VSE/ESA 2.7
Brand new – 03/03
Another Milestone for
Integration potential

WAVV 04/2003

Wilhelm Mild
IBM Boeblingen Laboratory
mildw@de.ibm.com

VSE

Agenda

- VSE/ESA - Milestones to a modern operating system
- Data integration
- Application integration
- Web Services – ultimate integration technology

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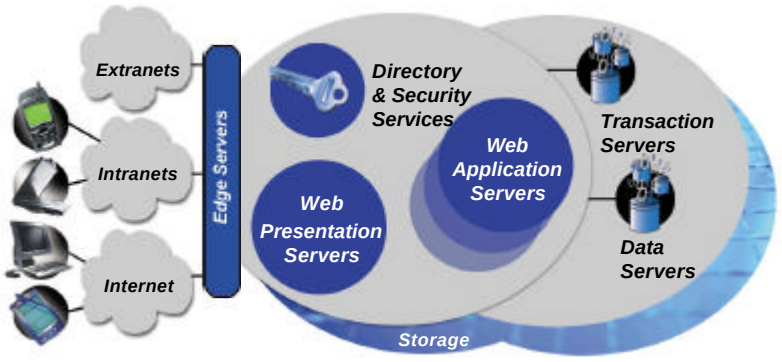
VSE

Infrastructure

End User Services | Web - Business Appl. Services | Data / Transaction Services



Responsive | Dynamic & Flexible | Reliable & Robust

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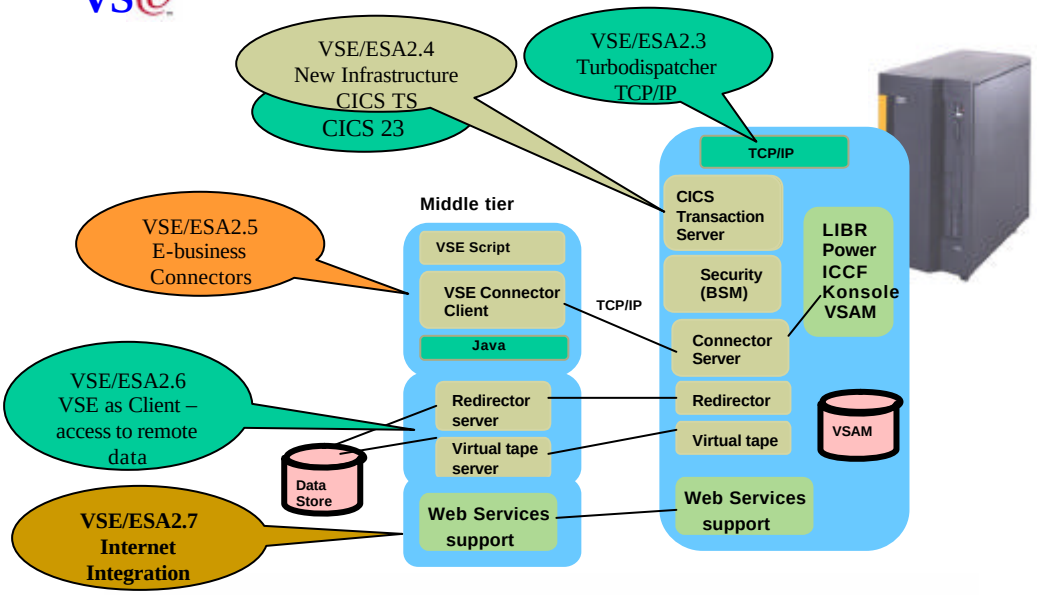
VSE

VSE/ESA - Milestones to a modern operating system



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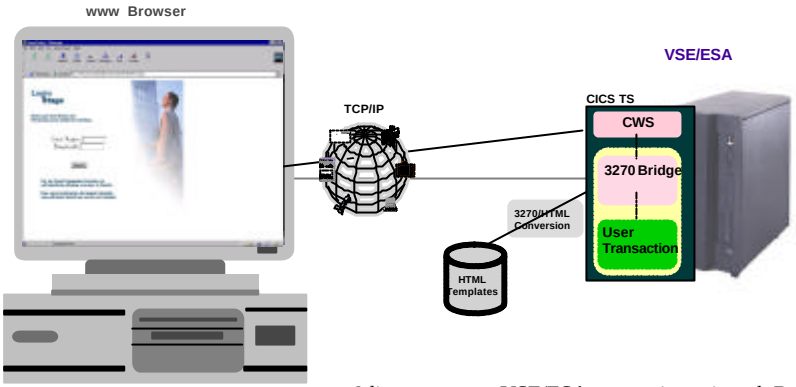
Integration of VSE/ESA transaction processes

