



E42

VSE/ESA New Features and z/VSE Preview

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Agenda

- Roadmap
- Supported environments
- e-business connectors
- Internet security
- Further VSE/ESA 2.7 enhancements
- z/VSE 3.1 Preview
- Documentation

VSE/ESA Roadmap

z/VSE 3.1 (Preview April 2004)

- Focus on zSeries and infrastructure simplification

Quality

VSE/ESA V2.7 March 2003

- Extends interoperability, e.g. to Linux on zSeries

Connectivity
(e-business enablement)

VSE/ESA V2.6 December 2001

- Interoperability continued

VSE/ESA V2.5 September 2000

- Improved Interoperability

z/OS Affinity

VSE/ESA V2.4 June 1999

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

Capacity

VSE/ESA Version 2.3 1997

- TCP/IP based communication

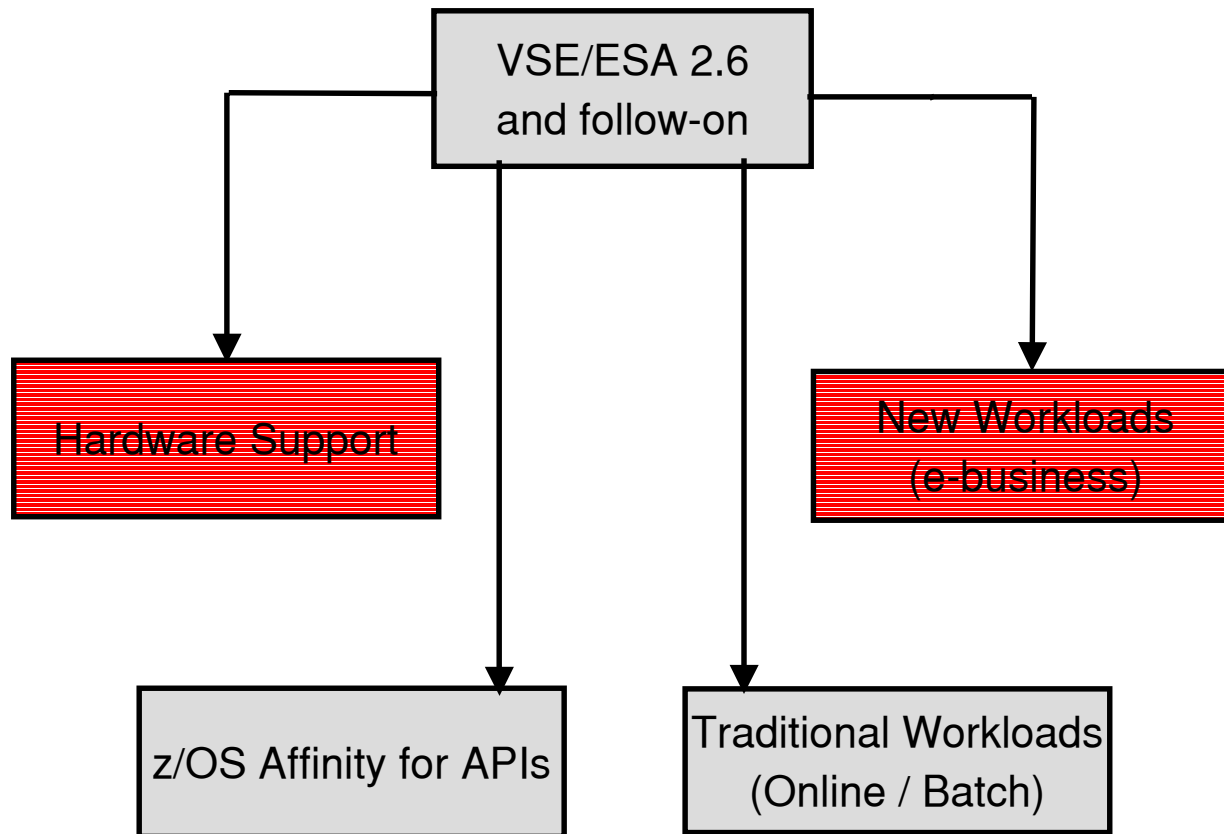
VSE/ESA Version 2 1994

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

VSE/ESA Version 1 1990

- Constraint Relief, ESA exploitation

VSE/ESA 2.6 and Follow-on



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
 - VSE/ESA 2.7.2 GA 3/19/2004
- Fast Service Upgrade (FSU) from VSE/ESA 2.5 and 2.6

Supported VSE/ESA Environments

- VSE/ESA releases run on ESA/390 and zSeries hardware only
- VSE/ESA 2.7 supports
 - S/390 Multiprise 3000
 - S/390 Parallel Enterprise Server G5, G6
 - IBM e-server zSeries processors
 - 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
- Turbo Dispatcher only
 - 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, 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 1.3.1, 1.4.1), 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 be routed through CICS (avoid share option 4)

