

Aktuelles zu z/VSE, z/VM und Linux on System z

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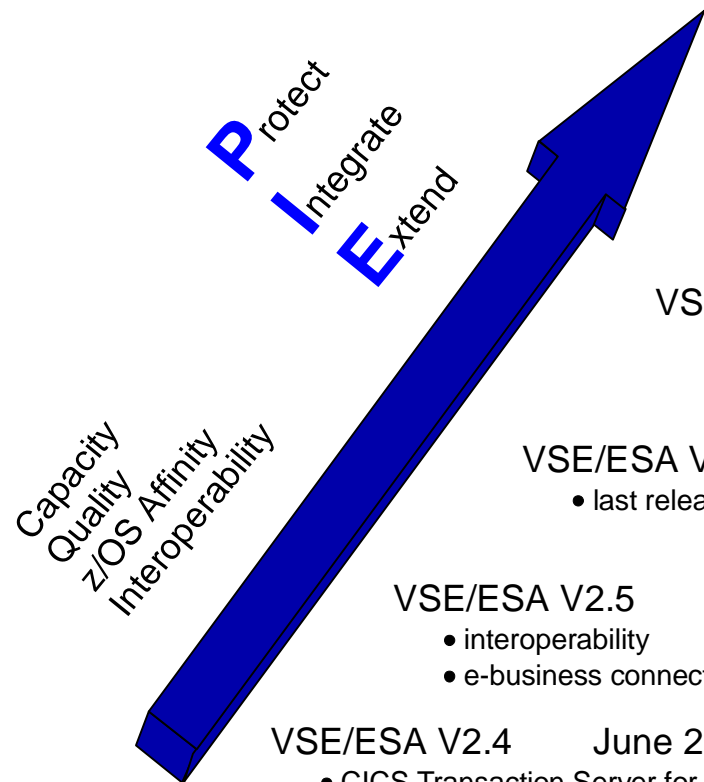
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Topics

- § **z/VSE Version 4 Release 2**
- § **z/VM Version 5 Release 4**
- § **Linux on System z**
- § **Customer References**
- § **The Best of all Worlds**



z/VSE Evolution and z/VSE Success Factors



z/VSE V4.2 Oct 17, 2008



- More tasks, more memory, LDAP client
- PAV, SVC, EF, SCRT on z/VSE
- SoD** for CICS/VSE, RBD V7 extension, WMQ V3

Future

z/VSE V4.1 March 16, 2007

- z/Architecture only
- 64-bit real addressing
- MWLC full & subcapacity pricing

Pricing

z/VSE V3.1* March 4, 2005

- zSeries features, FCP/SCSI
- 31-bit mode only

Rebranding

VSE/ESA V2.7 March 14, 2003

- enhanced interoperability
- ALS2 servers only

VSE/ESA V2.6 Dec 14, 2001

- last release to support pre-G5 servers

VSE/ESA V2.5 Sept 29, 2000

- interoperability
- e-business connectors

Strategy

VSE/ESA V2.4 June 25, 1999

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

• Note: z/VSE V3 can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE V3 is designed to support selected features of IBM System z hardware.

** All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

Important z/VSE-related Announcements

- § **Feb-28, 2007** - **End-of-Service for VSE/ESA V2.7 effective**
- § **March-16, 2007** - **z/VSE V4.1 General Availability**
- § **March-16, 2007** - **SecureFTP PTF available**
- § **May-18, 2007** - **IBM TS1120 encrypting tape PTF available for z/VSE V4.1**
- § **June-05, 2007** - **End-of-Marketing for z/VSE V3.1 announced (effective 5/31/2008)**
- § **June-18, 2007** - **IBM TS1120 encrypting tape PTF available for z/VSE V3.1**
- § **June-29, 2007** - **z/VM V5.3 General Availability**
- § **July-10, 2007** - **IBM TS3400 Tape Library attachment to System z**
- § **Aug-07, 2007** - **End-of-Service for z/VSE V3.1 announced (effective 7/31/2009)**
- § **Aug-09, 2007** - **DL/1 enhancement (up to 10 datasets for HD databases) available**
- § **Sep-09, 2007** - **z/VSE V4.2 Preview announced**
- § **Oct-09, 2007** - **Encryption Facility for z/VSE V1.1 announced (available 11/30/2007)**
- § **Oct-10, 2007** - **SCRT V14.2 available for z/VSE V4.1**
- § **Nov-14, 2007** - **IBM DB2 Server for VSE & VM V7.5 announced (available 11/30/2007)**
- § **Nov-30, 2007** - **z/VSE V4.1.1 available**
- § **Jan-18, 2008** - **z/VSE V3.1.3 available**
- § **Feb-26, 2008** - **IBM System z10 Enterprise Class (z10 EC) announced**
- § **May-31, 2008** - **End-of-Marketing for z/VSE V3.1 effective**
- § **June-13, 2008** - **z/VSE V4.1.2 available**
- § **June-24, 2008** - **HLASM for z/OS, z/VM, and z/VSE V1.6 announced**
- § **Aug-05, 2008** - **z/VM V5.4 announced with planned availability 09/12/2008**
- § **Aug-05, 2008** - **z/VSE V4.2 announced with planned availability 10/17/2008**
- § **Sep-12, 2008** - **z/VM V5.4 General Availability**
- § **Oct 17, 2008** - **z/VSE V4.2 General Availability**
- § **Oct 21, 2008** - **IBM System z10 Business Class (z10 BC) announced**
- § **Oct 24, 2008** - **SoD for Rational Business Developer Extension for z/VSE and for WebSphere MQ for z/VSE**



z/VSE V4.2 Contents (Page 1 of 2)



§ Servers

- ▶ IBM System z10 Enterprise Class (z10 EC) and z10 Business Class (z10 BC)
- ▶ IBM System z9 Enterprise Class (z9 EC) and z9 Business Class (z9 BC)
- ▶ IBM eServer zSeries 990, 890, 900, and 800



§ Scalability

- ▶ Up to 512 tasks (2x z/VSE V4.1)
- ▶ Up to 32 GB real processor storage (4x z/VSE V4.1)
- ▶ Turbo dispatcher enhancements (CP balancing)
- ▶ Parallel Access Volume (PAV) feature of IBM System Storage DS8000 and DS6000 series
- ▶ IBM System Storage DS8000 SE Flashcopy

§ Security

- ▶ **Lightweight Directory Access Protocol (LDAP) sign-on support using a z/VSE LDAP client**
- ▶ IBM System z10 extensions to CP Assist for Cryptographic Function (CPACF)
- ▶ SOA Message Layer and Transport layer security
- ▶ IBM System Storage TS1130 and TS1120 're-keying' function
- ▶ Basic Security Manager (BSM) improvements
- ▶ Encryption Facility for z/VSE V1.1 as an optional priced feature (also available for z/VSE V4.1)



LDAP Client in z/VSE V4.2

§ Enables users to sign on z/VSE using a single, comprehensive, corporate-wide 'Identity Management' systems (i.e. IBM Tivoli Identity Manager, etc.)

