z/VSE
Trends & Directions
Modernization Strategy

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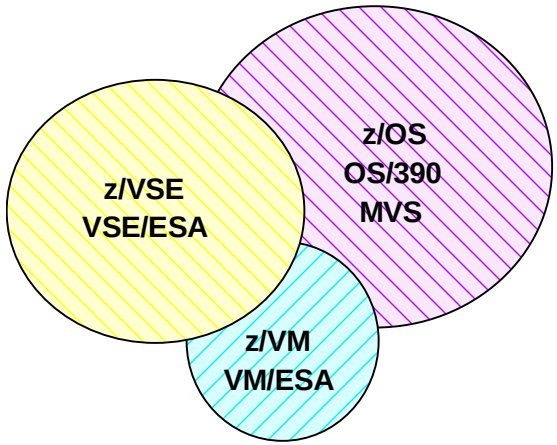
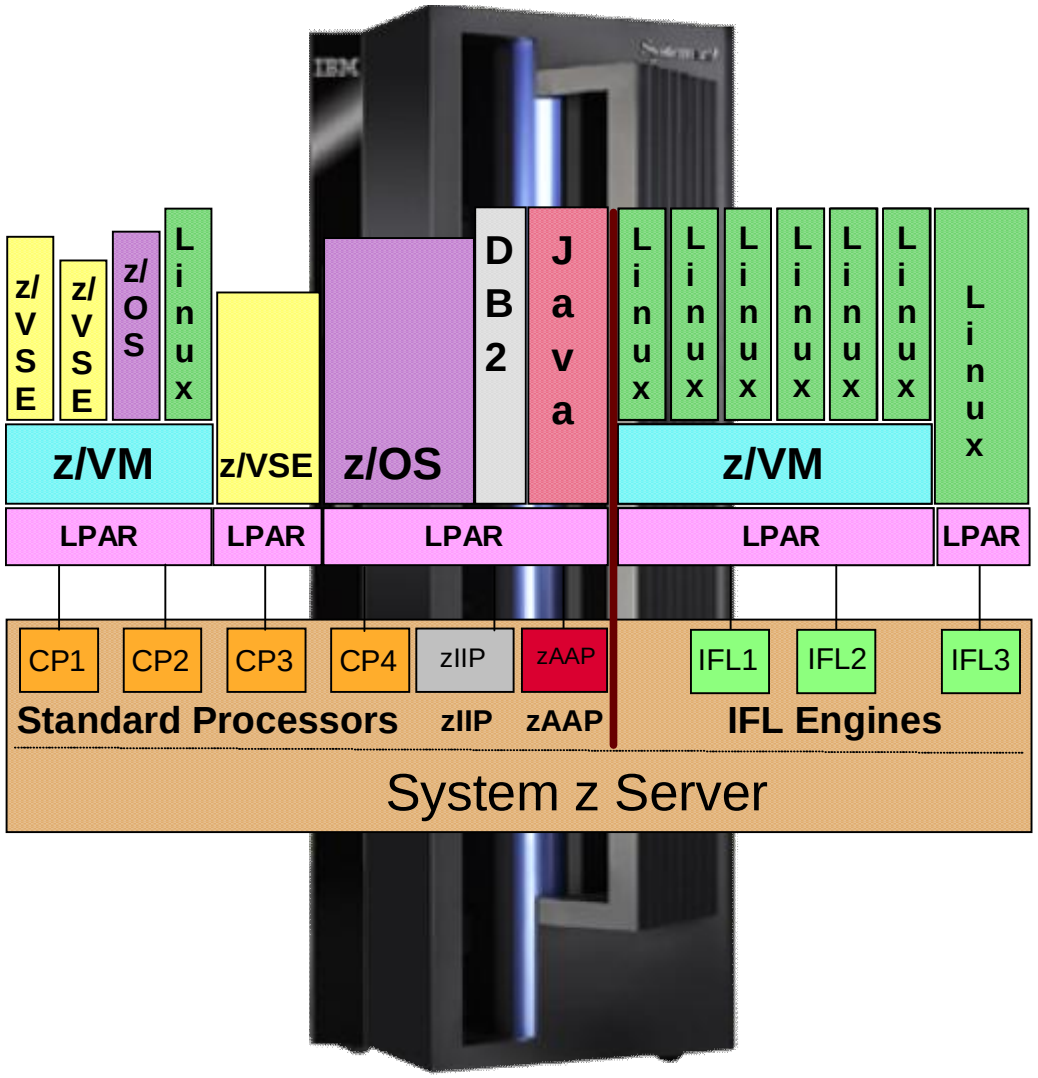
Agenda

- Operating Systems on IBM System z
- z/VSE Heritage
- z/VSE Application Portfolio
- z/VSE Strategy
- z/VSE Modernization Scenarios with Linux
- z/VSE Roadmap
- Summary

Operating Systems on IBM System z

- 33% of worldwide traditional mainframe operating system installs are z/VSE or VSE/ESA





- VSE* population is 40% in US, 40% in Europe, 20% in RoW
- Worldwide 50% run VSE under VM, in Europe 90+% are VSE under VM
- IFLs play an important role in VSE's strategy
- zIIP/zAAP have no meaning to VSE

(*) The term "VSE" stands for both, VSE/ESA and z/VSE.

40+ Years of IBM Mainframe & z/VSE Heritage

§ S/360->S/370->4300->9370->ES9000->S/390->zSeries->System z9

§DOS/360->DOS/VS->DOS/VSE->(SSX)->VSE/SP ->VSE/ESA V1->VSE/ESA V2->z/VSE V3->z/VSE V4

§ S/360 Model 30
- **30 KIPS (.03 MIPS)**
- **16 – 64 KB**

§ DOS/360
- **1 batch partition**
- **basic, but lovable**

§ System z9 BC
- **26-480 MIPS (1-way)**
- **8 – 64 GB**

§ z/VSE V4.1
- **Batch and OLTP**
- **SOA**
- **still lovable**

Typical VSE Customer

What is VSE?

- Traditional mainframe operating system, similar to z/OS but smaller and simpler
- Less capacity, availability, security; no Unix system services
- Designed for smaller accounts with less demanding needs

Why do customers use VSE?

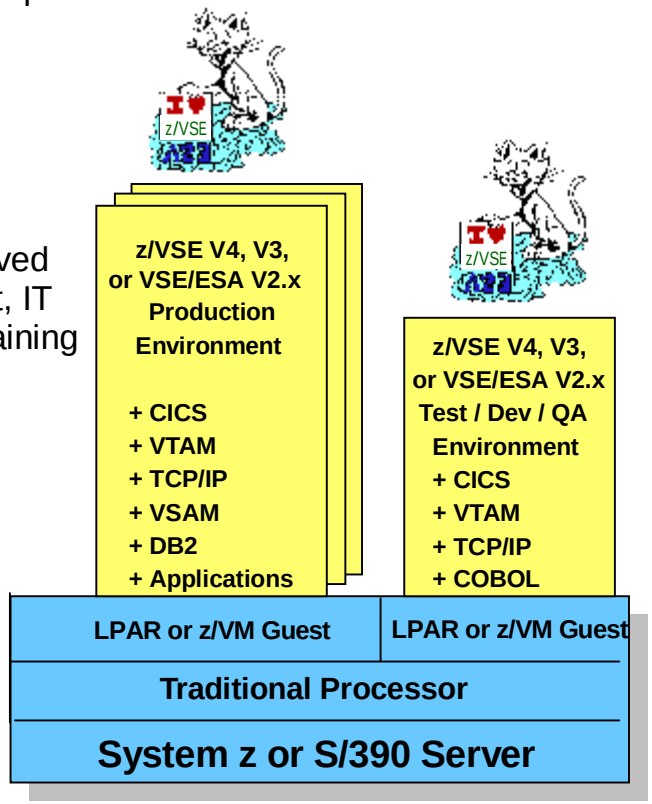
- Cost-efficient, high performance, robust (almost no downtime)
- Customers have a significant cumulative investment in proven, highly evolved homegrown core VSE application code (CICS and batch), data, equipment, IT skills, company & industry expertise, business processes, and end-user training
- History – familiarity, comfort, confidence

What are VSE customer's biggest concerns?

- **Applications!!** (no Java, WAS, Tivoli, Lotus, SAP, Oracle, etc.)
- **Cost!!** (or at least the perception of high mainframe costs)
- **Skills!** (especially availability of new mainframe skills)
- **Future!** (vitality of VSE key components and products)

Why not just migrate to another platform?

- Cost, time, risk, lost opportunity – not an easy task
- z/OS: cost, skills, benefits perceived to be marginal
- Unix, Linux, Windows, or i5/OS: complete redesign and rewrite of tailored, homegrown VSE CICS applications often required and/or packaged applications may be costly and not meet customer requirements



Note: The term "VSE" stands for both, VSE/ESA and z/VSE.

Top Concerns of VSE* Customers

1. **Applications**

2. **Cost**

3. **Skills**

4. **Future**

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VSE Application Portfolio

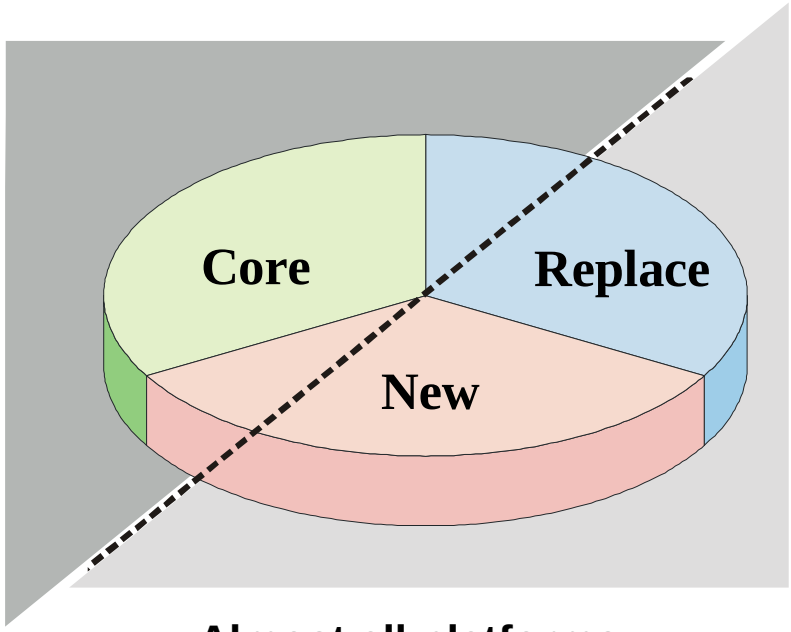
S/390 or System z

CICS

Cobol

VSAM

3270 Interface



Platform specific

‘Client/Server‘

C or C++

Relational

‘GUI‘ Interface

Almost all platforms

WebSphere

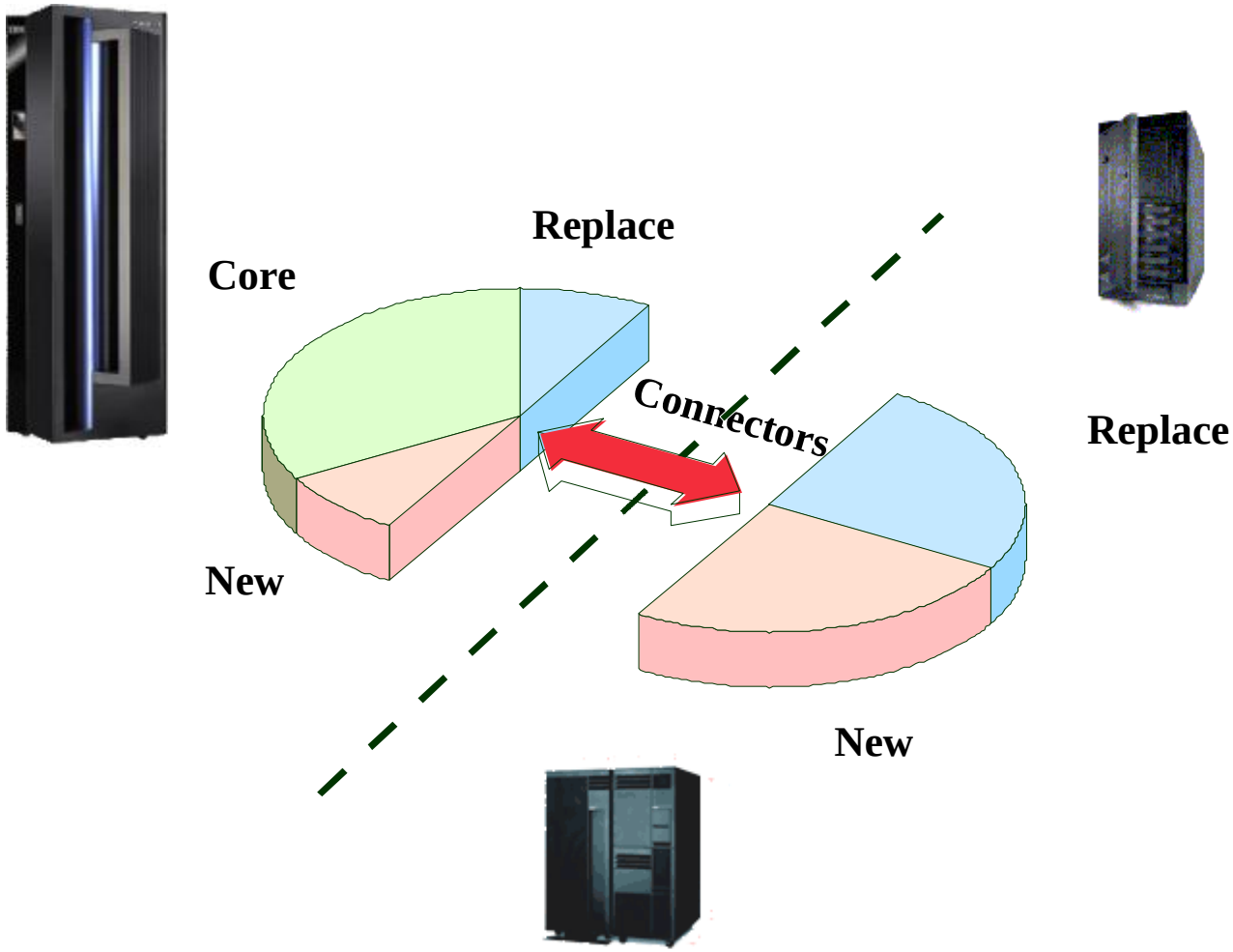
Java

Relational

Browser-based interface

Note: The pie was arbitrarily divided into equal piece parts, just for visualization purposes. The actual percentages in each category could differ a lot between different customers.

