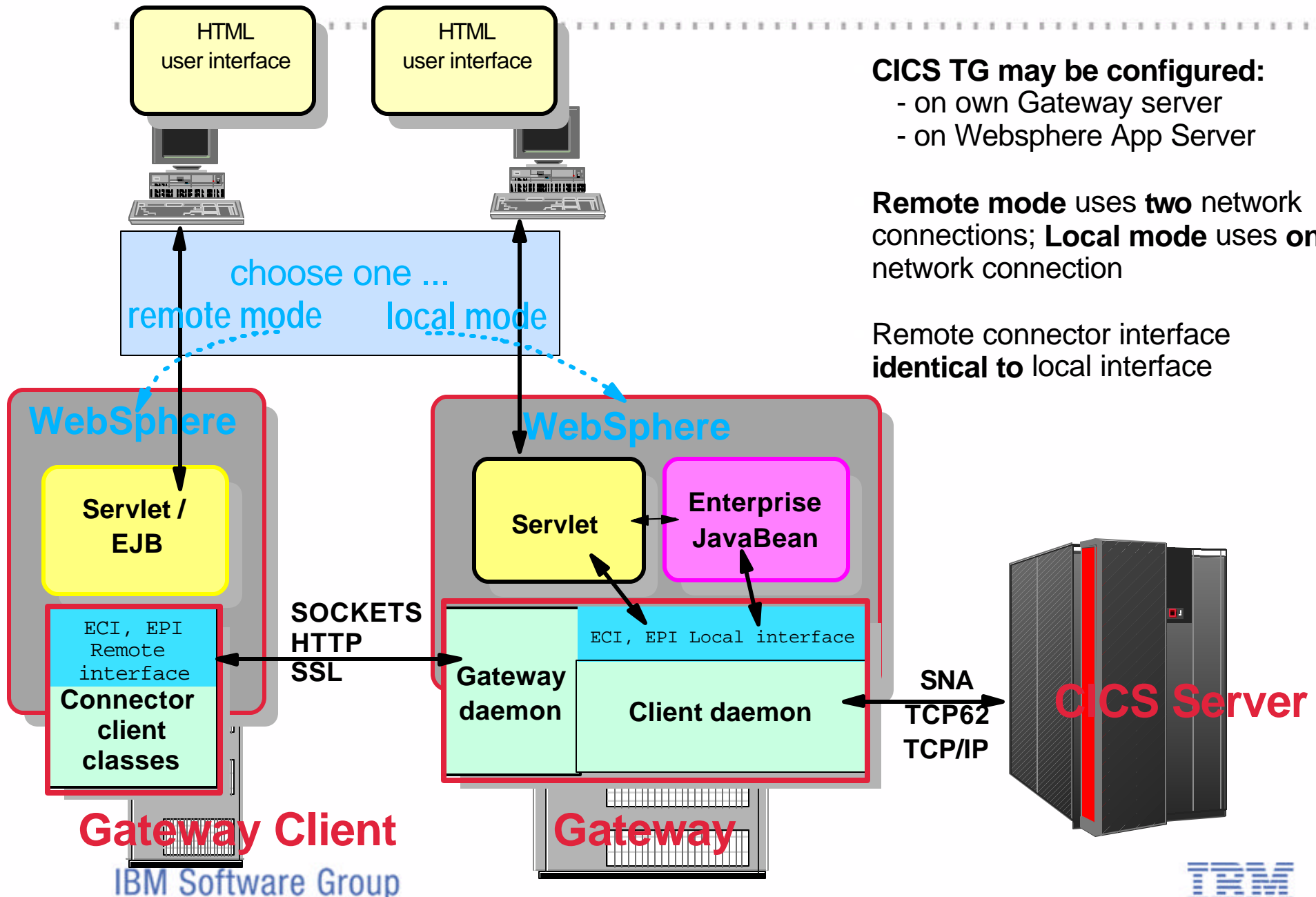


Examples of using CICS TG - Trader Application



ECI (External Call Interface)
EPI (External Presentation Interface)
 (Use the ECI whenever possible)

CICS TG Basics: Operation on Distributed Server



CICS TG may be configured:

