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z/VSE Update and Outlook

WAVV 2010



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Agenda

- z/VSE evolution
- z/VSE support status
- z/VSE V4.3 Preview
- IPv6
- z/VSE strategy

45 years Anniversary

z/VSE Evolution

z/VSE V4.3 GA 4Q2010

IPv6/VSE Ann. 4/06/2010; GA 5/28/2010

Protect
Integrate
Extend

Capacity
Quality
z/OS Affinity
Interoperability

z/VSE V4.3 Preview Oct 20, 2009
- Virtual storage (24-bit) constraint relief
- 4-digit device addresses
- Security/crypto/networking enhancements

z/VSE V4.2 Oct 17, 2008
- **More tasks, PAV, LDAP Client, SVC**
- **SoD** for CICS/VSE, EGL, WMQ**

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

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

z/VSE V3.1 End of Service
July 31, 2009

Changes in 2009 and 2010

- *02/26/2008 - IBM System z10 Enterprise Class*
- 09/12/2008 - z/VM V5.4 available
- 10/17/2008 - z/VSE V4.2 available
- *10/21/2008 - IBM System z10 Business Class*
- 04/28/2009 - z/VSE V4.2.1 announced
- 05/28/2009 – Support for PAV available
- 07/07/2009 - Preview: IBM z/VM V6.1
- **07/17/2009 - z/VSE V4.2.1 available**
- 07/17/2009 – Encryption Facility for z/VSE V1.2 available
- 07/31/2009 - End-of-Service for z/VSE V3.1
- **10/20/2009 - z/VSE V4.3 Preview announcement**
- 10/20/2009 - z/VM V6.1 announced
- 10/23/2009 - z/VM V6.1 available
- 10/20/2009 - 2nd edition of Redbook ‘Security on IBM z/VSE‘ (SG24-7691)
- 02/02/2010 - z/VSE V4.1 end-of-service extended from 04/30/2010 to 04/30/2011
- 02/03/2010 - New Redbook: ‘z/VSE Using DB2 on Linux for System z‘ (SG24-7690)
- **04/06/2010 – IPv6/VSE announced**

z/VSE Support Status

VSE Version and Release	*Marketed*	*Supported*	*End of Support*
z/VSE V4.2[2]	**Yes**	**Yes**	**tbd**
z/VSE V4.1[2]	No	**Yes**	**04/30/2011**
z/VSE V3.1[1]	No	No	07/31/2009
VSE/ESA V2.7	No	No	02/28/2007

[1]) z/VSE v3. 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

z/VSE V4.3 preview (announced October 2009)