§ LDAP user-IDs and passwords can be up to 64 characters. Helps overcome VSE internal limits

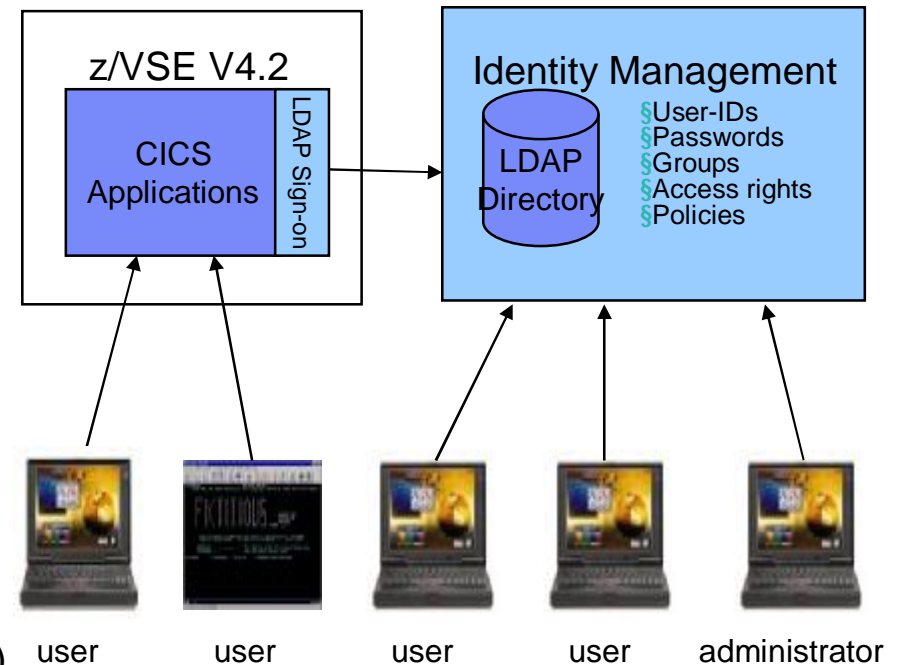
- ▶ 4 character VSE/ICCF user-IDs
- ▶ 4 and 8 character CICS user-IDs
- ▶ up to 8 character Passwords

§ LDAP sign on sits on top of existing z/VSE security manager (i.e. BSM, ESM, etc.)

§ z/VSE LDAP client can work with common LDAP servers

- ▶ IBM Tivoli Directory server
- ▶ z/VM LDAP server (with optional RACF repository)
- ▶ Microsoft Active Directory, OpenLDAP, Apache Directory server, Novell eDirectory, and many others.

§ Potential benefits include improved protection, consistent access rules, ease of use for end-users



z/VSE V4.2 Contents (Page 2 of 2)



§ Enhanced storage options

- ▶ IBM System Storage SAN Volume Controller (SVC) access to FCP-attached SCSI disks
- ▶ IBM System Storage TS3400 Tape Library and TS7700 Virtualization Engine Release 1.4
- ▶ IBM System Storage TS1130 Tape Drive **NEW**

§ Pricing

- ▶ MWLC (full capacity or sub capacity options) eligible on z10 EC, z10 BC, z9 EC, and z9 BC
- ▶ 'Traditional' price metrics for other servers

§ Migration

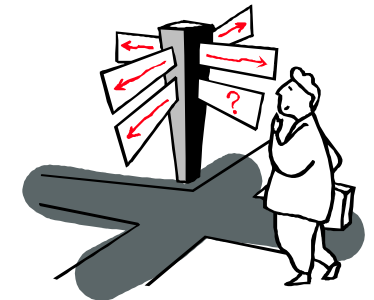
- ▶ Fast Service Upgrade (FSU) from z/VSE V4.1 and z/VSE V3.1

§ Virtualization

- ▶ Requires z/VM V5.2 or later if running under z/VM

§ Statement of Direction (SOD)**

- ▶ z/VSE V4.2 will be the last version/release of VSE to ship CICS/VSE V2.3
- ▶ New Enterprise Generation Language (EGL) extension to Rational Business Developer **NEW**
- ▶ New version of WebSphere MQ for z/VSE **NEW**



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Topics

§ z/VSE Version 4 Release 2

→ § z/VM Version 5 Release 4

§ Linux on System z

§ Customer References

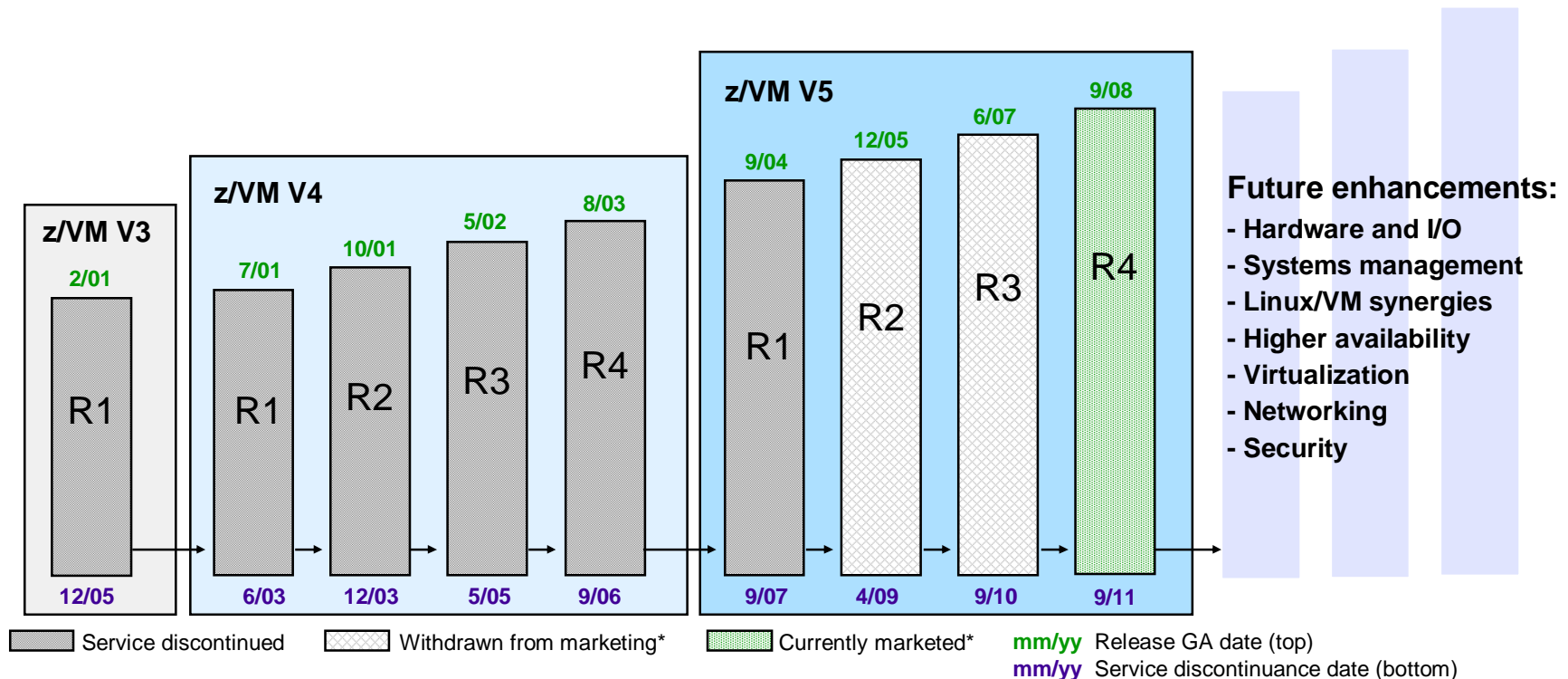
§ The Best of all Worlds



z/VM Evolution

z/VM V5: Robust Virtualization Technology

- « Offering new business solutions with Linux on System z
- « Extending mainframe value across the enterprise



IBM has received certification of **z/VM V5.3** from the German Federal Office of Information Security (Bundesamt für Sicherheit in der Informationstechnik) for conformance to the Controlled Access and Labeled Security protection profiles (CAPP and LSPP) of the Common Criteria standard for IT security, ISO/IEC 15408, at **Evaluation Assurance Level 4+ (EAL 4+)**.