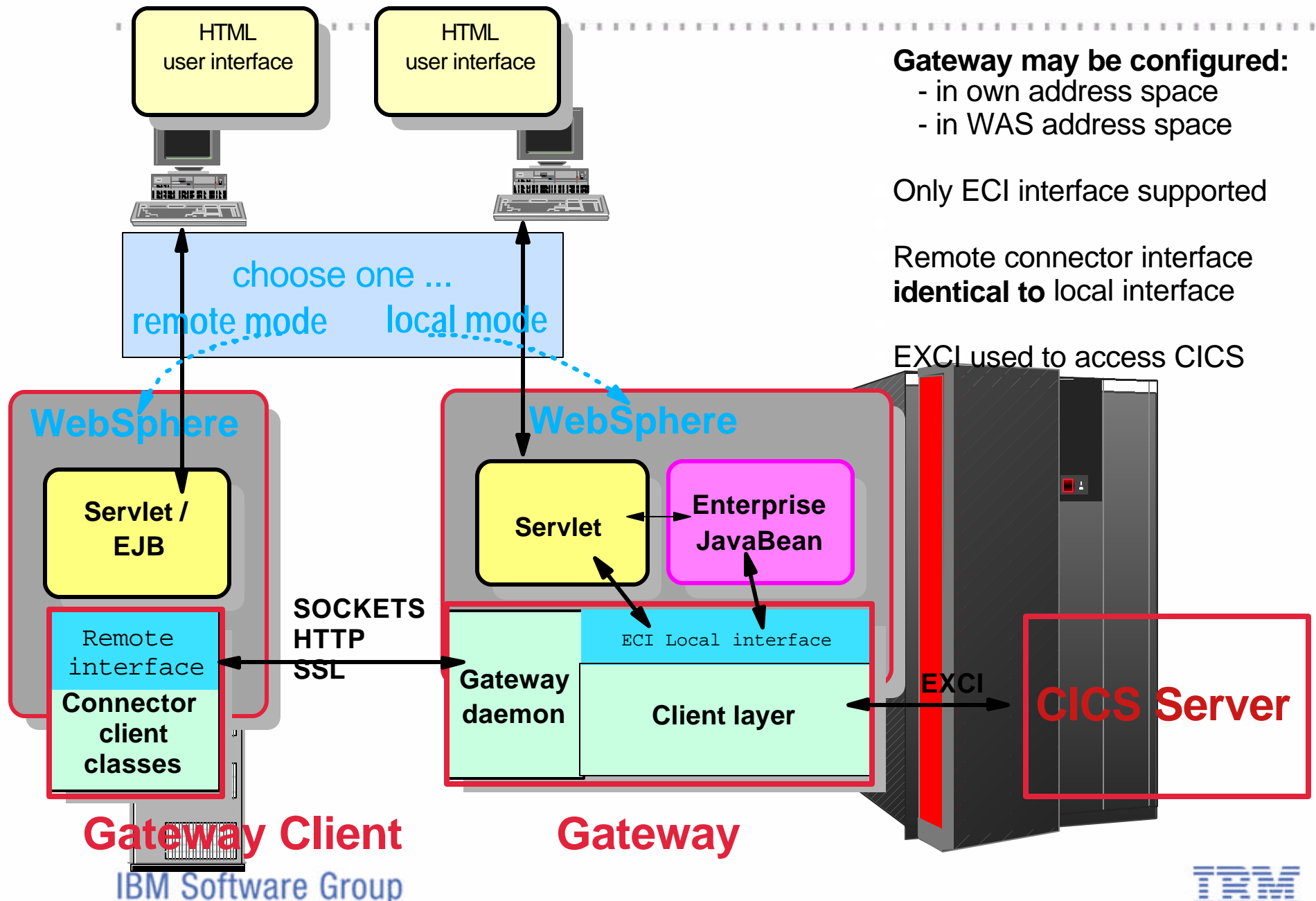
- on own Gateway server
- on Websphere App Server

Remote mode uses **two** network connections; **Local mode** uses **one** network connection

Remote connector interface **identical to** local interface



CICS TG Basics: Operation on zOS Server



Gateway may be configured:

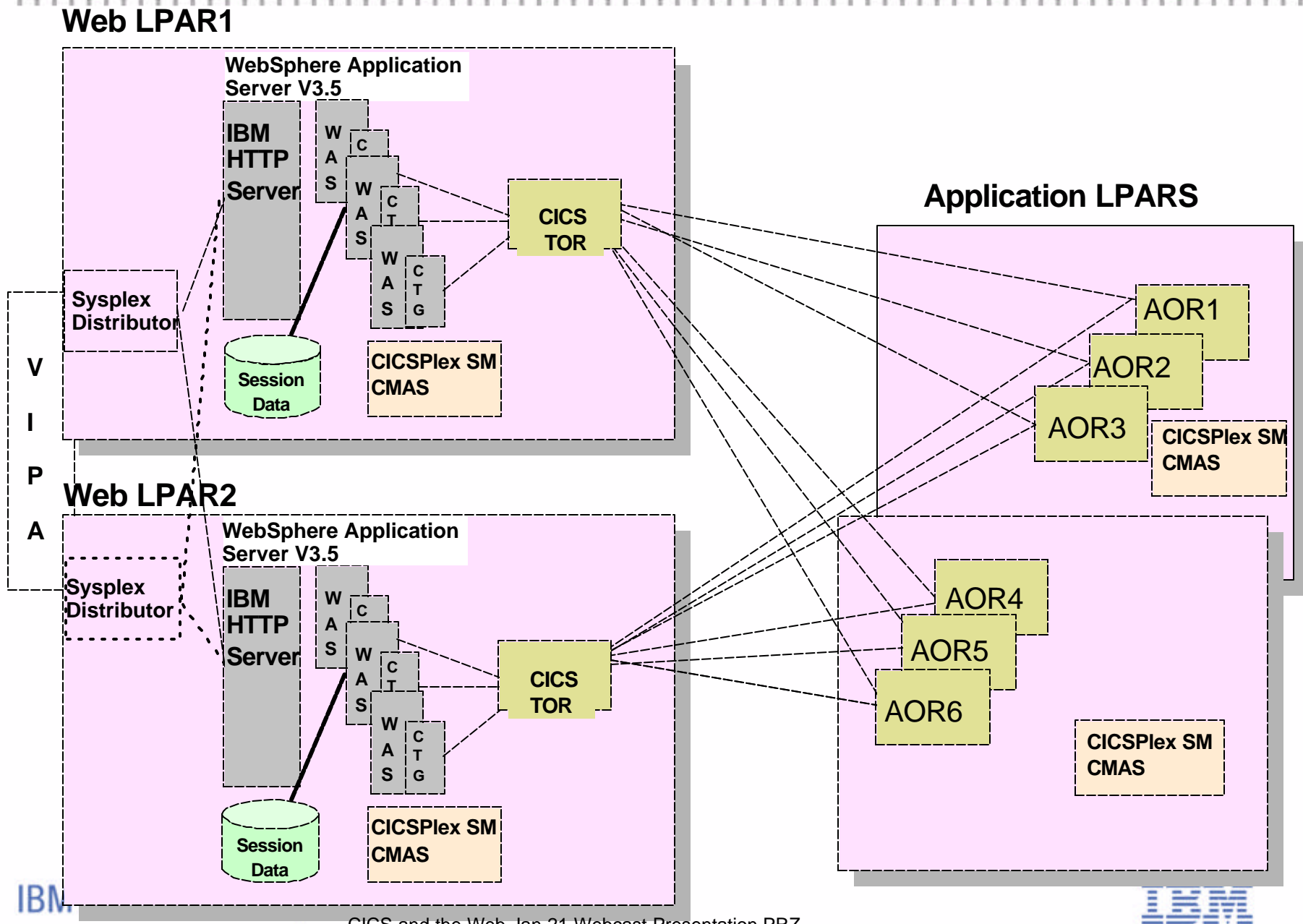
- in own address space
- in WAS address space