VSE/ESA e-business Connector Enhancements in VSE/ESA 2.7

- 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

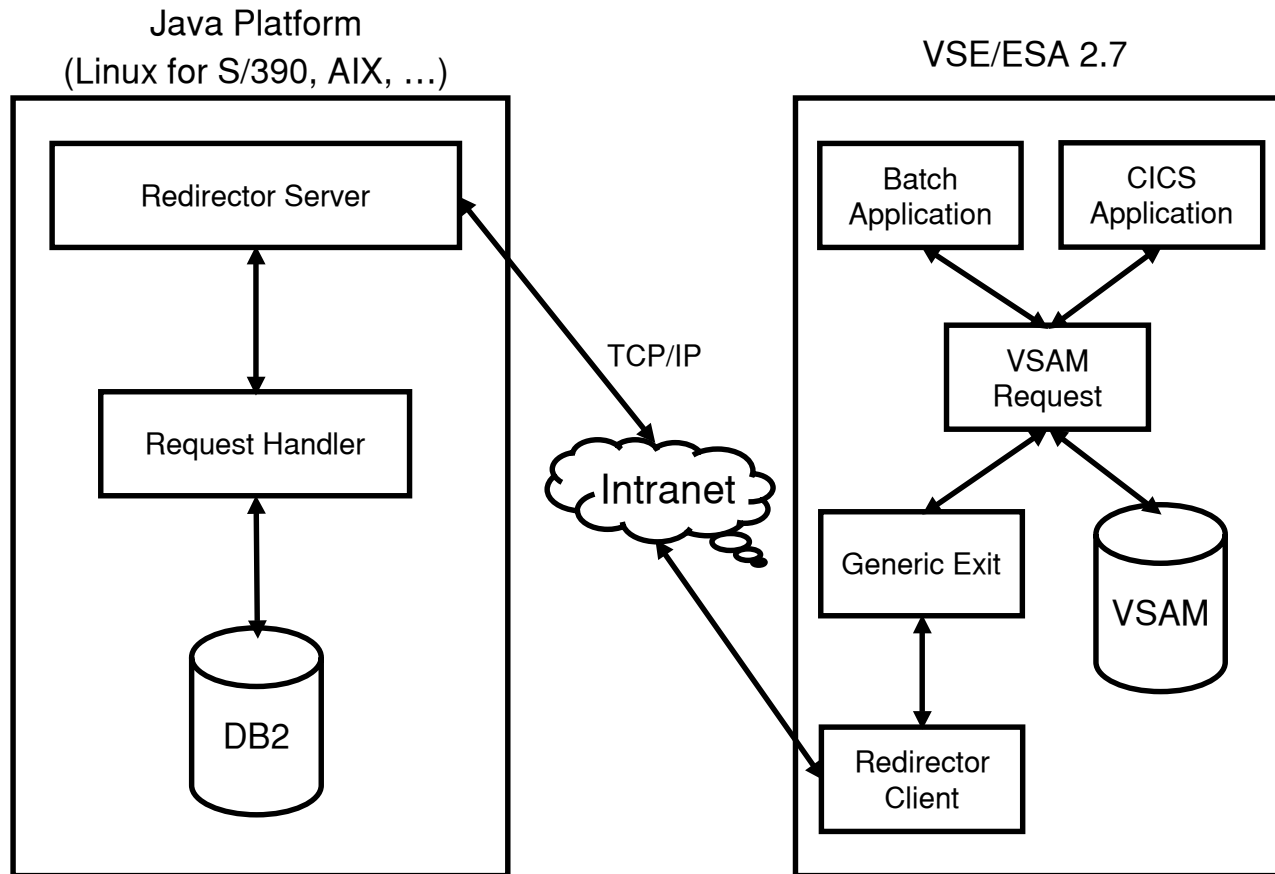
VSAM Redirector

(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...



Virtual Tape

(introduced with VSE/ESA 2.6)

