IBM System z
Technical University 2011

z/VSE Trends & Directions

zDG01

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DB2*	IBM*	PR/SM	VTAM*
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DirMaint	IBM e(logo)server*	RACF*	z/Architecture
e-business logo*	IBM logo*	Resource Link	z/OS*
ECKD	IMS	RMF	z/VM*
Enterprise Storage Server*	Language Environment*	S/390*	z/VSE
ESCON*	MQSeries*	Sysplex Timer*	zSeries*
FICON*	Multiprise*	System z9	
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Geographically Dispersed Parallel Sysplex	On demand business logo	Virtualization Engine	

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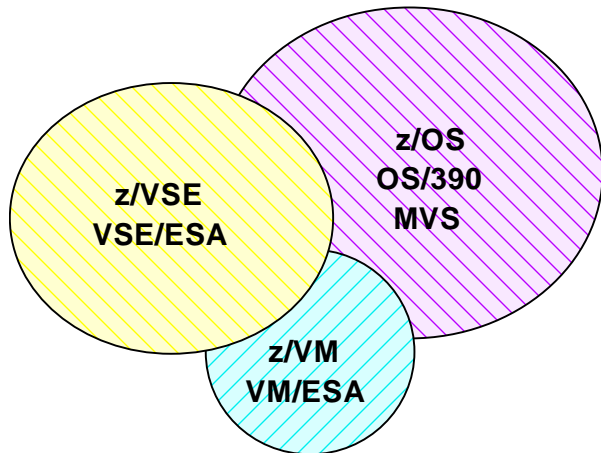
Agenda

§ **z/VSE Status & Support**

§ **z/VSE Strategy**

§ **z/VSE Modernization Options**

§ **z/VSE Software Pricing**

§ **z/VSE Functional Enhancements**
- **z/VSE V4.3**
- **z/VSE V5.1**

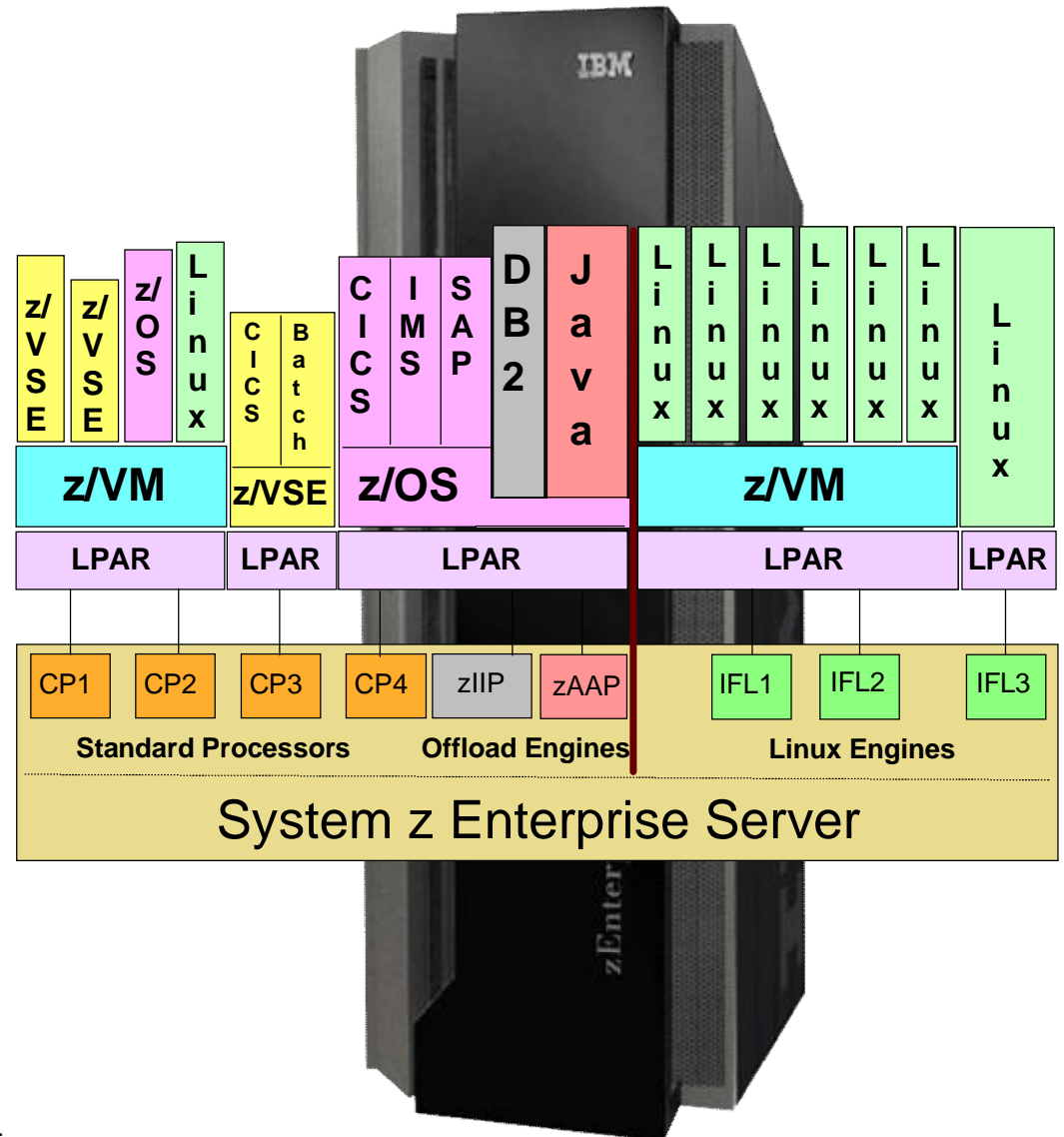§ **Wrap-up**

z/VSE Trends & Directions

Operating Systems on IBM System z

§ **33% of worldwide traditional mainframe operating system installs are VSE***
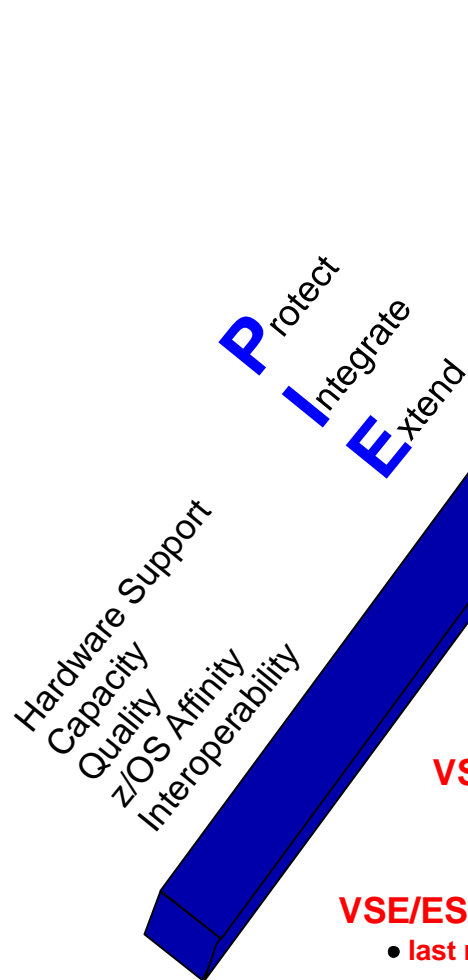
§ **VSE population is 40% in US, 40% in Europe, 20% in RoW**

§ **Worldwide 50% run VSE under z/VM, in Europe 90+% are VSE under z/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.

z/VSE Trends & Directions

z/VSE Evolution

z/VSE V5.1   **Nov 25, 2011**

NEW

- **zEnterprise exploitation**
- **ALS to System z9 (and higher)**
- **64-bit virtual addressing**

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

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

z/VSE V3.1   **March 4, 2005**
- **selected 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**

Protect **I**ntegrate **E**xtend

Hardware Support
Capacity
Quality
z/OS Affinity
Interoperability

[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

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

z/VSE Support Status (as of Oct'2011)

VSE Version and Release	Marketed	Supported	End of Support
z/VSE V4.3	a	a	tbd
z/VSE V4.2	r	a	10/31/2012
z/VSE V4.1 [2]	r	r	04/30/2011
z/VSE V3.1 [1]	r	r	07/31/2009
VSE/ESA V2.7	r	r	02/28/2007

On August 2, 2011, IBM announced withdrawal of service for CICS/VSE V2.3, DL/I DOS/VS V1.10, and DL/I VSE V1.11, to become effective October 31, 2012.
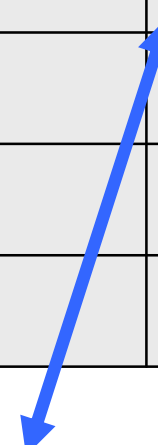
[1] z/VSE V3 is 31-bit mode only. It does not implement z/Architecture, and specifically does not implement 64-bit mode capabilities. z/VSE is designed to exploit select features of IBM System z10, System z9, and zSeries hardware.

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z/VSE Trends & Directions

How to get z/VSE Support

Reporting a problem

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

Finding known fixes

ı IBM Support Portal

- Downloads and fixes – Search for component ID (& symptom)

- Notifications of new APARs – Subscribe to System z, z/VSE Family

ı z/VSE Home Page – Service & Support – Corrective   (select a product and latest APAR list)

Ordering service

ı 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)

ı Open PMR to request service

z/VSE Trends & Directions

z/VSE Support for IBM Mainframe Servers

IBM Servers	z/VSE V5.1	z/VSE V4.3	z/VSE V4.2	z/VSE V4.1 (out of service)
IBM zEnterprise 196	a	a	a	a
IBM System z10 EC & z10 BC	a	a	a	a
IBM System z9 EC & z9 BC	a	a	a	a
IBM eServer zSeries 990 & 890	r	a	a	a
IBM eServer zSeries 900 & 800	r	a	a	a

On June 14, 2011, IBM announced withdrawal of service for Multiprise 3000 (7030-H30, -H50, -H70), to become effective December 31, 2012.

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 Trends & Directions

IBM zEnterprise System - Best in Class Systems and Software Technologies:
A system of systems that unifies IT for predictable service delivery

Unified management for a smarter system: zEnterprise Unified Resource Manager

§ Part of the IBM System Director family, provides platform, hardware and workload management

§ Unifies management of resources, extending IBM System z® qualities of service across the infrastructure

The world's fastest and most scalable system: IBM zEnterprise™ 196 IBM zEnterprise™ 114

§ Ideal for large scale data and transaction serving and mission critical applications

§ Most efficient platform for Large-scale Linux® consolidation

§ Leveraging a large portfolio of z/OS®, z/VSE™, and Linux on System z applications

§ Capable of massive scale up, 26 MIPS to more than 50 BIPS

Scale out to a trillion instructions per second: IBM zEnterprise BladeCenter® Extension (zBX)

§ Selected IBM POWER7™ blades and IBM System x® Blades[1] for tens of thousands of AIX® and Linux applications

§ High performance optimizers and appliances to accelerate time to insight and reduce cost

§ Dedicated high performance private network

[1] All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.

