E31

SOA and z/VSE: Options for integrating CICS and your network

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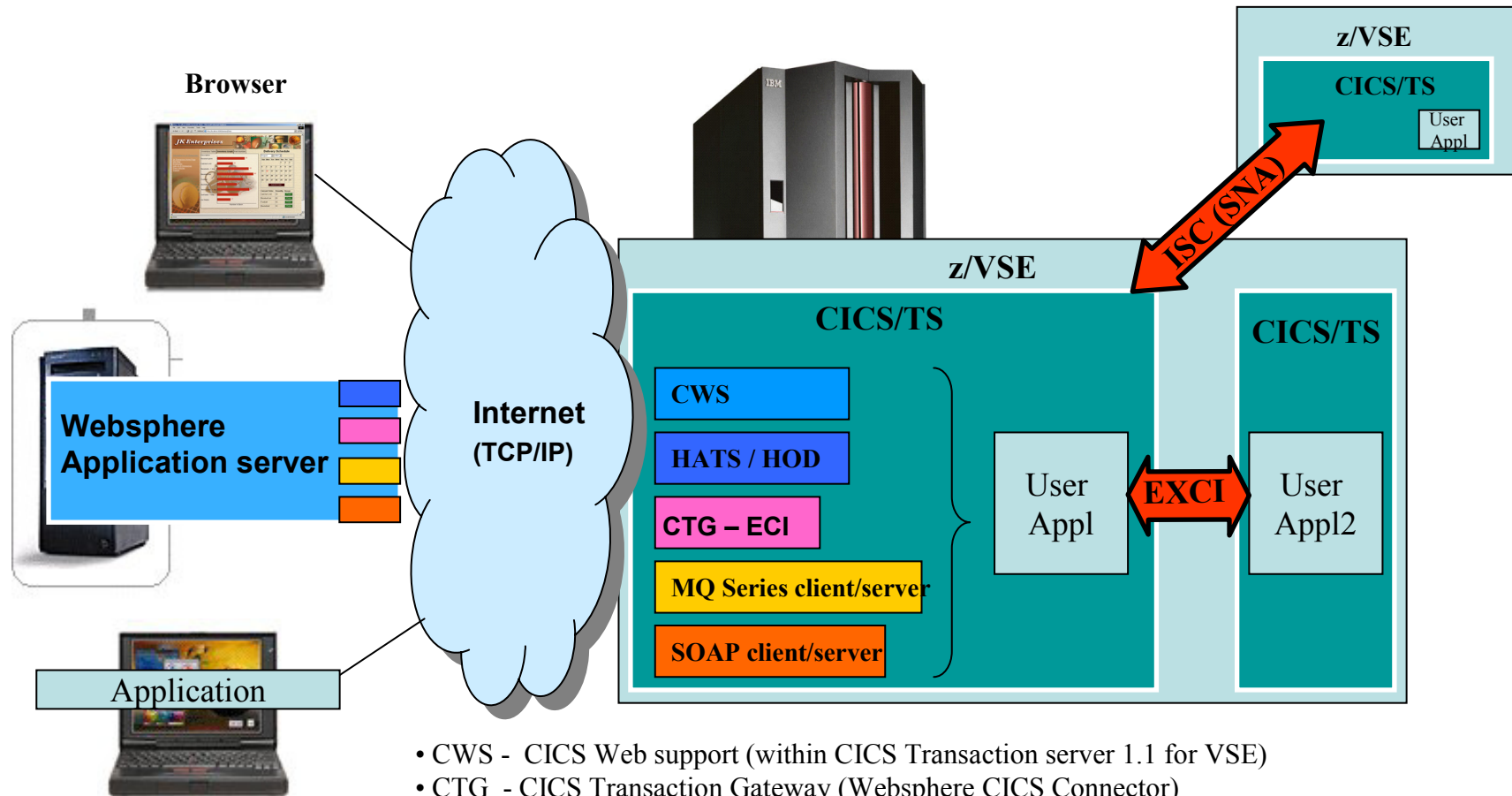Information concerning non-IBM products was obtained from the suppliers of those products. Questions concerning those products should be directed to those suppliers.

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Inter-Communication with VSE Transactions

Browser

z/VSE

CICS/TS

User Appl

z/VSE

CICS/TS

ISC (SNA)

Internet (TCP/IP)

Websphere Application server

CWS

HATS / HOD

CTG – ECI

MQ Series client/server

SOAP client/server

User Appl

EXCI

User Appl2

CICS/TS

Application

• CWS - CICS Web support (within CICS Transaction server 1.1 for VSE)
• CTG - CICS Transaction Gateway (Websphere CICS Connector)
• HATS – Host Access Transformation Server (no VSE software component required)
• HOD - Host OnDemand (Websphere Host Integrator)
• SOAP - Simple Object Access Protocol (Web Services based with XML data)

CWS (CICS Web Support)

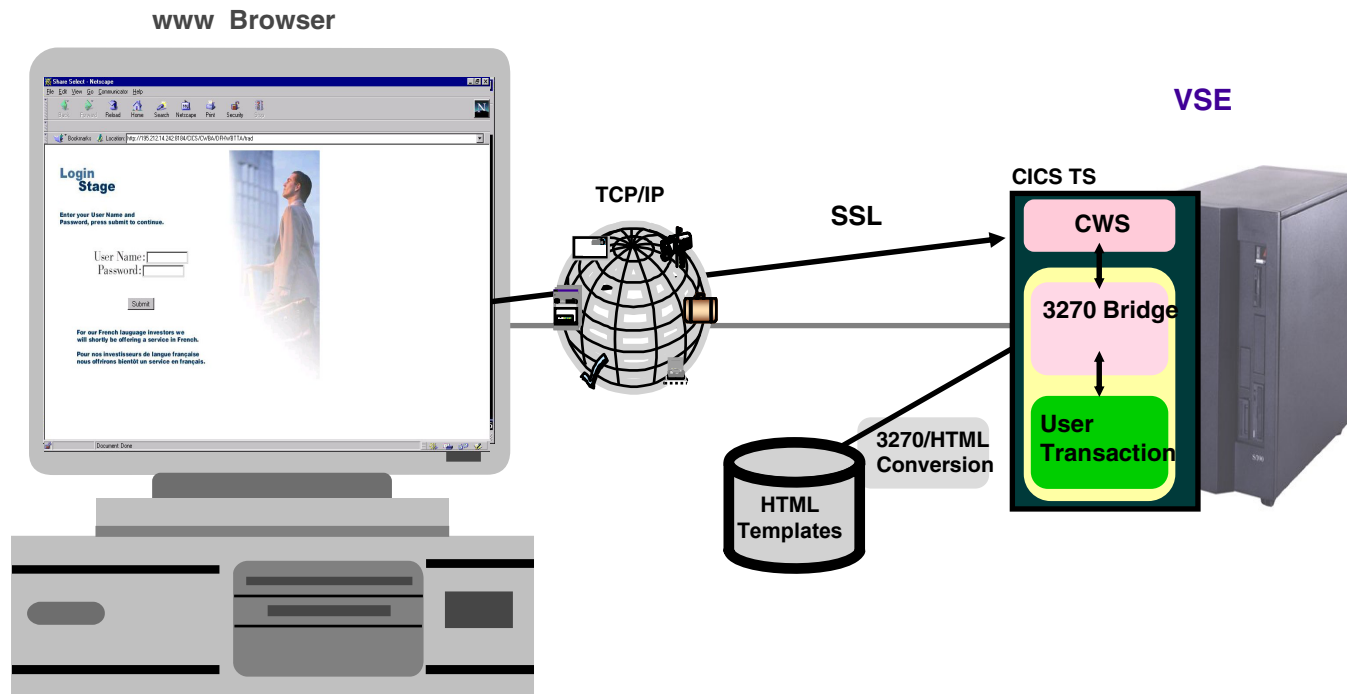# From 3270 screens to browser interaction