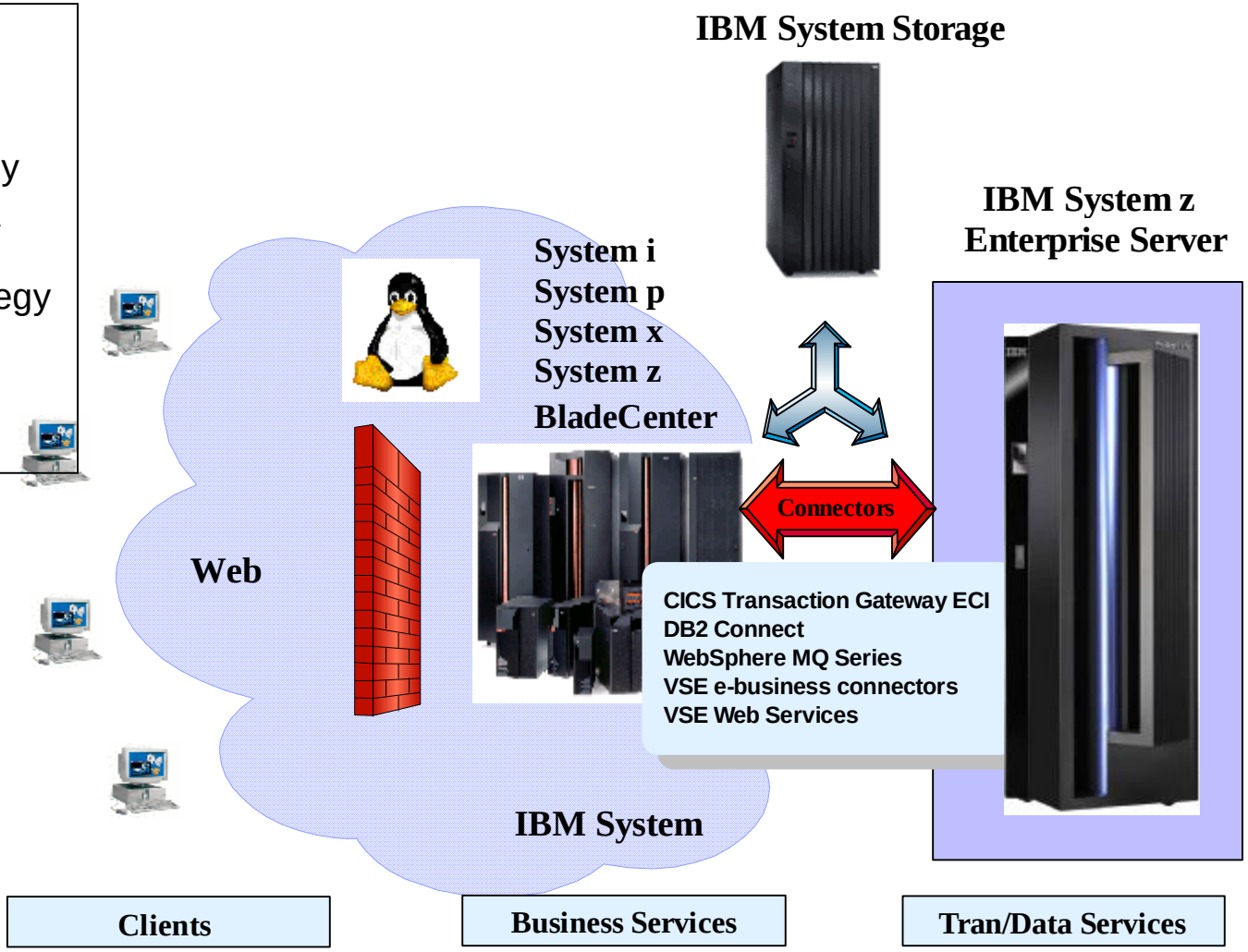
Integration into distributed Server Environments



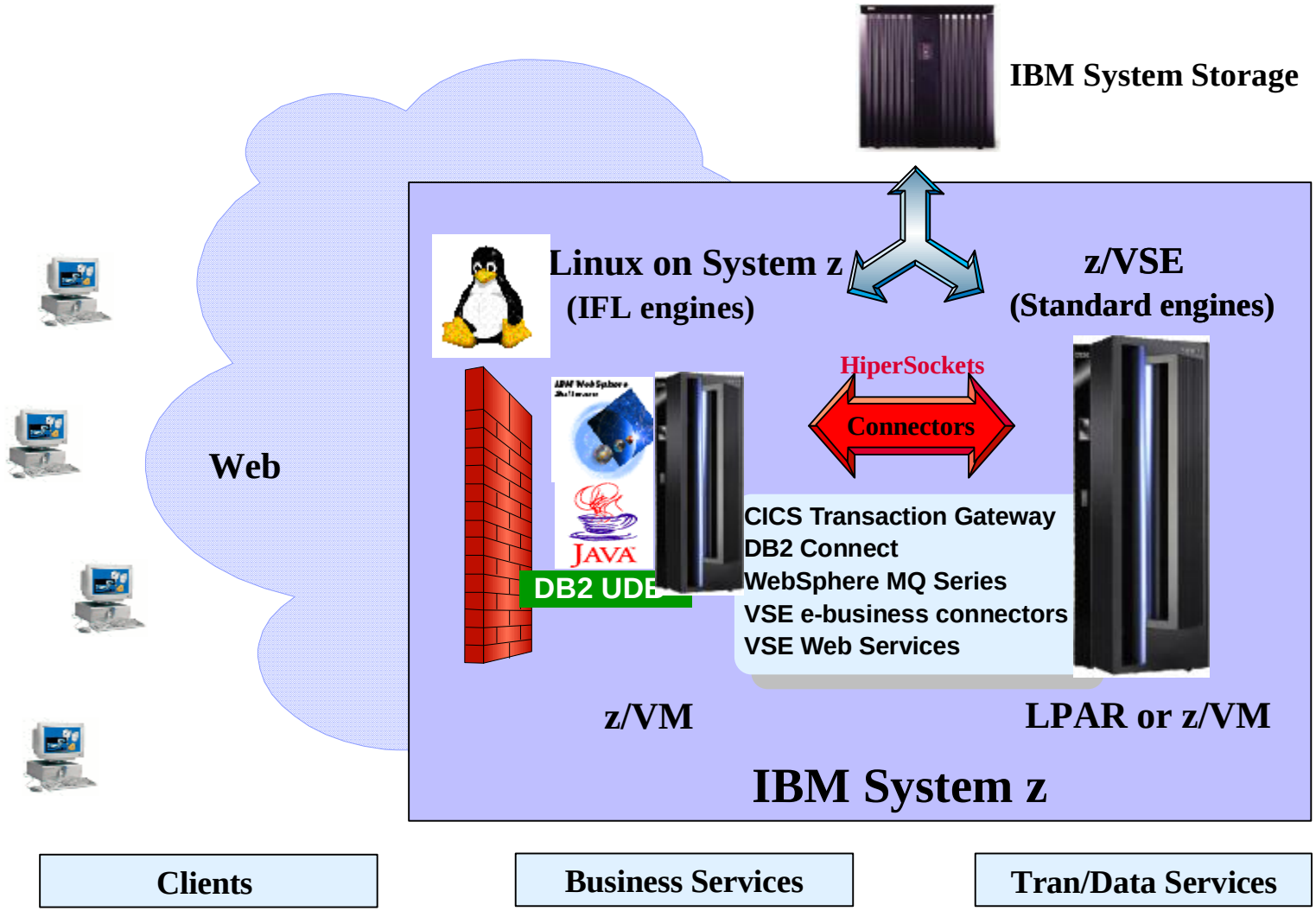
z/VSE Strategy

alias

- 3-tier Strategy
- Connector Strategy
- Migration Strategy
- Coexistence Strategy
- Linux Strategy
- **PIE Strategy**



z/VSE Strategy with Linux on System z



z/VSE Strategy “easy as P I E“

Protect
existing investment

- Existing core applications continue to run unchanged
- Continuous follow-on development for HW and SW
  - from S/390 via zSeries to IBM System z
  - from VSE/ESA to z/VSE
- z/VSE is the platform of choice for transaction oriented core applications with CICS
- Excellent support from IBM Lab in Boeblingen & Poughkeepsie
  - z/VSE worldwide development is located in Boeblingen --> deep skills available
  - PoC – Proof of Concept (customer individual)
  - Briefings (customer individual)

Integrate
with IBM middleware using connectors

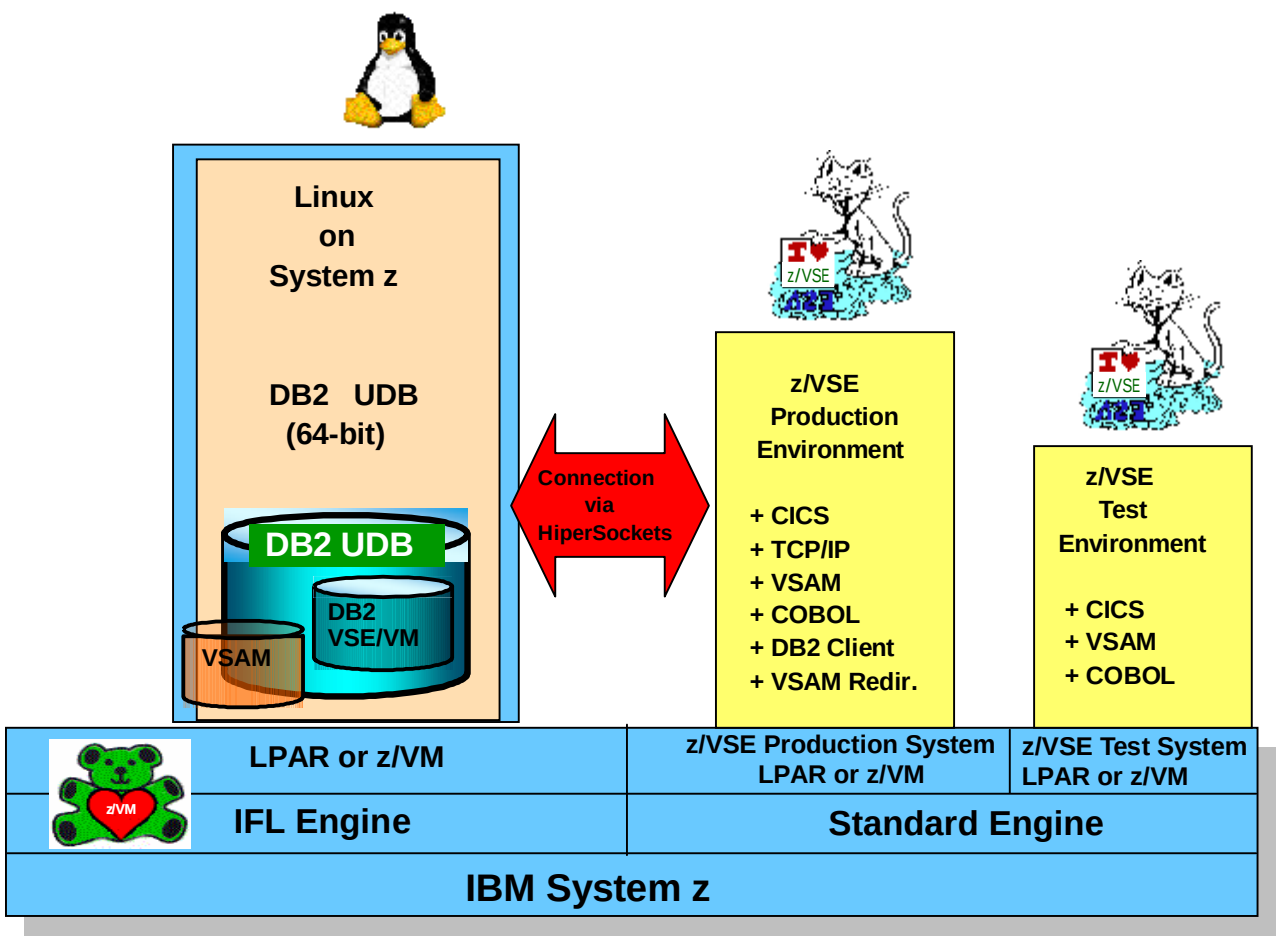
- Integration of z/VSE into heterogeneous environments
- z/VSE is a very stable operating system that can easily be connected to open systems (Linux)
  - access to external data (e.g. on Linux) or programs (e.g. Java) via standard connectors or via free of charge VSE specific connectors
  - exploitation of HiperSockets within the server – no physical network outside the box

