IBM

VSE/ESA V2.7 Update

Session E59

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VSE Technical Conference

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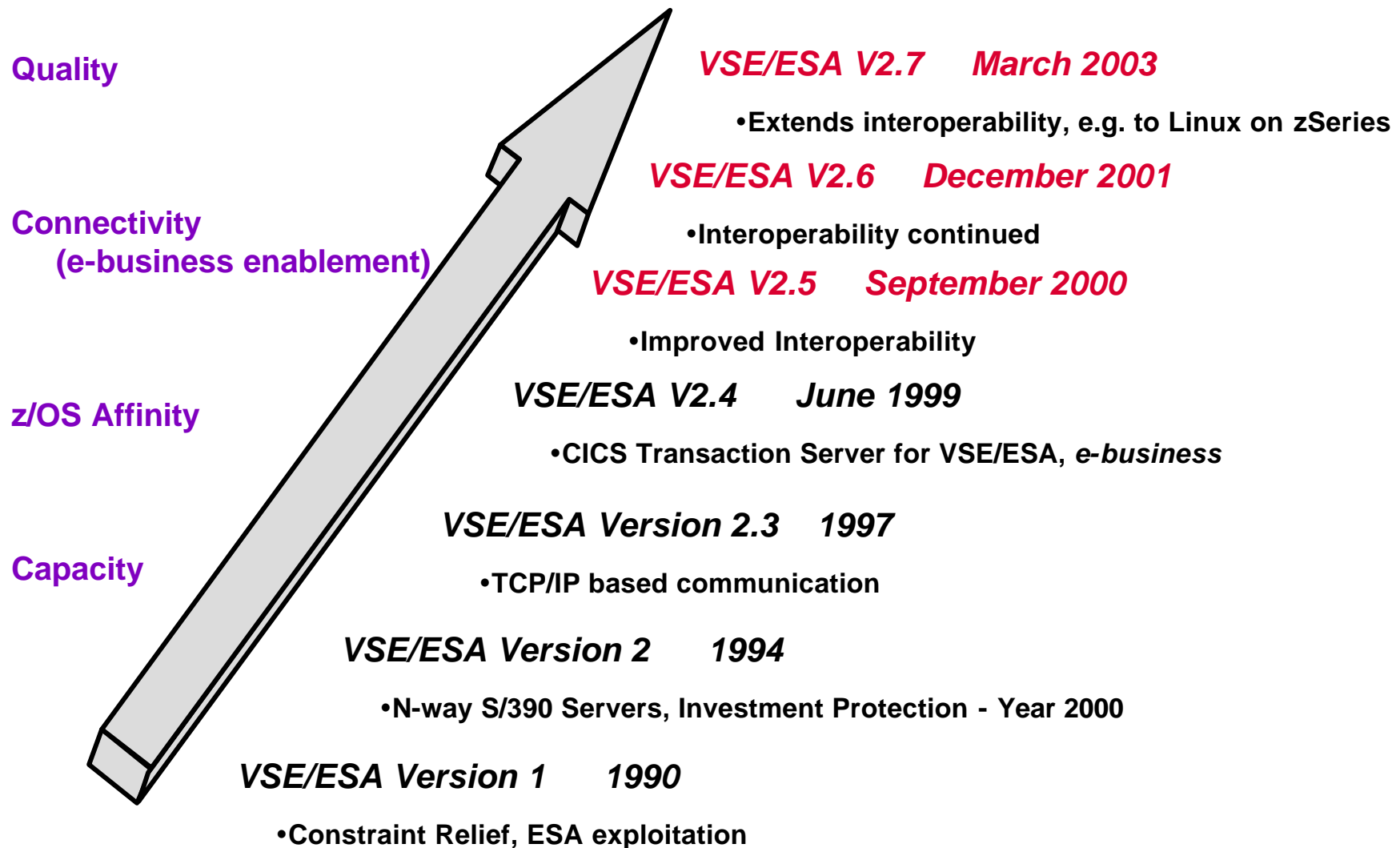
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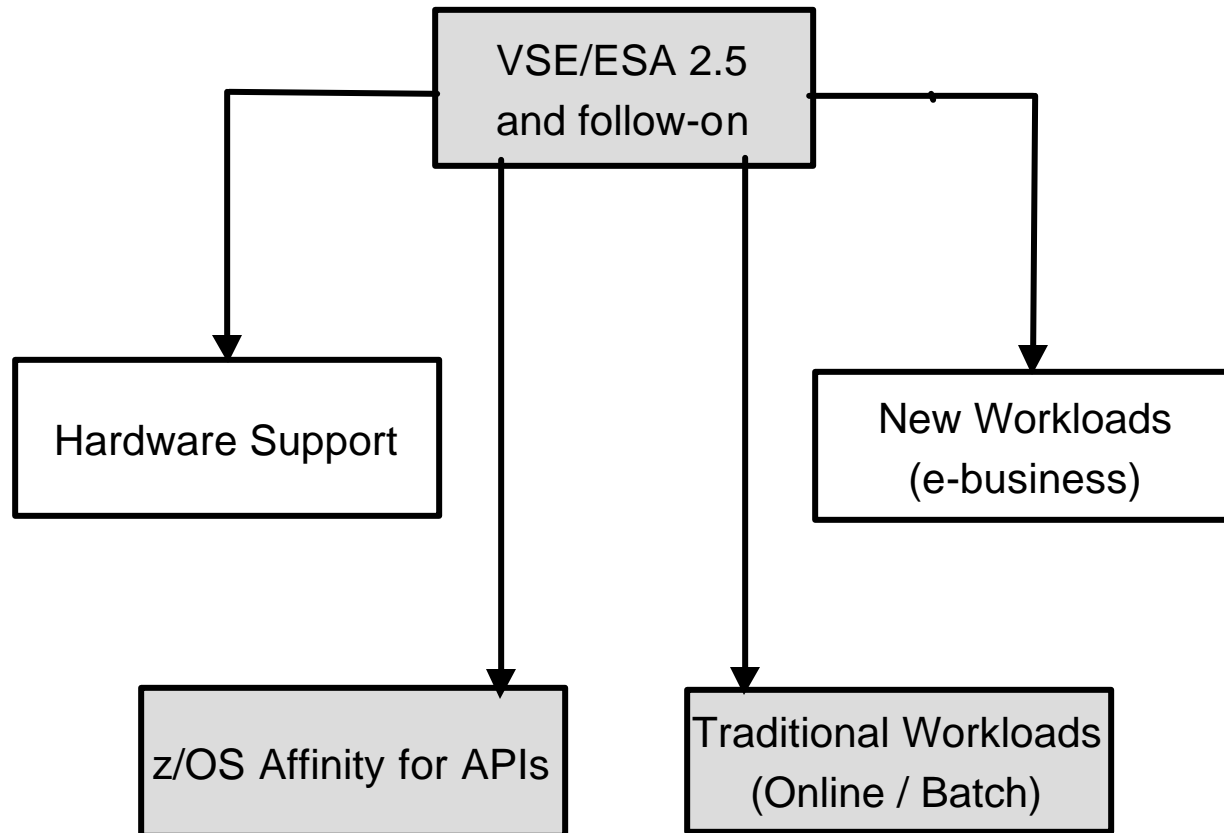Intel is a registered trademark of Intel Corporation.