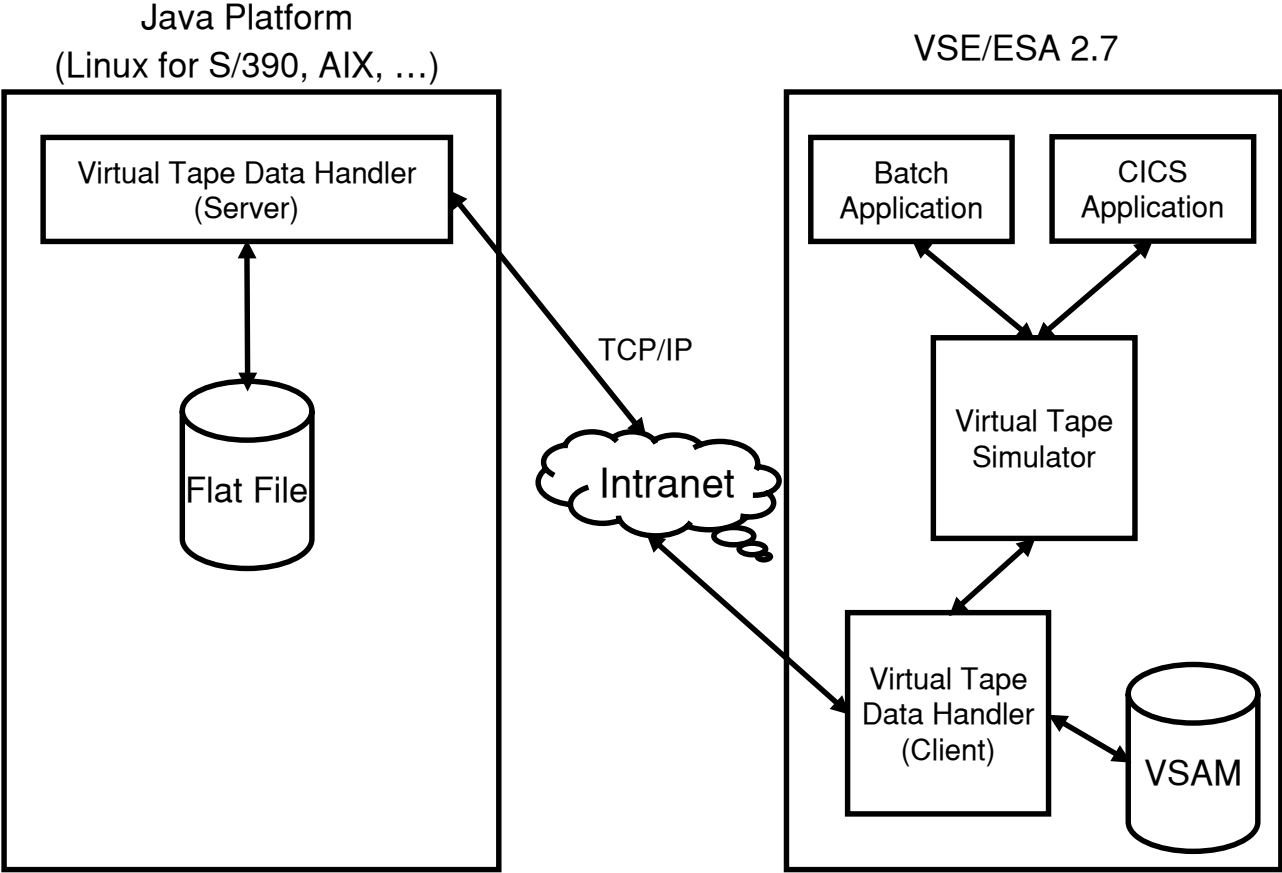
- File or dataset containing a tape image, that is
 - VSE/VSAM ESDS file on VSE/ESA
 - Remote file on Java-capable server platform (Windows, Linux, ...)

- 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

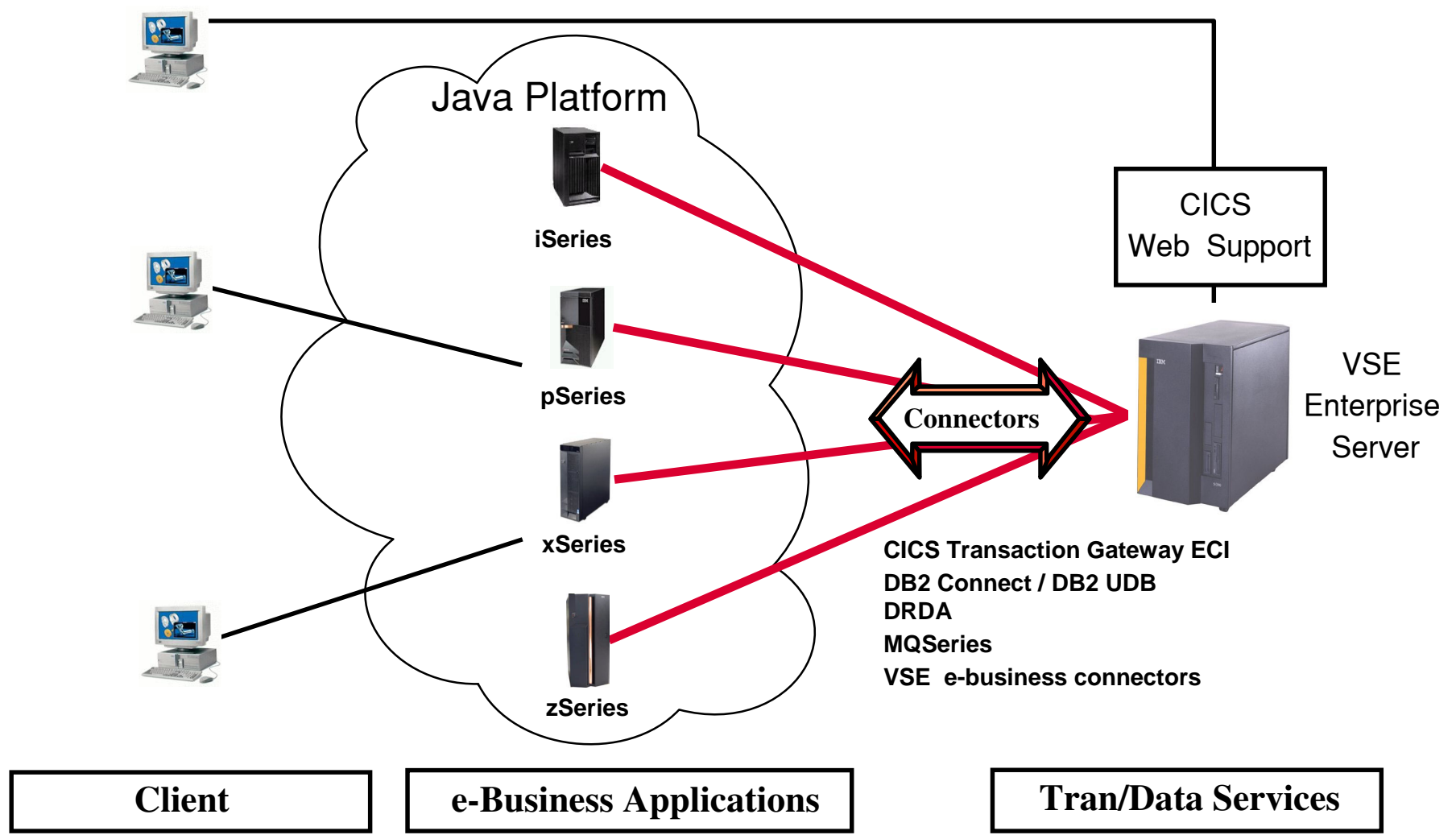
Virtual Tape ...



