

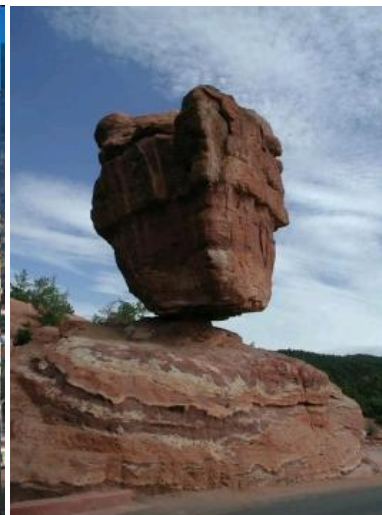
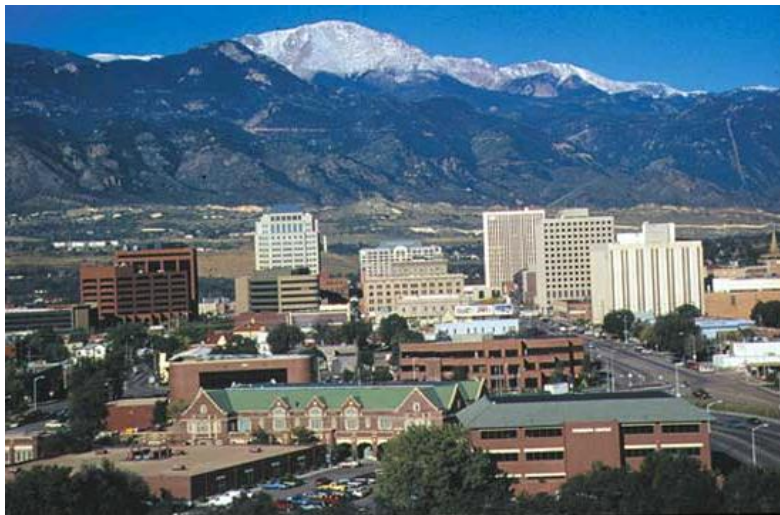
# IBM Update

## WAVV 2011

*Colorado Springs – April 15 to 19, 2011*



Siegfried Langer    Business Development Manager z/VSE & Linux on System z  
Klaus Goebel        z/VSE Systems Manager  
Miguel Delapaz     Advisory Software Engineer, z/VM Development



## What's new since last WAVV

§ Welcome Miguel Delapaz



§ Welcome message - Tom Rosamilia, General Manager, Power and z Systems

§ Updates – what's new?

- zEnterprise *Siegfried Langer*
- z/VSE *Klaus Goebel*
- z/VM *Miguel Delapaz*
- Linux on System z *Siegfried Langer*

§ The IBM Centennial





**Tom Rosamilia**  
IBM STG - GM, Power & z Systems

## Tom Rosamilia, IBM General Manager, Power and z Systems

*Video message, Nov 2010*



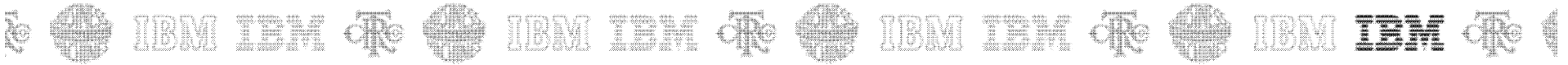
**“For the past four decades, z/VSE has been an important part of our portfolio. [...] z/VSE is designed to help you protect your existing investment in applications and data. And IBM remains committed to address the requirements for growing z/VSE workloads.”**



**“We are also committed to expand the options available for deploying Linux workloads. These implementations can drive significant financial benefits.”**



**“Recent z/VM enhancements also strengthen System z virtualization technology. The goal is to enable you to take advantage of the new function, performance, reliability, availability, and serviceability improvements of the IBM zEnterprise System, including hybrid system environments.”**



Siegfried Langer  
Business Development Manager z/VSE & Linux on System z



# zEnterprise



IBM zEnterprise™ 196  
(z196)



IBM zEnterprise  
BladeCenter® Extension  
(zBX)

zEnterprise Unified Resource Manager

## IBM zEnterprise System – Best-in-class systems and software technologies

*A “System of systems” that unifies IT for predictable service delivery*



### **IBM zEnterprise 196 (z196)**

- § Optimized to host large-scale database, transaction, and mission-critical applications
- § The most efficient platform for large-scale Linux consolidation
- § Capable of massive scale-up
- § New easy-to-use z/OS V1.12

### **zEnterprise Unified Resource Manager**

- § Unifies management of resources, extending IBM System z qualities of service end-to-end across workloads
- § Part of the IBM Systems Director family, provides platform, hardware and workload management

### **zEnterprise BladeCenter Extension (zBX)**

- § Selected IBM POWER7 blades and IBM System x Blades\* for tens of thousands of AIX, Linux and Windows applications
- § High-performance optimizers and appliances to accelerate time to insight and reduce cost
- § Dedicated high-performance private network

## The Value begins at the heart of z196.....

40%	Improvement for traditional z/OS workloads
30%	Improvement in CPU intensive workloads via compiler enhancements
60%	Total capacity improvement
1 to 80 configurable for client use	
IFL, zIIP, zAAP, ICFs and optional SAPs	
Up to 3 TB RAIM memory	
15 subcapacity settings	
Cryptographic enhancements	
Optional water cooling and/or HV DC Power	
Upgradeable from z10 EC and z9 EC	

### **zEnterprise 196 (z196)**

#### **Machine Type: 2817**

#### **Models: M15, M32, M49, M66, M80**

#### § Processor Units, Memory, I/O

- One to four books
- Hot pluggable I/O drawer

#### § Focus on the environment

- Options to help eliminate hotspots and save on energy
- Static power savings
- Query maximum potential power
- Leadership technology for cooling and power distribution

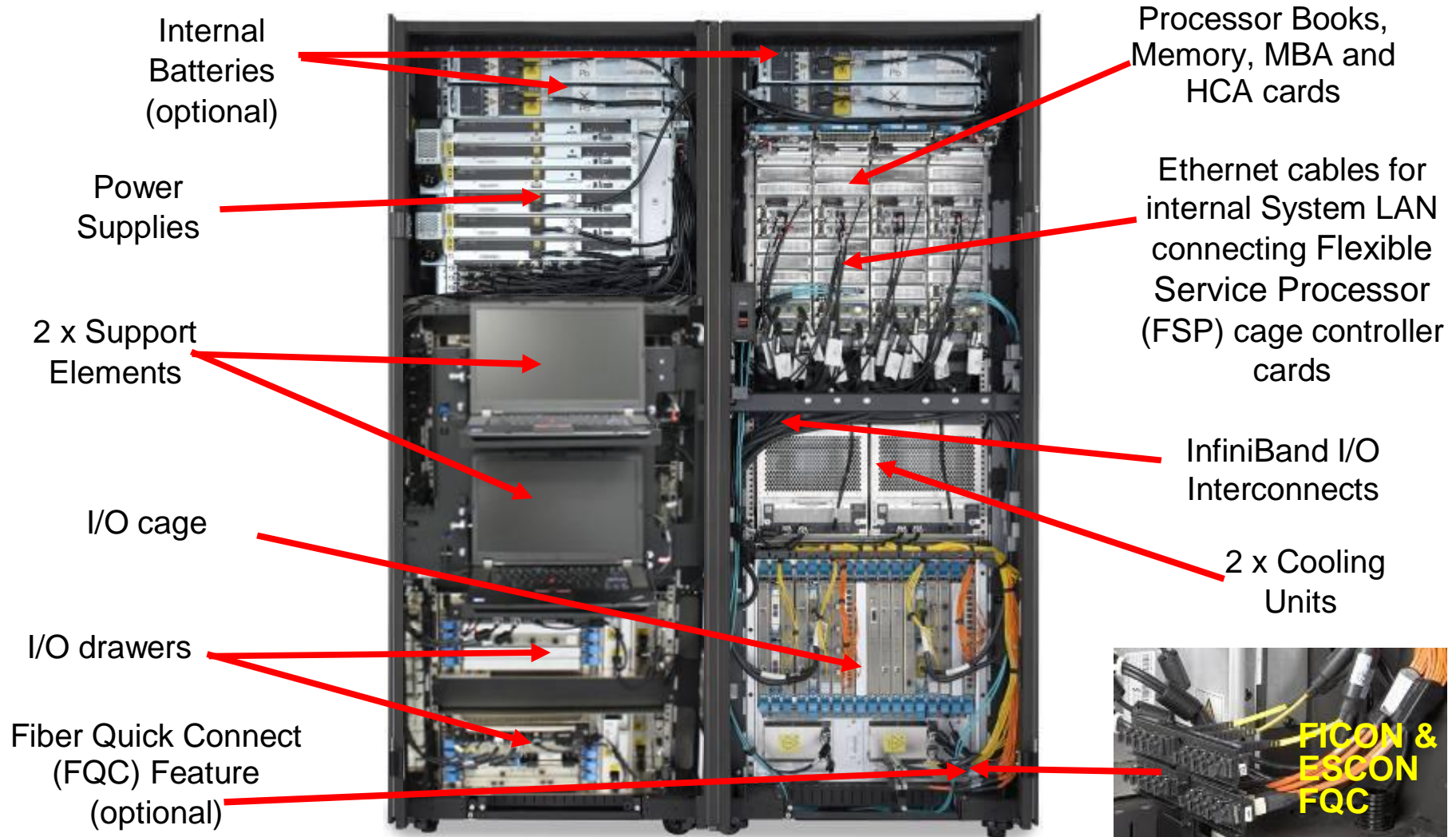
#### § Operating System Flexibility

- z/OS, z/VM, z/VSE, z/TPF and Linux on System z

#### § Security and reliability

- Elliptic curve cryptography
- Concurrent patch update enhancements
- InfiniBand Coupling links

