

VSE/ESA 2.6

Connectors

z/VM, VSE, and Linux on zSeries Tech Conference
Miami Beach - Oct 7 - 10th



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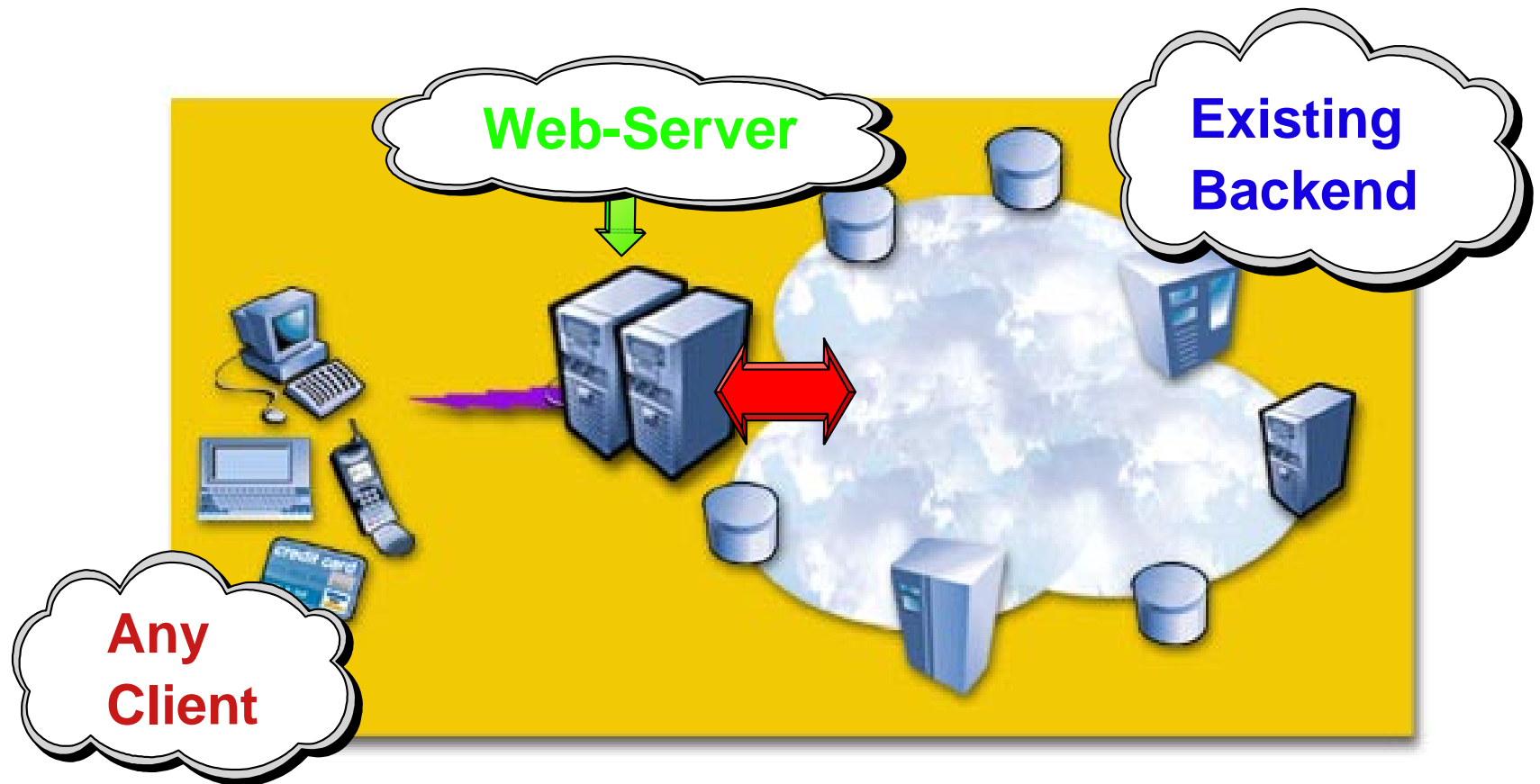
Business Objectives with VSE/ESA



- Leverage existing investments and skills
- Integration of all business systems
- Integration of business systems with the Web
- Utilize and promote open standards for portability and productivity
- Deploy applications for dynamic content access
- Secure, scalable, and manageable

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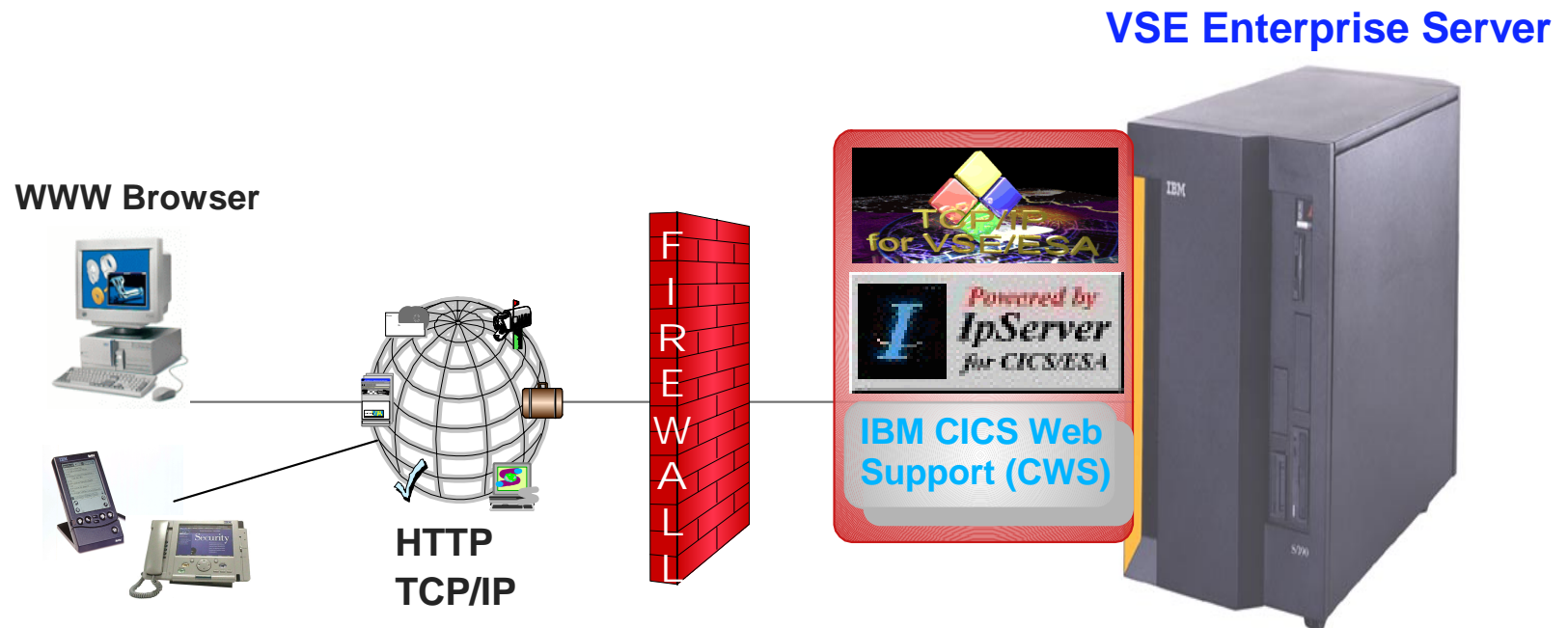
e-business Infrastructure



- Supports any client device
- Applications are built independent of deployment platforms
- Universal access to data and services across all types of networks
- Workload can be optimized across servers

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Direct Access from Internet

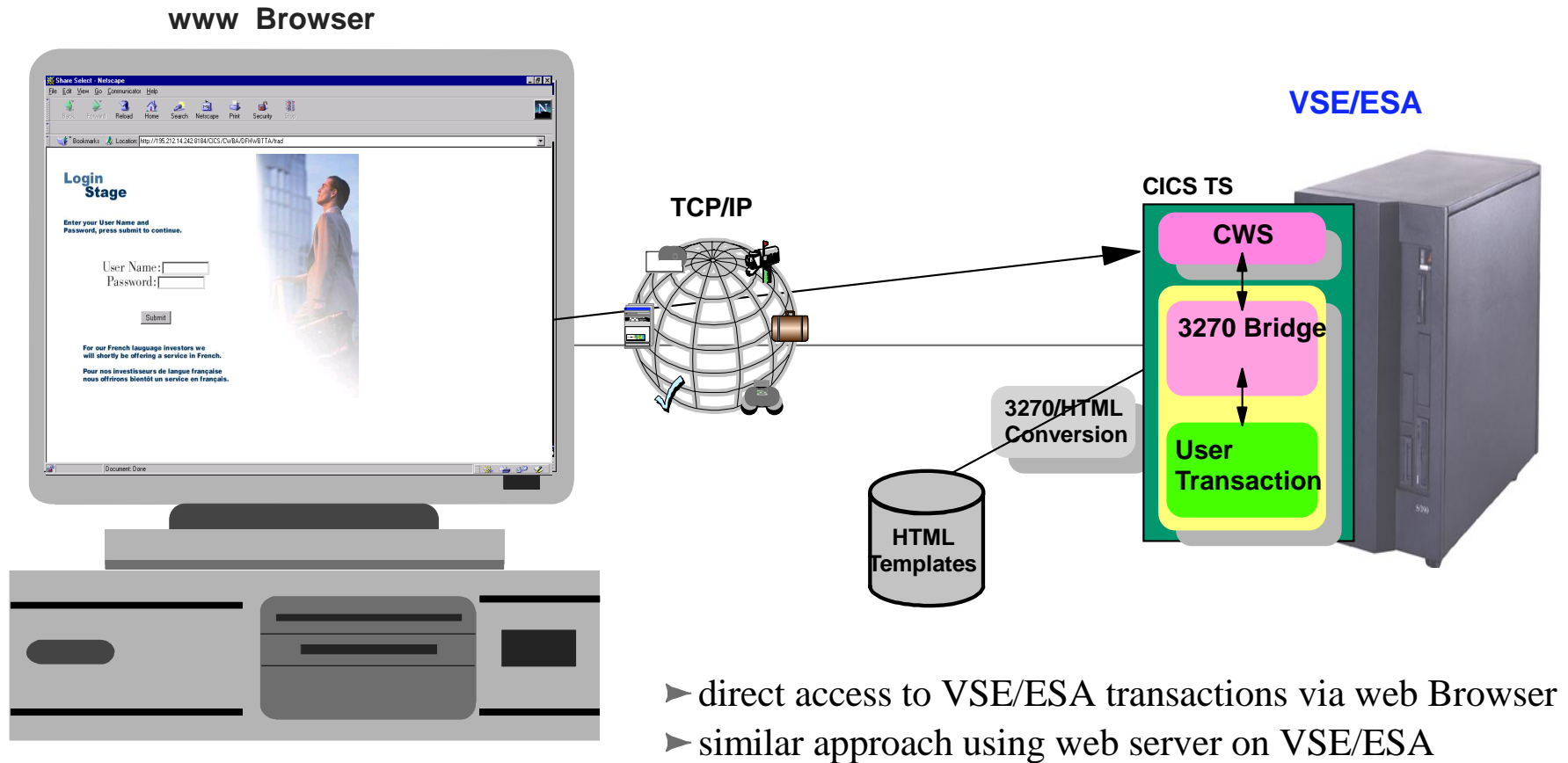


- ▶ Web Server delivered in Application Pack with IBM's TCP/IP for VSE/ESA
- ▶ IpServer from Data21, Inc.
- ▶ **IBM CICS Web Support**

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Integration of VSE/ESA transaction processes

IBM CICS Web Support



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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) with VSE/ESA 2.6
- requirements
 - ▶ VSE/ESA 2.5 and higher

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Connections to VSE/ESA via middle tier

Web Client
Linux, WinNT,
Win 95, Win 98,
Win 2000, HP, ...