3270 Terminal
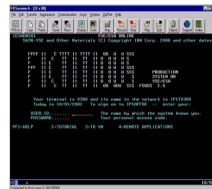
Browser

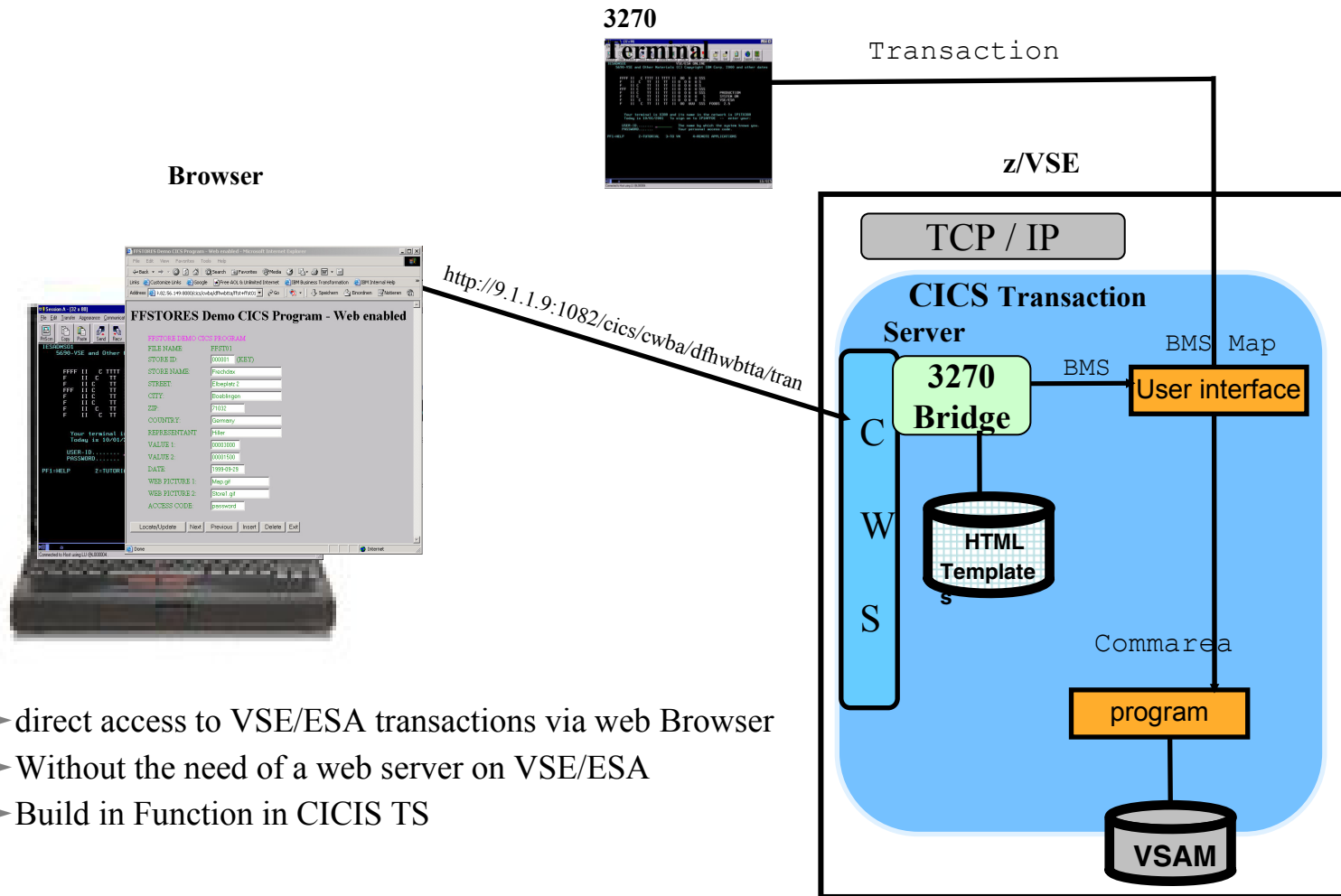# Direct access to VSE/ESA transactions via browser

IBM CICS Web Support - Components

www Browser

VSE

CICS TS

TCP/IP

SSL

CWS

3270 Bridge

3270/HTML Conversion

User Transaction

HTML Templates

► direct access to VSE transactions via web Browser

► Without the need of a web server on VSE

► Build in Function in CICIS TS

CICS Web Support (CWS)
From 3270 screens to Browser interfaces for CICS transactions

3270

Transaction

Browser

z/VSE

http://9.1.1.9:1082/cics/cwba/dfhwbtta/tran

TCP / IP

CICS Transaction Server

C W S

3270 Bridge

BMS

BMS Map

User interface

HTML Templates

Commarea

program

VSAM

► direct access to VSE/ESA transactions via web Browser
► Without the need of a web server on VSE/ESA
► Build in Function in CICIS TS

IBM CICS Web Support

- functional characteristics
  - ► direct access to VSE CICS transactions via a simple web browser
  - ► transaction security for the called transaction
  - ► secured connections (SSL)

- requirements
  - ► VSE CICS Transaction Server

Enable CWS (CICS Web support) for CICS Transaction server

•Properties

•CICS Web Support is a function of CICS Transaction Server in VSE.
•It is accessible via a TCP/IP Service that has to be defined (in CICS).
•For each separate CICS partition in your system the CICS Web support can be enabled
•CWS is prerequisite for other CICS access methods (like CTG, SOAP) .

•Required System changes to enable CWS:

▪Following parameters in **DFHSITxx** for the corresponding CICS TS partition (i.e. **DBDCCICS**), have to be set to enable CWS.

  ▪Intersystem communication enabled **ISC=YES**
  ▪TCP/IP protocol enabled   **TCPIP=YES**

▪Build of a Conversion table **DFHCNV (skeleton in ICCF Lib 59)**

Enable CWS (CICS Web support) for CICS Transaction server

•**Required System changes to enable CWS (continued):**

▪The BMS maps for the transaction have to be compiled with option
  SYSPARM='TEMPLATE'
  // OPTION NOLIST,ALIGN,DECK, *SYSPARM='TEMPLATE'*

▪Update of the **LIBDEF** statement in *CICS startup job* with **PRD2.DFHDOC** for the HTML Templates used

▪Define a **TCPIP Service** (i.e. CWSxx, and a **port** for CWS))
  CEDA DEF TCPIPS(CWSxx)

▪Access the transaction via web browser:
                http://a.b.c.d:port/cics/cwba/dfhwbtta/tran

CICS Web Support

CICS Web Interface 3270 screen emulation

```
STATUS:       ENTER ONE OF THE FOLLOWING

Discard
Inquire
Perform
Set




                                         SYSID=CIC1 APPLID=DBDCCICS
```

PF   1 HELP   3 END   9 MSG

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12

PF13 PF14 PF15 PF16 PF17 PF18 PF19 PF20 PF21 PF22 PF23 PF24

PA1 PA2 PA3 Clear Enter Pen Reset

File   Edit   View   Favorites   Tools   Help

⇐ Back ▾ → ▾ ⊗ ⊡ ⌂ | ⊘Search 🗷Favorites ⊕Media ⊗ | ⬒▾ ⇩ ⬜ ⬚

Links ⌖Customize Links ⌖Google 🗷Free AOL & Unlimited Internet ⌖IBM Business Transformation ⌖IBM Internal Help »

Address ⌖ 9.82.56.149:8080/cics/cwba/dfhwbtta/ffst+ffst01 ▾ | ⌁Go | 🗗 ▾ | ⬐ Speichern ⬐ Einordnen 🗎Notieren ⬕

FFSTORES Demo CICS Program - Web enabled

FFSTORE DEMO CICS PROGRAM

FILE NAME: FFST01

STORE ID: `000001` (KEY)

STORE NAME: `Frechdax`

STREET: `Elbeplatz 2`

CITY: `Boeblingen`

ZIP: `71032`

COUNTRY: `Germany`

REPRESENTANT   `Hiller`

VALUE 1:   `00003000`

VALUE 2:   `00001500`

DATE: `1999-09-29`

WEB PICTURE 1:   `Map.gif`

WEB PICTURE 2:   `Store1.gif`

ACCESS CODE: `password`

[Locate/Update] [Next] [Previous] [Insert] [Delete] [Exit]

⌖ Done   🌐 Internet

CTG (CICS Transaction Gateway)

Access to VSE transactions from remote

Integration of VSE/ESA transaction processes
CICS Transaction Gateway - Implementation

SSL
HTTP-S

Linux/AIX/Windows	
WebSphere	
CICS Transaction Gateway	
Programm	

VSE	
TCP/IP	
CICS Transaction Server	
CICS Application	
Data	

► Contains CICS Universal Client
► Synchronous transaction security
► Allows secure communications
► Integration of CICS business logic in heterogeneous transaction processes
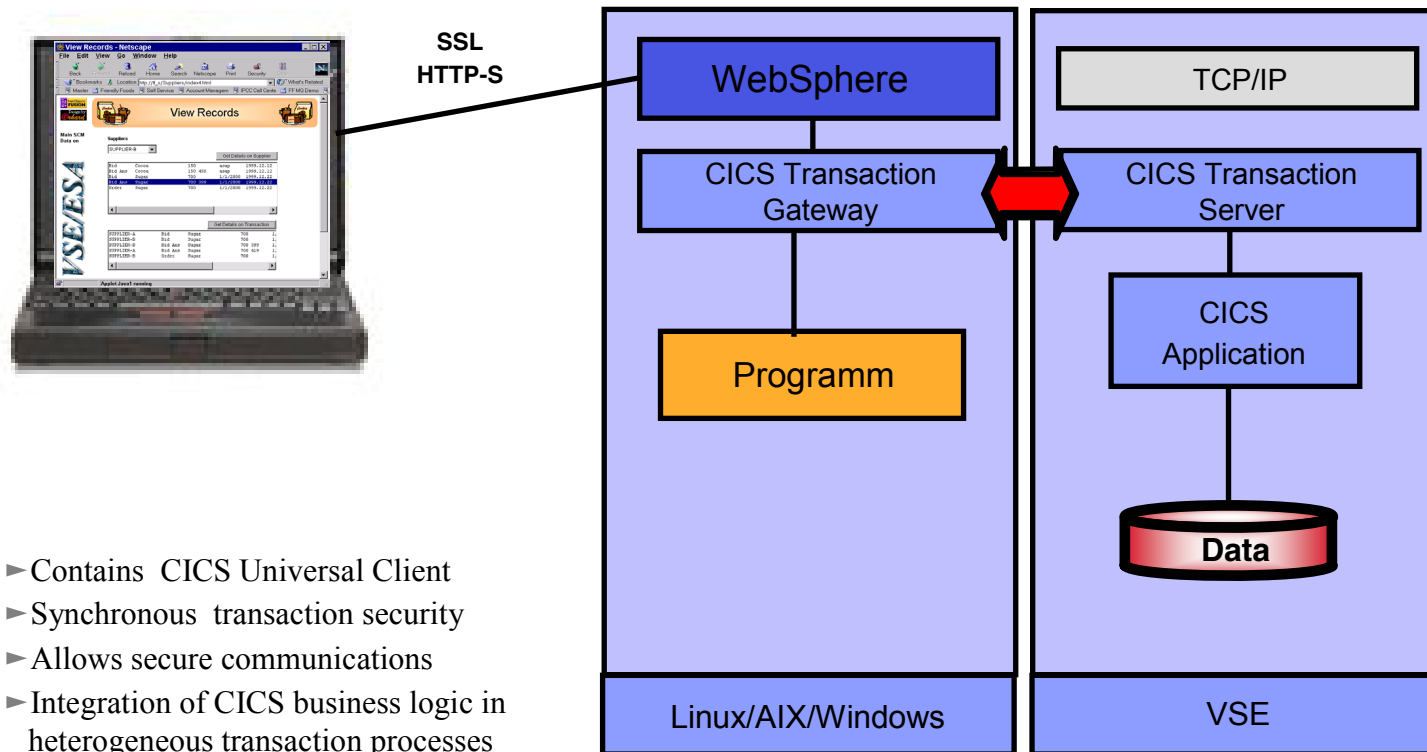
Integration of VSE transactions in distributed processes