## z196 – Under the covers (Model M66 or M80)





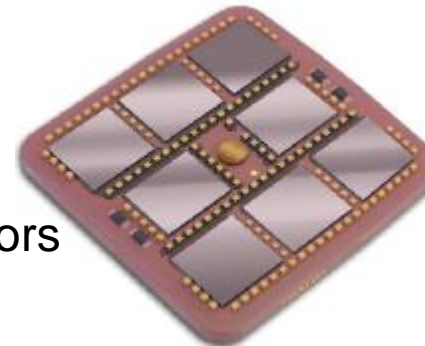
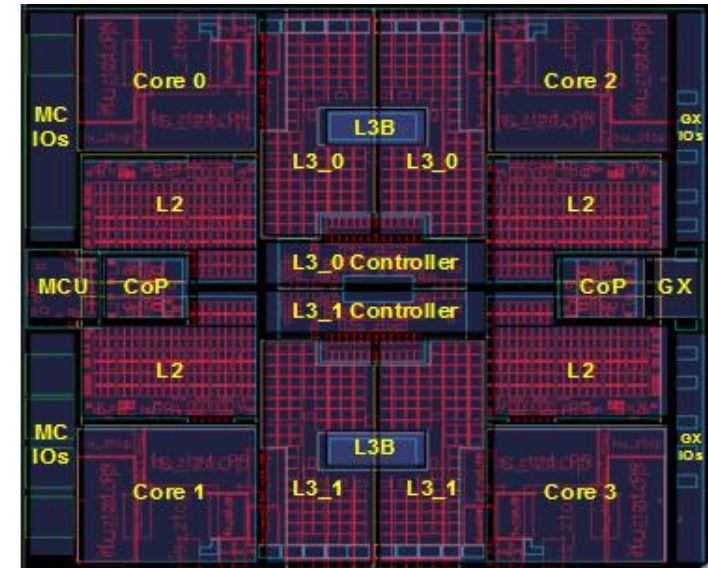
## z196 - IBM leadership technology at the core

### § New 5.2 GHz Quad Core Processor Chip boosts hardware price/performance

- 100 new instructions – improvements for CPU intensive, Java, and C++ applications
- Over twice as much on-chip cache as System z10 to help optimize data serving environment
- Out-of-order execution sequence gives significant performance boost for compute intensive applications
- Significant improvement for floating point workloads

### § Performance improvement for systems with large number of cores – improves MP ratio

### § Data compression and cryptographic processors right on the chip



..... and the value extends to heterogeneous platforms .....

## IBM zEnterprise BladeCenter Extension (zBX)

### Machine Type: 2458 – Model 002

- § Integrated IBM Certified Components driven by System z order
  - Standard parts – TOR switch, BladeCenter Chassis, Power Distribution Units, Optional Acoustic Panels
- § System z support
  - Problem reporting, hardware and firmware updates
- § Expanding operating system support for z196
  - AIX on System p, Linux and Windows on System x<sup>1</sup>
- § Simplified management
  - Improved time to install and implement new applications
  - Central point of management for heterogeneous workloads
  - No change to applications



#### Optimizers

- IBM Smart Analytics Optimizer
- DP<sup>1</sup>

#### Select IBM Blades

- BladeCenter PS701 Express
- System x<sup>1</sup>

One to four – 42u racks – capacity for 112 blades

No System z software running in zBX – Passport Advantage software licensed to blades

No MIPS/MSU rating

Configured for high availability

Optional rear door heat exchanger

**... managed by the zEnterprise Unified Resource Manager**

## zEnterprise Unified Resource Manager

### Transforming the way resources are managed and deployed

#### What is it?

*Unified Resource Manager provides **workload awareness** to optimize the system resources in accordance with understanding the policies assigned to that particular workload. Functions are grouped into two suites of tiered functionality that enable different levels of capability - Manage suite and Automate suite.*

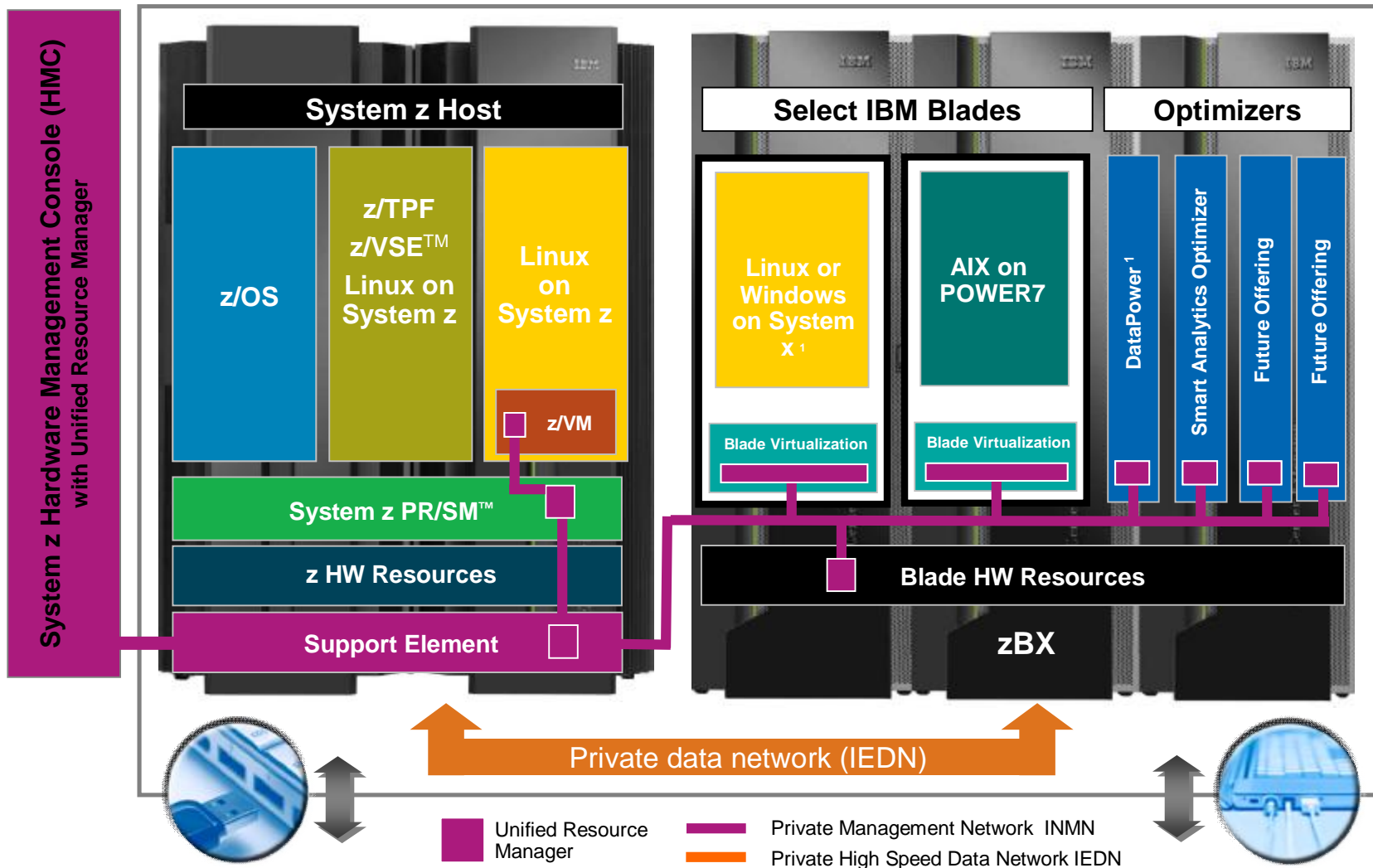
#### How is it different?

- § **Heterogeneous management:** Total systems management across heterogeneous resources
- § **Integration:** Single point of control, common skills for resources, reduced complexity of day to day operations.
- § **Monitoring.** New dashboard for CPU resources and energy management.
- § **Simplified installation:** Auto discovery and configuration of resources and workloads with single interface
- § **Secure:** Security with lower latency, less network hops, less complexity,
- § **Service and support management:** Virtual machines and blades able to perform hardware problem detection, reporting and call home



# Putting zEnterprise System to the task

Use the smarter solution to improve your application design



<sup>1</sup> All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.

## More Choice with Linux on System z and zBX

### Linux on System z

- § Highly virtualized with z/VM hypervisor
  - Highest flexibility
  - Supports large number of virtual servers (no architecture limitation)
- § Excellent dynamic management of resources
- § High level of integration with other System z environments (e.g. z/OS, z/VSE)
  - HiperSockets (data transfer in memory), optionally same disk environment (integration of backup, DR) and more

### zEnterprise BladeCenter Extension (zBX)

- § Integration of Linux & Windows on System x and AIX on POWER Blades
  - Unified management with zEnterprise Unified Resource Manager
  - Supports integration of heterogenous application environments
- § High-performance optimizers and appliances for fast analysis and reduced cost

*zEnterprise is the beginning of a new generation of System z  
... expect more to come!*



## Statements of Direction

### § *ESCON channels - February 15, 2011:*

**The IBM zEnterprise 196 (z196) will be the last high-end server to support ESCON channels:** IBM plans not to offer ESCON channels as an orderable feature on high-end System z servers which follow the z196 (machine type 2817). In addition, ESCON channels cannot be carried forward on an upgrade to such a follow-on server.

#### *Notes:*

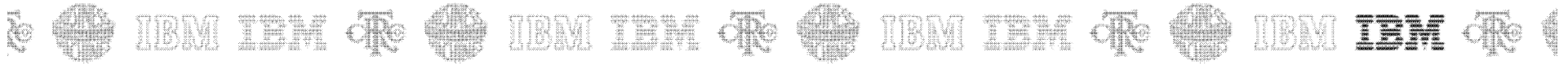
- This new Statement of Direction supersedes the previous ESCON SOD in Announcement letter 110-170 of July 22, 2010. It also confirms the SOD in Announcement letter 109-230 of April 28, 2009 that “ESCON Channels will be phased out.”
- This SOD does **NOT** say that the z10 BC will be the last midrange server to support ESCON channels or the last to offer ESCON channels as an orderable feature.

### § *IBM System x blades on zBX – April 12, 2011:*

In the third quarter of 2011, IBM intends to offer select IBM System x blades running Linux in the IBM zEnterprise System on zBX Model 002.

In the fourth quarter of 2011, IBM intends to offer select **IBM System x blades running Windows in the IBM zEnterprise System on zBX** Model 002.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice. Any reliance on these statements of general direction is at the relying party's sole risk and will not create liability or obligation for IBM.