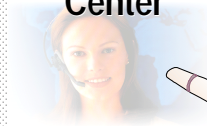


Internet



zSeries, S/390 Enterprise Server

Telephone Service Center



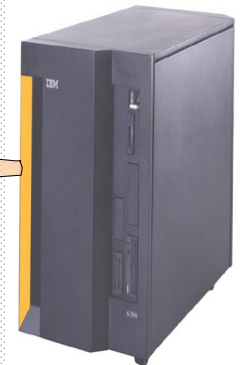
Web Application Server



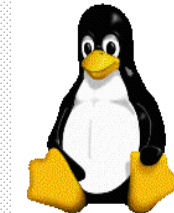
Web Marketing



VSE/ESA



Connectors



Linux for S/390

e-commerce

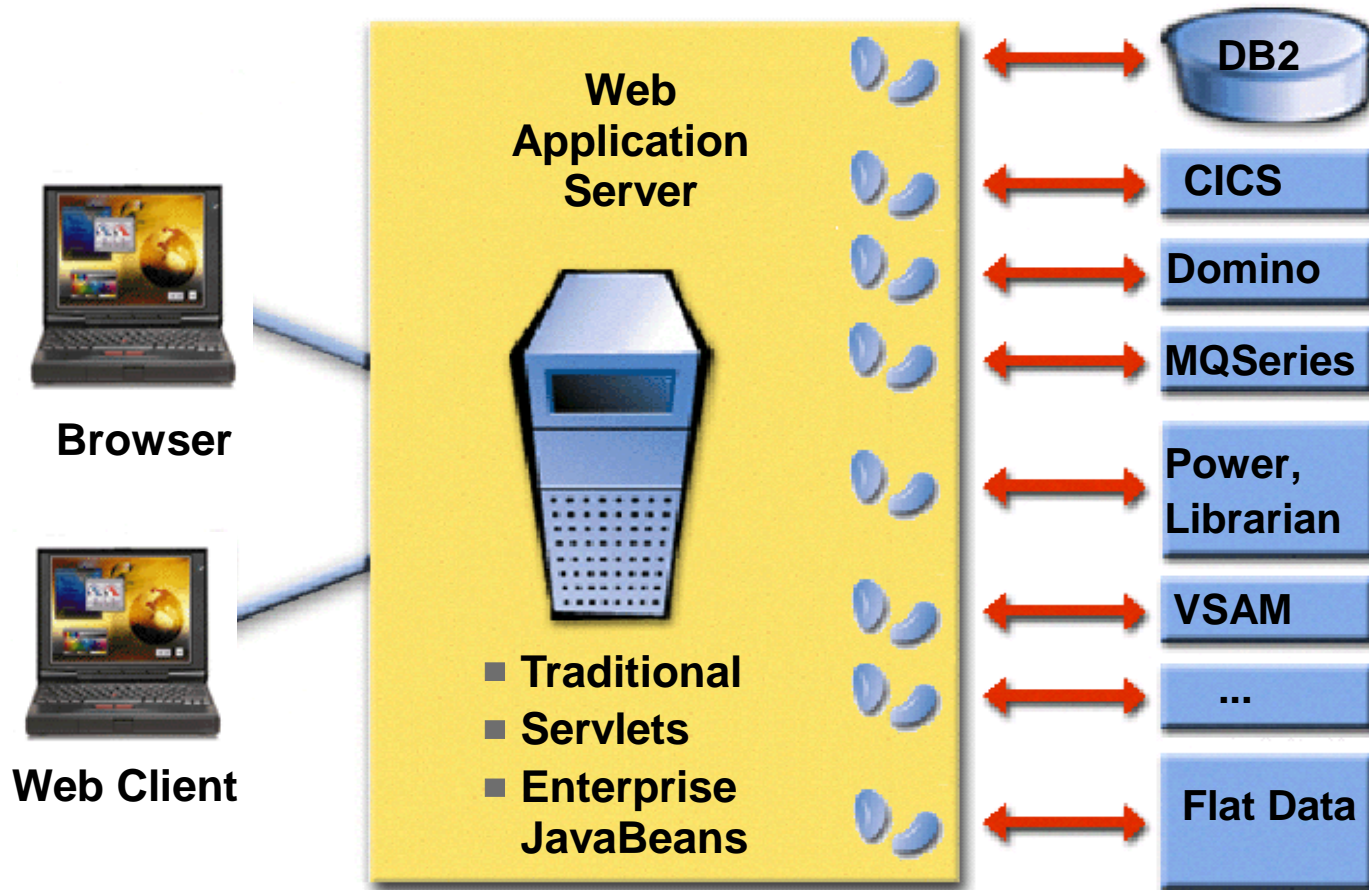


Java Programming M

- ▶ Any User Device
- ▶ Any Server Platform
- ▶ Integration with Business Systems

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Connector definition

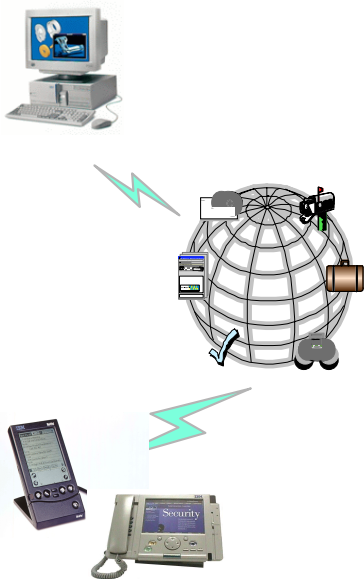


- Allows native connection to Backend systems from within a Web application
- No changes to Backend application required
- Consistent developer interface (Java)

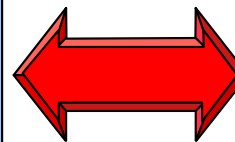
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Middleware for 3-tier logical Model

IBM
WebSphere



WebSphere AppServer
Apache or HTTP server
JDK
CICS Trans. Gateway
MQSeries Clients
Host Integrator
DB2 Connect
VSE Connector Client



VSE/ESA V2.6
TCP/IP for VSE/ESA
CICS TS for VSE/ESA
MQSeries
DB2 Server V7
VSE Connector Server

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e-business with VSE/ESA

Objectives

- ▶ integration of VSE/ESA transaction processes
- ▶ integration of VSE/ESA data
- ▶ remote system interactions (automation)
- ▶ services available via standard interfaces
- ▶ support for new technologies

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Integration of VSE/ESA transaction processes

- ▶ transaction initiation
- ▶ transaction control
- ▶ integration possibilities

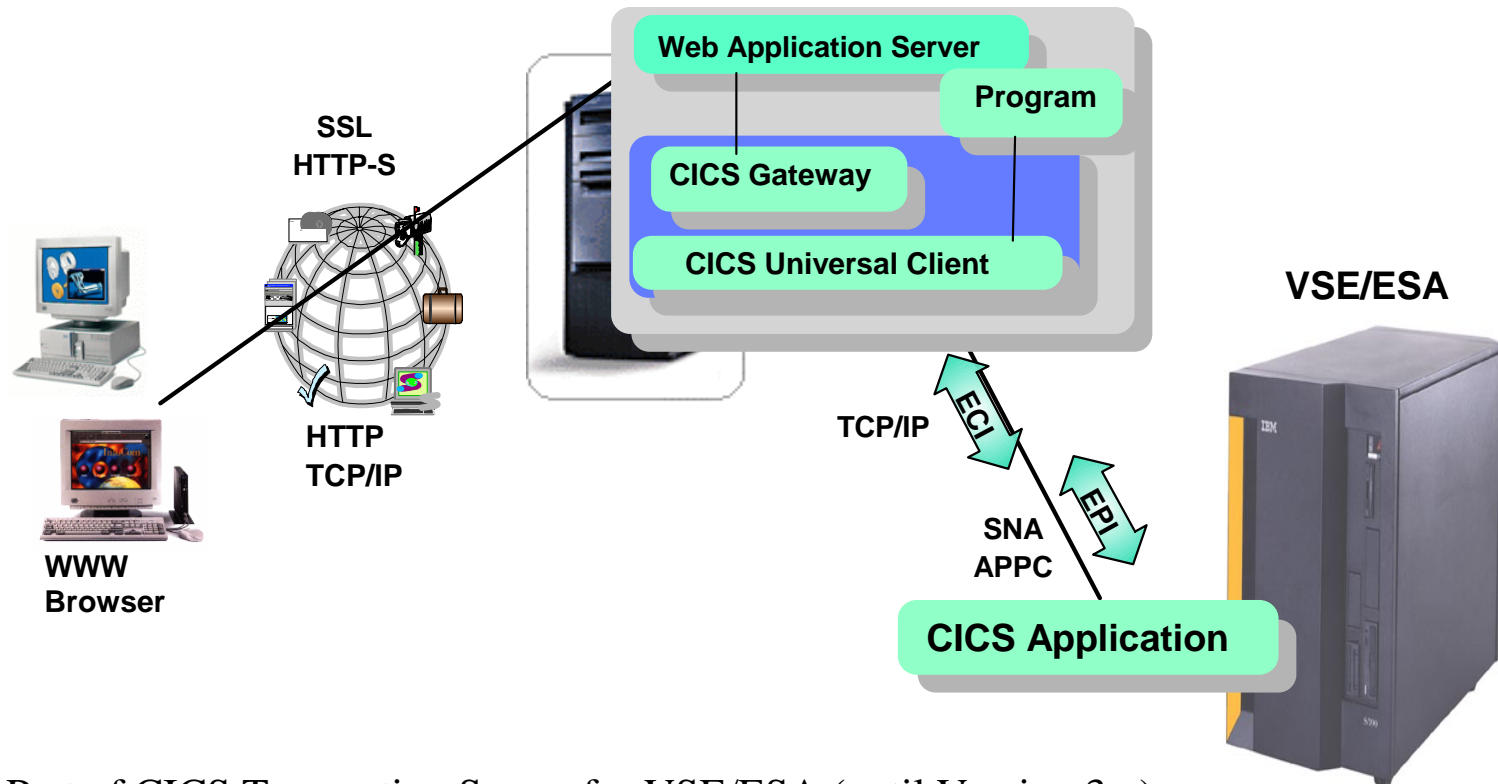
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Integration of VSE/ESA transaction processes

- CICS Web Support (CWS)
 - direct interaction with transactions
- CICS Transaction Gateway
 - transaction control on remote
- MQ Series
 - asynchronous transaction
- WebSphere Host Integration
 - host interactions via web browser

Integration of VSE/ESA transaction processes

CICS Transaction Gateway (CTG)



- ▶ Part of CICS Transaction Server for VSE/ESA (until Version 3.x)
- ▶ CTG Version 4.x has TCP/IP support for ECI in VSE/ESA 2.6
- ▶ Secured Connections (SSL) supported
- ▶ integration into WebSphere Application server

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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)
 - ▶ CTG Version 3 packaged for free with CICS TS (APPC only protocol)
 - ▶ for External CICS Interface (ECI) with TCP/IP, VSE/ESA 2.6 and CICS Transaction Gateway Version 4

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Integration of VSE/ESA transaction processes

View Records

NetObjects FUSION
Design by @nhard

Main SCM Data on

VSE/ESA

Suppliers

SUPPLIER-B

Get Details on Supplier

Bid	Cocoa	150	asap	1999.12.12
Bid Ans	Cocoa	150 450	asap	1999.12.12
Bid	Sugar	700	1/1/2000	1999.12.22
Bid Ans	Sugar	700 399	1/1/2000	1999.12.22
Order	Sugar	700	1/1/2000	1999.12.22

Get Details on Transaction

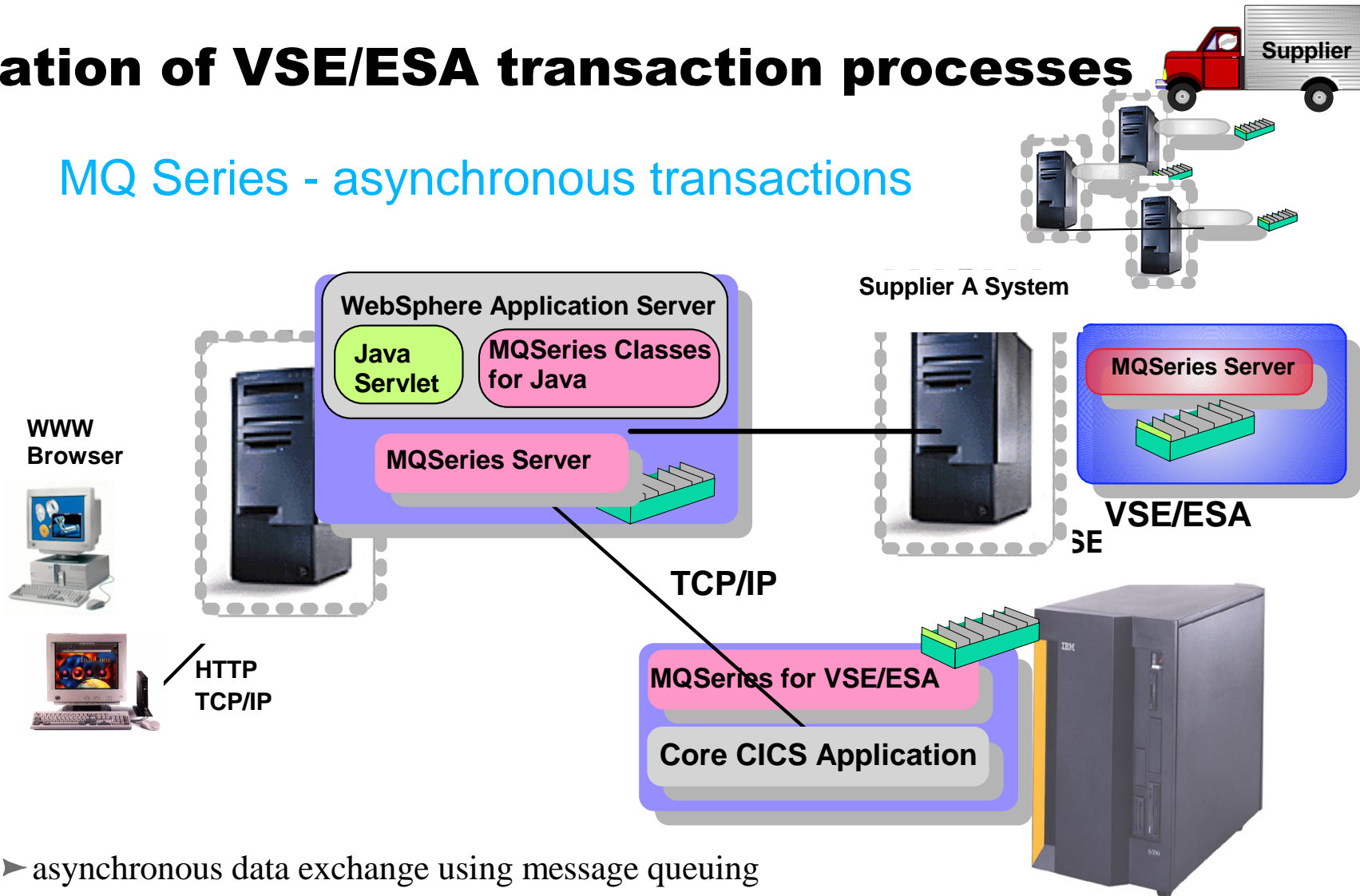
SUPPLIER-A	Bid	Sugar	700	1,
SUPPLIER-B	Bid	Sugar	700	1,
SUPPLIER-B	Bid Ans	Sugar	700 399	1,
SUPPLIER-A	Bid Ans	Sugar	700 419	1,
SUPPLIER-B	Order	Sugar	700	1,

Applet Java1 running

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Integration of VSE/ESA transaction processes

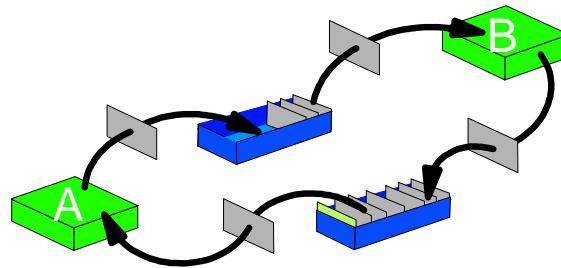
MQ Series - asynchronous transactions



- ▶ asynchronous data exchange using message queuing
- ▶ Various platforms supported
- ▶ integration into Web Application servers (WebSphere)

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MQ Series - asynchronous transactions