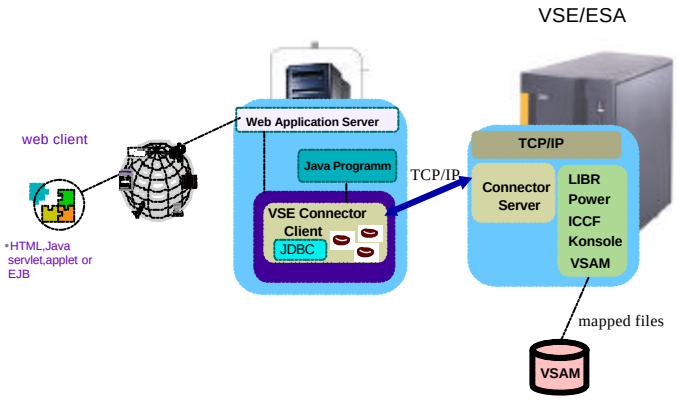
IBM CICS Web Support - VSE/ESA 2.5



- direct access to VSE/ESA transactions via web Browser
- Without the need of a web server on VSE/ESA

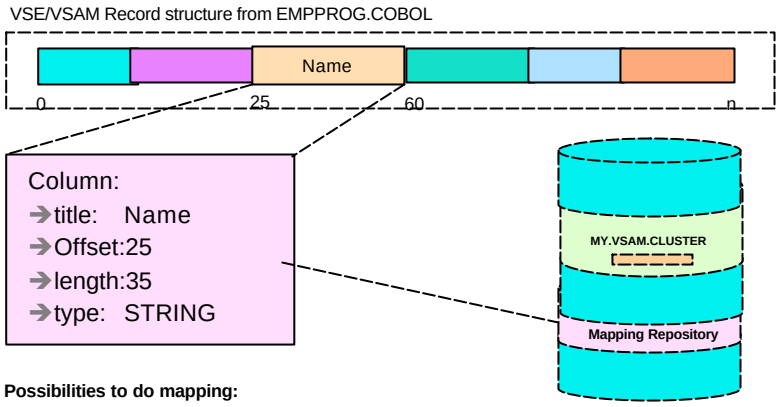
Remote VSE access: the technology

Java-Based Connector – VSE/ESA 2.5



- real time access to VSE resources from remote systems
- Lots of new possibilities for VSE/ESA

VSAM Record Mapping



Possibilities to do mapping:

- **IDCAMS Command RECMAP**
- **Java Beans (Function integrated in VSE Navigator)**
- **Maptool (Java Tool, free download from VSE/ESA home Page)**
  - **Allows the import of XML,COBOL, PL/I structures (Copy Books) and generates the MAP definitions (in VSE) or XML definitions (locally)**

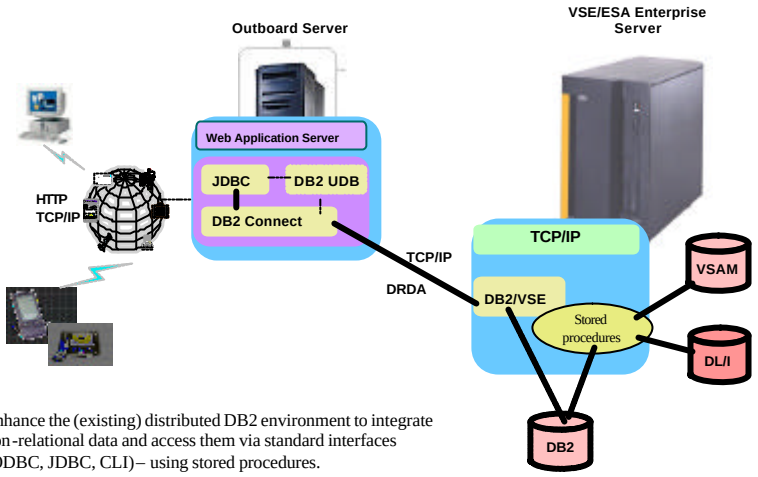
VSAM JDBC Driver

- Based on VSE Connector Client
- Translates SQL in VSE/VSAM calls
- Standard JDBC API
- Requires
  - VSAM Record Mapping

```
SELECT NAME,STREET,CITY FROM
  MY.USER.CATALOG\MY.VSAM.CLISTER\MY_MAP
  WHERE PERSNR=4711
  ORDER BY NAME
```

Standard relational interface for all VSE data

DB2-Based Connector – VSE/ESA 2.5



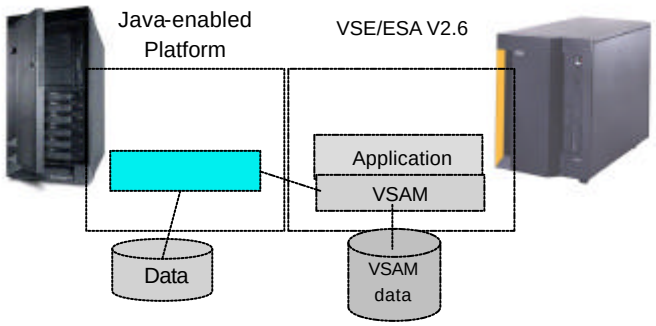
Enhance the (existing) distributed DB2 environment to integrate non-relational data and access them via standard interfaces (ODBC, JDBC, CLI)– using stored procedures.