Only ECI interface supported

Remote connector interface **identical to** local interface

EXCI used to access CICS

Customer Scenario - Luxembourg Government



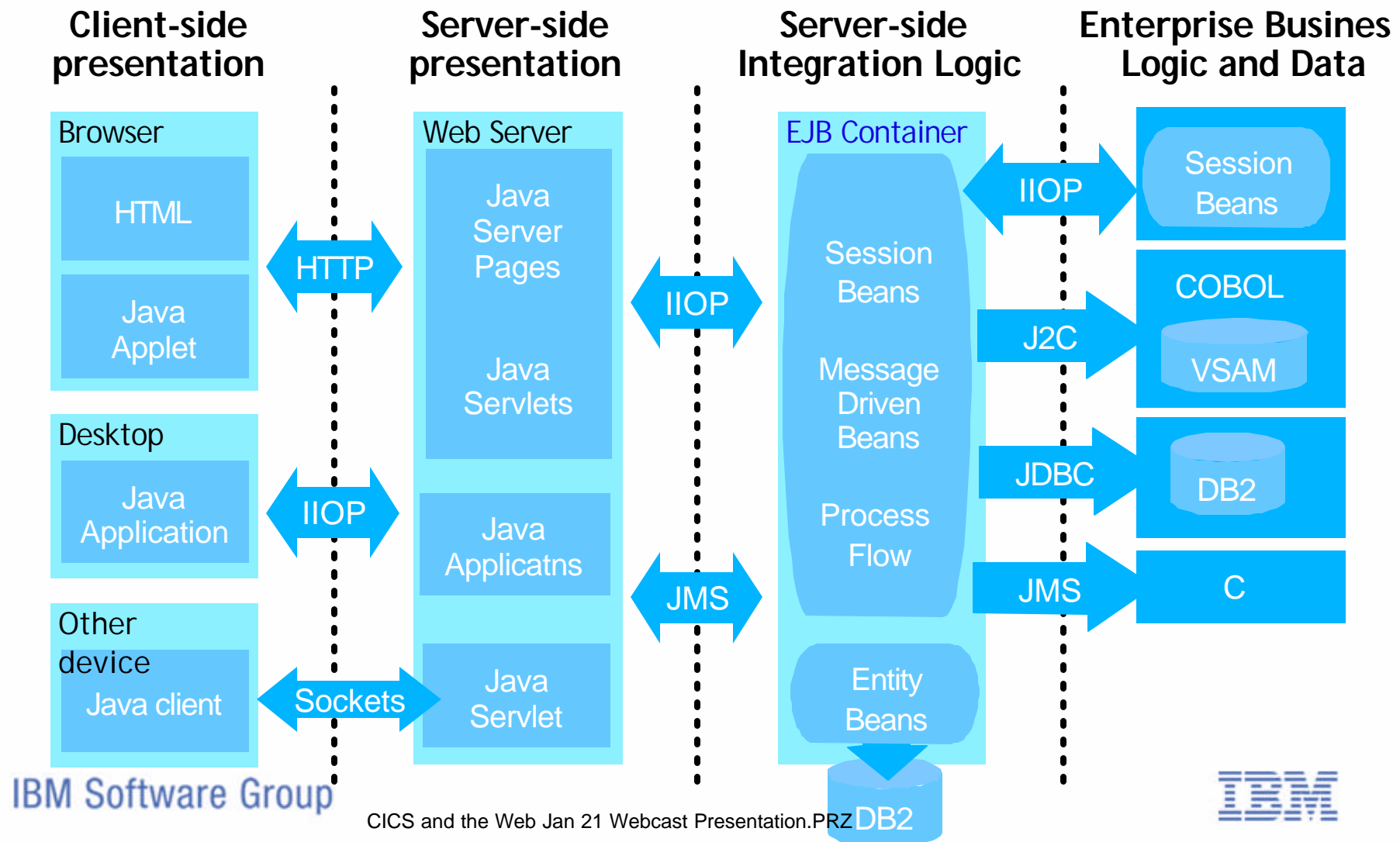
CICS TG V5 - New Function

- Supports JDK 1.3
 - ▶ including JSSE (Java Secure Sockets Extension) for 128-bit encryption
- Supports J2EE Connector Architecture (JCA)
 - ▶ ECI & EPI (AIX, Solaris, HP-UX, Windows NT/2000, Linux/390)
 - ▶ ECI only, 2PC transactions & enhanced security (OS/390)
 - ▶ async ECI calls also supported (all platforms)
- Enhanced support for TCP62 (all platforms ex. OS/390)
 - ▶ Removes SNA dependency for connection to CICS
- Improved performance for ECI data transfers
 - ▶ datastreams truncated to application data length
- Improved availability, serviceability, manageability
 - ▶ Support for ARM (Automatic Restart Manager) on OS/390
 - ▶ enhanced logging; logging of EXCI return codes on OS/390
 - ▶ dynamic control of tracing level; management infrastructure for JMX (Java Management eXtensions)