Agenda

- Roadmap

- Supported environments

- e-business connectors

- VSE/ESA 2.7 content

- Documentation

VSE/ESA Roadmap

Quality

VSE/ESA V2.7   *March 2003*

•**Extends interoperability, e.g. to Linux on zSeries**

VSE/ESA V2.6   *December 2001*

Connectivity
(e-business enablement)

•**Interoperability continued**

VSE/ESA V2.5   *September 2000*

•**Improved Interoperability**

VSE/ESA V2.4   *June 1999*

z/OS Affinity

•**CICS Transaction Server for VSE/ESA,** *e-business*

VSE/ESA Version 2.3   *1997*

Capacity

•**TCP/IP based communication**

VSE/ESA Version 2   *1994*

•**N-way S/390 Servers, Investment Protection - Year 2000**

VSE/ESA Version 1   *1990*

•**Constraint Relief, ESA exploitation**

VSE/ESA 2.5 and Follow-on

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                    ┌──────────────────┐
        ┌───────────│   VSE/ESA 2.5    │───────────┐
        │           │   and follow-on  │           │
        │           └────────┬─────────┘           │
        │                    │                      │
        ▼                    │                      ▼
┌─────────────────┐         │           ┌─────────────────┐
│ Hardware Support│         │           │  New Workloads  │
│                 │         │           │   (e-business)  │
└─────────────────┘         │           └─────────────────┘
        │                    │
        ▼                    ▼
┌─────────────────┐  ┌─────────────────┐
│z/OS Affinity for│  │Traditional Workloads│
│      APIs       │  │ (Online / Batch)│
└─────────────────┘  └─────────────────┘
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VSE/ESA 2.5 and follow-on

Hardware Support

New Workloads (e-business)

z/OS Affinity for APIs

Traditional Workloads (Online / Batch)

VSE/ESA 2.7

- Enables integrated hybrid solutions

- Extends interoperability introduced with VSE/ESA 2.5 and 2.6

- Enhances interoperability between VSE/ESA and Linux on zSeries

- Enhances Internet Security

- Schedules
  - VSE/ESA 2.7   GA   3/14/2003
  - VSE/ESA 2.7.1 GA   9/12/2003

- Fast Service Upgrade (FSU) from VSE/ESA 2.5 and 2.6

Supported VSE/ESA Environments

- VSE/ESA releases run on <u>ESA/390 and zSeries</u> hardware only
- VSE/ESA 2.7 supports
  - S/390 Multiprise 3000
  - S/390 Parallel Enterprise Server G5, G6
  - IBM e-server zSeries 800, 900
  - Equivalent processors based on G5 architecture
  - Reason:
    - Exploitation of "G5" instruction set
    - New compiler level
  - Linux on zSeries, z/VM V4 support same architecture level
  - ➤ VSE/ESA 2.6 as service option

- <u>Turbo Dispatcher only</u>
  - ➤ On all uni- and multiprocessors
  - ➤ Native, as z/VM guest or in LPAR

VSE e-business Connectors
(introduced with VSE/ESA 2.5)

- Easy access to VSE/ESA resources from other systems

- VSE e-business connectors include
  - Server code running on VSE/ESA
  - JAVA beans, servlets and samples on Java capable clients
    - Such as IBM's WebSphere Application Server
      which may run on Windows 2000/NT/XP, Linux, AIX, z/OS, ...

- Advantages
  - Exploitation of non-VSE e-business infrastructure
  - Always newest e-business components
    - Java, web server, security
    - Platform independent
  - VSE/ESA resources can be easily integrated into new e-business applications
    - New VSE e-business connectors
    - Other IBM connectors (DB2 Connect, MQ Series client, CICS TS Gateway, ...)

VSE/ESA e-business Connectors ...