Extend
with Linux on System z

- Extension of existing solutions with Linux on System z
- Cooperation and coexistance with Linux on System z and z/VM
- z/VSE is open and connectable to various different client/server platforms

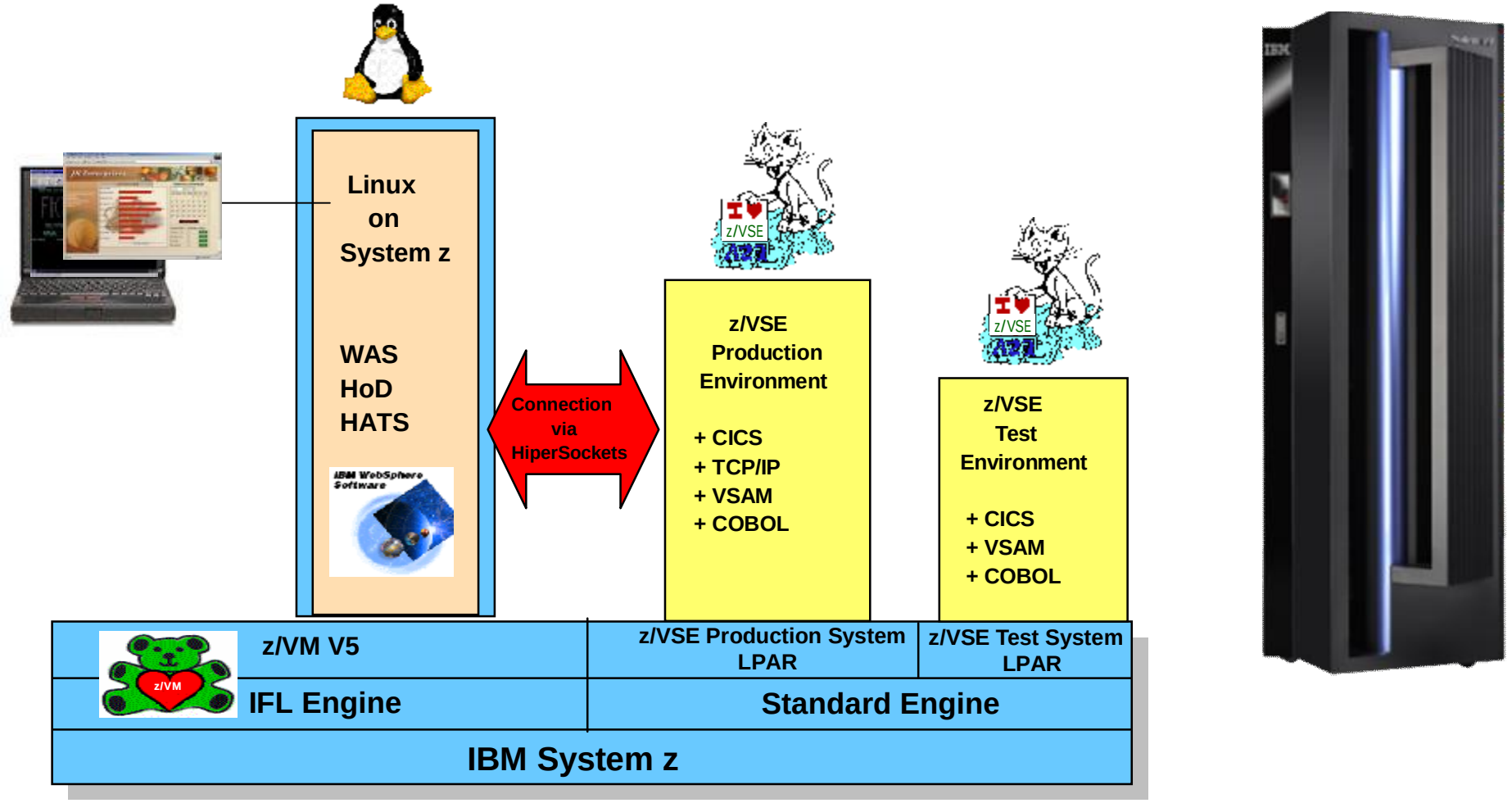
Szenario 1: DB2 LUW for z/VSE Customers

Data consolidation and data warehouse solutions with DB2 UDB on System z



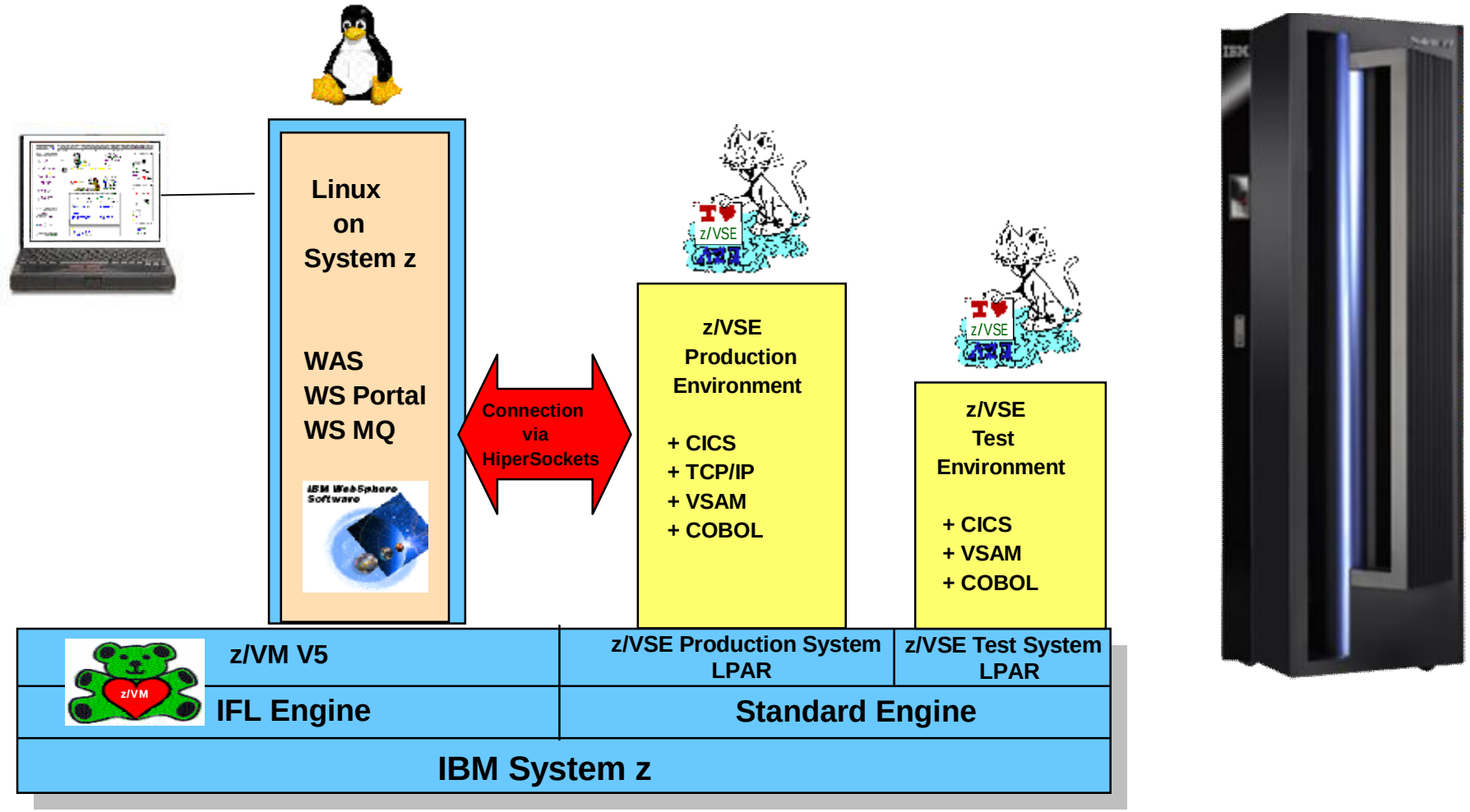
Szenario 2: „Webification“ for z/VSE Applications

Web enable existing applications with Inter/Intranet frontend



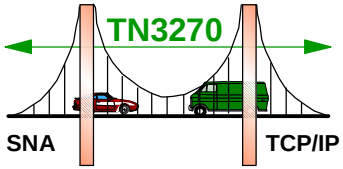
Szenario 3: WebSphere Portal for z/VSE Customers

A portal for administration and integration of employees / customers / providers



Szenario 4: Network Infrastructure Simplification

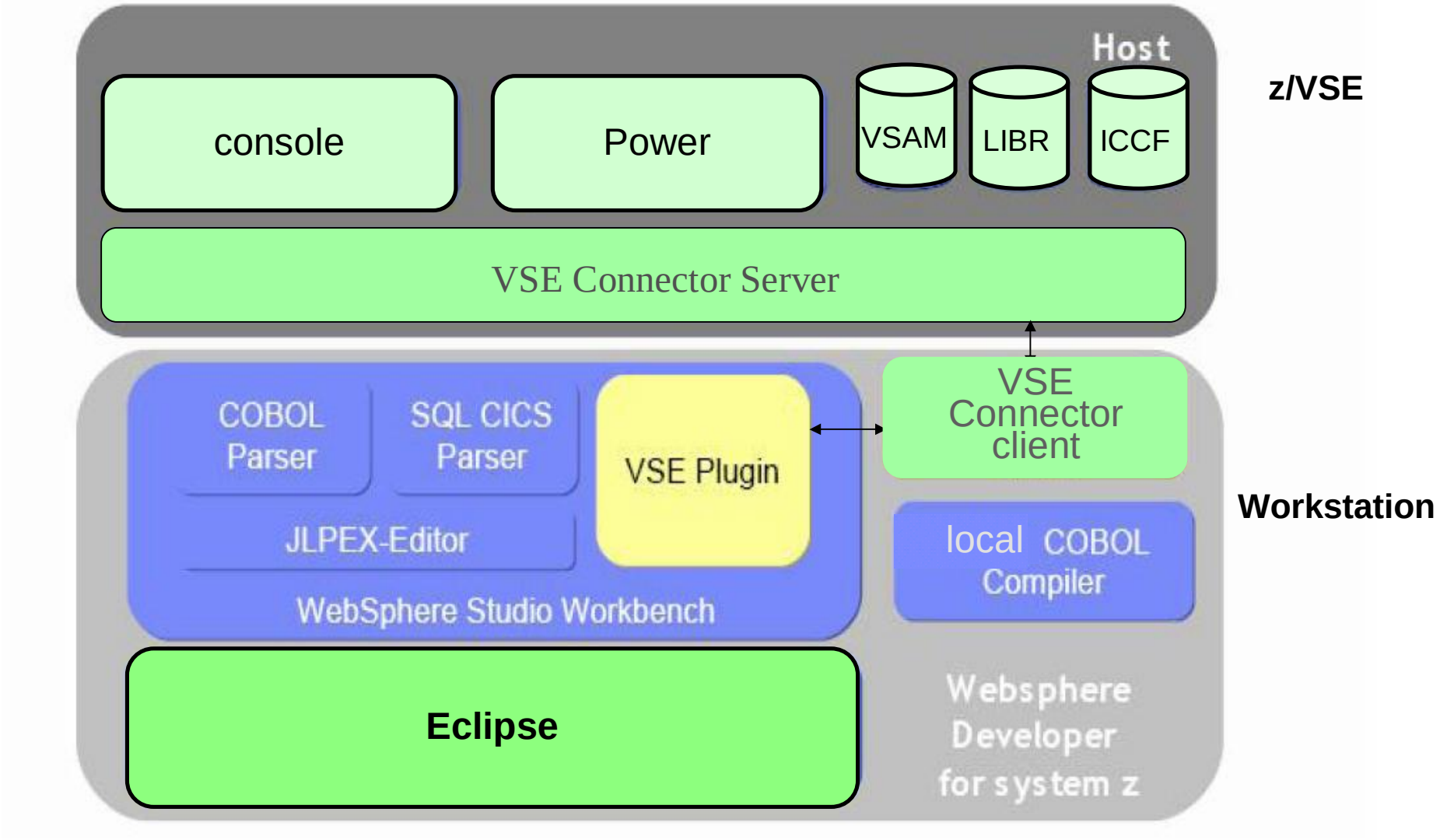
3745/46 (NCP) and TN3270 replacement with Linux on System z