CICS Transaction Gateway (CTG) - Components

Java Applet

TCP/IP:-

HTTP
HTTPS
SSL
TCP

ECI
EPI
ESI

Java Application

Java execution environment

Web Server
Java Servlet

Other Applications
Java, EJB | C++, C, VB, COBOL

ECI   EPI   ESI

Java Gateway

Client Daemon

CICS Transaction Gateway

Windows NT, Windows 2000, Windows XP, AIX, Solaris, HP-UX, z/OS, OS/390, Linux for zSeries

TCP/IP
TCP62
SNA LU6.2

CICS

APPLICATIONS

z/VSE, z/OS, OS/400, OS/2, AIX, Solaris, HP-UX, Windows NT, Windows /2000

CICS Transaction Gateway

- functional characteristics
  - ► access to VSE transactions from a remote
    platform (program communication)
  - ► transaction security for the called transaction
    therefore, good integration in e-business Processes and
    WebSphere Application Server.
  - ► secured connections (SSL) to CICS Transaction Gateway

- requirements
  - ► VSE/ESA and the Product: CICS Transaction Gateway (CTG)
    - ► for External CICS Interface (ECI) with TCP/IP, VSE/ESA 2.6 and
      later is required with CICS Transaction Gateway Version 4 or later

From 3270 screens to Browser interfaces for CICS transactions

3270 Terminal

Transaction

Browser

VSE

TCP / IP

CICS Transaction Server

http://9.1.1.9:1082/cics/cwba/dfhwbtta/tran

BMS Map

**Java Platform
(Linux for zSeries)**

C
W
S

**3270
Bridge**

BMS

user interface

**IBM WebSphere
Application Server**

Connector Framework

_Java

Program (ECI Calls)

CTG

HTML
Templates

ECI

Commarea

program

VSAM
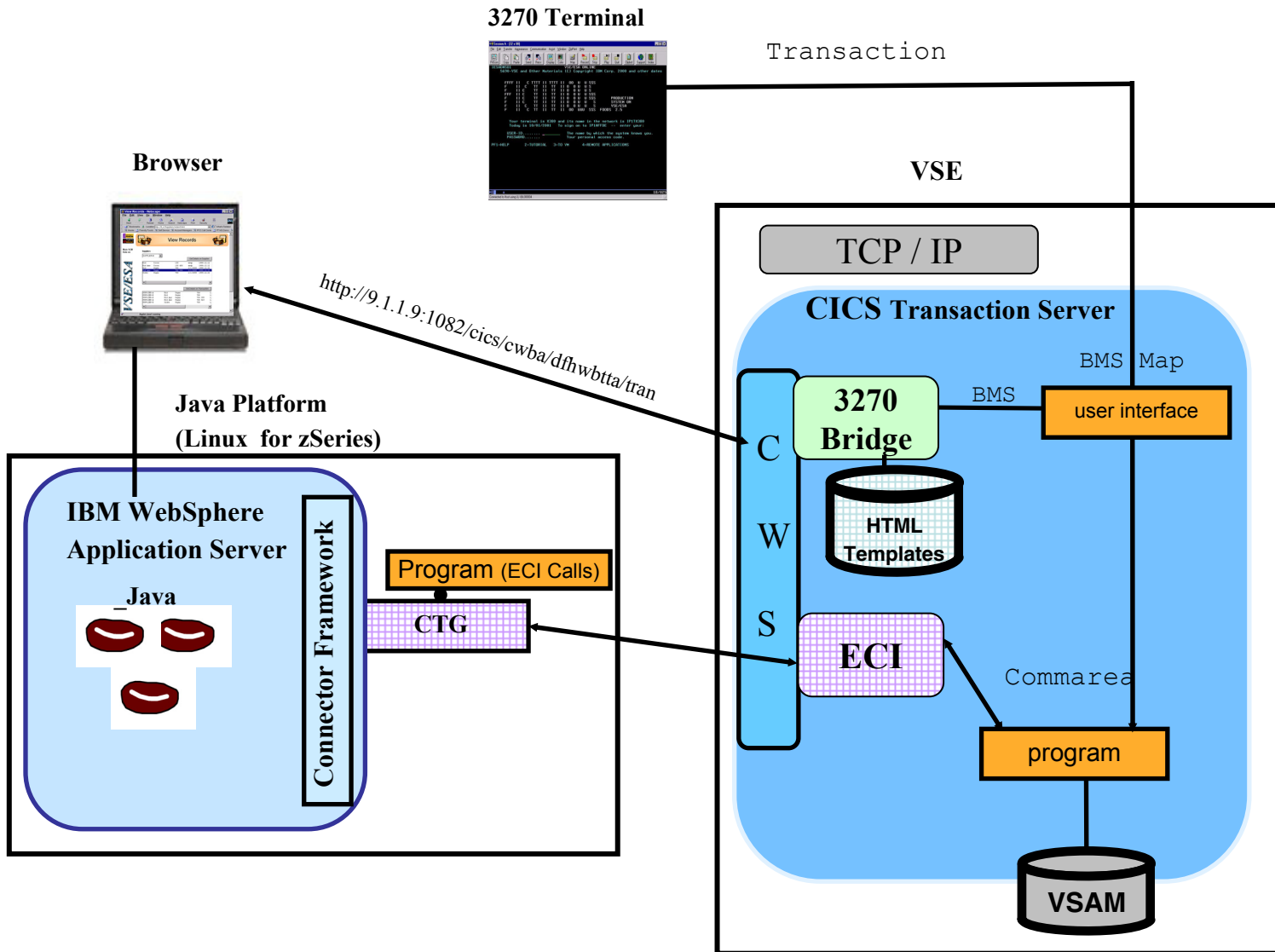
MQ Series

Synchronous/Asynchronous data transfer and distribution

Messaging Overview

Event Notification (1 way communication), Request / Response (2 way communication)

WebSphere Message Broker

Uses rules to reformat, enhance, and route in-flight messages across differing protocols.

WebSphere MQ

Provides a simple means to <u>reliably</u> exchange messages between applications.

Application "A"

Application "B"

A

B
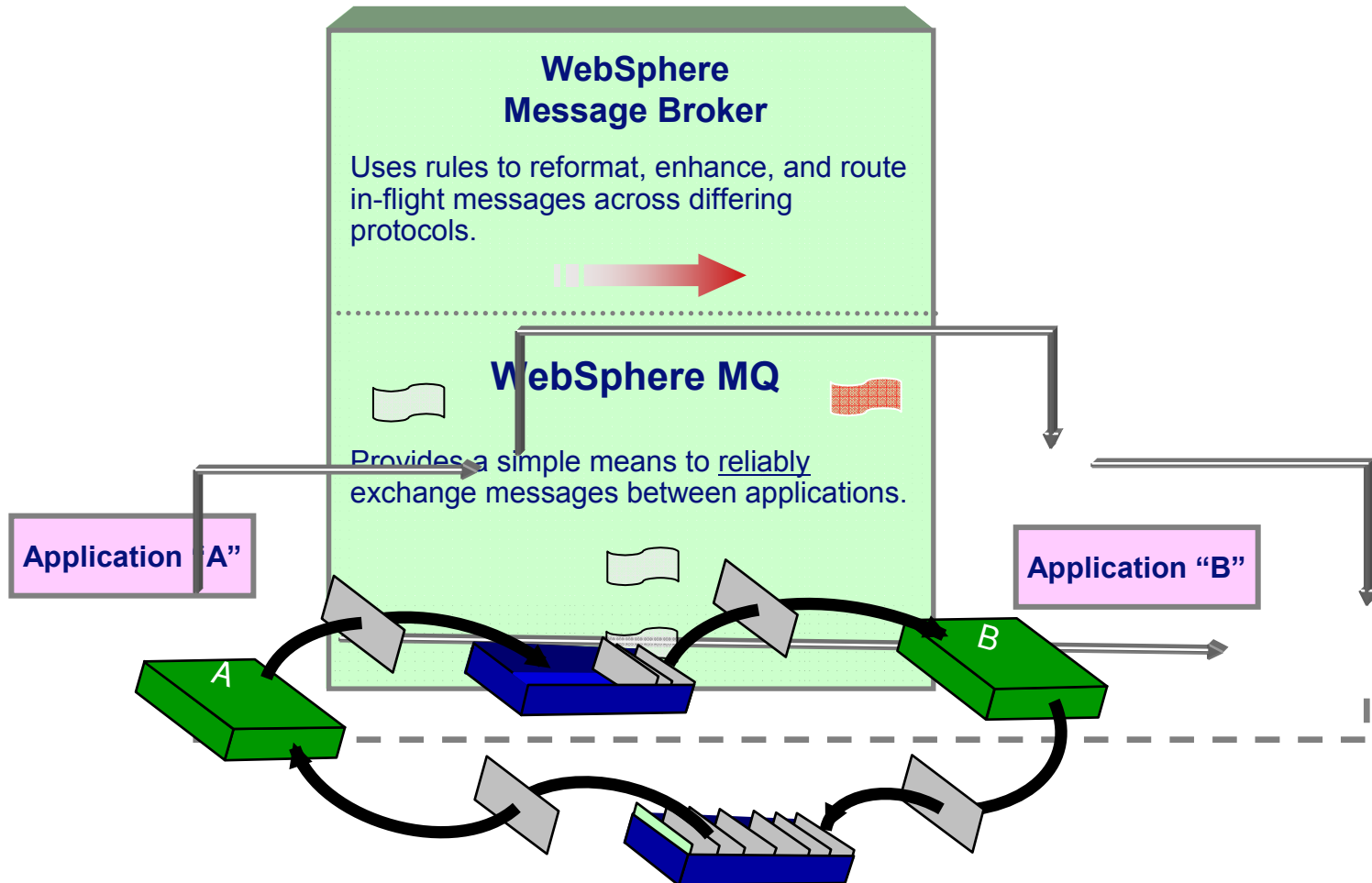
What is WebSphere Message Broker?