VSE as a Client – access to remote data

VSE/VSAM Redirector – VSE/ESA 2.6

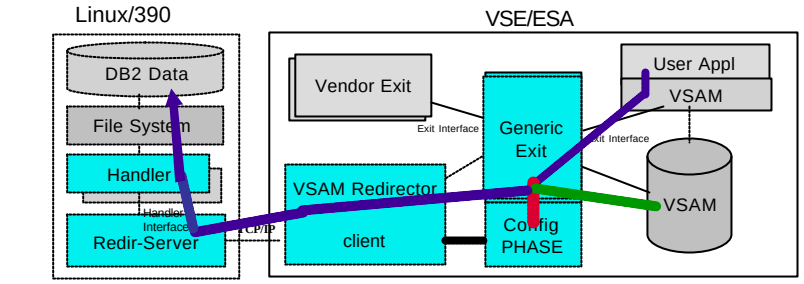
A mechanism for VSE programs working with VSAM data:

- gain transparent access to remote data
- synchronize VSAM files with remote data stores
- without any changes to VSE programs



VSE as a Client – access to remote data

VSAM Redirector –functional overview



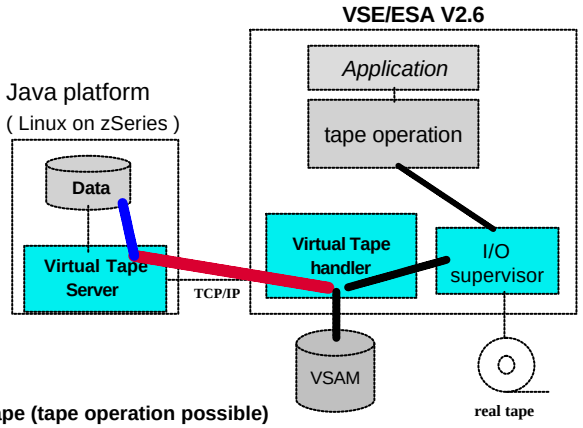
Config PHASE:

Catalog	Cluster	OWNER	IP	Port	Handler-Name	option-string
MY.USER.CAT	MY.VSAM.FILE	REDIR	19.164.155.2	4711	DB2Handler	user=xxx,pw=xxx,...
VENDOR.CAT	VEND..CLUSTER	VENDEXIT	n/a	n/a	n/a	n/a
USER.CAT	KSDS.CLUSTER	VSAM	12.100.121.1	1211	HTMLHandler	n/a

- **Customer Benefits:**
- **Redirect VSAM access to a remote system without changes to existing VSE applications**
- **Two phase commit synchronization of VSAM data with a remote Relational database**
- **transparent for batch and CICS processing**

VSE as a Client – Virtual tape on remote

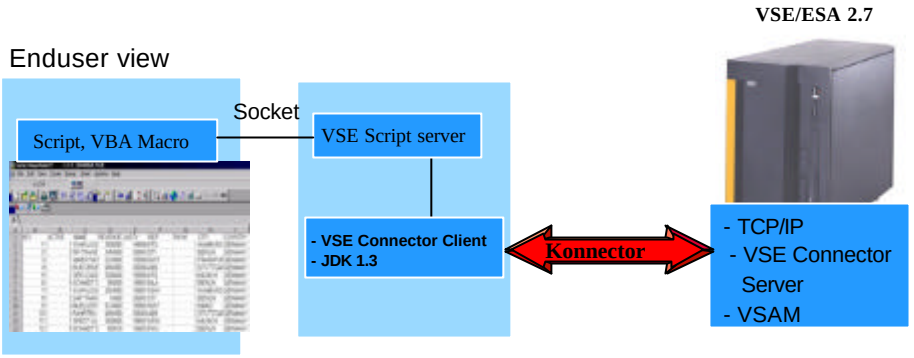
VSE/ESA Virtual Tape support – VSE/ESA 2.6



- **it simulates a real tape (tape operation possible)**
  - **in a VSAm file**
  - **in a file on a remote system**
- **transparent for applications**

Access VSE resources from Office products using scripts

VSEScript – VSE/ESA 2.7

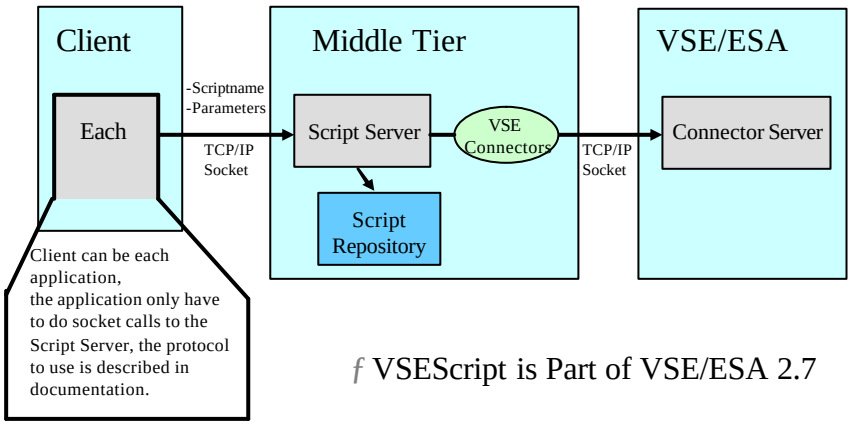


Advantages:

- Individual requests (Statistics)
  - Security: Userid/Password for VSE
- Centralization, using macros from server
- Automation (automatically create Office files/reports)
- Part of VSE/ESA 2.7

VSEScript

Overview and Control Flow



- VSEScript is Part of VSE/ESA 2.7

Overview cont.

