



IBM eServer™

VSE Trends and Directions

2004 WAVV

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| DB2 Connect | IBM eServer | TotalStorage* |
| DB2 Universal Database | IBM e(logo)server* | VM/ESA* |
| Domino | iSeries | VSE/ESA |
| DRDA* | Lotus* | z/VSE |
| Enterprise Storage Server* | Multiprise* | WebSphere* |
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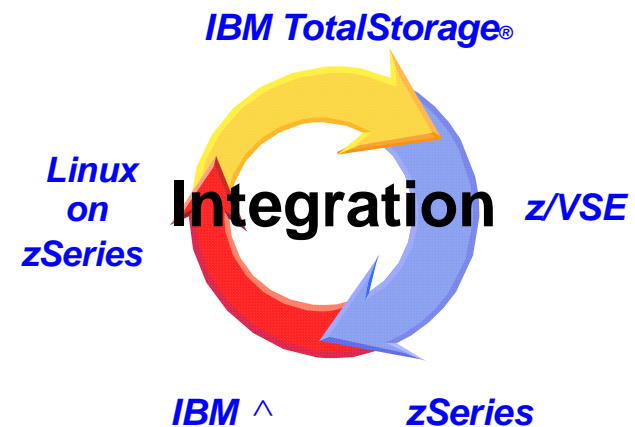
Abstract

- On 7 April 2004, IBM previewed z/VSE V3.1. Do you know where VSE is going? What is the significance of a new name and version? What is the role of Linux? This presentation will cover the present and future of VSE. The session is intended for VSE customers, as well as IBMers, BPs, and ISVs with responsibilities for VSE accounts.



Agenda

- **What's New**
- z/VSE
- zSeries 890
- Hybrid Model
- VSE Connectors
- Linux
- Conclusion





What were things like in 1964?

- Value (in 2004\$) of \$1 = \$6.04
- Average salary = \$7,336
- Average price of a car = \$2,350
- Average price of a house = \$20,500
- Dow Jones Industrial Average = 874
- Top Songs
 - ▶ Beatles 'Can't Buy Me Love'
 - ▶ Beatles 'She Loves You'
 - ▶ Beatles 'I Feel Fine'
 - ▶ Beatles 'I Want to Hold Your Hand'
- Top TV Shows
 - ▶ Bewitched
 - ▶ Gilligan's Island
 - ▶ Lawrence Welk Show
- Russell Crowe born April 7, 1964





Nothing stays the same!

DOS/360 - DOS/VS - DOS/VSE - VSE/SP - VSE/ESA - z/VSE
(SSX)

| Metric | Change |
|-----------------------------|-------------|
| <i>Speed</i> | ~ 10,000 X |
| <i>Main Memory</i> | ~ 250,000 X |
| <i>Disk</i> | ~ 35,000 X |
| <i>Price/Perf (1964 \$)</i> | ~ .0002 X |





What has changed since Winston-Salem?

- 05/13/2003 - IBM eServer™ zSeries® 990
- 06/30/2003 – End of hardware service for ES/9021 and 9121
- 09/12/2003 - VSE/ESA V2.7.1
 - ▶ service integration plus z990 items
 - ▶ DB2 Server for VSE and VM V7.3
 - ▶ VSE/ESA V2.6.3 Service Option
- 12/31/2003 - End of hardware service for ES/9221 and 9672-Rx1
- **12/31/2003 - VSE/ESA V2.5 End-of-Service**





What has changed since Winston Salem (Part 2)?

- 03/19/2004 - VSE/ESA V2.7.2
 - ▶ service integration, z990 items, IBM 3592 tape

- 03/19/2004 – distribution via e-delivery and CD-ROM
 - ▶ internet delivery of releases via ShopzSeries
 - ▶ full releases, no change in service delivery at this time

- 03/19/2004 - introduce Recommended Service Level (RSL) concept
 - ▶ new preventative service concept
 - ▶ designed to fill gap between refreshs and HIPER service

- 04/07/2004 – 40th Anniversary of S/360 Announcement
 - ▶ IBM eServer™ zSeries® 890
 - ▶ IBM TotalStorage Enterprise Storage Server (ESS) 750
 - ▶ z/VM V5.1
 - ▶ **z/VSE V3.1 Preview !**

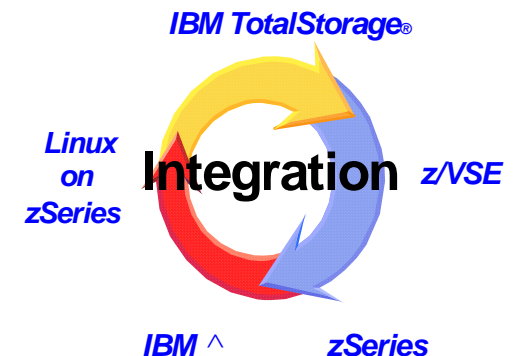




The fundamental VSE strategy has not changed

- Helps **Protect** your extensive investments in VSE programs, data, equipment, and IT skills, plus business processes, end user training, etc.
 - ▶ modernize – i.e. extend core CICS® TS VSE/ESA applications to the Web
 - ▶ exploit IBM servers, storage, and software
- **Integrate** VSE with the rest of your IT - based on open and industry standards
 - ▶ IBM Middleware
 - ▶ VSE e-business connectors and web services
- **Extend** with Linux on IBM eServer™ zSeries® where appropriate
 - ▶ infrastructure simplification
 - ▶ new infrastructure and/or line-of-business applications

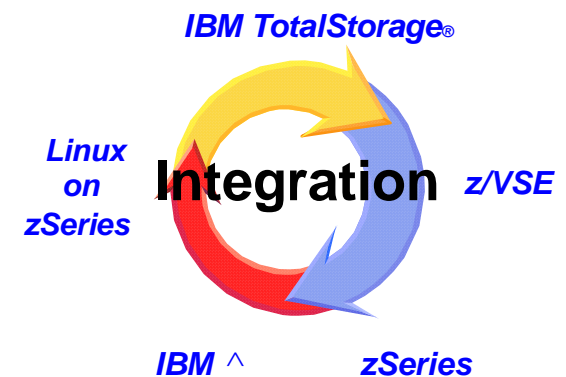
Leverage your VSE investment
– without being limited by it





Agenda

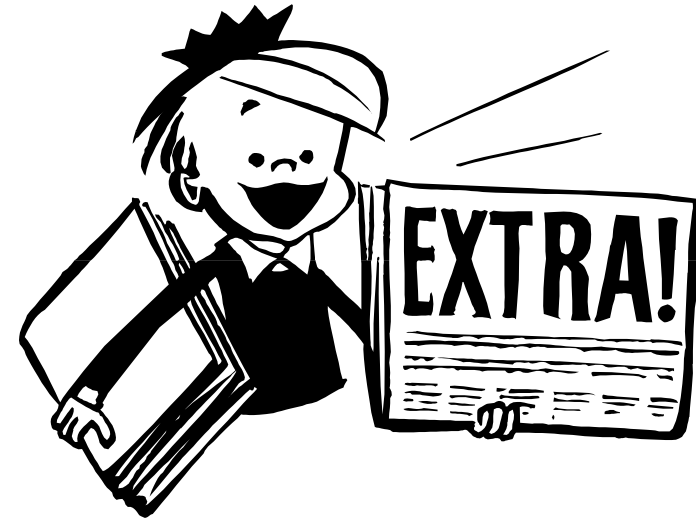
- What's New
- **z/VSE**
- zSeries 890
- Hybrid Model
- VSE Connectors
- Linux
- Summary





z/VSE (1) V3.1 Preview

- Helps **Protect** investments in your core VSE assets
 - ▶ **Fibre Channel Protocol (FCP) Channel attached SCSI disk**
 - ▶ HiperSockets, incl spanned HiperSockets
 - ▶ PCICA hardware encryption assist
 - ▶ Adapter interrupts for OSA-Express
 - ▶ OSA-Express, incl Ethernet and Token Ring
 - ▶ OSA-Integrated Console Controller
 - ▶ Up to 30 LPARs
 - ▶ Up to 2 LCSSs on z890 - 4 on z990
 - ▶ FICON-Express
- **Integrate** VSE with the rest of your IT
 - ▶ VSE Connectors and web services
 - ▶ IBM middleware
- **Extend** with Linux on zSeries



Note 1: z/VSE can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE is designed to support selected features of IBM zSeries hardware



z/VSE V3.1 Planning Information

- z/VSE can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE is designed to support selected features of IBM zSeries hardware. There are **NO** plans for 64-bit support.
- Language Environment for VSE/ESA is planned to disappear as a separate product and become a component of VSE Central Functions
- Equivalent monthly prices for IBM software are planned to be 'net neutral'
- CICS/VSE V2.3 is planned to ship together with CICS TS for VSE/ESA as before at no additional charge
- FSU is planned to be available from VSE/ESA V2.6 and V2.7
- GA is planned for 2005 – go ahead and upgrade to VSE/ESA V2.7 now!
- Previews provide insight into current IBM plans and direction. IBM development plans are subject to change or withdrawal without further notice. Any reliance on this preview is at the relying party's sole risk and will not create any liability or obligation for IBM. Availability, prices, ordering information, and terms and conditions will be provided when the product is announced.



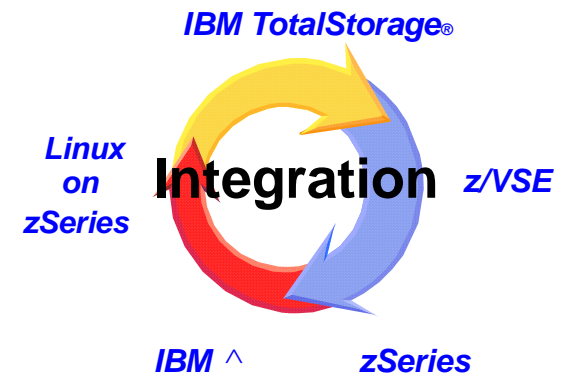
VSE Server Support

| IBM Servers | z/VSE V3.1 | VSE/ESA V2.7 | VSE/ESA V2.6 | Hdwr EoS |
|--|---------------|-----------------|-----------------|-------------|
| zSeries 800, 890, 900, 990 (31-bit only) | Yes | Yes | Yes | tbd |
| S/390 Parallel Enterprise Server™ G5/G6 | Yes | Yes | Yes | tbd |
| S/390® Multiprise® 3000 | Yes | Yes | Yes | tbd |
| S/390 Parallel Enterprise Server™ G3/G4 | No | No | Yes | tbd |
| S/390® Multiprise® 2000 | No | No | Yes | tbd |
| S/390 Integrated Server | No | No | Yes | tbd |
| S/390 Parallel Enterprise Server™ G2 | No | No | Yes | 12/2004 |
| P/390 and R/390 | No | No | Yes | 12/2004 |
| S/390 Parallel Enterprise Server™ G1 | No | No | Yes | 12/2003 |
| ES/9000® – 9221 | No | No | Yes | 12/2003 |
| ES/9000® – 9121, 9021 | No | No | Yes | 06/2003 |