- DB2 based connectors for VSAM and DL/I
  - Exploitation of DB2 infrastructure
    (JDBC/ODBC, DB2 Connect, DB2 server, DB2 stored procedures)
  - Mapping of SQL requests to VSAM and DL/I data
  - Sample mappings and applications provided
  - Communication via DRDA (SNA or TCP/IP based with DB2 V7)

- External services based VSE connectors
  - Access to VSE/ESA resources, such as
    VSE/VSAM files, VSE/POWER, VSE/ICCF, VSE Librarian, VSE consoles
  - Access provided via
    - external services running on VSE/ESA
    - Java-based services running on
      e.g. web application server environments
  - Java samples are provided
  - Communication TCP/IP based

VSE/ESA e-business Connectors
(introduced with VSE/ESA 2.6)

- New VSE connectors and connector currency
  - Support for Java 2 (JDK 1.2 and 1.3), including new WebSphere releases
  - J2EE connectors
  - JDBC connector to VSAM file
  - JConVSE = Java-based VSE console
    - Supports monitoring, submit job, PF key, retrieve, ...
    - Can automate VSE jobs based on console messages
  - VSEPrint
    - Formats output of VSE/POWER job
    - Output transferred via ftp
    - Runs on Java-capable workstation
  - Support for Linux, Windows, ...
  - VSAM connectors may now be routed through CICS (avoid share option 4)
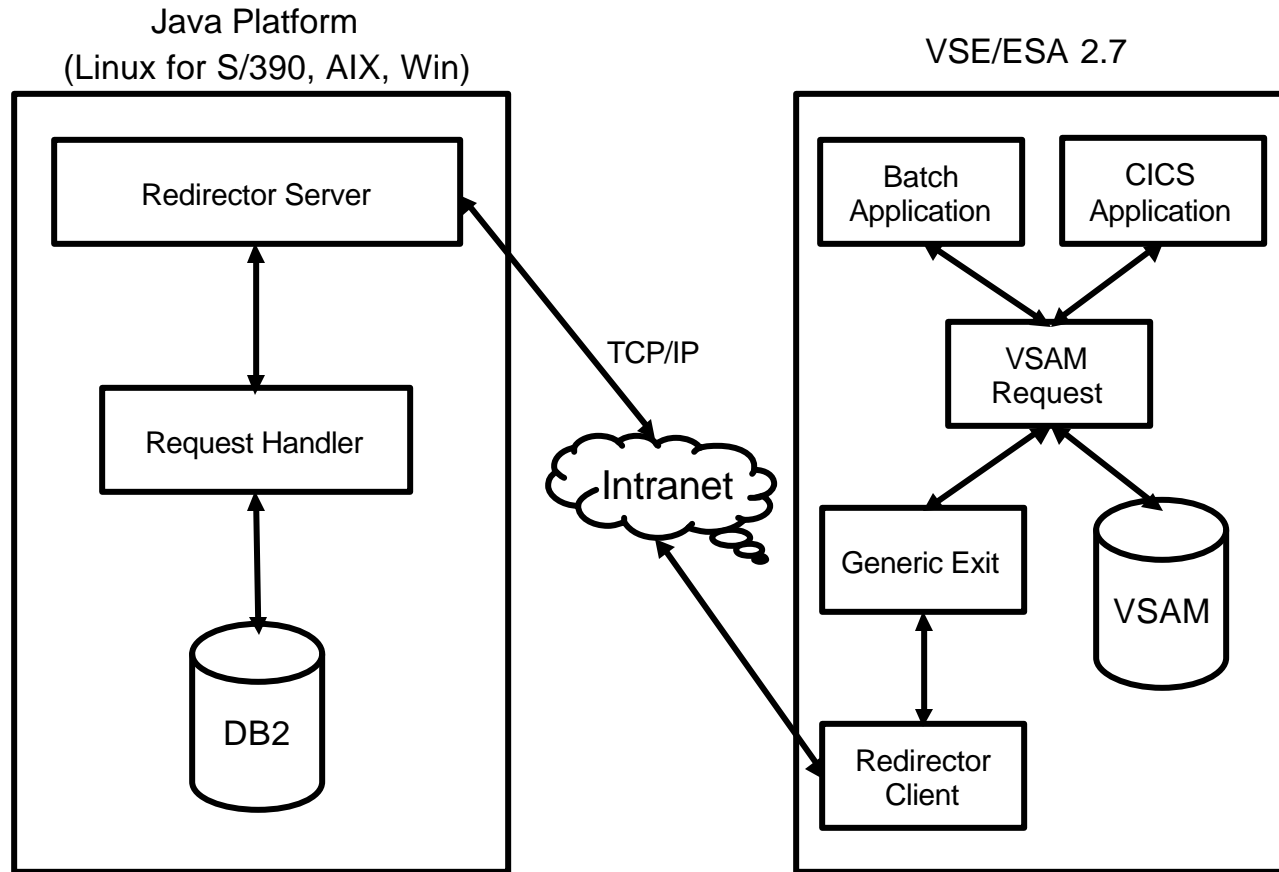
VSAM Redirector
(introduced with VSE/ESA 2.6)

- VSAM Redirector provides
  - Access to remote data
    - on Java capable platform (e.g.Linux on zSeries)
    - transparent to VSE/ESA program (batch or online)
  - Samples to access flat files and DB2 UDB
  - Interfaces to include other data
  - Communication to other platform via TCP/IP

➔VSE/ESA as a client

VSAM Redirector...