Support for J2EE Connectors in CICS TG

Software Architecture for e-business

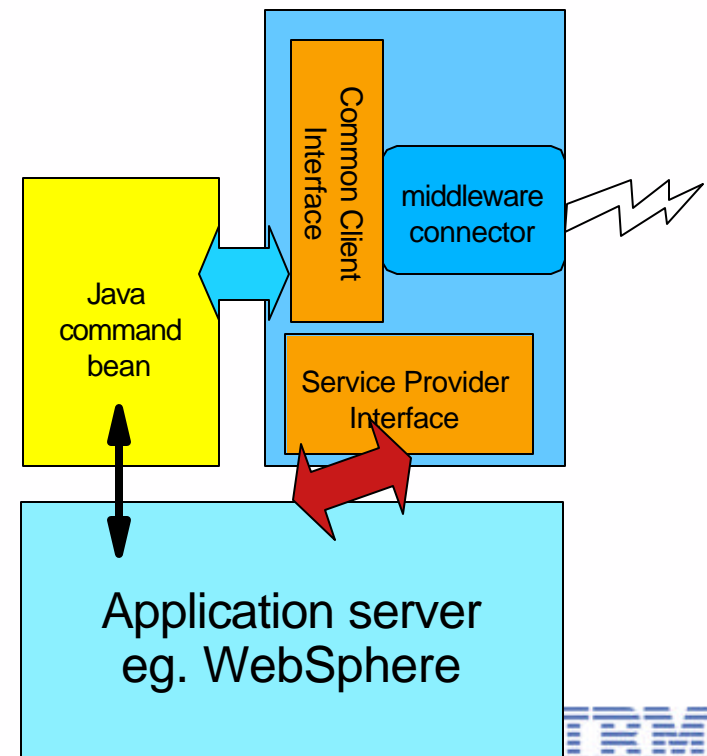
An end-to-end architecture ... based on Java 2 Enterprise Edition



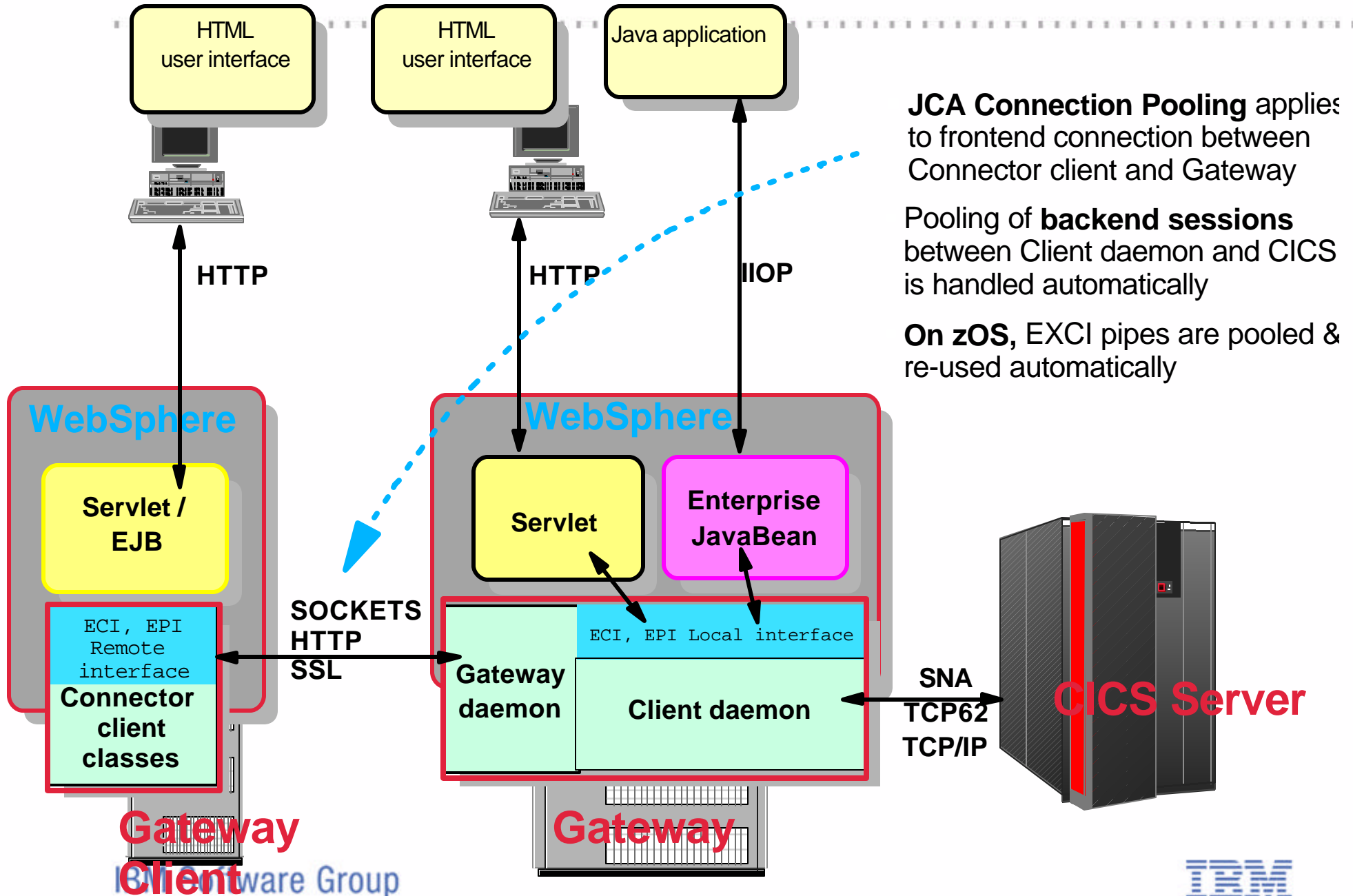
What do JCA Connectors do?

