

VSE/ESA Update

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VSE/ESA Roadmap

Connectivity
(e-business enablement)
Capacity
OS/390 Affinity
Quality

VSE/ESA V2.7 *Previewed in 2/2002*

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

VSE/ESA V2.6 *December 2001*

- Interoperability continued

VSE/ESA V2.5 *September 2000*

- Improved Interoperability

VSE/ESA V2.4 *June 1999*

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

VSE/ESA Version 2.3 *1997*

- TCP/IP based communication

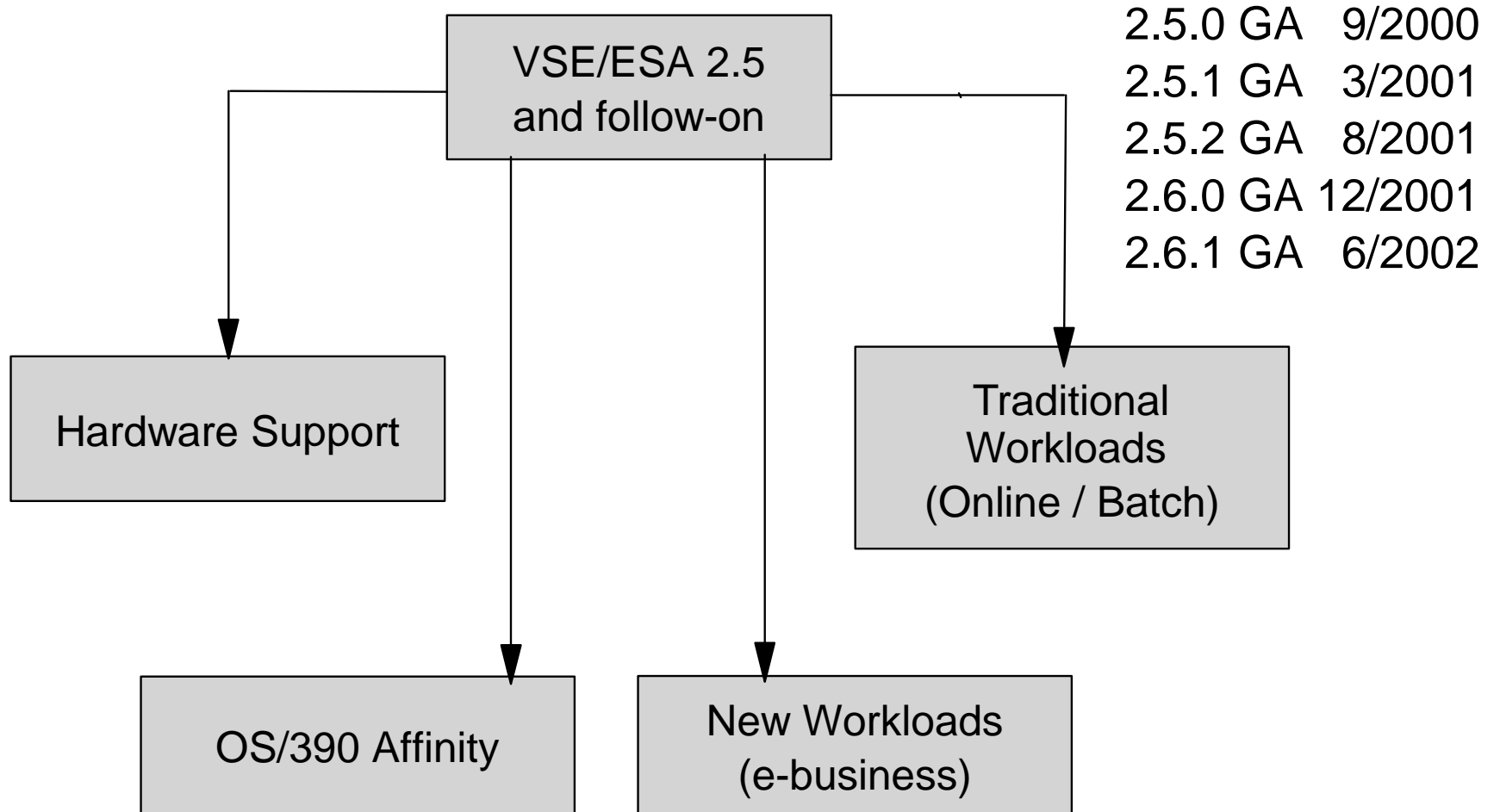
VSE/ESA Version 2 *1994*

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

VSE/ESA Version 1 *1990*

- Constraint Relief, ESA exploitation

VSE/ESA 2.5 / 2.6



FSU from VSE/ESA 2.4 or 2.5 to VSE/ESA 2.6

VSE/ESA 2.6 Highlights

- Preview Announcement: 4/2001, VSE/ESA 2.6.0 GA 12/2001
 - ▶ VSE/ESA 2.6.1 GA 6/2002

- Hardware Support

- Addresses heterogeneous environments
 - ▶ Focus on connectivity (e.g. to Linux for S/390)
 - Currency for e-business connectors (e.g. Java 2 support)
 - VSAM connector performance (avoid share option 4)
 - ▶ Internet Security
 - via Secure Socket Layer (SSL) support
 - Secure connections to CICS TS

- Fast service upgrade from VSE/ESA 2.4 and 2.5

VSE/ESA 2.6 Hardware Support

- VSE/ESA 2.5/2.6 runs on ESA/390 hardware only
 - ▶ Subsystem Storage Protection (SSP) in ESA/390
 - ▶ Cross address space services

- Hardware Support with VSE/ESA 2.5/2.6:
 - ▶ Enterprise Storage Server (ESS) Flashcopy support

 - ▶ IXFP SnapShot and ESS Flashcopy
 - Exploitation via VSAM Backup/Restore
 - SnapShot for logical volumes
 - Backup on "snapped" volume
 - Reduces backup window (backup can start after SnapShot)
 - Exploitation via Fastcopy (VSE/ESA 2.6 only)

- Turbo Dispatcher only (VSE/ESA 2.5/2.6)
 - ▶ On all uni- and multiprocessors
 - ▶ Native, as VM/ESA (z/VM) guest or in LPAR

VSE/ESA 2.6 Hardware Support ...