## z/VSE Update

- Ø z/VSE V4.3 – more capacity for growth
- Ø z/VSE V5.1 offers 64-bit virtual addressing for future workloads

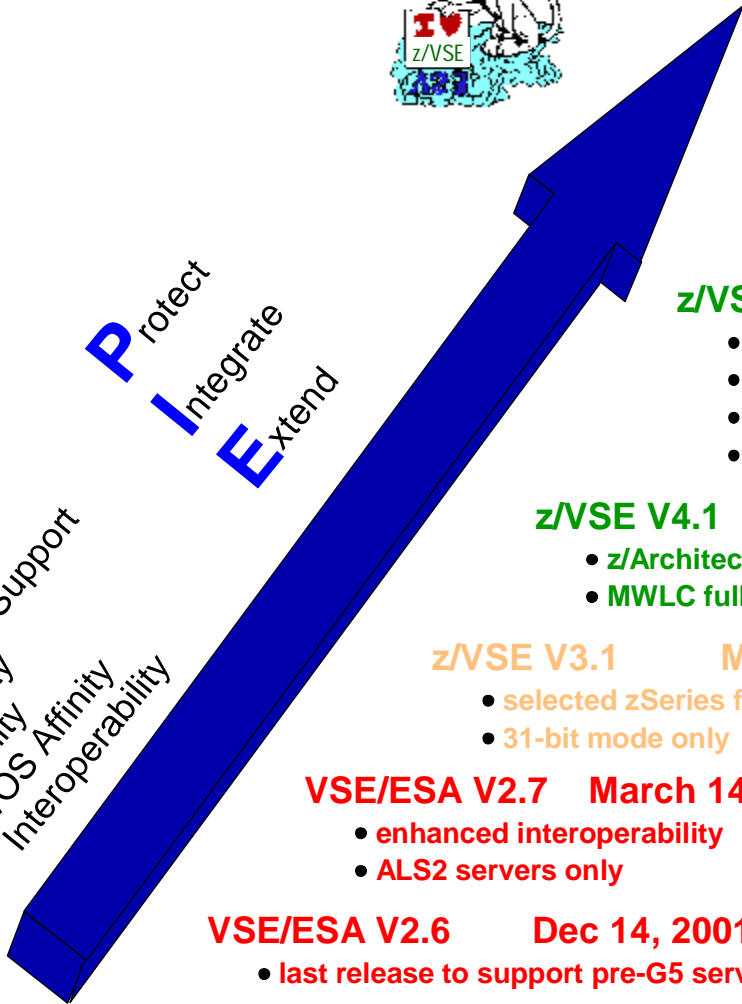


# z/VSE Evolution



**P**rotect  
**I**ntegrate  
**E**xtend

Hardware Support  
 Capacity  
 Quality  
 z/OS Affinity  
 Interoperability



**VSE/ESA V2.6 Dec 14, 2001**  
 • last release to support pre-G5 servers

**VSE/ESA V2.7 March 14, 2003**  
 • enhanced interoperability  
 • ALS2 servers only

**z/VSE V3.1 March 4, 2005**  
 • selected zSeries features, FCP/SCSI  
 • 31-bit mode only

**z/VSE V4.1 March 16, 2007**  
 • z/Architecture only / 64-bit real addressing  
 • MWLC full & sub-cap pricing

**z/VSE V4.2 Oct 17, 2008**  
 • More tasks, PAV, SVC, SCRT, LDAP Client  
 • SoD for CICS/VSE, RBD V7, WMQ V3  
 • Crpto Express3 (April 30, 2010)  
 • IPv6/VSE\* (May 28, 2010)

**z/VSE V4.3 Nov 26, 2010**  
 • Virtual storage (24-bit) constraint relief  
 • 4-digit device addresses, IPv6/VSE  
 • Security / Crypto / Networking enhancements



**z/VSE V5.1 Preview April 12, 2011**  
 • z196 / zBX exploitation  
 • ALS to System z9 (and higher)  
 • 64-bit virtual addressing



\* IPv6/VSE is a registered trademark of Barnard Software, Inc.



## z/VSE Support Status



<i>VSE Version and Release</i>	<i>Marketed</i>	<i>Supported</i>	<i>End of Support</i>
<b>z/VSE V4.3</b>	Yes	Yes	tbd
<b>z/VSE V4.2</b>	No	Yes	tbd
<b>z/VSE V4.1<sup>2)</sup></b>	No	Yes	04/30/2011
<b>z/VSE V3.1<sup>1)</sup></b>	No	No	07/31/2009
<b>VSE/ESA V2.7</b>	No	No	02/28/2007

1) z/VSE V3 is 31-bit mode only. It does not implement z/Architecture, and specifically does not implement 64-bit mode capabilities. z/VSE is designed to exploit select features of IBM System z10, System z9, and zSeries hardware.

2) z/VSE V4 is designed to exploit 64-bit real memory addressing, but will not support 64-bit virtual memory addressing

## How to get z/VSE Support



### Reporting a problem

- | IBM Support Portal – Service Request Tool (requires registration, directly queued to L2)
- | Call IBM - Specify customer number & comp ID (e.g. 5686CF806 for z/VSE V4)
- | z/VSE Home Page – Contact z/VSE (in case of problems opening a PMR)

### Finding known fixes

- | IBM Support Portal
  - Downloads and fixes – Search for component ID (& symptom)
  - Notifications of new APARs – Subscribe to System z, z/VSE Family
- | z/VSE Home Page – Service & Support – Corrective (select a product and latest APAR list)

### Ordering service

- | ShopzSeries
  - Order PTF with report  
(w/o report requisite search goes back 90 days only)
  - Order PSP with report  
(if WebSphere MQ for z/VSE 3.0.0 is installed, please request assistance via z/VSE home page – Contact z/VSE)
- | Open PMR to request service



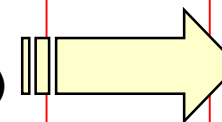
## z/VSE Support for IBM Mainframe Servers



<b>IBM Servers</b>	<b>z/VSE V4.3</b>	<b>z/VSE V4.2</b>	<b>z/VSE V4.1</b>
<b>IBM zEnterprise 196</b>	<b>Yes</b>	Yes	Yes
<b>IBM System z10 EC &amp; z10 BC</b>	<b>Yes</b>	Yes	Yes
<b>IBM System z9 EC &amp; z9 BC</b>	<b>Yes</b>	Yes	Yes
IBM eServer zSeries 990 & 890	Yes	Yes	Yes
IBM eServer zSeries 900 & 800	Yes	Yes	Yes

**Please note:**

- z/VM V6 requires System z10 technology (or higher)
- Novell SLES 11 requires System z9 technology (or higher)
- Red Hat RHEL 6 requires System z9 technology (or higher)



**§ z/VSE V5 requires System z9 technology (or higher)**



## z/VS E V4.3 - General Availability since 11/26/2010

Previewed 10/20/2009, refreshed 07/22/2010, full announce 10/05/2010

### § IBM zEnterprise and System z10 technology exploitation

- Dynamic add of logical CPs to LPAR without Re-IPL
- Large page (1 megabyte page) support for data spaces
- FICON Express8 and Crypto Express3 support
- **LFP connector: Fast path from z/VS E to Linux TCP/IP in a z/VM-mode LPAR**

Black = previewed

Blue = added w/ full announce

### § Virtual storage constraint relief for workload growth

- Move selected system programs and buffers from 24-bit into 31-bit storage

### § Ease of use through four-digit device addresses

- Transparent for system, vendor, and user applications that rely on 3-digit CUUs

### § Enhanced storage options

- DS8000 Remote Mirror and Copy (RMC) feature support through ICKDSF
- IBM System Storage TS7700 WORM support
- **XIV support**

### § Networking, security, and auditability enhancements

- SNMP agent to retrieve z/VS E specific system and performance data

### § DOS/VS RPG II support for CICS Transaction Server (CICS TS)

- Allows RPG programs implemented for CICS/VS E V2.3 to run with CICS TS V1.1

### § IPv6/VS E as optional product (IPv6 solution)

- **IBM IPv6/VS E – licensed from BSI – includes IP stack & applications for both, IPv6 and IPv4**

## z/VSE V5.1 Preview Announcement - GA planned for 4Q2011



### § 64-bit virtual addressing for growing / future workloads

- Keep ‘more data in memory’ to benefit from increased processor storage
- Built upon z/Architecture capabilities and 64-bit real addressing introduced with z/VSE V4
- 64-bit API is compatible with z/OS
- Fulfills SoD as announced with z/VSE V4.3, dated October-5-2010

### § Introduction of an Architectural Level Set (ALS) that requires System z9 (or later)

- z/VSE V5 will run on System z9 BC/EC, z10 EC/BC, and zEnterprise 196

### § zEnterprise 196 exploitation

- Support Static Power Save Mode for MWLC clients with subcapacity option (also z/VSE V4)
- 4096-bit RSA keys with Crypto Express3 for enhanced security
- Support of OSA-Express for zBX (CHPID OSX) to participate in an Intra Ensemble Data Network (IEDN)

### § Exploitation of IBM System Storage options

- Copy Export function of TS7700 Virtualization Engine for disaster recovery
- IBM Storwize V7000 Midrange Disk System (z/VSE V4.2 and later)
- IBM XIV (z/VSE V4.2 and later)

### § Networking enhancements

- IPv6 support added to Linux Fast Path connector

# New SoD - included in z/VSE V5.1 Preview Announcement



**Statement of Direction:**  
 “IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value.”

## CICS Explorer

- Based on the Eclipse Rich Client Platform (RCP)
- Provides integration platform
- Scalable and intuitive way to monitor CICS systems
- Can be extended via plug-ins

The screenshot shows the IBM CICS Explorer interface. On the left, a summary table displays transaction data for region IYNX011. The main window shows a detailed list of transactions with columns for Name, Status, Use Count, Program, Priority, Transaction Class, Purgeability, Dumping, and Routing. A red '1' is placed over the transaction list, a red '2' over the 'Program' column, and a red '3' over the 'Transaction Class' column. On the right, a 'Related Topics' sidebar is visible with a red '4' next to it. At the bottom, a compass logo for CICS Explorer is shown.