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

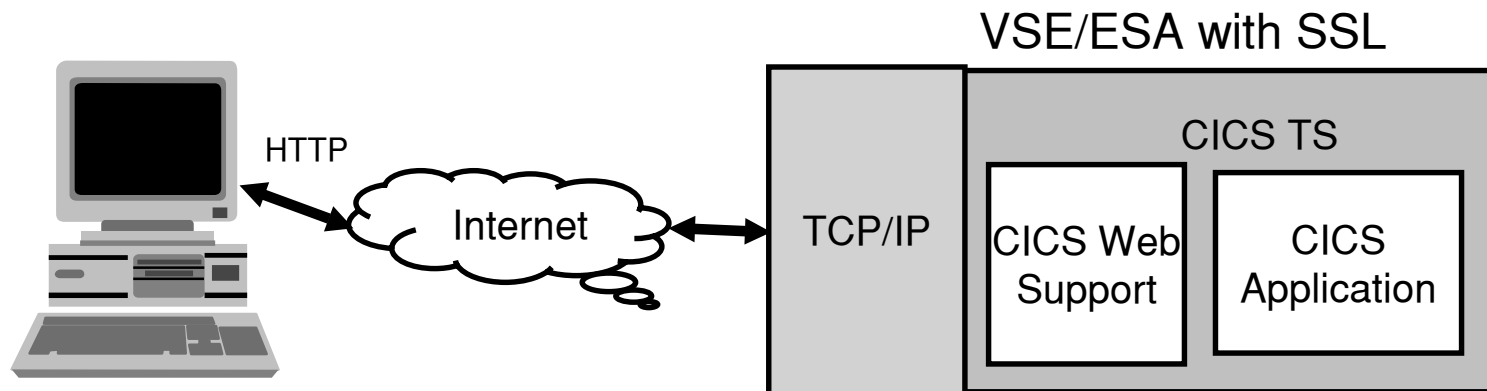
VSE/ESA e-business Connectors ...



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



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

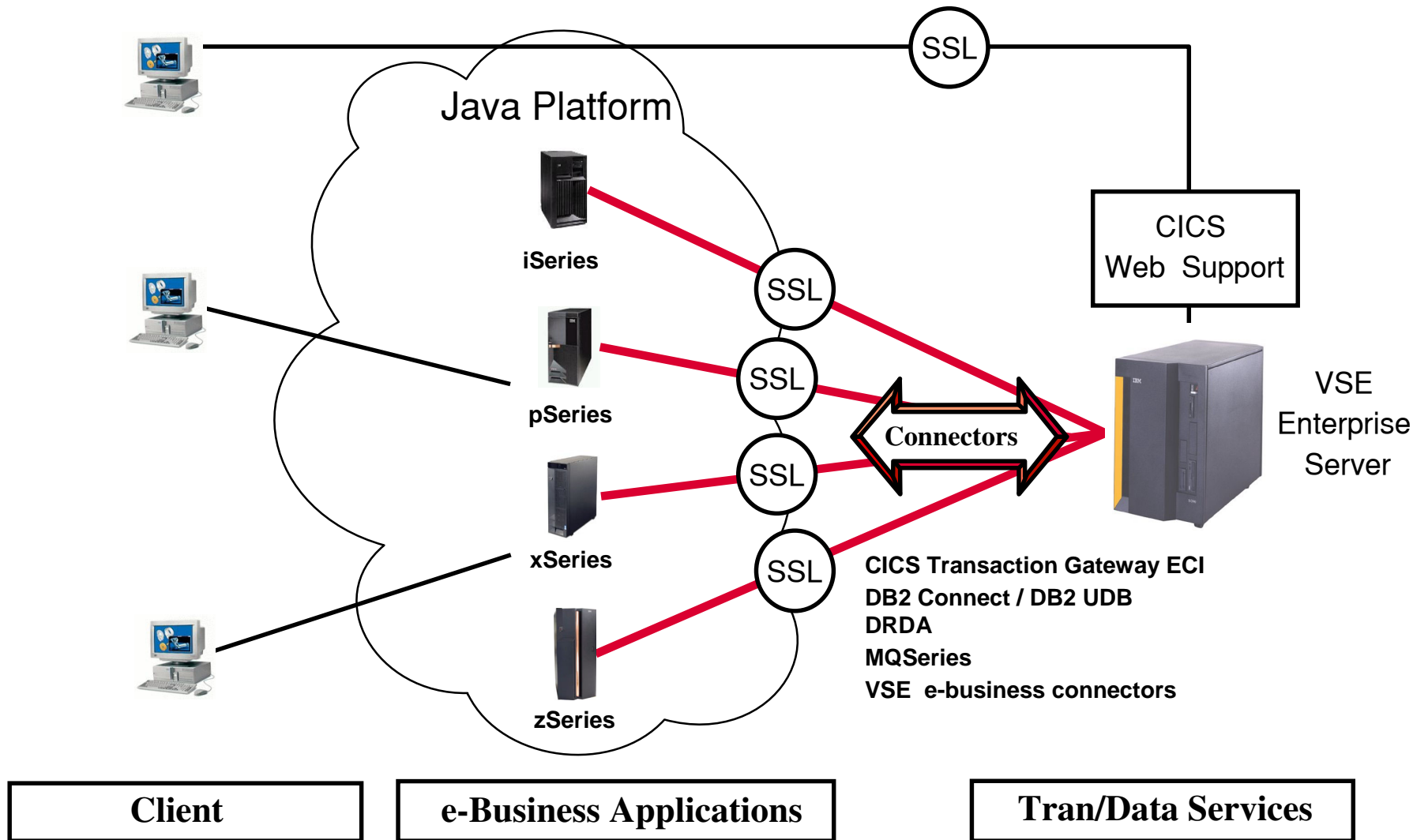
Internet Security ...