Java Platform
(Linux for S/390, AIX, Win)

VSE/ESA 2.7

Redirector Server

Request Handler

DB2

TCP/IP

Intranet

Batch Application

CICS Application

VSAM Request

Generic Exit

VSAM

Redirector Client
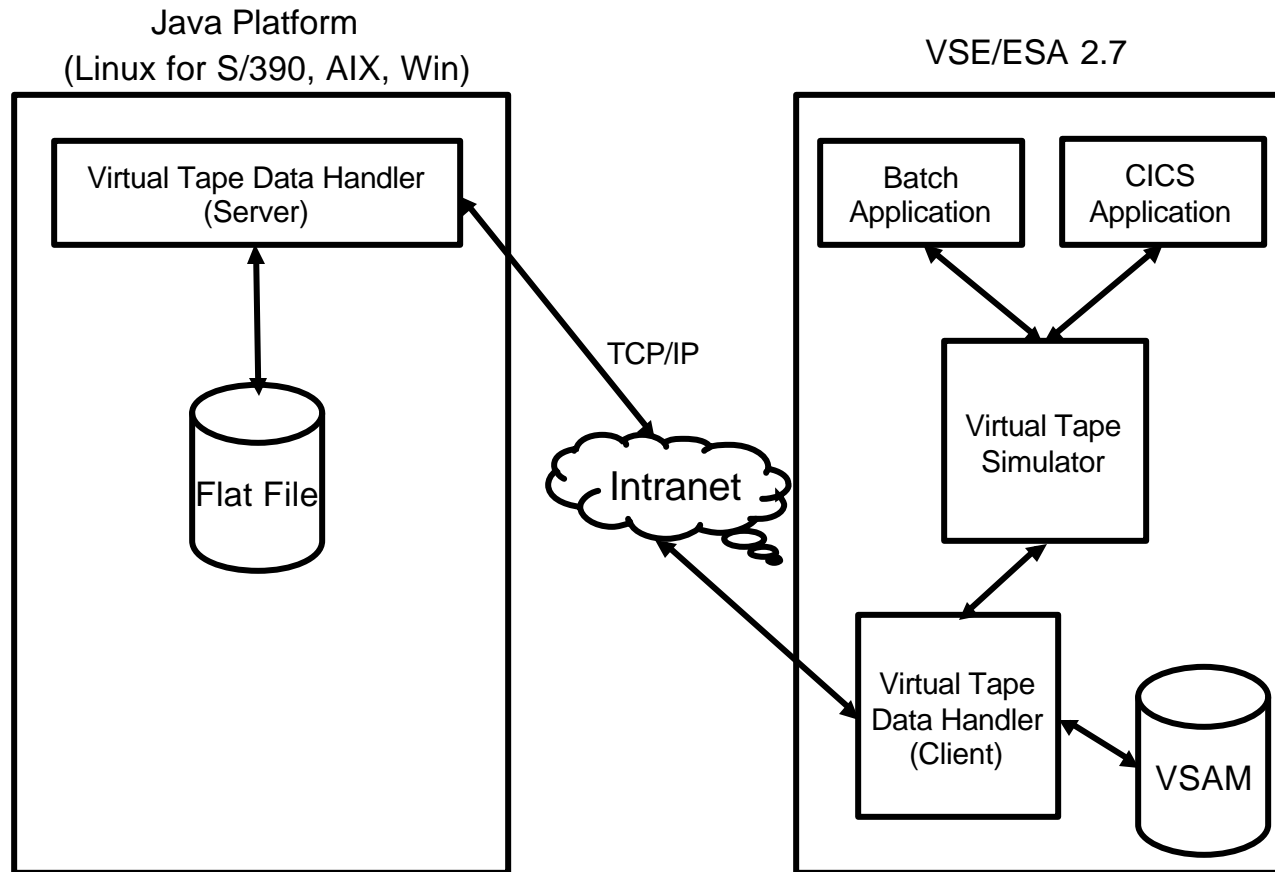
Virtual Tape
(introduced with VSE/ESA 2.6)

- File or dataset containing a tape image, that is
  - VSE/VSAM ESDS file on VSE/ESA
  - Remote file on Java-capable server platform (Windows, Linux, ...)

- Has most functions of physical tape
  - Some functions not supported
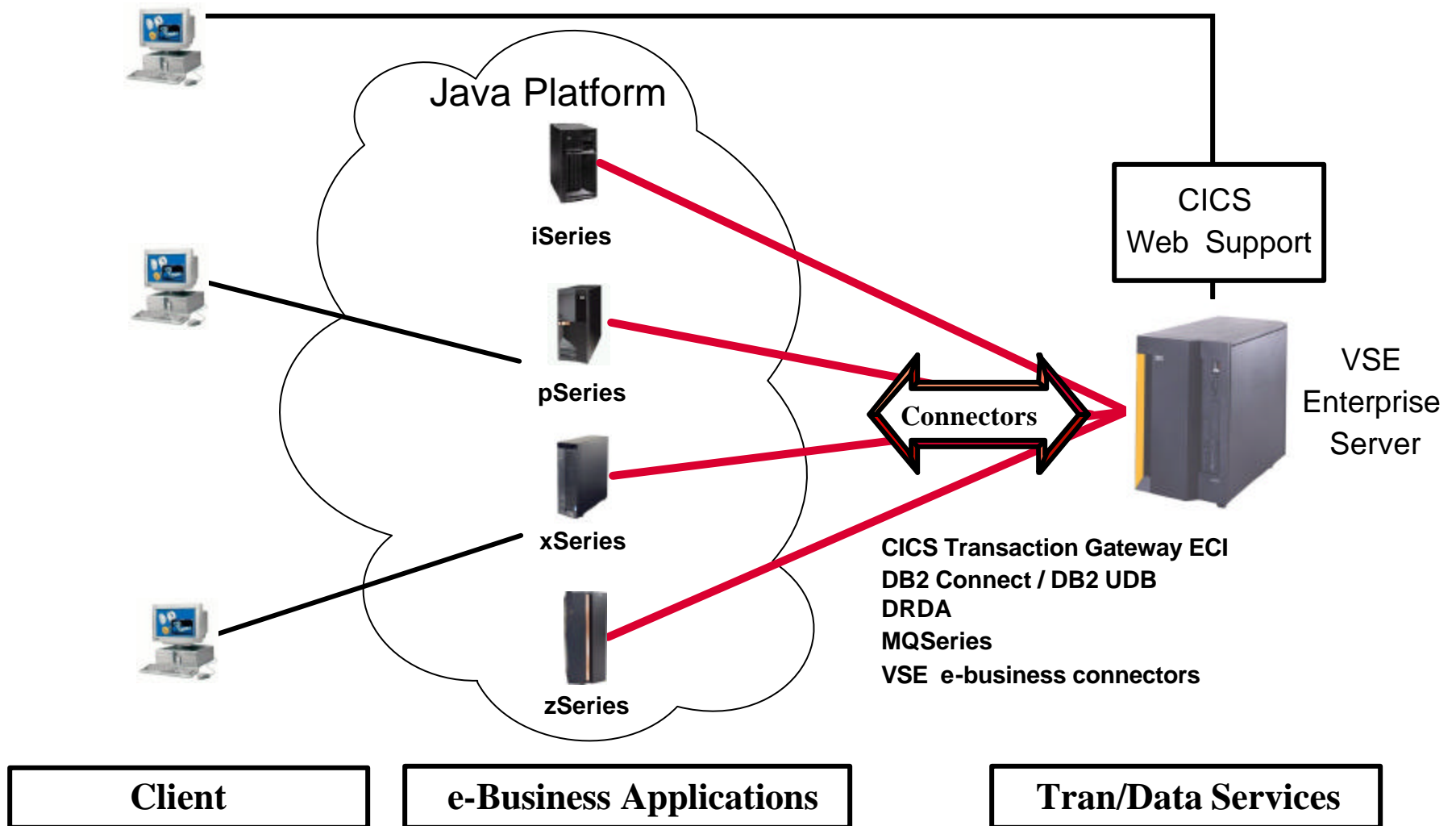   - e.g. SDAID to tape, Ditto Erase function