Region	Job Name	MVS System ID	Task Count	CICS Status	CICS TS Level	Total CPU	Page In Count	Page O
IYNX14	IYNX14	MV23	7	ACTIVE	040100	0000:01:12.7576	5	0
IYNX32	IYNX32	MV23	7	ACTIVE	030200	0000:04:13.5715	993	11743
IYNX42	IYNX42	MV23	7	ACTIVE	030200	0000:05:12.2451	580	8419
IYNX44	IYNX44	MV23	8	ACTIVE	040100	0000:01:05.4144	0	24

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

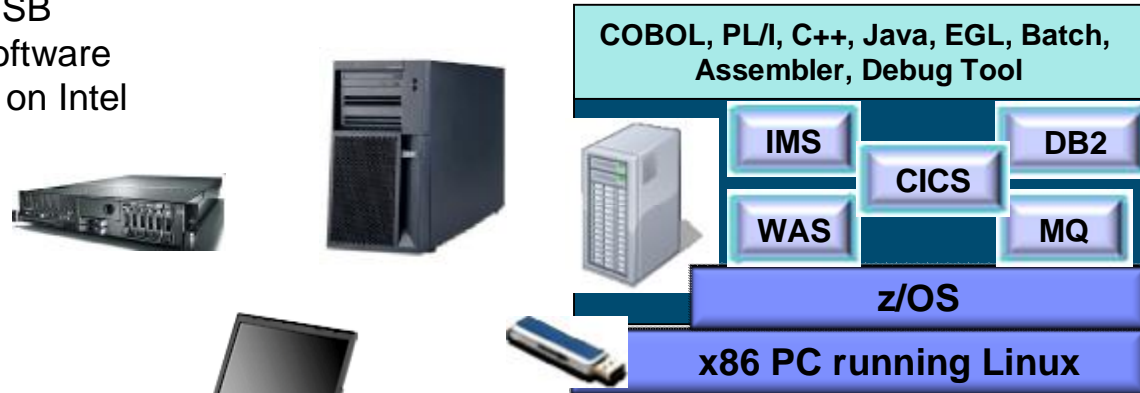
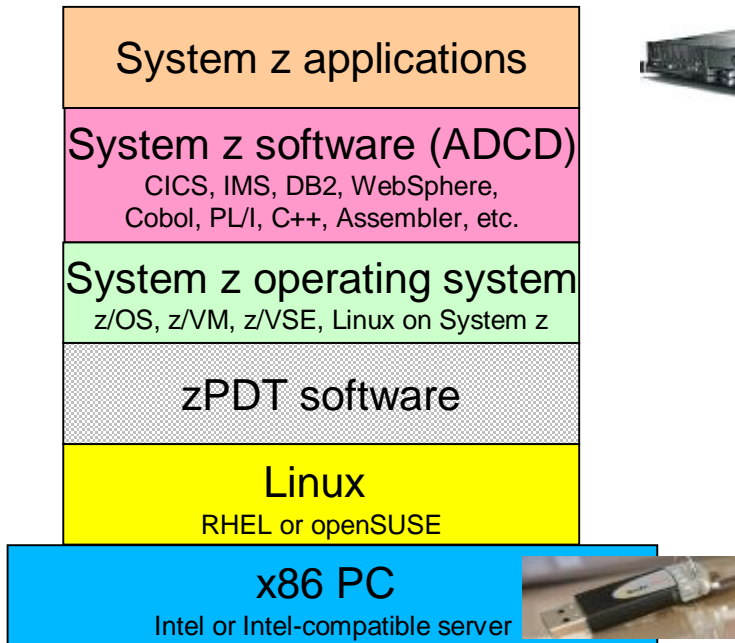
# zPDT and RDz UT – System z Application Development on Intel



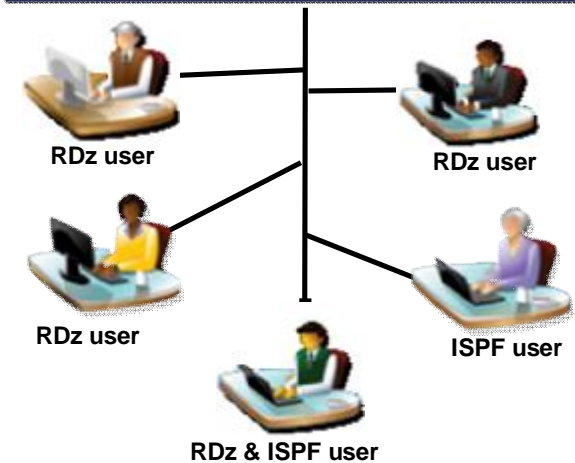
zPDT = System **z** Personal **D**evelopment **T**ool

RDz UT = **R**ational **D**eveloper for System **z** **U**nit **T**est

zPDT technology consists of a 1090 USB security hardware key and some software that enables System z architecture on Intel



Note: RDz UT is licensed only for development and test of applications that run on IBM z/OS. The Program may not be used to run production workloads of any kind, nor more robust development workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.



zPDT is for application development, test, and demo of System z applications

RDz UT is for application development, unit test, and function test of System z applications

zPDT is available to ISVs only!

RDz UT is available to anyone, but for z/OS only!



## My Favorites - WAVV 2011 Sessions You shouldn't miss!



§ **Wilhelm Mild: z/VSE and Linux on System z**

– Saturday, 10:30 am

§ **Mike Poil: CICS TS for VSE/ESA News**

– Saturday, 11:45 am

§ **Karl-Heinz Strassemeyer: A Vision of the Future**

– Saturday, 5:30 pm

§ **Klaus Goebel: zPDT - z on Your Thinkpad!**

– Sunday, 8:00 am

§ **Ingo Franzki: z/VSE Fast Path to Linux on System z**

– Sunday, 10:30 am

§ **Ingolf Salm: z/VSE Internals**

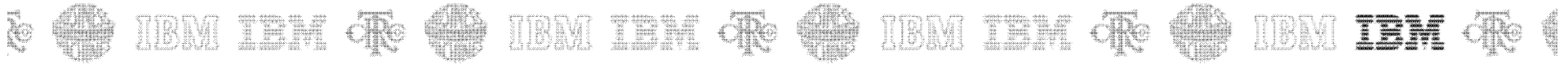
– Sunday, 11:45 am

§ **Jeff Barnard: IPv6/VSE and z/VSE**

– Monday, 3:00 pm







Miguel Delapaz  
Advisory Software Engineer, z/VM Development



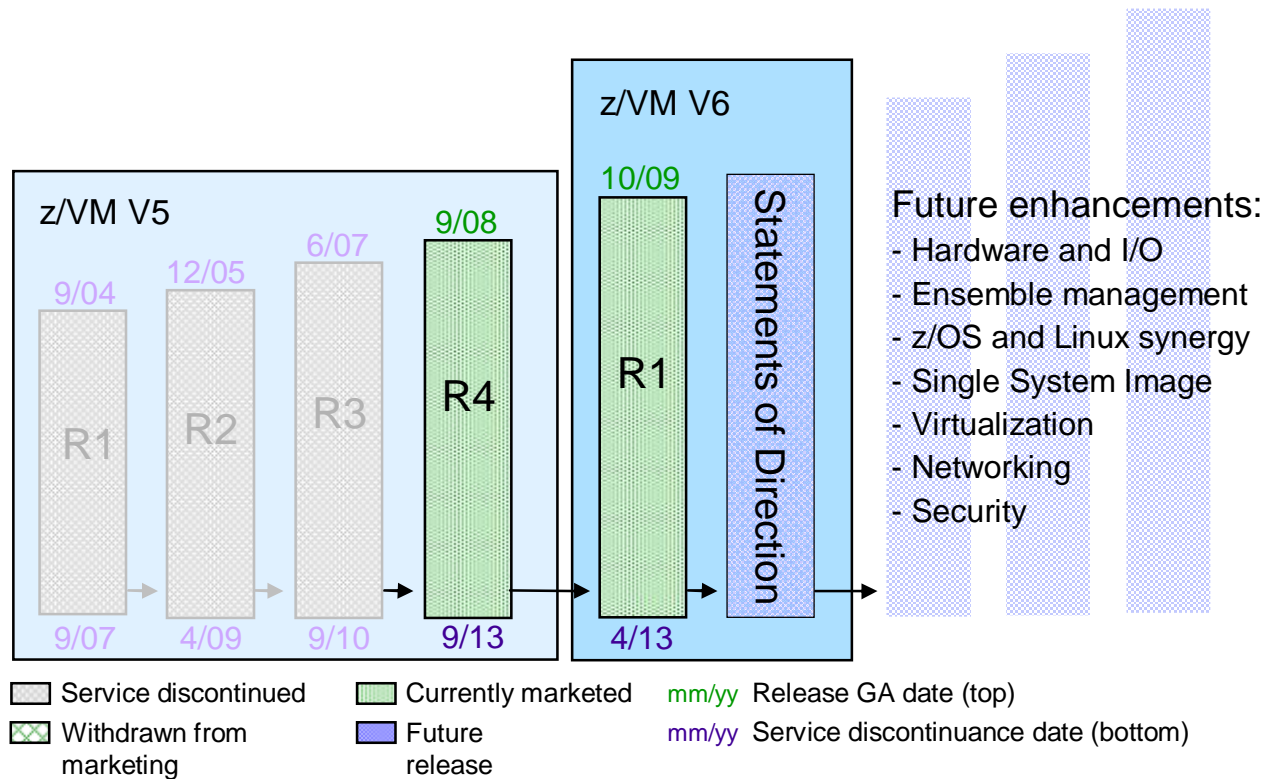
## z/VM Update

***z/VM: helping clients “do more with less”***

- « Higher core-to-core consolidation ratios
- « Higher levels of resource sharing and utilization
- « Higher levels of staff efficiency



# z/VM Release Status



IBM received EAL 4+ 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. z/VM V6.1 is currently undergoing evaluation against OSPP with the labeled security extension at EAL 4+.