- **Provide Common Client Interface for all back end servers**
 - ▶ standard call interface hides connection details from Java applications
 - ▶ each back end server still requires unique data format
- ▶ **Enable Service Provider Interface for Application Server**
 - ▶ operate in "managed" or "unmanaged" environments
 - ▶ managed environment enables connection pooling, transactions & security
- **Leverage tool technology:**
 - ▶ Connectivity to specific backend may be encapsulated in an "adapter" bean
 - ▶ WSAD/IE automates construction of interactivity/navigation & data format logic

- A **Connector** is generic runtime code, such as a J2EE architected connector, that transforms one calling interface into another
- An **Adapter** is runtime code, possibly generated by a tool, that converts one data format to another (e.g. converts a bean format into a CICS COMMAREA)
- Many solutions will use *both* connectors and adapters



JCA Connection Pooling with CICS TG

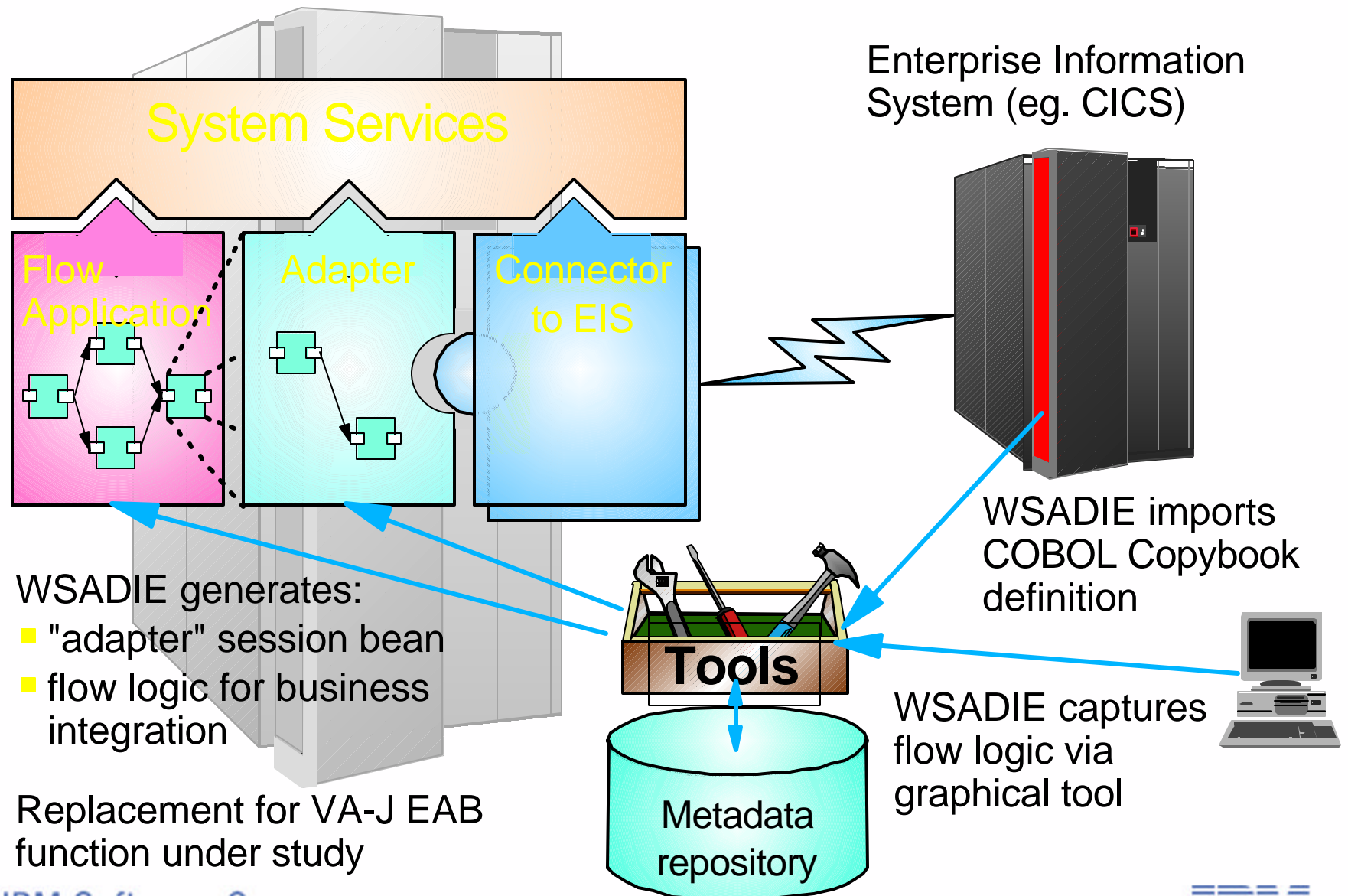


JCA Connection Pooling applies to frontend connection between Connector client and Gateway

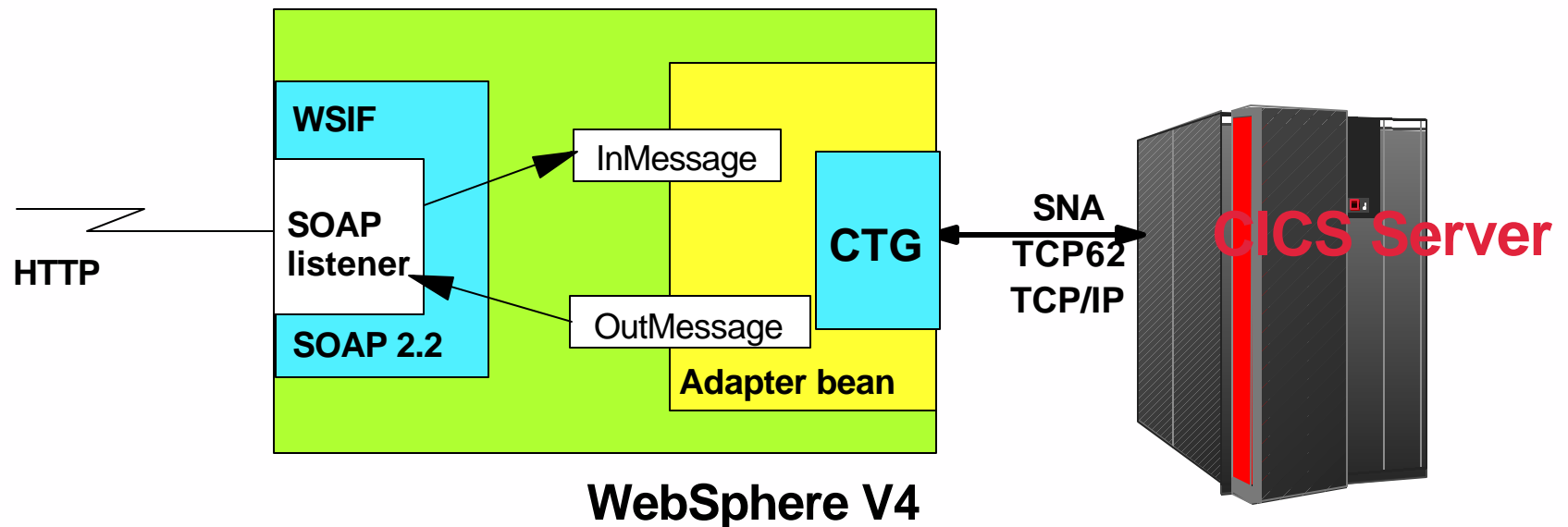
Pooling of **backend sessions** between Client daemon and CICS is handled automatically