■ functional characteristics

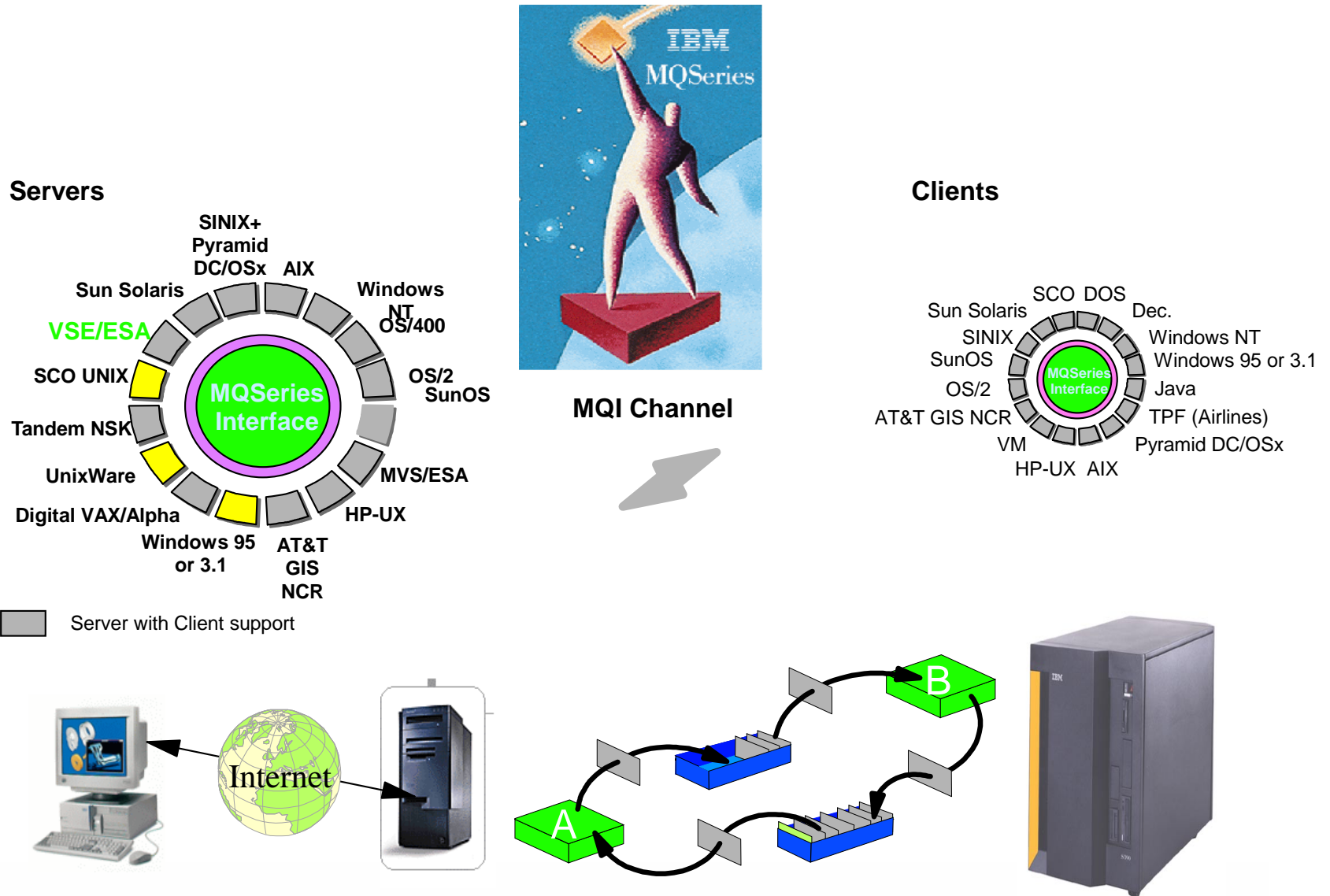
- ▶ guaranteed, secured asynchronous data access for remote systems
- ▶ same API for all supported MQ Series platforms
- ▶ transaction security, therefore appropriate for e-business processes
- ▶ integration with WebSphere Application Server
- ▶ works well for Business-to-Business (B2B) environments

■ requirements

- ▶ VSE/ESA and MQ Series for VSE
- ▶ MQ Series Client/Server on each system

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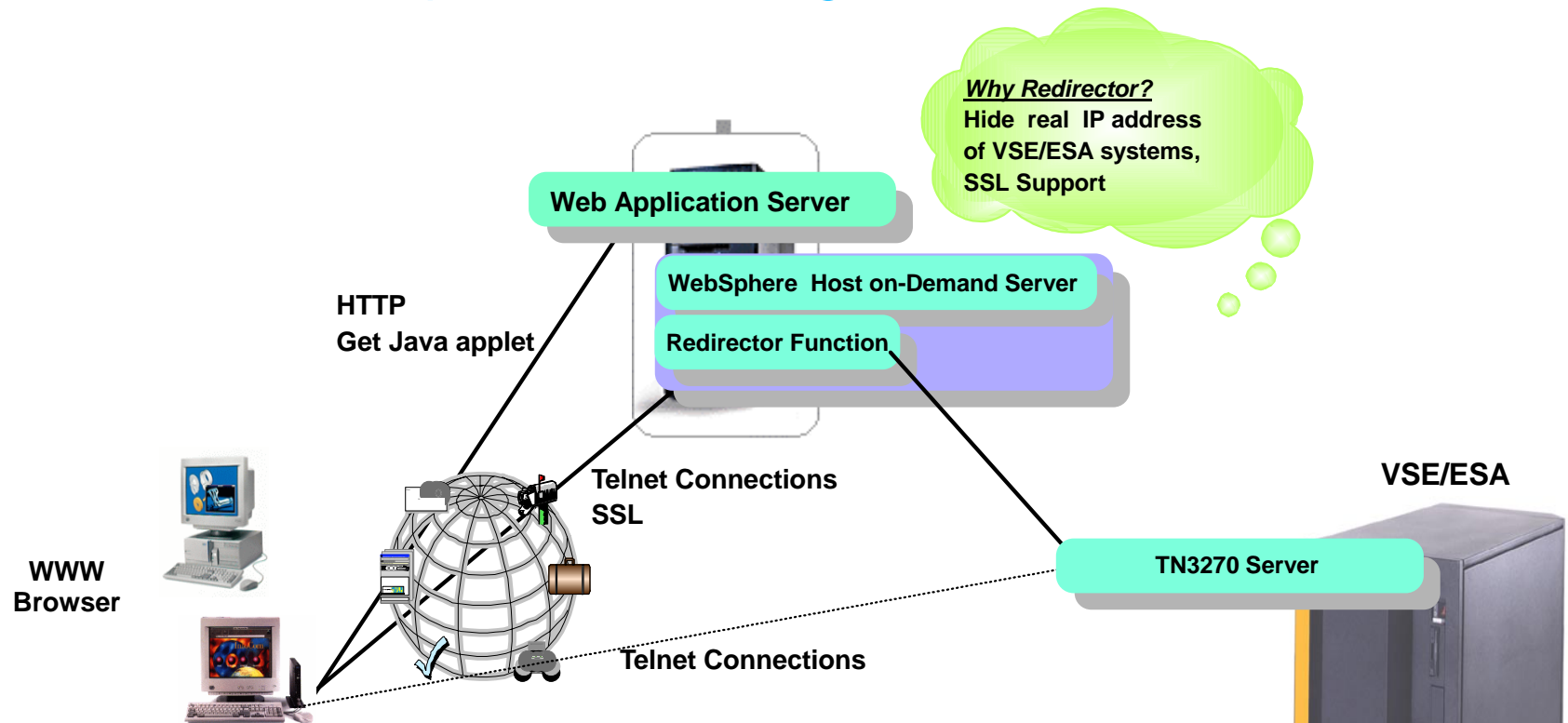
MQSeries and MQSeries Clients



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Integration of VSE/ESA transaction processes

WebSphere Host Integration



- ▶ Remote 3270 access to VSE/ESA via web Browser
- ▶ No changes in VSE/ESA required
- ▶ Java classes to make interaction more fancy or integrate interaction in web application server processes

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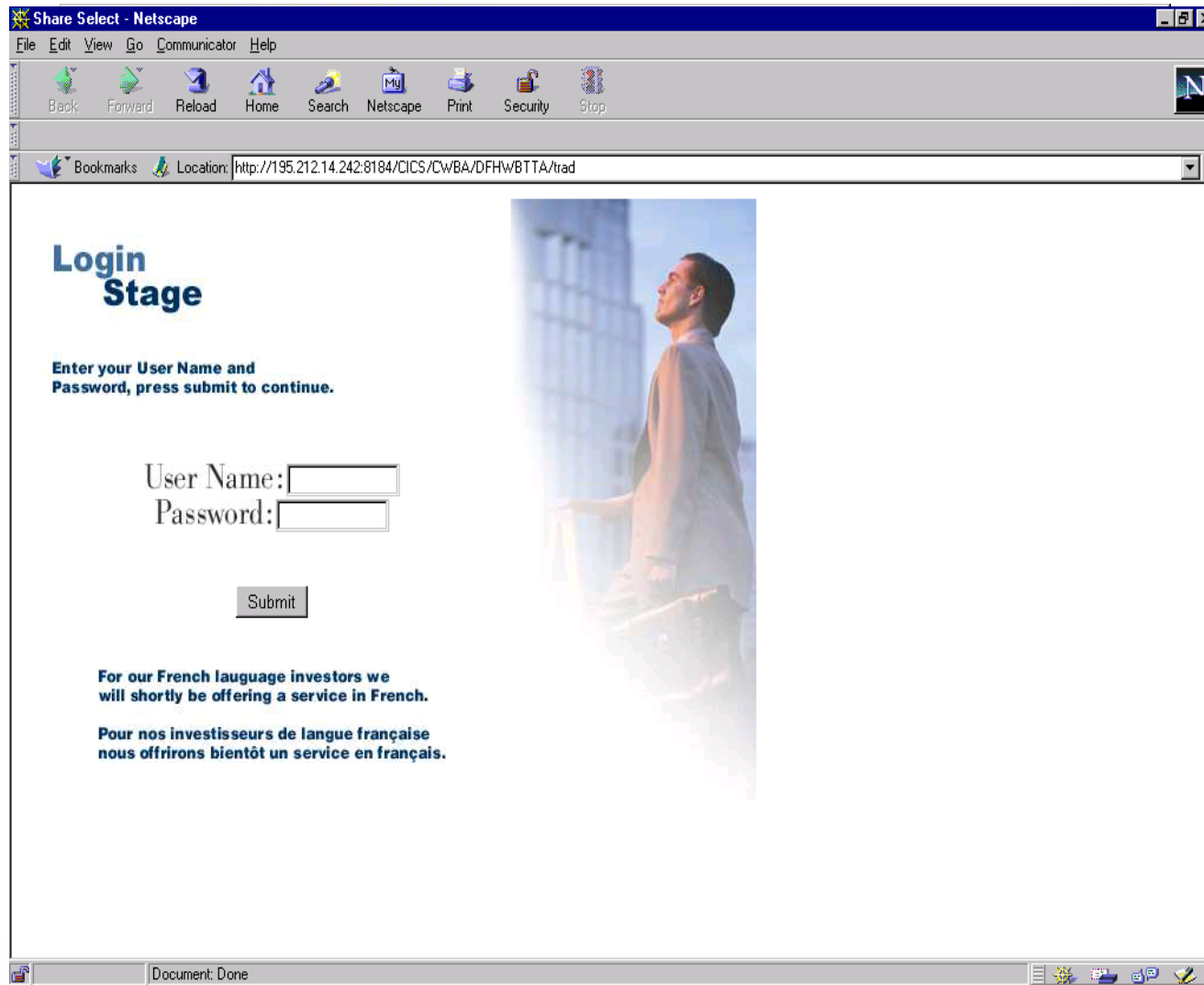
WebSphere Host Integration

- functional characteristics
 - ▶ access to VSE/ESA via browser
 - ▶ the access is similar with a local access via 3270 emulator
 - ▶ Java classes to make interaction more fancy or integrate interaction in web application server processes
 - ▶ 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

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

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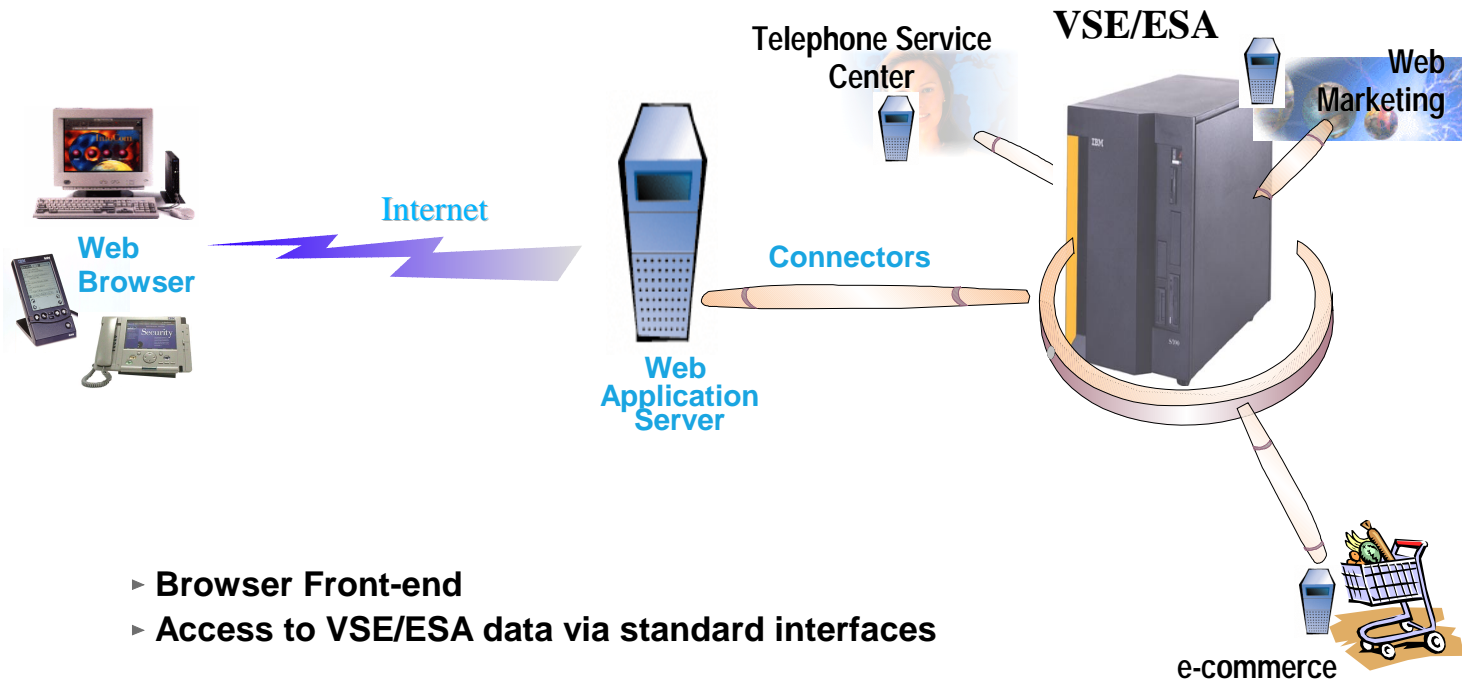
Interaction with VSE/ESA via browser