## z/VM Version 5

### Marketing and Service Updates

§ End of Service for z/VM V5.3 was September 30, 2010

§ End of Service for z/VM V5.4 is September 30, **2013**

§ z/VM V5.4 is still marketed and available

- z/VM V5.4 and z/VM V6.1 are available concurrently
- Clients with System z9 or prior generations should acquire z/VM V5.4

## z/VM Version 6.1

### The Foundation for System z Virtualization Growth

Available October 23, 2009

#### **§ Architectural Level Set establishes a new z/VM technology base on IBM System z10**

- z/VM V6 operates only on z10 EC, z10 BC, and z196

#### **§ Allows optimization of z/VM function for greater business value on newer hardware**

- Prefetch Data instruction improves performance of streaming network connections between guests on a VSWITCH

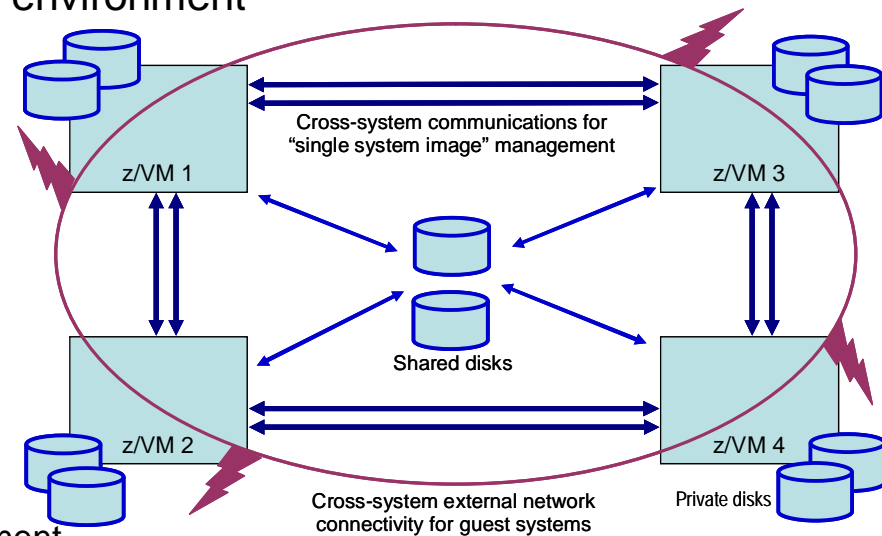
#### **§ Multi-system virtualization support (future release support)**

- z/VM clustering and guest mobility statements of direction
- A more manageable ecosystem for cloud computing
  - add hardware to the workload
  - move workload to hardware
- Helps clients avoid the virtual machine sprawl challenges of x86 systems: fewer real systems hosting thousands of server images

## z/VM Statement of Direction

### Clustered Hypervisor with Guest Mobility

- § Clients can cluster up to four z/VM systems in a **Single System Image (SSI)**
- § Provides a set of shared resources for the z/VM systems and their hosted virtual machines
- § z/VM system images can be run on the same or different System z10 or z196 servers
- § Simplifies systems management of a multi-z/VM environment
  - Single user directory
  - Cluster management from any system
    - Apply maintenance to all systems in the cluster from one location
    - Issue commands from one system to operate on another
  - Built-in cross-system capabilities
  - Resource coordination and protection: network and disks
- § Dynamically move Linux guests from one z/VM system to another with **Live Guest Relocation**
  - Reduce planned outages; enhance workload management
  - Non-disruptively move work to available system resources **and** non-disruptively move system resources to work



Note: All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

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## SPE Highlights

### § Imbedded z/OS component upgrade to R11

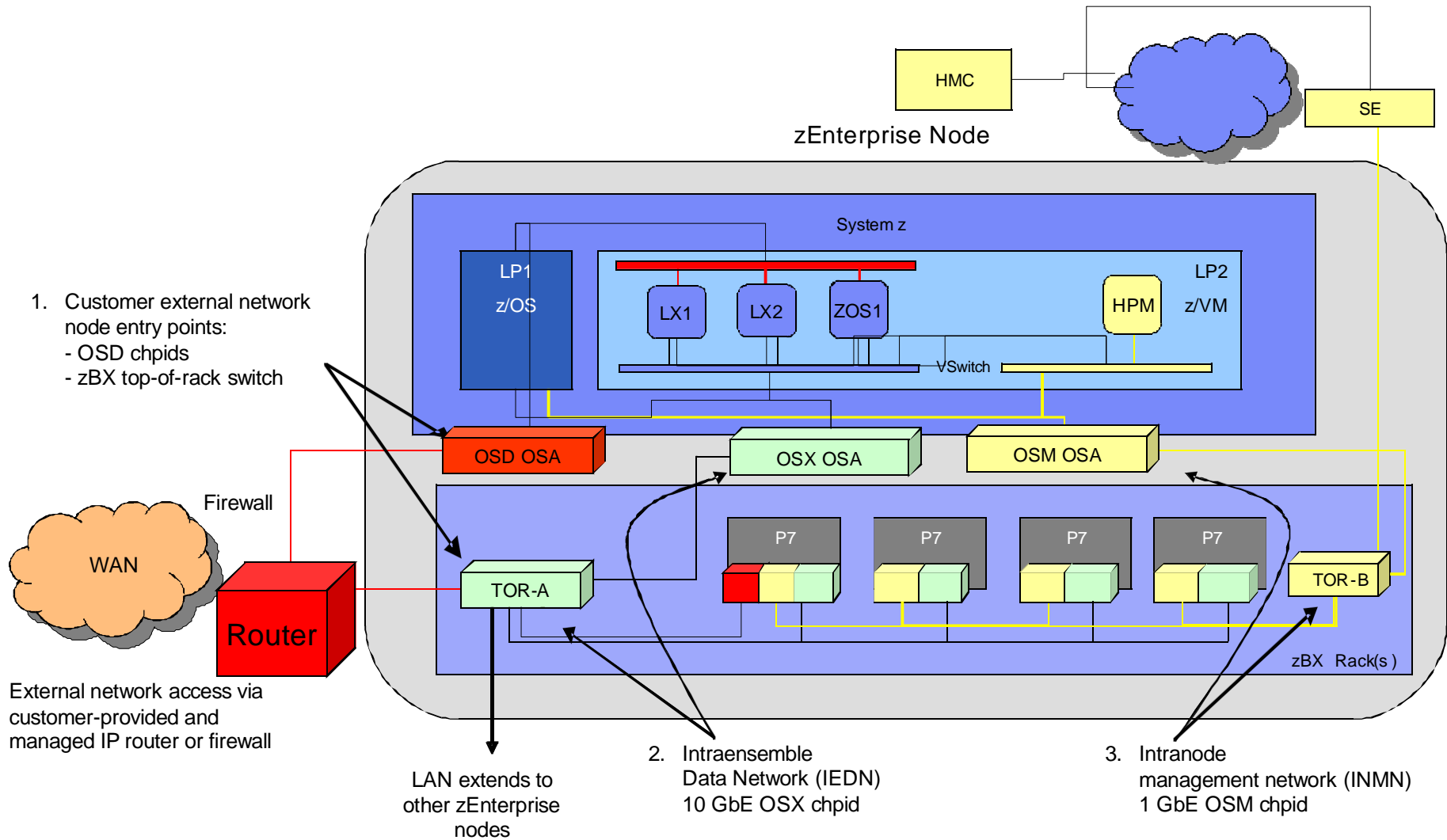
- Includes FIPS support for SSL
- z/VM 6.1 only!

### § SSL Server Reliability and Scalability

- Multiple SSL servers provide more capacity

### § zEnterprise zManager

# zEnterprise Network interconnect



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## z/VM Session Highlights

§ z/VM and the zEnterprise System zManager

– Monday 10:30-11:30, Pikes Peak IV

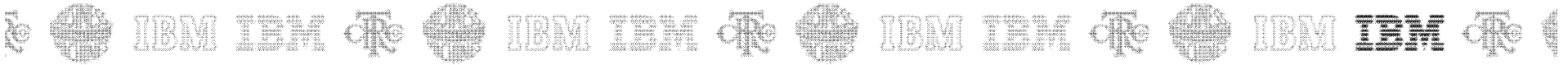
§ z/VM Single System Image and Guest Mobility Preview

– Monday 3:00-4:00, Pikes Peak IV

§ Migrating to Multiple SSL Server Support for z/VM

– Tuesday 8:00-9:00, Pikes Peak III





Siegfried Langer  
Business Development Manager z/VSE & Linux on System z



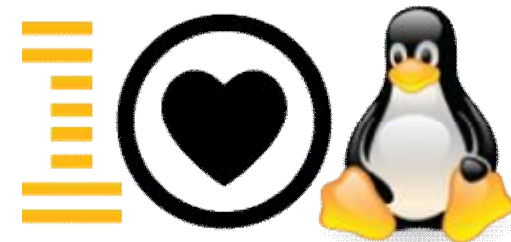
# Linux on System z Update

Latest Enterprise Linux releases:

Ø RHEL 6



Ø SLES 11 SP1



## Enterprise Linux Distributions

The table below shows IBM tested Linux environments. IBM remote technical support for these environments is provided when you obtain a Support Line contract. You may also find support for these environments by contracting with a third party provider.

Hardware Platform and Operating System Software Compatibility				
64-bit environment				
Release	zSeries	System z9	System z10	zEnterprise
SLES 9 (*)	✓	✓	✓	✓ <sup>(2)</sup>
SLES 10	✓	✓	✓	✓
SLES 11	✗	✓	✓	✓
RHEL 4 (*)	✓	✓	✓	✓ <sup>(1)</sup>
RHEL 5	✓	✓	✓	✓
RHEL 6	✗	✓	✓	✓

The listed distributions are 64-bit distributions, they all include the 31-bit emulation layer to run 31-bit software products.

- (1) RHEL 4.8 only. Some functions have changed or are not available with the z196, e.g. the Dual-port OSA cards support to name one of several.  
 (2) SLES 9 SP4 + latest maintenance updates only. Some functions have changed or are not available with the z196,  
 (\*) Also available as 31-bit distribution.