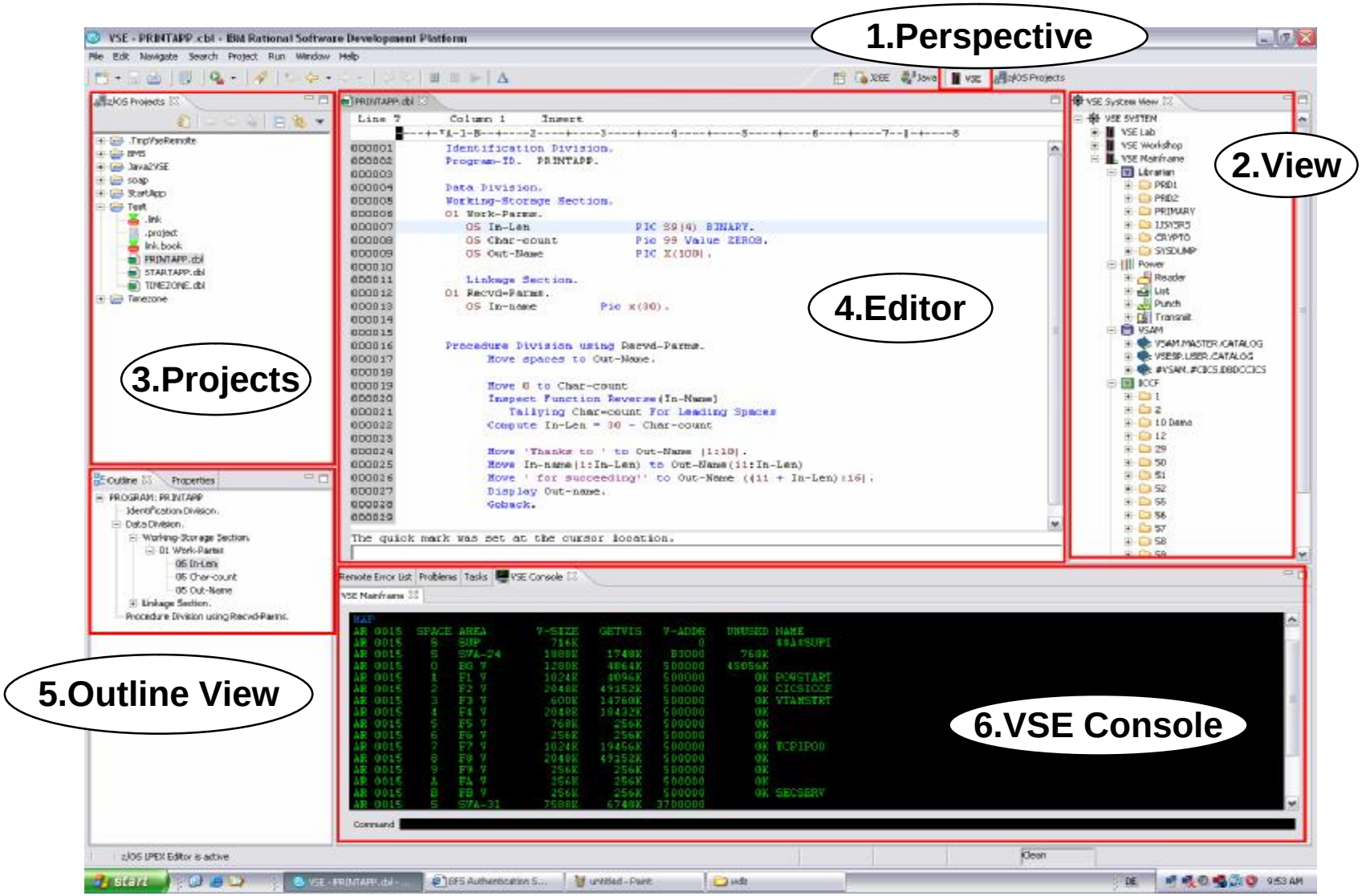
Easy, high-value transition

Szenario 5: Application Development for z/VSE

Modern Appl Dev with Eclipse and Rational Developer (RDz) for System z

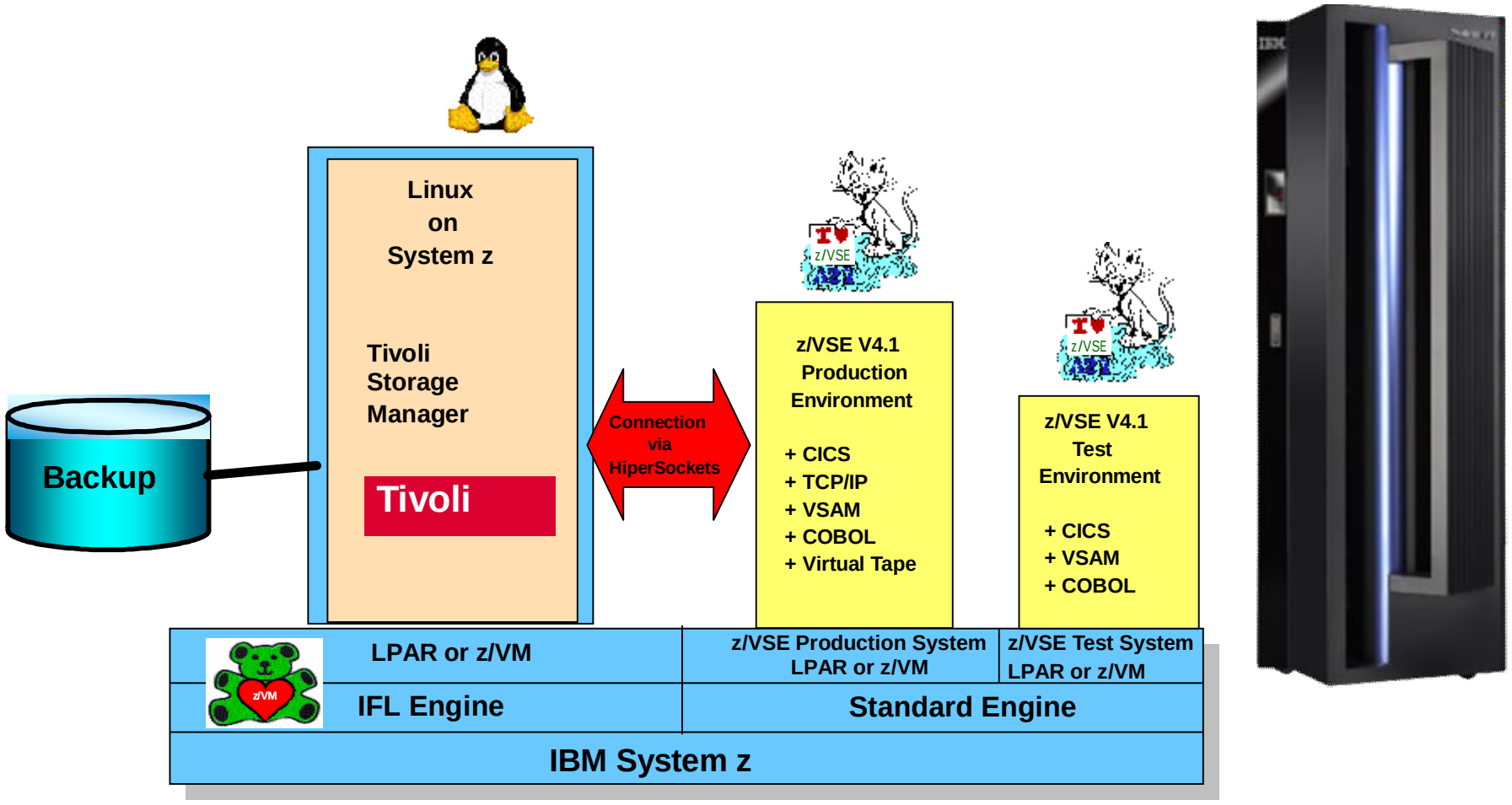


IBM Rational Developer (RDz) in z/VSE Perspective



Szenario 6: Backup / Restore Concept for z/VSE

Integrate z/VSE with TSM on Linux on System z



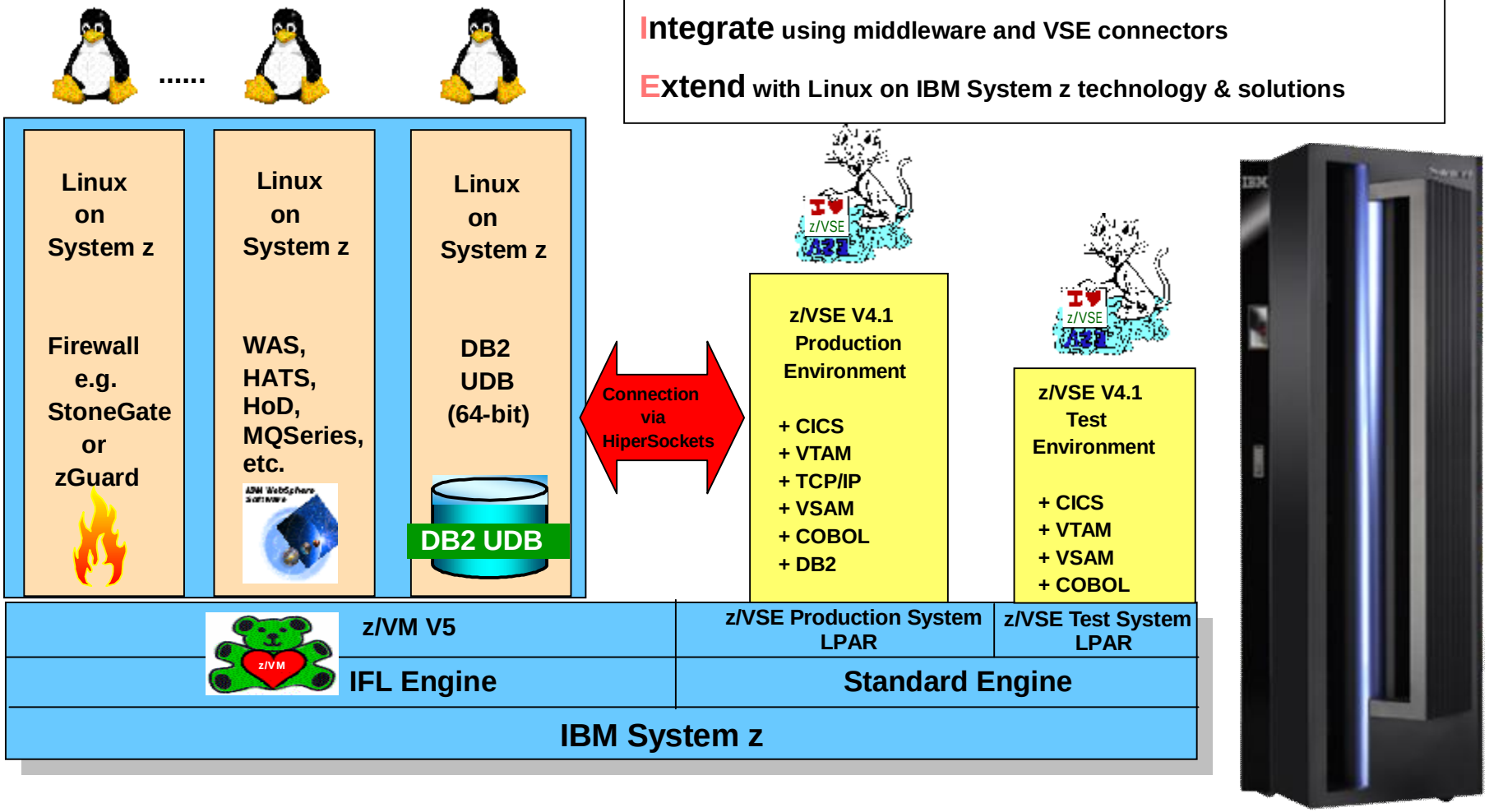
Modernization / Growth Szenarios with z/VSE and Linux

Combine the scenarios, make use of synchronicity offerings from IBM and LDPs.