Agenda

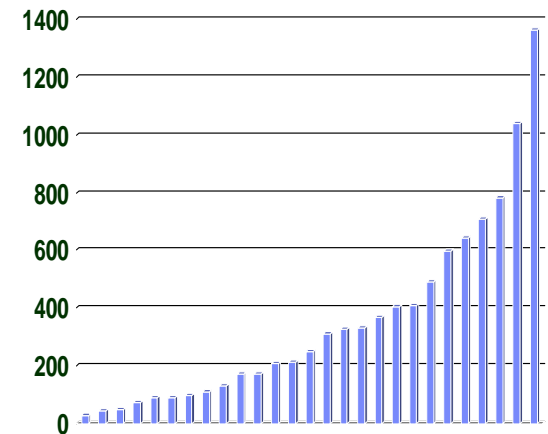
- What's New
- z/VSE
- IBM eServer™ zSeries® 890
- Hybrid Model
- VSE Connectors
- Linux
- Conclusion





IBM eServer™ zSeries® 890 Highlights

- Based on the latest z990 on demand technology
- A single model with 28 capacity settings for flexibility and granular growth
 - ▶ specially designated workload processors available for Linux (plus coupling facility and Java™ workloads for z/OS)
- On demand upgradeability in the family*
 - ▶ upgrades can be temporary or permanent
 - ▶ select versions of z890 is upgradeable to z990
- New and improved Networking and Connectivity Options
- zSeries Availability
- EWLC Tiered Price Structure



*Terms and conditions apply



z890 – Technology Features



- Memory
 - ▶ 8 GB Standard
 - ▶ 8 GB increments to 32 GB (i.e. 8, 16, 24, 32 GB)
- Up to 30 LPARs
 - ▶ Capacity setting 110 supports just 15 LPARs
- Two Logical Channel SubSystems (LCSS)
 - ▶ 28 slot I/O cage supports up to 420 ESCON® channels
 - z890 110 capacity setting has just 16 I/O slots
 - ▶ OSA-Express – Gigabit Ethernet, 1000BASE-T Ethernet, Token-Ring, Integrated Console Controller
 - ▶ Open [Fibre Channel Protocol](#) (FCP)
 - ▶ 4X HiperSockets™ (16) compared to z800
- Cryptographic coprocessor optional
- Single frame
 - ▶ One and three phase options
 - ▶ Raised floor recommended but not required
 - ▶ Internal Battery Option



An innovative way to think about granularity

- Single Model: **z890-0A4**
- A dramatic new way to consider upgrading
- One MCM per model with 5 Processor Units (PUs)
 - ▶ 4 PUs available for characterization
 - **CPs**
 - **IFLs**
 - zAAPs and CFs (z/OS only)
 - ▶ One PU standard as a SAP
- Standard CPs
 - ▶ 4 full capacity processors, each with 7 capacity settings
 - z890 entry point (110) **approximately 32% less** than z800-0E1
 - z890 full capacity 1-way (170) is **1.98 – 2.09* X** the capacity of z800-001
 - z890 full capacity 4-way (470) is **2.19 – 2.28* X** the capacity of z800-004
 - ▶ Upgrades can be vertical, horizontal, or diagonal to best fit your needs””

| 1-WAY | 2-WAY | 3-WAY | 4-WAY |
|------------|-------|------------|------------|
| 110 | 210 | 310 | 410 |
| 120 | 220 | 320 | 420 |
| 130 | 230 | 330 | 430 |
| 140 | 240 | 340 | 440 |
| 150 | 250 | 350 | 450 |
| 160 | 260 | 360 | 460 |
| 170 | 270 | 370 | 470 |

Think of the possibilities
 Define the processor the way your business requires

* Preliminary estimates.
 ** No mixing of standard CP capacity sizes in multi-engine machines, and zAAPs cannot outnumber standard CPs in any configuration.



VSE Pricing for zSeries 890

| 1-way | 2-way | 3-way | 4-way |
|-------------------|-------------------|-------------------|-------------------|
| 110 (zELC) | 210 (EWLC Tier A) | 310 (EWLC Tier A) | 410 (EWLC Tier B) |
| 120 (EWLC Tier A) | 220 (EWLC Tier B) | 320 (EWLC Tier C) | 420 (EWLC Tier C) |
| 130 (EWLC Tier B) | 230 (EWLC Tier C) | 330 (EWLC Tier C) | 430 (EWLC Tier D) |
| 140 (EWLC Tier C) | 240 (EWLC Tier C) | 340 (EWLC Tier D) | 440 (EWLC Tier D) |
| 150 (EWLC Tier C) | 250 (EWLC Tier D) | 350 (EWLC Tier D) | 450 (EWLC Tier E) |
| 160 (EWLC Tier C) | 260 (EWLC Tier D) | 360 (EWLC Tier E) | 460 (EWLC Tier E) |
| 170 (EWLC Tier D) | 270 (EWLC Tier E) | 370 (EWLC Tier E) | 470 (EWLC Tier E) |

Note: For z890, VSE is priced according to EWLC – Tiered Price Structure. However, zELC prices are used for the z890 Capacity Setting 110 (only).



Capacity Settings and MSUs for zSeries 890

| 1-way | 2-way | 3-way | 4-way |
|---------------|---------------|---------------|---------------|
| 110 (004 MSU) | 210 (008 MSU) | 310 (011 MSU) | 410 (015 MSU) |
| 120 (007 MSU) | 220 (013 MSU) | 320 (020 MSU) | 420 (026 MSU) |
| 130 (013 MSU) | 230 (026 MSU) | 330 (038 MSU) | 430 (049 MSU) |
| 140 (017 MSU) | 240 (032 MSU) | 340 (047 MSU) | 440 (062 MSU) |
| 150 (026 MSU) | 250 (050 MSU) | 350 (074 MSU) | 450 (097 MSU) |
| 160 (032 MSU) | 260 (062 MSU) | 360 (091 MSU) | 460 (119 MSU) |
| 170 (056 MSU) | 270 (107 MSU) | 370 (158 MSU) | 470 (208 MSU) |



Replace your small Multiprise[®] 2000 running VSE with an IBM eServer zSeries 890 and Save!



■ Innovation on IBM eServer[™] zSeries[®] 890 (z890)

- ▶ High Capacity IFL
- ▶ OSA-Express, OSA-ICC
- ▶ On/Off Capacity on Demand
- ▶ PCI Crypto
- ▶ HiperSockets[™]

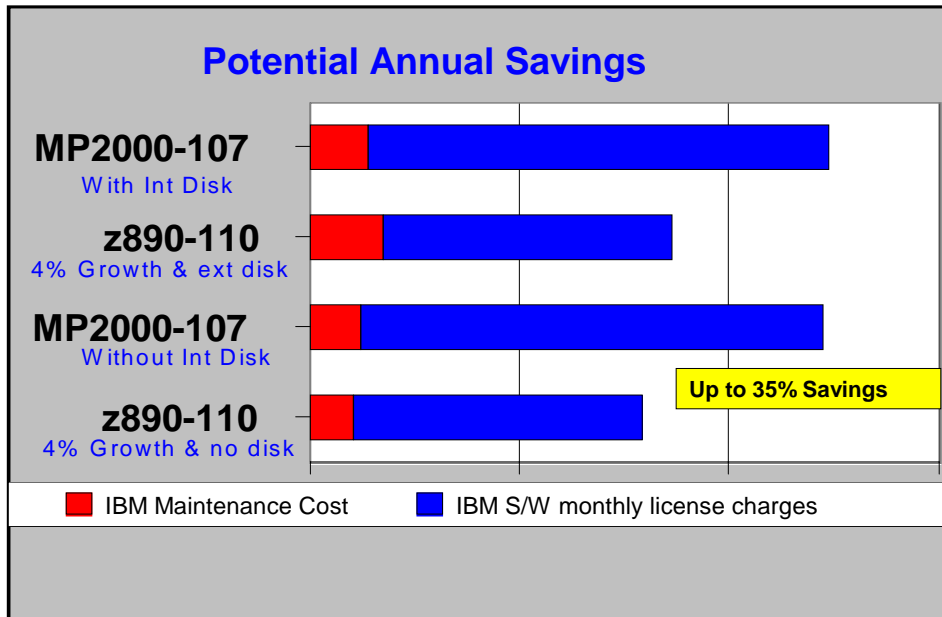
■ **Ongoing Savings help you offset the cost of your hardware investment.**

■ Savings driven by:

f Lower priced VSE/ESA[™] on the 110 with full capacity zSeries Entry License Charge[™] (zELC) versus Model Group software pricing

■ Additional Value considerations:

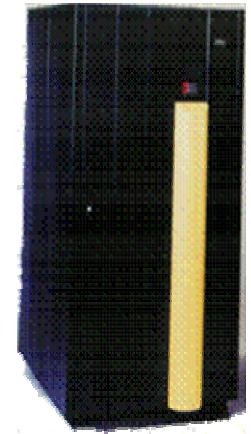
- f IGF certified used IBM TotalStorage[®] Enterprise Storage Server[®] (ESS) F20 - 420GB capacity
- f Granular upgradeability
- f Temporary capacity available with On/Off Capacity on Demand



* Hardware configuration based on general purpose central processors only (no IFLs) and similarly configured for costing purposes. VSE software stack based on VSE/ESA, CICS[®], DITTO, SSP, VTAM[®], COBOL, Language Environment[®] and HLASM.



Replace your Multiprise 2000 running VSE with a z890 and Save!



■ Innovation on z890

- ▶ High Capacity IFL
- ▶ OSA-Express, OSA-ICC
- ▶ On/Off Capacity on Demand
- ▶ PCI Crypto
- ▶ HiperSockets

■ **Ongoing Savings help you offset the cost of your hardware investment.**

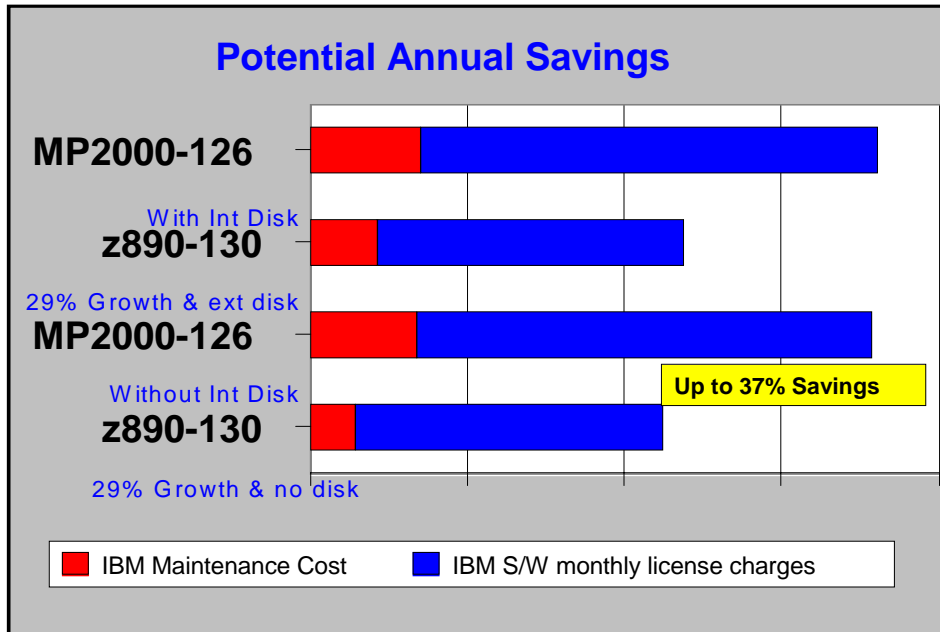
■ Savings driven by:

- f* Lower priced IBM hardware maintenance on z890
- f* Lower priced VSE on the 130 with EWLC Tiered Price Structure versus Model Group software pricing

■ Additional Value considerations:

- f* IGF certified used ESS F20 – 420 GB capacity
- f* Granular upgradeability
- f* Temporary Capacity available with On/Off Capacity on Demand

* Hardware configuration based on general purpose central processors only (no IFLs) and similarly configured for costing purposes. VSE software stack based on VSE/ESA, CICS, DITTO, SSP, VTAM, COBOL, LE and HLASM.