For information on which HW is supported by:

- Red Hat please visit the Red Hat Hardware Catalog: <https://hardware.redhat.com/hwcert/index.cgi>
- Novell SUSE, please visit the SUSE YES Certified Bulletin Search: <http://developer.novell.com/yessearch/Search.jsp>
- System Storage Interoperation Center: <http://www.ibm.com/systems/support/storage/config/ssic/index.jsp>

## Linux on IBM System z

*The momentum continues*

### § Growth 4Q09 to 4Q10:

- Shipped IFL volumes increased 34%
- Installed IFL MIPS increased 35%

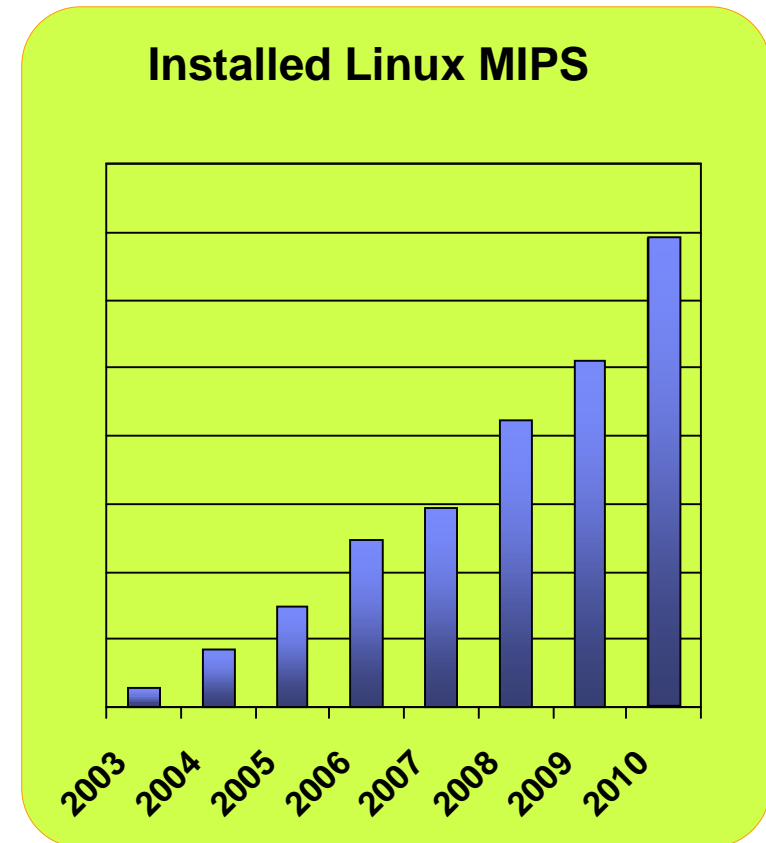
§ 32% of System z customers have IFLs installed

§ 64% of the Top100 System z clients are running Linux on the mainframe

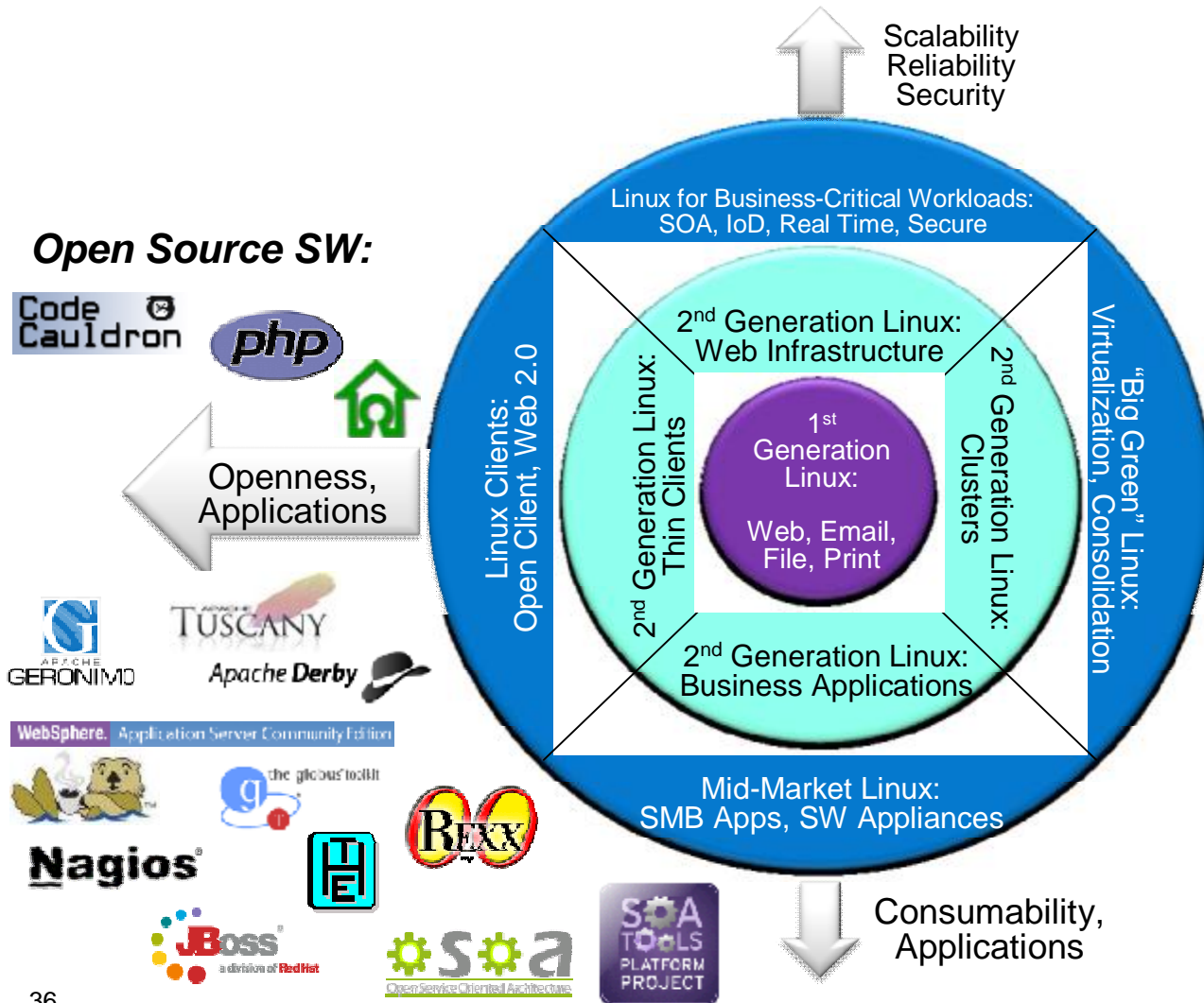
§ Two Linux partners: Novell SUSE and Red Hat