- "virtual tape" device need to be ADDed at IPL

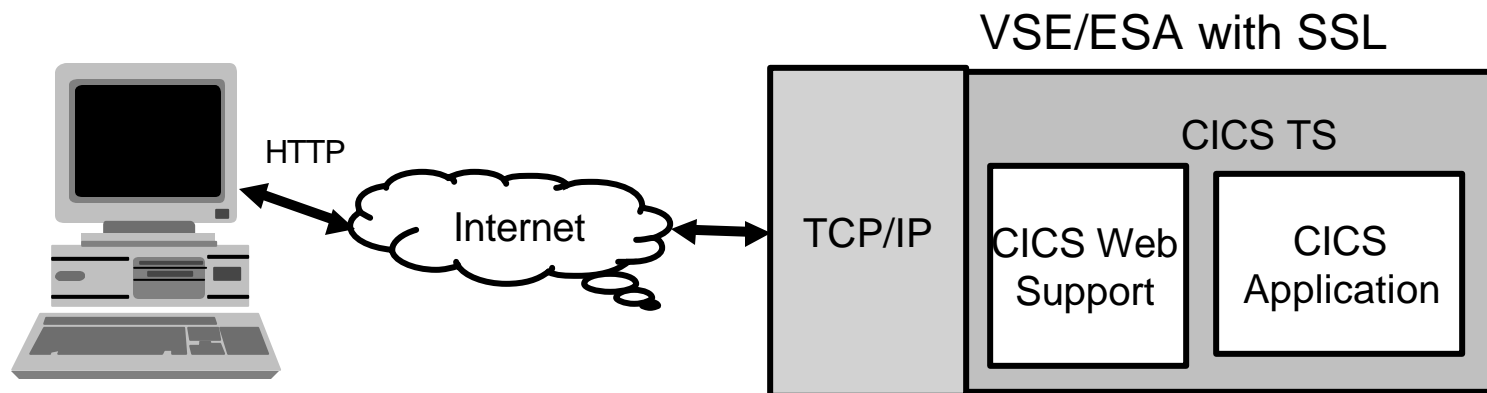- New VTAPE command to manage virtual tapes

Virtual Tape ...

Java Platform
(Linux for S/390, AIX, Win)

VSE/ESA 2.7

Virtual Tape Data Handler
(Server)

Flat File

TCP/IP

Intranet

Batch
Application

CICS
Application

Virtual Tape
Simulator

Virtual Tape
Data Handler
(Client)

VSAM

VSE/ESA e-business Connectors ...

Java Platform

iSeries

pSeries

Connectors

xSeries

CICS
Web Support

VSE
Enterprise
Server

CICS Transaction Gateway ECI
DB2 Connect / DB2 UDB
DRDA
MQSeries
VSE e-business connectors

zSeries

Client	e-Business Applications	Tran/Data Services

Internet Security
(introduced with VSE/ESA 2.6)

- Secured TCP/IP connections through SSL encryption services
  - Includes Data Encryption Standard (DES) and triple-DES
  - Licensed from Connectivity Systems Incorporated (CSI)

- SSL API can be exploited by any applications
  - Compatible with the OS/390 SSL API