z/VSE Trends & Directions

z/VSE Support for IBM zEnterprise - Overview

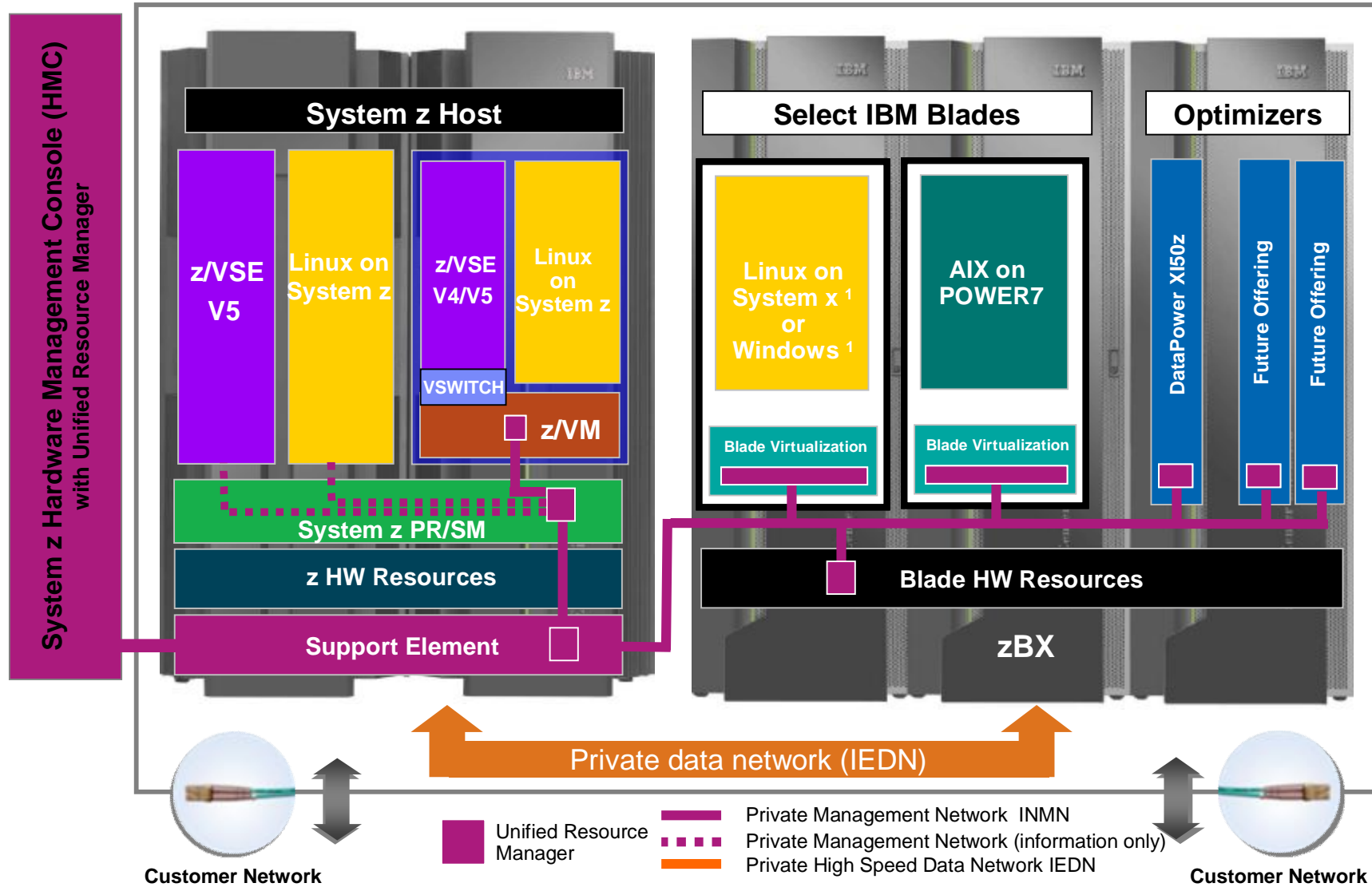## § zEnterprise compatibility

- **z114 and z196 are supported by z/VSE V4.2, z/VSE V4.3, z/VSE V5.1 (GA 11/2011)**
  - Refer to z/VSE Preventive Service Planning (PSP) buckets
  - z/VSE PTFs are required for subcapacity pricing customers

§ zEnterprise exploitation

- **z196 exploitation**
  - Static power save mode for use with SCRT

- **z114 and z196 exploitation**
  - Fast Path to Linux on System z in a z/VM-mode LPAR
    (also available on z10 BC/EC)
  - z/VSE z/VM IP Assist (VIA)
  - Fast Path to Linux on System z in an LPAR environment
  - Dynamic add of logical CPs
    (also available on z10 BC/EC)
  - Large page (1 MB frames) support for data spaces
    (also available on z10 BC/EC)
  - Dynamic add / remove of cryptographic processors
    (also available on z10 BC/EC)
  - Crypto Adjunct Processor (AP) Queue interrupt facility
    (also available on z10 BC/EC)
  - 4096-bit RSA key support with configurable Crypto Express3
    (also available on z10 BC/EC)

- **zBX environment**
  - z/VSE V5 supports Intra Ensemble Data Network (IEDN)
  - z/VSE V4 can participate in an IEDN data network using z/VM's VSWITCH support

z/VSE Support for IBM zEnterprise - IEDN to zBX

System z Hardware Management Console (HMC)
with Unified Resource Manager

System z Host

z/VSE V5

Linux on System z

z/VSE V4/V5

Linux on System z

VSWITCH

z/VM

System z PR/SM

z HW Resources

Support Element

Select IBM Blades

Linux on System x [1] or Windows [1]

AIX on POWER7

Blade Virtualization

Blade Virtualization

Blade HW Resources

zBX

Optimizers

DataPower XI50z

Future Offering

Future Offering

Private data network (IEDN)

Customer Network

Customer Network

Unified Resource Manager

Private Management Network INMN

Private Management Network (information only)

Private High Speed Data Network IEDN

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z/VSE Trends & Directions

Agenda

§ **z/VSE Status & Support**

→ § **z/VSE Strategy**

§ **z/VSE Modernization Options**

§ **z/VSE Software Pricing**

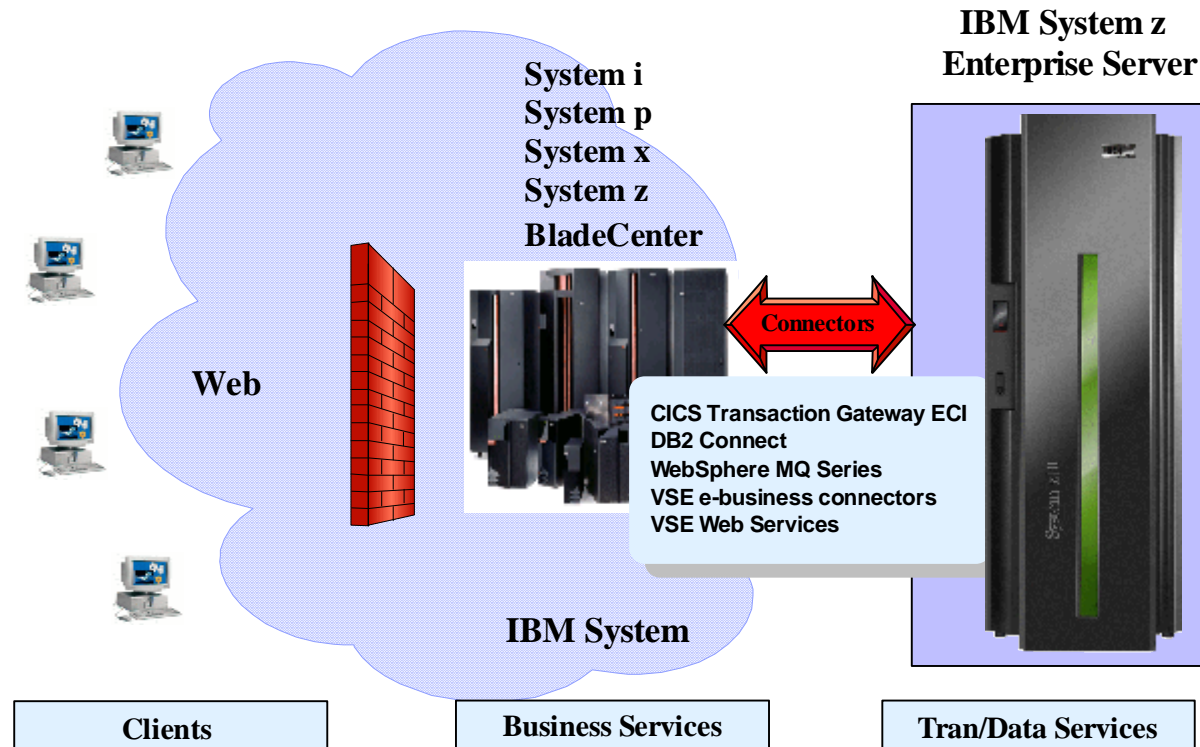§ **z/VSE Functional Enhancements**
  – **z/VSE V4.3**
  – **z/VSE V5.1**

§ **Wrap-up**

z/VSE Trends & Directions   © 2011 IBM Corporation

z/VSE Strategy - Invented in Year 2000

alias

§   3-tier Strategy

§   **Hybrid Strategy**

§   Connector Strategy

§   Migration Strategy

§   Coexistence Strategy

§   Linux Surround Strategy

§   **PIE Strategy**

IBM System z Enterprise Server

System i
System p
System x
System z
BladeCenter

Connectors

Web

CICS Transaction Gateway ECI
DB2 Connect
WebSphere MQ Series
VSE e-business connectors
VSE Web Services