- Hardware cryptographic support with VSE/ESA 2.7
 - 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

Internet Security

- Hardware cryptographic support
 - Console message, when PCICA card detected
 - Available on zSeries processors
 - 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

Internet Security ...



zSeries HiperSockets

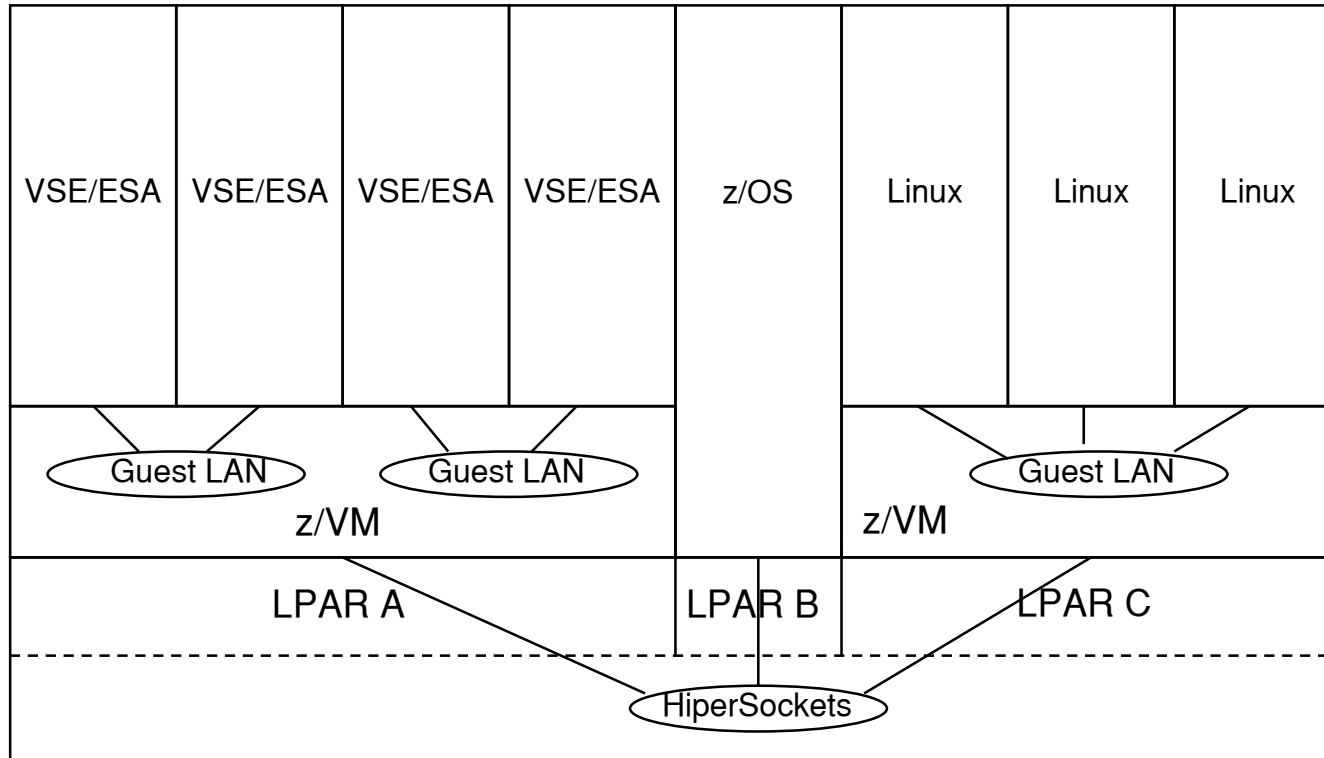
- zSeries HiperSockets
 - “network in the box”,
TCP/IP based communication at near memory speed within one system
 - zSeries Logical Partitions (LPARs)
 - z/VM guests (via virtual guest LAN)
 - z/VM guests and LPARs