Protect existing VSE investments

Integrate using middleware and VSE connectors

Extend with Linux on IBM System z technology & solutions



Top Concerns of VSE* Customers

1. **Applications**

→ 2. **Cost**

3. **Skills**

4. **Future**

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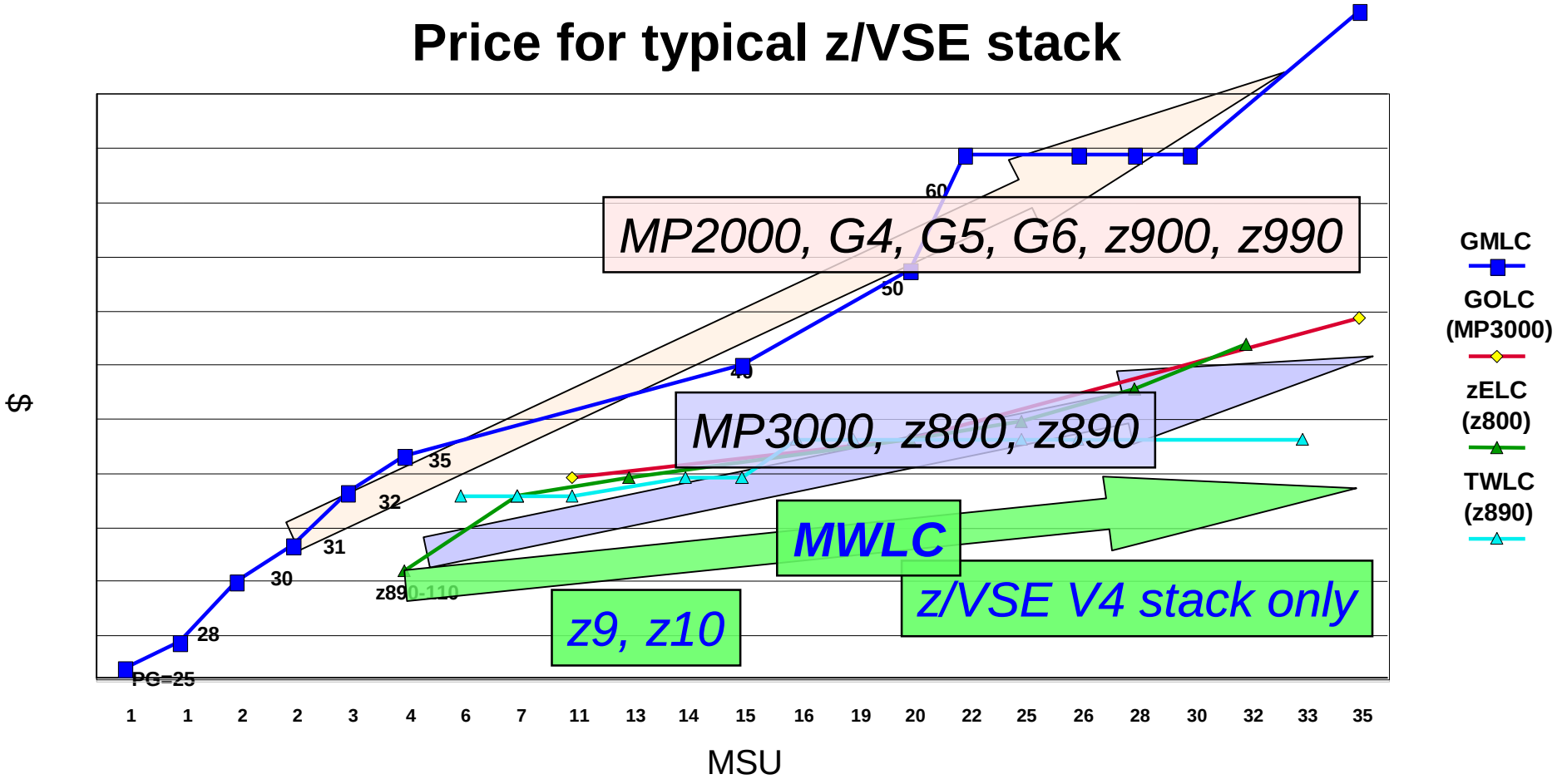
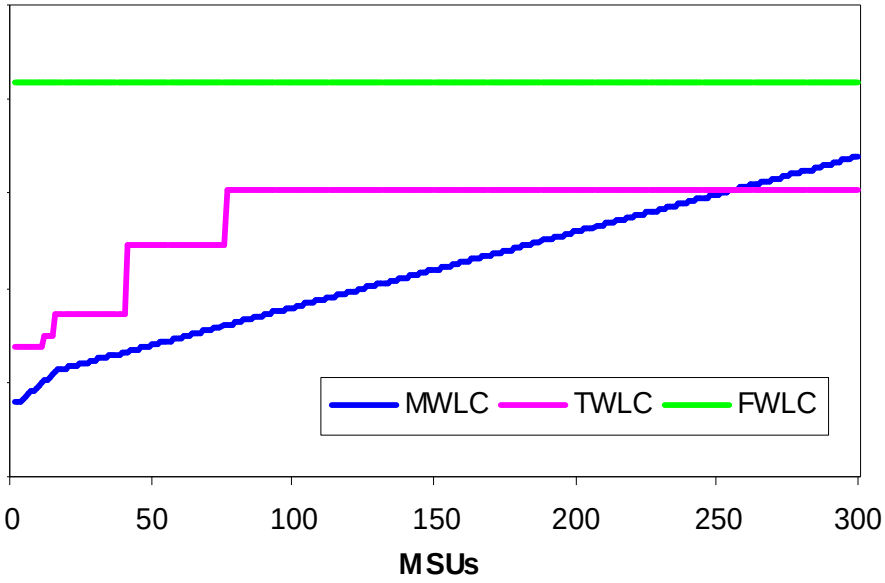
MWLC – Midrange Workload License Charge

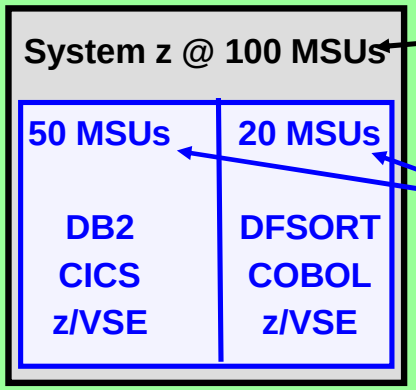


§ *"I just got our April software bill from IBM for the first month on our z9 under z/VSE 4.1 and MWLC. We were paying $22,965 per month on our z800 under z/VSE 3.1.2. The April bill is for the same software and it is $12,318: a difference of $10,647 per month."*
Mike Moore, IT Manager, Alabama Judical Datacenter, Alabama

Improved TCO through new Pricing Metric and Sub-Capacity Pricing with z/VSE V4

- **z/VSE price/performance through new pricing metric**
  - **Midrange Workload License Charge (MWLC)**
  - **MWLC requires current HW (z9* or z10) and z/VSE V4**
- **Additional price/performance through sub-capacity option**
  - **Some hardware footprint consolidations more attractive now**
  - **Presence of z/VSE V3 or VSE/ESA™ forces full-capacity pricing**





Full-capacity pricing metrics rely on the total rated capacity of the MACHINE where a product executes.

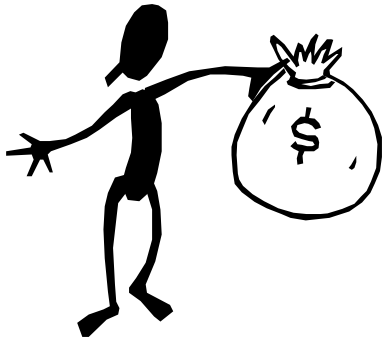
Sub-capacity pricing metrics rely on the utilization of the LPAR(s) where a product executes.

* z9 BC A01 is priced zELC, not MWLC.

Transition to z/VSE V4 MWLC Pricing

- **Basic Requirements**
  - **IBM System z10 EC, z9 EC or z9 BC (exception: z9 BC A01 is priced zELC)**
  - **z/VSE V4**
  - **If running under VM: z/VM 5.2 (or later) is required**

Very simple !



- **The resulting savings can – and should – be used to invest in new solutions, e.g.**
  - **SOA**
  - **Linux on System z**
  - **new middleware**
  - **new standard software**
  - **new application development**
  - **new projects with IBM**

Transition to z/VSE V4 Sub-Capacity Pricing

§ Basic Requirements

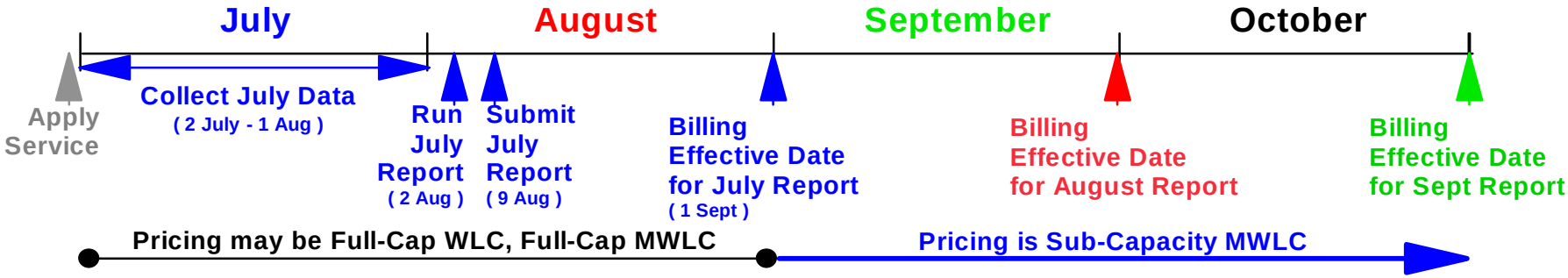
- IBM System z10 EC, z9 EC or z9 BC (exception: z9 BC A01 is priced zELC)
- z/VSE V4 (no older VSE version allowed on the processor, i.e. no VSE/ESA V2, no z/VSE V3)
- If running under VM: z/VM 5.2 (or later) is required

§ Reporting Requirements

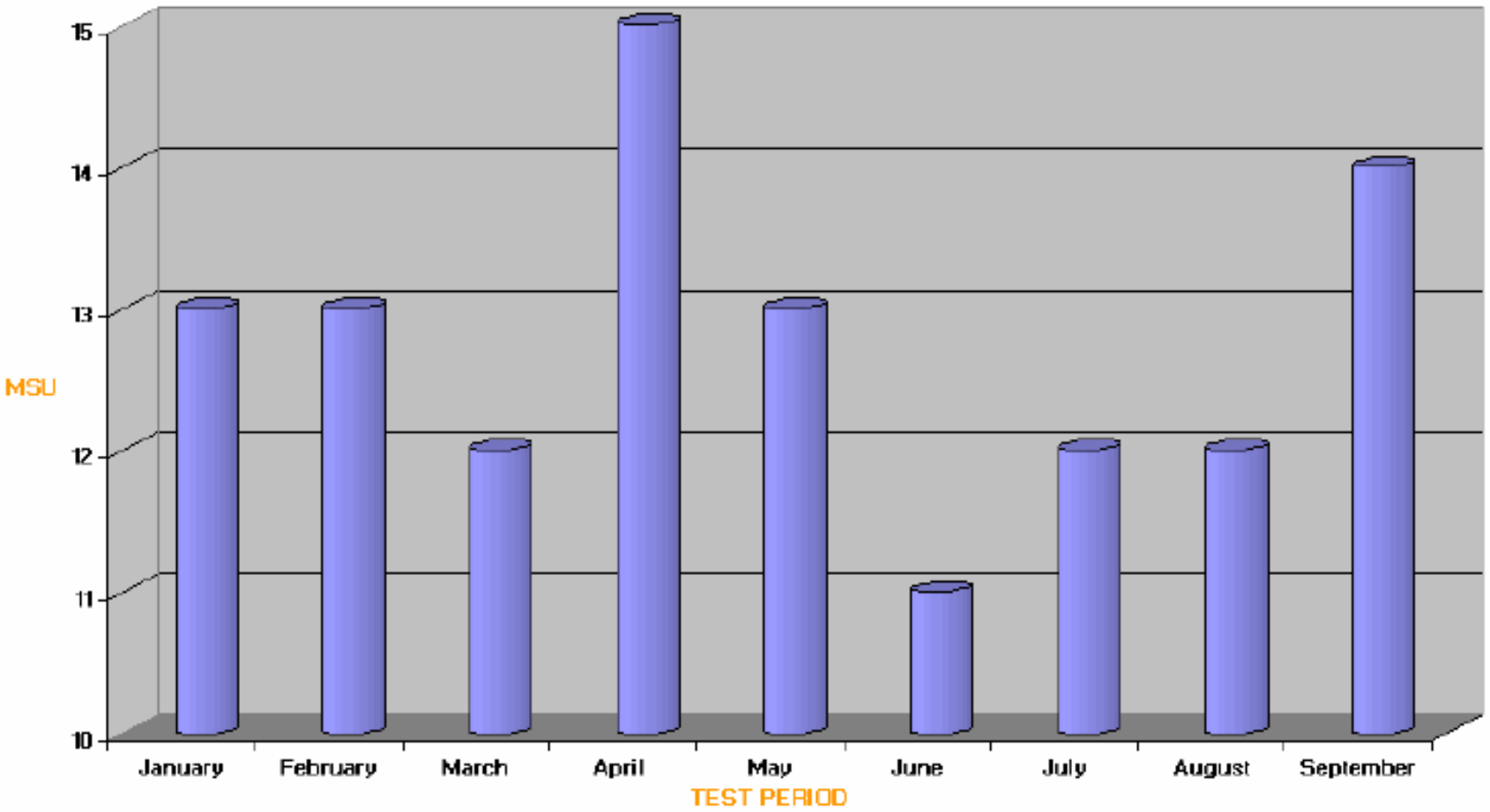
- Must report on <u>all</u> LPARs and z/VM guests (production, test, development, etc.)
- 95% data collection
- Default (i.e. worst case) is full-capacity prices
- 2-month full-capacity transition period