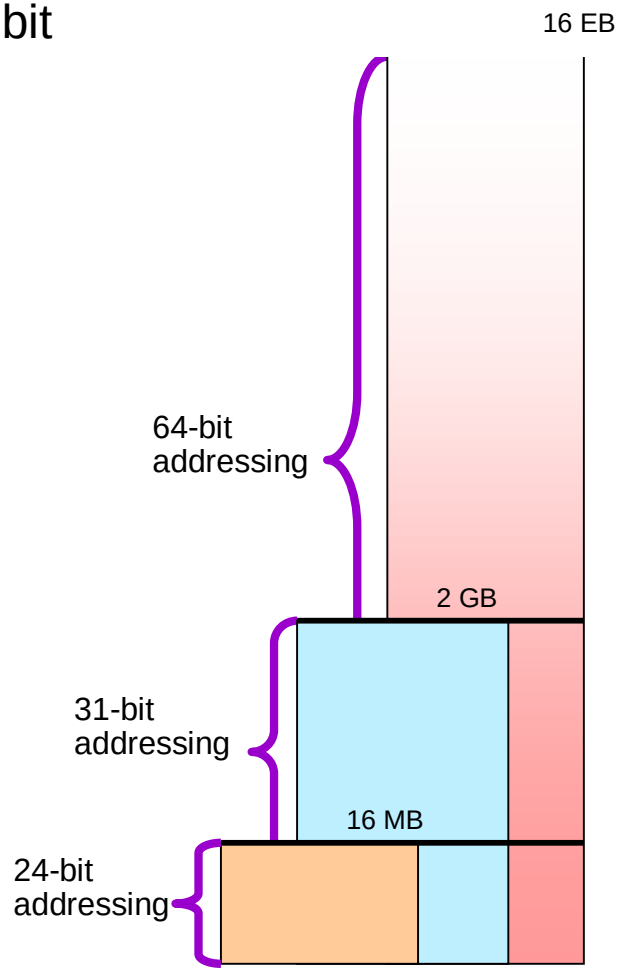
- Virtual storage constraint relief:
  - Move selected system programs and buffers from 24-bit into 31-bit storage
- Ease of use through four-digit device addresses
- IBM System z10 technology exploitation:
  - Dynamic add of logical CPs
  - Large page (1 megabyte page) support for data spaces
  - FICON Express8 support
- Enhanced storage options:
  - Parallel Access Volume (PAV) feature of IBM Systems Storage DS8000 and DS6000
  - DS8000 Remote Mirror and Copy (RMC) feature support through ICKDSF
  - IBM System Storage TS7700 Virtualization Engine Release 1.5
- Network, security and auditability enhancements
- DOS/VS RPG II support for CICS Transaction Server for VSE/ESA (CICS TS)
  - Allows RPG programs implemented for CICS/VSE V2.3 to run with CICS TS
- IPv6 SOD

Virtual storage constraint relief

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

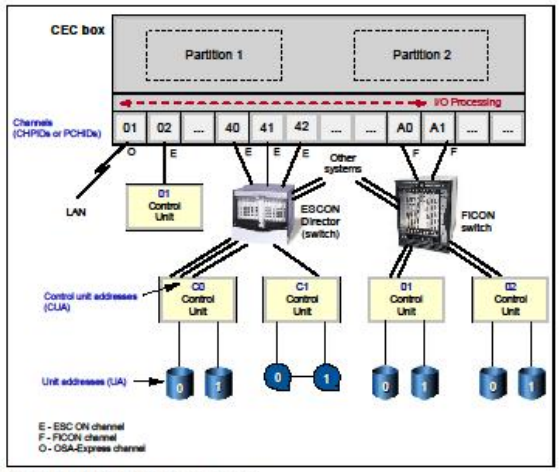
- Fulfills several customer requirements
- Will satisfy increasing 24-bit storage needs of customers -
  - with growing workloads (e.g. CICS)
  - who want to consolidate their z/VSE systems
- Addresses (among others):
  - VSE/VSAM
  - DL/I
  - z/VSE supervisor

Note: 64-bit virtual addressing is not supported



Four digit device addresses

- Ease-of use configuration and infrastructure simplification
  - Specifically helpful in mixed IT environments where z/VSE runs together with other System z operating systems (z/VM, Linux on System z, z/OS)
  - More flexibility
  - Removes the requirement for a z/VSE specific I/O configuration
- Transparent for system, vendor, and user applications that rely on 3-digit device numbers
  - z/VSE V4.3 will map a 4-digit number to a 3-digit one
  - After initial program load (IPL) only the 3-digit device address will be used



X'0000' to X'FFFF'

2 8 F

Mapped to 3-digit address in z/VSE

IBM System z10 technology exploitation

- Dynamic add of logical CPs*
  - Ability to dynamically add logical CPs without preplanning
  - Allows adding central processors (CPs) to LPAR without re-IPL of the z/VSE system
  - Clients can increase (and decrease) the capacity of the z/VSE V4.3 system dependent on workload needs

- Large page (1 megabyte page) support for data spaces*
  - Better exploitation of large processor storage
  - Transparent to applications

- FICON Express8 support
  - Faster access to data with a link rate of 8 gigabits per second (Gbps)
  - Two modes of operation: CHPID TYPE FC (FICON or CTC) and FCP (for SCSI disks)
  - Ability to auto-negotiate to 2 or 4 Gbps