 - 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

HiperSockets Example



Device Support

- 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

Enhancements in VSE/ESA 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

Enhancements in VSE/ESA Components / 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

Enhancements in VSE/ESA Components / 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

Enhancements in VSE/ESA Components / Products

- MQSeries for VSE/ESA 2.1.2
 - SSL support
 - Multiple concurrent batch interfaces

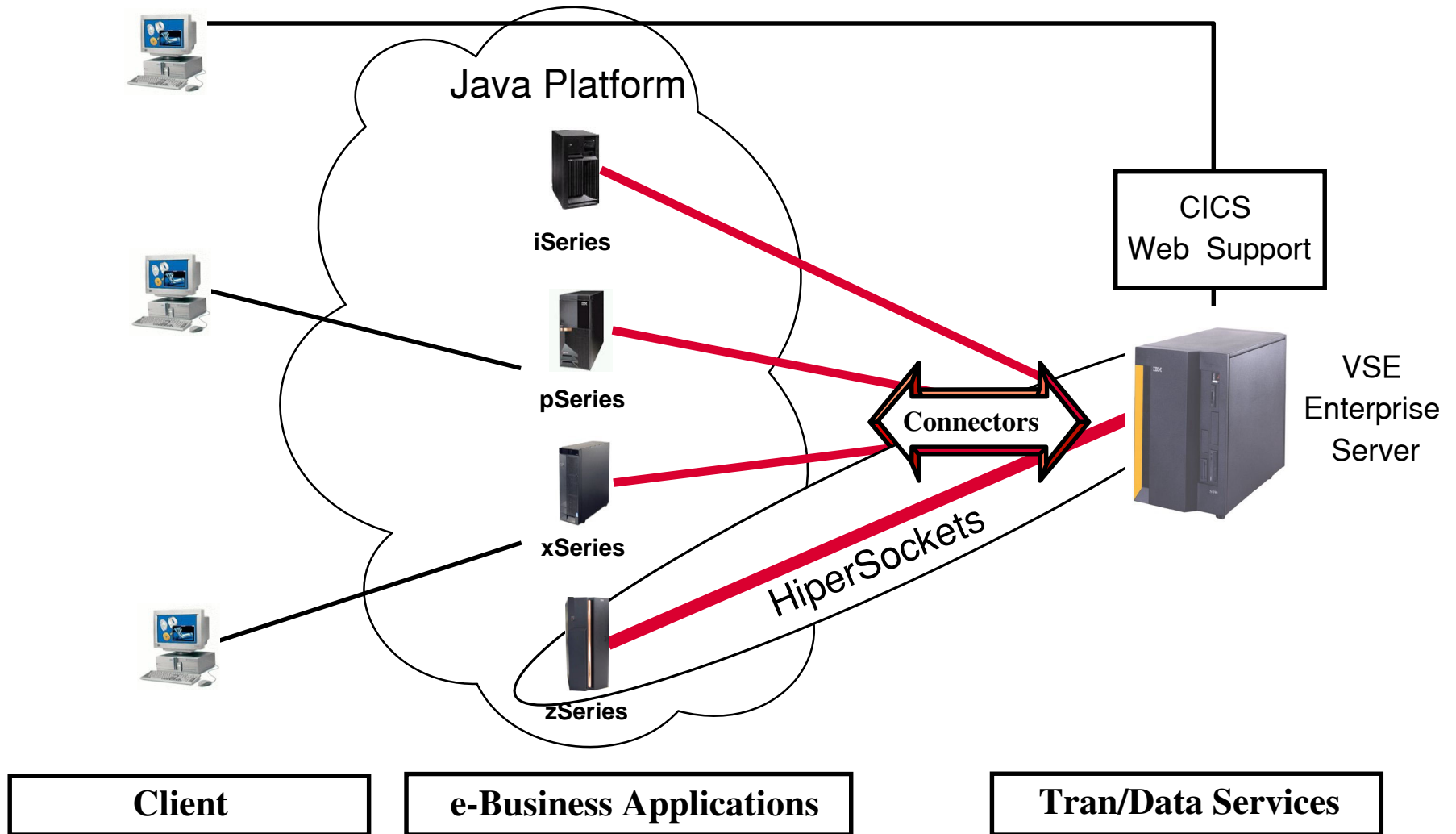
- DB2 Server for VSE and VM V7.3
 - Included since VSE/ESA 2.7.1
 - Increased availability
 - Compatibility with DB2 UDB 8.1
 - Control center enhancements

VSE/ESA 2.7.2

- Available since 3/19/2004
- Starting with VSE/ESA 2.7.2 documentation will only be available as softcopy
- Additional delivery options
 - VSE/ESA 2.7.2 available on CD-ROM
 - If ordered via Shopz, via download from the Internet (e-delivery)
- Support of new processors and devices (3592 J1A tape)