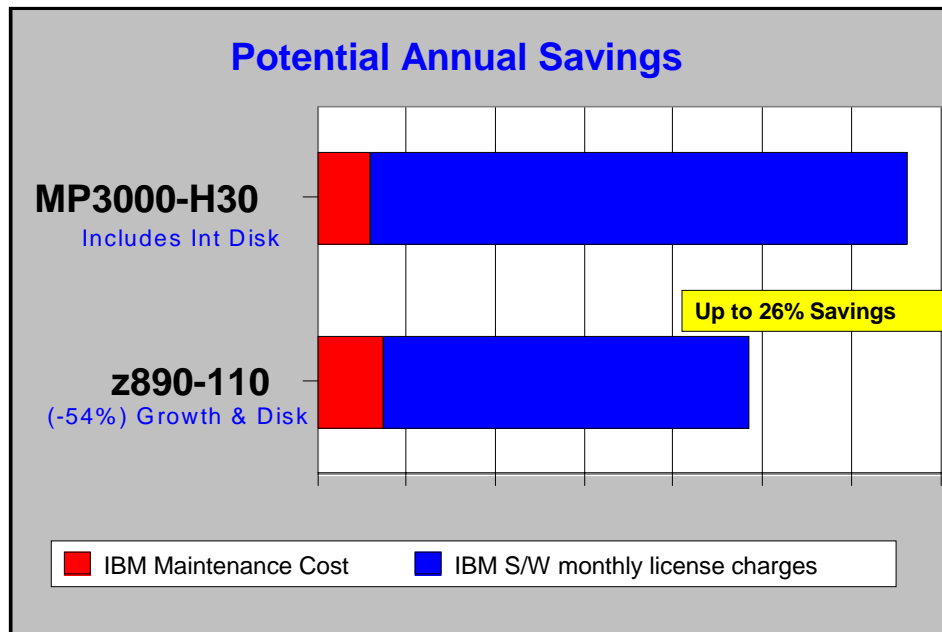


Too much capacity on your Multiprise 3000 running VSE today? Consider a z890 to bring new technology to your firm!



■ Innovation on z890

- ▶ High Capacity IFL
- ▶ OSA-Express, OSA-ICC
- ▶ On/Off Capacity on Demand
- ▶ PCI Crypto
- ▶ HiperSockets



- **Ongoing Savings help you offset the cost of your hardware investment.**

■ Savings driven by:

- f* Providing a solution with the granularity you need
- f* Lower priced VSE on the 110 with full capacity zELC versus GOLC software pricing

■ Additional Value considerations:

- f* IGF certified used ESS F20 – 420 GB capacity
- f* Granular upgradeability
- f* Temporary capacity available with On/Off Capacity on Demand

* Hardware configuration based on general purpose central processors only (no IFLs) and similarly configured for costing purposes. VSE software stack based on VSE/ESA, CICS, DITTO, SSP, VTAM, COBOL, LE and HLASM.



Replace your 9672 G4 running VSE with a z890 and Save!



▪ Innovation on z890

- ▶ High Capacity IFL
- ▶ OSA-Express, OSA-ICC
- ▶ On/Off Capacity on Demand
- ▶ PCI Crypto
- ▶ HiperSockets

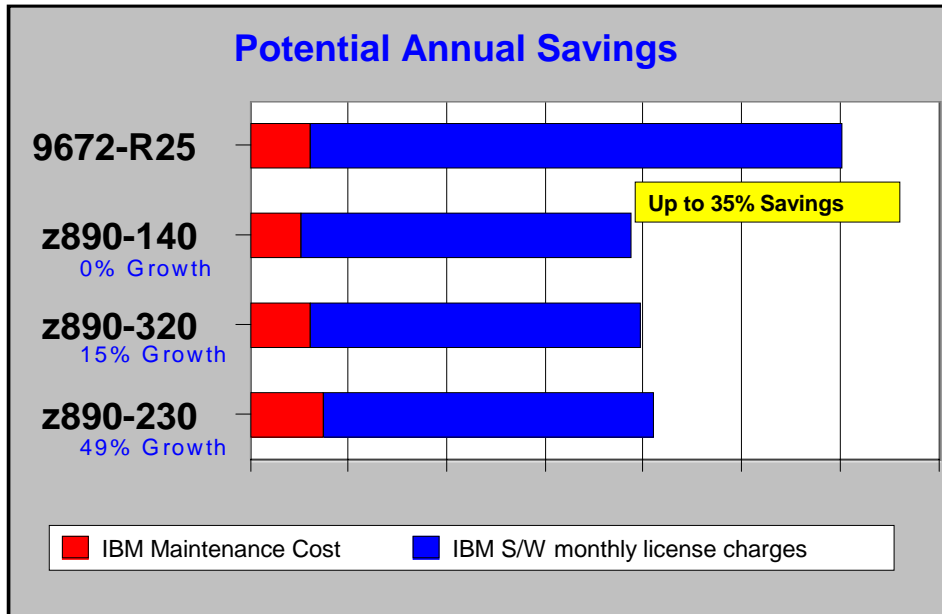
▪ Ongoing Savings help you offset the cost of your hardware investment.

▪ Savings driven by:

- f* Lower priced IBM hardware maintenance on z890-140
- f* Lower priced VSE on the 140, 320 and 230 with EWLC Tiered Price Structure versus Model Group software pricing

▪ Additional Value considerations:

- f* Granular upgradeability
- f* Temporary capacity available with On/Off Capacity on Demand



* Hardware configuration based on general purpose central processors only (no IFLs) and similarly configured for costing purposes. VSE software stack based on VSE/ESA, CICS, DITTO, SSP, VTAM, COBOL, LE and HLASM



VSE Support for z800 and z890

| VSE Version.Release | z800 | z890 | VSE EoS |
|---------------------|----------------|----------------|----------------|
| z/VSE V3.1 | Yes (2) | Yes (2) | tbd |
| VSE/ESA V2.7 | Yes (2) | Yes (2) | tbd |
| VSE/ESA V2.6 | Yes (2) | Yes (2) | tbd |
| VSE/ESA V2.5 | Yes (2) | No | 12/2003 |
| VSE/ESA V2.4 | Yes (2) | No | 06/2002 |
| VSE/ESA V2.3 | No | No | 12/2001 |

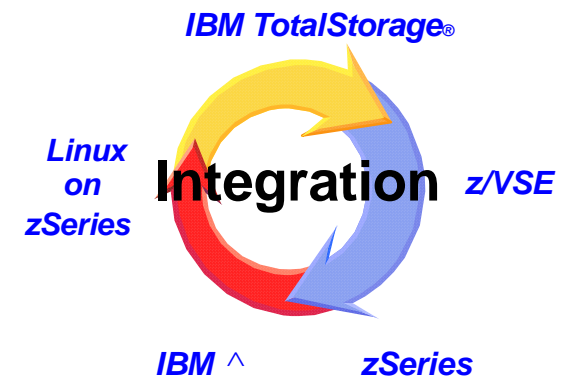
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Note 2: 31-bit mode only



Agenda

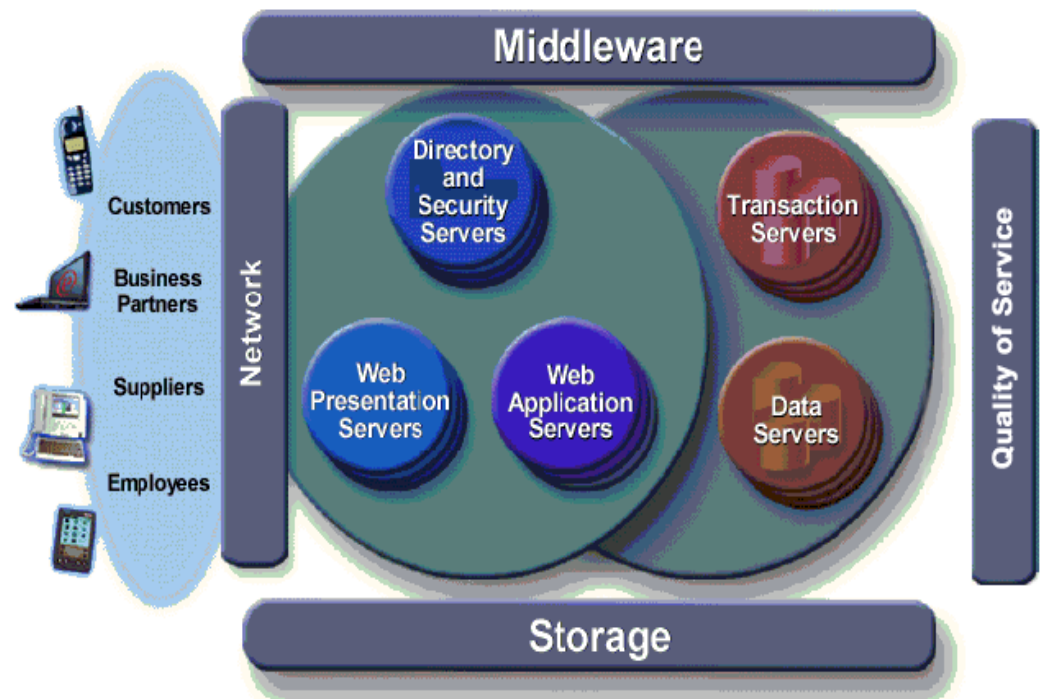
- What's New
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- zSeries 890
- **Hybrid Model**
- VSE Connectors
- Linux
- Conclusion