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Integration of VSE/ESA data

Real time access to VSE/ESA data



- ▶ **Browser Front-end**
- ▶ **Access to VSE/ESA data via standard interfaces**

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Real time access to VSE/ESA data

Connectors for data access in VSE/ESA

Java-Based Connectors

- ▶ access VSE/ESA data via Java Beans (ICCF, Librarian, VSAM)
- ▶ JDBC access to VSE/VSAM data

DB2 Connect

- ▶ access of DB2 VSE data from standard interfaces

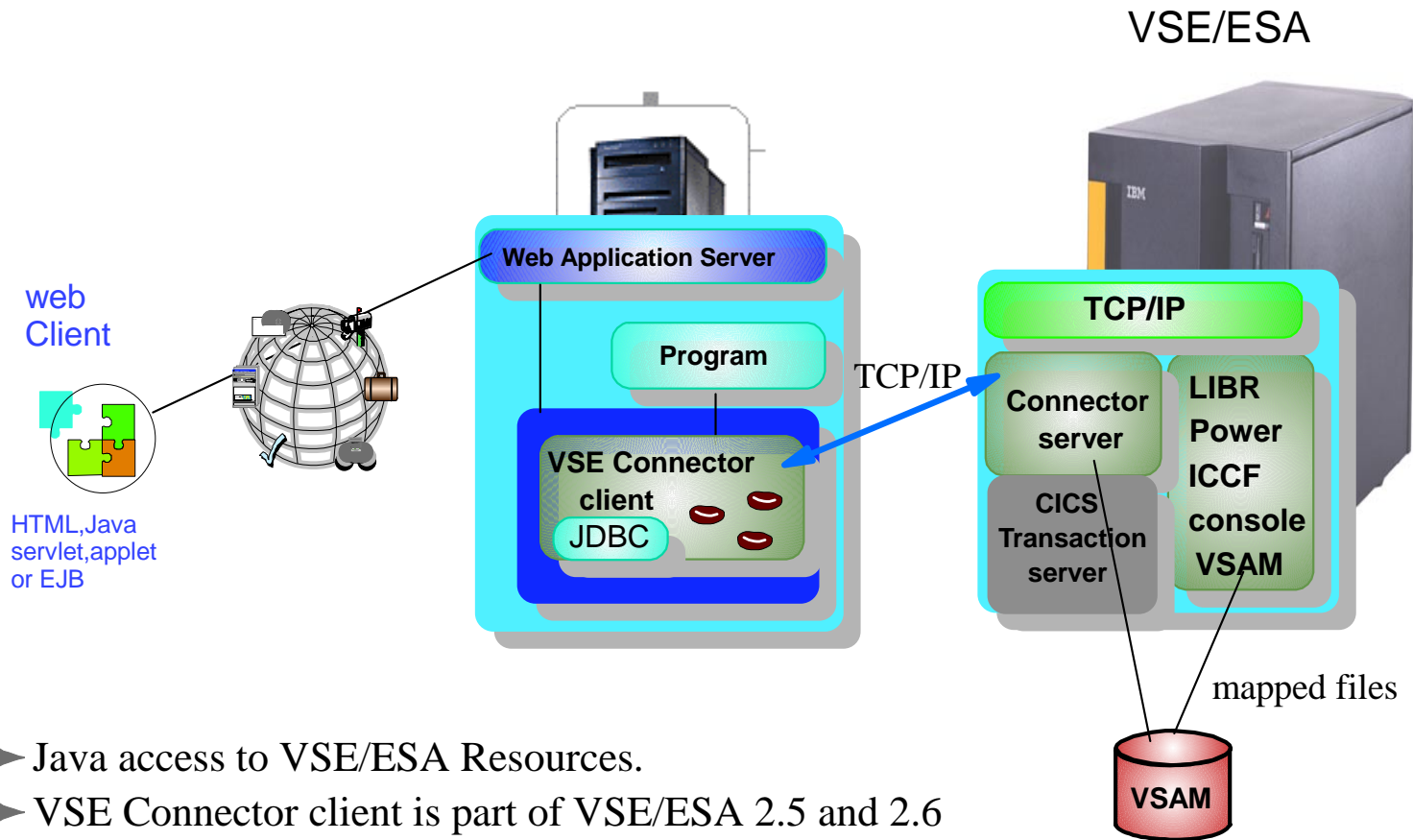
DB2-Based Connector

- ▶ standard interfaces for all kinds of VSE/ESA data (JDBC, ODBC, DB2 CLI)

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Real time access to VSE/ESA data

Java-Based Connectors



- ▶ Java access to VSE/ESA Resources.
- ▶ VSE Connector client is part of VSE/ESA 2.5 and 2.6
- ▶ To reduce network traffic - VSAM mapped file access only
- ▶ better integration with WebSphere using VSAM JDBC driver

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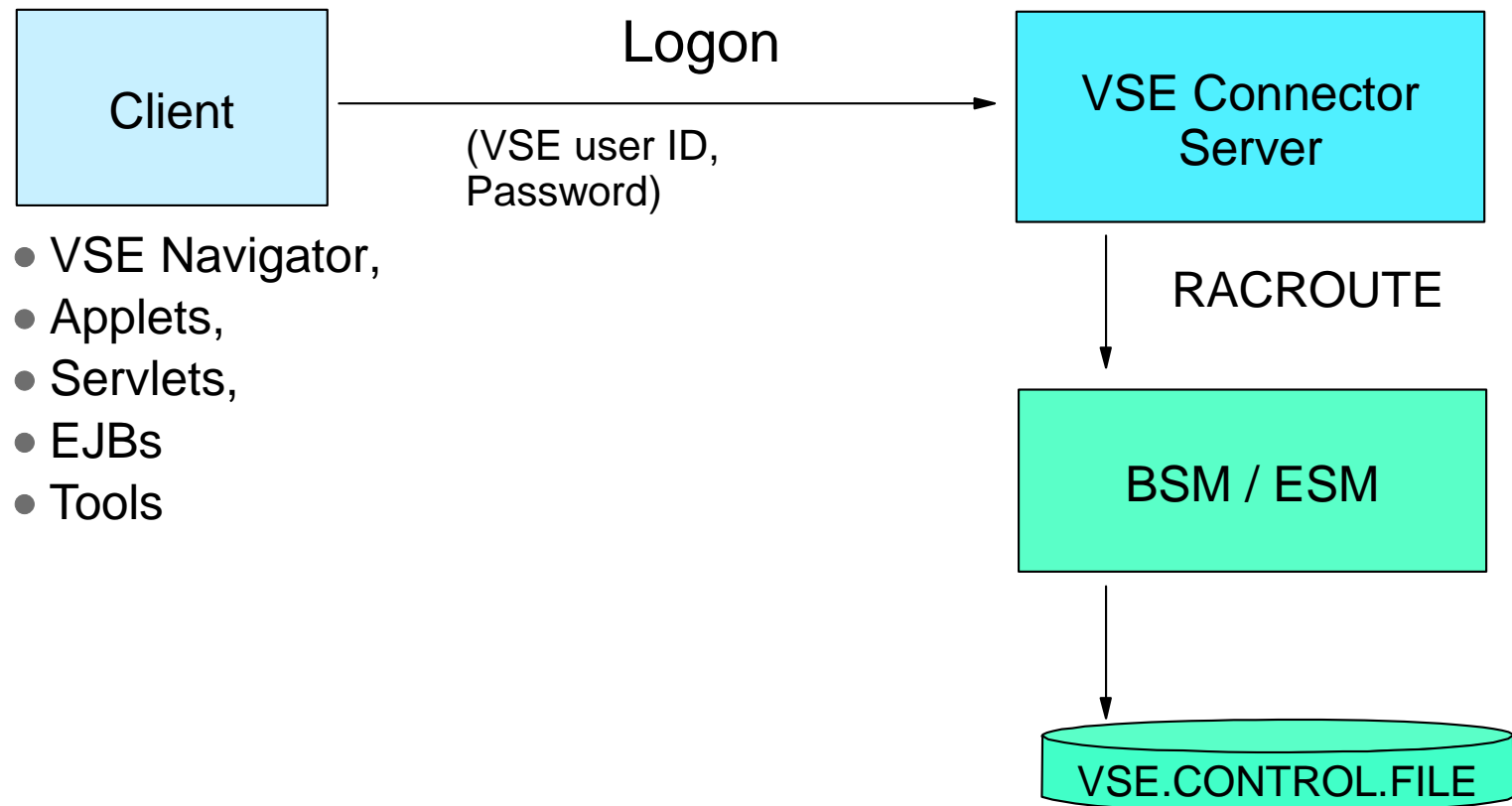
VSAM JDBC Driver

- Based on VSE Connector Client
- Maps SQL statements in VSE Connector calls
- Standard JDBC API
- Requirement:
 - ▶ VSAM Record Mapping

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

VSE Connector Server

Logon-mechanism



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VSE Connector Server Configuration

Logon Security

Include and exclude list for userids
and IP addresses:

- Server configuration member **SKVCSUSR**
- Job-Skeleton in ICCF Lib.59

```
IP = 9.164.123.456, LOGON = DENIED  
IP = 9.165.*      , LOGON = DENIED  
IP = 10.0.0.*    , LOGON = ALLOWED
```

```
USER = SYS*,      LOGON = ALLOWED  
USER = PROG,     LOGON = DENIED
```

VSE Connector Server Configuration

SSL Security

Include and exclude list for userids
and IP addresses:

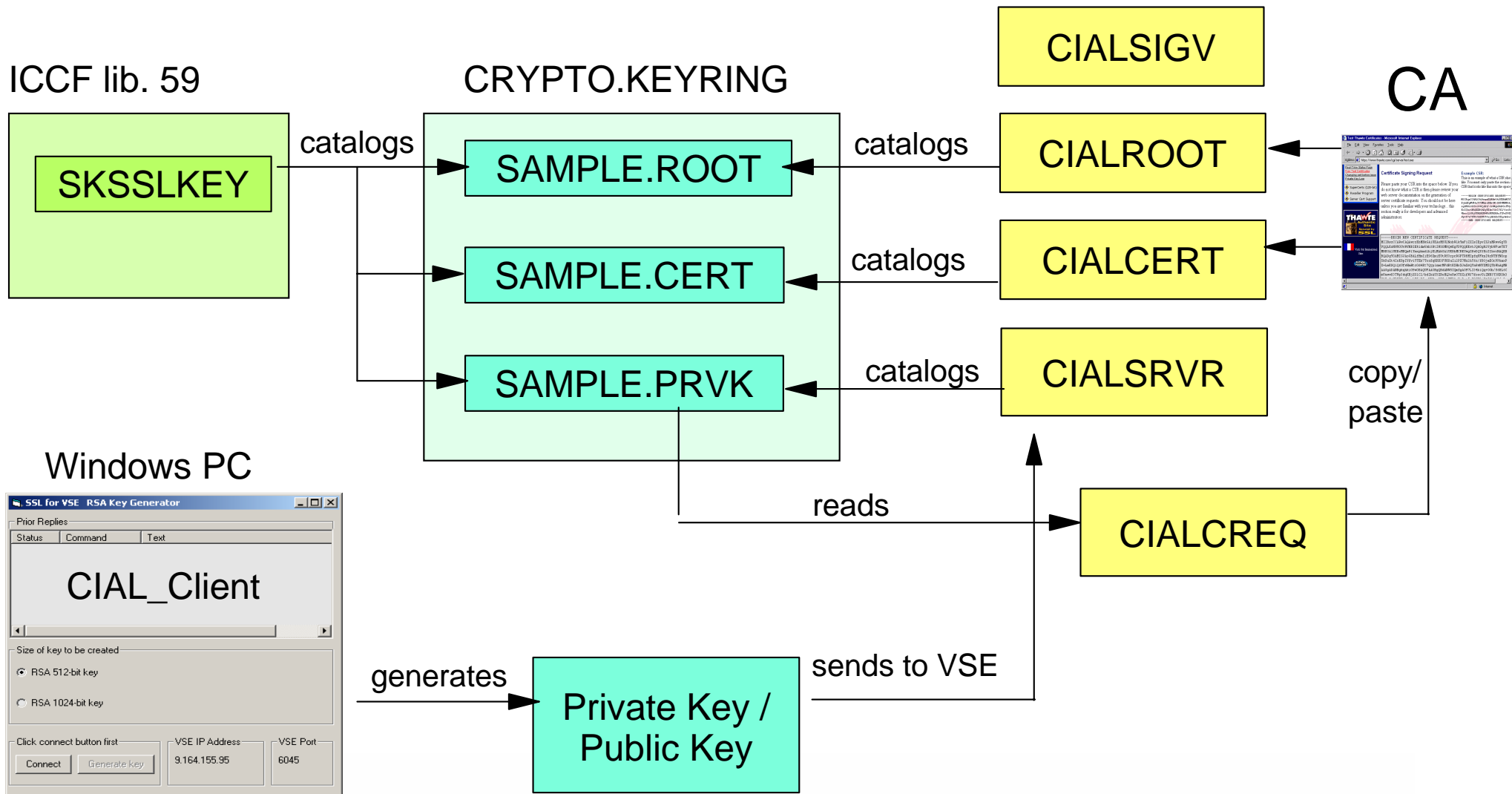
- Server configuration member **SKVCSSSL**
- Job-Skeleton in ICCF Lib.59

```
; *****  
;      SSL CONFIGURATION MEMBER FOR VSE CONNECTOR SERVER  
; *****  
  
; *****  
; SSLVERSION  SPECIFIES THE MINIMUM VERSION THAT IS TO BE USED  
;              POSSIBLE VALUES ARE:  SSL30 AND TLS31  
; *****  
SSLVERSION = SSL30  
  
; *****  
; CIPHERSUITES SPECIFIES A LIST OF CIPHER SUITES THAT ARE ALLOWED  
; *****  
CIPHERSUITES =      ; COMMA SEPARATED LIST OF NUMERIC VALUES  
01,      ; RSA512_NULL_MD5  
02,      ; RSA512_NULL_SHA  
08,      ; RSA512_DES40CBC_SHA  
09,      ; RSA1024_DES_CBC_SHA  
0A,      ; RSA1024_3DESCBC_SHA  
62,      ; RSA1024_EXPORT_DES_CBC_SHA
```