VSE/ESA with SSL

HTTP

Internet

TCP/IP

CICS TS

CICS Web Support
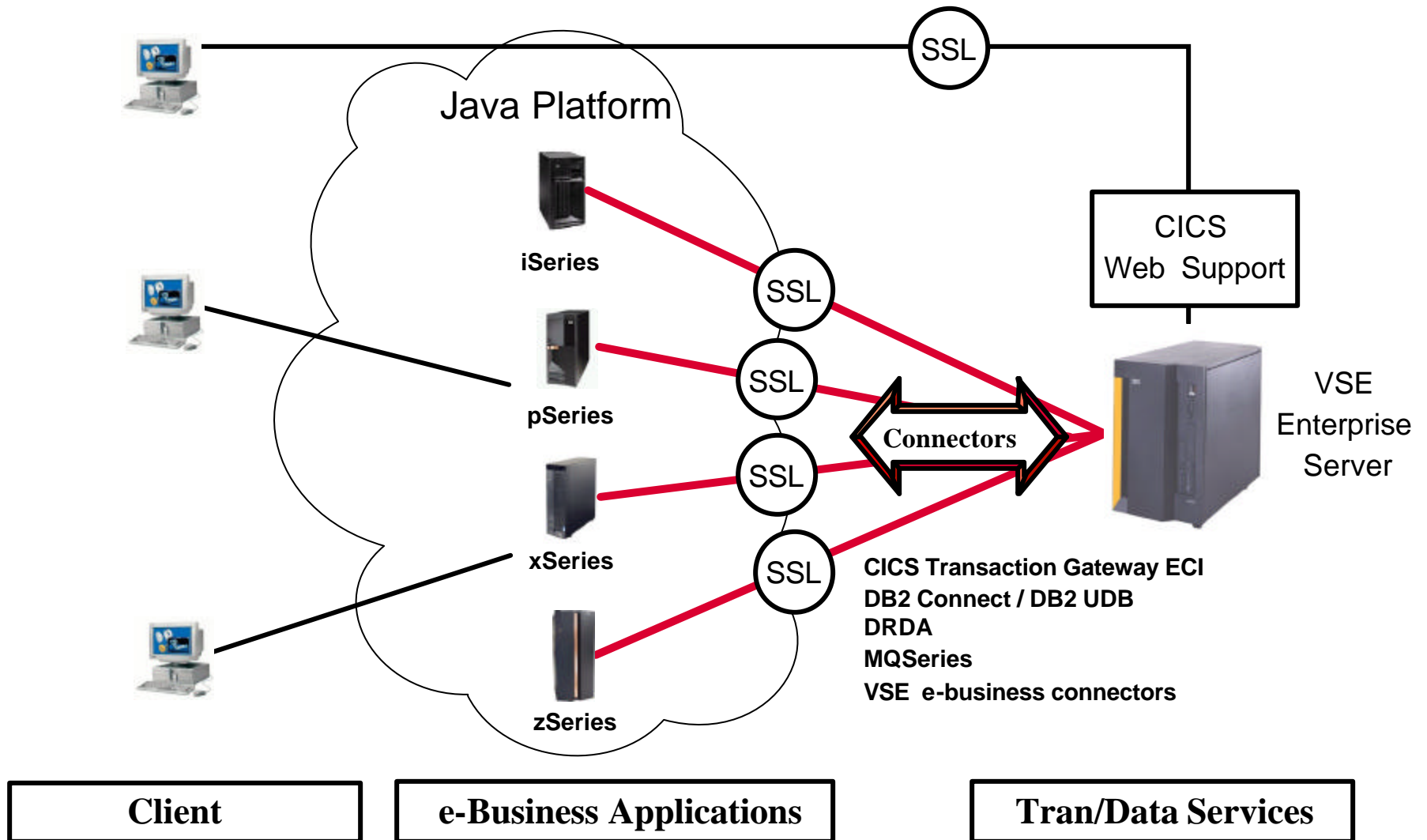
CICS Application

Internet Security ...

- SSL Exploiters:

  - TN3270
  - HTTP server
  - TCP/IP High Level Language API (EZA Interfaces)
  - CICS Web Support -Client Authentication
  - VSE Connectors
    - Client side based on JSSE (Java Secure Socket Extension)
  - VSE/Power PNET
  - MQ Series 2.1.1 or higher

Internet Security …

SSL

Java Platform

iSeries

pSeries

xSeries

zSeries

SSL
SSL
SSL
SSL

Connectors

CICS
Web Support

VSE
Enterprise
Server

CICS Transaction Gateway ECI
DB2 Connect / DB2 UDB
DRDA
MQSeries
VSE e-business connectors

Client	e-Business Applications	Tran/Data Services

VSE/ESA 2.7 Content

- zSeries HiperSockets
  - ➢ "network in the box",
    TCP/IP based communication at near memory speed within one system
    - zSeries Logical Partitions (LPARs)
    - z/VM guests (via virtual guest LAN)
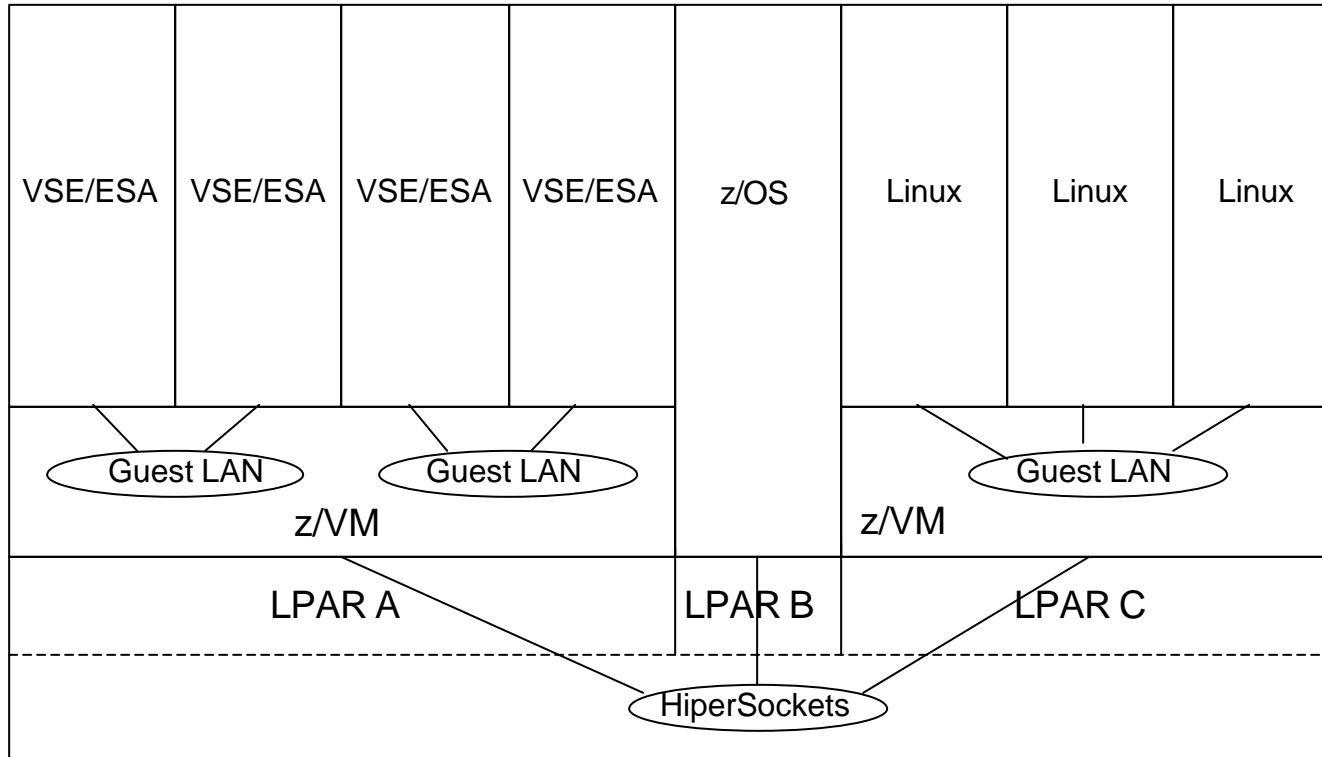   - z/VM guests and LPARs