Event Sources

Detected Situations

A ☐ Situation Manager

Definitions
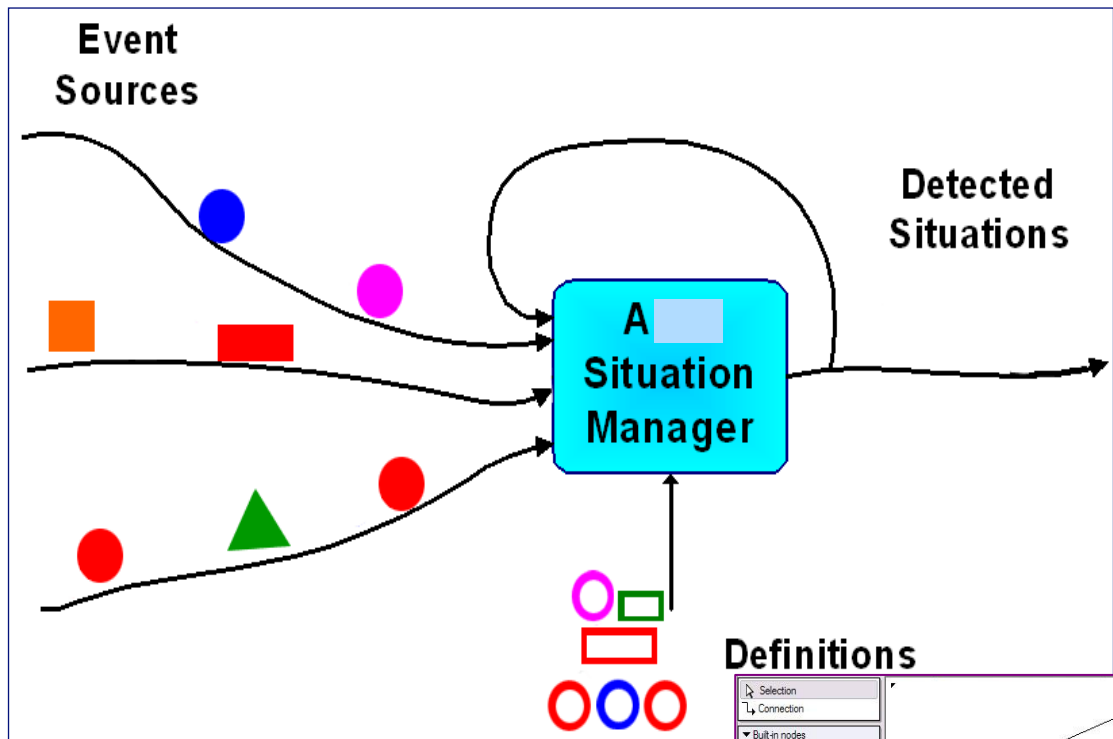
1. **A framework for processing MQ messages**

2. **A robust hosting environment for:**
   - ✓ Transforming data
   - ✓ Enriching data
   - ✓ Interacting with databases
   - ✓ Routing messages based on content
   - ✓ Detecting complex combinations of messages
   - ✓ Interacting existing applications with Web Services
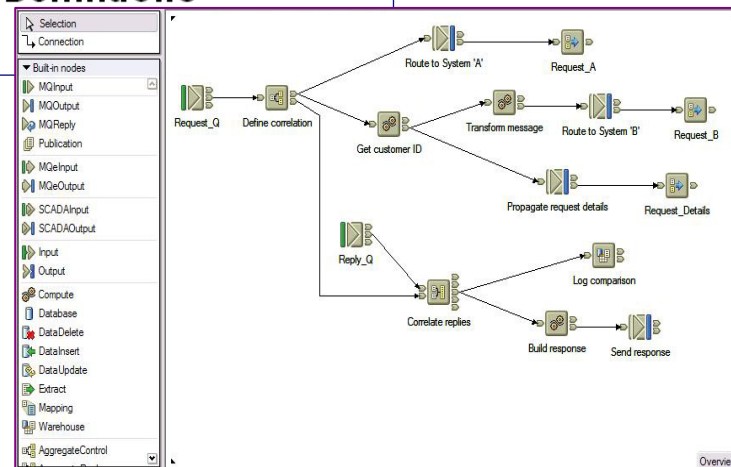
MQ Series servers and MQSeries Clients
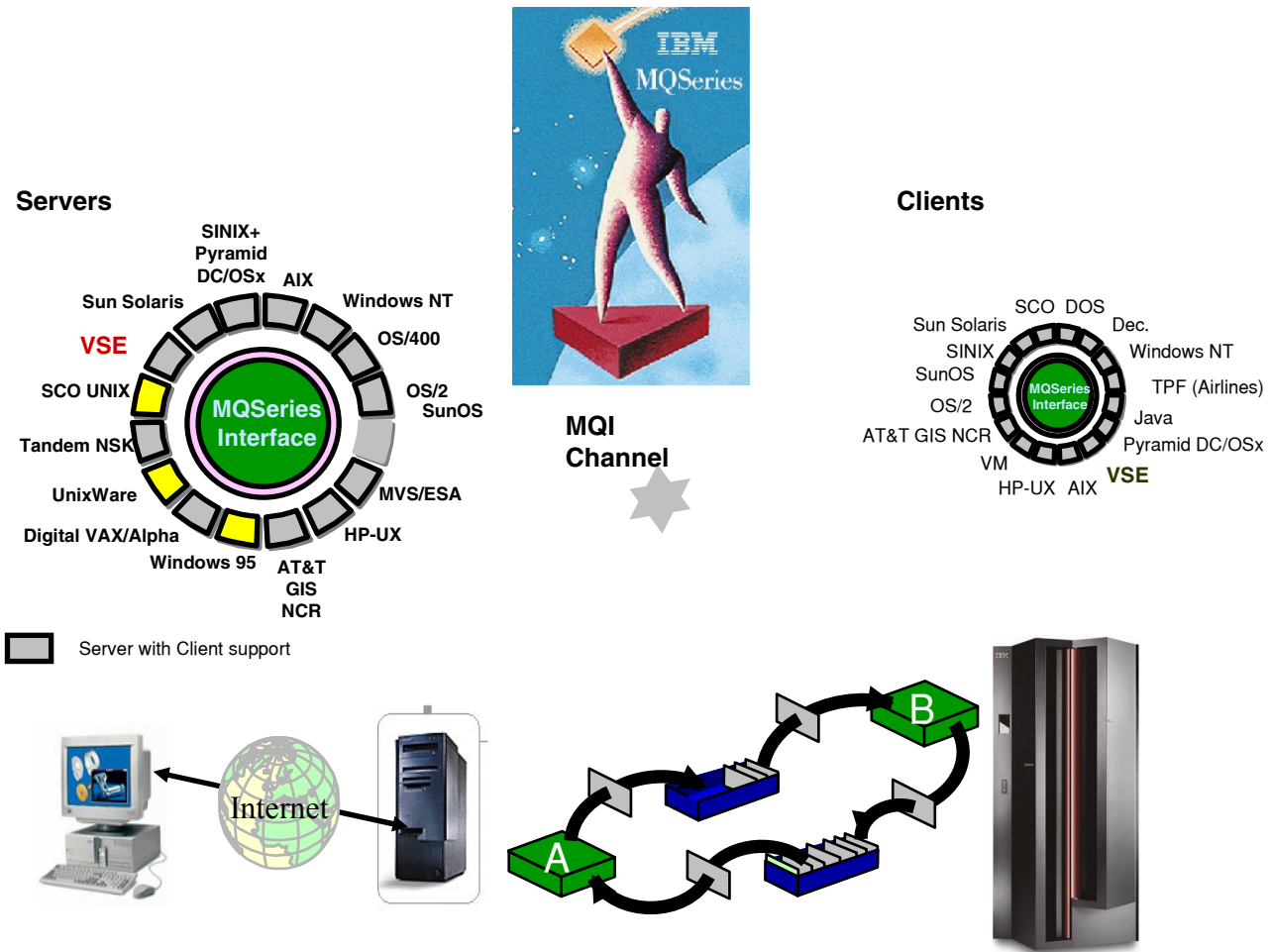
Various platforms supported

integration into Web Application servers (WebSphere)