Benefits

• Use the VSE Connectors client without programming Java, you only need to write a script using a simple script language.

• The Scripts on ScriptServer can be invoked by any client or existing application (which e.g. could use the shipped DLL), or using a socket connection.

• The VSEScript script language offers the following functionality of the VSE Connector client:
  • Full access to VSAM with data mapping (read, insert, ...)
  • Full access to POWER (job submission, ...)
  • Full access to VSE console (issue commands, ...)

VSEScript is part of VSE/ESA 2.7:

• Use WBOOK member in VSE/ESA 2.7 library:
  IESSCRPT.W in PRD1.BASE

• Download from the web (***always newest version***):
  http://www-1.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/

Sample script

```
//*****************************************************************************
//* This script executes a POWER job that is read from a file (test.job)       *
//* on the local harddisk and prints out the LIST output of the job.           *
//*****************************************************************************

string jin, jout;
int rc;
// read the local file into variable jin
readFile(".\\Scripts\\samples\\test.job", &jin, &rc);

// execute the job in jin and store the joboutput in jout
// host config (ip,user,pw) for „vsefran“ is taken from config file
executePowerJob("vsefran",&jin,&jout,&rc);

if(rc!=0) do;
   exit(2);
endif;

int y,z;
// store size of array jout into int variable y (=number of lines)
arraysize(&jout, &y);
z=0;
// print the job output line by line
while(z<y) do;
    println(jout[z]);
    z=z+1;
endwhile;
```

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VSE transactions can communicate with web services

Web Services – VSE/ESA 2.7

- Infrastructure
- HTML
- HTML vs. XML
- Web Service
- What is SOAP?
- Web Services Runtime View

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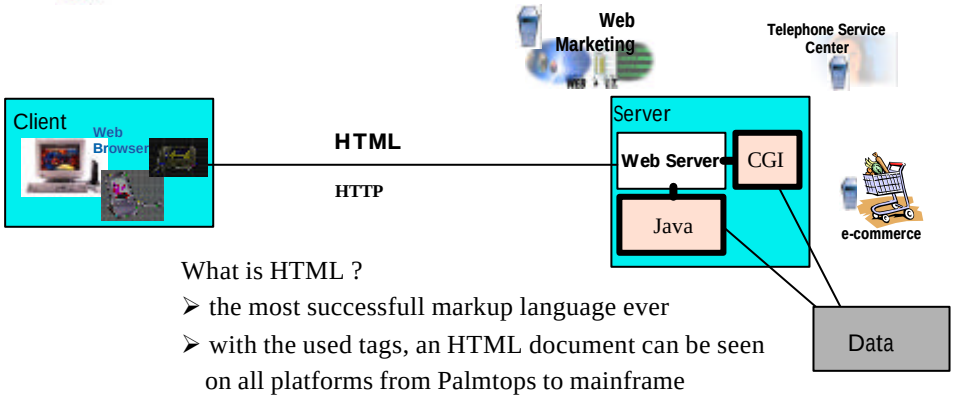
HTML - Traditional Internet Technology



What is HTML ?

- the most successfull markup language ever
- with the used tags, an HTML document can be seen on all platforms from Palmtops to mainframe
- extension interfaces like CGI (Common Gateway Interface) and Java (applets, servlets, EJB) allow access to backend systems
- **HTML was designed with humans in mind**

HTML vs. XML - extendet Markup Language

VS@

- HTML - contains tags to tell a browser how to display information
  - but not WHAT that information is
- **XML was designed with applications in mind** (distributed application)
- XML has information about structure and content of information
- XML supports attributes that hold additional information about a tag
- HTML can be written within XML

An address in HTML

```
<p>
<b>Mrs. Mary Brown</b>
<br>
1401 MainStreet
<br>
Winston Salem, WN 34123
</p>
```

An address in XML

```
<address>
   <title>Mrs.</title>
   <firstname>Mary</firstname>
   <lastname>Brown</lastname>
   <street>1401 MainStreet </street>
   <city state="WN">Winston Salem</city>
   <postalcode type=“int”>34123</postalcode>
</address>
```