  - ➢ VSE/ESA 2.7 may communicate with
    - Linux on zSeries
    - z/OS
    - z/VM
    - VSE/ESA 2.7

  - ➢ Virtual HiperSockets available on S/390 processors
    via z/VM Guest LAN support (z/VM 4.2 or higher)

  - ➢ Implemented as device driver (owned by IBM) for the TCP/IP stack

VSE/ESA 2.7 Content
HiperSockets Example

| VSE/ESA | VSE/ESA | VSE/ESA | VSE/ESA | z/OS | Linux | Linux | Linux |

Guest LAN   Guest LAN   Guest LAN

z/VM   z/VM

LPAR A   LPAR B   LPAR C

HiperSockets

VSE/ESA 2.7 Content

- Hardware cryptographic support
  - ➢ Enhances Internet security
  - ➢ Encryption hardware assist for increased SSL throughput
    Exploits PCI Cryptographic Accelerator (PCICA) card
  - ➢ Supports SSL handshaking only
    for applications that use the SSL crypto API
  - ➢ Transparent for TCP/IP applications
    (VSE connector server, CWS, VSE/Power PNET)
  - ➢ No definition necessary

VSE/ESA 2.7 Content

- Hardware cryptographic support ….
  - ➤ Console message, when PCICA card detected
  - ➤ Available on z800 and z900
  - ➤ Virtualized with z/VM 4.2 plus APARs or higher
  - ➤ Implemented as device driver for the SSL support
    - Device driver called by TCP/IP partition
    - If BSM active, new crypto subtask in BSM partition (default partition FB)
    - If ESM active, new crypto subtask in any partition started via batch job

VSE/ESA 2.7 Content

- **IBM TotalStorage Enterprise Storage Server (ESS)**
  - ➢ Exploitation of Flashcopy (also available on VSE/ESA 2.6)
    - by VSE/VSAM backup/restore
    - by Fastcopy

  - ➢ Large Volume Support (LVS – also available on VSE/ESA 2.6)
    - Up to 32,760 cylinders can be used by page data set, label area, lock file, VSE/POWER, Librarian, SAM, DAM
    - Up to 10,017 cylinders can be used by VSE/VSAM

VSE/ESA 2.7 Content

- Web services - enhanced interoperability through
  - Simple Object Access Protocol (SOAP)
    - information exchange over the internet (e.g. with CICS appls)
    - VSE/ESA SOAP server/client
      implemented as CICS program using CICS Web Support (CWS)
    - Any SOAP enabled platform may call a web service
      running as a CICS application
    - SOAP based on XML
  - Extensible Markup Language (XML)
    - creation and parsing XML data streams from VSE applications
    - Can be called from batch and CICS applications

VSE/ESA 2.7 Content

- **Connector enhancements**
  - ➤ Connector currency (JDK, WebSphere, Windows XP, Linux)
  - ➤ DL/I connector
    - As e-business connector
    - New DL/I Java Beans
    - Requires DL/I 1.11 + APAR
    - All requests are routed to CICS -> must have active MPS
    - Up to 15 clients per VSE system
  - ➤ Non-Java Access (VSEScript)
    - Simple access to VSE resources
    - Access to VSE resources from
      non-Java programs via a script server and e-business connectors

VSE/ESA 2.7 Content

- Enhancements in VSE components …

  - VSE Job Control enhancements
    - VTAPE JCL enhancements
    - Virtual storage constraint relief

  - VSE Librarian
    - Virtual storage constraint relief
  - LE/VSE 1.4.3 enhancements
    - New CLER CICS transaction to change runtime options
    - Enhancements for DL/I applications
    - Diagnostic improvements