While z/VM V5.4 has not been officially evaluated for conformance, it is designed to meet the same standards.

* As of September 8, 2008

z/VM Version 5 Release 4 New Function Highlights

Announced August 5, 2008 – Available since September 12, 2008

§ Processor support

- ▶ System z10 processor instruction exploitation
- ▶ DAT table performance enhancements
- ▶ **Dynamic LPAR memory upgrade**

§ Virtualization support

- ▶ Dynamic virtual machine memory upgrade
- ▶ **z/VM-mode LPAR support**
- ▶ Virtual CPU SHARE redistribution
- ▶ DCSS addressability above 2 GB
- ▶ Guest FCP dump
- ▶ OSA-Express3 Four-Port Connectivity
- ▶ Virtual Switch networking management

§ Networking

- ▶ z/VM TELNET IPv6 support
- ▶ Path MTU discovery
- ▶ TCP/IP OSD Layer 2 support

§ Security

- ▶ LDAP upgrade
- ▶ RACF change logging and password/phrase enveloping
- ▶ SSL server re-host

§ Systems management

- ▶ z/VM system management API enhancements
- ▶ Linux-on-z/VM installation using the Hardware Management Console (HMC)
- ▶ Service and installation improvements
- ▶ Performance Toolkit and DirMaint support enhancements
- ▶ LE, C/C++, and Binder upgrades
- ▶ System SHUTDOWN verification

§ Withdrawn

- ▶ 3480 tapes no longer supported as product distribution media

Refer to announcement letter: 208-249 (US), AP08-0242 (AP), A08-1178 (CAN), ZP08-0349 (EMEA)

z/VM Dynamic LPAR Memory Upgrade

New z/VM V5.4 Function Enhances System Availability

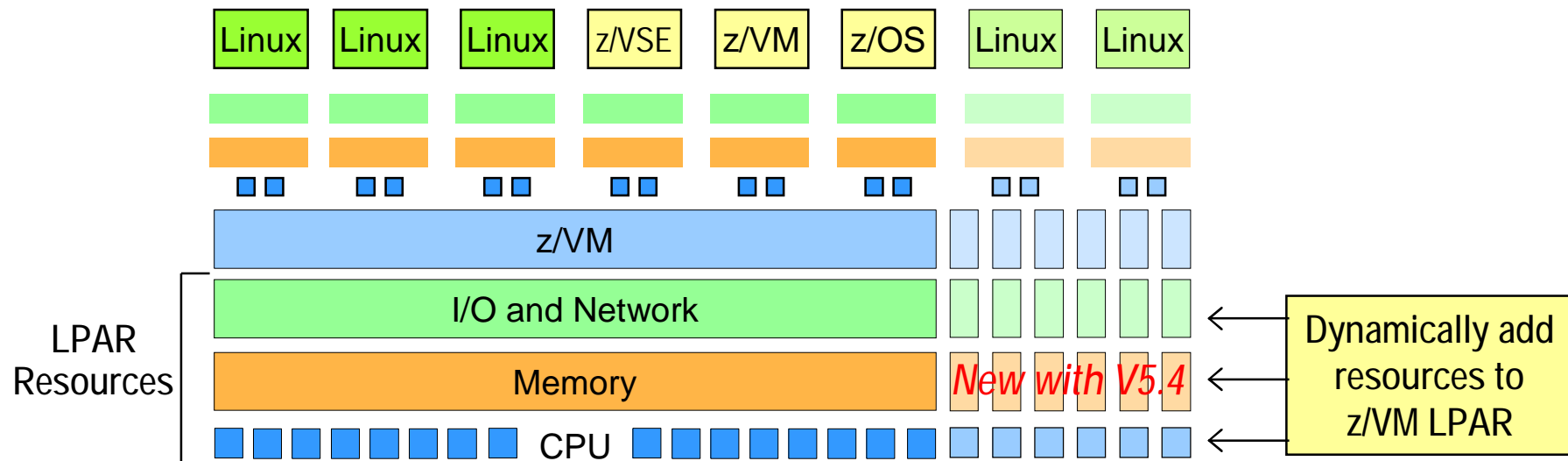
§ Users can non-disruptively add memory to a z/VM LPAR

- ▶ Additional memory can come from: a) unused available memory, b) concurrent memory upgrade, or c) an LPAR that can release memory
- ▶ Memory *cannot* be non-disruptively removed from a z/VM LPAR

§ z/VM virtualizes this hardware support for *guest machines*

- ▶ Currently, only z/OS and z/VM support this capability in a virtual machine environment

§ Complements ability to dynamically add CPU, I/O, and networking resources



Smart economics: non-disruptively scale your z/VM environment by adding hardware assets that can be shared with every virtual server

z/VM-Mode LPAR Support for IBM System z10

§ New LPAR type for IBM System z10: z/VM-mode

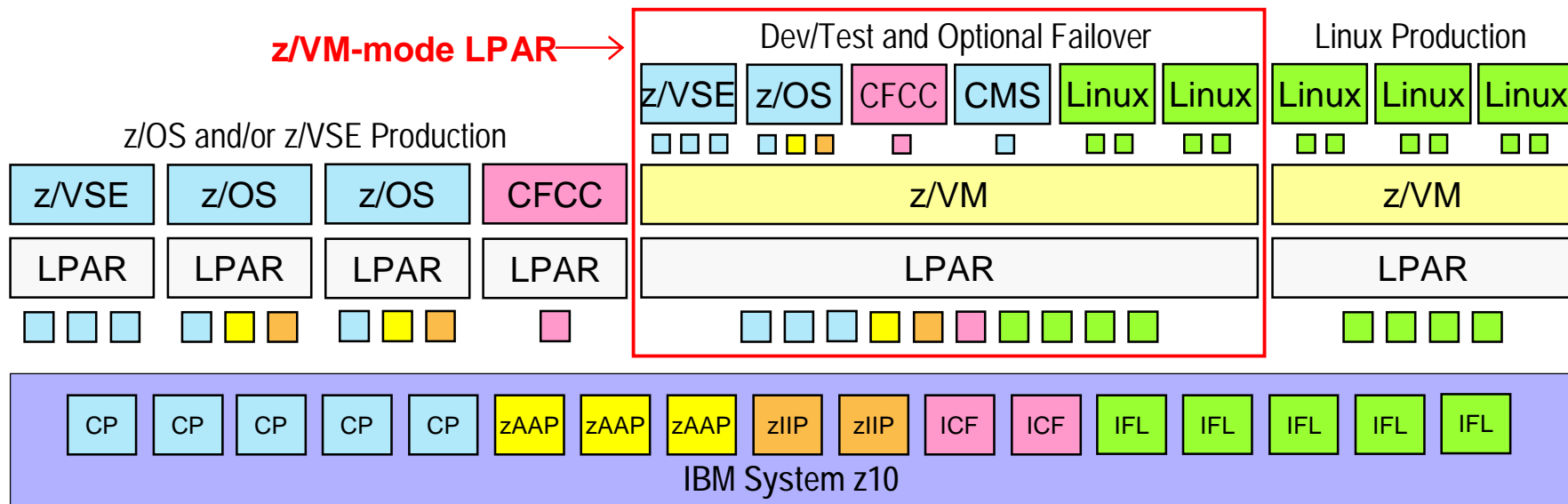
- ▶ Allows z/VM V5.4 users to configure all CPU types in a z10 LPAR