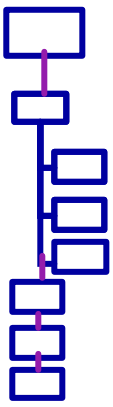

XML - extendet Markup Language

VS@

Adresses.XSL – XML Style Sheet

Contains the descriptions how the document should be displayed

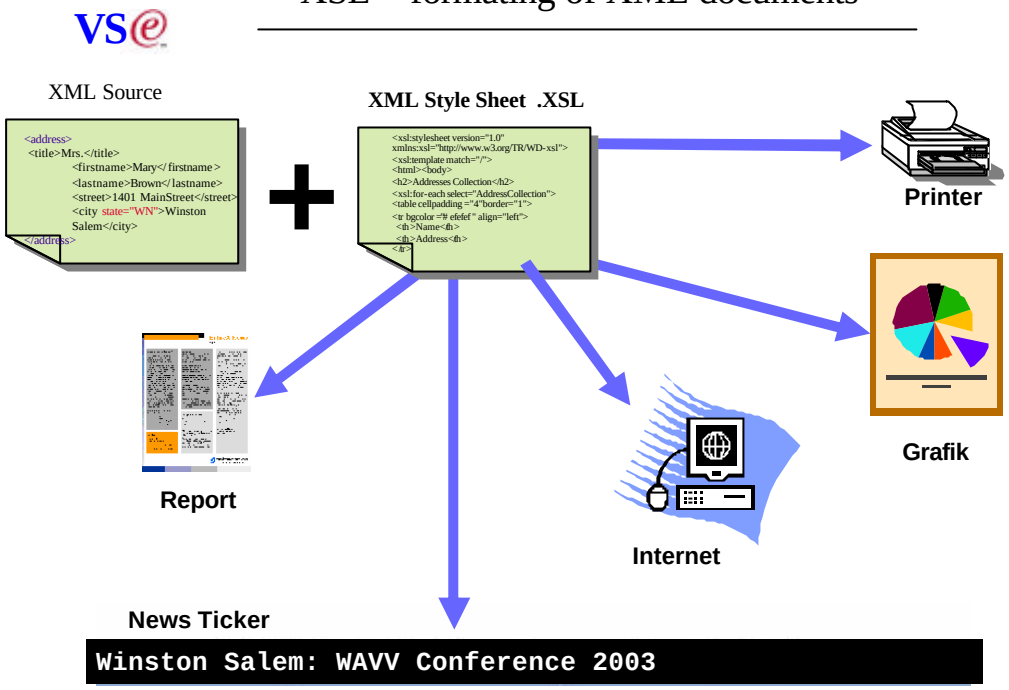
```
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/TR/WD-xsl">
<xsl:template match="/">
<html><body>
<h2>Addresses Collection</h2>
<xsl:for-each select="AddressCollection">
<table cellpadding="4" border="1">
  <tr bgcolor="#efefef" align="left">
     <th>Name</th>
     <th>Address</th>
  </tr>
 <xsl:for-each select="address">
   <tr>
    <td><b>
      <xsl:value-of select="title"/>
      <xsl:value-of select="firstname "/>
      <xsl:value-of select="lastname "/></b></td>
    <td><xsl:value-of select="street"/>,
        <xsl:value-of select="postalcode"/>
    <xsl:value-of select="city"/></td>
   </tr>
 </xsl:for-each>
 </table>
</xsl:for-each></body></html>
</xsl:template></xsl:stylesheet>
```