Integration of VSE Programs with MQ Series
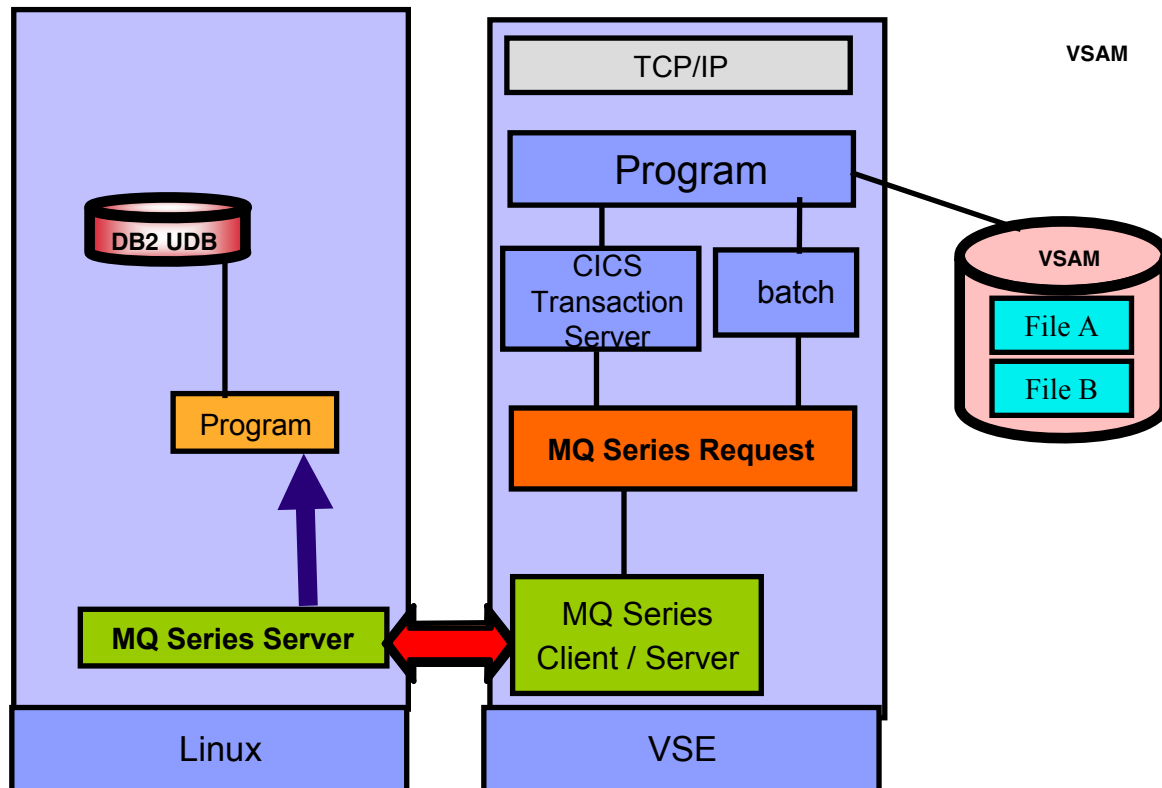
- ► Data distribution via MQ Series technology
- ► VSE programs have to write MQ messages – requires changes to existing applications
- ► NEW: WebSphere MQ Series Client for VSE – free of charge – enablement for MQ environments and modern solutions

Integration of unchanged VSE Programs with MQ Series
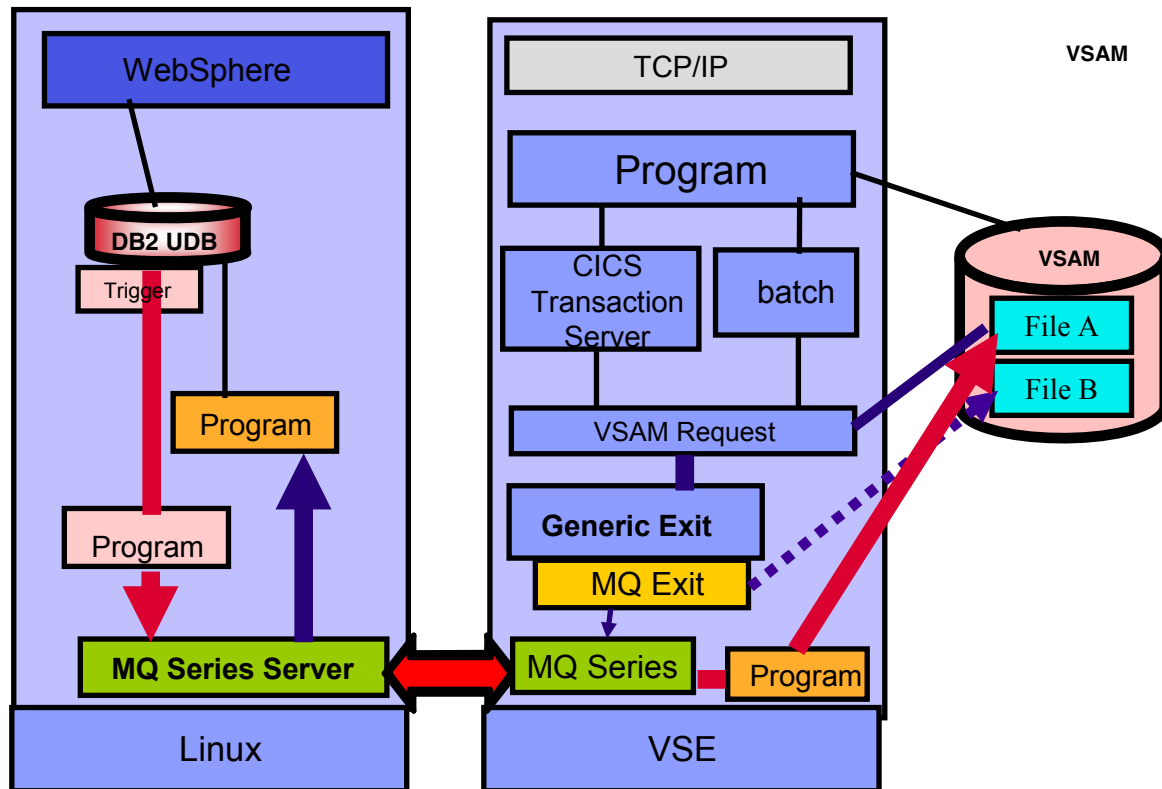
► Data distribution via MQ Series technology

► NO changes to VSE programs – using MQ Exit and VSE VSAM Redirector

► NEW: WebSphere MQ Series Client for VSE – free of charge – enablement for MQ environments and modern solutions

MQ Series - asynchronous transactions

■ **functional characteristics**
  - ►guaranteed, secured asynchronous data access for remote systems
  - ►same API for all supported MQ Series platforms
  - ►transaction security, therefore appropriate for e-business processes
  - ►integration with WebSphere Application Server
  - ►works well for Business-to-Business (B2B) environments

■ **software requirements**
  - ►For VSE/ESA :
    - ►VSE/ESA 2.6/2.7
    - ►MQ Series Server
    - ►Program that interfaces with MQ on VSE or VSAM Redirector

  - ►On the remote system:
    - ►MQ Series Client / Server
    - ►Program that interface with MQ Series
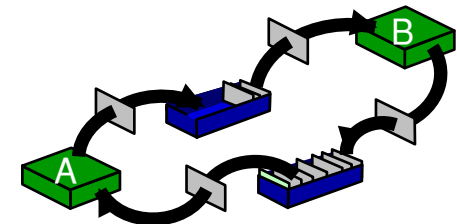
HOD, HATS
(Host OnDemand, Host Access Transformation Server)

Create graphical interfaces for existing Applications

General access to VSE/ESA via browser
Websphere host Integrator - Implementation
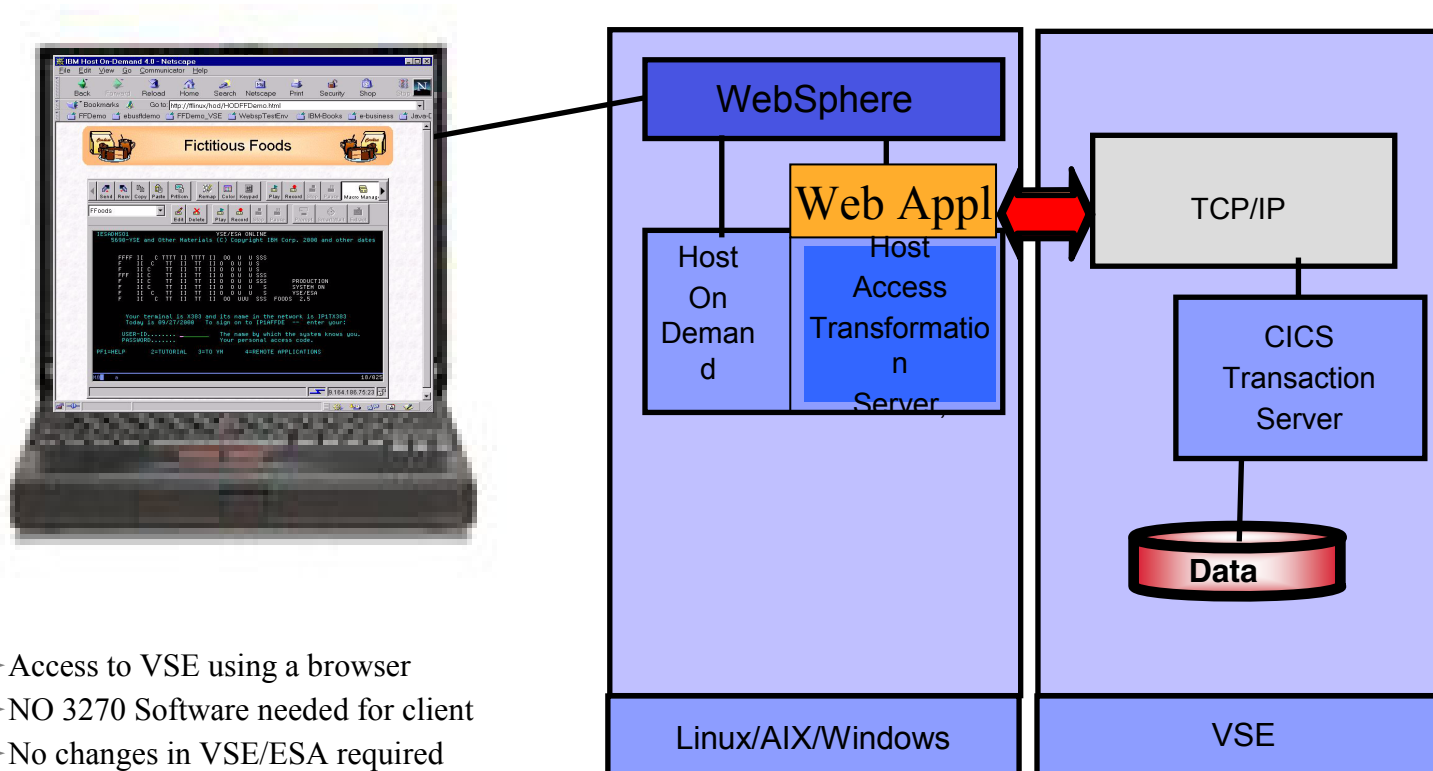
- ► Access to VSE using a browser
- ► NO 3270 Software needed for client
- ► No changes in VSE/ESA required