§ Offers added flexibility for hosting mainframe workloads

- ▶ Add *IFLs* to an existing standard-engine z/VM LPAR to host Linux workloads
- ▶ Add *CPs* to an existing IFL z/VM LPAR to host z/OS, z/VSE, or traditional CMS workloads
- ▶ Add *zAAPs* and *zIIPs* to host eligible z/OS specialty-engine processing
- ▶ Test integrated Linux and z/OS and z/VSE solutions in the same LPAR

§ No change to software licensing

- ▶ Software continues to be licensed according to CPU type



Topics

§ z/VSE Version 4 Release 2

§ z/VM Version 5 Release 4



→ § Linux on System z

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Linux Exploitation of System z10 (available since May 21, 2008)

	 SLES 10 SP2	 RHEL 5 Update 2
HW Toleration and Exploitation	z10 Large Page Support z10 STSI Change for Capacity Provisioning z10 CPU Node Affinity Processor Degradation External Time Reference (ETR)	z10 Large Page Support) z10 STSI Change for Capacity Provisioning
Virtualization	z/VM Monitor Stream Application Support (SLES 10 SP1) Guest Filesize in Monitor Appldata (SLES 10 SP1) z/VM hypfs DIAG 2FC (eWLM) (SLES 10 SP 1) Process Data into z/VM Monitor Stream Unit-record Device Driver Auto-adaptive CPU and Memory Management Kernel NSS	z/VM Monitor Stream Application Support Guest Filesize in Monitor Appldata z/VM hypfs DIAG 2FC (eWLM) Process Data into z/VM Monitor Stream Unit-record Device Driver
Network	z10 HiperSockets MAC Layer2 Routing z10 OSA Express3 with 4 Ports AF_IUCV Protocol Support QETH Skb scatter-gather support for large incoming messages	z10 HiperSockets MAC Layer2 Routing z10 OSA Express3 with 4 Ports AF_IUCV Protocol Support QETH Skb scatter-gather support for large incoming messages
Security	z10 CP Assist Instructions AES & SHA SW and In-Kernel z10 Crypto Card Dynamic add	z10 CP Assist Instructions AES & SHA SW and In-Kernel z10 Crypto Card Dynamic add
RAS	Dynamic CHPID reconfiguration via SCLP SCSI Dump Support (SLES 10) FCP Performance Data Collection – Adapter Statistics	Dynamic CHPID reconfiguration via SCLP SCSI Dump Support
Other Highlights	Network Configuration GUI (SLES 10)	Network Configuration GUI

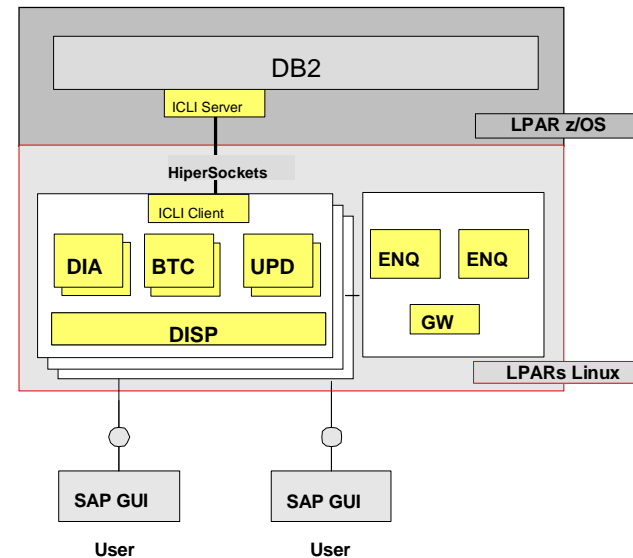
Note: LDP's are independent companies. IBM cannot guarantee that newly developed features will get included in their Linux distributions.

SAP Certification for RHEL



§ Announced by Red Hat on Feb 5, 2008: SAP certification for RHEL

- ▶ SAP Business Suite
- ▶ SAP NetWeaver



§ SAP's certification for RHEL is part of the worldwide Linux-on-Mainframe program led by IBM and Red Hat, as announced in May 2007.

§ RHEL provides additional functions such as Security-Enhanced Linux (SELinux) and ExecShield.

§ In addition to the Common Criteria certifications already available to customers of System z, IBM is sponsoring the EAL 4+ certification of Red Hat Enterprise Linux 5 on System z.

Novell: Linux Starter Kit for System z



§ **Announced Jan-30-2008**

§ **Available for SLES 10 SP1**

§ **Pre-built installation server**

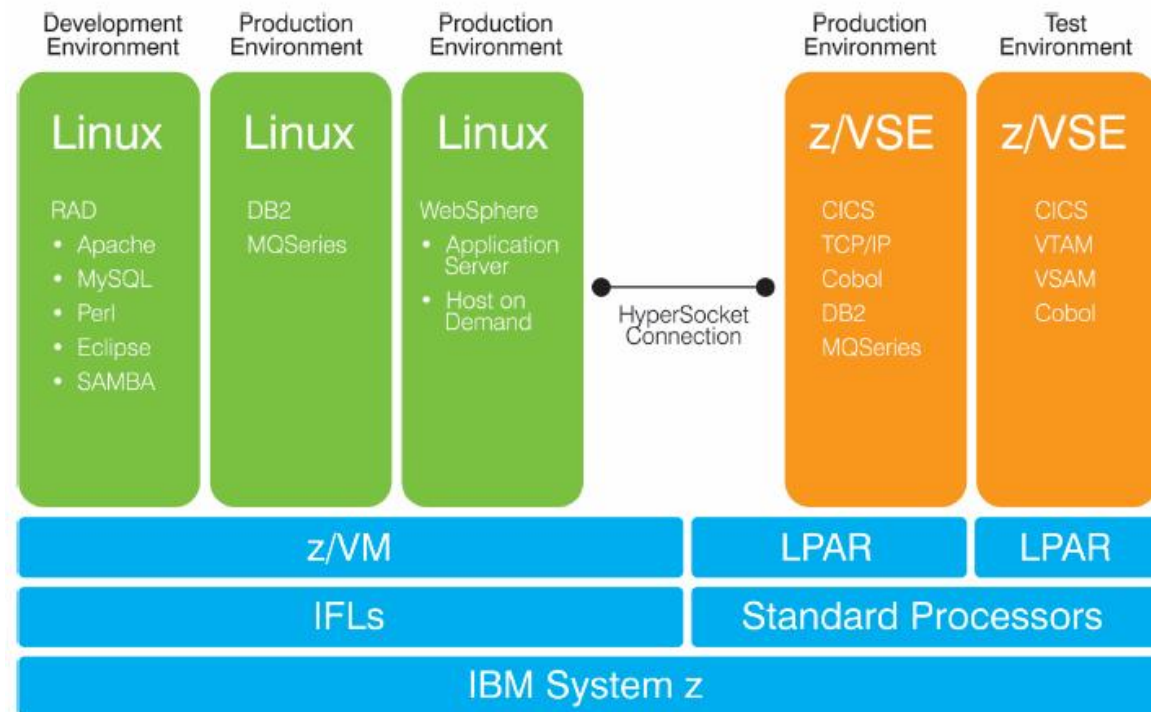
§ Simplifies installation of SLES 10 on System z on a z/VM system