- zSeries 800/900 support (31-bit only)
- Support of FICON channels
- 2074 Console Support Controller
to eliminate the non-SNA 3174 controller
- Support for OSA Express Adapter (via TCP/IP)

CICS Transaction Server For VSE/ESA

- New code base with VSE/ESA 2.4 (CICS TS 1.1)
 - ▶ Latest code level: CICS TS 1.1.1 (VSE/ESA 2.5/2.6)

Includes

- ▶ CICS Server (CICS TS)
- ▶ CICS Web Support
- ▶ 3270 Bridge
- ▶ Report Controller
- ▶ Data Management Facility (DMF)
- ▶ CICS/VSE 2.3
- ▶ and more ...

CICS TS Highlights

- Extensive Virtual Storage Constraint Relief
 - ▶ 24-, 31-bit CICS, read-only, shared and user DSAs

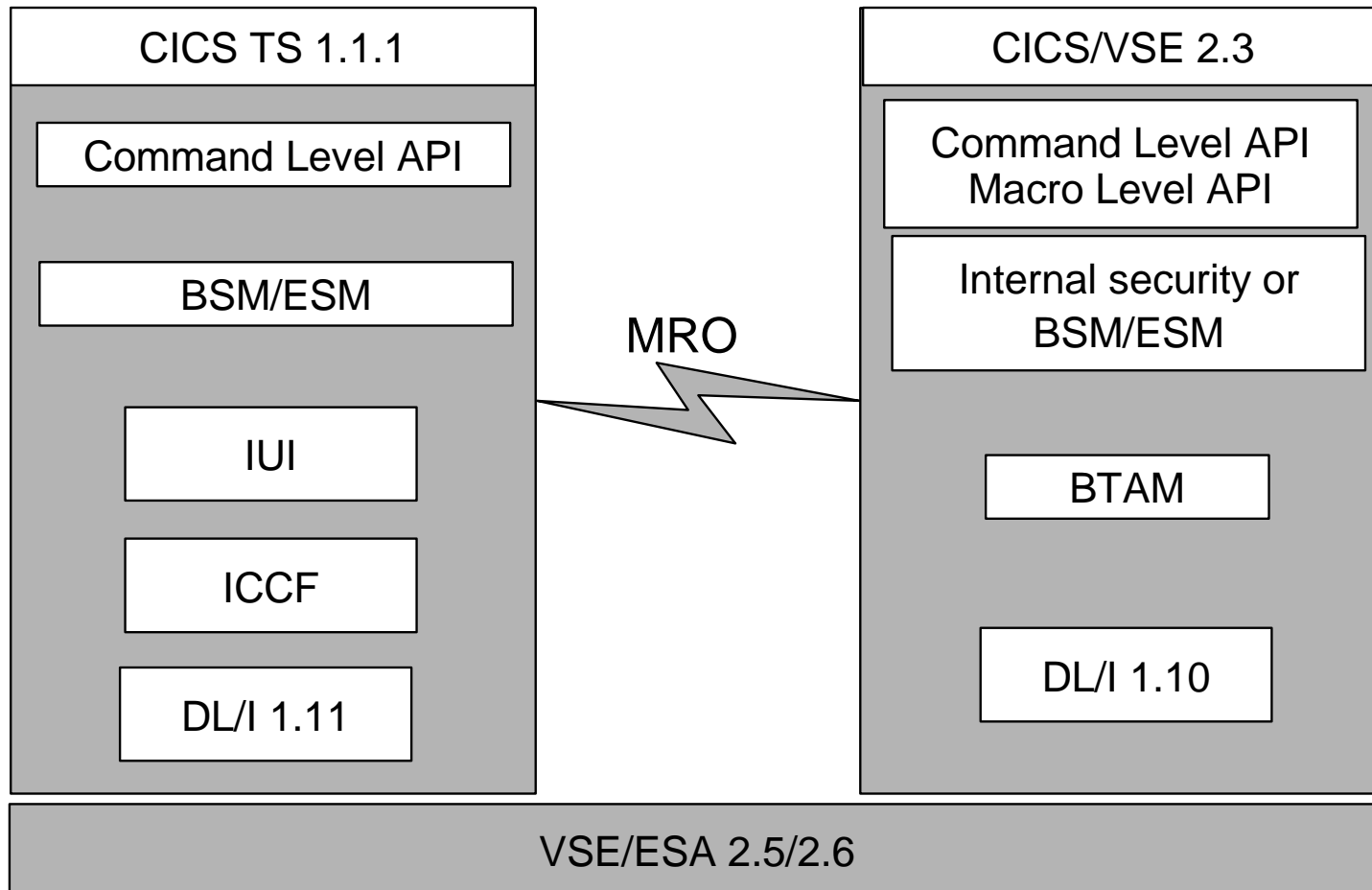
- CICS TS programming interfaces
 - ▶ Extended Application Programming Interfaces (APIs)
 - ▶ Extended System Programming Interfaces (SPIs)
 - ▶ Front-end Programming Interface (FEPI)

- System management enhancements
 - ▶ Resource Definition Online (RDO) for files

CICS TS Highlights ...