On zOS, EXCI pipes are pooled & re-used automatically

JCA Tooling with WSADIE and WebSphere EE



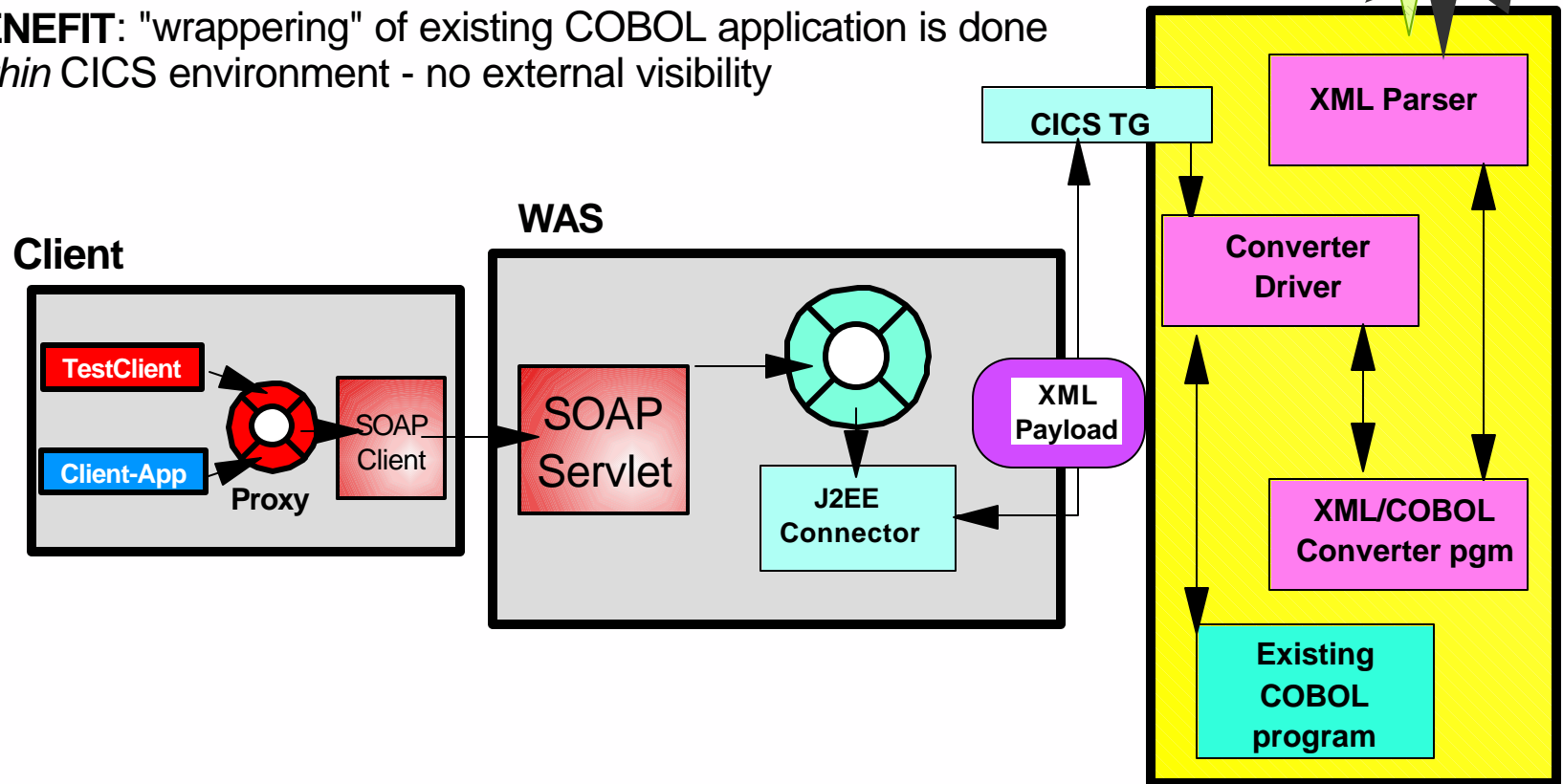
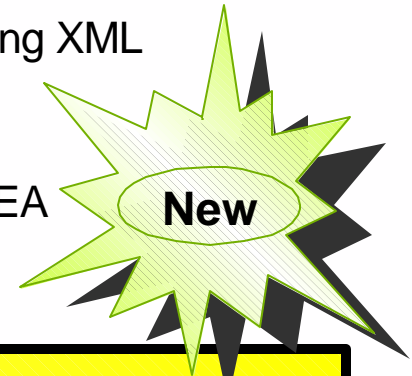
SOAP Support with WebSphere, CICS TG and CICS



- ***Uses WSIF (Web Services Invocation Framework) and SOAP 2.1 supplied with WebSphere EE***
- ***WSADIE (WebSphere Studio Application Developer Integration Edition) generates "adapter" bean***
- ***Uses JCA Connector with CICS TG for access to CICS***