§ **Eliminates big hurdle to try out Linux on the mainframe**

§ Gaining network access to the installation media from the mainframe

§ **Allows customers with little or no Linux experience and/or little or no z/VM experience to initiate evaluations of SLES 10 for System z**

Typical architecture with z/VM and z/VSE



Source: Novell Product Flyer, Feb 2008

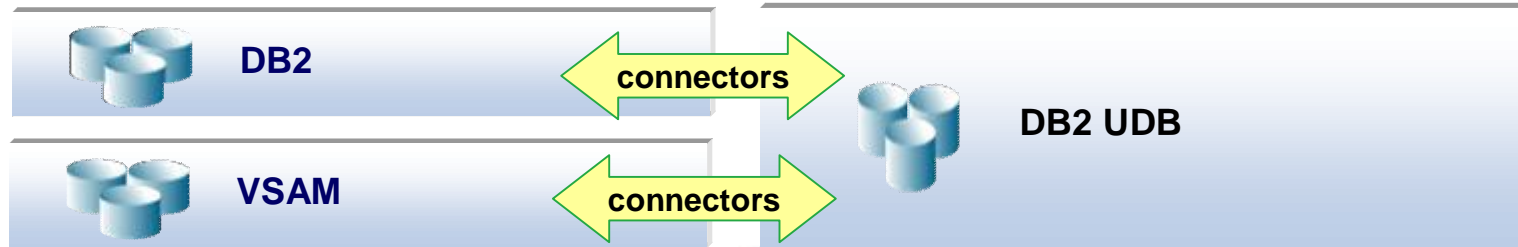
<http://www.novell.com/partners/ibm/mainframe/starterpack.html>

Cognos on IBM System z with z/VSE



Connectors like *VSAM Redirector* enable a VSE application to store data on a remote system.

The VSE program doesn't need any change. Working with a remote relational database (i.e. IBM DB2 UDB), a real time synchronization between VSAM data and the database can be done.

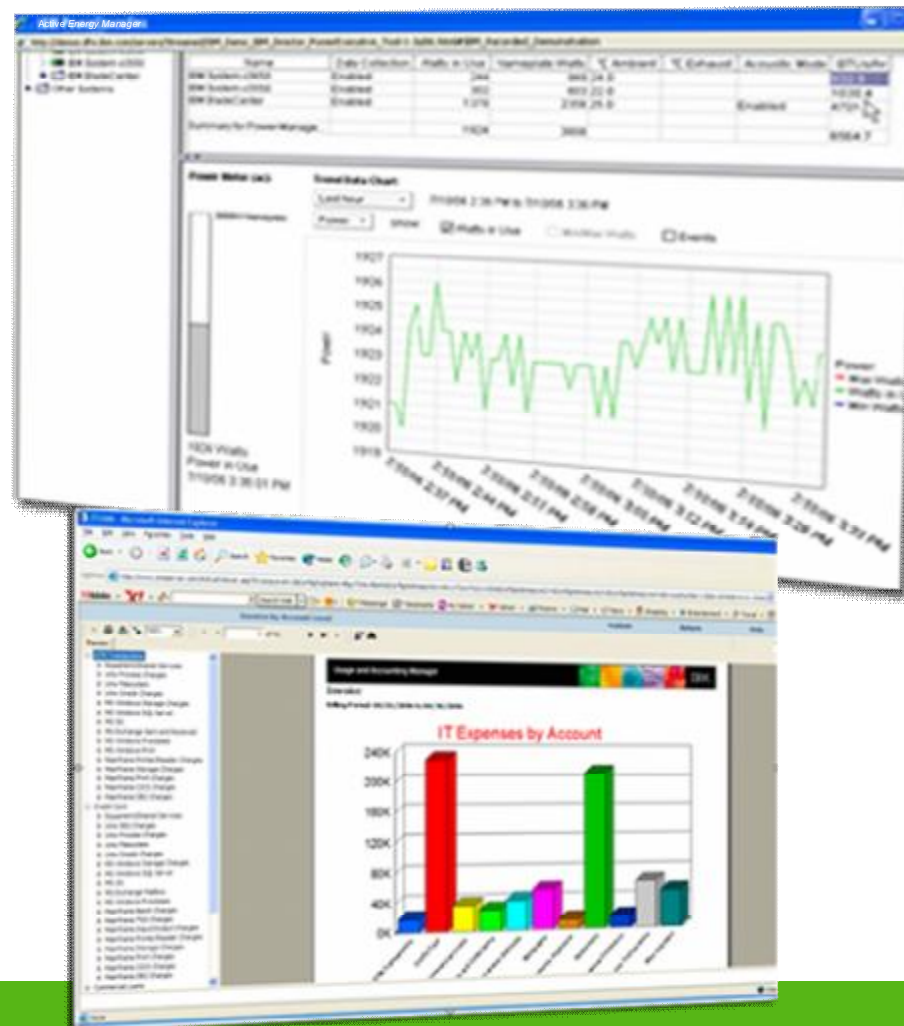


IBM Systems Director Active Energy Manager (AEM)

Announced Feb-26-2008, available since March-14-2008

- § **AEM helps monitor, measure and control energy usage**
- § **AEM is supported on Linux on System z**
 - ▶ to monitor energy use of IBM System z10, BladeCenter, System i, System p, System x
 - ▶ to manage energy use of IBM BladeCenter, Power6 processor based systems, System x
- § **No agents are required on the endpoint servers**
 - ▶ no dependency on z/OS, z/VM, z/VSE
- § **System z10 hardware capabilities are exploited**
 - ▶ Power trending
 - ▶ Thermal trending
- § **AEM can be integrated with Tivoli to provide energy mgmt solution**
 - ▶ e.g. Tivoli Accounting Manager

Active Energy Manager



Topics

§ z/VSE Version 4 Release 2

§ z/VM Version 5 Release 4

§ Linux on System z

→ § Customer References

§ The Best of all Worlds



Hardware group of companies Häfele cuts transaction processing run times in half with an IBM System z9 Business Class server

Business challenge:

With customers in more than 150 countries, demands for quick order turn-around and immediate delivery status updates, Häfele's transaction processing system needs to operate 24x7. Its existing IBM S/390® Multiprise® 3000 platform was nearing its operating capacity. Häfele needed a new platform that could accommodate rising order volumes and provide increased flexibility, stability and availability, together with moderate operating costs.

Solution:

With the help of IBM Business Partner Comparex, Häfele has migrated to an IBM System z9® Business Class server running the IBM z/VSE™ V3.1 operating system, subsequently moving to the IBM z/VSE V4.1 and IBM z/VM® V5.2 operating systems. Häfele's data is stored on IBM TotalStorage® Enterprise Storage Server® technology, which, in spite of the high transaction volume, is handling the new requirements quite well.

Benefits:

- § Reduces transaction processing run times by half
- § Protects the company's investment in existing in-house, custom-designed applications
- § Meets the high requirements of the company's flexible merchandise management system

“The IBM System z9 with z/VM V5.2 and z/VSE V4.1 offers optimum investment protection for our custom-designed, in-house developments.”