IBM System

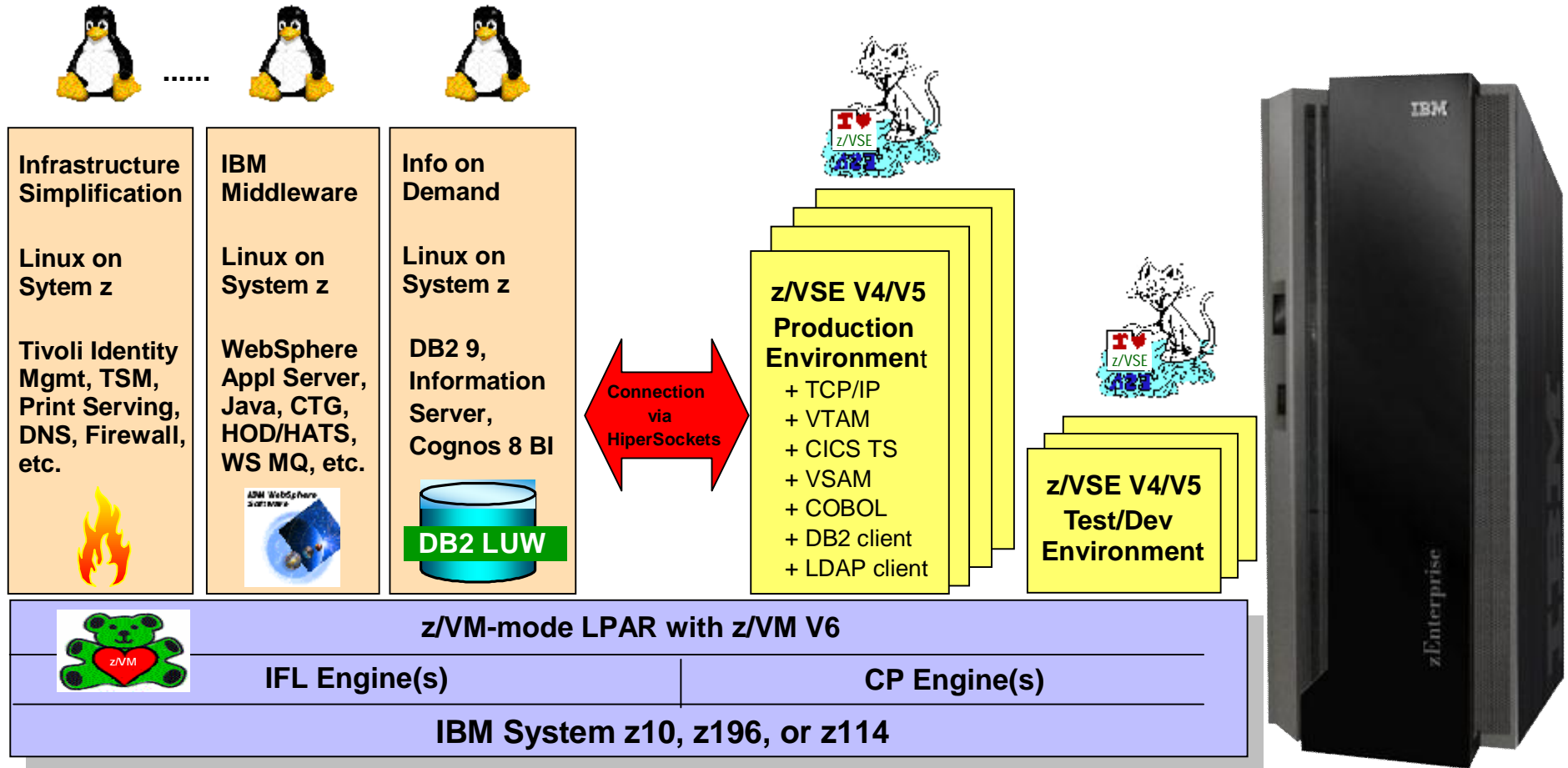**Clients**

Business Services

Tran/Data Services

Protect existing VSE investments

Integrate using middleware and VSE connectors

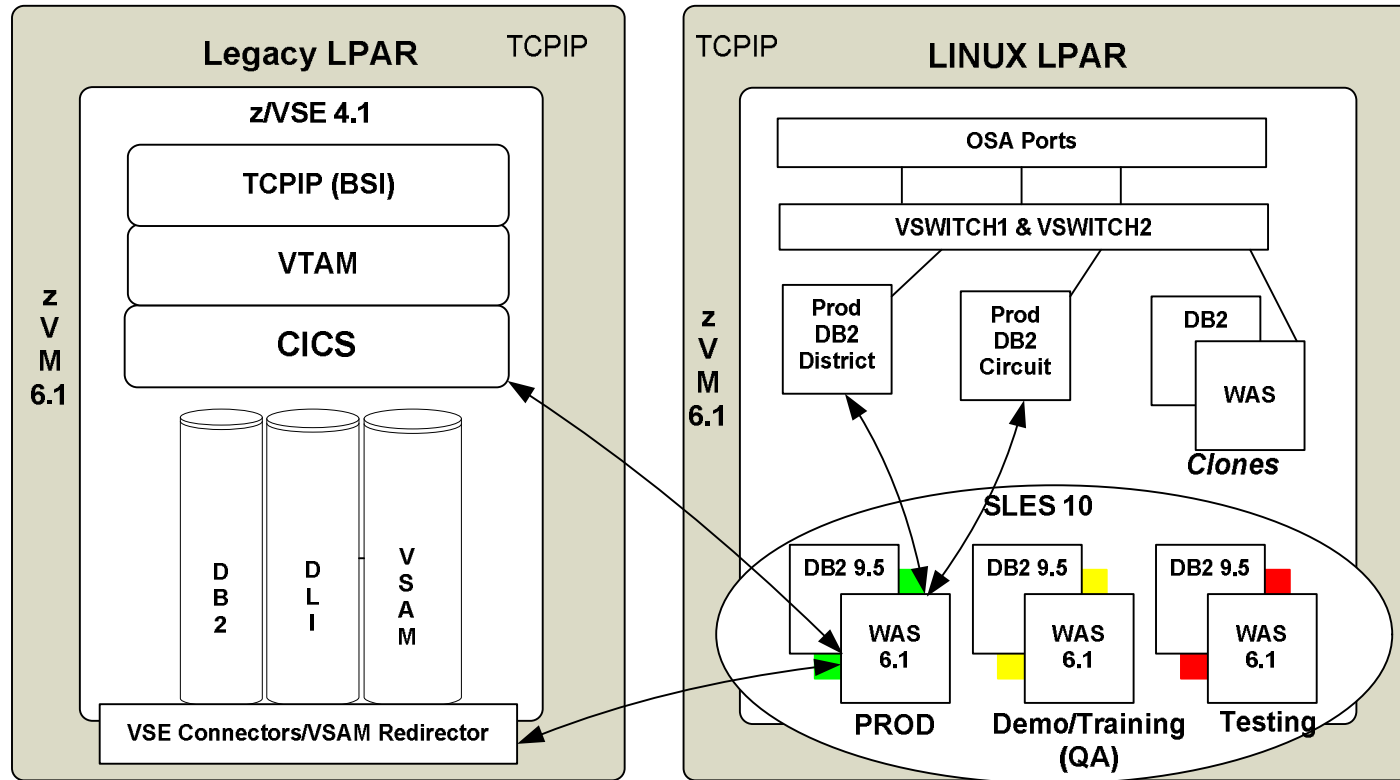**E**xtend with another platform to access new applications & solutions

z/VSE Strategy w/ Linux on System z
Hybrid Environment leveraging z/VSE, z/VM, and Linux on System z

Protect existing VSE investments

Integrate using middleware and VSE connectors

Extend with Linux on IBM System z technology & solutions

......

Infrastructure Simplification

Linux on Sytem z

Tivoli Identity Mgmt, TSM, Print Serving, DNS, Firewall, etc.

IBM Middleware

Linux on System z

WebSphere Appl Server, Java, CTG, HOD/HATS, WS MQ, etc.

Info on Demand

Linux on System z

DB2 9, Information Server, Cognos 8 BI

DB2 LUW

Connection via HiperSockets

z/VSE V4/V5 Production Environment
+ TCP/IP
+ VTAM
+ CICS TS
+ VSAM
+ COBOL
+ DB2 client
+ LDAP client

z/VSE V4/V5 Test/Dev Environment

z/VM-mode LPAR with z/VM V6

IFL Engine(s)

CP Engine(s)

IBM System z10, z196, or z114

Customer Example: Supreme Court of Virginia

- 1 + 1 z10 BC L02
- 2 + 2 CPs
- 5 + 5 IFLs
- 112 + 112 GB memory
- 2 + 2 z/VM V6.1 LPARs
- 8 + 4 z/VSE V4.1 guests
- 73 + 24 SLES 10 SP2 guests
- WAS V6.1, DB2 V8.2, DB2 V9

§ z10 BC L02 for Court System (internal)

- Serves 325 courts, 5.000+ users, 4.2 million new cases in 2009
- Integrating z/VSE, DB2/UDB and WebSphere applications
- eMagistrate* system serves 125 locations, 2.800 trans per day
  2007 ComputerWorld Honors Program Laureate
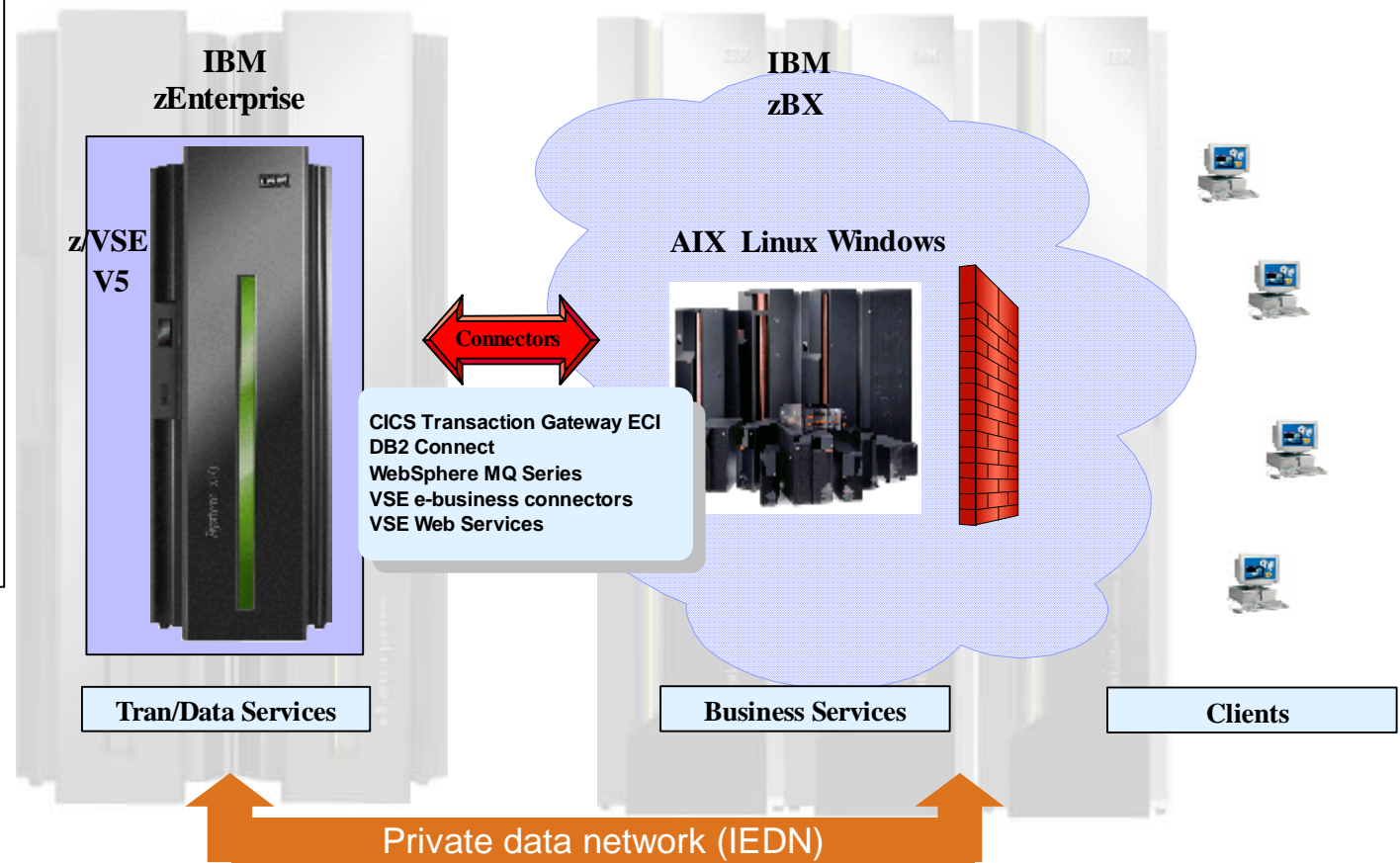
§ z10 BC L02 for Internet

- eCommerce application integrating z/VSE and WebSphere appls

z/VSE Trends & Directions

z/VSE V5 Strategy with zEnterprise - More options, highly integrated

alias

§ 3-tier Strategy

§ **Hybrid Strategy**

§ Connector Strategy

§ Migration Strategy

§ Coexistence Strategy

§ Linux Surround Strategy

§ **PIE Strategy**

IBM zEnterprise

z/VSE V5

IBM zBX

AIX Linux Windows

Connectors

CICS Transaction Gateway ECI
DB2 Connect
WebSphere MQ Series
VSE e-business connectors
VSE Web Services

Tran/Data Services

Business Services

Clients

Private data network (IEDN)

Protect existing z/VSE investments

Integrate using middleware and z/VSE connectors

Extend with zBX or with Linux on z to access new applications & solutions

z/VSE Trends & Directions

Agenda

§ **z/VSE Status & Support**

§ **z/VSE Strategy**

→ § **z/VSE Modernization Options**

§ **z/VSE Software Pricing**

§ **z/VSE Functional Enhancements**
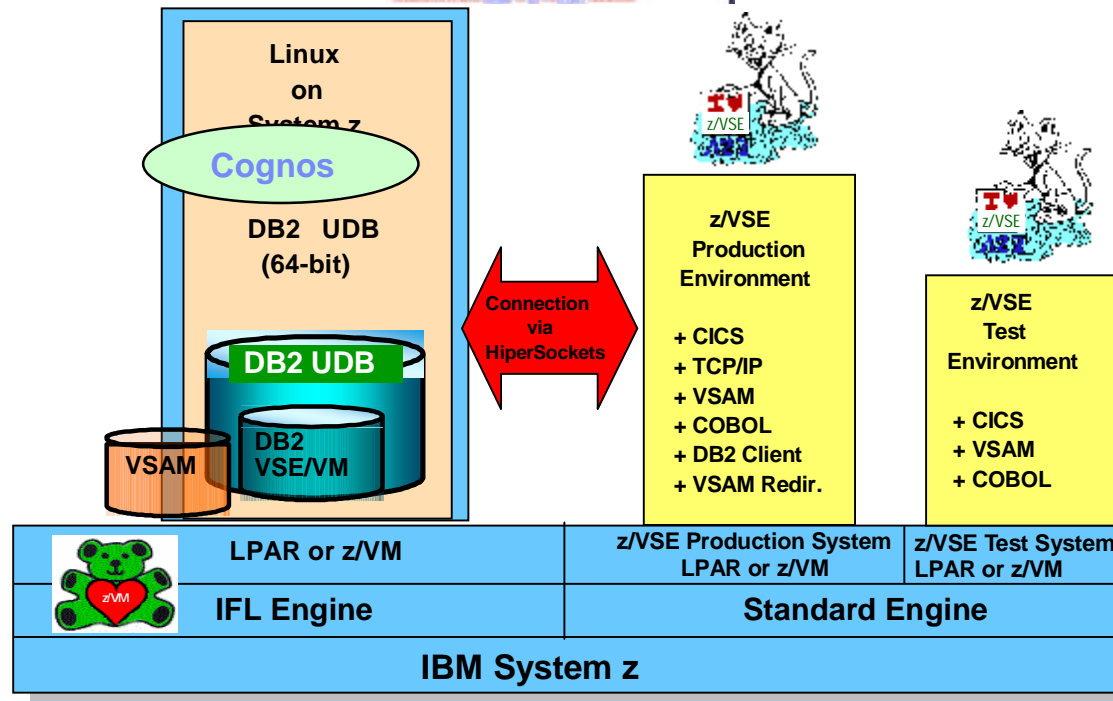 – **z/VSE V4.3**
 – **z/VSE V5.1**