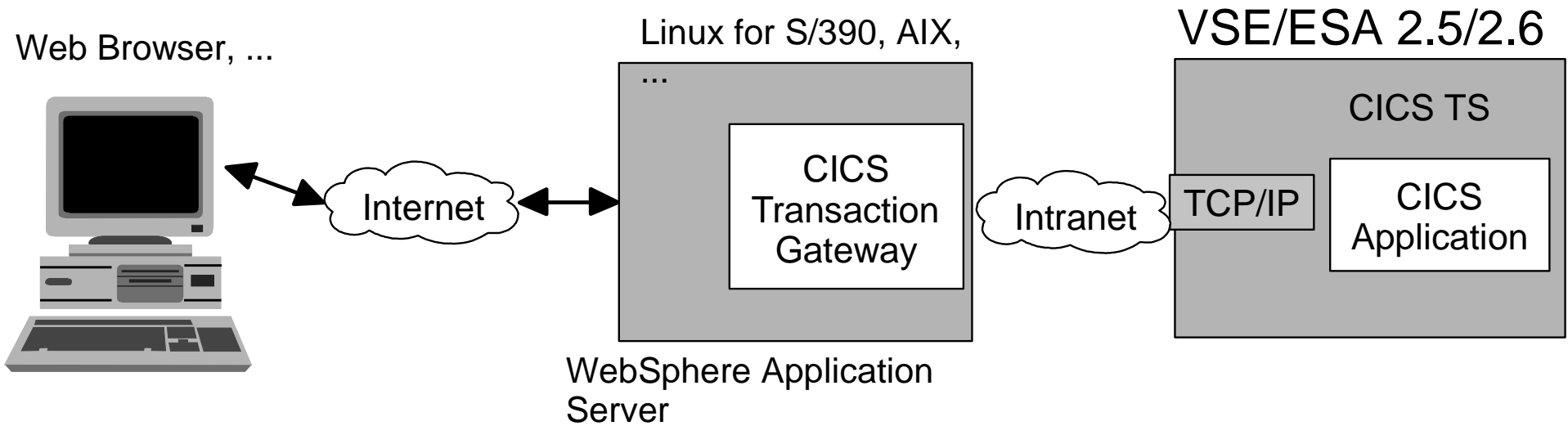
- Improved Reliability
 - ▶ Subsystem Storage Protection (SSP)
- Performance
 - ▶ (Shared) Data Tables
- Connectivity
 - ▶ External Call Interface within VSE/ESA (EXCI)
 - ▶ External Call Interface (ECI) via TCP/IP
 - ▶ CICS Web Support
- Security
 - ▶ Sign-on and transaction security via
 - Basic Security Manager
 - External Security Manager
 - ▶ CICS Web Support exploitation of Secure Socket Layer Protocol (SSL)

CICS Coexistence Environment



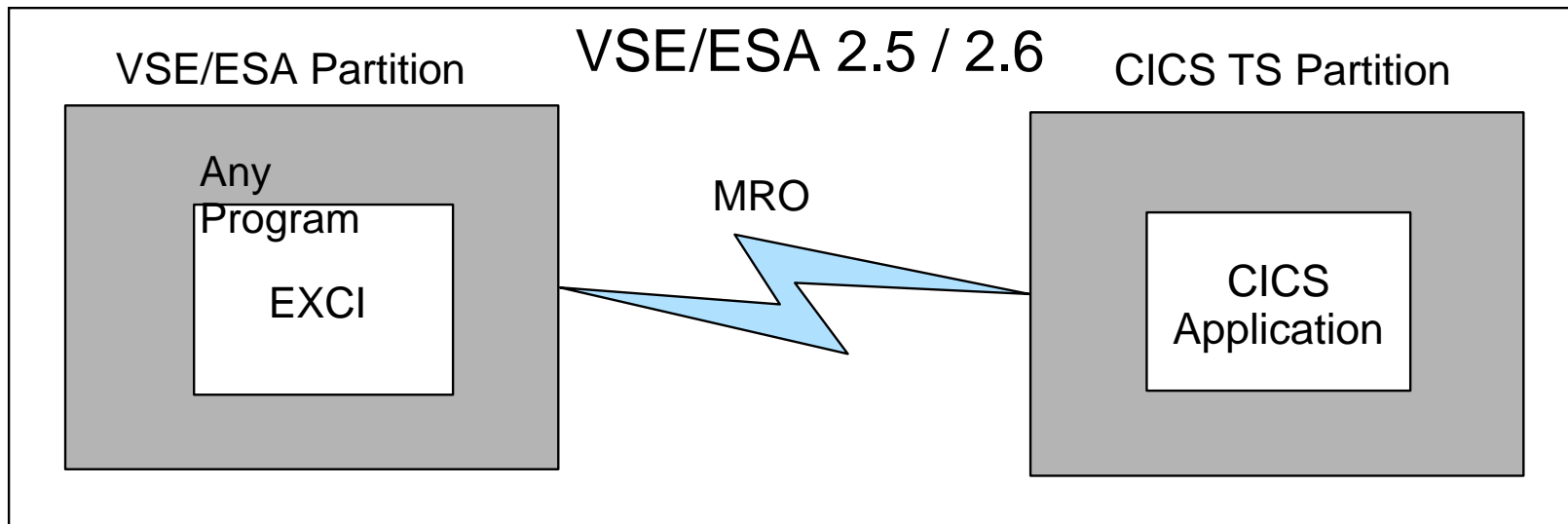
CICS External Call Interface (ECI)