*) Not available in a z/VM guest environment

z/VSE Support for IBM Mainframe Servers

IBM Servers	z/VSE V4.3 Plan	z/VSE V4.2	z/VSE V4.1
IBM System z10 Business Class (z10 BC)	**Yes**	**Yes**	Yes
IBM System z10 Enterprise Class (z10 EC)	**Yes**	**Yes**	Yes
IBM System z9 EC & z9 BC	**Yes**	**Yes**	Yes
IBM eServer zSeries 990 & 890	Yes	Yes	Yes
IBM eServer zSeries 900 & 800	Yes	Yes	Yes

IBM System z10 Exploitation

Functions	**z/VSE V4.3 Plan**	**z/VSE V4.2**	z/VSE V4.1
z/Architecture mode (with 64-bit *real* addressing)	Yes	Yes	Yes
64-bit *virtual* addressing	No	No	No
ESA/390 processor support	No	No	No
Processor storage (i.e. real memory) … *up to*	32 GB	32 GB	8 GB
Large page (1 megabyte page) support for data spaces	New	No	No
Dynamic add of logical CPs	New	No	No
CP Assist for Cryptographic Function (i.e. DES, TDES, etc.) § CPACF z9 extensions (i.e. AES 128-bit, etc.) § CPACF z10 extensions (i.e. AES 256-bit, etc.)	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
up to 60 LPARs and 4 LCSSs	Yes	Yes	Yes
HiperSockets™ (including spanned HiperSockets)	Yes	Yes	Yes

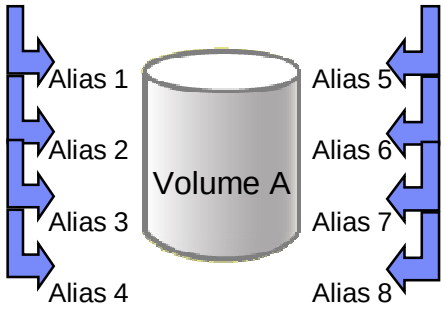
IBM System z10 Exploitation

Functions	**z/VSE V4.3 Plan**	**z/VSE V4.2**	z/VSE V4.1
FICON Express8, Express4, FICON Express2 ('FICON' & 'FCP')	Yes	Yes	Yes
Fibre Channel Protocol (FCP) for SCSI Disks	Yes	Yes	Yes
OSA-Express3, OSA-Express2, OSA-Express features	Yes	Yes	Yes
§ z10 OSA-Express3 - 4-port exploitation	Yes	Yes	Yes
OSA Integrated Console Controller (OSA-ICC)	Yes	Yes	Yes
Crypto Express3 – 2P & 1P	Yes	Yes	No
Crypto Express2 – 2P & 1P	Yes	Yes	Yes
§ SSL clear key encryption assist	Yes	Yes	Yes
§ Configurable Crypto Express3	Yes	Yes	No
§ Configurable Crypto Express2	Yes	Yes	Yes
§ 2048-bit RSA keys	Yes	Yes	Yes
§ z10 Dynamic Add/Remove Cryptographic Processors	Yes	Yes	No

Note: selected FICON or OSA Express cards may not be supported on System z10 processors

Enhanced storage options

- Parallel Access Volume (PAV) feature of IBM Systems Storage DS8000 and DS6000[1]
  - Allows a z/VSE V4.3 host to access a single ECKD disk volume with multiple concurrent requests
  - Improved performance/throughput for certain workloads



- DS8000 Remote Mirror and Copy (RMC) feature support[2]
  - Supported in z/VSE through the ICKDSF component

- IBM System Storage TS7700 Virtualization Engine Release 1.5[2]
  - Including TS7720 disk-only virtual tape system

[1] Available with z/VSE V4.2 with PTFs
[2] Available with z/VSE V4.1 and later with PTFs