§ **Wrap-up**

z/VSE SOA and Interoperability

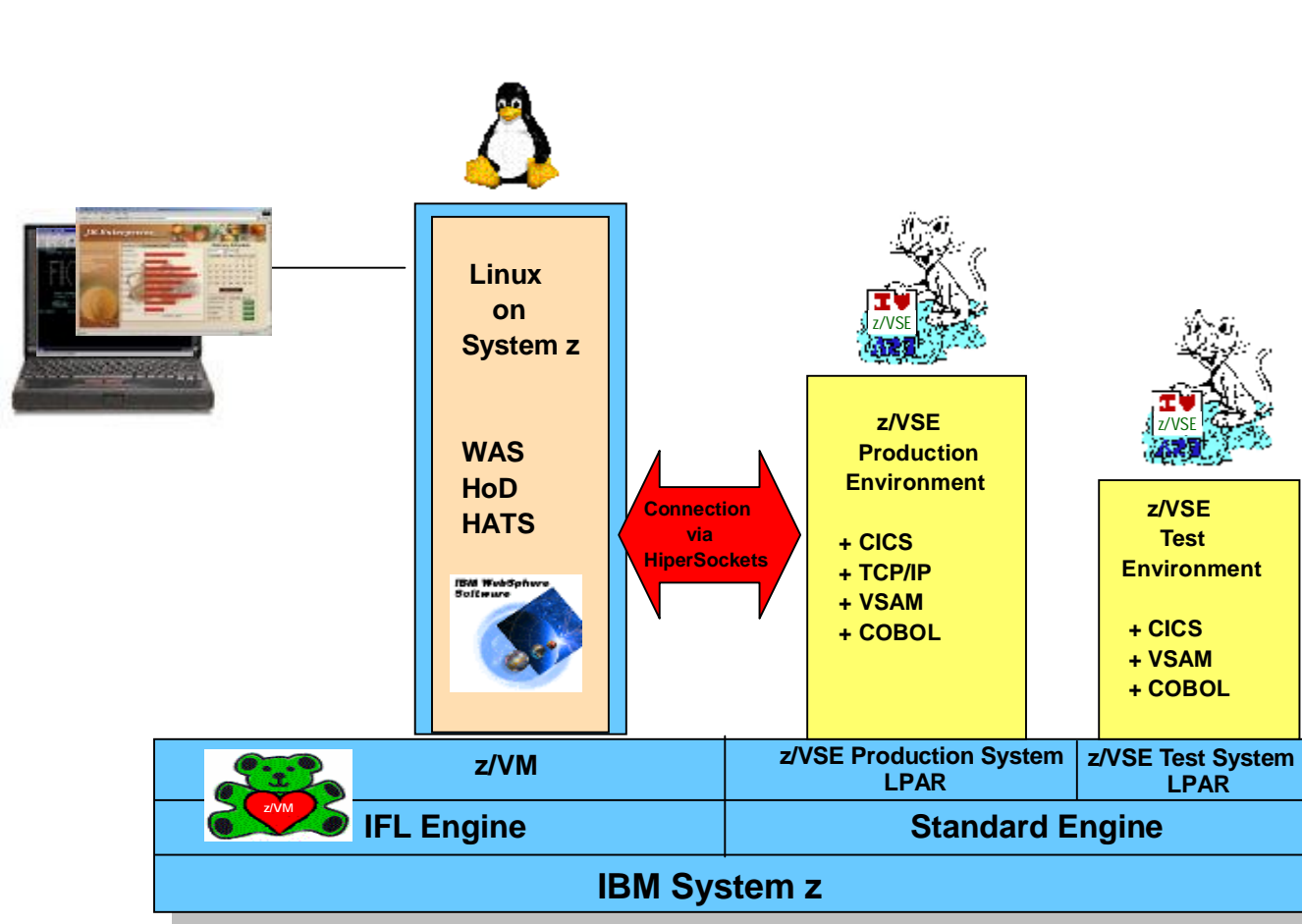| Connector Functions	z/VSE V5.1	z/VSE V4.3	z/VSE V4.2	z/VSE V4.1
z/VSE Connectors (no additional charge)				
VSAM, POWER, Librarian, ICCF lib, console	Yes	Yes	Yes	Yes
VSAM Redirector	Yes	Yes	Yes	Yes
SOA Web Services, i.e. SOAP and XML	Yes	Yes	Yes	Yes
z/VSE Script and DL/1	Yes	Yes	Yes	Yes
DB2 Stored Procedures for VSAM and DL/1	Yes	Yes	Yes	Yes
VTAPE interface to IBM Tivoli Storage Manager (TSM)	Yes	Yes	Yes	Yes
LDAP client (LDAP server on another platform required)	Yes	Yes	Yes	
SNMP agent	Yes	Yes		
Linux Fast Path from z/VSE to Linux TCP/IP in z/VM-mode LPAR	Yes	Yes		
z/VSE z/VM IP Assist (VIA)	Yes			
GDPS client	Yes			
Linux Fast Path via zEnterprise HiperSockets Completion Queues	SoD			
IBM Middleware (priced)				
CICS Transaction Gateway ECI	Yes	Yes	Yes	Yes
Host on Demand / Host Application Transformation	Yes	Yes	Yes	Yes
DB2 Connect / DB2 UDB (DB2 Server for z/VSE V7.5 Client)	Yes	Yes	Yes	Yes
WebSphere MQ (z/VSE Client no charge)	Yes	Yes	Yes	Yes

z/VSE Trends & Directions

Scenario 1: DB2 LUW for z/VSE Customers
Data consolidation & data warehouse solutions with DB2 UDB on System z

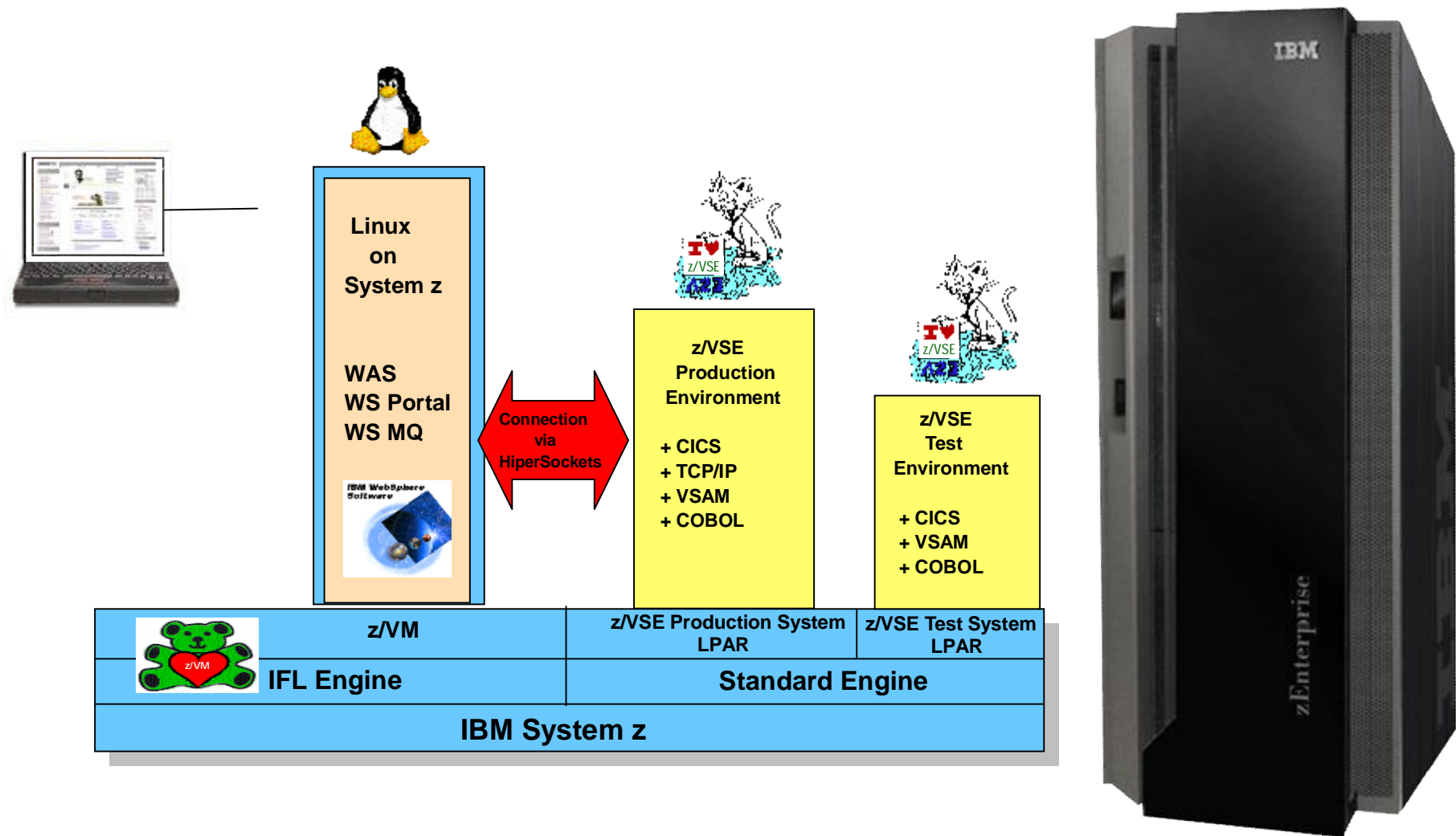**Linux on System z**

Cognos

DB2 UDB (64-bit)

DB2 UDB

VSAM

DB2 VSE/VM

Connection via HiperSockets

z/VSE Production Environment

+ CICS
+ TCP/IP
+ VSAM
+ COBOL
+ DB2 Client
+ VSAM Redir.

z/VSE Test Environment

+ CICS
+ VSAM
+ COBOL

LPAR or z/VM	z/VSE Production System LPAR or z/VM	z/VSE Test System LPAR or z/VM
IFL Engine	Standard Engine	

IBM System z

z/VSE Trends & Directions

Scenario 2: "Webification" for z/VSE Applications
Web enable existing applications with Inter/Intranet frontend

Linux on System z

WAS
HoD
HATS

IBM WebSphere Software

Connection via HiperSockets

z/VSE Production Environment

+ CICS
+ TCP/IP
+ VSAM
+ COBOL

z/VSE Test Environment

+ CICS
+ VSAM
+ COBOL

z/VM	z/VSE Production System LPAR	z/VSE Test System LPAR
IFL Engine	Standard Engine	

IBM System z

Scenario 3: WebSphere Portal for z/VSE Customers
A portal for administration & integration of employees/customers/providers

Linux
on
System z

WAS
WS Portal
WS MQ

IBM WebSphere Software

Connection
via
HiperSockets

z/VSE
Production
Environment

+ CICS
+ TCP/IP
+ VSAM
+ COBOL

z/VSE
Test
Environment

+ CICS
+ VSAM
+ COBOL

z/VM

z/VSE Production System LPAR

z/VSE Test System LPAR

IFL Engine

Standard Engine

IBM System z

z/VSE Trends & Directions

Scenario 4: Backup / Restore Concept for z/VSE
Integrate z/VSE with TSM on Linux on System z

z/VSE Trends & Directions
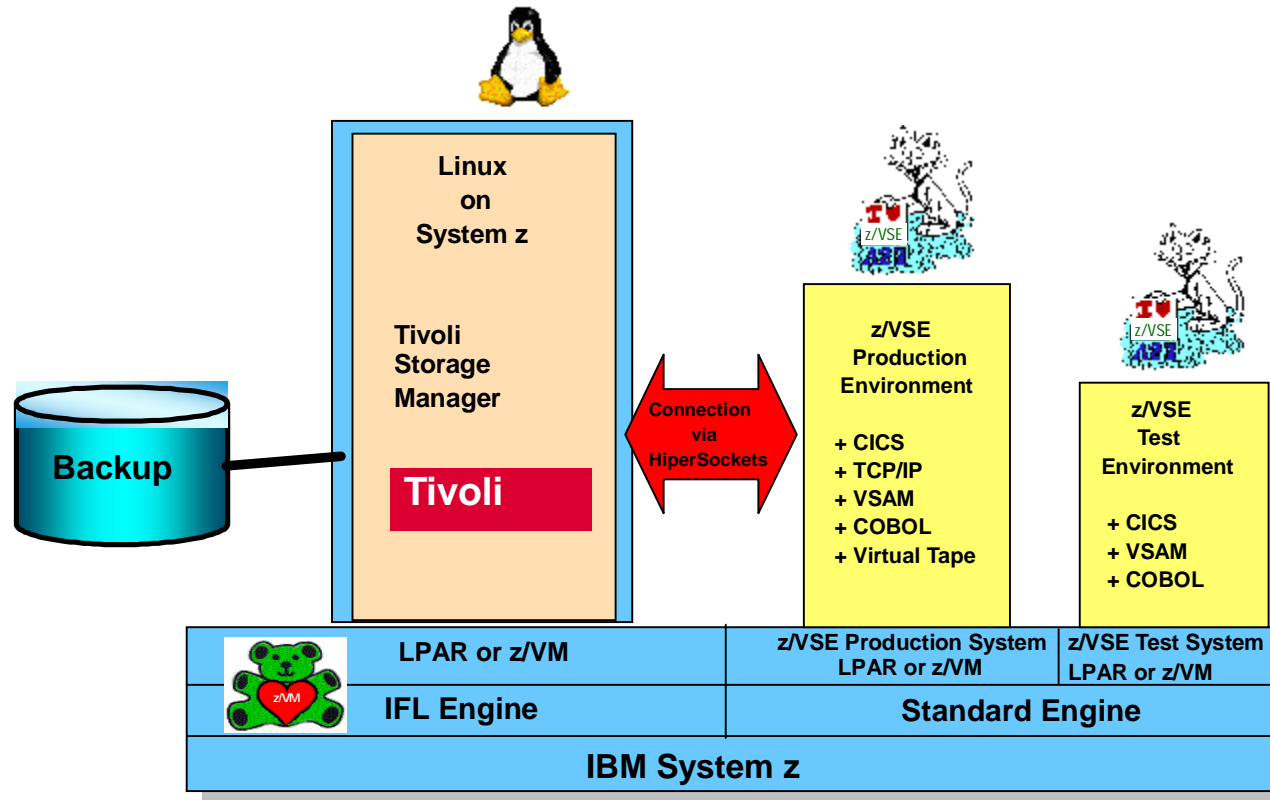
Scenario 5: Application Development
Modern Appl Dev with Eclipse and Rational Developer (RDz) for System z