- CICS External Call Interface (ECI) will now support TCP/IP
 - Can be exploited by CICS clients or the CICS Transaction Gateway
 - Provides CICS connectivity for WebSphere Application Servers running on Linux for S/390



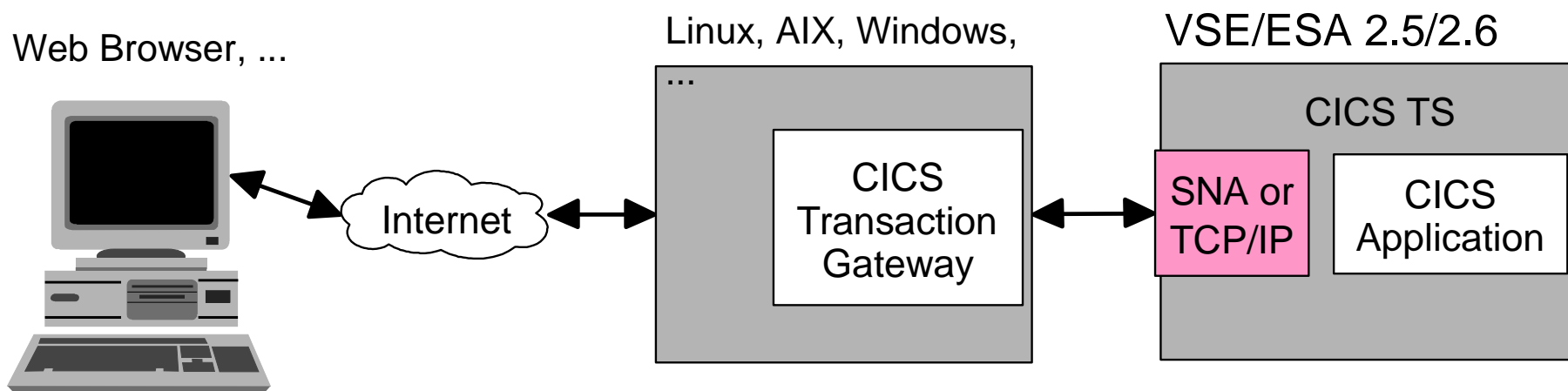
External Call Interface (EXCI)

- Invoke a program running under CICS TS from any VSE/ESA partition
- EXCI is the S/390 equivalent of the ECI (External Call Interface) function provided by the CICS clients
- Linkage via a CICS MRO link



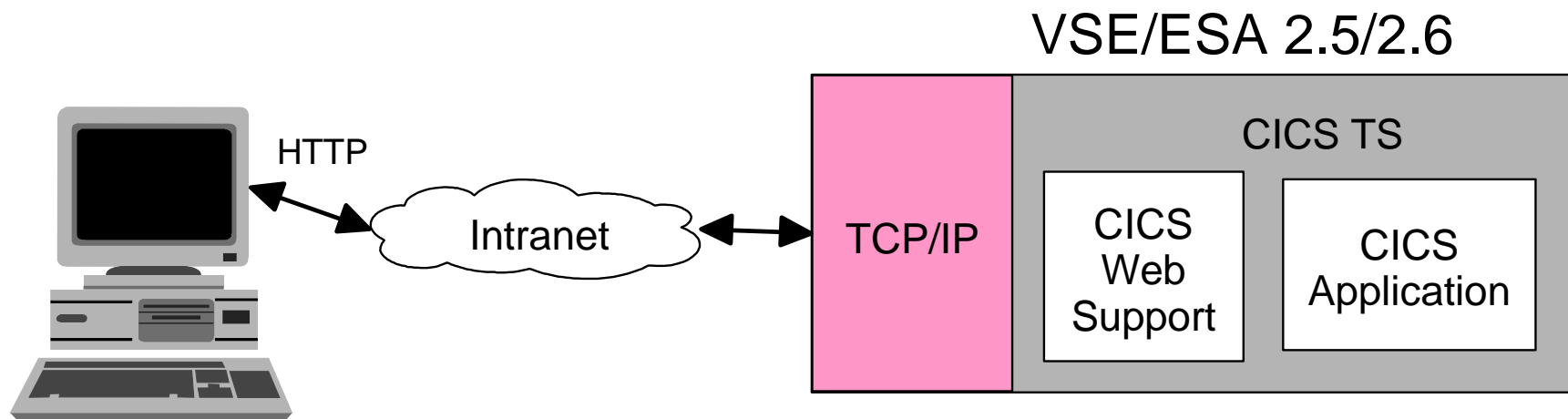
CICS Transaction Gateway

- Access to VSE/ESA resources from /390 and non-390 platforms (AIX, Windows NT, OS/2, OS/390, z/OS, Linux for S/390, ...)
- Provides Java, C++, C, Cobol, Visual Basic interfaces for access of CICS transactions from any middle tier program
- Connectivity to CICS server via SNA or TCP/IP (for ECI Communication)
- Advantages
 - ▶ Access from e-business/internet/intranet/middle tier solutions (e.g. WebSphere Application Server)