Creating Web Services with XML Converters

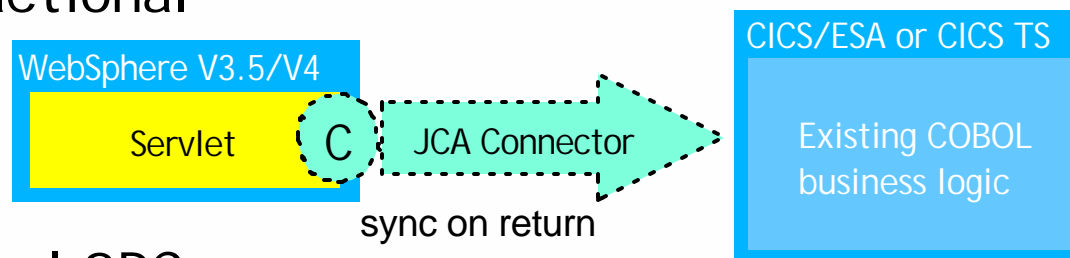
- **CICS Transaction Gateway** can pass any data in COMMAREA - including XML
 - can use to pass SOAP message payload
- **Enterprise COBOL V3** includes fast XML parser
 - can use for converter program - parses XML payload into COMMAREA
- **WebSphere Studio Enterprise Developer** generates XML converter
 - no programming needed
- **BENEFIT:** "wrapping" of existing COBOL application is done *within* CICS environment - no external visibility