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SSL Configuration in VSE/ESA 2.6

Relationship with CSI utilities



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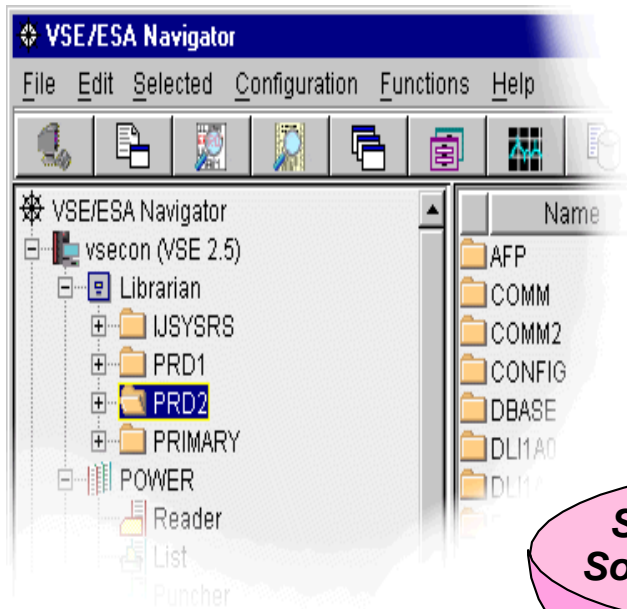
Real time access to VSE/ESA data

Benefits using Java-based connectors

- ▶ usage of modern technologies to interact with VSE/ESA resources
- ▶ integration of VSE data into front end applications (statistic, decision)
- ▶ faster actions possible using real time data
- ▶ full integration in WebSphere technologies

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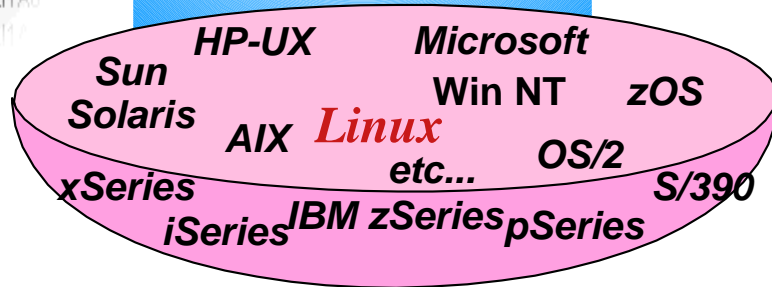
VSE Navigator (100% pure Java application)




- VSE Connector Client
- Java Runtime (JRE)
- VSE Navigator




- TCP/IP
- VSE Connector Server



- ☛ A VSE/ESA graphical user interface for VSE/ESA using the Java-Based Connectors
- ☛ remote monitoring and supervisor functions

 **More Details in session 'VSE Navigator'**

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Sample: JDataMig

From Front-end Tools to VSE/ESA data

user

views

KEY	ACTIVE	NAME	REVENUE	LASTV	REP	PAYM	CITY	COUNTRY
1	11	1 KUHN LOGI	2500000	199906	KFG		1 HAMBURG	GERMANY
2	21	2 RR TRANS	3450000	200003	STI		1 BERLIN	GERMANY
3	31	1 MAIER FAH	2234000	199908	NWT		2 FRANKFUR	GERMANY
4	41	3 RUPN DRIV	8450450	200004	ABS		2 STUTTGAR	GERMANY
5	51	1 DER LOGIS	2500000	199906	KFG		3 MUNICH	GERMANY
6	61	5 SCHMOT E	850000	199803	MLA		2 BERLIN	GERMANY
7	71	1 KUHN LOGI	2504500	199801	HDW		1 HAMBURG	GERMANY
8	81	2 DAF TRAN	10000	200001	STI		1 BERLIN	GERMANY
9	91	4 MUELLER F	5234000	199902	NWT		2 MAINZ	GERMANY
10	101	3 FAHRTEN	8450450	200004	ABS		2 STUTTGAR	GERMANY
11	111	1 SPEDT -GL	2500000	199907	HDW		3 MUNICH	GERMANY
12	121	5 SCHMOT E	850010	199803	RHU		2 BERLIN	GERMANY

Lotus 1-2-3

ACTIVE	NAME	REVENUE	PAYM	COUNTRY
01	HUMLOGESTK	2500000	01	GERMANY
02	RR TRANSPORT	3450000	01	GERMANY
01	MAIER FAHRT	2234000	02	GERMANY
03	RUPN DRIVE	8450450	02	GERMANY
01	DER LOGESTK	2500000	03	GERMANY
05	SCHMOT SPEDT	850000	02	GERMANY
01	HUMLOGESTK	2504500	01	GERMANY
02	DAF TRANSPORT	10010000	01	GERMANY
04	MUELLER FAHRT	5234000	02	GERMANY
03	FAHRTEN	8450450	02	GERMANY
01	SPEDT -GLT	2500000	03	GERMANY
05	SCHMOT SPEDT_E	8500010	02	GERMANY
01	HUMLOGESTK	2300000	02	FRANCE
02	RR TRANSPORT	3450000	01	FRANCE
01	MAIER FAHRT	2234000	02	FRANCE
03	RUPN DRIVE	8450450	02	FRANCE
01	DER LOGESTK	2502300	02	FRANCE
05	SCHMOT SPEDT	8500050	02	FRANCE
01	HUMLOGESTK	1504500	01	FRANCE
02	DAF TRANSPORT	10010000	02	FRANCE
05	MUELLER FAHRT	5234000	02	FRANCE

DB2 & QMF

- DB2 UDB V7
- VSE Connector Client
- JDK 1.1.8
- JDataMig



- VSAM
- TCP/IP
- VSE Connector Server

interact with VSE Connectors via Visual Basic (VBA), or Script language.

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Java-based Console support for VSE/ESA

JConVSE - mild@ffdemo

BG F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB

```

R1 0045 IESC1024I CLIENT DISCONNECTED FROM IP: 9.164.185.90
R1 0045 IESC1024I CLIENT DISCONNECTED FROM IP: 9.164.185.90
AR 0015 SPACE AREA          V-SIZE  GETVIS  V-ADDR  UNUSED  NAME
AR 0015  S  SUP              664K    0          0      $$A$SUPX
AR 0015  S  SVA-24          1684K   1748K    A6000      OK
AR 0015  0  BG V           1280K   4864K   400000    45056K
AR 0015  1  F1 V           1024K   1024K   400000      OK POWSTART
AR 0015  2  F2 V           2048K  49152K   400000      OK CICSICCF
AR 0015  3  F3 V            600K  14760K   400000      OK VTAMSTRT
AR 0015  4  F4 V           2048K  18432K   400000      OK DB2START
AR 0015  5  F5 V            768K    256K   400000      OK
AR 0015  6  F6 V            256K    256K   400000      OK
AR 0015  7  F7 V           1024K  19456K   400000      OK TCPSTART
AR 0015  8  F8 V           2048K  49152K   400000      OK
AR 0015  9  F9 V            256K    256K   400000
AR 0015  A  FA V            256K    256K   400000
AR 0015  B  FB V            256K    256K   400000
AR 0015  S  SVA-31          7156K   7180K  3600000
AR 0015  DYN-PA          16384K
AR 0015  DSPACE          5472K
AR 0015  SYSTEM          1088K
AR 0015  AVAIL           58976K
AR 0015  TOTAL          270336K  <---- !
AR 0015 1140I  READY
  
```

State
 SaveLog
 ReDisp
 ReDisp End
 SubJob
 PutRdr
 ToDo
 Help
 Exit

Working, please wait...

IBM

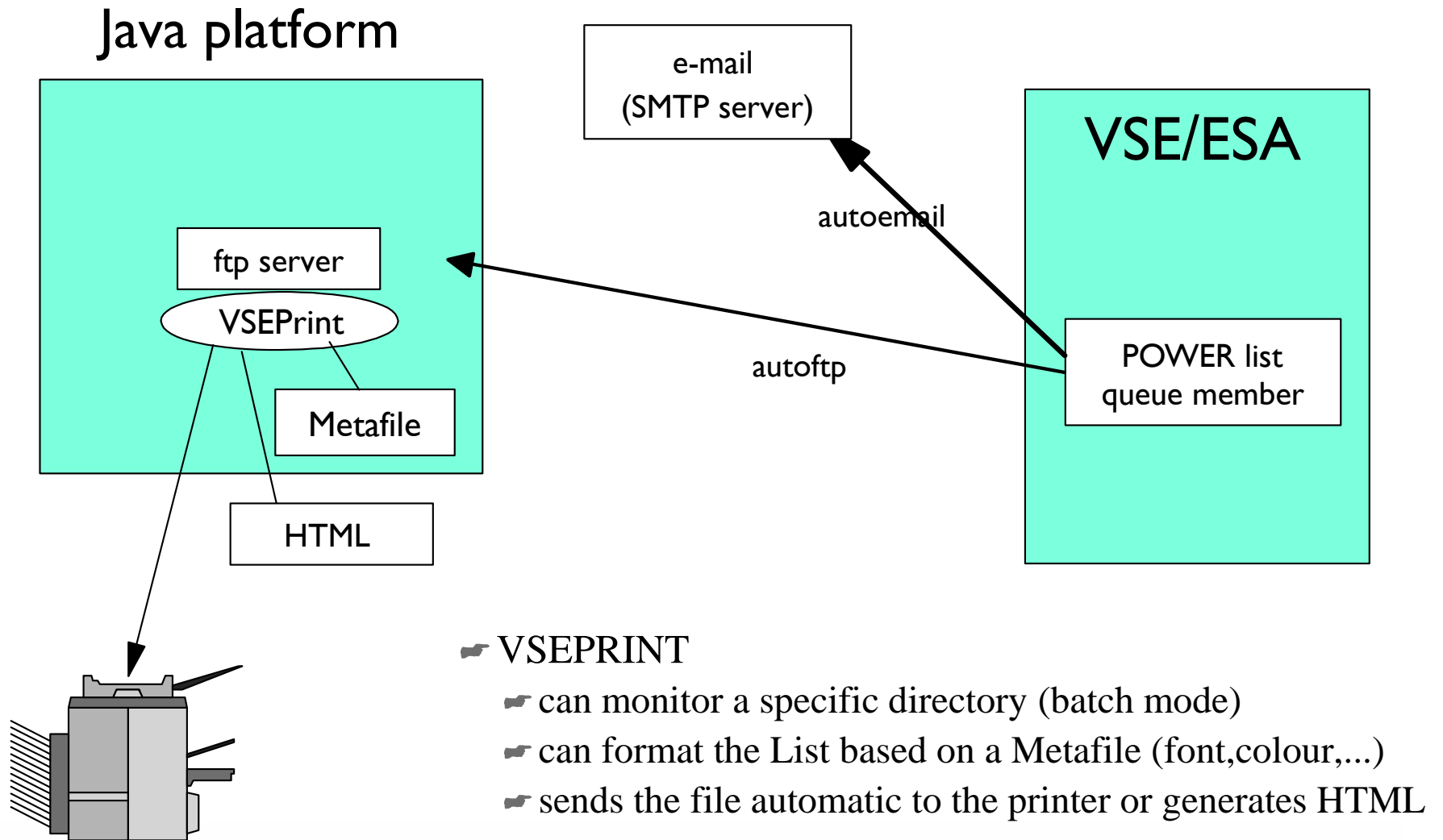
VSE/ESA JAVA

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

ready... 08:28:44

VSE Print - Tool

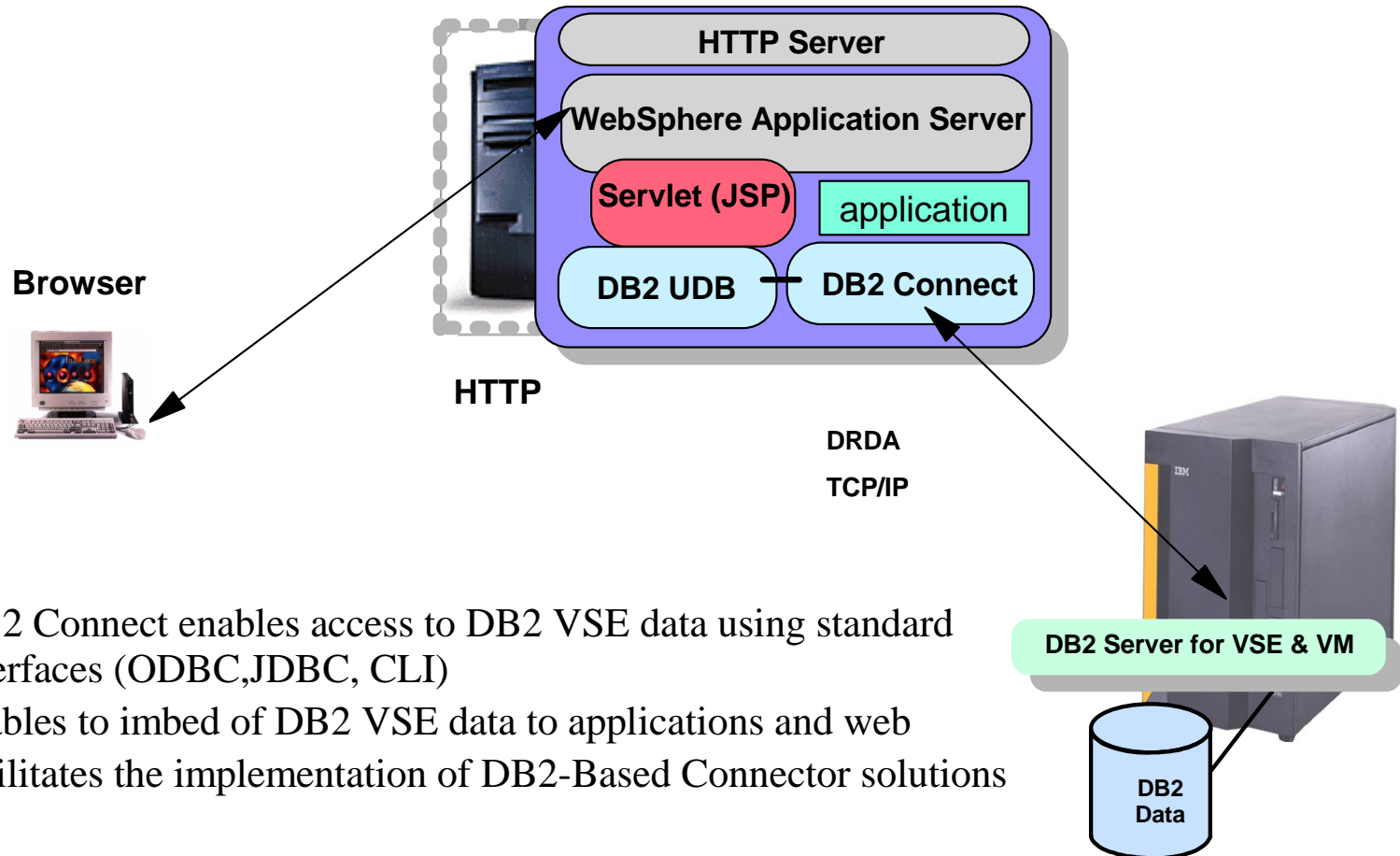
AUTOFTP and AUTOEMAIL functions



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Real time access to VSE/ESA data