z/VSE Trends & Directions
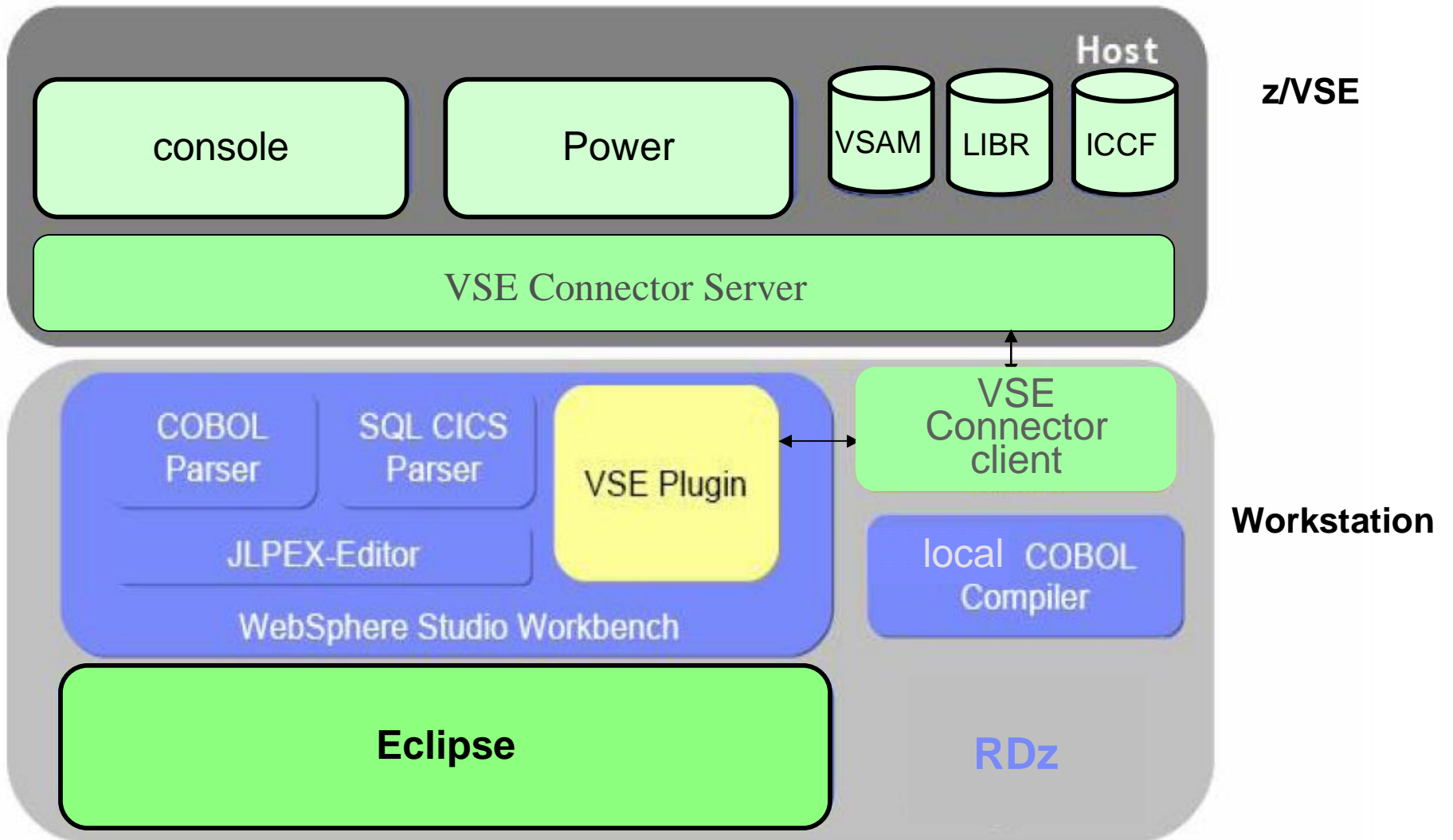
Combine the Scenarios, Manage Software Cost

Protect existing z/VSE investments

Integrate using middleware and z/VSE connectors

Extend with Linux on IBM System z technology & solutions

IFLs run at full speed

Linux on System z

Firewall, ISV Appl, Open Source Appl, etc.

WAS, Portal, HATS, HoD, RDz, Lotus Domino, etc.

DB2 UDB, TSM, TEC, WS MQ, Cognos, etc.

DB2 UDB

Connection via HiperSockets

Manage SW license charges

z/VSE Production Environment
+ CICS TS
+ VTAM
+ TCP/IP
+ VSAM
+ DB2
+ Applications

z/VSE Test Environment
+ CICS TS
+ VTAM
+ VSAM
+ COBOL

MIPS

MSU

z/VM

z/VSE Production System LPAR or z/VM

z/VSE Test System LPAR or z/VM

IFL Engine

Standard Engine

IBM System z

z/VSE Trends & Directions
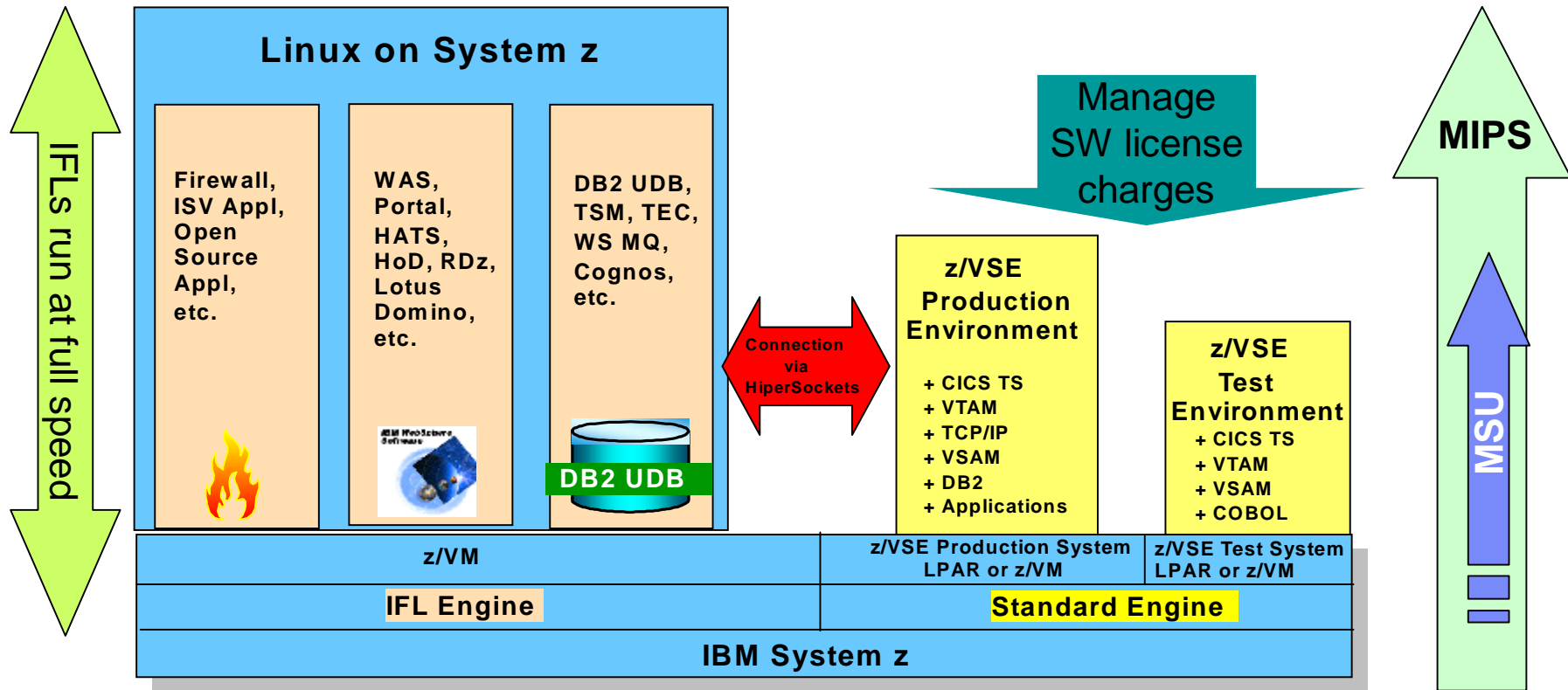
Additional Options with zEnterprise (Example: Oracle e-Business Suite)

Supported as native port

Applications not certified on LoZ can be run on AIX blades

System z Hardware Management Console z(HMC) with Unified Resource Manager

System z Host

Oracle DB and FMW

Oracle EBS Mid-Tier

Oracle DB and FMW

z/OS z/TPF z/VSE

Linux

Linux

Linux

z/VM

System z PR/SM

z HW Resources

Support Element

IBM Power7 Blades

Oracle Enterprise Manager

Oracle supported app

Oracle supported app

Oracle supported app

AIX

AIX

AIX

AIX

Power

Power

PowerVM

PowerVM

Blade HW Resources

zBX - **Optional Factory-Packaged Blades and Accelerators**

Private Data Network

Customer Network

Customer Network

Ensemble Management Firmware

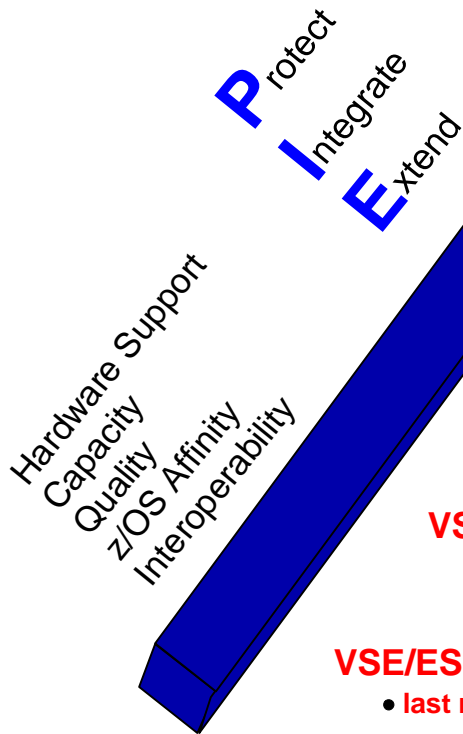Private Management Network
Private High Speed Data Network

Agenda

§ **z/VSE Status & Support**

§ **z/VSE Strategy**

§ **z/VSE Modernization Options**

➡ § **z/VSE Software Pricing**

§ **z/VSE Functional Enhancements**
  – **z/VSE V4.3**
  – **z/VSE V5.1**

§ **Wrap-up**

z/VSE Trends & Directions

MWLC – Midrange Workload License Charge on z9, z10, and z196

Price for typical z/VSE stack

MP2000, G4, G5, G6, z900, z990

MP3000, z800, z890

MWLC

z/VSE V4 stack only

z9, z10, z196

80

60

50

40

35

32

31

30

28

PG=25

z890-110

MSU

$

GMLC

GOLC
(MP3000)

zELC
(z800)