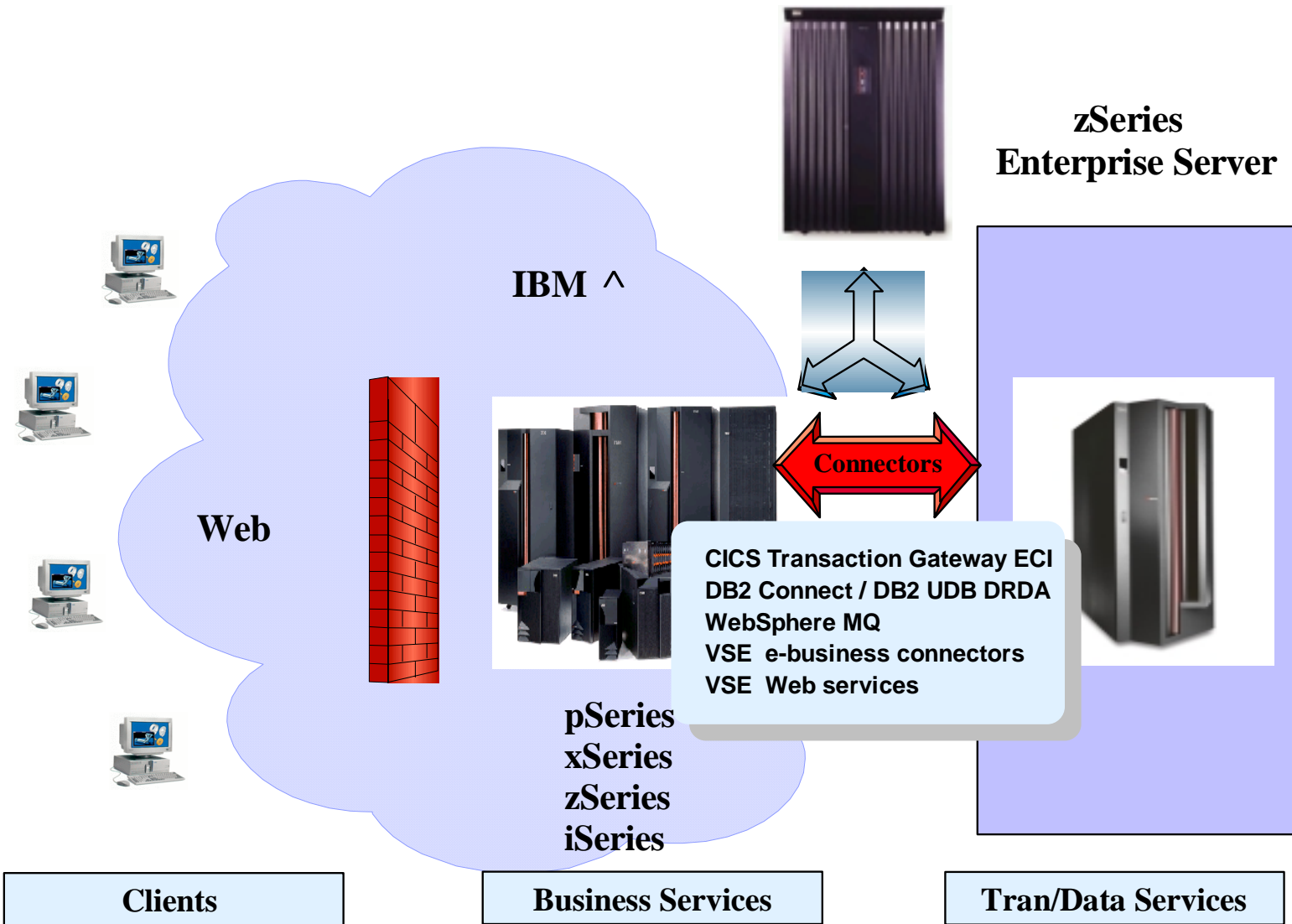
Unlock your VSE information assets

- **A hybrid, 3-tier framework**
 - ▶ A comprehensive, robust e-business model
 - ▶ Based on open and industry standards
 - ▶ Supports key platforms
 - ▶ Leadership products
 - ▶ Helps protect core investments



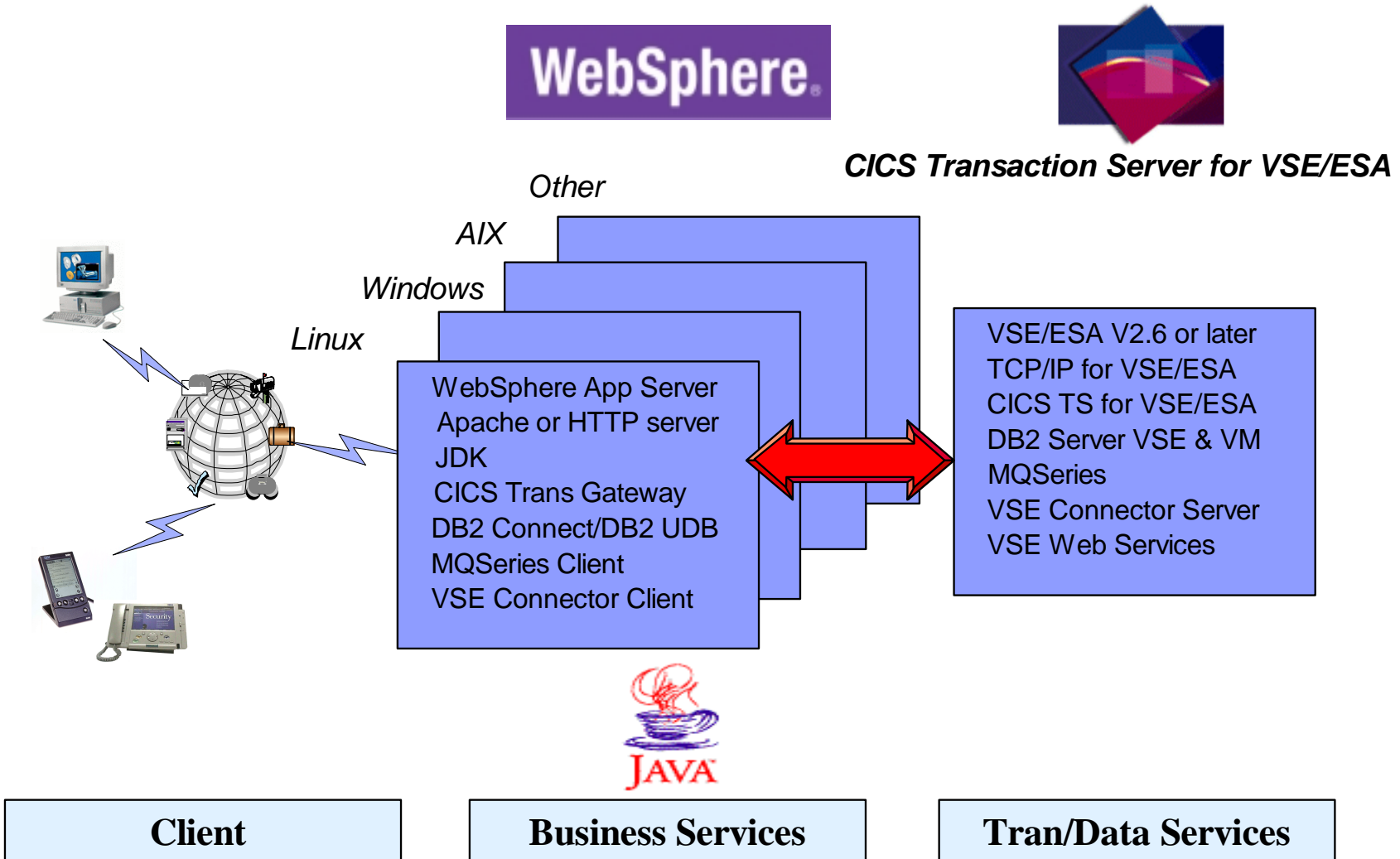


Hybrid model



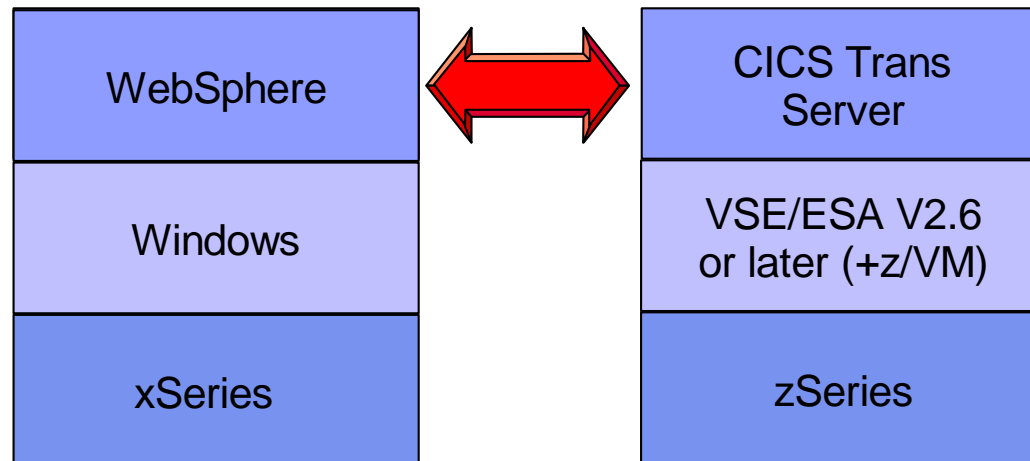


Middleware for a Hybrid model

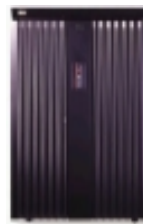




Alternative 1: Integrate xSeries and zSeries



IBM [^] [®]
xSeries (Intel-based)



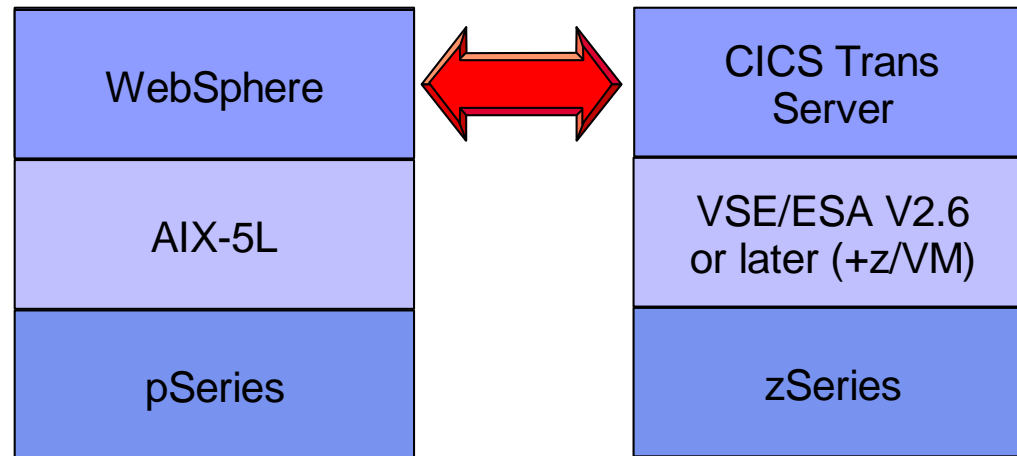
IBM TotalStorage[®]
Enterprise Storage Server[®]



IBM [^] [®]
zSeries



Alternative 2: Integrate pSeries and zSeries



IBM [^] [®]
pSeries (POWER)