DB2 Connect

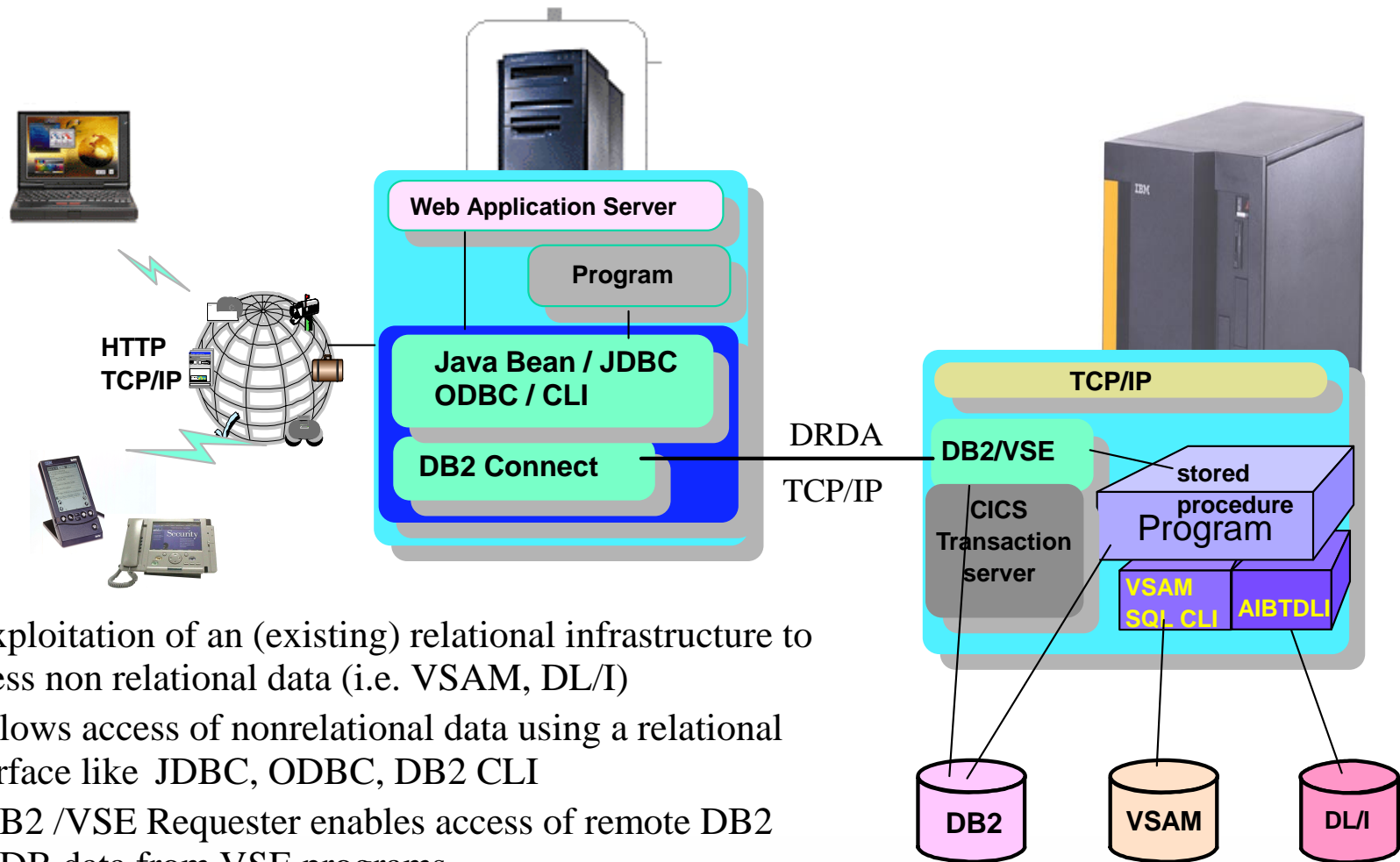


- ▶ DB2 Connect enables access to DB2 VSE data using standard interfaces (ODBC, JDBC, CLI)
- ▶ enables to imbed of DB2 VSE data to applications and web
- ▶ facilitates the implementation of DB2-Based Connector solutions

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Real time access to VSE/ESA data

DB2-Based Connector



- ▶ exploitation of an (existing) relational infrastructure to access non relational data (i.e. VSAM, DL/I)
- ▶ allows access of nonrelational data using a relational interface like JDBC, ODBC, DB2 CLI
- ▶ DB2 /VSE Requester enables access of remote DB2 UDB data from VSE programs.

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Real time access to VSE/ESA data

Major benefits using DB2-based connector

- ▶ encapsulates the business logic on mainframe
- ▶ full control of requests to DB2 Databases
- ▶ integration of various types of VSE/ESA data for one web request (DB2, VSAM,DL/I...)
- ▶ reduced network traffic
- ▶ standard interfaces for all kinds of data (JDBC,ODBC,DB2 CLI)

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Sample: VSE/VSAM access via DB2 JDBC

VSE/ESA e-business Connectors - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Real.com

Address <http://ebusvse/VSAMFlight/VSAMFlights.html> Go

IBM ShopIBM Support Downloads

Home Products Consulting Industries News About IBM Search

Demo center layout : VSE Home Page : Linux for S/390 : VM/VSE Home Page : DB2 Server for VSE & VM : Download Presentations

[Home VSE demo center](#)

Access VSE/VSAM using the DB2-based connector (VSE and Linux for S/390)

This applet lets you browse etc. from the VSE/VSAM sample cluster for the DB2-based connector. The JDBC Applet calls the corresponding Stored Procedures defined within your DB2 Server for VSE.

Demo usage:	
Database Name	sqllds
User ID	demo
Server Name	9.164.155.58
Port Number	6789

Database Name: sqllds

User ID: demo

Password:

Server Name: fflin390

Port Number: 6789

Records from view OFFER:

1	Volkswagen	New Beetle	Petro Mode:
2	Ford	Compact	DR CONV
3	Ford	Taurus	SE Station
4	BMW	compact	316i
5	Mercedes	E220	Avantgarde
6	Porsche	411	cabrio
7	Ford	Escort	ZX2 2 Door




8 records retrieved from view OFFER.


Done Local intranet

Sample: Web e-booking system

VSE/ESA e-business Connectors - Microsoft Internet Explorer


File Edit View Favorites Tools Help


Address  http://fflin390/VSAMFlights.html  Go  Links

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Demo center layout : [VSE Home Page](#) : [Linux for S/390](#) : [VM/VSE Home Page](#) : [DB2 Server for VSE & VM](#) : [Download Presentations](#)




 **Welcome to the e-booking system**

Based on the new **Connectors** included into VSE/ESA 2.5, web transactions can access VSE/ESA resources from a browser .

 [Flight Booking System](#)

 [Car Rental System](#)

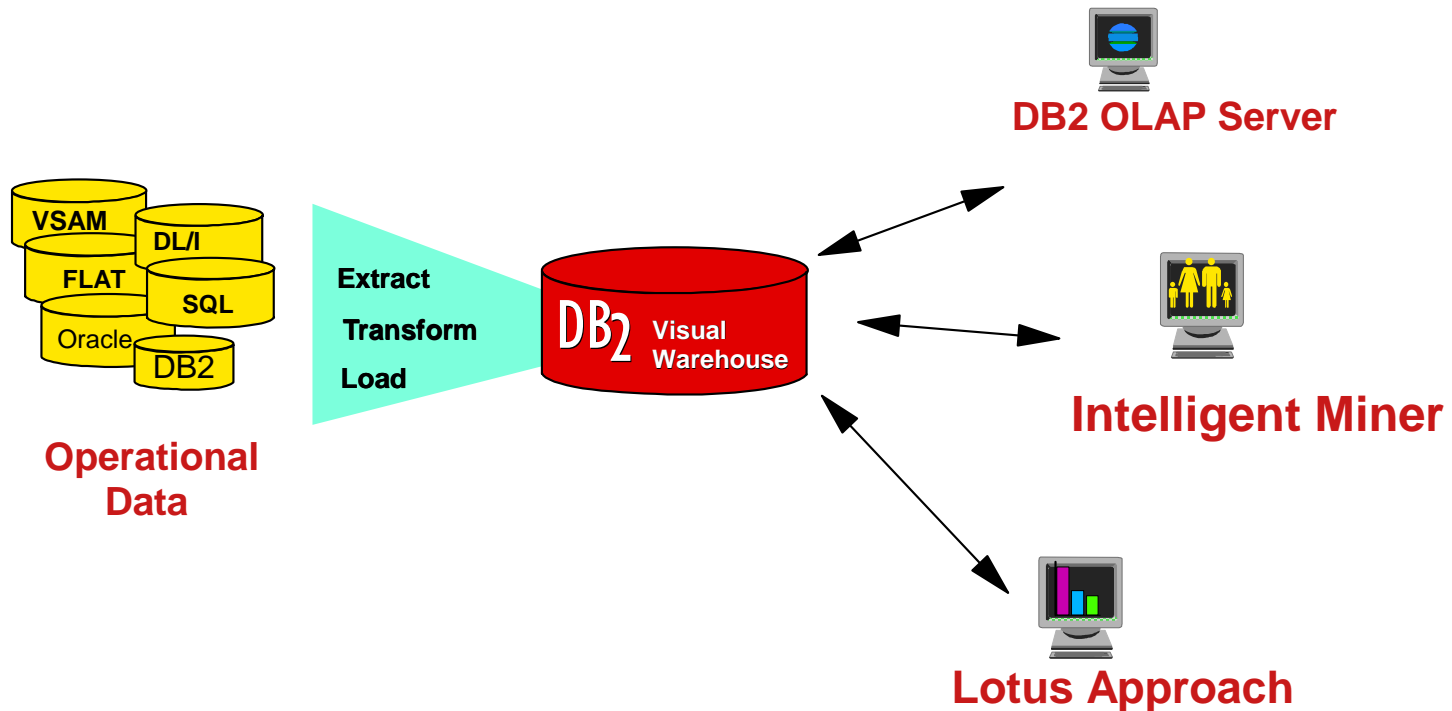


Connectors, are programs which allow client applications to :

- connect to host systems like VSE/ESA .
- **Different Programming Concepts**. can reflect the programming model of your application. The

Business Intelligence Solution using VSE/ESA e-business connectors

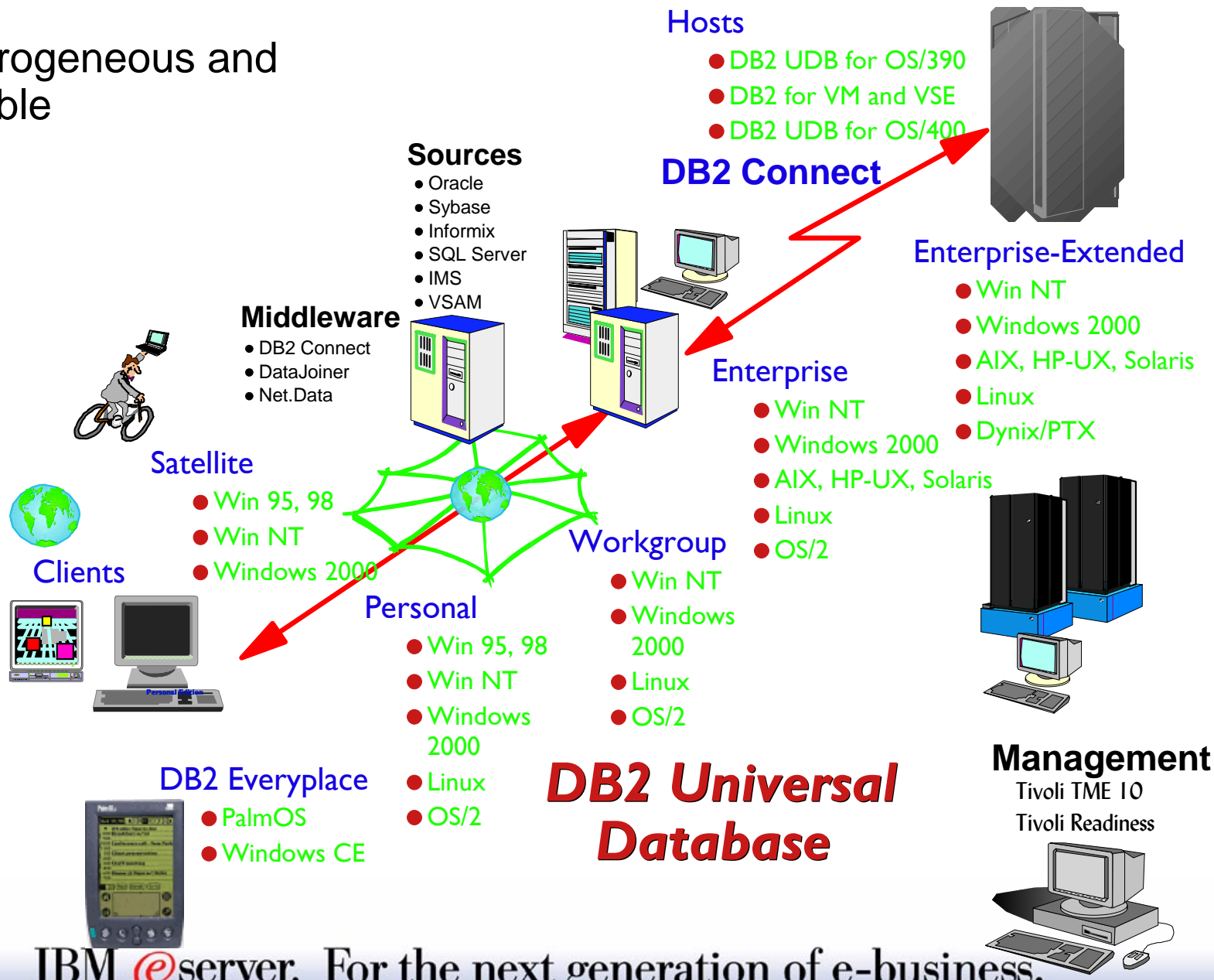
Creating intimate knowledge of customers, competitors and supply-chain partners