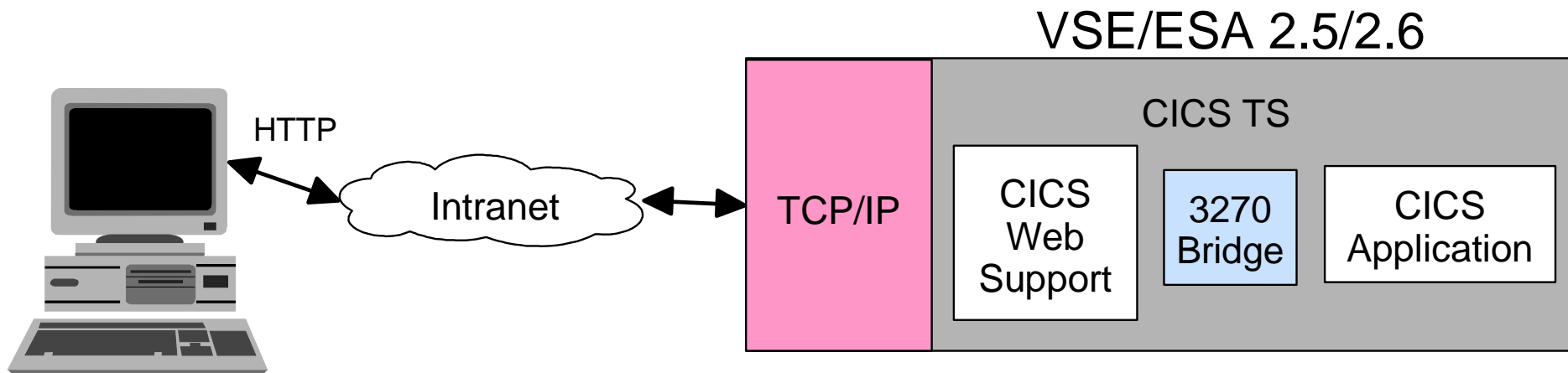
CICS Web Support

- Allows a standard Web Browser to invoke a CICS application
- Direct connection - no intermediate gateways or servers
- ASCII to EBCDIC Conversion
- Ability for existing applications to have their output converted to HTML by CICS



CICS 3270 Bridge

- A way of accessing 3270 transactions from non-3270 devices
- Advantages
 - ▶ Access to existing 3270 transactions, unmodified
 - ▶ No rewrite of presentation logic
 - ▶ No 3270 emulation needed



Basic Enhancements

- More than 10 dynamic classes
- SDAID MP Support
- Enhancements for
 - ▶ VSE/POWER
 - Access to active queue entries
 - Access to queue entries in creation
 - Constraint relief
 - ▶ Job Control
 - ▶ Librarian
 - ▶ Language Environment
 - ▶ VSE/VSAM
 - ▶ Interactive Interface
 - ▶

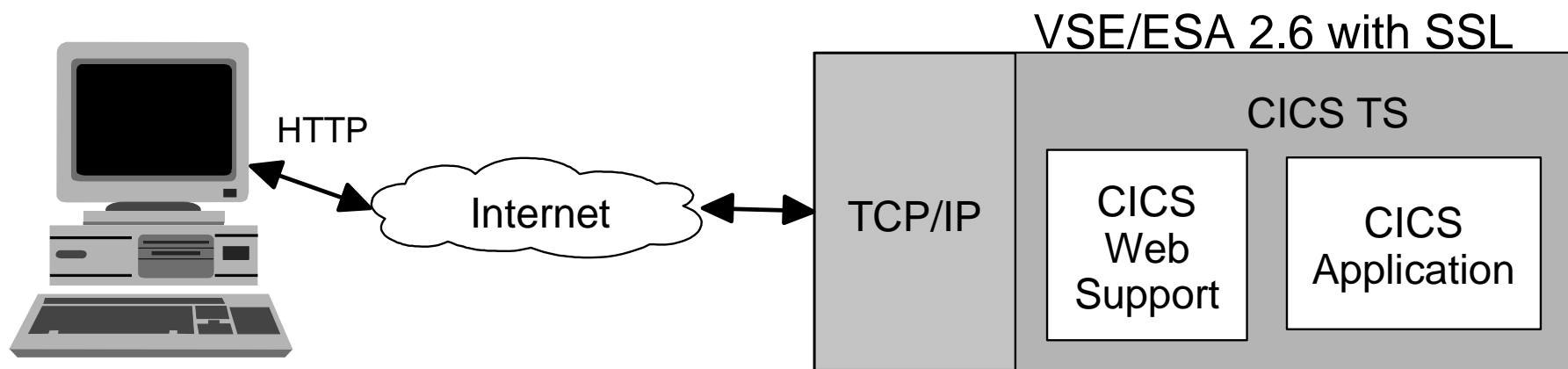
VSE/ESA Connectivity

- **TCP/IP 1.4 exploitation (VSE/ESA 2.5 / 2.6)**
 - ▶ VSE/POWER PNET over TCP/IP
 - ▶ REXX over TCP/IP
 - ▶ TCP/IP High Level Language API (EZA OS/390 interface)
 - ▶ CICS listener
 - Ported from OS/390
 - TCP/IP application
 - Waits for incoming connection requests from a CICS client
 - ▶ TCP/IP configuration dialogs
 - ▶ MQ Series 2.1.1 (TCP/IP support, SSL exploitation)
 - ▶ DB2 Server for VSE and VM 7.2 (DRDA over TCP/IP)

- **TCP/IP support for Open Systems Adapter (OSA) Express**
 - ▶ Available for S/390 G5, G6 and zSeries processors
 - ▶ Gigabit, Fast Ethernet, TokenRing supported for high speed connections
 - ▶ Available with VSE/ESA 2.6 only

Internet Security (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)
- New SSL API can be exploited by customer applications compatible with the OS/390 SSL API
- SSL exploitation by
 - ▶ TCP/IP for VSE/ESA applications such as TN3270 and web server
 - ▶ CICS Web Support (CWS)



Internet Security (VSE/ESA 2.6) ...