TWLC
(z890)
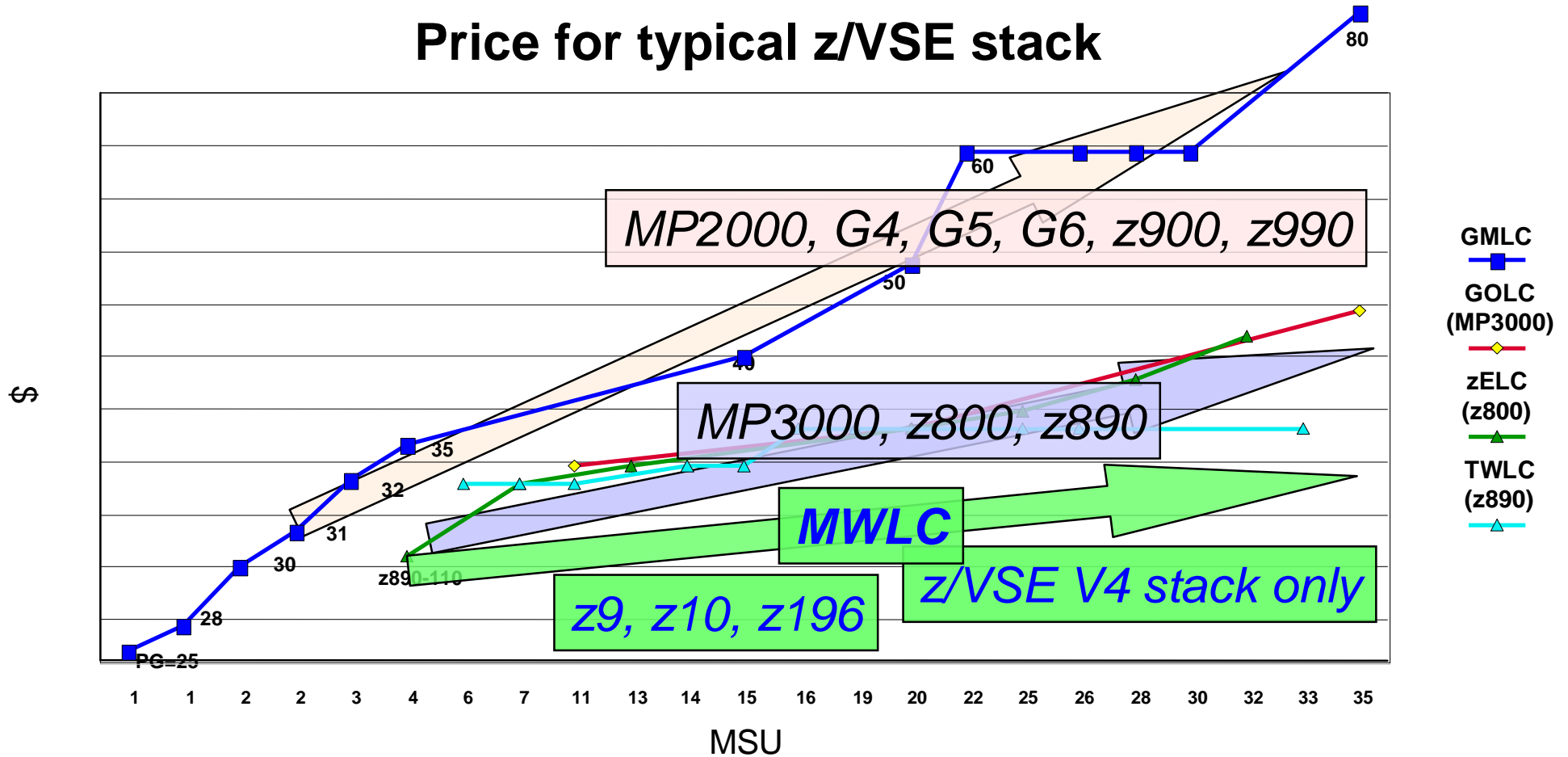
§ *"I just got our April software bill from IBM for the first month on our z9 under z/VSE 4.1 and MWLC. We were paying $22,965 per month on our z800 under z/VSE 3.1.2. The April bill is for the same software and it is $12,318: a difference of $10,647 per month."* **Mike Moore, IT Manager, Alabama Judicial Datacenter, Alabama**

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AEWLC – Advanced Entry Workload License Charge on z114

Price for typical z/VSE stack

Legend:
- **GMLC**
- **GOLC (MP3000)**
- **zELC (z800)**
- **TWLC (z890)**
- **MWLC (z9/10/196)**
- **AEWLC (z114)**

Chart labels:
- MP2000, G4, G5, G6, z900, z990
- MP3000, z800, z890
- z9, z10, z196
- z114
- z890-110
- PG=25
- Y-axis: $
- X-axis: MSU

z/VSE Trends & Directions
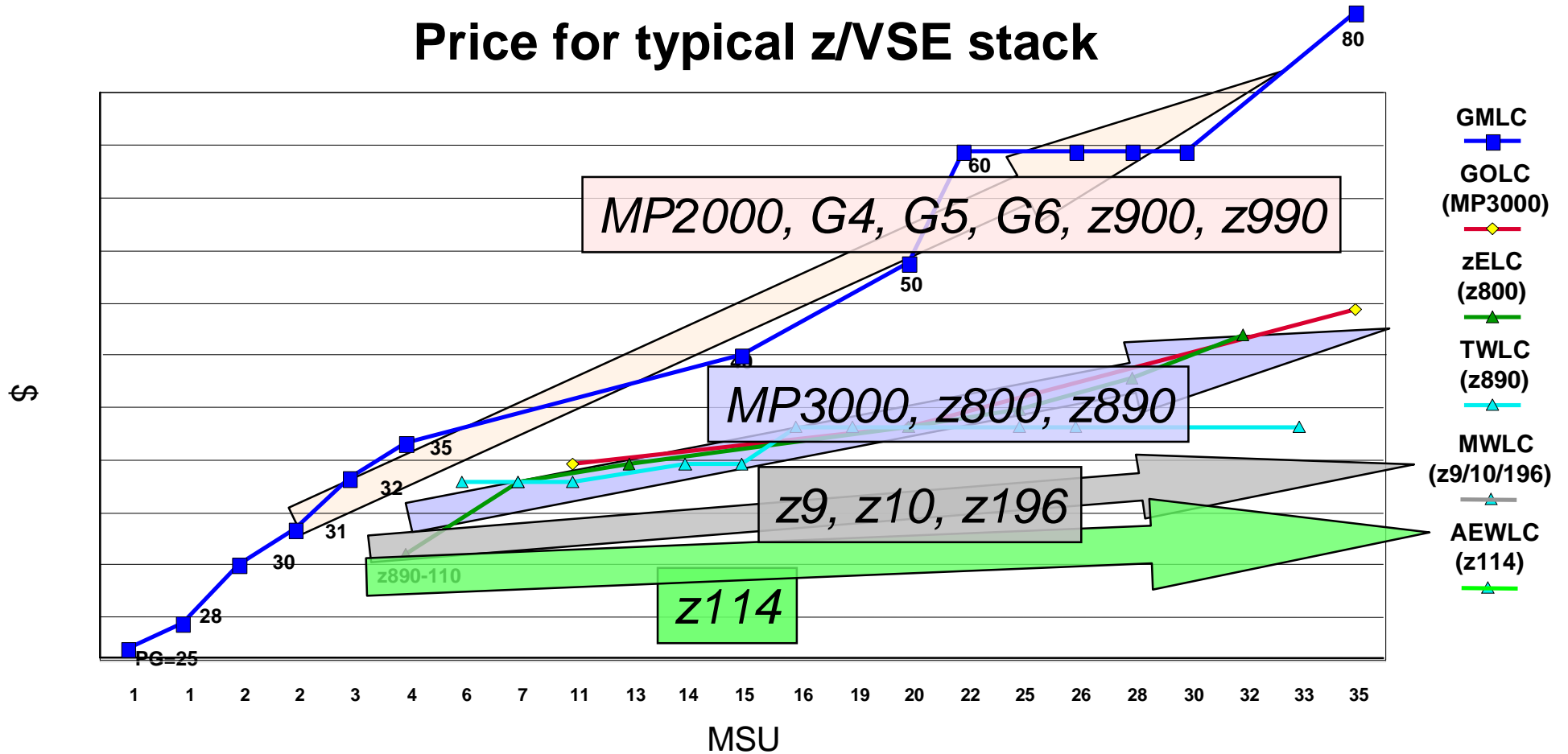
Improved TCO through new Pricing Metric and Sub-Capacity Pricing

§ **z/VSE price/performance through new pricing metric**
  – Advanced Entry Workload License Charge (**AEWLC**)
  – AEWLC requires z114 and current z/VSE software (z/VSE V4 or V5)
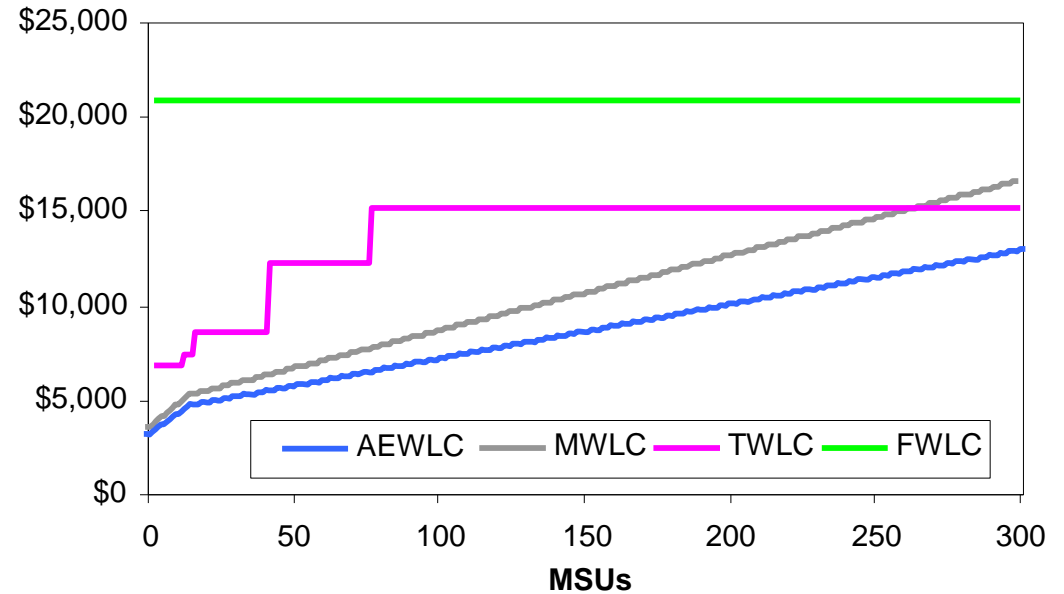
§ **Additional price/performance through sub-capacity option**
  – Some hardware footprint **consolidations** more attractive now
  – Presence of z/VSE V3 or VSE/ESA™ forces full-capacity pricing

System z @ 100 MSUs

50 MSUs	20 MSUs
DB2 CICS z/VSE	DFSORT COBOL z/VSE

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.
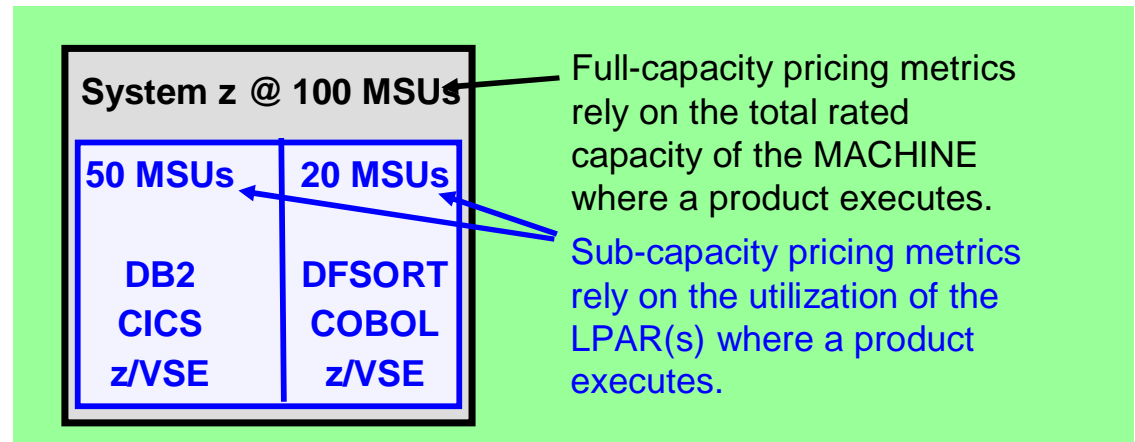
(*) z9 BC A01, z10 BC A01, and z114-A01 are priced zELC.