— Horst Reichardt, director of systems engineering, Häfele GmbH & Co KG

Solution components:

- § IBM System z9 Business Class mainframe
- § IBM z/VM V5.2 and IBM z/VSE 4.1 operating systems
- § IBM TotalStorage Enterprise Storage Server technology



BRZ Deutschland

Accelerates data processing run times with IBM System z9 and IBM System Storage DS6800 technology

Business challenge:

As an IT service provider to the fast-paced construction industry with more than 13,000 clients, the ability to respond quickly to its customers' needs is paramount. Having reached capacity on its IBM S/390® Multiprise® 2000 mainframe, BRZ Deutschland GmbH (BRZ) needed to migrate to a more flexible platform that could run Virtual Storage Extended (VSE) and Java-based applications on a Linux® operating system in parallel.

Solution:

BRZ decided to migrate to an IBM System z9® Business Class server running the IBM z/VSE™ V4 operating system. IBM and IBM Premier Business Partner Fritz & Macziol GmbH, who recommended the change, completed the migration in one weekend. Three VSE systems run in a logical partition with the System z9 server functioning as a data hub. An IBM System Storage™ DS6800 provides BRZ with the latest hard drive technology.

Benefits:

- § Accelerates processing times for batch jobs
- § Cuts run times by 20% compared to the previous system
- § Reduces run times even further with addition of DS6800 technology

“A maximum in flexibility, stability and availability is simply what our clients expect and is a requirement for the permanent improvement of process flows. With the IBM System z9 BC we can meet these requirements.”

*— Oliver Neureuther, director of product management systems
BRZ Deutschland GmbH*

Solution components:

- § IBM System z9 Business Class
- § IBM System Storage DS6800
- § IBM z/VSE



Wessels+Müller AG

Improves application response times and cuts operating costs with an IBM System z mainframe

Business challenge:

Wessels+Müller had migrated many of its key business systems to an IBM zSeries® 890 mainframe. And, while it was pleased with the platform, it found that the IBM hardware was unable to keep pace with the company's growing processing demands. With the system operating at 80 percent just to handle day-to-day operations, the business was concerned about peak processing periods when high volumes of data need to be analyzed.

Solution:

Working with IBM Business Partner Becom, Wessels+Müller migrated its business systems to an IBM System z9® Business Class mainframe. The IBM hardware, leveraging the IBM z/VSE™ operating platform, supports multiple Linux® virtual machines that host the client's online parts ordering and information management systems as well as an IBM DB2® data server containing part information.

Benefits:

- § Improved application speeds and reduced response times—even during peak processing periods
- § Increased staff productivity with a more responsive environment
- § Reduced operating costs by simplifying the infrastructure

“This System z mainframe has reaffirmed our confidence in IBM’s hardware. Not only does the server offer more power but more control over the environment as well.”

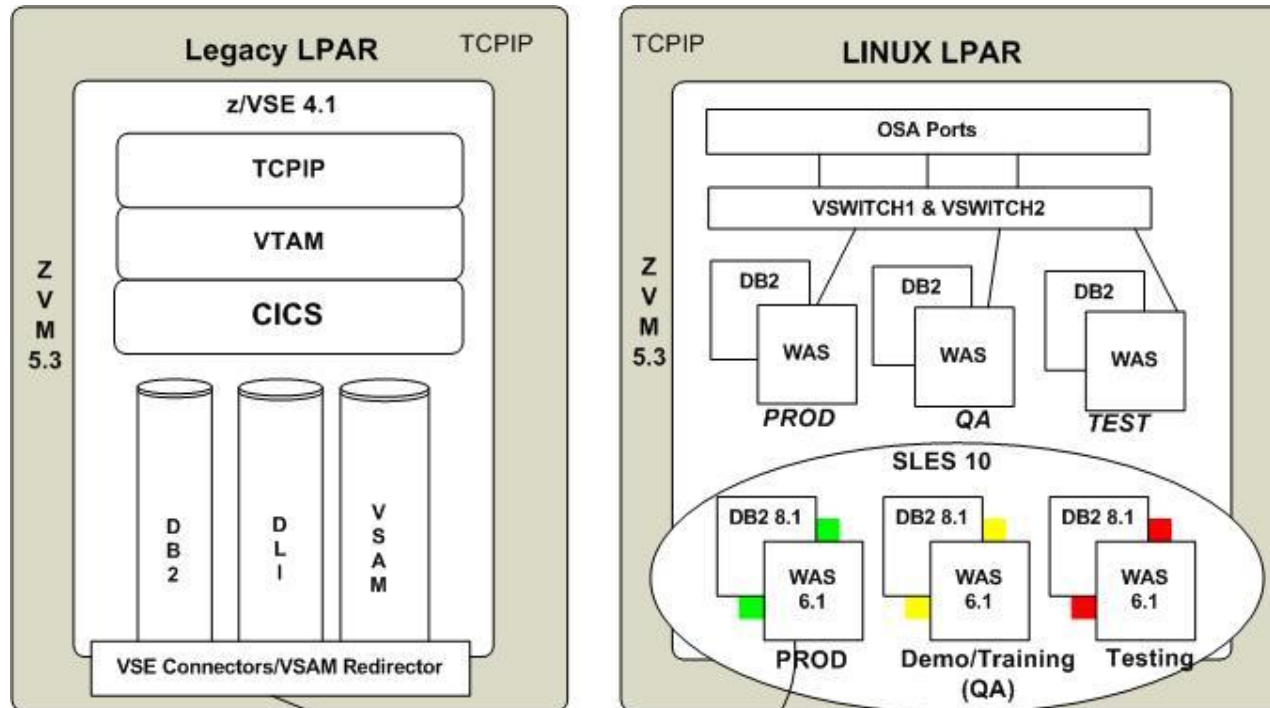
— Wessels+Müller AG

Solution components:

- § IBM System z9 Business Class (BC) mainframe
- § IBM DB2 data server



Supreme Court of Virginia



- ▶ 1 + 1 z9 BC
- ▶ 2 + 2 CPs
- ▶ 5 + 5 IFLs
- ▶ 48 + 32 GB memory
- ▶ 2 + 2 z/VM 5.3 LPARs
- ▶ 7 + 4 z/VSE 4.1 guests
- ▶ 41 + 14 SLES 10 guests

§ z9 BC for Court System (internal)