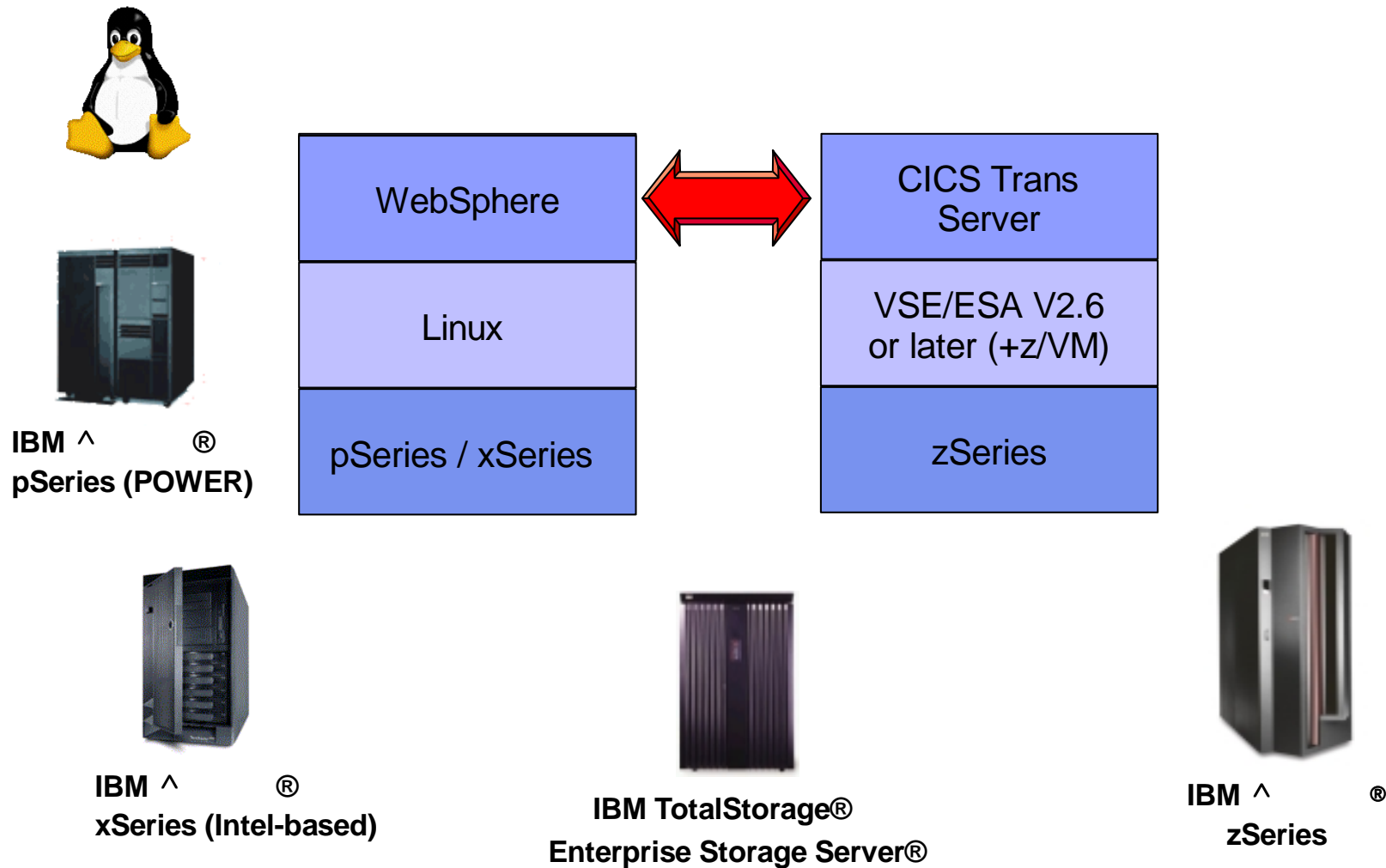
IBM TotalStorage[®]
Enterprise Storage Server[®]



IBM [^] [®]
zSeries

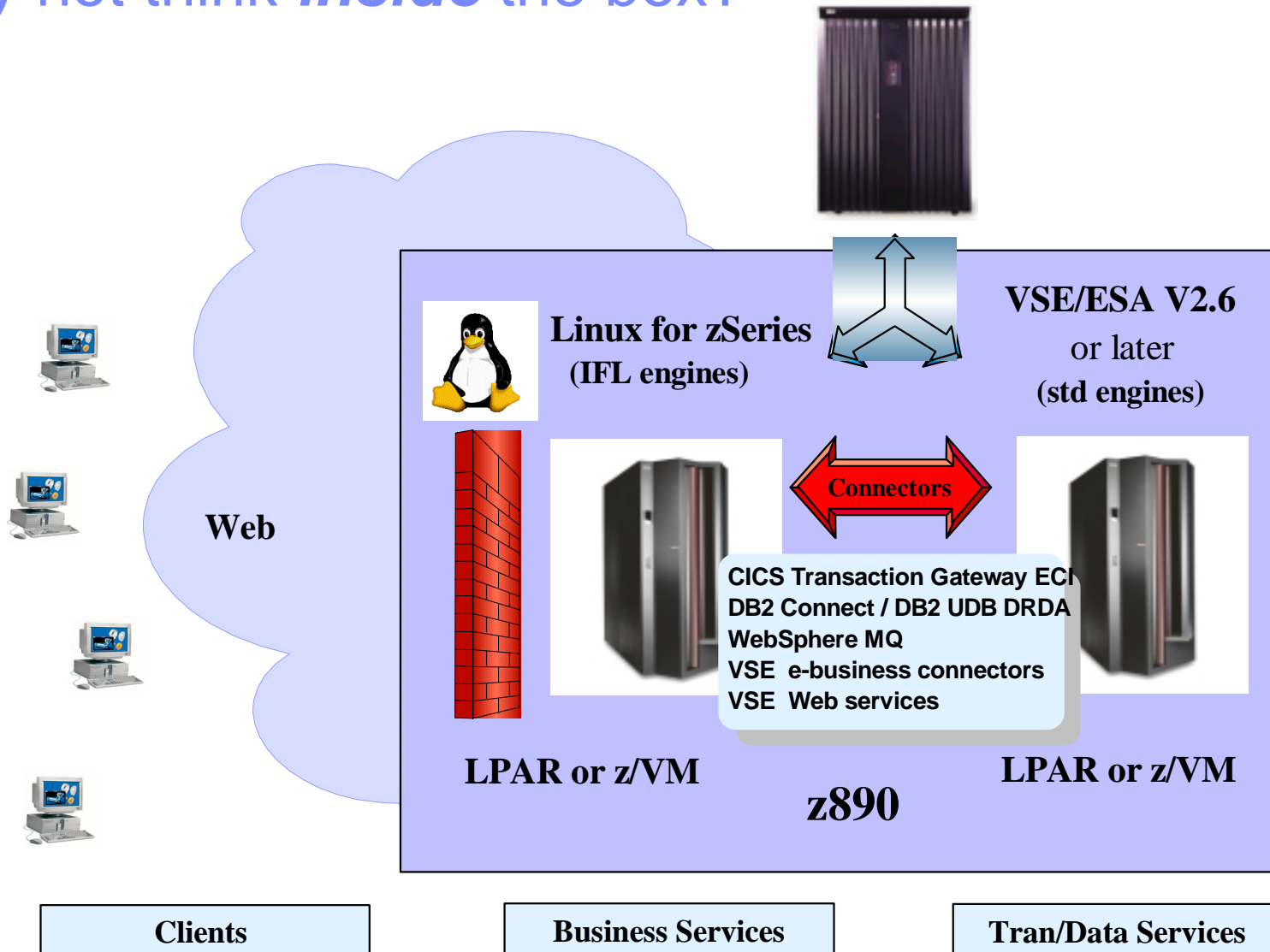


Alternative 3: Integrate xSeries & pSeries and zSeries



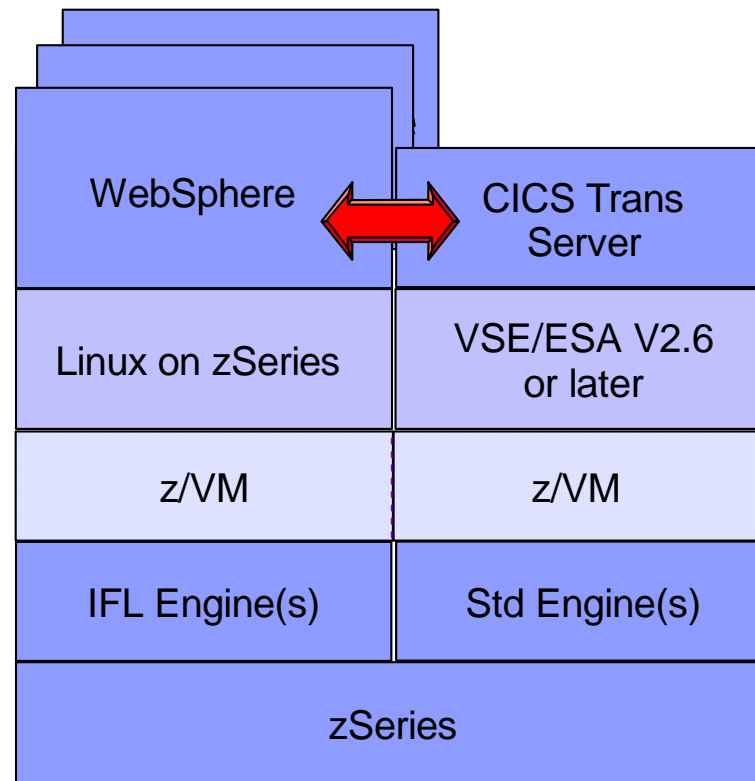


Why not think *inside* the box?