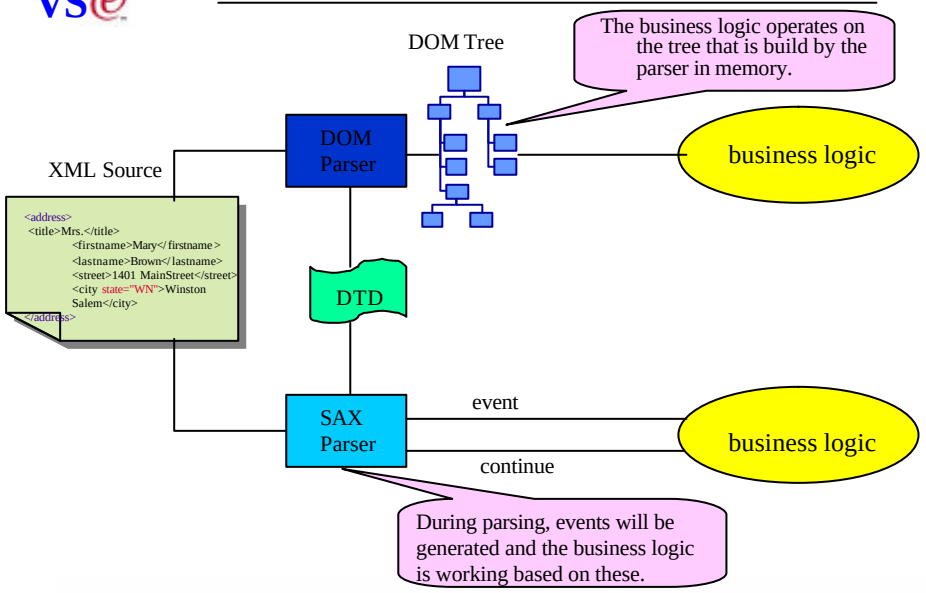
An address in XML

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE addresses SYSTEM “ addresses.dtd">
<?xml-stylesheet type='text/xsl' href='addresses.xsl'?>
<AddressCollection>
 <address>                          -tag
   <name>                           \
     <title>Mrs.</title>            |
     <first-name>                   |
      Mary                          > element
     </first-name>                  | (with 3 childs)
     <last-name>Brown</last-name>   |
   </name>                          /
   <street>
   1401 MainStreet
   </street>      v---------------------------- attribute
   <city state="WN">Winston Salem</city>
   <postal-code type=“ int”>34123</postal-code>
 </address>
</AddressCollection>
```

XSL – formating of XML documents



XML parser Technology (DOM,SAX)



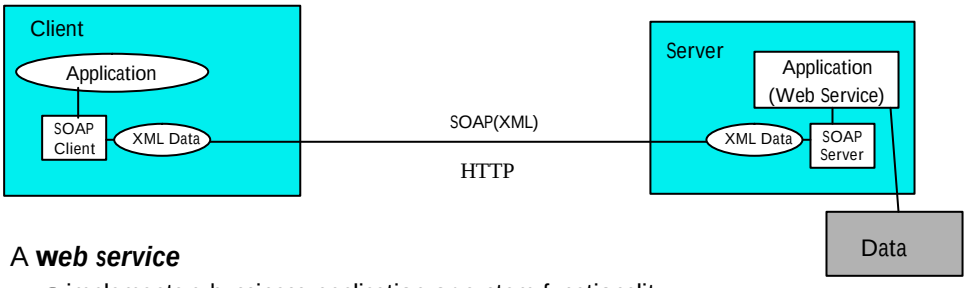
What is SOAP?

Simple Object Access Protocol

- SOAP is an XML based protocol for communication between two remote applications:
  - is based on RPC messaging
  - is language independent (de-couples interface from implementation)
  - represents remote procedure calls and responses
- A SOAP message consists of:
  - Envelope
    - –Wraps the message itself
    - –Defines rules for decoding the message
  - Message
    - –Request (method to invoke on a remote object and parameters)