NEW: IBM Communication Server (TN3270, APPN) and
IBM Communication Controller (374x replacement)
-> available for Linux for zSeries

Host Access Transformation Server

- functional characteristics
  - ►access to VSE/ESA via browser
  - ►the access is similar with a local access via 3270 emulator
  - ►can be used in Intranet or Internet and /or
  - ►integrated with WebSphere Application Server
  - ►support for secured connections (SSL) to the HostOnDemand Server and a redirector to mask the real IP addresses
    - ►Host Access Transformation Server – for 3270 screen scraping
    - ►Host Publisher - a bean generator to create the Java Beans (Integration Objects), to provide legacy access for new Web applications.

- Requirements
  - ► WebSphere Host Integration products on middle tier
  - ► NO additional software on VSE/ESA required

Benefit: Easily extend existing applications to the web

Interaction with VSE via HOD and browser
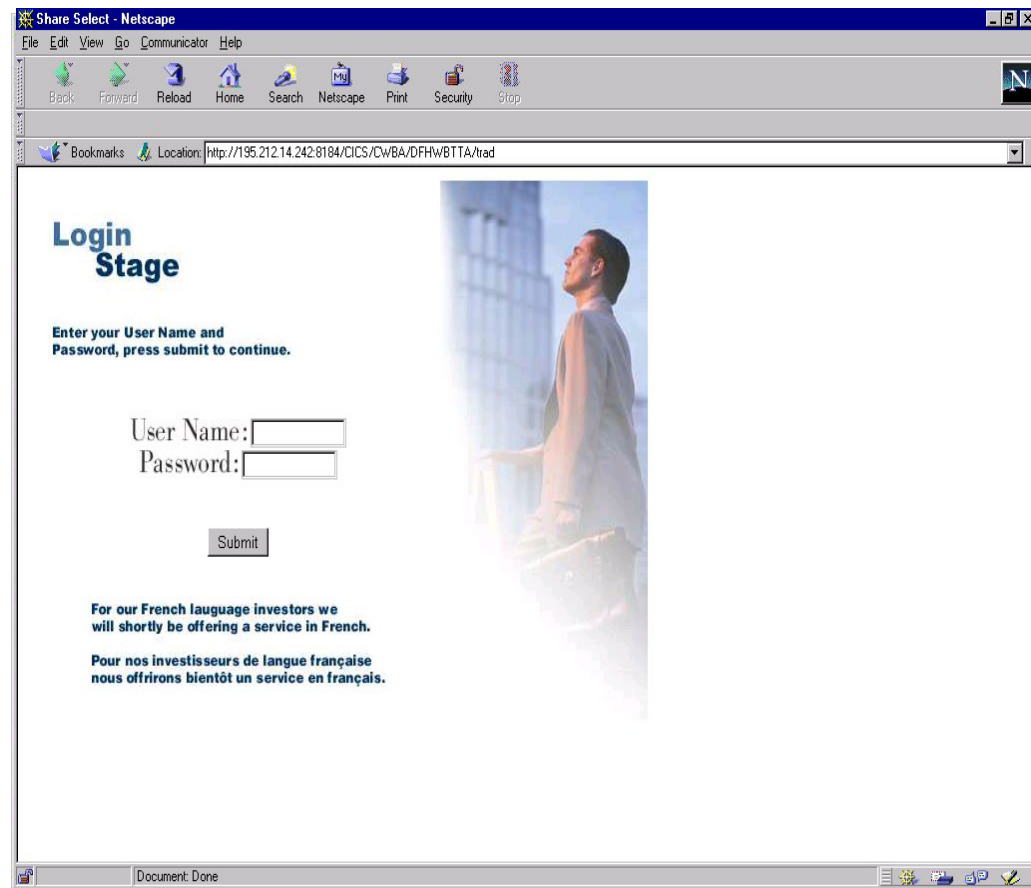
Interaction with VSE via HATS application and browser

From 3270 screens to Browser interfaces for CICS transactions

3270 Terminal

Transaction

Browser

VSE

TCP / IP

CICS Transaction Server

http://9.1.1.9:1082/cics/cwba/dfhwbtta/tran

BMS Map

**Java Platform
(Linux for zSeries)**

C
W
S

**3270
Bridge**

BMS

user interface

**IBM WebSphere
Application Server**

HTML
Templates

_Java

Program (ECI Calls)

Connector Framework

CTG

ECI

Commarea

HOD,HATS

TN3270

program

VSAM

SOA
Web Services

Modern architecture of program communication using XML data and the SOAP protocol

Innovation that Matters in Todays IT

Top Innovation Priorities:

- Extend the ability to collaborate inside & outside

- Innovate business models & processes

- Leverage information for business optimization

87% of CEOs believe fundamental change is required in next two-years to drive innovation

Source: 2006 IBM Global CEO Survey

Innovation is all about change.
SOA makes it easier to change.

Customers & Analysts Agree:
SOA Enables Rapid & Incremental Change Leading to Innovation

Innovation That Matters *

*"The IBM and GenXus SOA-based solution has made our product **more innovative, expanded our market** and made us **more competitive** It will let us grow our business significantly in the years to come."*

*"SOA is the **heart of the next wave of innovation**. The leaders that do this well are able to **rapidly change** …"*

*"SOA is critical for … executing the on-demand vision and in preparing … for the **incremental changes** … over time. Companies … make better decisions."*

Creating & Reusing Services - Greater Value through SOA
Create Flexible, Service-based Business Applications

People
Information
Process
Connectivity
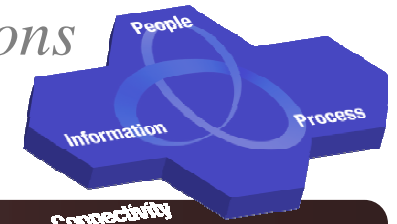
Value

- Flexibility and elimination of duplication for reduced cycle times

- Expanded access to core applications

- Consultant studies have found it 5X less expensive to re-use existing applications than to write new applications*

Start with

- What services are needed to run your business?

- Identify high-value existing IT assets and service-enable them for reuse

- Fill in gaps by creating new services for today's business needs and future reuse

- Registry/repository to facilitate centralized access and control of reusable services
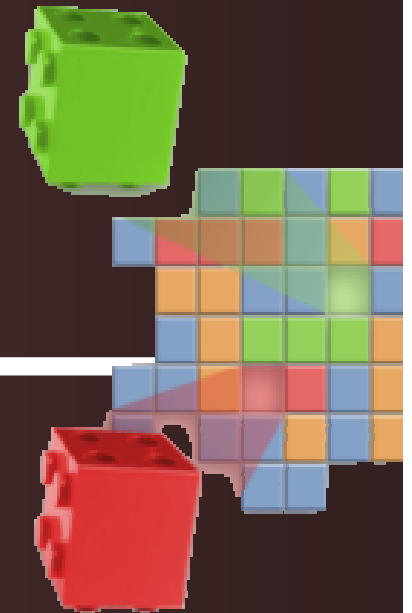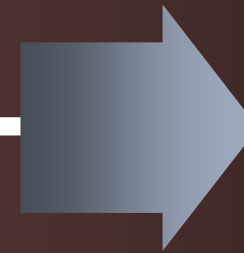
"With reuse, solving the next business problem can be done more quickly and efficiently."

- Amy Wohl

* Software Productivity Research (SPR)

Reusing Services

Business Challenge: Leverage existing assets to improve business agility
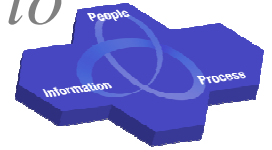
Sysdat & Gautzsch

Reused existing RPG service based function to integrate with Amazon.de sales portal

Online in 3 weeks. *ROI in < 3 months.*

WebSphere Business Integration Express, Partner Gateway

Acesita

Integrates mySAP and existing backend applications with **reusable service data**

Real-time views of critical cost and profit information for **better decisions**

IBM BCS, WebSphere MQ and Message Broker

Mainsoft and Comtec

Reuse .NET applications in open standards-based SOA with IBM Business Partner Mainsoft Solutions

5x faster than rewriting the code from scratch

Mainsoft Visual MainWin, WebSphere Application Server

Service Oriented Architecture(SOA) Web Services

z/VSE

Business Partner

Customers and Business Partners

Web Service

SOAP (XML)