- **SSL Exploiters:**
 - ▶ TN3270
 - ▶ HTTP server
 - ▶ TCP/IP High Level Language API (EZA Interfaces)
 - ▶ CICS Web Support
Client Authentication (via PTF - later this year)
 - ▶ VSE Connectors
 - Client side based on JSSE (Java Secure Socket Extension)
 - ▶ VSE/Power PNET
 - ▶ MQ Series 2.1.1

VSE e-business Connectors

- 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 for S/390, AIX, OS/390, ...

- 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 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 e-business Connectors ... (VSE/ESA 2.6)

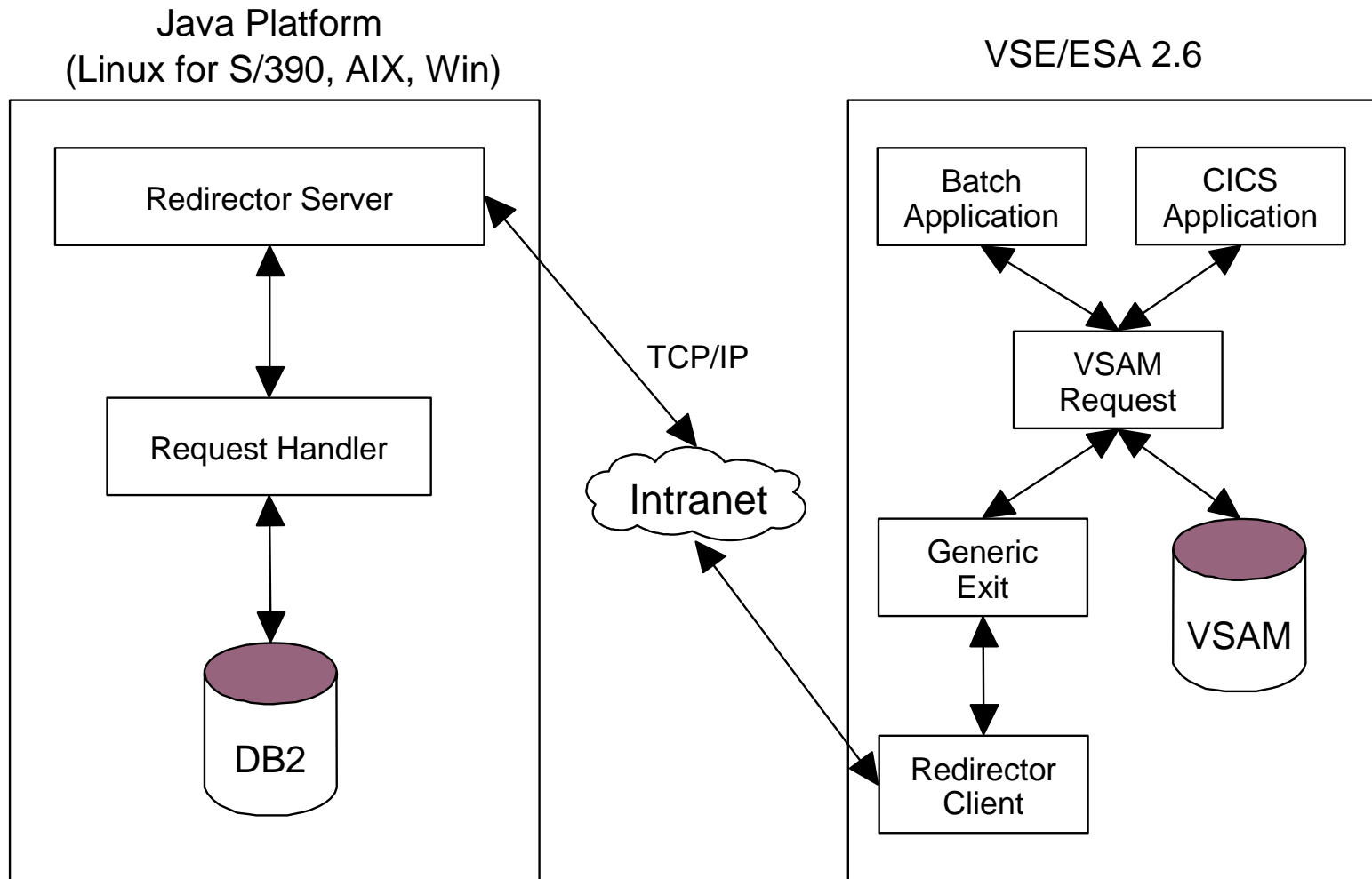
- New VSE connectors and connector currency
 - ▶ Support for Java 2 (JDK 1.2 and 1.3), including new WebSphere releases
 - ▶ J2EE connectors
 - ▶ JDBC connector to VSAM file
 - ▶ JConVSE = Java-based VSE console
 - Supports monitoring, submit job, PF key, retrieve, ...
 - Can automate VSE jobs based 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 (VSE/ESA 2.6)

- VSAM Redirector provides
 - ▶ Access to remote data
 - on Java capable platform (e.g. Linux on zSeries)
 - transparent to VSE 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 as a client