Alternative 4: Integrate Linux and VSE on zSeries



**IBM TotalStorage®
Enterprise Storage Server®**

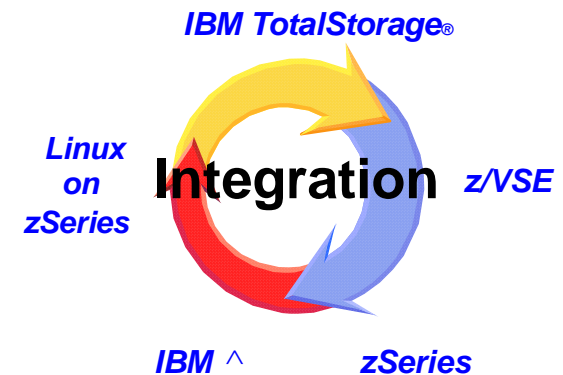


**IBM ^ ®
zSeries**



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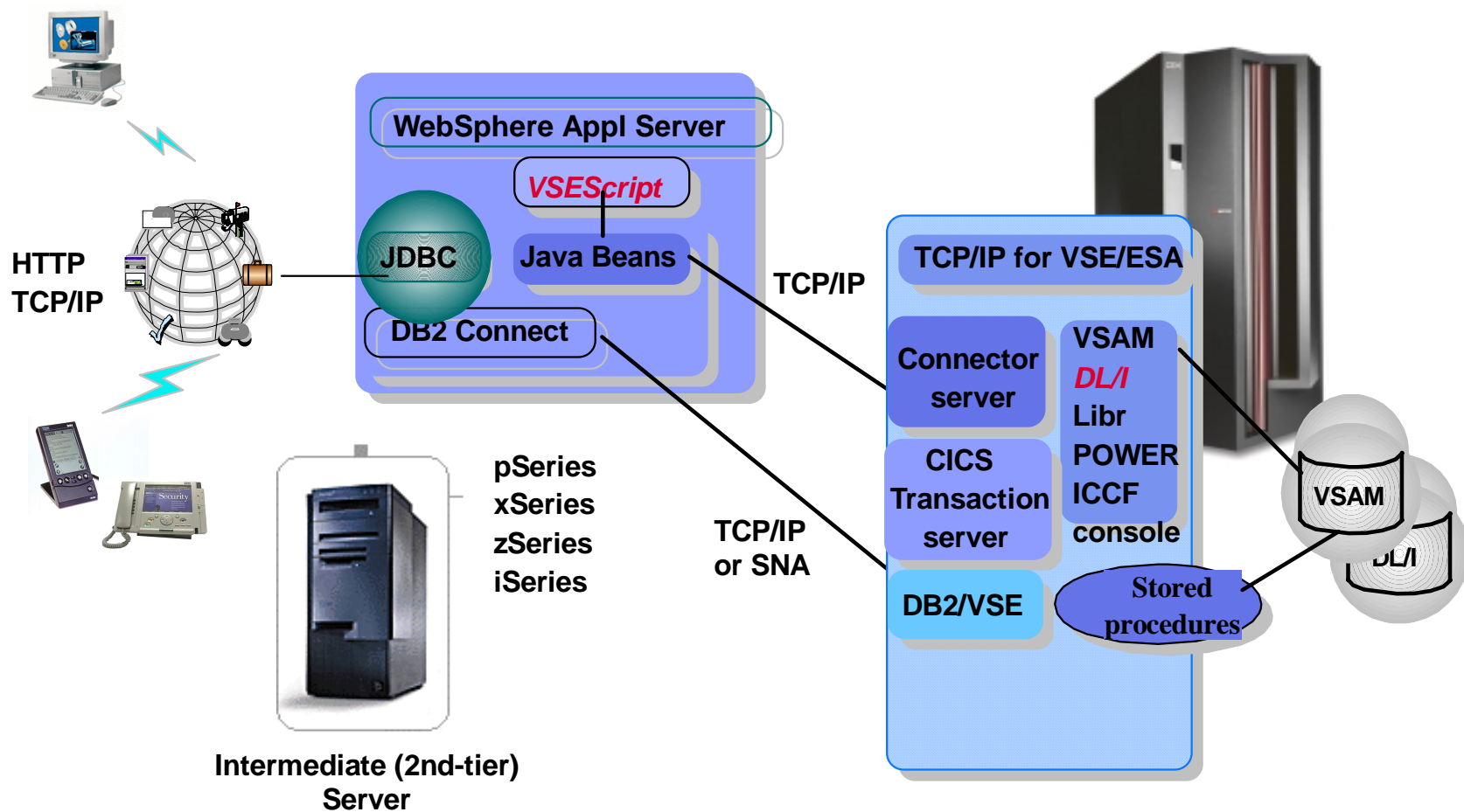
VSE e-business connectors

- Java technology-based connectors
 - ▶ Connectivity via TCP/IP (BSD Sockets)
 - ▶ VSE server implemented as a long-running partition
 - ▶ Clients implemented as Java classes
 - ▶ Access to VSAM, DL/1, POWER™, Librarian, ICCF Lib, console
- DB2 based connectors
 - ▶ Connectivity via TCP/IP or SNA
 - ▶ VSE server implemented as DB2® stored procedures
 - ▶ Client is DB2 Connect on “middle tier”
 - ▶ Access to DL/1 and VSAM (plus DB2 via DRDA)
- Provided with VSE at no additional charge
 - ▶ DB2-based connectors require DB2 Connect or DB2 Universal Database on a middle tier



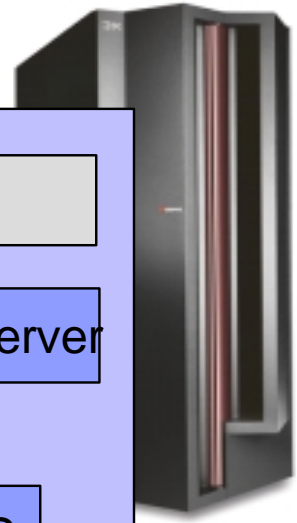
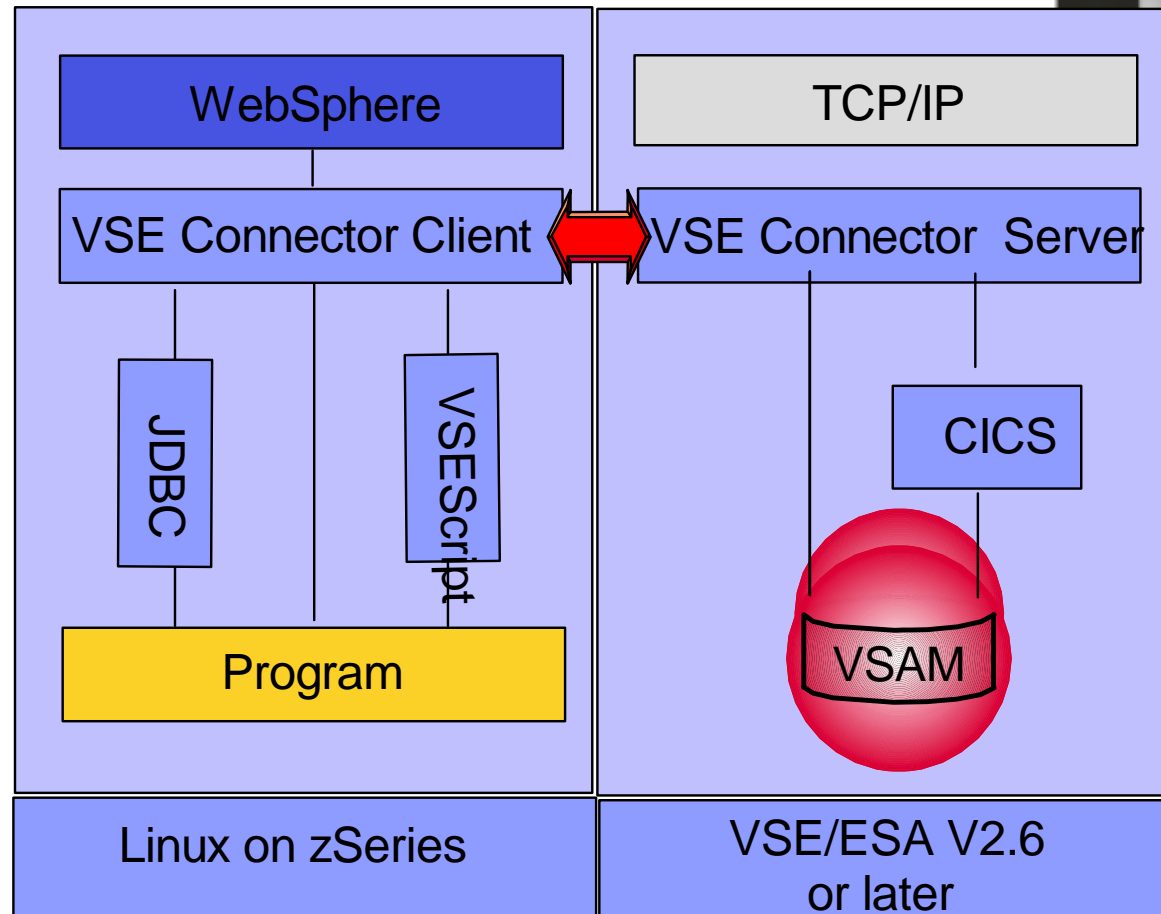
VSE e-business connectors

zSeries Enterprise Server





Scenario 1 – ‘Pull’



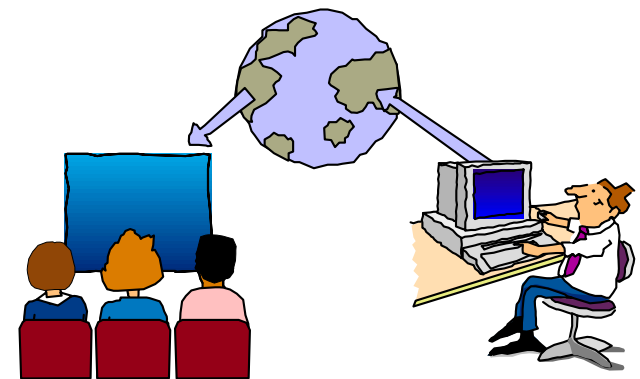


VSE/VSAM Redirector

- VSAM Redirector Client (runs on VSE)
 - ▶ Based on generic VSAM exit
 - ▶ Designed to be transparent (no changes) to VSE application
 - ▶ Intercepts VSAM request and routes to Redirector Server

- VSAM Redirector Server (runs on any Java Platform)
 - ▶ Implemented in Java
 - ▶ Fields request from VSE client
 - ▶ Calls file-specific handler
 - ▶ Returns result to VSE