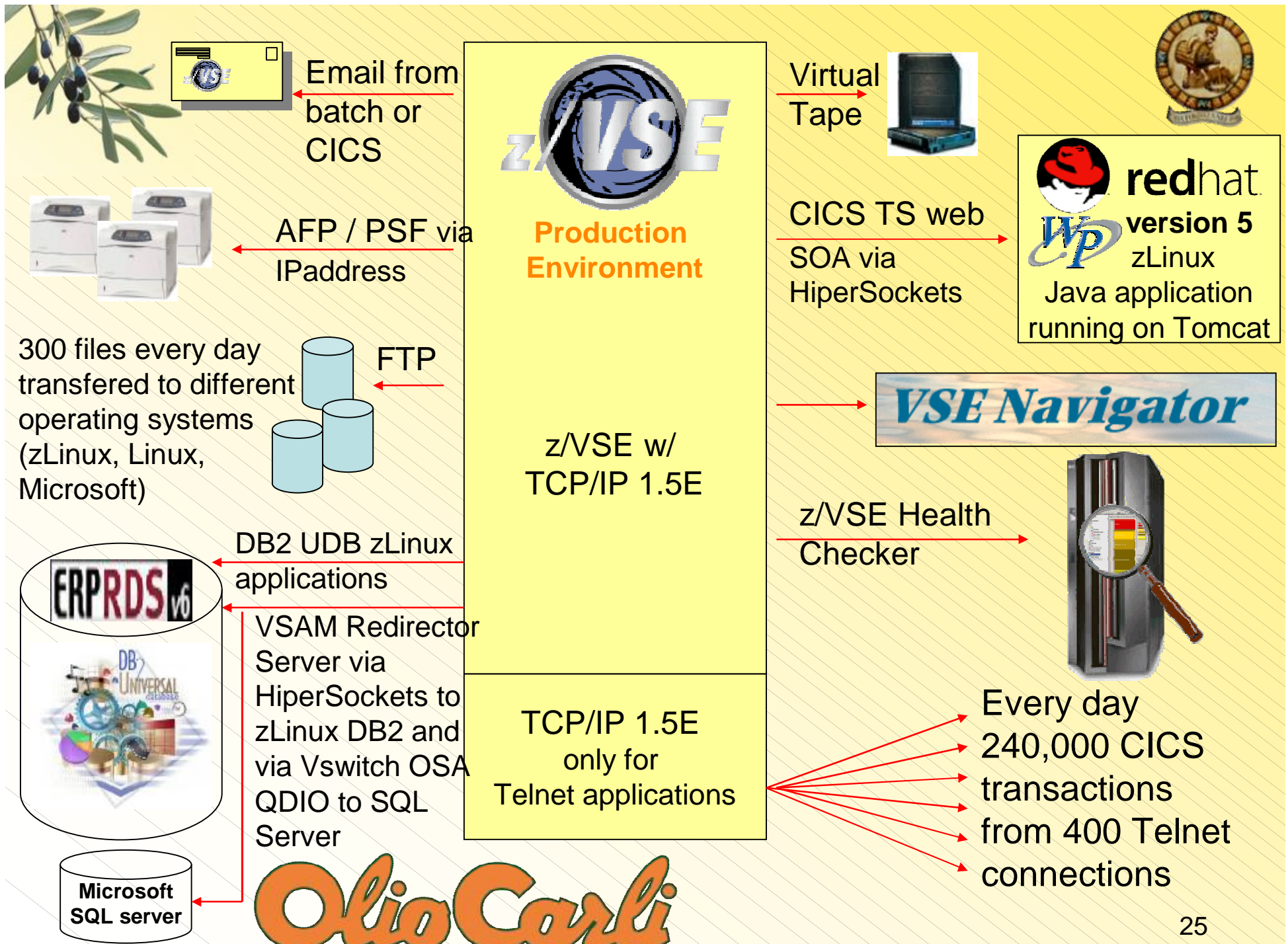
- ▶ Serves 325 courts, 5.000+ users, 4 million cases (2007)
- ▶ Integrating z/VSE, DB2/UDB and WebSphere applications
- ▶ eMagistrate* system serves 125 locations, 2.800 trans per day