    - –Response (result of running the method and exceptions)

Web Services

XML Document + SOAP Protocol = Web Services



A ***web service***

- implements a bussiness, 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 integration between companies
- uses only standard internet technologies

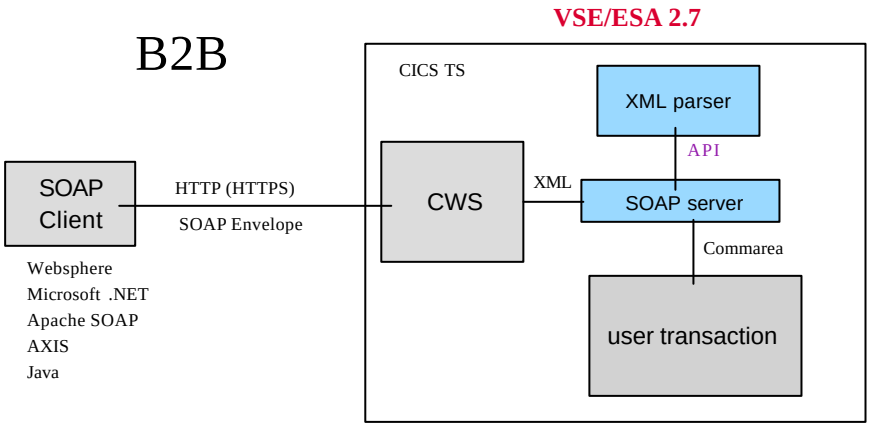
Overview

- VSE can act as
  - SOAP server
    - Driven through CICS Web Support
    - Allows to invoke a CICS program from remote
    - Transport protocol is HTTP (and HTTPS)
  - SOAP client
    - A CICS program can invoke a WebService
    - Transport protocol is HTTP
    - Connection possible through firewalls
      - HTTP Proxy
      - Socks V4/V5

VSE/ESA as SOAP server

Web Services (SOAP)

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



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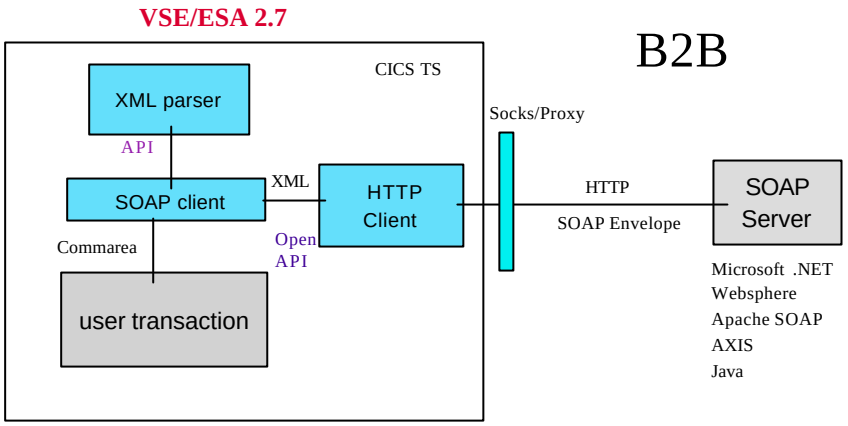
VSE/ESA 2.7 as SOAP client

Web Services (SOAP)

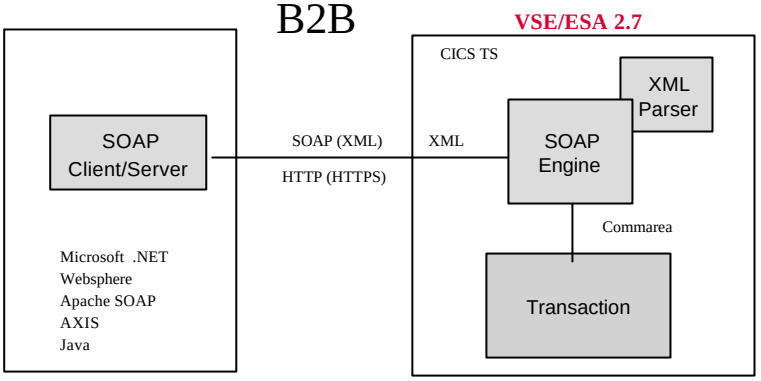
SOAP - Simple Object Access Protocol
(platform independent remote procedure call)



VSE provided HTTP client

- The VSE provided HTTP client can be used by user written programs
- EXEC CICS LINK interface (or direct call)
- Supports connections through firewalls
  - HTTP proxy
  - Socks V4 and V5
- HTTP Methods supported
  - GET