§ Gold standard in virtualization with z/VM®

§ > 3,000 applications are available for Linux on System z



# Linux application areas



### Open Source SW:

Code Cauldron

php

Openness, Applications

APACHE GERONIMO

TUSCANY

Apache Derby

WebSphere. Application Server Community Edition

the glorious toolkit

Nagios

REXX

JBoss a division of Red Hat

SOA TOOLS PLATFORM PROJECT

### Distributions:

Novell. &



### IBM middleware:

Rational. software

WebSphere software

Information Management software

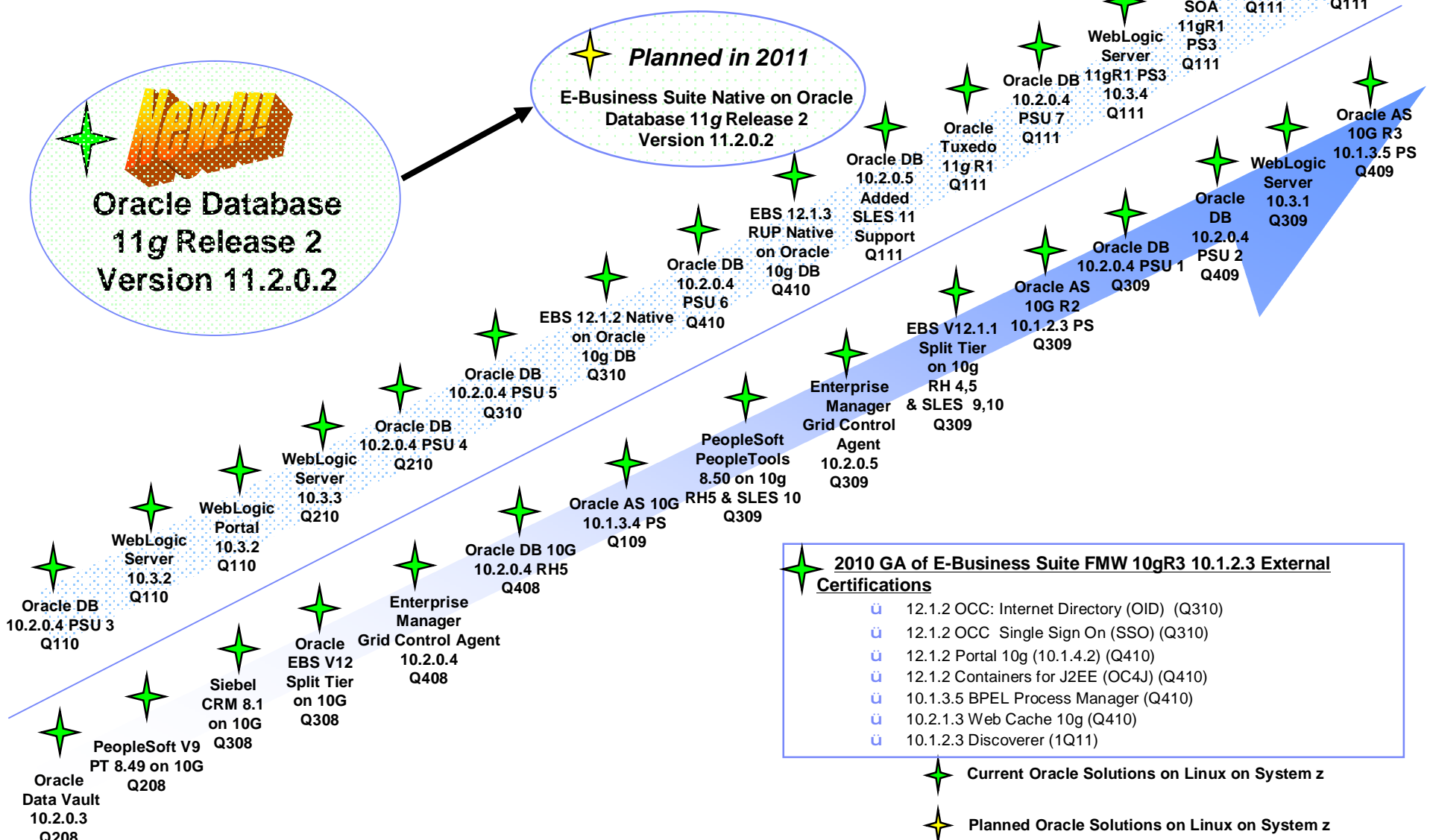
Tivoli software Lotus software

### Cloud computing

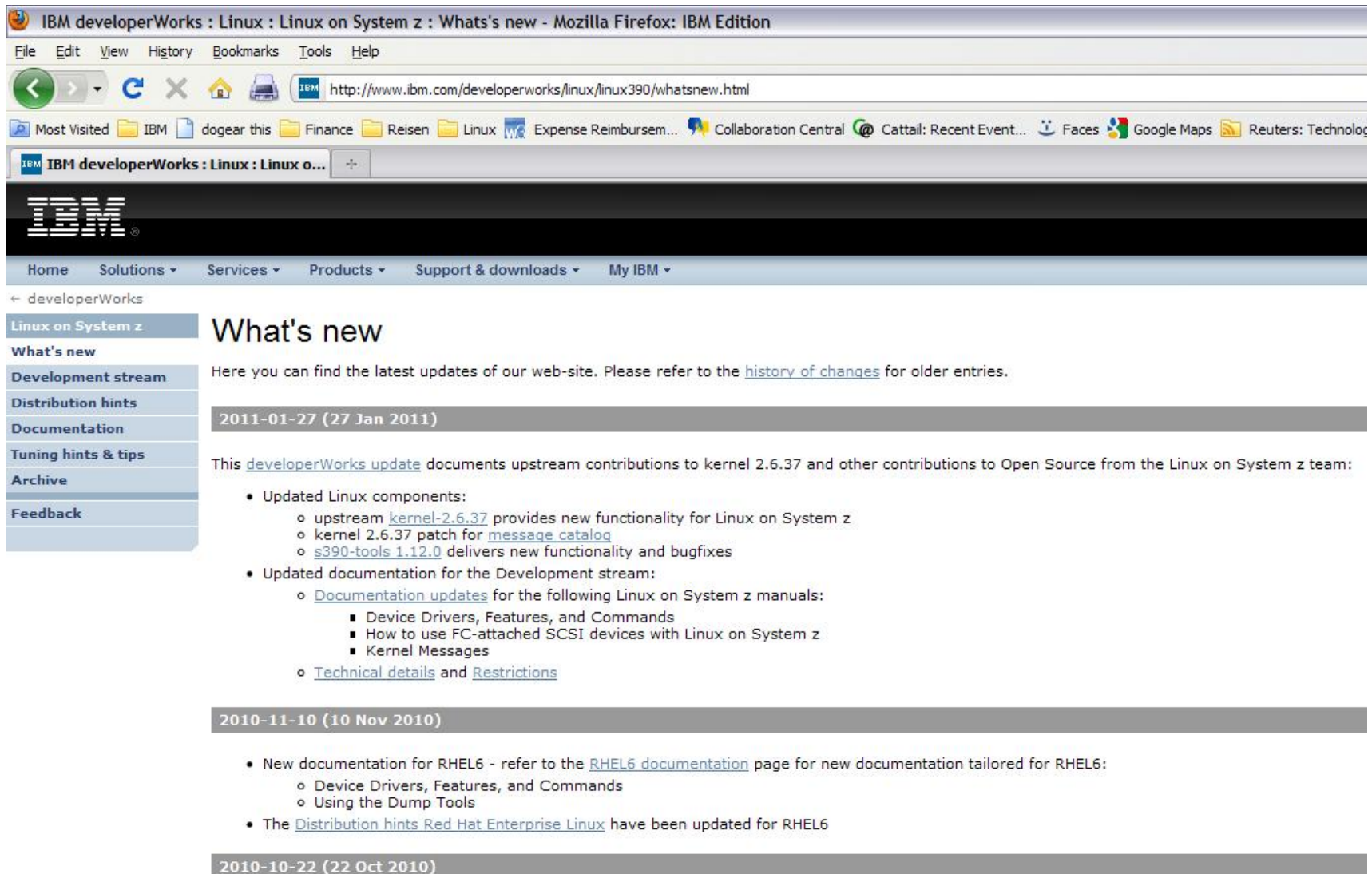




# IBM System z & Oracle Solutions Delivered and Planned



## Linux on System z development – What's new



IBM developerWorks : Linux : Linux on System z : What's new - Mozilla Firefox: IBM Edition

File Edit View History Bookmarks Tools Help

http://www.ibm.com/developerworks/linux/linux390/whatsnew.html

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Linux on System z

What's new

Development stream

Distribution hints

Documentation

Tuning hints & tips

Archive

Feedback

### What's new

Here you can find the latest updates of our web-site. Please refer to the [history of changes](#) for older entries.

**2011-01-27 (27 Jan 2011)**

This [developerWorks update](#) documents upstream contributions to kernel 2.6.37 and other contributions to Open Source from the Linux on System z team:

- Updated Linux components:
  - upstream [kernel-2.6.37](#) provides new functionality for Linux on System z
  - kernel 2.6.37 patch for [message catalog](#)
  - [s390-tools 1.12.0](#) delivers new functionality and bugfixes
- Updated documentation for the Development stream:
  - [Documentation updates](#) for the following Linux on System z manuals:
    - Device Drivers, Features, and Commands
    - How to use FC-attached SCSI devices with Linux on System z
    - Kernel Messages
  - [Technical details](#) and [Restrictions](#)

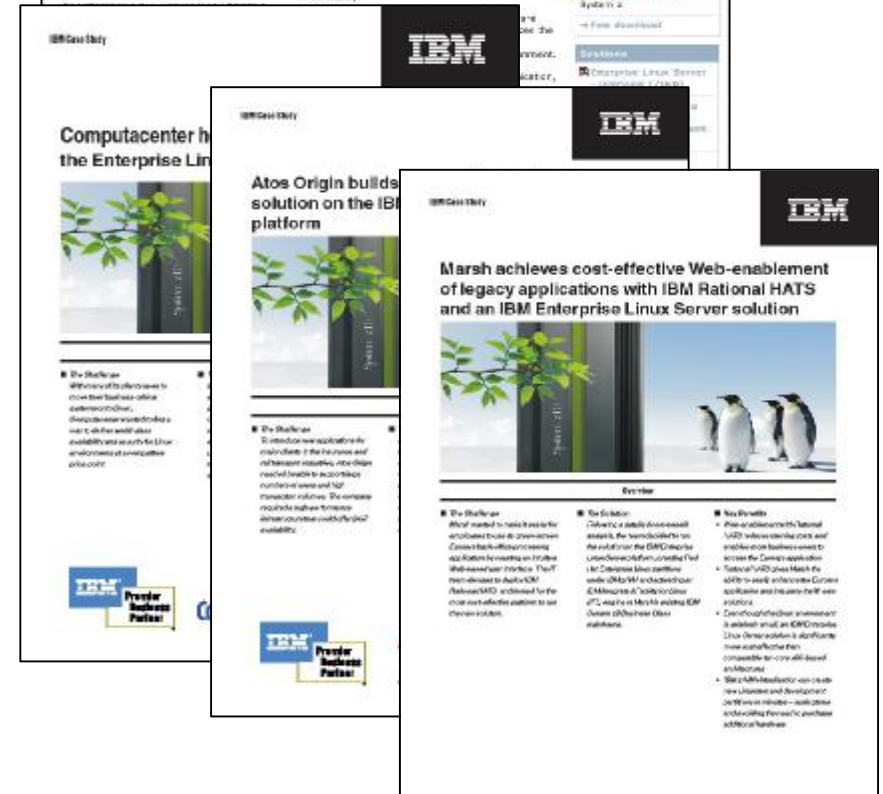
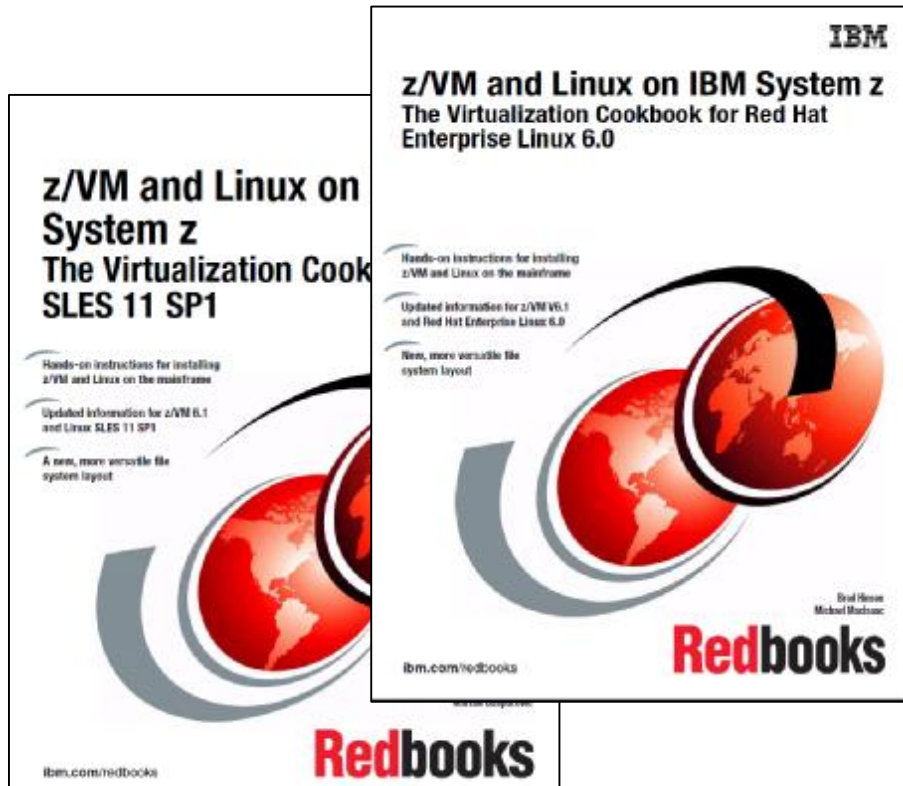
**2010-11-10 (10 Nov 2010)**