§ Timing Requirements

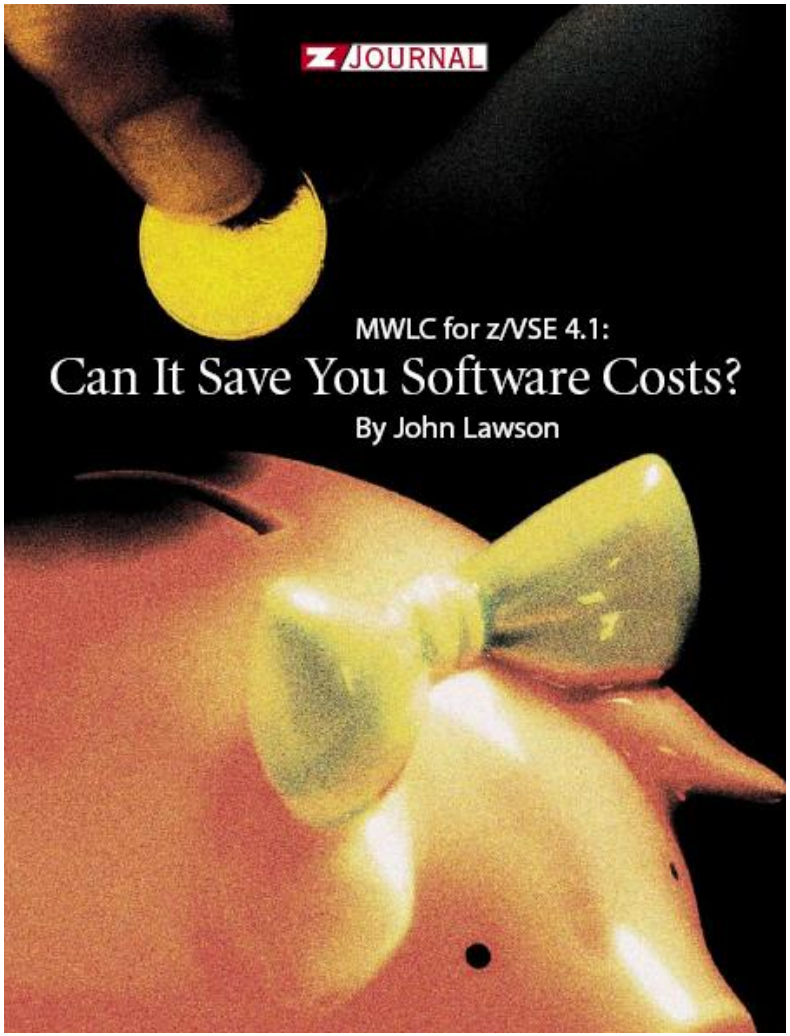
- Sub-Capacity Pricing begins with the submission of 1st full month report
- Data <u>collection</u> period: 2nd of the previous month - 1st of the current month
- Data <u>submission</u> period: 2nd - 9th following data collection



Sub-Capacity Example Report



Press & Analyst Papers



Source: z/Journal, April / May 2007

VSE users receive an offer they can't refuse

Most of the activity in the IBM mainframe world not surprisingly focuses on the z/OS environment, but there is still a sizeable population of users running systems based on VSE, often in conjunction with the VM hypervisor.

Many of these sites are slow growers with limited in house technical skills and a reluctance to upgrade their hardware or software even in exchange for significant cost savings. As a result their relationship with IBM (and with other ISVs supporting their applications) is a difficult one.

In its recent announcement of z/VSE 4.1, IBM has shown some of the 'carrot and stick' tactics that often characterize its product developments in this part of the market.

The latest version of the operating system offers many attractions for small mainframe users, including some important enhancements to SOA/web service support and tape encryption. Moreover the software is accompanied by a new pricing scheme (Midrange Workload License Charge), which can bring sub capacity benefits and very significant savings to VSE users. But to get the savings they need to upgrade to a z9 BC or EC.

For VSE users, it is becoming increasingly difficult to make a cost case for avoiding an upgrade to the latest hardware, and the months ahead are likely to witness a steady stream of VSE-base upgrades to the z9 BC.

Source: The Arcati Mainframe Yearbook 2007

z/VSE: A Roadmap For Cost savings and Exploiting Technology

Prepared for:
IBM Corporation

By:
Sine Nomine Associates
43596 Blacksmith Square
Ashburn, VA 20147

IBM-2007-04569-E-01
August, 2007
SNA Proprietary – Confidential

z/VSE Roadmap
6 September 2007

Source: Sine Nomine Associates, August 2007

Black Belt Success Story: Scheidt & Bachmann

VSE/ESA 2.2 on 9121-411 w/ ESS à z/VSE 4.1 on z9 BC A01 w/ DS6800

Top Concerns of VSE* Customers

1. **Applications**

2. **Cost**

→ 3. **Skills**

4. **Future**

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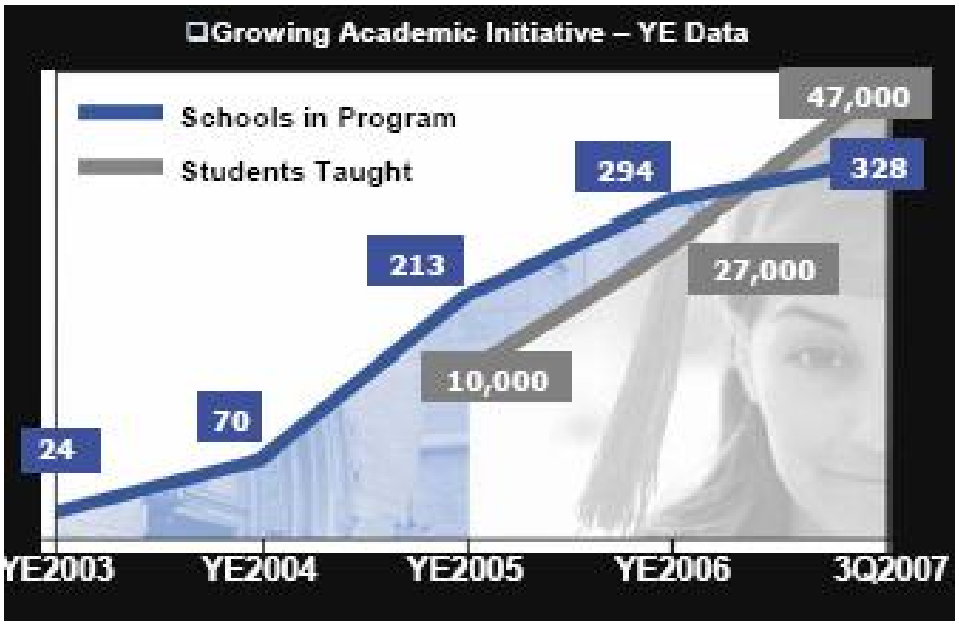
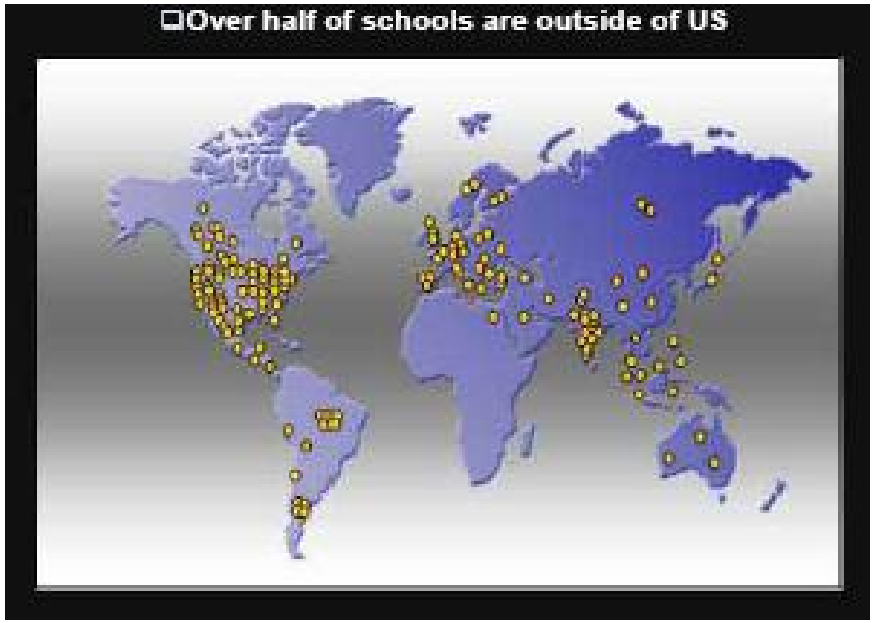
Building Skills: IBM Academic Initiative for System z

IBM is committed to training 20,000 new students on the mainframe by 2010

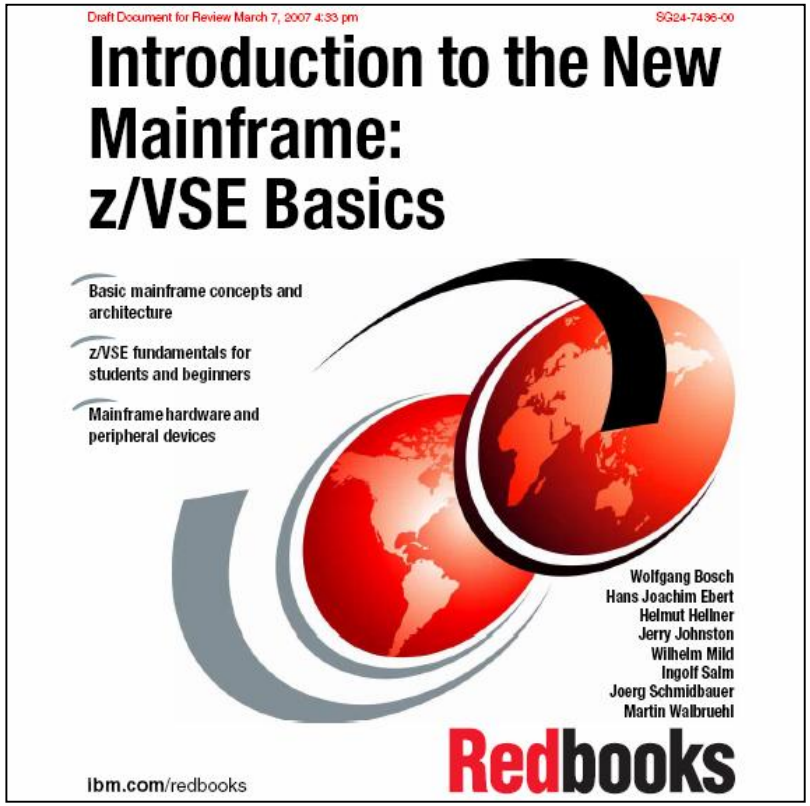




- **Academic Initiative by the numbers:**
  - Participation – Over 325 schools registered, over 47,000 students
  - Courses – 21 Courses (10 more coming) & Mastery Exam Certification
  - zCommunity – Running local roundtables with Client / School / ISV
  - Resources – Systems at 6 university HUBs + loaned systems and SW
  - Student MF Contests - >4,500 students, >700 schools ... more coming WW
  - IBM Help – zSkills Help Desk (zskills@us.ibm.com) + over 200 IBM MF ambassadors
  - Assist Professors – Education seminars, Faculty awards