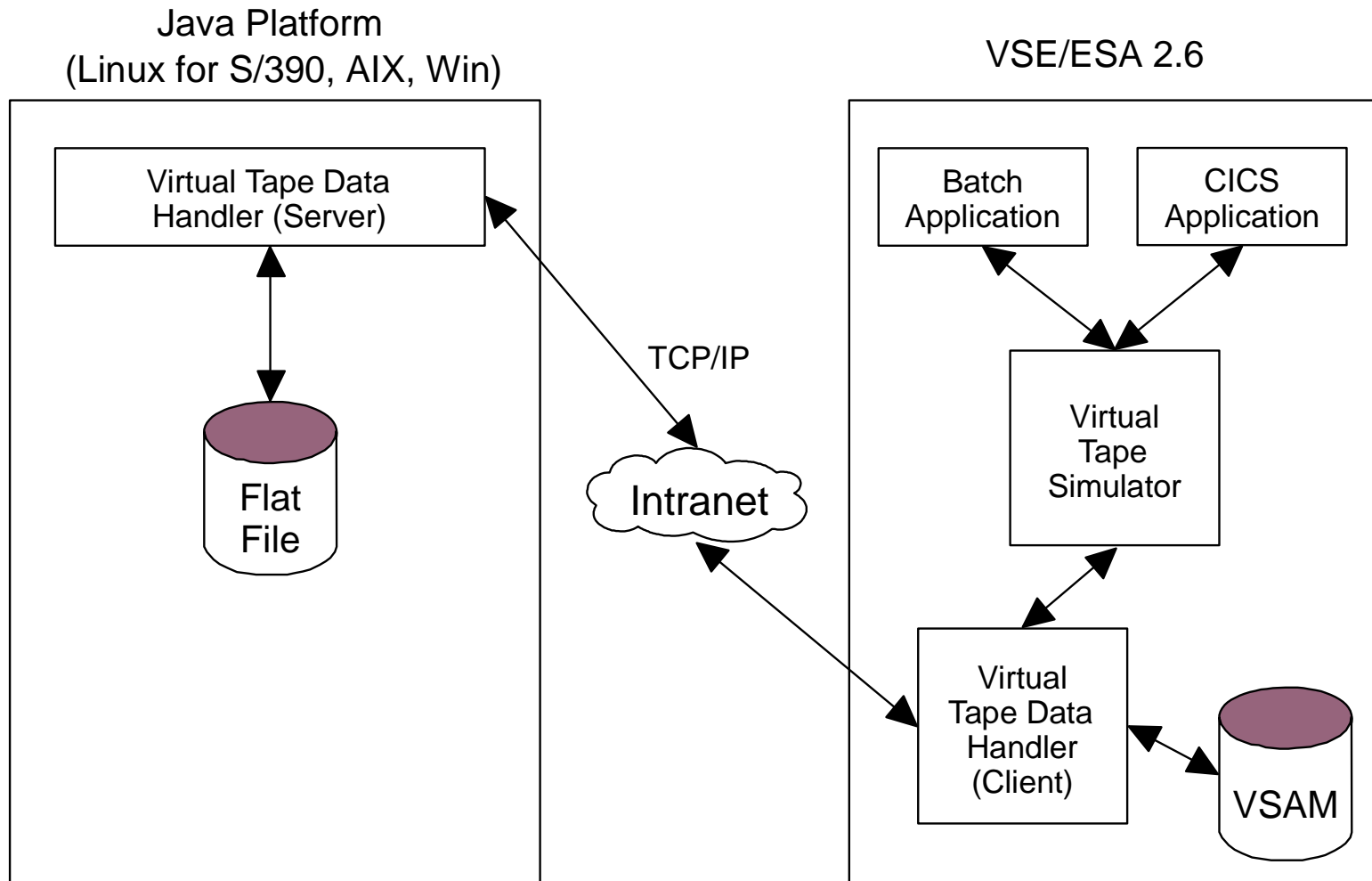
VSAM Redirector (VSE/ESA 2.6) ...