- Provided with VSE at no additional charge

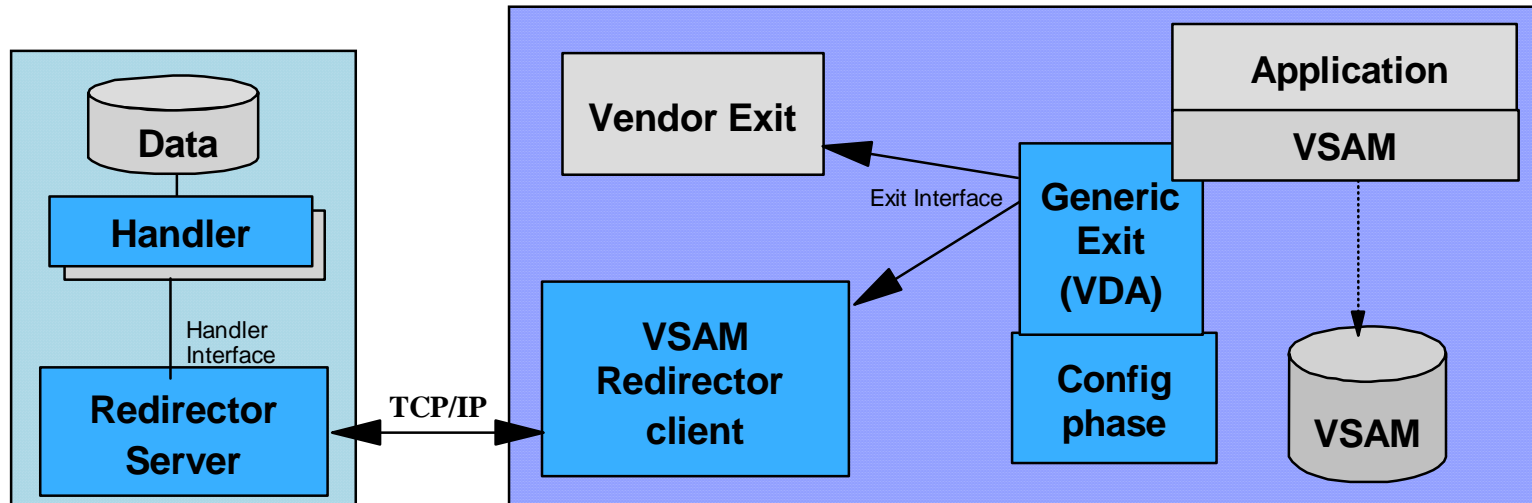




VSE/VSAM Redirector

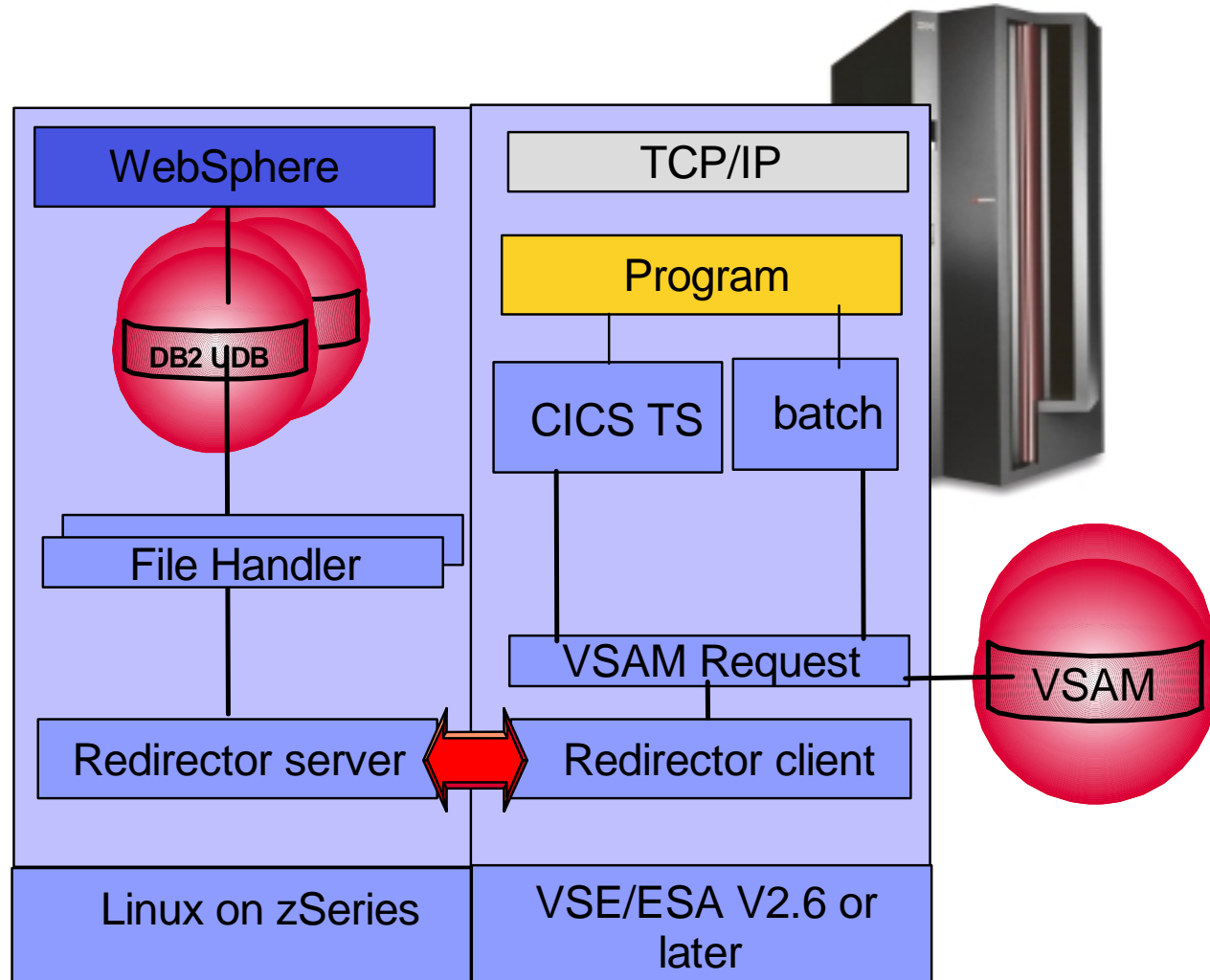
Java Platform

VSE





Scenario 2 – ‘Push’





z/VSE (1) V3.1 Interoperability

| zSeries Functions | z/VSE V3.1 | VSE/ESA V2.7 | VSE/ESA V2.6 |
|---|---------------|-----------------|-----------------|
| VSE Connectors (no additional charge) | | | |
| Web Services i.e. SOAP and XML | Yes | Yes | Yes |
| VSEScript and DL/1 | Yes | Yes | No |
| VSAM Redirector | Yes | Yes | Yes |
| VSAM, POWER, Librarian, ICCF Lib, console | Yes | Yes | Yes |
| DB2 Stored Procedures for VSAM and DL/1 | Yes | Yes | Yes |
| IBM Middleware (priced) | | | |
| CICS Transaction Gateway | Yes | Yes | Yes |
| DB2 Connect/DB2 UDB link to stored procedures | Yes | Yes | Yes |
| MQSeries | Yes | Yes | Yes |

Note 1: z/VSE can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE is designed to support selected features of IBM zSeries hardware



Agenda

- What's New
- z/VSE
- zSeries 890
- Hybrid Model
- VSE Connectors
- **Linux on zSeries**
- Conclusion



Linux on zSeries – TCO advantages



- Help improve computing resource utilization
 - ▶ Resource sharing and workload balancing
- Help improve management of resources
 - ▶ Flexible & responsive (quickly add or reconfigure 'virtual' servers)
 - ▶ Improve systems reliability and availability
 - ▶ Improve and simplify disaster recovery
 - ▶ Simplify application architecture and/or infrastructure (i.e. combine application tiers from multiple platforms onto one platform, reduce intersystem networking, etc.)
 - ▶ Simplify system administration
- Helps reduce operational costs related to personnel, environment (power, heating and cooling), floor space, etc.
- Help reduce distributed software licensing costs



Linux on zSeries – Advantages for VSE customers

- Infrastructure simplification to help reduce cost
 - ▶ Consolidate existing distributed servers
 - ▶ Possible TCO benefits of Linux and zSeries
- New Linux on zSeries applications based on IBM Middleware
 - ▶ WebSphere Application Server
 - ▶ DB2 UDB
 - ▶ Lotus® Domino™
 - ▶ Advanced application development tools
- New Linux-based open source and/or ISV applications
 - ▶ Linux *for* zSeries to exploit zSeries 64-bit capabilities
 - ▶ Complement 31-bit core VSE applications
- Integrate Linux and VSE solutions
 - ▶ Linux access to VSE applications and data





z890 Integrated Facility for Linux (IFL)

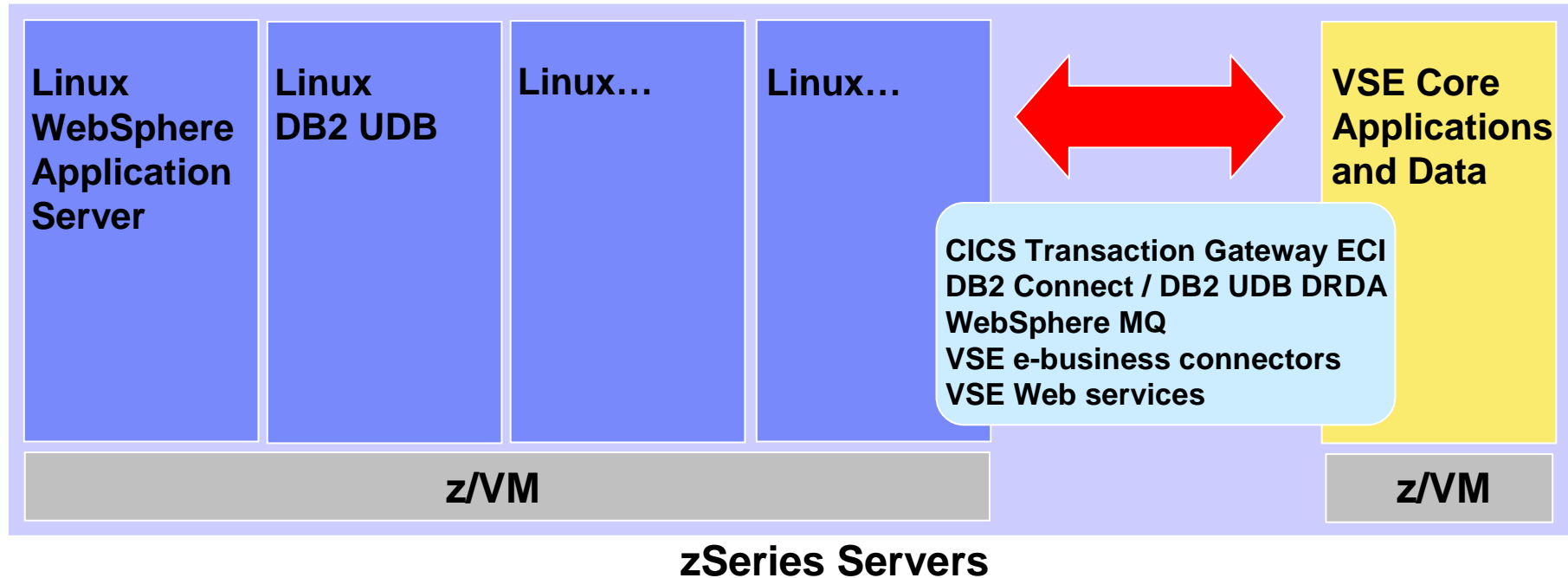
- ▶ Dedicated exclusively to Linux workloads
 - Linux or Linux under z/VM
- ▶ Uses PR/SM™ technology
- ▶ Customers can opt for all IFLs
- ▶ Full processor functionality, same as regular CP
- ▶ Cost benefits
 - lower price for IFL than standard engine
 - IBM's traditional zSeries software charges unaffected





Integrated Linux and VSE solutions on zSeries

Web application servers, etc.



- **Leverage existing applications and data**
 - ▶ Integrate VSE and Linux environments using IBM Middleware
 - ▶ Unlock VSE resources with VSE e-business connectors
- **Mainframe reliability for critical Linux applications**
- **Simplify networking and help reduce networking hardware costs with HiperSockets**
- **Deploy new Linux servers rapidly with z/VM**



Agenda

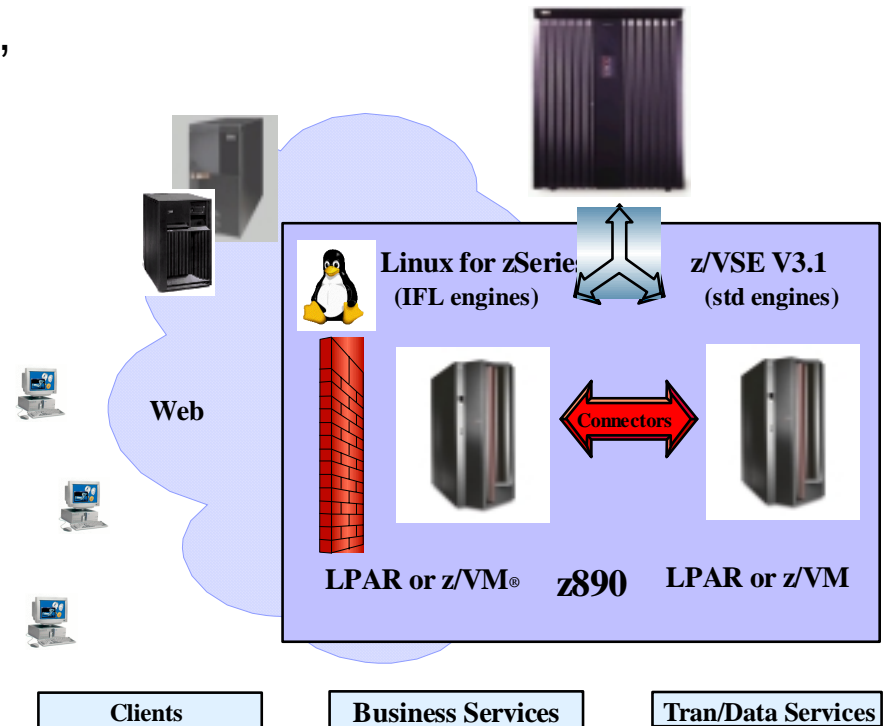
- What's New
- z/VSE
- zSeries 890
- Hybrid Model
- VSE Connectors
- Linux
- **Conclusion**



z/VSE (1) Strategy

- Helps **Protect** your existing investments in core VSE programs, data, equipment, IT skills, *plus* business processes, end user training, etc.
 - ▶ modernize, i.e. extend VSE resources to Web
 - ▶ exploit IBM servers, storage, and software
- **Integrate** VSE with the rest of your IT based on open and industry standards
 - ▶ IBM middleware
 - ▶ VSE e-business connectors and web services
- **Extend** with Linux on zSeries
 - ▶ infrastructure simplification
 - ▶ add new infrastructure and/or line-of-business applications

Why Not Think Inside the Box?