VSE/ESA 2.7

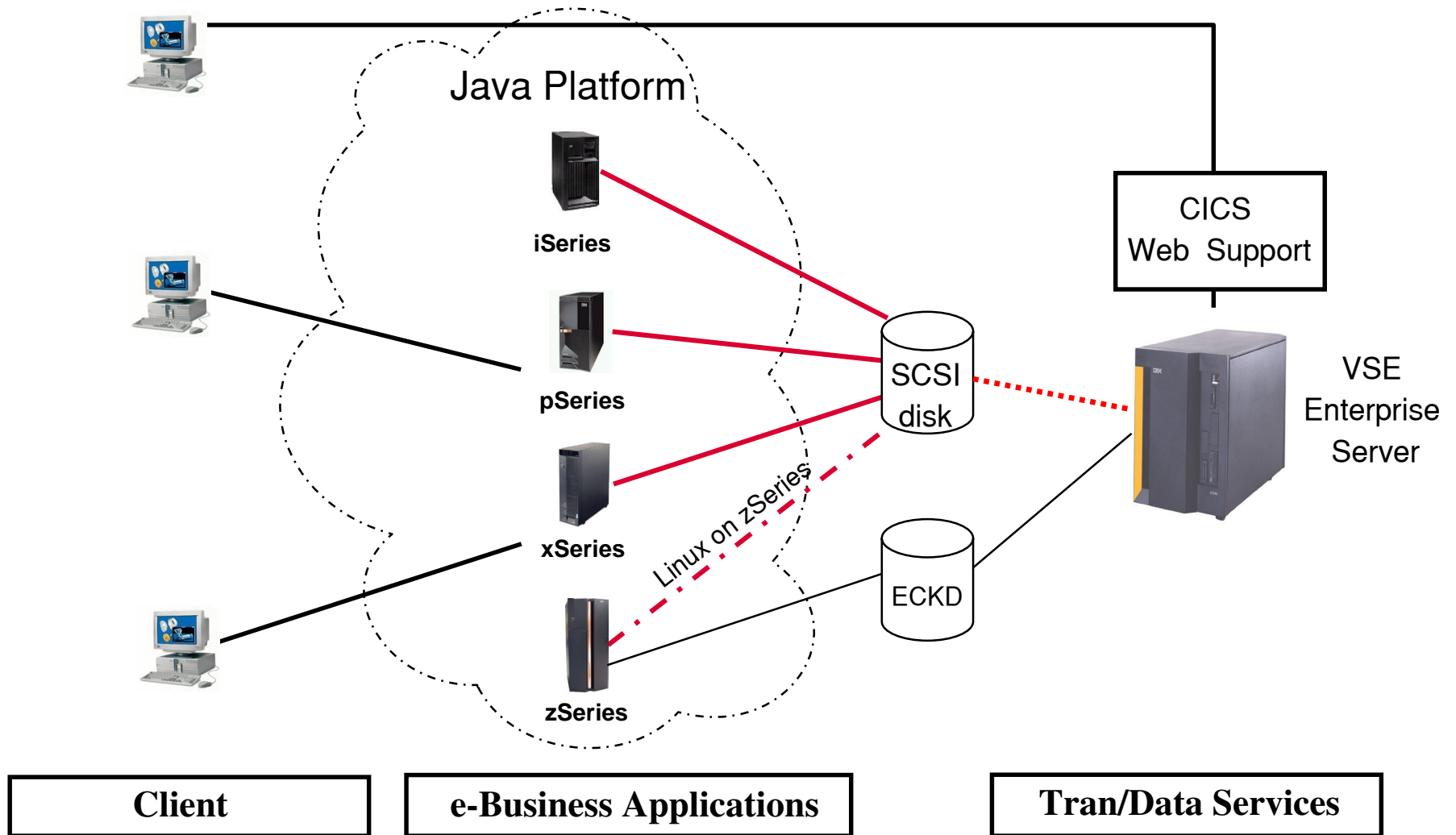
(VSE/ESA 2.6 + Hw Crypto + HiperSockets)



z/VSE 3.1 Preview

- Support of Small Computer System Interface (SCSI) devices
- Expand focus on interoperability
 - Especially with Linux on zSeries
- Support of (newest) zSeries processors (z800, z890, z900, z990)
 - Continues to support S/390 Multiprise 3000, S/390 Parallel Enterprise Server G5, G6 or equivalent
- Simplified packaging
 - Language Environment as part of VSE Central Function
- Options for electronic internet delivery and CD-ROM shipment
- z/VSE can execute in 31-bit mode only
- FSU from VSE/ESA 2.6, 2.7 (ECKD devices)

SCSI Support in z/VSE



SCSI Support in z/VSE

- Access SCSI devices through Fibre Channel Protocol (FCP)
 - For disk devices only
 - Support available on zSeries processors
 - OS interfaces
 - Operating system communicates with FCP adapter
 - FCP adapter communicates with the SCSI device
 - SCSI disk devices utilize fixed block sectors
 - Therefore VSE treats them as FBA devices

SCSI Support – Impact on Applications ?