  - POST
- Data to send/receive can be passed via
  - Buffers in memory
  - Callback functions/programs

VSE/ESA 2.7 – Integration of CICS Transactions as Web Services (XML data interchange with SOAP)



★ VSE/ESA Transactions as Web Service

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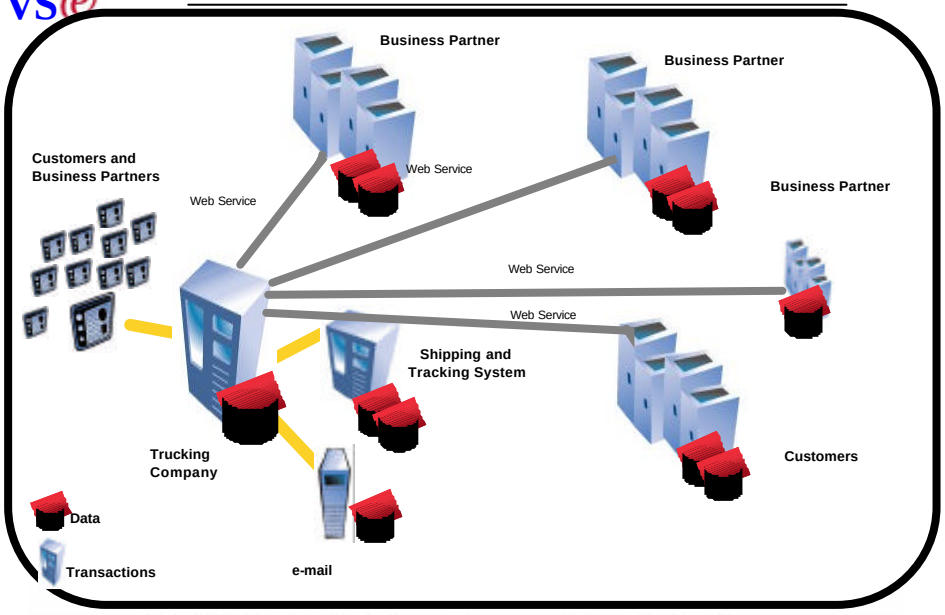
Roadmap for dynamic e-business



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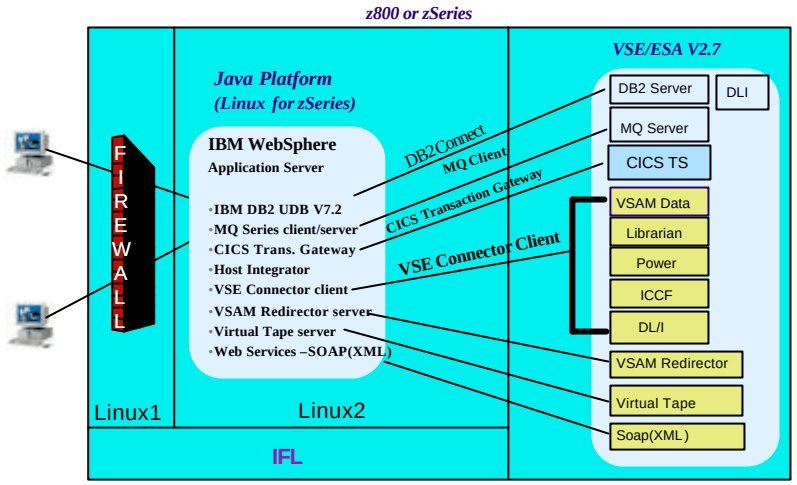
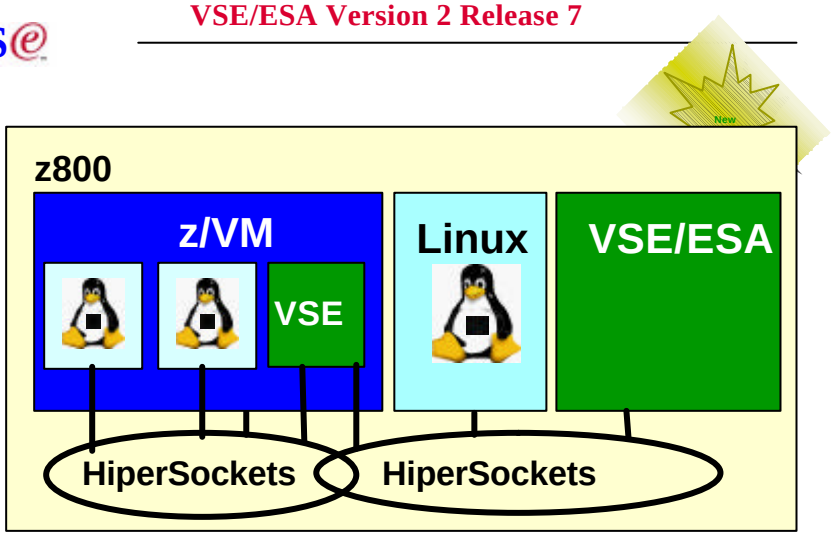
VSE/ESA Connections



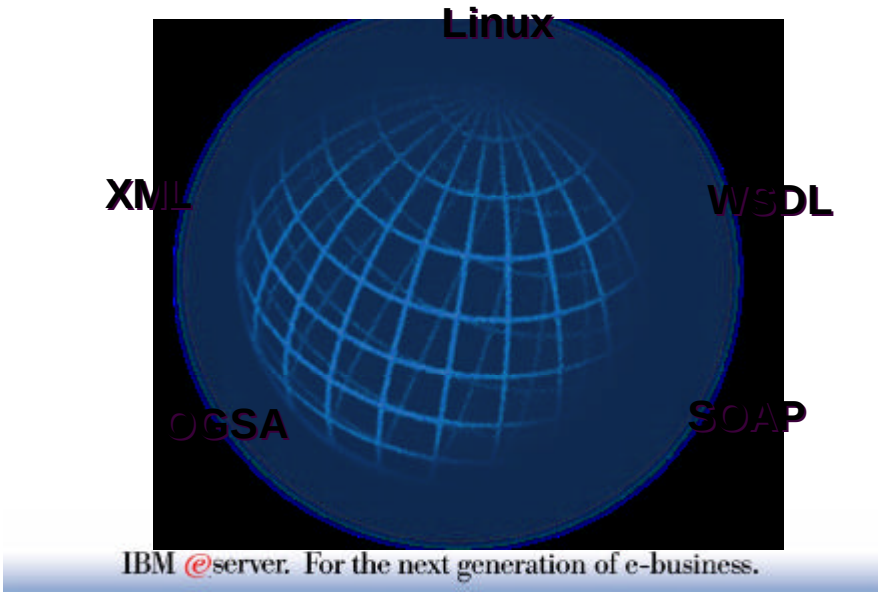
VSE/ESA Version 2 Release 7



VS@

On Demand Operating Environment

Requirement: Open Standards



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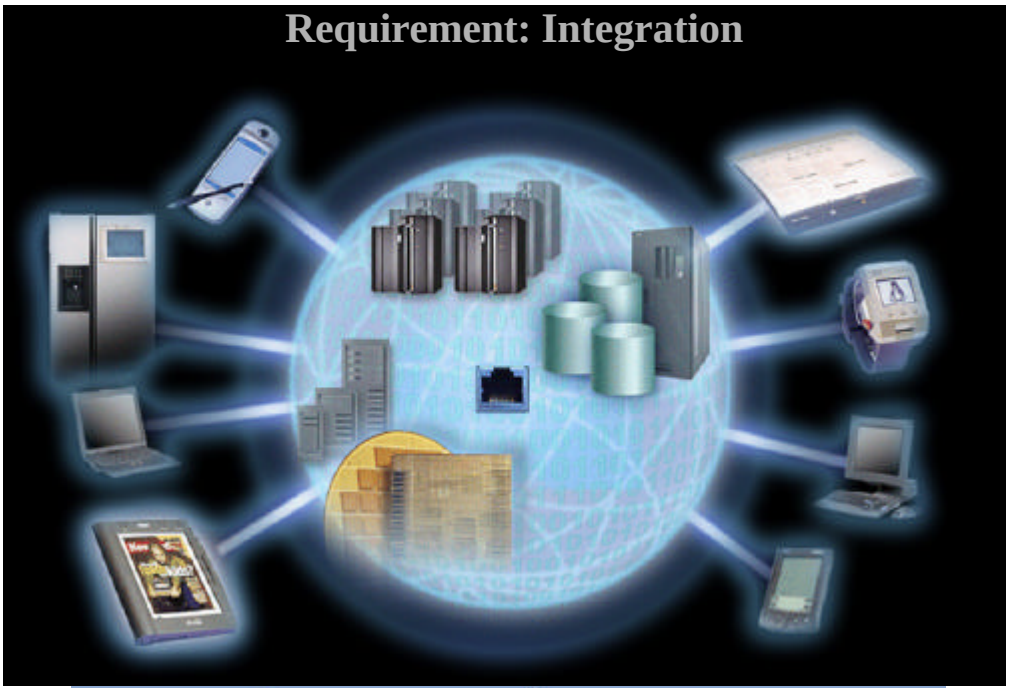
On Demand Operating Environment

Requirement: Integration



On Demand Operating Environment

VSE

Additional Information

- VSE/ESA Home Page
  http://www.ibm.com/servers/eserver/zseries/os/vse/
- Connectors for VSE/ESA
  http://www.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/
- e-business Connectors User's Guide SC33-6719
  http://www.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/

Redbooks

- 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, DB2, and Domino SG24-6007

VSEESA@de.ibm.com

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