Business Partner

Web Service

Web Service

Shipping and Tracking System

Customers

Trucking Company

Data

Transactions

e-mail
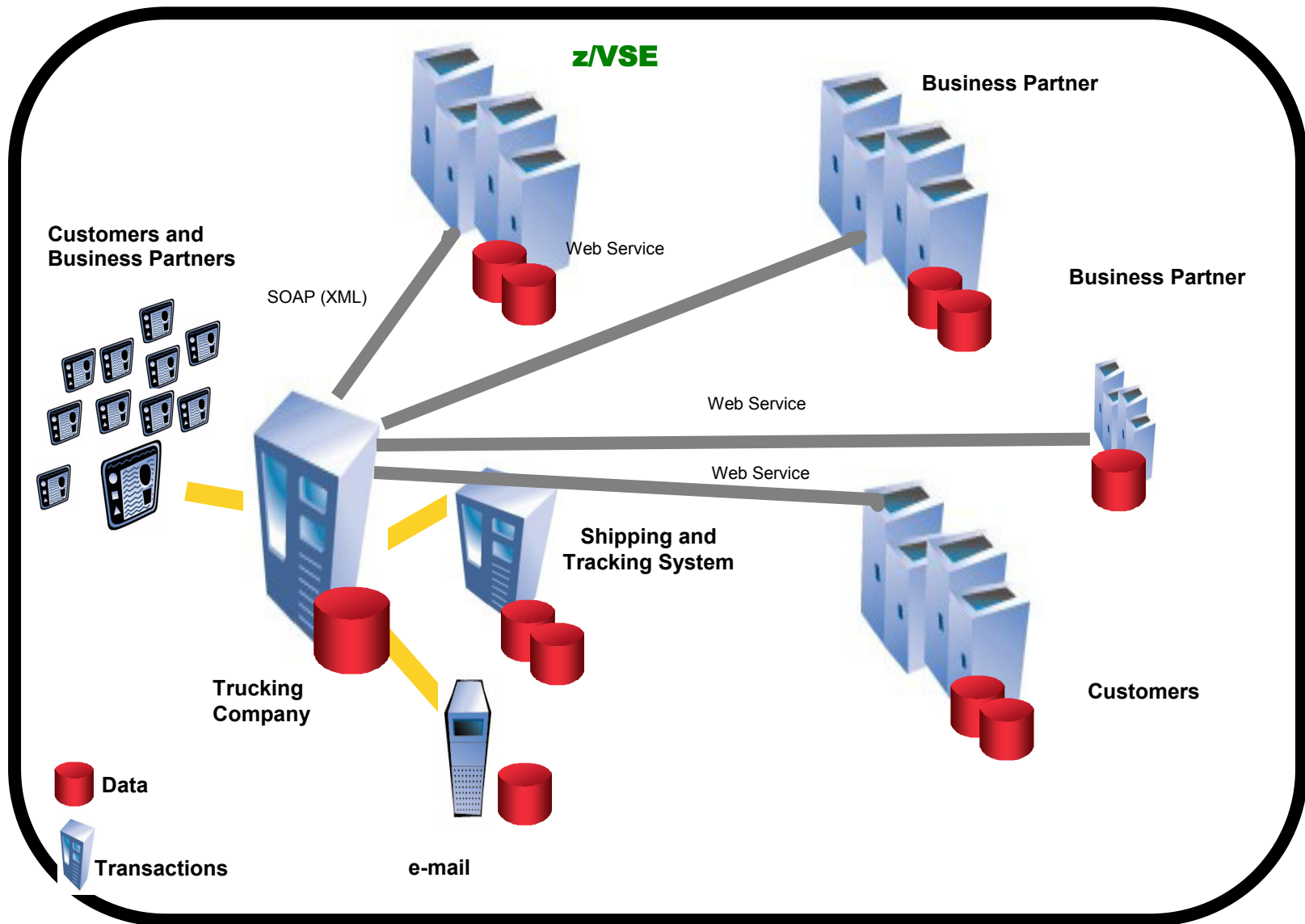
Web Services
XML Document + SOAP Protocol = Web Services

XML -

SOAP -

HTTP - Carrier

TCP/IP - Highway

Client

Application

SOAP Client

XML Data

`<xsl:stylesheet version="1.0" xmlns:xsl="http://`

SOAP(XML)

HTTP

Server

Application (Web Service)

XML Data

SOAP Server

Data
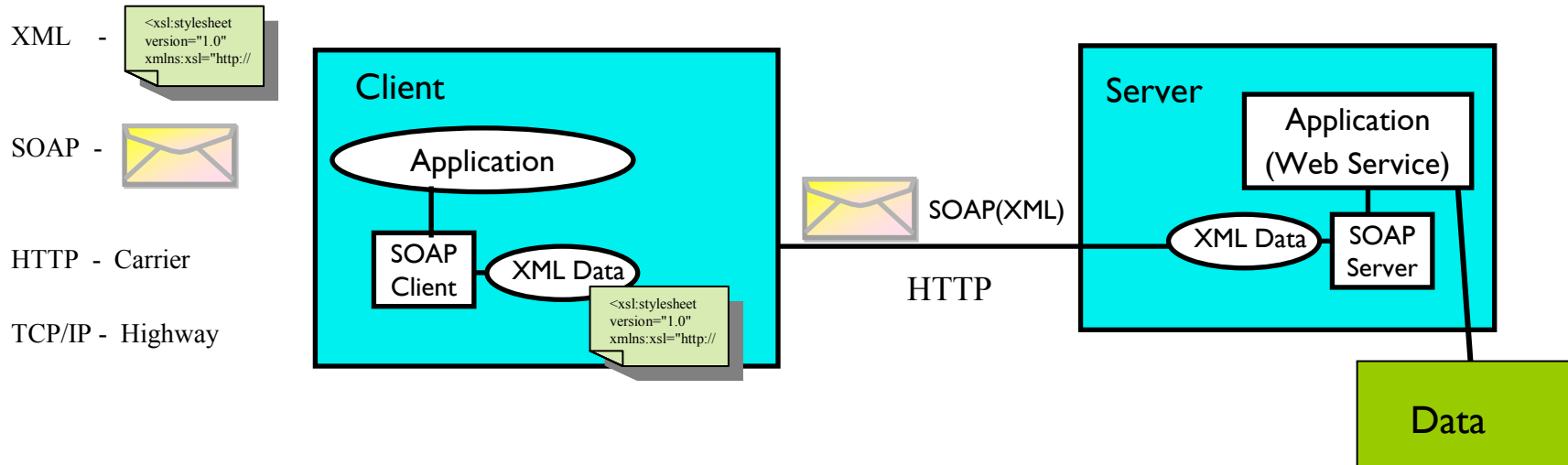
A **web service**

☞ implements a business, application or system functionality

☞ is intended for application communication

☞ is useable in internet, intranet, extranet

☞ is useable for browser-based solutions up to the B2B

☞ 8business-to-business) integration between companies

☞ uses only standard internet technologies

Web Services with z/VSE

XML data interchange with CICS transactions

z/VSE

Microsoft .NET
Websphere
Apache SOAP
AXIS
Java

SOAP
Client/Server

HTTP (HTTPS)

SOAP Envelope

XML

CICS TS

XML
Parser

SOAP
Engine

XML to Commarea proxy

Commarea

Transaction

**NEW !
CICS2WS**
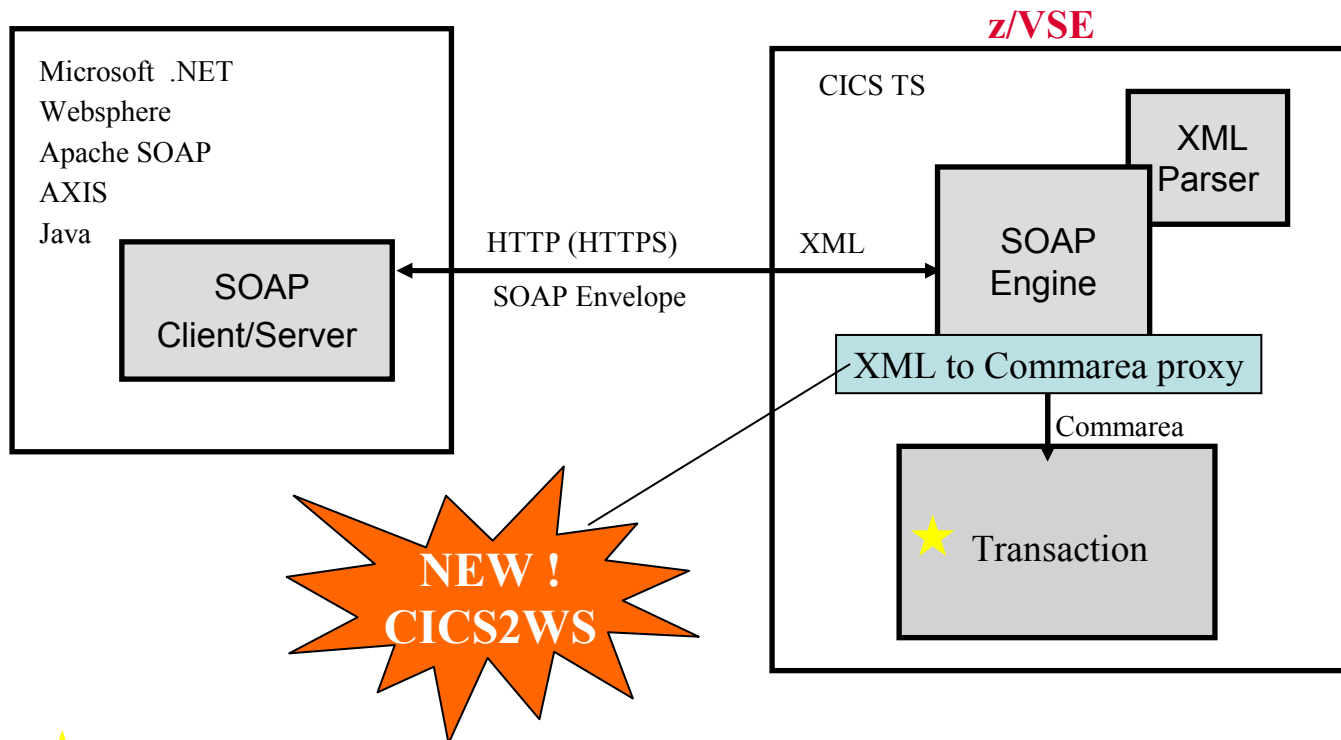
⭐ VSE Transactions as Web Service – generated with the tool CICS2WS