- Transparent to all VSE applications and subsystems,
 - Minimal impact on ISV system management tools
- Reasons for transparency:
 - VSE/ESA's SCSI implementation is based on FBA support
 - Applications can not exploit SCSI commands directly
 - FBA to SCSI emulation on low level I/O interface

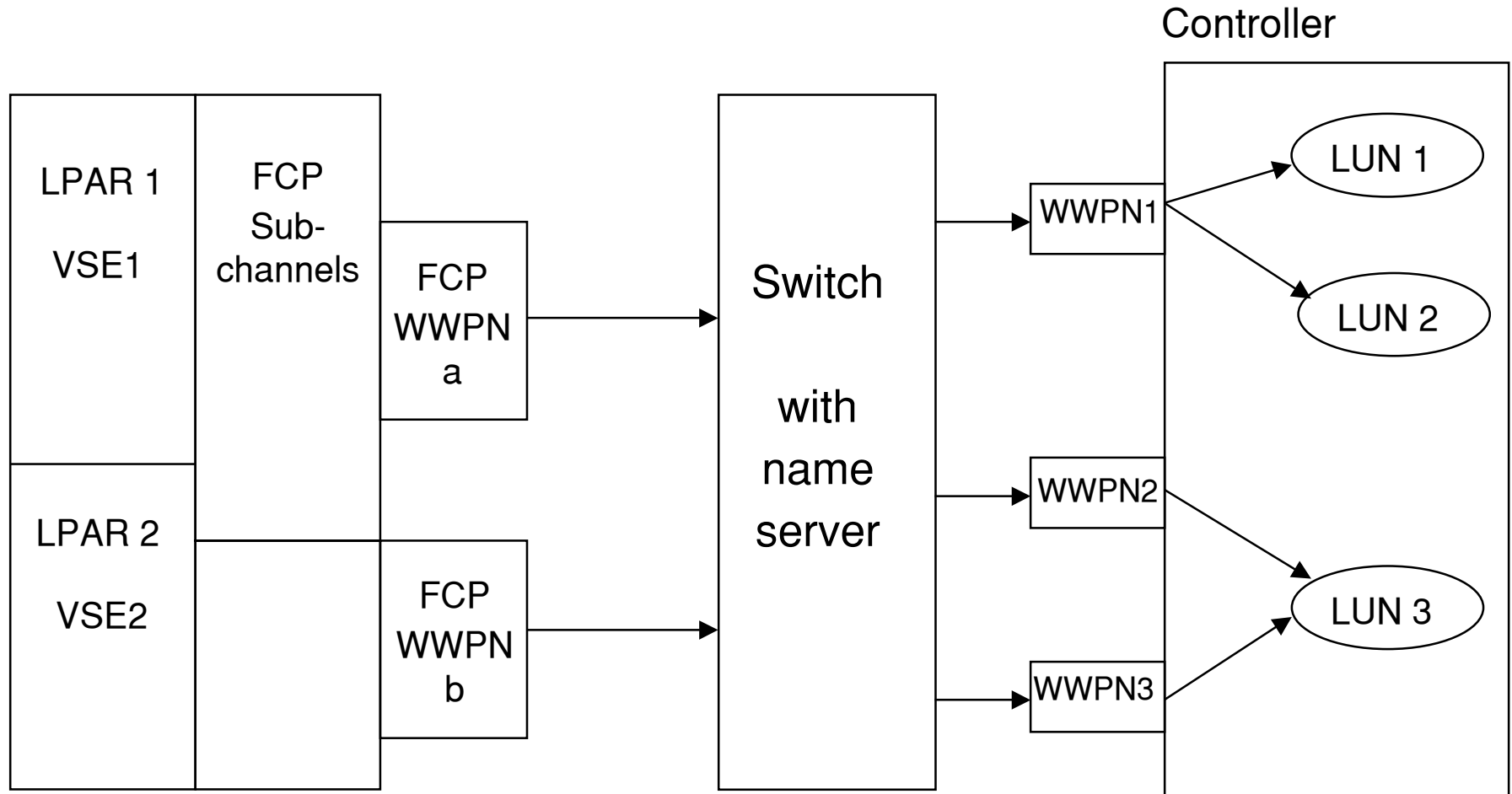
SCSI Support – Content / Limitations

- VSE/ESA's SCSI support includes:
 - SCSI as data device
- Minimum processor storage: 32 MB
- FSU from VSE/ESA 2.6, 2.7 to SCSI device is not possible
- SCSI support transparent to existing (I/O) interfaces
- Block size restricted to 512 bytes,
even if the SCSI device can be configured with larger block sizes

SCSI Support - Configuration

- zSeries FCP adapter supports switched network only:
 - Each FCP adapter has an associated port (WWPN)
 - FCP adapter configured in IOCDS with subchannel type FCP
 - FCP adapter connects to a switch
 - Switch connects to a controller with one or multiple ports
 - Controller accesses one or more SCSI devices (LUNs)

SCSI Support - Configuration



SCSI Support - Configuration

- New IPL / JCL commands and dialog to define and query a SCSI device
- Required steps to get a SCSI device known to z/VSE
 - Device /Switch configuration
 - FCP Adapter to be configured in IOCDS (CHIPID type FCP)
 - FCP adapter and SCSI disk to be defined in VSE via
 - IPL ADD commands to define FCP and FBA device
 - IPL DEF or JCL SYSDEF command to define connection to LUN

z/VSE 3.1 Exploitation of zSeries Technology

- SCSI disks attached to zSeries FCP channels
 - HiperSockets including HiperSockets spanned channels
 - PCI Cryptographic Accelerator (PCICA)
 - Adapter interruptions for OSA Express
 - Open Systems Adapter Integrated Console Controller
 - OSA Express including Ethernet and Token-Ring
 - Up to 30 LPARs
 - Up to four Logical Channel Subsystems
 - FICON and FICON Express
- 31 bit mode only

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 2.7.2 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/>