Agenda

§ **z/VSE Status & Support**

§ **z/VSE Strategy**

§ **z/VSE Modernization Options**

§ **z/VSE Software Pricing**

§ **z/VSE Functional Enhancements**
  – **z/VSE V4.3**
  – **z/VSE V5.1**

§ **Wrap-up**

IBM

z/VSE Evolution
z/VSE Success Factors

z/VSE V5.1 **Nov 25, 2011**
- **z196 / z114 / zBX exploitation**
- **ALS to System z9 (and higher)**
- **64-bit virtual addressing**

NEW

Future

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

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

Pricing

z/VSE V3.1 **March 4, 2005**
- **selected 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**

Strategy

Protect **I**ntegrate **E**xtend

Hardware Support
Capacity
Quality
z/OS Affinity
Interoperability

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

 *) 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 V4.3   -   General Availability since 11/26/2010
Previewed 10/20/2009, refreshed 07/22/2010, fully announced 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/VSE to Linux TCP/IP in a z/VM-mode LPAR

§ **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/VSE specific system and performance data

§ **DOS/VS RPG II support for CICS Transaction Server (CICS TS)**
  – Allows RPG programs implemented for CICS/VSE V2.3 to run with CICS TS V1.1

§ **IPv6/VSE as optional product (IPv6 solution)**
  – IBM IPv6/VSE – licensed from BSI – includes IP stack & applications for both, IPv6 and IPv4

Black = previewed

Blue = added w/ full announce

IBM IPv6/VSE® Version 1 Release 1

Allow z/VSE users to participate in an IPv6 network

§ **New product:**   5686-BS1

§ **Announcement:**   April 06, 2010

§ **General availability:**   May 28, 2010, further enhanced Nov 26, 2010

§ **Minimum requirement:**   z/VSE V4.2 (DY47077)

§ **Pricing:**   Enabled for sub-capacity pricing

§ **IPv6/VSE is designed to provide**

- TCP/IP stack

- IPv6-enabled and IPv4-enabled applications

- IPv6 and IPv4 APIs (IBM's EZA socket APIs)

IPv6/VSE

§ FTP, TelNet, NTP, email, LPR, GZIP, etc.

IPv4 stack   **IPv6 stack**
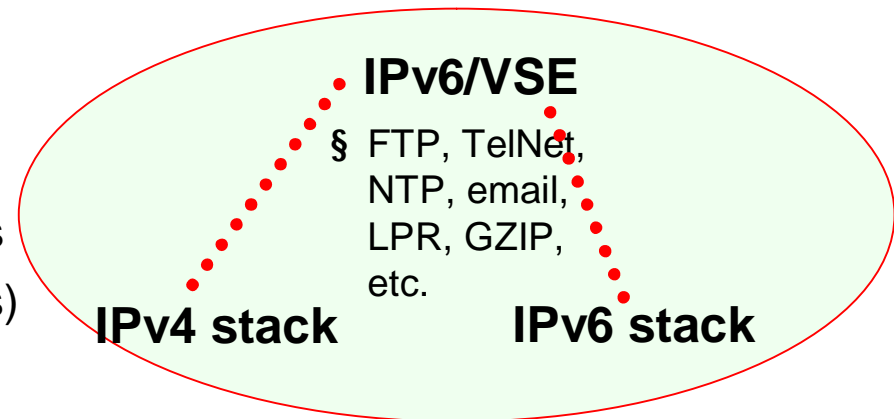
§ **IPv6/VSE supports both, the IPv6 and IPv4 protocol**

- Both TCP/IP stacks can be run concurrently within one z/VSE system

- Existing IPv4 applications continue to run unchanged

Note: IPv6/VSE is a registered trademark of Barnard Software, Inc.

XIV Support with Linux on System z, z/VM V5.4 and V6.1, and z/VSE V4.3

Native z/VM support for XIV (e.g., paging, spooling) is available now via service for z/VM V5.4 and V6.1 (APAR VM64708).

Added z/VM Support
Aug 25, 2010

April 30, 2009

IBM is announcing qualification and general availability of support for Linux on System z (SLES 10) with the IBM XIV Storage System.

§ IBM eServer™ zSeries® 890, 990 (z890, z990), all IBM System z9® and all IBM System z10™ servers

§ IBM XIV Storage System (2810-A14)

§ Environment:

– Native LPAR mode: Linux on System z SLES 10 SP2

– Guest OS mode: Linux on System z SLES 10 SP2 z/VM® is supported as a Hypervisor only. VM System volumes must reside on non XIV storage. z/VM release 5.4 and 5.3 are supported.

§ SLES 10 SP2, RHEL 5.2, RHEL 5.3, or RHEL 5.4 is required

Added z/VSE Support
Nov 26, 2010

Linux on IBM System z – IBM XIV Storage System Support Statement

IBM now supports Linux® on IBM System z® (SLES 10 SP2) with the IBM XIV® Storage System!

Linux on System z combines the advantages of the IBM mainframes with the flexibility and open standards of the Linux operating systems. Linux can help simplify business integration through the use of open industry standards, and it can also support deployment of new solutions more quickly.

Now the benefits of Linux on System z can be combined with the phenomenal capabilities of XIV – Storage Reinvented to support today's fast growing, dynamic environments. The IBM XIV Storage System is a revolutionary open disk system that represents the next generation of high-end disk storage, offering self-tuning and self-healing for consistently high performance and reliability as well as management simplicity and low total costs.

IBM is announcing qualification and general availability of support for Linux on System z (SLES 10) with the IBM XIV Storage System. This includes the integration into the IBM enterprise support mechanisms as well as all needed qualification items (hardware and software). Support qualification is as follows:

System z Host Type:	IBM eServer™ zSeries® 890, 990 (z890, z990), all IBM System z9® and all IBM System z10™ servers
Storage hardware:	IBM XIV Storage System (2810-A14)
Environment:	1. Native LPAR mode: Linux on System z SLES 10 SP2 2. Guest OS mode: Linux on System z SLES 10 SP2 z/VM® is supported as a Hypervisor only. VM System volumes must reside on non XIV storage. z/VM release 5.4 and 5.3 are supported.
Linux code level:	SLES 10 2.6.16.60-0.34-default (or higher) is required
XIV code release:	IBM XIV Storage System Software release 10.0.1.b (or higher) is required
Known restrictions:	255 WWPNs in a zone with an XIV FC port 128 WWPNs per single Host connected to an XIV FC port
Date:	April 30, 2009
URL:	http://www-03.ibm.com/systems/support/storage/config/ssic/displayess searchwithoutjs.wss?start_over=yes Under Product Family, you would select IBM System Storage Enterprise Disk Under Product Model, you would select IBM XIV Storage System You would then see IBM System z and S/390 listed under Host Platform select that and you see SUSE SLES 10 under OS

IBM, IBM logo, IBM eServer, System z, System z9, System z10, XIV, zSeries and z/VM are trademarks of IBM Corporation in the United States, other countries or both.
Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

IBM Linux on System z / XIV – Support Statement

z/VSE Trends & Directions

Linux Fast Path in a z/VM-mode LPAR - Supported by z/VSE 4.3 + 5.1

Faster communication between z/VSE and Linux applications

Application

TCP/IP Stack

z/VSE Supervisor

z/VM

Application

TCP/IP Stack

Kernel

z/VM

HiperSockets

Application

z/VSE Supervisor

IUCV

Application

LFP Daemon

TCP/IP Stack

Kernel

z/VM

System z10, z196, z114

network

Without LFP

network

With LFP

network

z/VSE Trends & Directions
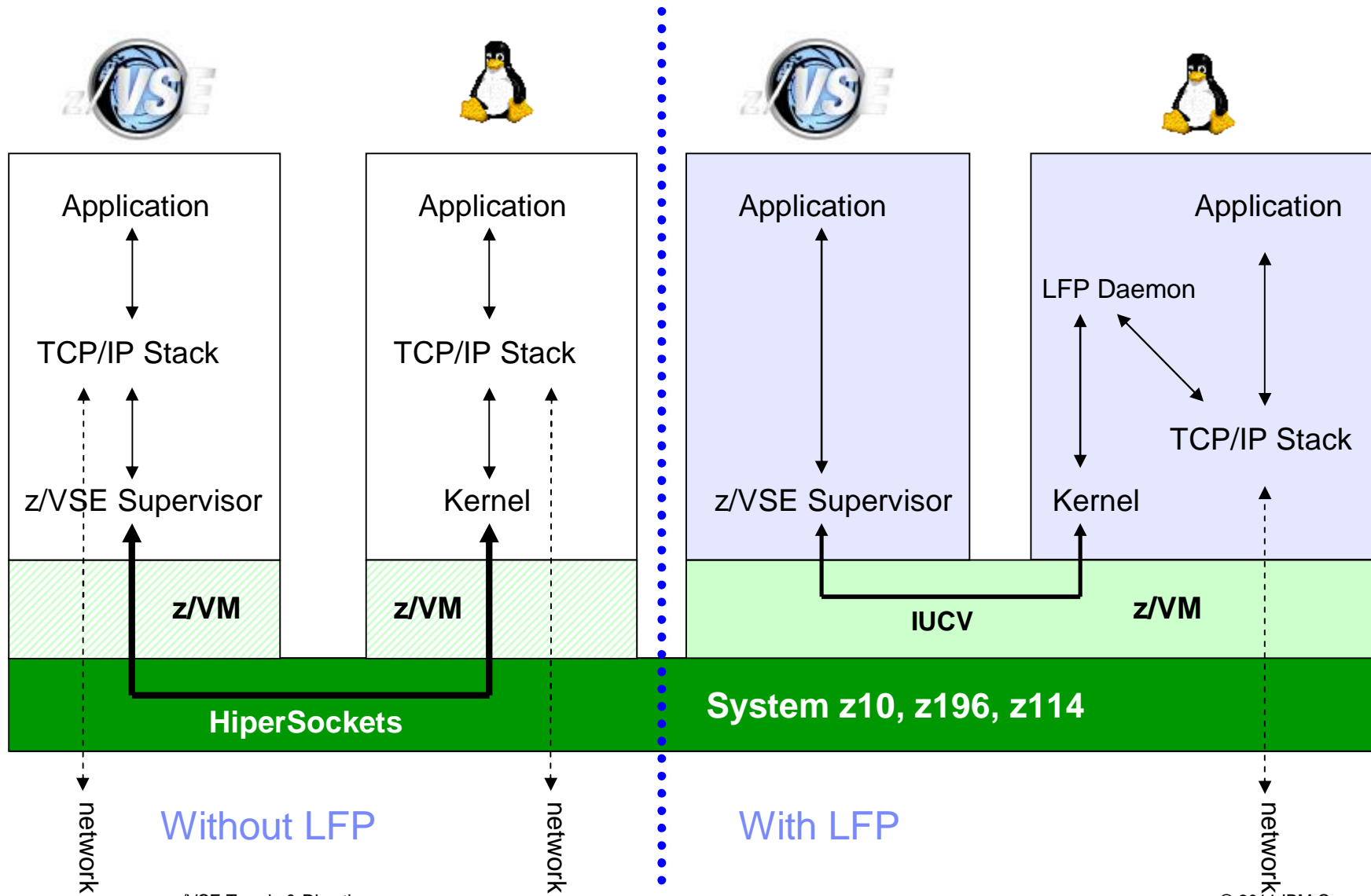
z/VSE V5.1 - General Availability planned for 11/25/2011
Previewed 04/12/2011, full announcement planned for 10/12/2011

§ **64-bit virtual addressing for growing / future workloads**
- Keep 'more data in memory' to benefit from increased processor storage
- Built upon 64-bit real addressing, compatible API with z/OS

> Black = previewed
>
> Blue = added w/ full announce

§ **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 z196/z114

§ **IBM zEnterprise exploitation**
- Support Static Power Save Mode for MWLC clients with subcapacity option on z196
- 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)
- z/VSE z/VM IP Assist (VIA)

§ **Exploitation of IBM System Storage options**
- Copy Export function of TS7700 Virtualization Engine for disaster recovery
- IBM Storwize V7000 Midrange Disk System

§ **Networking enhancements**
- IPv6 support added to Linux Fast Path connector
- GDPS client for high availability in z/VSE

§ **Statement of Direction**
- CICS Explorer capabilities for CICS TS for VSE/ESA to deliver additional value
- Allow the Linux Fast Path function to be used in an LPAR environment

z/VSE Trends & Directions   © 2011 IBM Corporation

z/VSE z/VM IP Assist (VIA) - Supported by z/VSE V5 + z/VM V6

With z/VM IP Assist (VIA), no Linux on System z is needed to utilize the LFP advantage