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DB2 Database Family

- Heterogeneous and Flexible



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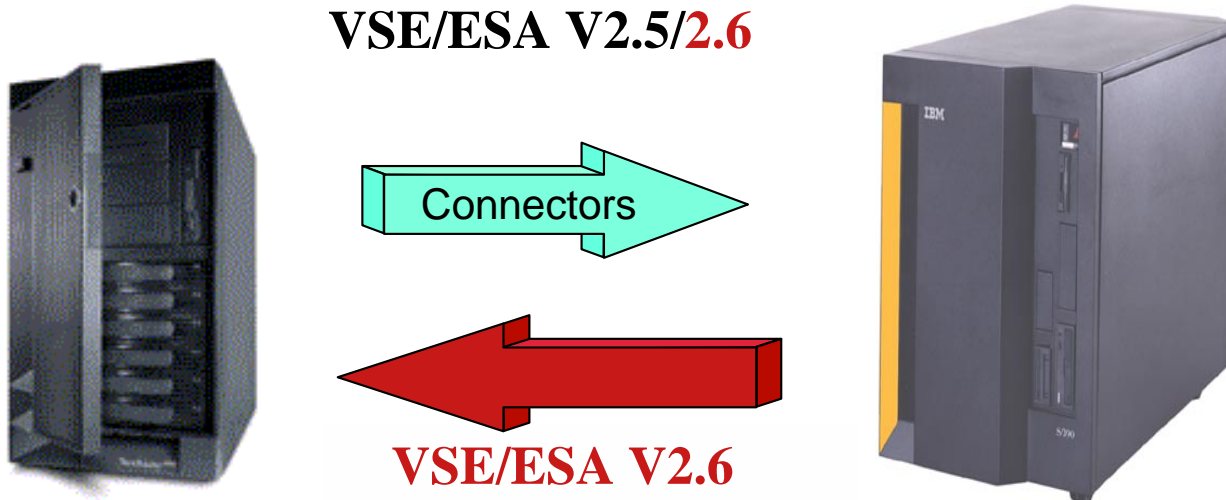
VSE/ESA and it's connections.

VSE/ESA V2.5/2.6 - VSE as server

- ▶ remote access to VSE data
- ▶ e-business connectors

VSE/ESA V2.6 - VSE as a client

- ▶ **VSE access to remote data**
- ▶ **VSAM Redirector**
- ▶ **Virtual tape support**

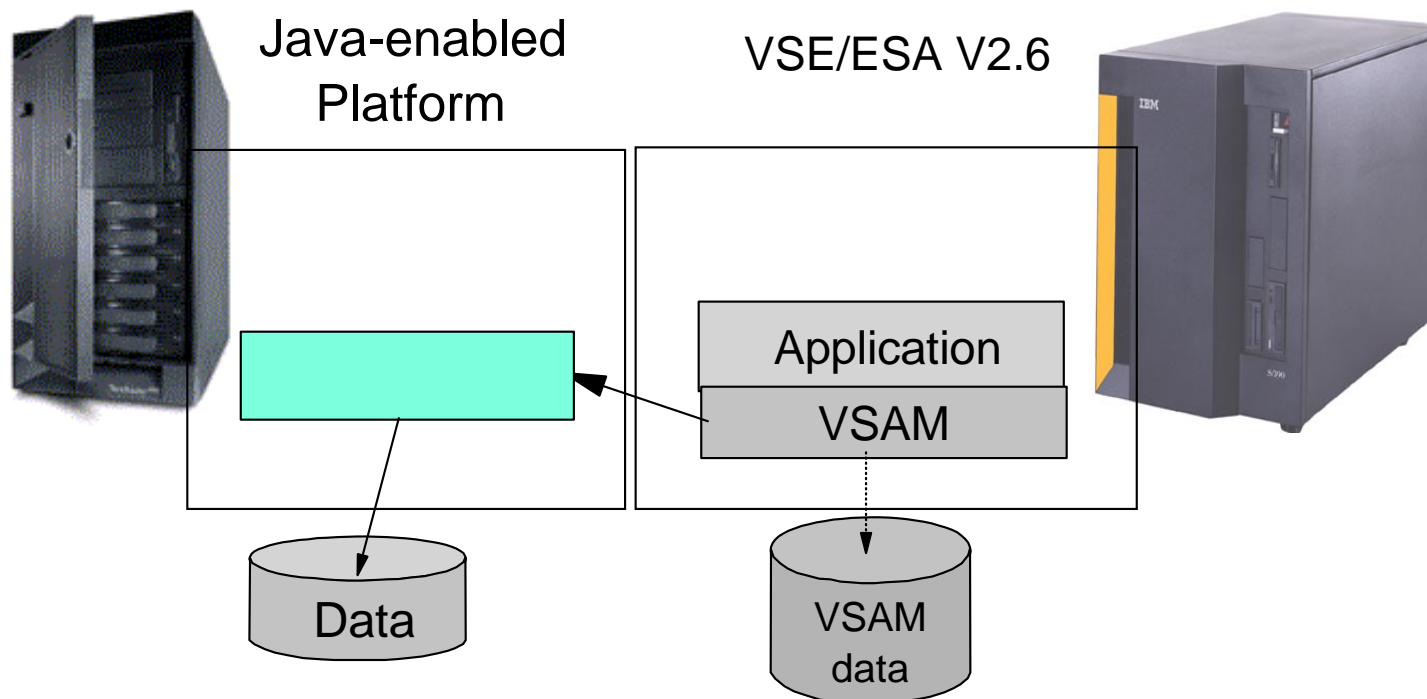


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VSE/VSAM Redirector

A mechanism for VSE programs working with VSAM data:

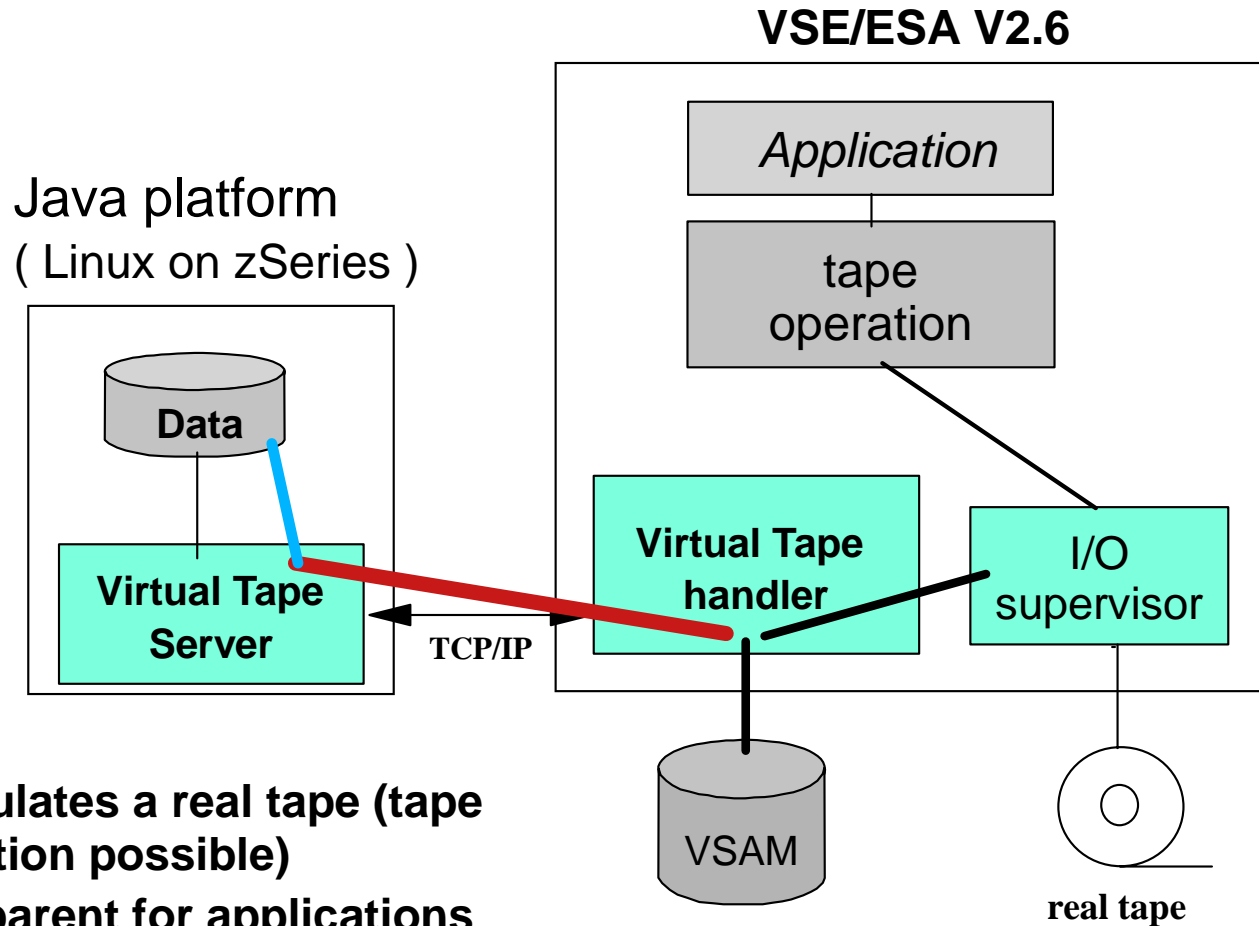
- gain transparent access to remote data
- synchronize VSAM files with remote data stores
- without any changes to VSE programs



➤ **More Details in session 'VSE 2.6 new functions'**

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VSE/ESA Virtual Tape support

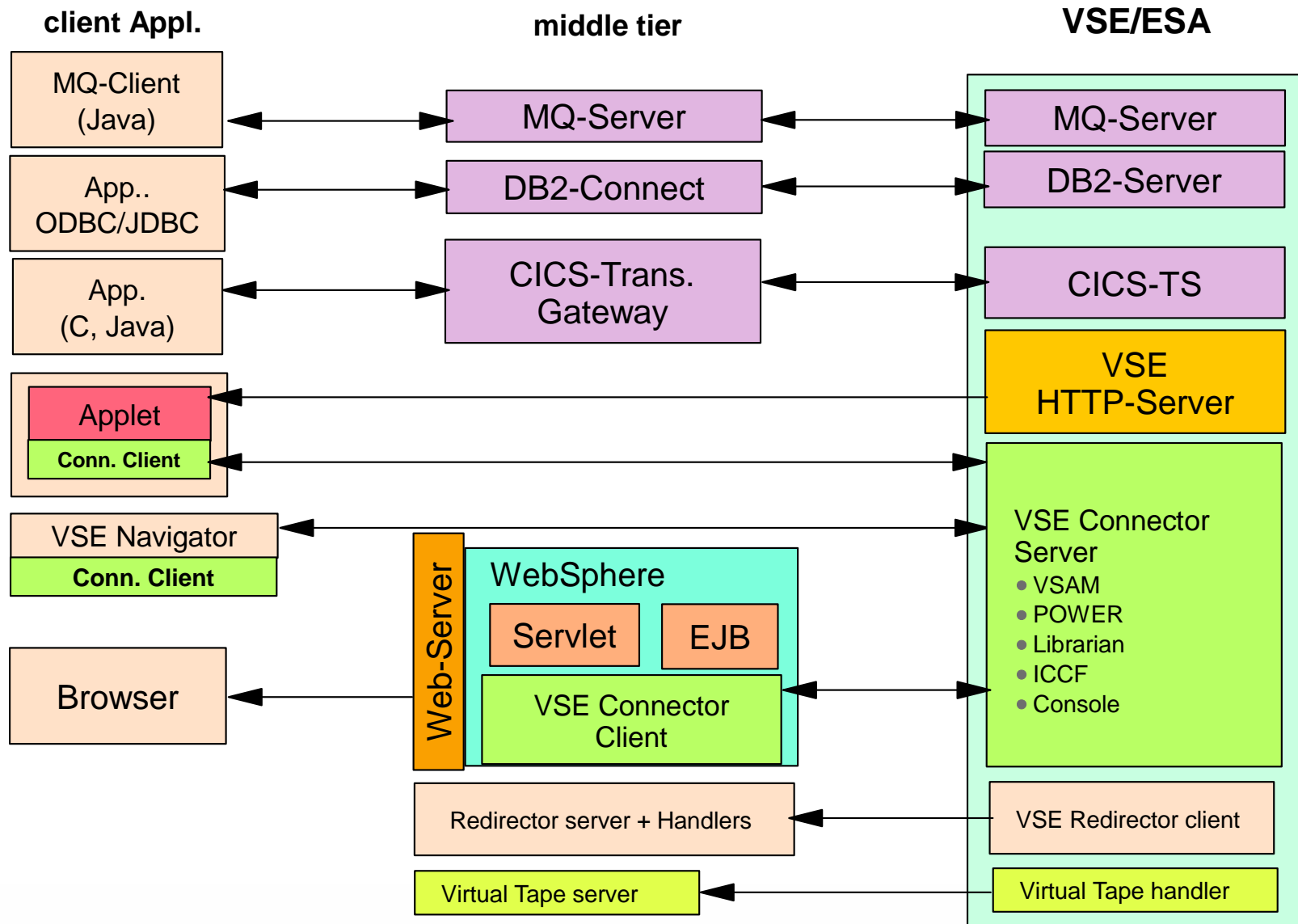


- ▶ it simulates a real tape (tape operation possible)
- ▶ transparent for applications