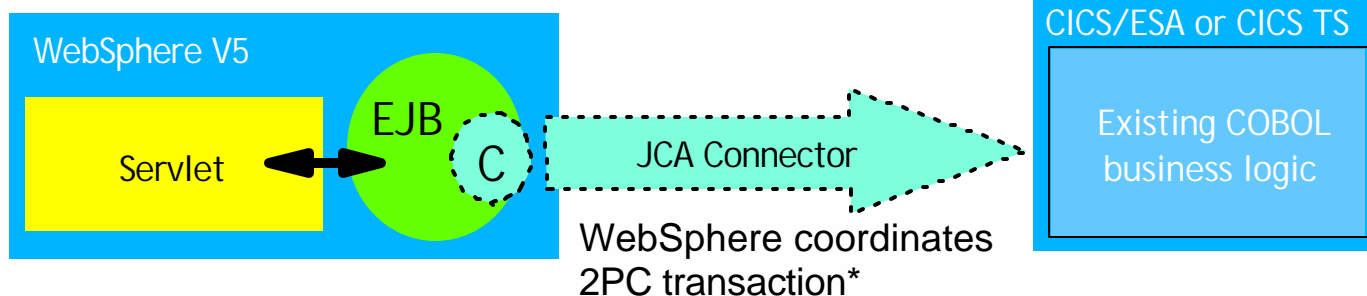
Other Options

Using Bean-to-Bean Communication with IIOP

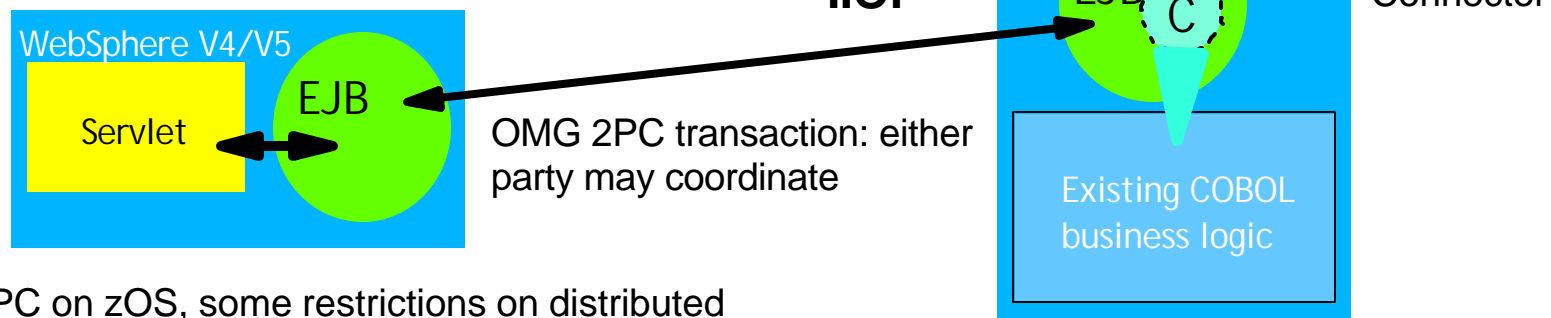
Non-transactional



Transactional 2PC



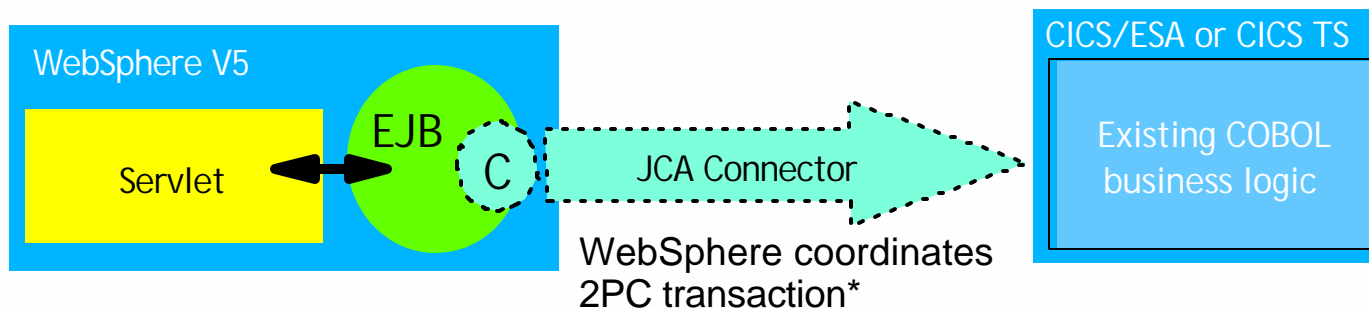
Alternative 2PC scenario



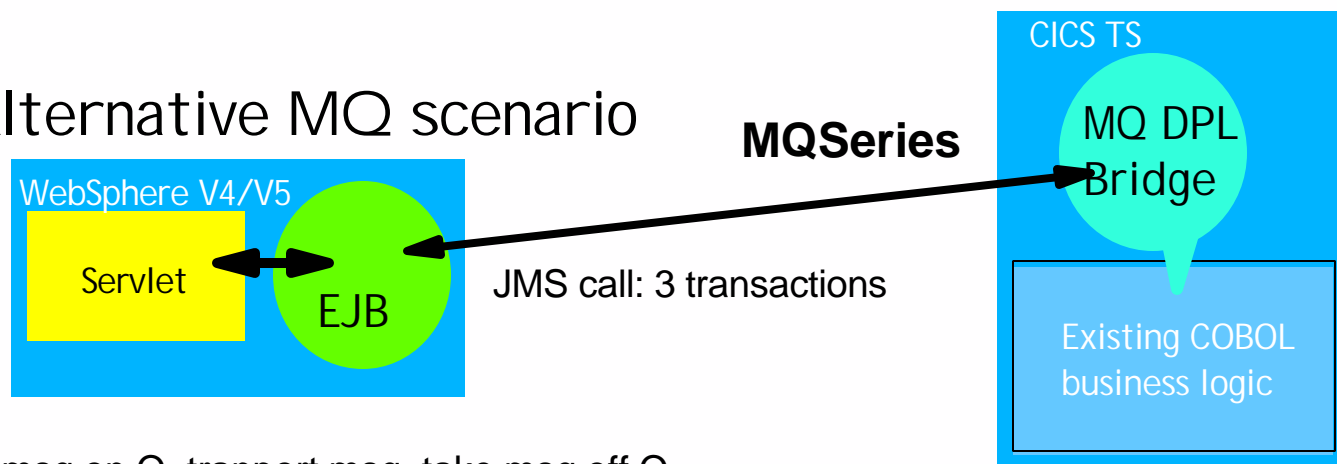
*Full 2PC on zOS, some restrictions on distributed

Using WebSphere MQ

Transactional 2PC



Alternative MQ scenario



*place msg on Q, transport msg, take msg off Q

From Host Integration to CICS Transaction Gateway

1. Host on Demand provides a JCA Connector for 3270 applications only

- ▶ Can connect to any 3270 application on CICS, IMS, TSO etc.
- ▶ Supports "generic screenable record" interface with J2EE, ie. a data record containing a field for each field on 3270 containing application data
- ▶ WSADIE contains tool to generate connector flows
- ▶ Limited by 3270 datastream architecture, eg. 1920 byte data transfer

2. CICS TG provides an improved connector for 3270 CICS applications

- ▶ Can connect to most CICS applications
- ▶ Uses LU6.2, TCP62 or TCP/IP networking rather than LU2 or TN3270
- ▶ Supports "generic screenable record" interface with 3270 applications and connector flows
- ▶ Will support "custom screenable record" interface in future
- ▶ Custom screenable record interface will be mapped to ECI call to Link3270 Bridge provided by CICS TS 2.2 (no 3270 datastream flows)

3. CICS TG *also* provides a connector for COMMAREA applications

- ▶ Preferred design point for new CICS applications
- ▶ Enables re-use of application modules in many different contexts
- ▶ Currently limited to 32,500 byte data transfer, but limit will be relieved in future

Where is CICS Transaction Gateway going?

CICS Transaction Gateway ... beyond V5

- *Our strategy is to **enhance** the CICS Transaction Gateway and support the CICS Universal Client*
- *CICS TG V5 became available July 26th 2002*
 - *CTG V5.01 will be available in 2003*
- *Medium term, we'll continue to provide the strategic "connector into CICS" and integrate with the latest technologies:*
 - *support for J2EE spec. enhancements*
 - *support for Linux/Intel and 64 bit platforms*
 - *JCA exploitation of LINKable 3270 Bridge in CICS TS 2.2*
 - *easier programming for ECI returned data > 32K*
 - *good integration with IBM tools offerings*
 - *enhanced manageability via JMX (Java Management eXtensions)*
- *As an alternative, customers may wish to consider using IIOP with CICS TS V2.2 and later releases:*
 - *must have CICS TS 2.2 in production*
 - *must have implemented Java and EJB under CICS*
 - *must have existing apps in LINKable form (COMMAREA or Bridge)*

Additional information

- Other sources of planning information:
 - ▶ SG24-5243 CICS Transaction Server for OS/390: Web Interface and 3270 Bridge
 - ▶ SG24-5275 Java Application Development for CICS
 - ▶ SG24-5277 Revealed! CICS Transaction Gateway with more CICS Clients Unmasked
 - ▶ SG24-5466 Revealed! Architecting Web Access to CICS
 - ▶ SG24-5748 A Performance Study of Web Enabling CICS
 - ▶ SG24-5756 Securing Web Access to CICS
 - ▶ SG24-6118 Workload Managing Access to CICS
 - ▶ SG24-6133 CICS Transaction Gateway V5: The WebSphere Connector for CICS
 - ▶ SG24-6401 Java Connectors for CICS Featuring the J2EE Connector Architecture
 - ▶ REDP0206 From code to deployment: Connecting to CICS from WebSphere V4.01 for zOS
 - ▶ SR23-9720-00 Java for S/390® and AS/400® Cobol Programmers
 - ▶ Designing & Programming CICS Applications, O'Reilly ISBN 1-56592-676-5
 - ▶ <http://www.ibm.com/cics/>
 - ▶ <http://www.redbooks.ibm.com/>

Thank you for joining us today!

If you would take a few moments to fill out the feedback form which will display when you close out of this session, it would be greatly appreciated. Your comments are very important to us.

If you have questions regarding the topics we have covered in this webcast today, you may submit them via the email hotlinks below:

*Dr Geoff Sharman, Senior Consultant, Transaction Systems
Lead Strategist, CICS Portfolio
geoff_sharman@uk.ibm.com*