**2007 ComputerWorld Honors Program Laureate*

§ z9 BC for Internet

- ▶ eCommerce application integrating z/VSE and WebSphere apps





Topics

§ z/VSE Version 4 Release 2

§ z/VM Version 5 Release 4

§ Linux on System z

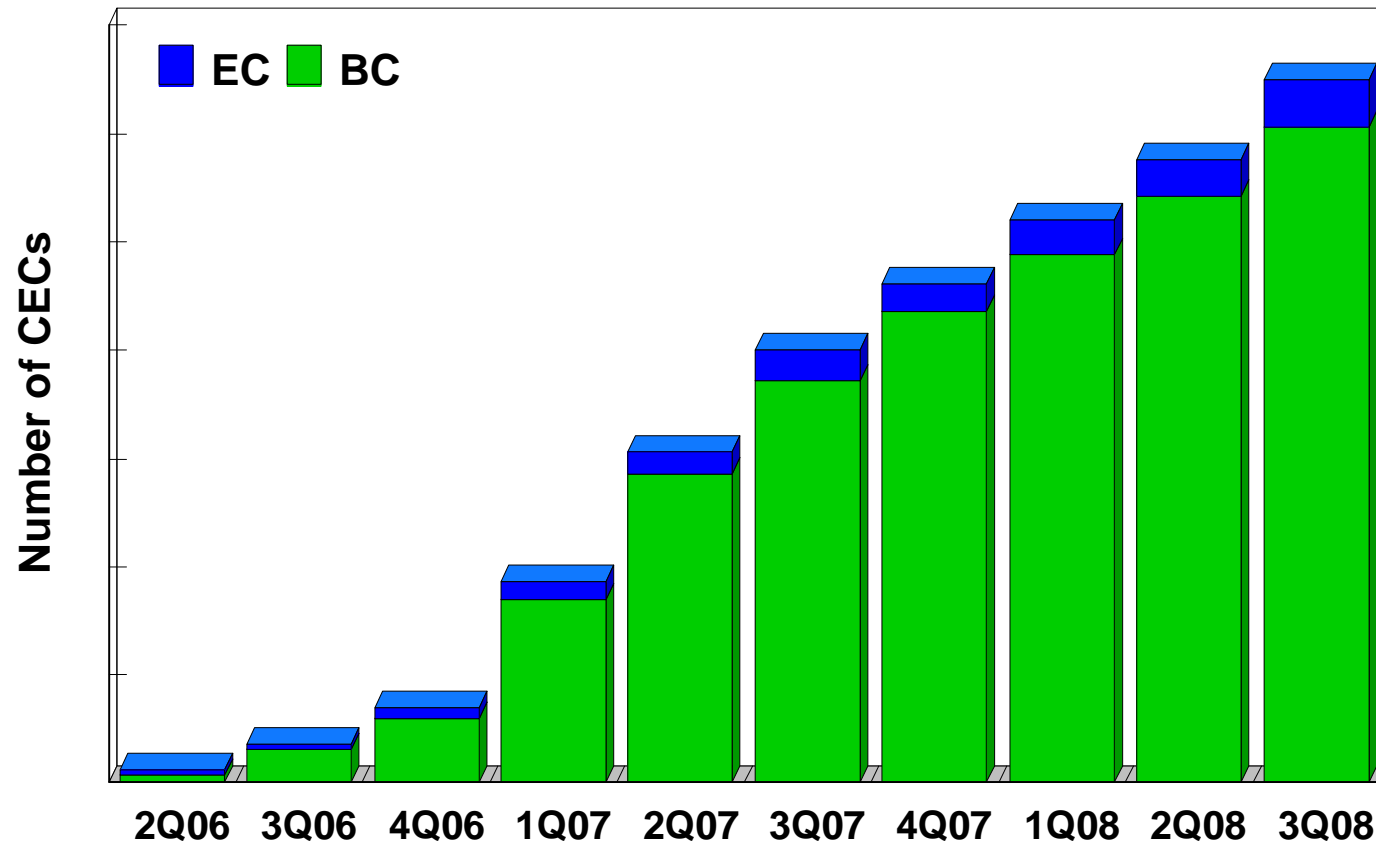
§ Customer References

→ § The Best of all Worlds



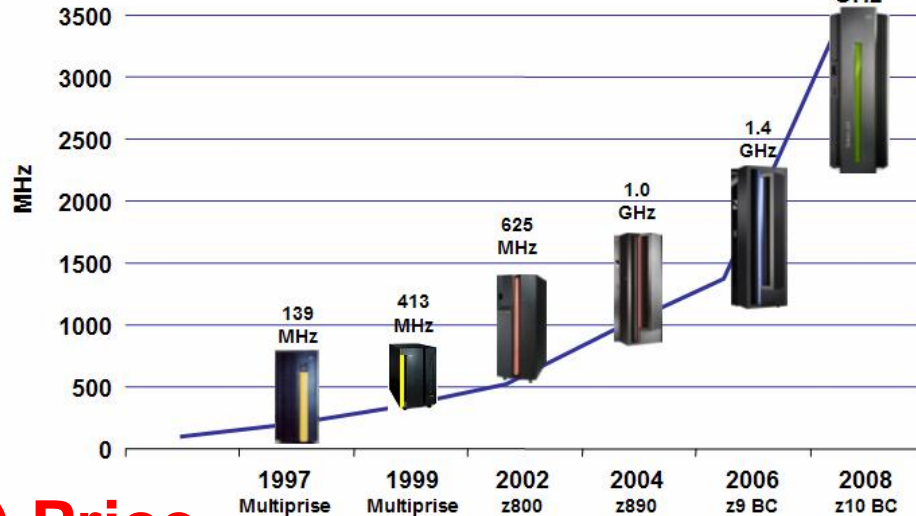
z/VSE Strategy is driving z9/z10 Adoption with z/VSE V4

z9/z10 CECs with z/VSE V4

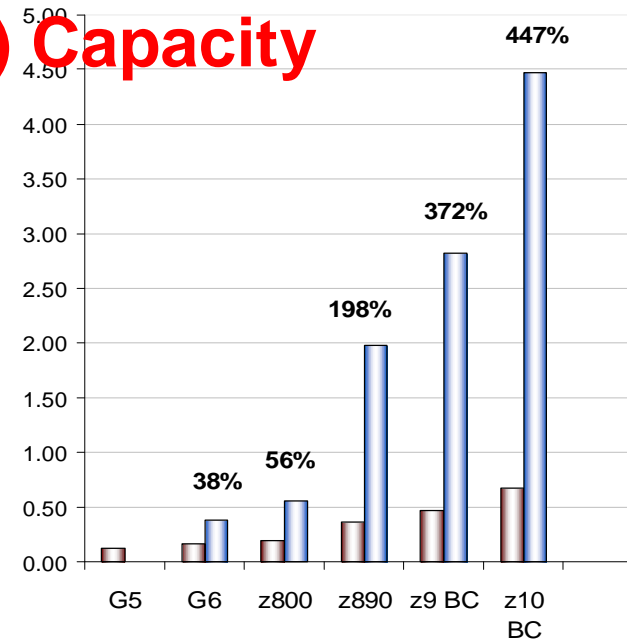


My top 3 Reasons to upgrade to IBM System z10 BC

1) Performance



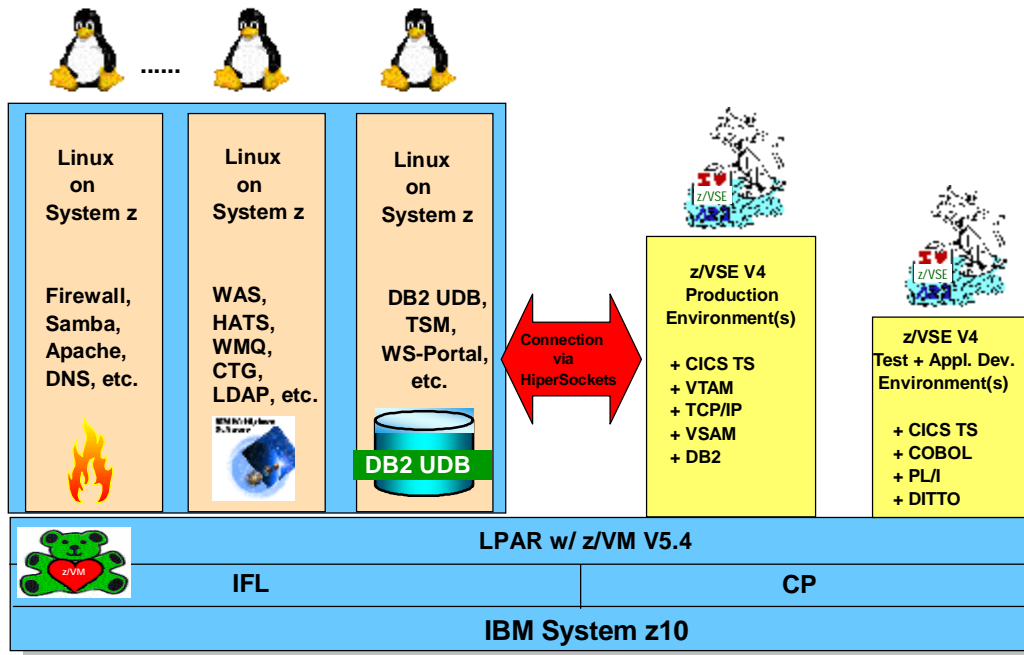
2) Capacity



3) Price

Generation to generation price / performance improvements:	z10 BC
Reduction in software charging units, MSUs, ¹ versus z9 BC (1 Millions of Service Units)	10%
Reduction in software charging units, MSUs, versus z890 or z800 / z900	19% or 27%
Maintenance price per MIPS reduction for equivalent capacity ¹	5%
Maintenance price per MIPS reduction with capacity growth ¹	Up to 10%
Performance improvement for Linux (IFLs), Java (zAAPs) and Integrated Information Processors (zIIPs)	Up to 40%
Typical charge for MES upgrades for IFLs, zAAPs, and zIIPs	0
Technology-driven value	z10 BC
Number of capacity settings - 5 Full Uni + 125 Sub-Cap settings	130
50% price reduction on Specialty engines for System z10 BC ^{2,4}	\$47.5 K
IBM Software charges for zAAP capacity and zIIP capacity	0
62% price reduction on System z10 Memory Prices for new workloads when purchased together with Specialty engines ^{2,3,4}	\$2,250 USD

IBM System z10 can do IT all - Smart, Cool, Affordable



§ z/VSE V4

- ▶ Protect core IT investments thru PIE
- ▶ Robust, secure enterprise server
- ▶ Cost-effective solutions
- ▶ Interoperability with network / servers
- ▶ Highly improved price / performance

§ z/VM V5

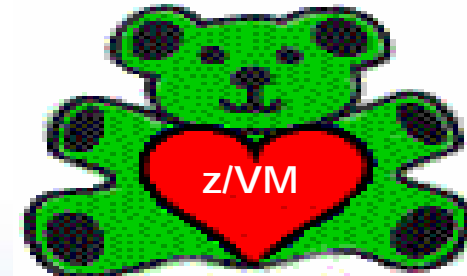
- ▶ Highly flexible, industrial strength
- ▶ Advanced virtualization
- ▶ Multiple z/VSE and Linux images
- ▶ Designed to exploit System z9 and z10

§ Linux on System z

- ▶ Large portfolio of new applications
- ▶ Platform for IBM middleware
- ▶ Infrastructure Simplification
- ▶ Massive scalability and consolidation



Questions ?



Thank You !



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