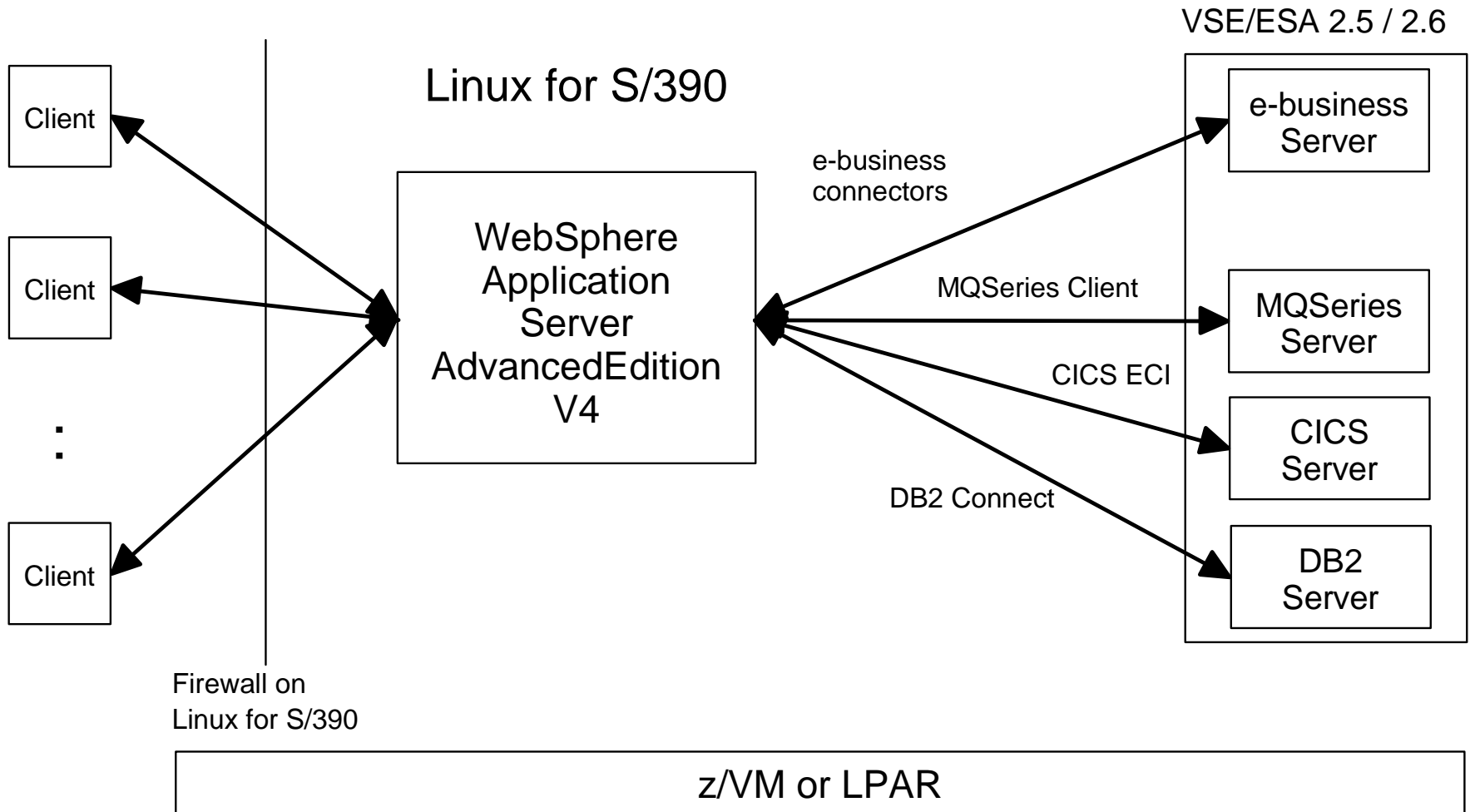
Virtual Tape (VSE/ESA 2.6)

- 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 (VSE/ESA 2.6) ...



Linux for S/390 and VSE/ESA



Miscellaneous VSE/ESA 2.6 Items

- Language Environment for VSE/ESA 1.4
 - ▶ LE/VSE dump under CICS sent directly to VSE/POWER LSTQ
 - ▶ Customization of storage around registersdump in CEE5DMP
 - ▶ C-Runtime Writable Static Support for subroutines invoked using CEEPIPI CALL_SUB function
 - ▶ Optimization of CICS storage at LE/VSE initialization time
 - ▶ New LE/VSE Callable Service, CEE5DLY; to simulate DELAY
 - For C and Cobol in batch environments

- JCL enhancements
 - ▶ Delete Label
 - ▶ New SIZE=* operand for EXEC (same as EXEC progname, SIZE=progname)
 - ▶ SDL Update from non-BG partition (SET SDL)
 - ▶ JCL phases moved to SVA (31 bit)
 - \$IJBPRTY, \$IJBMAP

- VSE/POWER: data file extension during warmstart

Product Releases/Updates with VSE/ESA 2.5/2.6

- DB2 Server for VSE and VM 7.2
 - ▶ Major VSE/ESA related enhancements:
 - DRDA over TCP/IP
 - DRDA batch application requester support
 - Improved security (password encryption)
 - Improved performance
 - ▶ Installation support for DB2 server
 - English version on extended base tape
 - Key enabled (trial period)
- MQ Series 2.1.1 (TCP/IP support, SSL Exploitation)
- REXX/VSE (TCP/IP and VSAMIO)
- REXX for CICS

VSE/ESA 2.7

- Preview Announcement: 2/2002

- Hardware Support
 - ▶ Supported hardware: MP3000, G5, G6, zSeries or equivalent (31 bit only)
 - ▶ New processors (z800, ...)
 - ▶ New devices
 - OSA Express including non-QDIO for SNA
 -

- Fast service upgrade from VSE/ESA 2.5, or 2.6

VSE/ESA 2.7...

- Enhanced interoperability
 - ▶ Between VSE/ESA and Linux on zSeries
 - ▶ HiperSockets
 - Uses adapted QDIO protocol (OSA Express)
 - Support high speed communication among
 - Logical partitions (LPARs)
 - Virtual machines under z/VM 4.2 or higher
 - VSE/ESA can communicate with other HiperSockets-capable operating systems (VSE/ESA, z/VM, z/OS, Linux on zSeries)
 - ▶ Cryptographic assist support
 - Support of IBM PCI Crypto Accelerator (PCICA)
 - Provides increased SSL throughput
 - Transparent for SSL exploiters (CWS, e-business connectors, ...)

More Information

- ▶ **VSE/ESA home page**
 - ▶ <http://www.s390.ibm.com/vse/>

- **CICS**
 - ▶ <http://www.ibm.com/software/ts/cics/products/>

- **DB2**
 - ▶ <http://www.ibm.com/software/data/>

- **WebSphere MQ family**
 - ▶ <http://www.ibm.com/software/ts/mqseries/>

- **WebSphere**
 - ▶ <http://www.ibm.com/software/info1/websphere/index.jsp>

More Information ...

- ▶ 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 Turbo Dispatcher Guide and Reference
 - ▶ VSE/ESA 2.4, SC33-6797