- **Web site – www.ibm.com/university/systemz**

z/VSE and z/VM Beginner‘s Education



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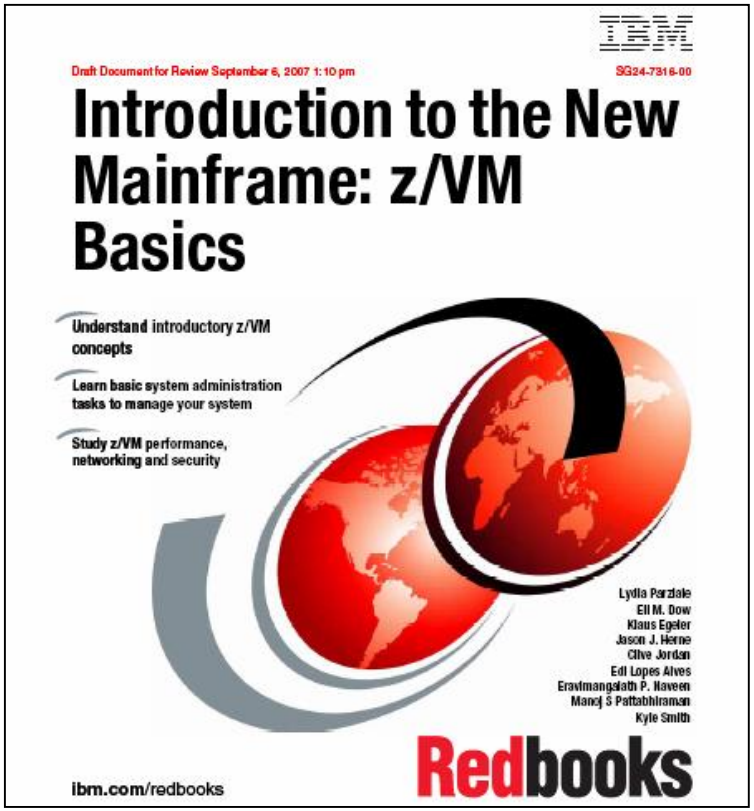
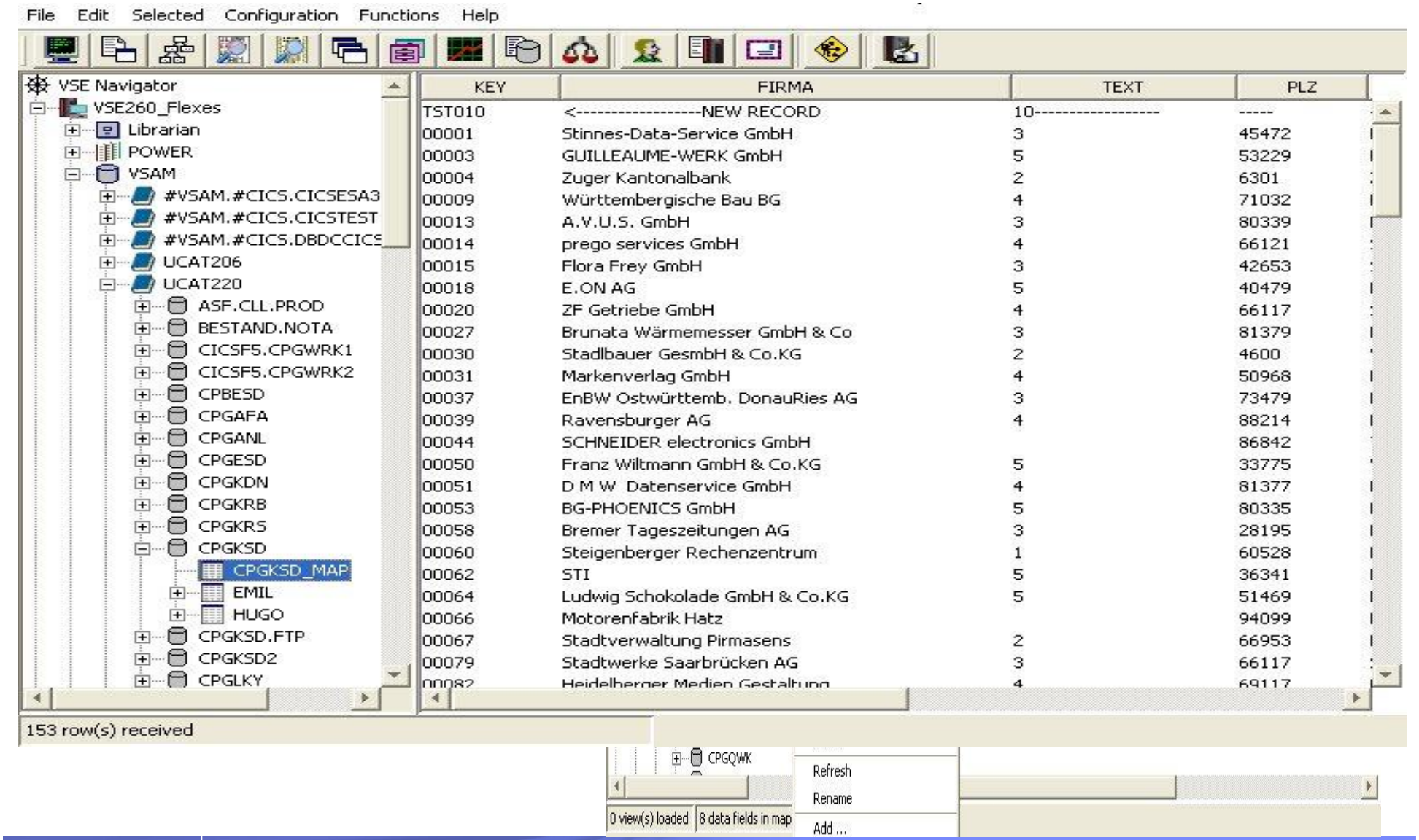


SG24-7316-00

www.redbooks.ibm.com

z/VSE Navigator: Windows-like VSE Interface



z/VSE and z/VM-Linux Customer Conferences in 2008

- **GSE German Working Group in Bonn (Germany), April 7-9, 2008**
  - **Approx 100 attendees, German speaking audience**

- **WAVV in Chattanooga (Tennessee), April 18-22, 2008**
  - **Approx 250 attendees, mainly from the US**
  - **This is the prime conference for VM/VSE and Linux within AG**

- **European IBM System z Technical Conf. in Dresden (Germany), May 5-9, 2008**
  - **Approx 500 attendees, mainly from Europe, thereof approx 80-100 for VM and VSE**

- **IBM System z EXPO in Las Vegas (Nevada), Oct 13-17, 2008**
  - **Expect approx 1000 attendees, worldwide, thereof approx 100-200 for VM and VSE**

- **GSE European Working Group in Leipzig (Germany), Oct 27-29, 2008**
  - **Expect approx 200+ attendees, mainly from Europe**
  - **This is going to become the prime conference on VM/VSE and Linux within Europe**

- **German IT Manager Summit in Bad Reichenhall (Germany), Nov 27-28, 2008**
  - **Expect approx 70-80 attendees, German speaking decision makers**

z/VSE Live Virtual Classes in 2007/08

- z/VSE V4 and MWLC Announcement Overview
- Midrange Workload License Charges (MWLC)
- z/VSE V4.1 Solutions based on SOA and DB2
- z/VSE Security
- z/VSE V4.1 User Experience
- IBM System z Hardware
- New VSAM Tools
- Bringing You up to Date with z/VSE V4
- z/VSE Wellness
- Encryption Facility for z/VSE
- DB2 for z/VM and z/VSE V7.5
- Modern Application Development for z/VSE
- Live Demo of WebSphere Developer for System z

- + more planned …

- typically set for Thursday, 5:00 – 6:00 pm ET

Note: Charts are available on the z/VSE web site the day following each call. Replay available approximately one week later. For more information, please see the z/VSE web site at:

http://www-03.ibm.com/servers/eserver/zseries/zvse/

Top Concerns of VSE* Customers

1. **Applications**

2. **Cost**

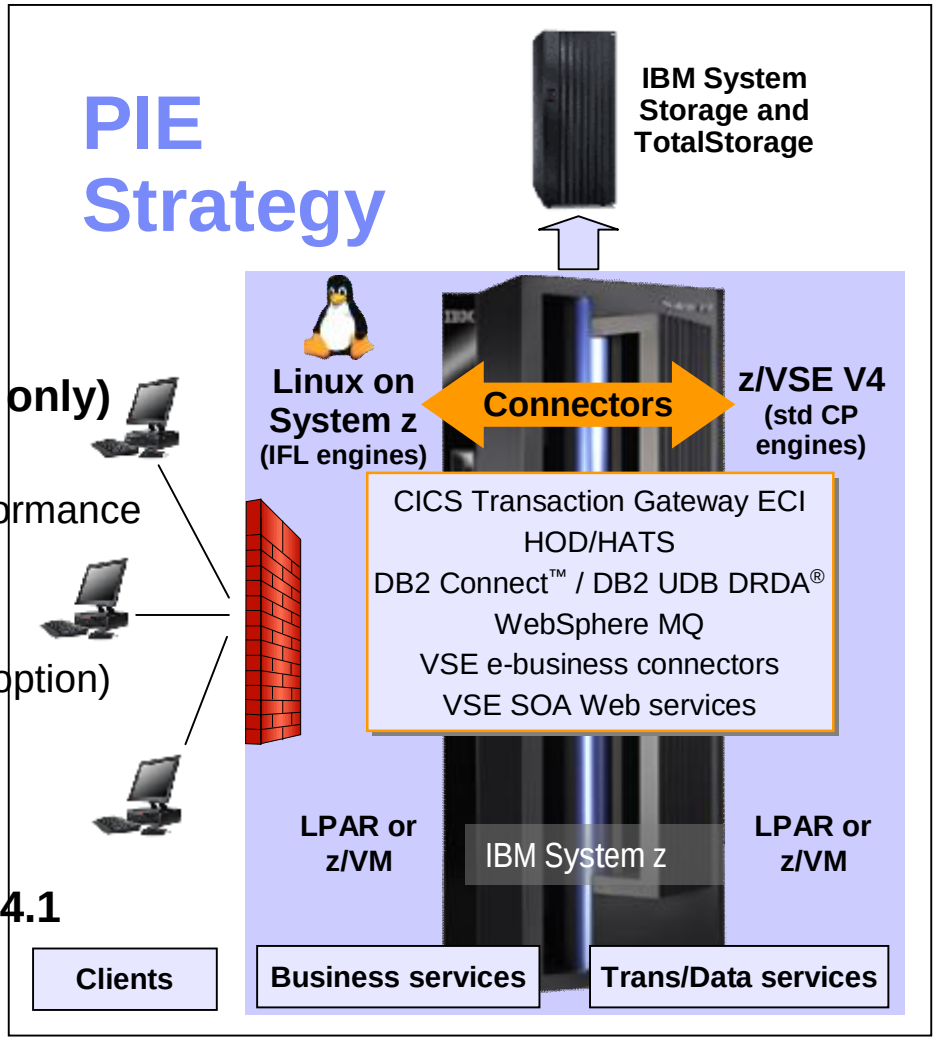
3. **Skills**

→ 4. **Future**

(*) The term “VSE” stands for both, VSE/ESA and z/VSE.

z/VSE V4.1 Overview

- Preview 4/27/2006, Announce 1/9/2007, **General Availability 3/16/2007**
- **z/Architecture mode only**
  - 64-bit *real* addressing (31-bit *virtual* addressing)
    - up to 8 GB real processor storage
  - IBM System z9 EC, z9 BC, z10 EC servers
  - IBM eServer zSeries 990, 890, 900, 800 servers
- **Capacity Measurement Tool (CMT)**
  - Fulfills SoD from July 2005
- **New MWLC pricing metrics (System z9/z10 only)**
  - Attractive full-capacity MWLC price points
  - Sub-capacity MWLC option for added price/performance
- **Encryption enhancements**
  - CPACF enhancements (AES-128)
  - Configurable Crypto Express2 (add accelerator option)
  - TS1120 encrypting tape
  - SecureFTP
- **SOA and interoperability improvements**
- **CICS TS & CICS/VSE supported w/ z/VSE V4.1**
- **FSU from z/VSE V3.1 and VSE/ESA V2.7**
- **Implemented 22 customer requirements**



z/VSE: Looking ahead

z/VSE V4.2 - Preview Oct 9, 2007
- **More tasks, more memory**
- **EF for z/VSE, SCRT on z/VSE**
- **SoD** for CICS/VSE**

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

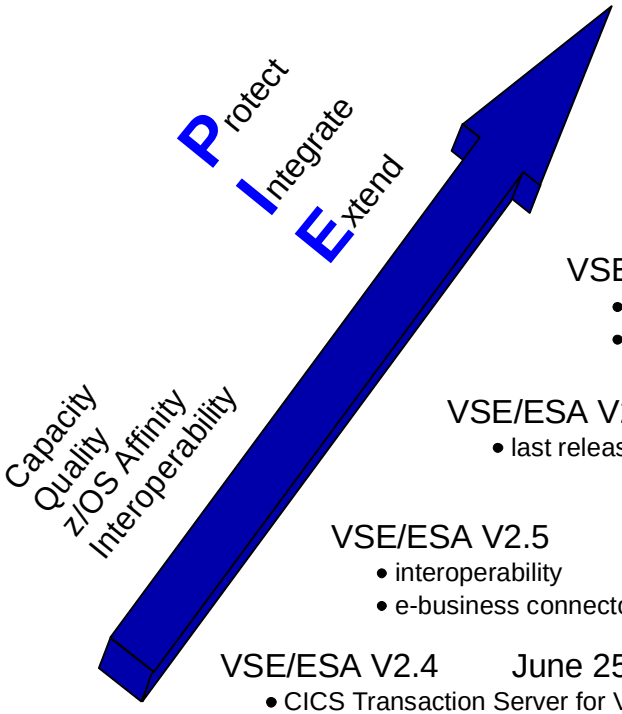
z/VSE V3.1* March 4, 2005
- zSeries features, FCP/SCSI
- 31-bit mode only