Note 1: z/VSE can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE is designed to support selected features of IBM zSeries hardware



Common Linux and VSE Development Team





After almost 40 years
providing robust,
cost-effective solutions,
VSE doesn't get older –
it gets better.....

Protect
Integrate
Extend



Simple as Pie!



Additional VSE-related Events

- **IBM 2004 zSeries Expo** - featuring
 - ▶ z/OS, z/VM, z/VSE, and Linux on zSeries
 - ▶ November 1- 5, 2004
 - ▶ Miami Beach, FL
 - ▶ Fontainebleau Hilton Hotel

- **WAVV 2005** - featuring
 - ▶ z/VM, z/VSE, and Linux on zSeries
 - ▶ May 20 - 24, 2005
 - ▶ Colorado Springs, CO
 - ▶ Sheraton Hotel





Thanks for listening, and thanks for your business



→ The History of IBM



Your friends, the VSE team





Appendix – Related April 7 Announcements

- z990 enhancements
- ESS Model 750
- z/VM V5.1



New z990 Highlights

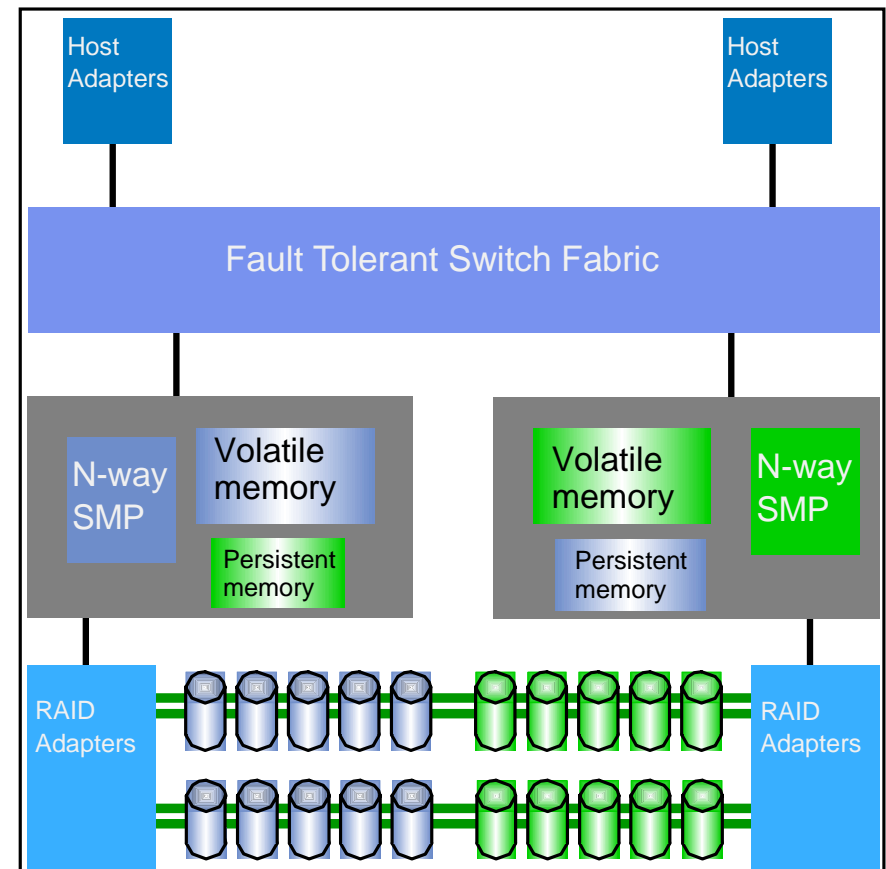


- Run strategic J2EE workloads cost effectively with improved price/performance benefits.
 - ▶ zSeries Application Assist Processor (zAAP)
- Continue to set world-class standards that strengthen the zSeries set of **core values**, and help keep the platform competitive
 - ▶ EAL5 Certification (z800 and z900 servers; awaiting formal certificate for z990)
 - ▶ Cryptography extensions
 - ▶ Parallel Sysplex clustering enhancements
- Help customers simplify infrastructure complexity as a further step toward achieving an on demand business model.
 - ▶ Expanded z/Architecture
 - **4 Logical Channel Subsystems**
 - Up to 1024 channels
 - ▶ Improved Networking and Connectivity features
 - **OSA-Integrated Console Controller**
 - **FICON Performance Improvement**
 - ▶ On/Off Capacity on Demand enhancements
 - **IFLs, ICFs and zAAPs**
 - Increased flexibility with Capacity BackUp (CBU) and On/Off Capacity On Demand together



ESS Model 750 – The Advantages of ESS

- Redundant Architecture
- Failover/Failback
- 2 Gb Fibre Channel / FICON
- Industry leading RAID-5 or RAID-10
- Cluster Processor
- 2 GB NVS
- Up to 8 GB cache
- 72.8, and 145.6 GB (10,000 rpm) Disks
- 1.1 to 4.6 TB
- Standard zSeries Optimization features
- Advantages
 - ▶ Designed to support **24 X 7 Operations**
 - ▶ **Avoids Single Points of Failure/Repair**
 - ▶ 64 non-arbitrated, pipelined paths to disks
 - ▶ Leading Price Performance
 - ▶ 20 + Autonomic features offer excellent efficiency
 - ▶ Imbedded flexibility offers optimal solution design
 - ▶ Non Disruptive upgrade design improves application availability
 - ▶ **Designed to deliver low Total Cost of Ownership**





ESS Model 750 and Model 800 At a Glance

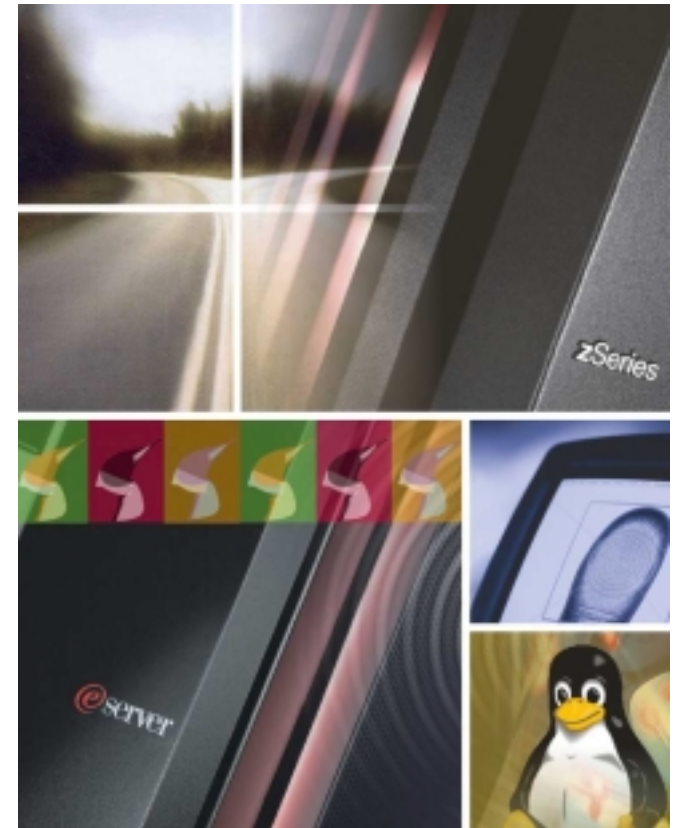
| | ESS Model 750 | ESS Model 800/800 turbo |
|-----------------------------------|---|--------------------------------------|
| Processor | 2-way (600 MHz) | 4-way / 6-way (600 MHz / 750 MHz) |
| Cache | 8 GB | 8 to 64 GB |
| Host adapters | 2 to 6 | 2 to 16 |
| - Fibre Channel / FICON (2Gb) | Yes | Yes |
| - ESCON | Yes | Yes |
| - SCSI | No | Yes |
| Expansion enclosure | No | Yes |
| Disk drives | 16 to 64 ** (increments of 16) | 32 to 384 (increments of 16) |
| Standby Capacity on Demand | Yes (maximum of 16 CoD drives) | Yes (maximum of 48 CoD drives) |
| Disk drives | | |
| - 18.2GB (10K and 15K rpm) | No | Yes |
| - 36.4GB (10K and 15K rpm) | No | Yes |
| - 72.8GB (15K rpm) | No | Yes |
| - 72.8GB (10K rpm) | Yes | Yes |
| - 145.6GB (10K rpm) | Yes | Yes |
| Physical capacity | 1.1 TB to 4.6 TB ** | 582 GB to 55.9 TB |
| Device adapters | 2 to 8 (increments of 2) | 8 |
| Power | Three-phase | Three-phase |



zSeries Virtualization for Linux on zSeries

z/VM V5.1 – The innovation continues

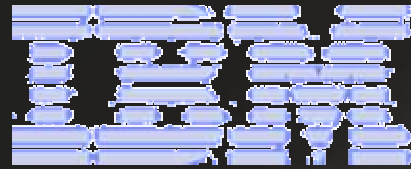
- **Virtualization advances to help provide more cost-effective and robust virtual Linux servers**
 - ▶ Requirement for ECKD™ disks for Linux servers lifted – SCSI only environments supported
 - ▶ Improved cryptographic performance with PCIXCC support
- **Virtual Networks and Integrated Security streamline deployment**
 - ▶ Enhanced network recovery and virtual switch failover support
 - ▶ z/VM security manager (RACF®) support for authorization control of virtual server access to Guest LANs and virtual switches
- **Technology exploitation**
 - ▶ Support for the OSA-Express Integrated Console Controller
 - ▶ Support for external spanned channels
 - ▶ Enhancement for IPv6 routing and applications
- **Systems Management**
 - ▶ Performance Toolkit for VM™ Enhancements
 - ▶ Additional System Management API support for server provisioning solutions
- **Architectural Level Set requires z/Architecture server**



**zSeries virtualization – robust,
comprehensive, and
security-rich.**

Announcement: April 2004

Planned Availability: September 24, 2004



@server