Application

TCP/IP Stack

z/VSE Supervisor

z/VM

Application

TCP/IP Stack

Kernel

z/VM

HiperSockets

network

Application

z/VSE Supervisor

IUCV

VIA

z/VM

z196, z114

network

NEW

Without LFP

With LFP + VIA

network

z/VSE Trends & Directions   © 2011 IBM Corporation
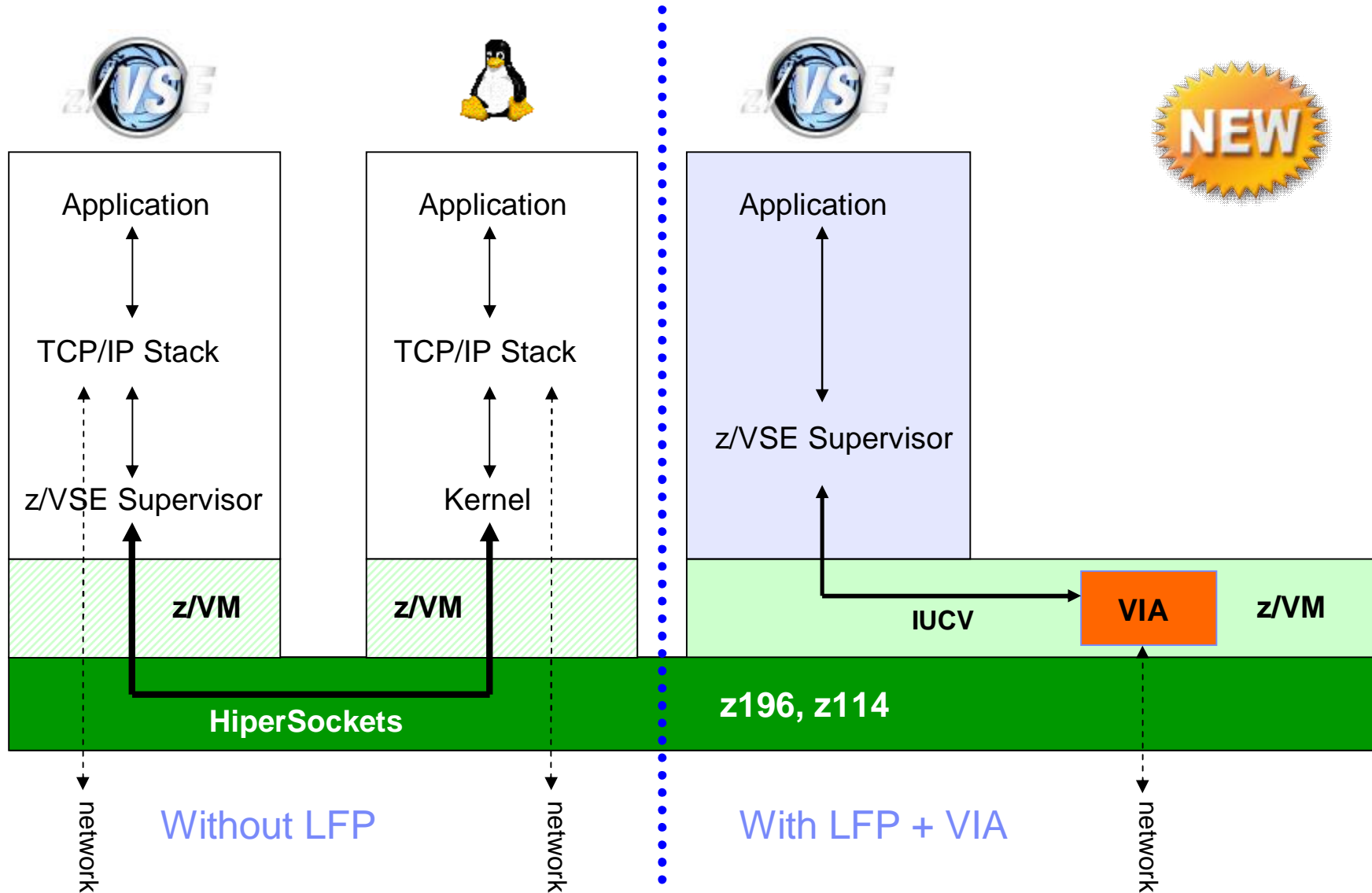
New SoD: Linux Fast Path in an LPAR

Statement of Direction:

Linux Fast Path in LPAR environment:
IBM intends to provide the Linux Fast Path function for LPAR environments Exploiting the zEnterprise HiperSockets Completion Queue.
For more information see the statement of direction
In Hardware Announcement 111-136,
(RFA54680) dated July 12, 2011.

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

Application

z/VSE Supervisor

Application

LFP Daemon

TCP/IP Stack

Kernel

HiperSockets CQ

z196, z114

network
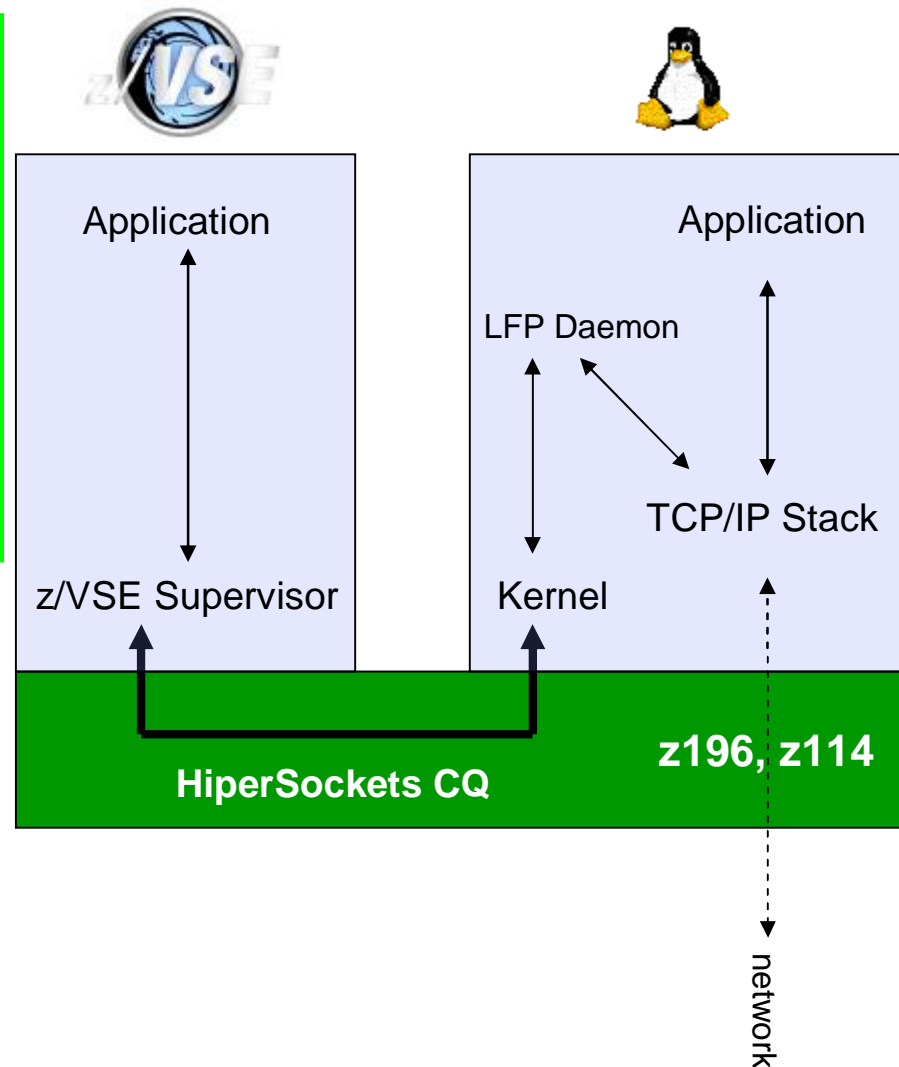
xDR Support for z/VSE as active guest under z/VM

z/VSE Trends & Directions
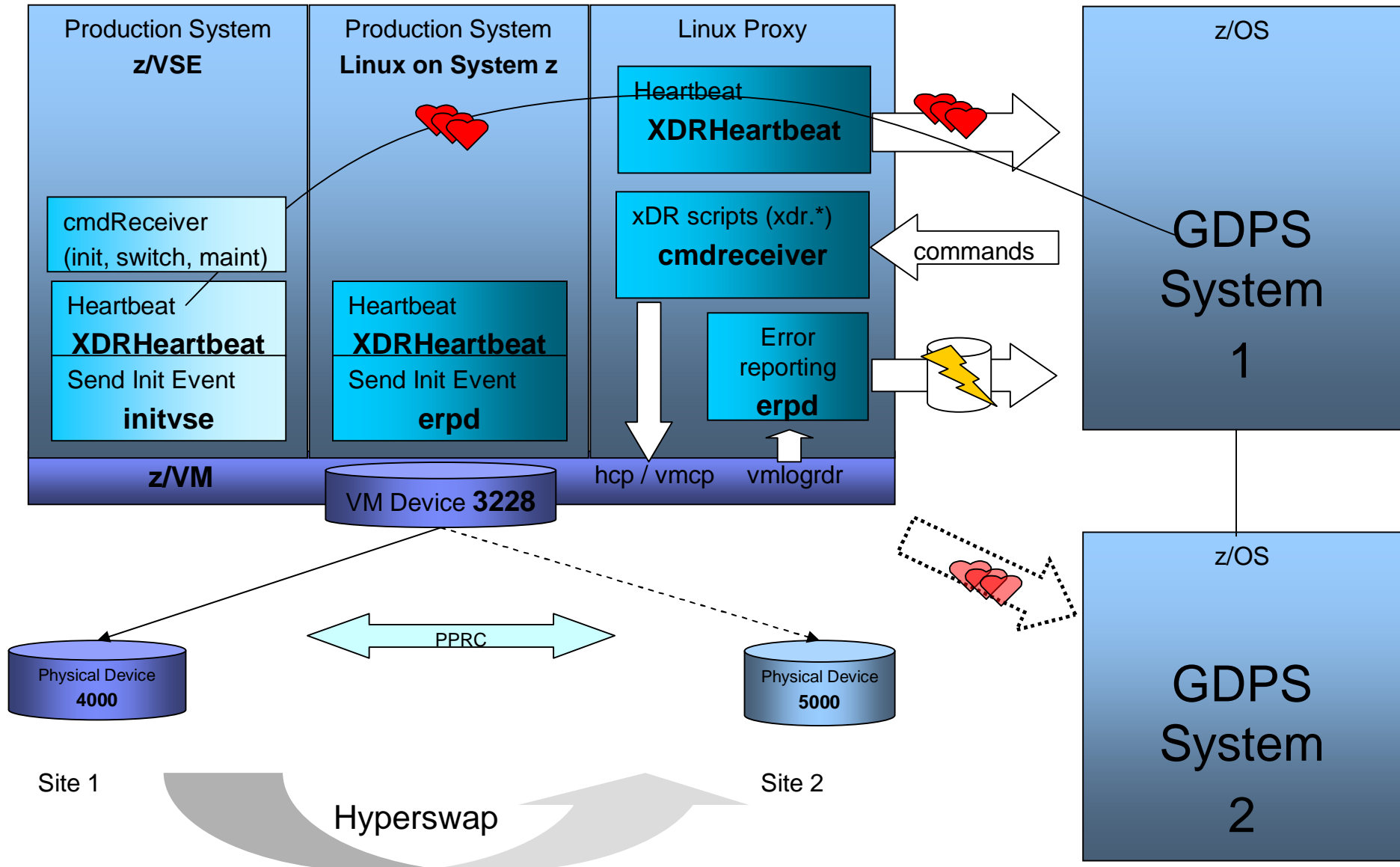
Reemphasized SoD: CICS Explorer Functionality for CICS TS for VSE/ESA

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

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

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- § **z/VSE Status & Support**

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  - – **z/VSE V4.3**
  - – **z/VSE V5.1**

- § **Wrap-up**

z/VSE Trends & Directions

IBM zEnterprise can do IT all - Think inside the box and/or think zBX !

Rational

Lotus.

Tivoli

WebSphere

COGNOS

Protect existing VSE investments

Integrate using middleware and VSE connectors

Extend with another platform to access new applications & solutions

Infrastructure Simplification	IBM Middleware	Info on Demand
Linux on Sytem z	Linux on System z	Linux on System z
Tivoli Identity Mgmt, TSM, Print Serving, DNS, Firewall, etc.	WebSphere Appl Server, Java, CTG, HOD/HATS, WS MQ, etc.	DB2 9, Information Server, Cognos 8 BI
		DB2 LUW

z/VSE V4/V5 Production Environment
+ TCP/IP
+ VTAM
+ CICS TS
+ VSAM
+ COBOL
+ DB2 client
+ LDAP client

Connection via HiperSockets

z/VSE V4/V5 Test/Dev Environment

z/VM-mode LPAR with z/VM V6

IFL Engine(s)	CP Engine(s)

IBM System z10, z196, or z114

IBM zEnterprise

IBM zBX

z/VSE V5

AIX   Linux   Windows

Connectors

CICS Transaction Gateway ECI
DB2 Connect
WebSphere MQ Series
VSE e-business connectors
VSE Web Services

Tran/Data Services

Business Services

Clients

Private data network (IEDN)

z/VSE Trends & Directions

Tom Rosamilia
IBM STG - GM, Power & z Systems

z/VSE Trends & Directions

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."

z/VSE Trends & Directions

For more information, please see the z/VSE web site:
http://www-03.ibm.com/servers/eserver/zseries/zvse/

Thank You

z/VSE Trends & Directions