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

VSE/ESA V2.4 June 25, 1999
- CICS Transaction Server for VSE/ESA
- e-business

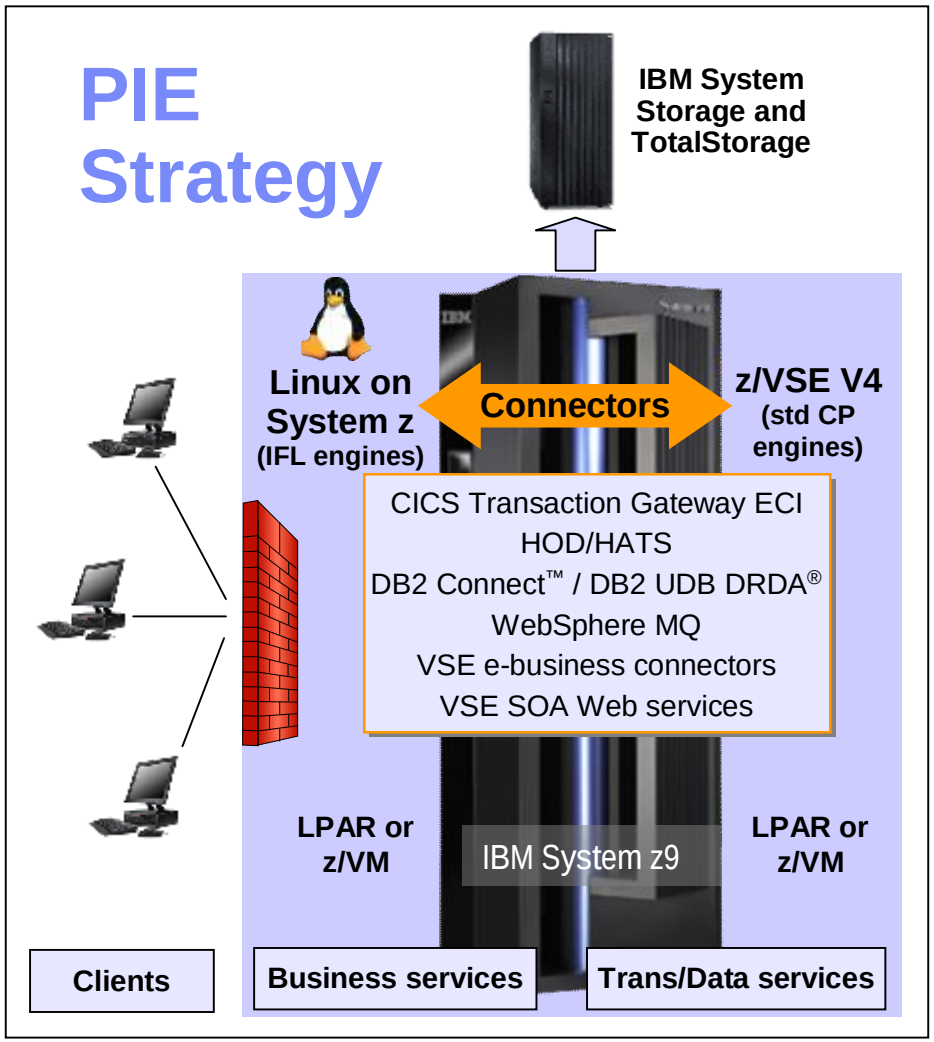


•Note: z/VSE V3 can operate in 31-bit mode only. It does not implement z/Architecture and specifically does not implement 64-bit mode capabilities. z/VSE V3 is designed to support selected features of IBM System z hardware.

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

z/VSE Next

- **z/VSE V4.2 - previewed Oct-9-2007**
  - Planned availability: 4Q2008
  - IBM System z10 EC, z9 EC and z9 BC servers
  - IBM eServer zSeries 990, 890, 900, 800 servers
  - Up to 32 GB real processor storage
  - More than 255 tasks to enable growth
  - Sub-Capacity Reporting Tool (SCRT) integrated
  - Support for TS3400 Tape Library and TS7740 Virtualization Engine
- **CICS TS for z/VSE**
  - **Statement of Direction (SoD)**: z/VSE V4.2 is planned to be the last release to offer CICS/VSE.**
- **And much more ...**
  - **Wait for full product announcement!**



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Press Reaction

CNNMoney.com

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http://money.cnn.com/news/newsfeeds/articles/marketwire/0317343.htm

IBM Continues the Evolution of Its z/VSE Mainframe Operating System

October 19, 2007: 08:01 AM EST

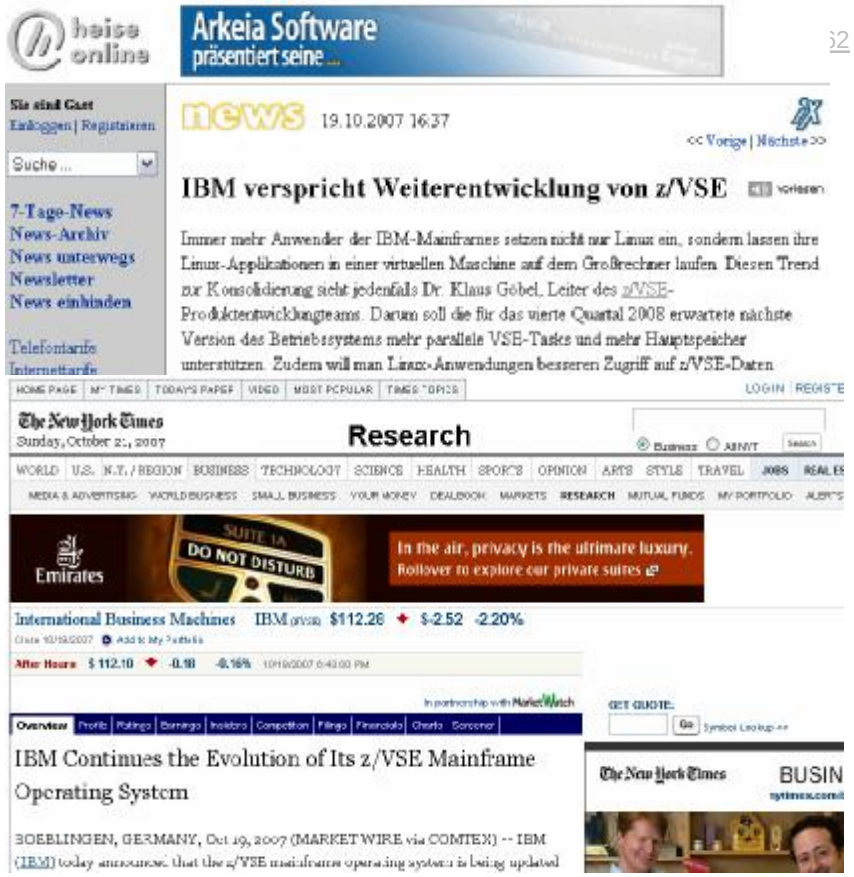
marketwire

IBM (NYSE: IBM) today announced that the z/VSE mainframe operating system is being updated to help address customer needs for scalability, security and integration. z/VSE V4.2 is designed to support growing mainframe applications and drive stronger investment protection.

"Many customers are beginning to put new Linux applications on the same IBM System z9 mainframe that also runs their production z/VSE applications. This integrated approach is designed to offer the best of Linux, the robust data serving capabilities of z/VSE, and the potential for low total cost of ownership of the System z9 mainframe," said Dr. Klaus Goebel, Development Executive Project Manager and z/VSE PDT Leader. "IBM's powerful mainframe virtualization system, z/VM, is fundamental to these integrated environments. It helps customers get the most from their Linux and z/VSE applications, integrate their business, and support business growth."

Previewed at a special international meeting of the GUIDE SHARE EUROPE (GSE) mainframe user group earlier this week, z/VSE enhancements include a range of new features, especially important to modern applications, such as on-line commerce. Capabilities include:

```
--  More z/VSE tasks and more real storage designed to improve scalability
```



and many more, e.g.	§ **Wall Street Journal**
§ **yahoo.com**	§ **news.moneycentral.msn.com**
§ **pressebox.de**	§ **marketwatch.com**
§ **verivox.de**	§ **businessweek.com**
§ **boerse-go.de**	§ **smartmoney.com, etc. etc.**

Summary of Changes over a 12-Month Sample

- 02/28/2007 - End-of-Service for VSE/ESA V2.7 effective
- 03/16/2007 - z/VSE V4.1 General Availability
- 03/16/2007 - SecureFTP PTF for z/VSE available
- 04/18/2007 - IBM System z9 EC and z9 BC Enhancements
- 05/18/2007 - IBM TS1120 encrypting tape PTF available for z/VSE V4.1
- 06/05/2007 - End-of-Marketing for z/VSE V3.1 *announced* (effective 5/31/2008)
- 06/18/2007 - IBM TS1120 encrypting tape PTF available for z/VSE V3.1
- 07/10/2007 - IBM TS3400 Tape Library attachment to System z
- 08/07/2007 - End-of-Service for z/VSE V3.1 announced (effective 7/31/2009)
- 08/09/2007 - DL/1 enhancement (up to 10 datasets for HD databases) available
- 10/09/2007 - z/VSE V4.2 Preview
- 10/09/2007 - Encryption Facility for z/VSE V1.1 announced (available 11/30/2007)
- 10/10/2007 - SCRT V14.2 available for z/VSE V4.1
- 11/14/2007 - IBM DB2 Server for VSE & VM V7.5 announced (available 11/30/2007)
- 11/30/2007 - z/VSE V4.1.1 available
- 01/18/2008 - z/VSE V3.1.3 available
- 02/26/2008 - IBM System z10 Enterprise Class

à There is VSE related news every 3-4 weeks, on average !!!

Summary / Wrap-up

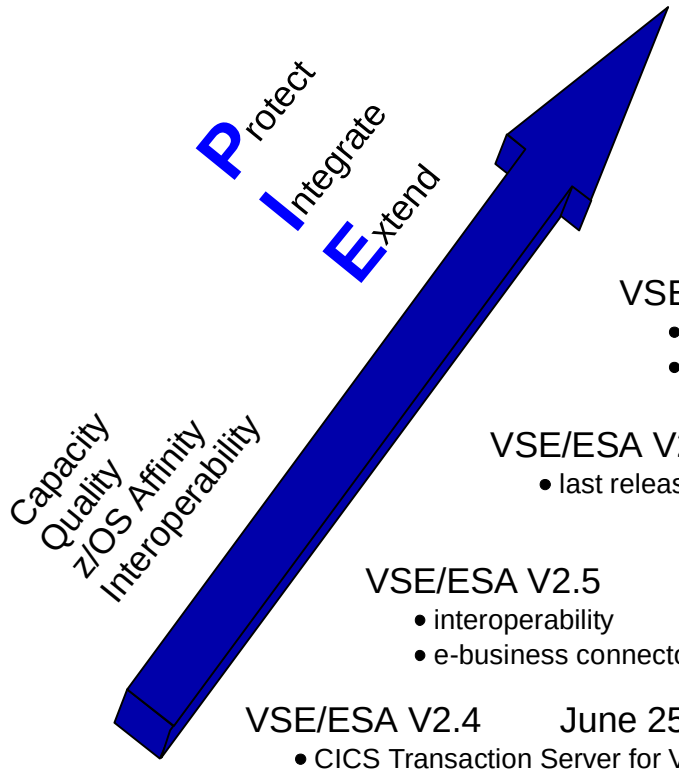
Summary: z/VSE Evolution
and z/VSE Success Factors

z/VSE V4.2 - Preview Oct 9, 2007
- **More tasks, more memory**
- **EF for z/VSE, SCRT on z/VSE**
- **SoD** for CICS/VSE**

Future

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

VSE/ESA V2.4 June 25, 1999
- CICS Transaction Server for VSE/ESA
- e-business

Strategy

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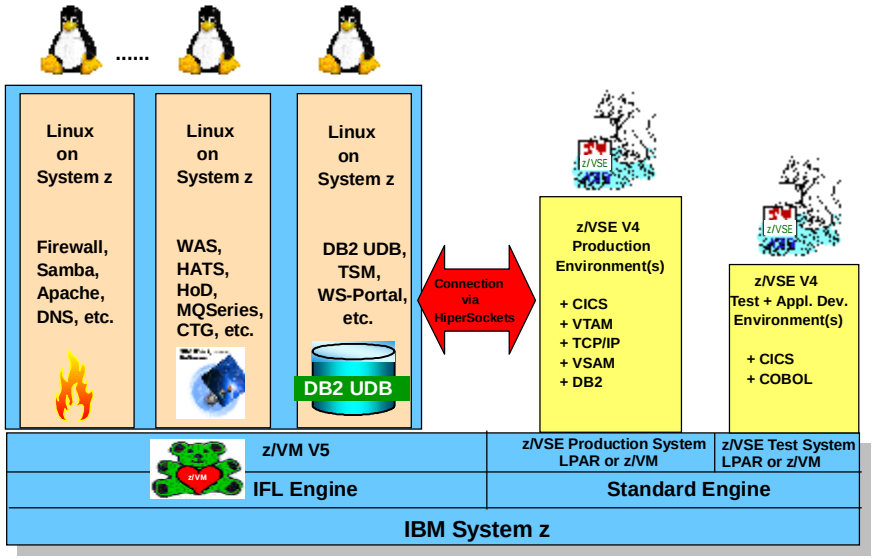
Summary: Exploiting the Best of all Worlds

with System z, z/VM, z/VSE, Linux, System Storage, and IBM Middleware



§ 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

§ Linux on System z

- ▸Large portfolio of new applications
- ▸Platform for IBM middleware
- ▸Infrastructure Simplification
- ▸Massive scalability / consolidation

For more Information go to ...

- **z/VSE**
  - **Homepage:**
    ibm.com//servers/eserver/zseries/zvse/
  - **Solution components:**
    ibm.com/servers/eserver/zseries/zvse/solutions/
  - **Presentations:**
    ibm.com/servers/eserver/zseries/zvse/documentation/presentations.html
  - **Redbooks:**
    ibm.com/servers/eserver/zseries/zvse/documentation/redbooks.html
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    ibm.com/servers/eserver/zseries/zvse/news/index.html
  - **Downloads:** ibm.com/servers/eserver/zseries/zvse/downloads/
  - **Consulting and Q&A:** zvse@de.ibm.com

Questions ?

Feel free to contact the z/VSE team in the Lab in Boeblingen via:

tmcc@de.ibm.com	**– for technical sales support**
boebc@de.ibm.com	**– for briefings and proof of concept**
zvse@de.ibm.com	**– for z/VSE consulting and Q&A**