VSE/ESA 2.7 Content

- **Enhancements in VSE components and products**
  - ➤ VSE/POWER
    - Increase number of spool entries to 100,000
    - Enhancements to VSE/POWER warm start
      - Change local node name during warm start via autostart statement
    - SLI member JECL continuation
    - PDISPLAY enhancements (biggest queue file, conditional scan)
  - ➤ TCP/IP 1.5
    - HiperSockets support
    - PCICA support
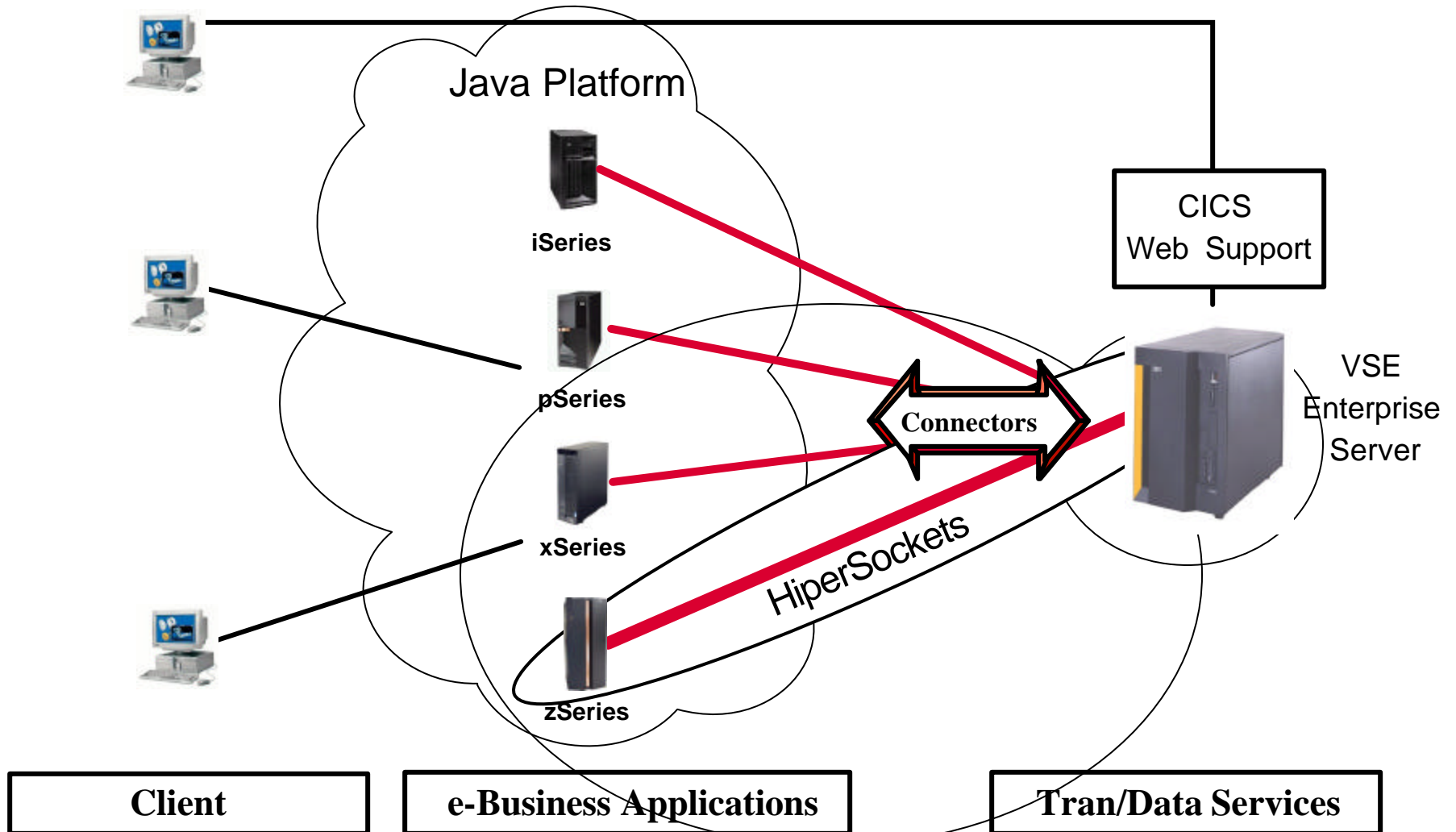
VSE/ESA 2.7 Content

- Enhancements in VSE components and products
  - ➢ CICS Web Support (CWS) enhancements
    - Full client authentication support
    - Light pen and cursor select
    - COLOR option for BMS and terminal control
    - Mixing of BMS and terminal control commands in same application
    - And more
  - ➢ REXX Socket support – SSL based security added

VSE/ESA 2.7 Content

- **Enhancements in VSE components and products**
  - ➢ MQSeries for VSE/ESA 2.1.2
    - SSL support
    - Multiple concurrent batch interfaces
  - ➢ DB2 Server for VSE and VM V7.3
    - Not yet included into VSE/ESA 2.7.0 package
    - Increased availability
    - Compatibility with DB2 UDB 8.1
    - Control center enhancements

VSE/ESA 2.7
(VSE/ESA 2.6 + Hw Crypto + HiperSockets)

Java Platform

iSeries

pSeries

xSeries

zSeries

CICS
Web Support

VSE
Enterprise
Server

Connectors

HiperSockets

| **Client** | **e-Business Applications** | **Tran/Data Services** |

Documentation

- Connectors for VSE/ESA
  http://www.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/

- e-business Connectors User's Guide, SC33-6719

- Redbook: Getting Started with TCP/IP for VSE/ESA 1.4, SG24-5626

- Redbook: e-business Solutions for VSE/ESA, SG24-5662

- Redbook: e-business Connectivity for VSE/ESA, SG24-5950

- VSE Applications - How e-business Fits, GF22-5137

- VSE/ESA 2.7 Release Guide, SC33-6718

- Hints and Tips for VSE/ESA, SC33-6757

- VSE/ESA home page
  http://www-1.ibm.com/servers/eserver/zseries/os/vse/