 **More Details in session 'VSE/ESA 2.6 new functions'**

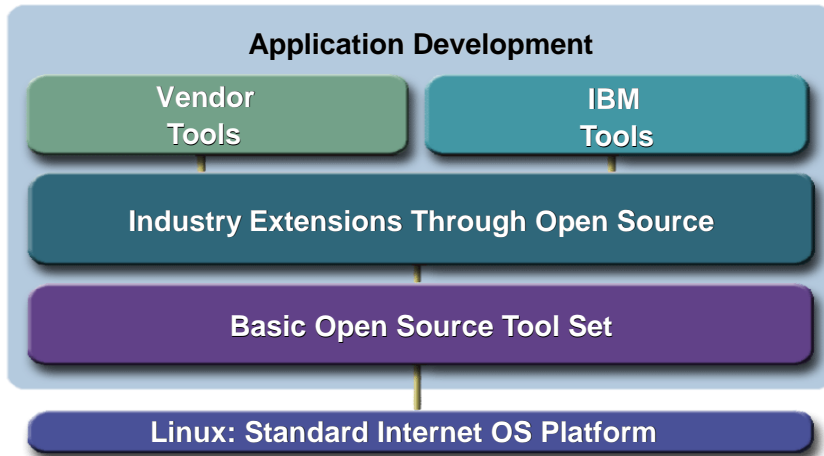
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General overview Connectors for VSE/ESA



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Open/Standards-based Application Deployment



- **Common Application Development**



```
signed int num, const char *p;
if (iotable[i].num == 0)
    break;
if (iotable[i].num == IOTABLE_SIZE)
    printk("warning: ioport table is full\n");
p = find_gap(&iolist, from, num);
if (p == NULL)
    return;
iotable[i].name = name;
iotable[i].from = from;
iotable[i].num = num;
iotable[i].next = p->next;
```



- **zSeries**



- **iSeries**



- **pSeries**



- **xSeries**

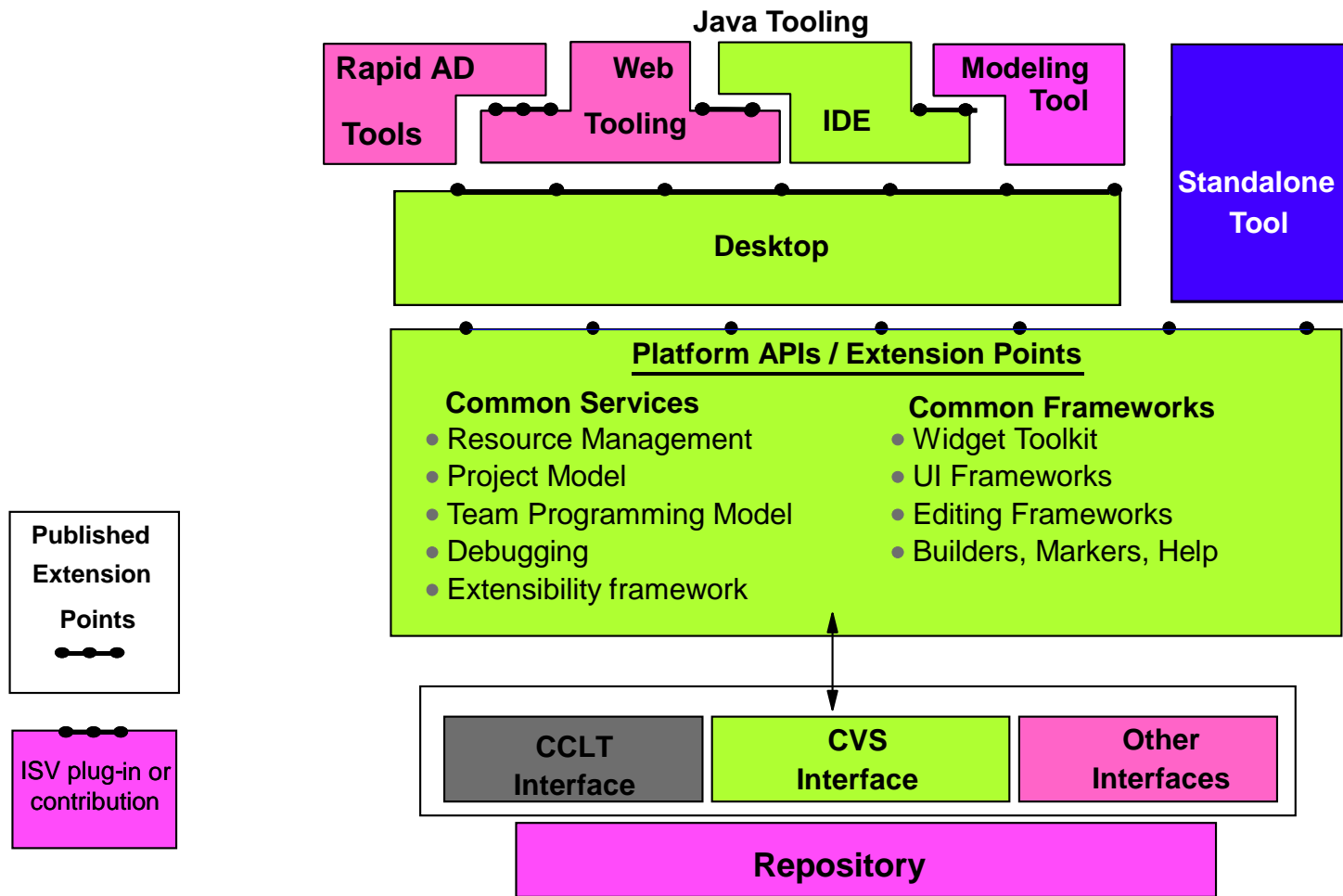


- **Embedded Appliances**

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WebSphere Studio

App. Developer & Site Developer

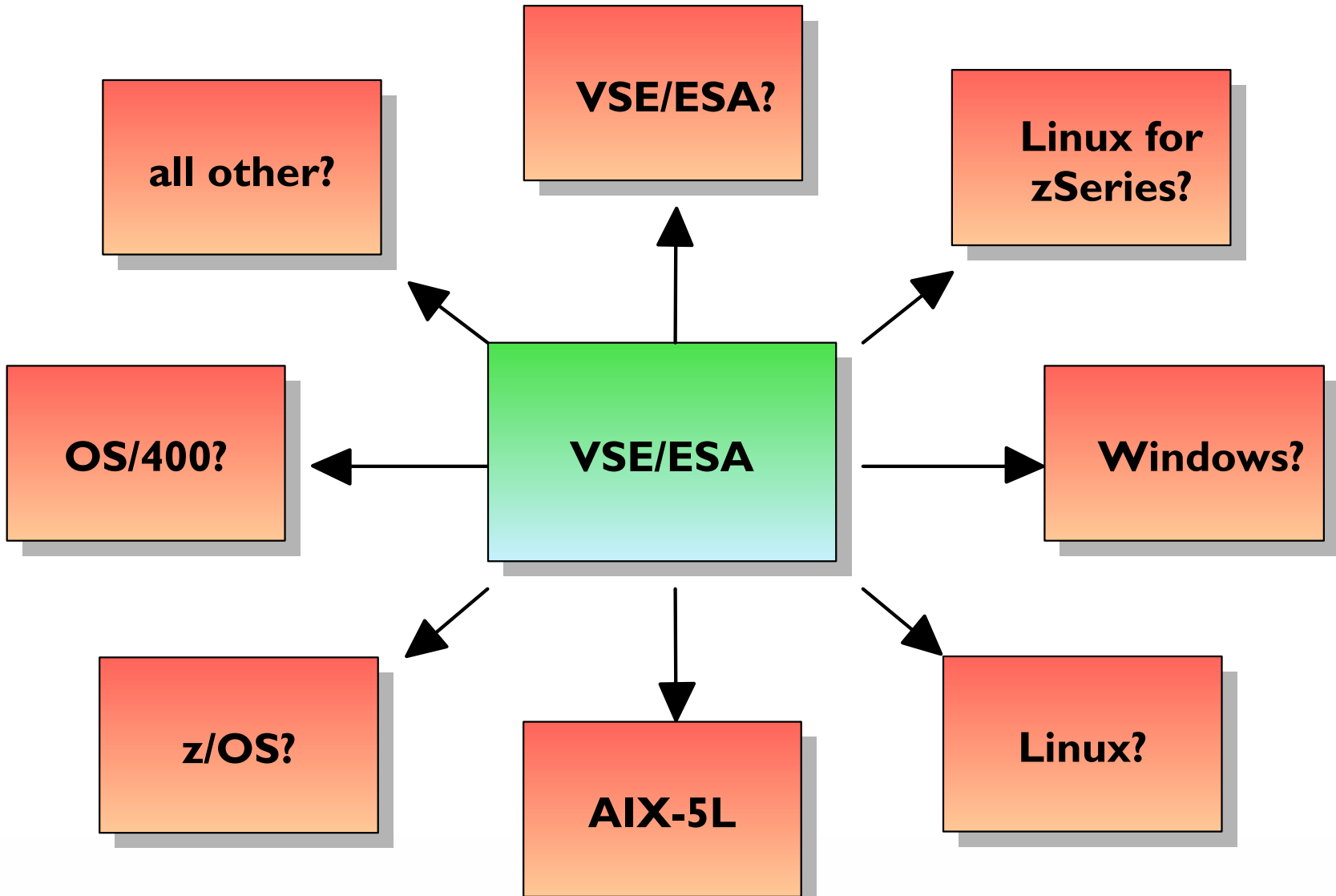


➔ Technologies to donate to open source project

www.eclipse.org

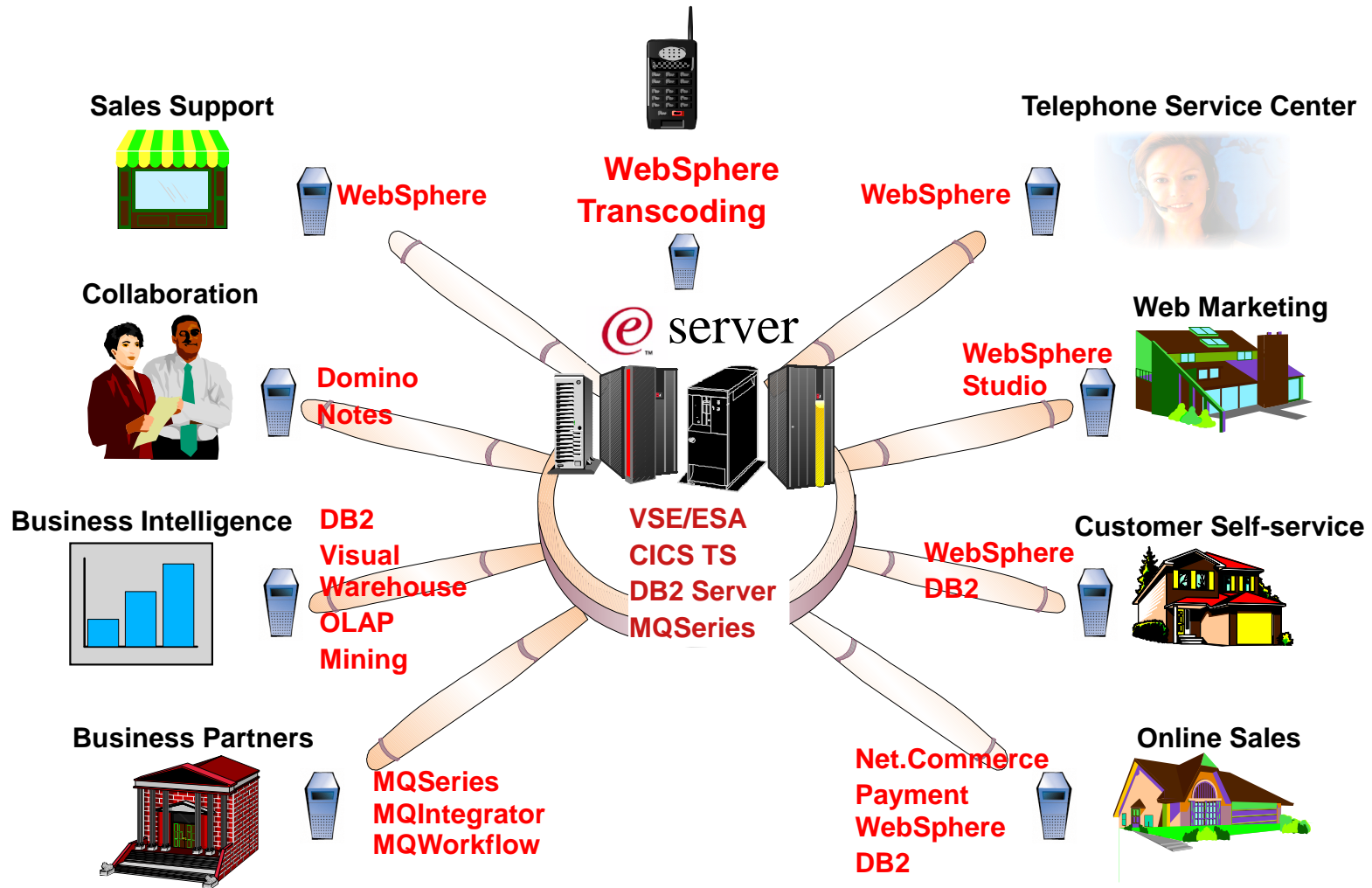
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Choices



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e-business solutions on



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Additional Information

- ♥ VSE/ESA Home Page

<http://www.ibm.com/servers/eserver/zseries/os/vse/>

- ♥ VSE/ESA e-business Connectors and Utilities

<http://www-1.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/conmain.htm>

- ♥ e-business Connectors User's Guide

SC33-6719

<http://www-1.ibm.com/servers/eserver/zseries/os/vse/pdf/ieswue10.pdf>

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



We appreciate your comments at : VSEESA@de.ibm.com

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