VSE as SOAP server

Web Services (SOAP)

SOAP - Simple Object Access Protocol
(platform independent remote procedure call)

VSE/ESA 2.7

B2B

CICS TS

XML parser

API

SOAP Client

HTTP (HTTPS)

SOAP Envelope

CWS

XML

SOAP server

XML to Commarea proxy

Commarea

user transaction

Websphere
Microsoft .NET
Apache SOAP
AXIS
Java
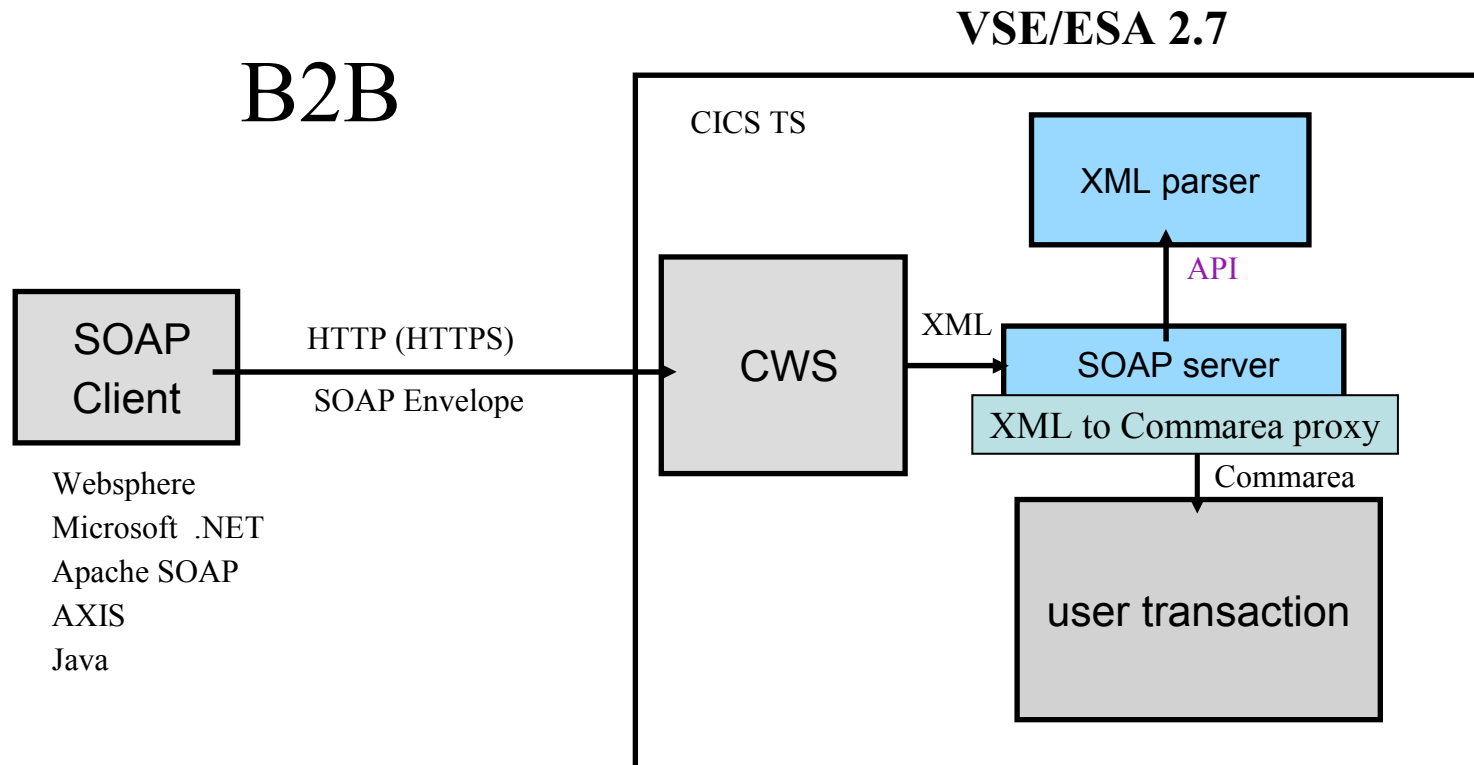
VSE as SOAP client

Web Services (SOAP)

SOAP - Simple Object Access Protocol
(platform independent remote procedure call)

VSE/ESA 2.7
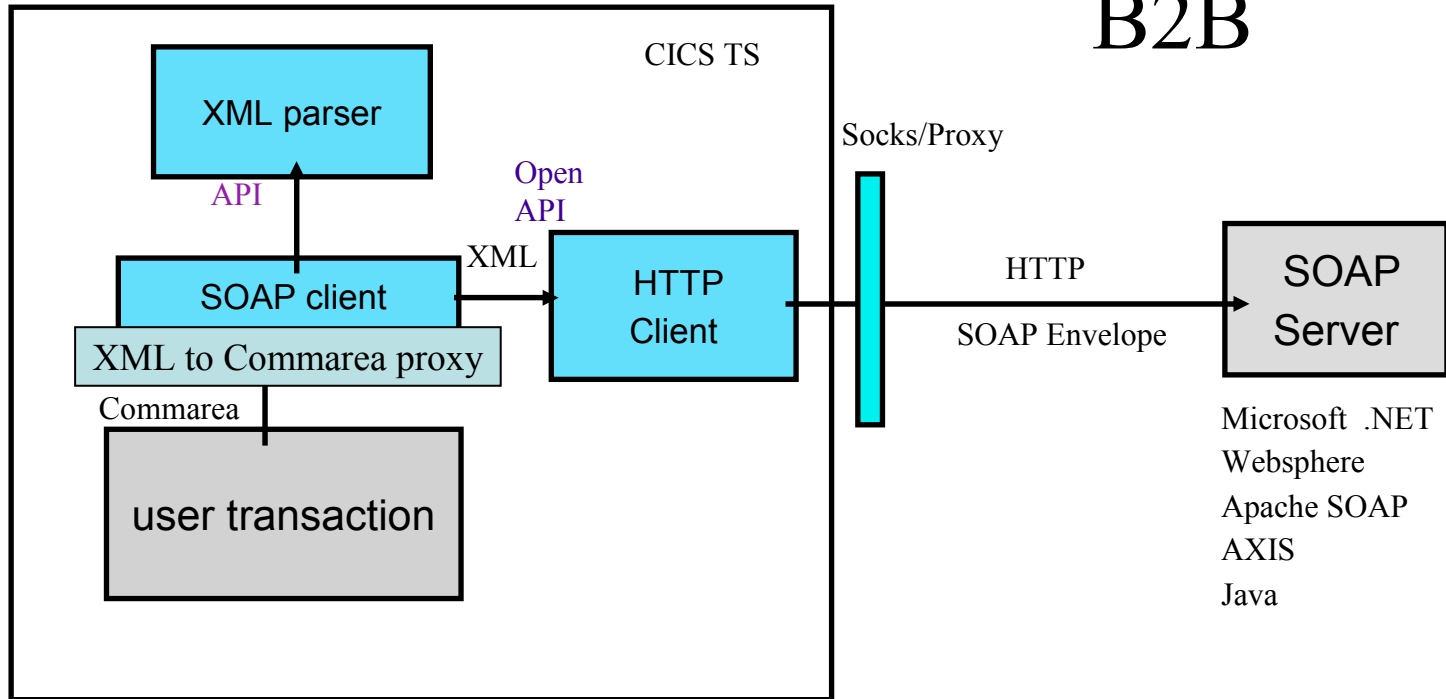
WebSphere Application Server for VSE Customers

The possibility of application integration
and
Software Oriented Architecture (SOA)

Linux
on
zSeries

WAS
WS Portal
WS MQ

IBM WebSphere Software

Connection via HiperSockets
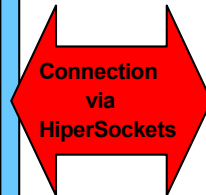
z/VSE V3.1
Production
Environment

+ CICS
+ TCP/IP
+ VSAM
+ COBOL

z/VSE V3.1
Test
Environment

+ CICS
+ VSAM
+ COBOL

z/VM V5	z/VSE Production System (z/VM guest or LPAR)	z/VSE Test System (z/VM guest or LPAR)
IFL Engine	Standard Engine	

IBM eServer z890 or System z9

Transactional processing with CICS TS

Solution	Connector to use
Webify	▪CWS – CICS Web Support ▪HATS – Host Access Transformation server ▪HOD – Host on Demand server
CICS application access from remote	▪CTG – CICS Transaction Gateway ▪HATS – Host Access Transformation Server ▪MQ Series (Client or Server)
SOA - Flexible, platform independent, CICS application integration, the most advance Application-to-application communication Method	▪Web Services – using XML data and SOAP protocol

Solutions on the new z/VSE homepage

http://www.ibm.com/servers/eserver/zseries/zvse/

Additional Information

- **z/VSE Home Page**
  http://www.ibm.com/servers/eserver/zseries/zvse/

- **Solutions for VSE**
  http://www.ibm.com/servers/eserver/zseries/zvse/solutions/

Redbooks
International Technical Support Organization

- **e-business Connectivity for VSE/ESA**   **SG24-5950**

- **e-business Solutions for VSE/ESA**   **SG24-5662**

- **Servlet and JSP Programming**   **SG24-5755**

- **Linux Web Hosting with WebSphere,**   **SG24-6007**
  DB2, and Domino

- *NEW: Websphere Handbook (Connectors to z/OS and VSE)   SG24-7042*

We appreciate your comments at zvse@de.ibm.com