- New documentation for RHEL6 - refer to the [RHEL6 documentation](#) page for new documentation tailored for RHEL6:
  - Device Drivers, Features, and Commands
  - Using the Dump Tools
- The [Distribution hints Red Hat Enterprise Linux](#) have been updated for RHEL6

**2010-10-22 (22 Oct 2010)**

# Linux on System z information

- § Public information:
- § <http://www-05.ibm.com/de/promotions/els/>
- § Live Virtual Classes (Webcasts – replays available):
- § <http://www.vm.ibm.com/education/lvc/>



## Live Virtual Classes (Webcasts)

April	<b>Problem Reporting and Analysis Linux on System z - How to survive a Linux critical situation</b>
March	<b>Linux on System z RHEL 6 Performance Report</b>
February	<b>Lessons learned from putting Linux on System z in Production</b>
January	<b>Best Practices for WebSphere Application Server on System z Linux</b>
2010:	<b>The Linux on System z toolchain in a nutshell</b> <b>Linux on System z disk I/O performance</b> <b>Linux on System z: Current &amp; Future Technologies</b> <b>Linux on System z SLES11 SP1 Performance Report</b> <b>Linux Performance on zEnterprise 196</b> <b>Linux on System z Customer Webcast: FCP on Linux for System z Overview</b> <b>Introduction to the new Linux on System z Terminal Server using IUCV</b> <b>What's new in RHEL 6 for Linux on System z!</b>



***Replays available!***

**Dates and replays @ <http://www.vm.ibm.com/education/lvc/>**



## z/VSE Live Virtual Classes (Webcasts)

§ December 2010

**IBM z/VSE v4.3 - More Capacity for Growth**

§ January 2011

**IBM z/VSE V4.3 in Modern Solutions with Linux on System z**

§ March

**Overview of Cryptography and Enhancements on z/VSE 4.3**

***Replays available!***

**Dates and replays @ <http://www-03.ibm.com/systems/z/os/zvse/education/>**

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The IBM System z Job Board at <http://www.systemzjobs.com> is a new resource to connect IBM System z clients, partners, and businesses with students learning the mainframe and professionals seeking System z job opportunities.

**SystemzJobs.com** lets you post your job requirements for job seekers to review and apply.

### Benefits of using SystemzJobs.com

- § Free, secure, and easy to use
- § Specialized audience of mainframe educated students and experienced professionals
- § Global pool of mainframe talent

### Getting started

Follow these steps at SystemzJobs.com to get started:

1. Create a secure account
2. Post your job description
3. Connect with qualified candidates

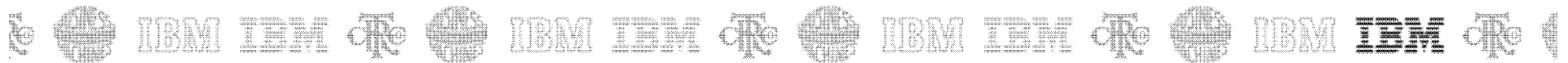
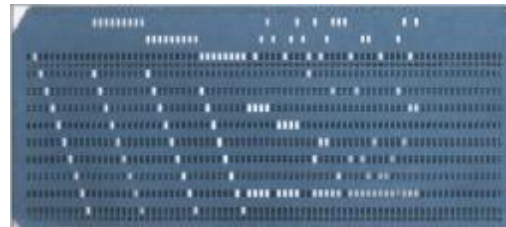
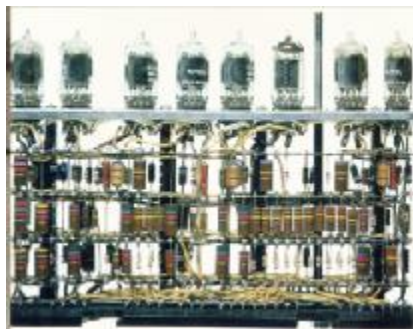
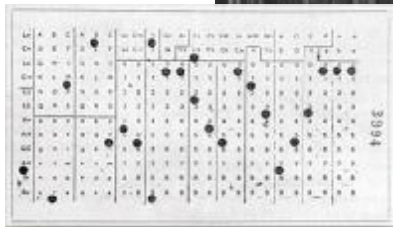
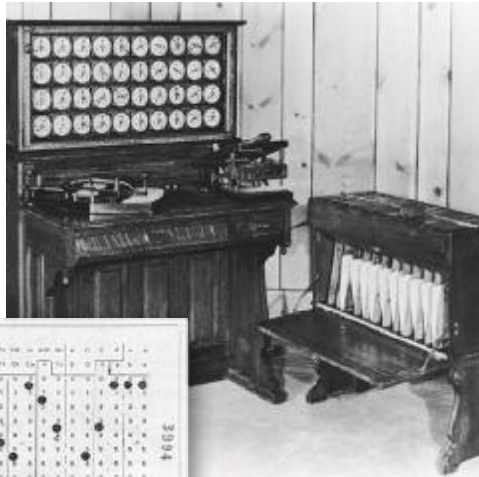


## *The IBM Centennial*

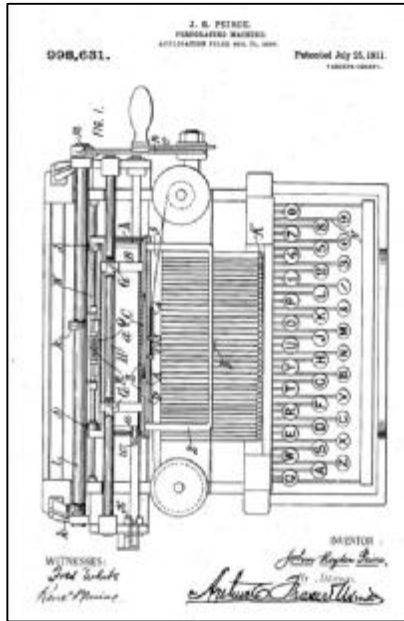
On June 16, 2011, IBM will celebrate its 100<sup>th</sup> anniversary as a corporation.



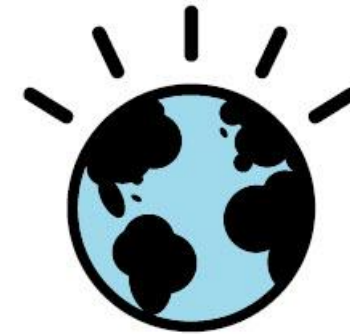
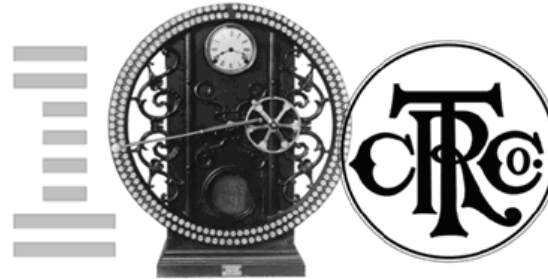
# 100 Years of IBM

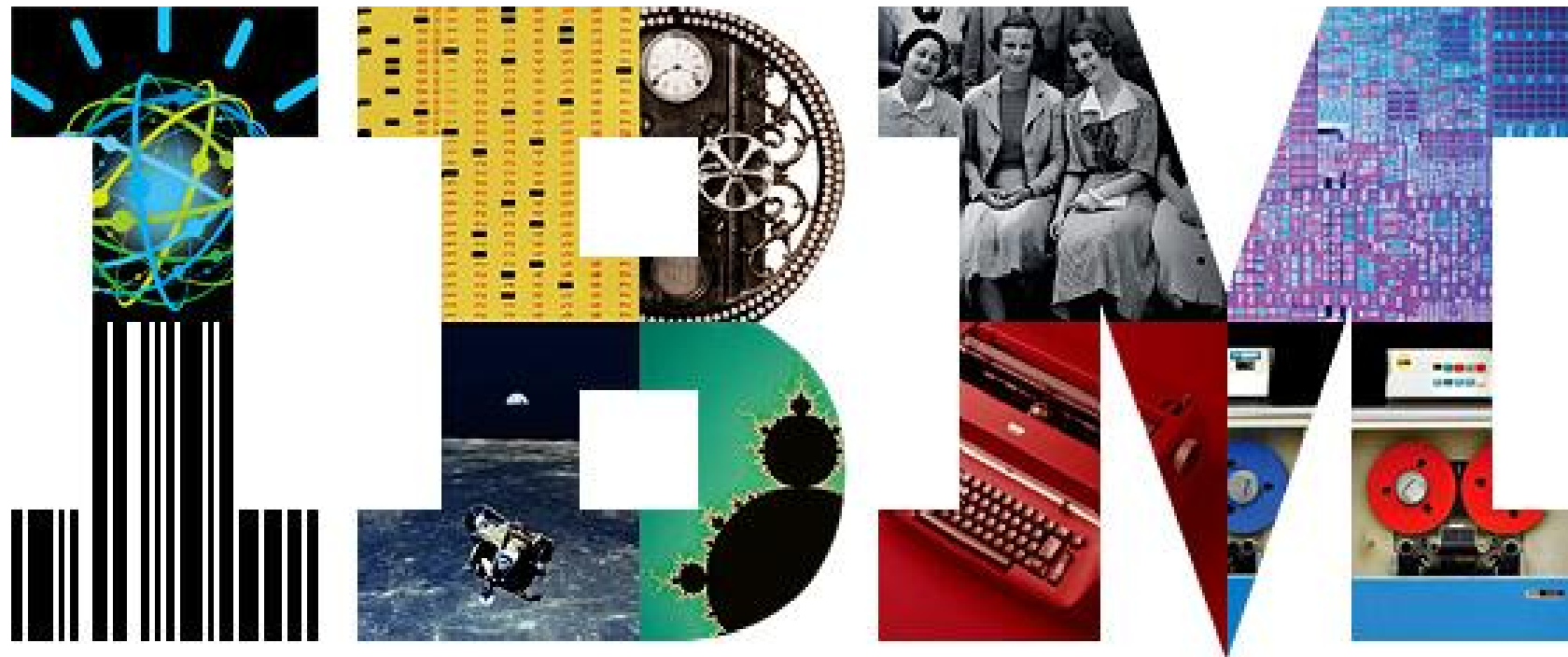


# 100 Years of IBM



The first patent IBM received in 1911 for an invention related to punched card tabulation





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