Network, security and auditability enhancements

- Network enhancements
  - z/VM Queue I/O (QIO) performance assist for real networking devices for z/VSE running in a z/VM guest environment
  - For OSA Express adapters and HiperSockets

- Security enhancements
  - Protecting MQ resources in WebSphere MQ for z/VSE V3 by Basic Security Manager (BSM)

- Systems management enhancements
  - Monitoring agent allowing SNMP version 1 clients to retrieve z/VSE specific system and performance data
  - Helps performance monitors in collecting data

DOS/VS RPG II support for CICS TS

RPG II compiler support for CICS Transaction Server for VSE/ESA (CICS TS)

- Will allow RPG programs implemented for CICS/VSE to run with CICS TS
- Support will also be made available with z/VSE V4.2


This support will ease the migration from CICS/VSE V2.3 to CICS TS on z/VSE V4.2

- z/VSE V4.3 will no longer offer CICS/VSE V2.3 as part of z/VSE V4.3 base (SOD published in October 2007
- Customers can migrate their online RPG programs to CICS TS on z/VSE V4.2

z/VSE V4.3 shows commitment and dedication to clients' needs

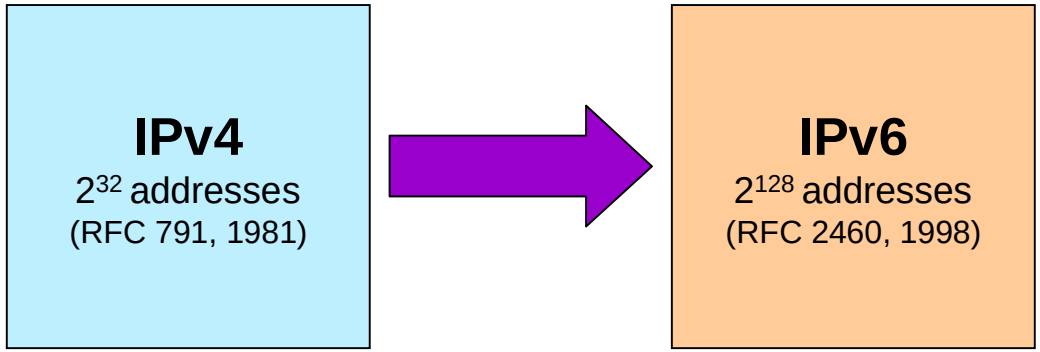
z/VSE V4.3 is designed to:

- Help clients protect their existing investment in applications and data
- Address requirements for growing z/VSE workloads
- Allow consolidation of z/VSE systems
- Exploit the value of the latest IBM System z10 and IBM System Storage technology
- Provide ease of use for configuration of mixed IT environments

z/VSE V4.3 continues to deliver functions and benefits based on the z/VSE strategy

Internet Protocol Version 6 (IPv6)

- IPv6 is the “next generation” protocol designed by the Internet Engineering Task Force (IETF) to replace the current version Internet protocol, IP Version 4 (IPv4).
- IPv6 removes the IP addressing limitation of IPv4
- IPv6 is expected to gradually replace IPv4, both coexisting for a number of years
- Availability of IPv6 support addresses long term requirements of the commercial community and government agencies
  - *IPv6 is a strategic direction and a requirement of US Government projects*
  - *US DoD, GSA, and NASA require IPv6 compliant products in all new IT acquisitions*
  - *European Commission (EU) will specify IPv6 capabilities as a core requirement*



IPv6/VSE® Version 1 Release 1

Allow z/VSE users to participate in an IPv6 network

- Announcement: April 06, 2010
- Planned availability: May 28, 2010

- IPv6/VSE is designed to provide
  - TCP/IP stack
  - IPv6 APIs
  - IPv6 enabled applications
- IPv6/VSE only supports the IPv6 protocol
  - TCP/IP for VSE/ESA V1.5 only supports the IPv4 protocol
  - Both stacks can be run concurrently within one z/VSE system
  - Existing IPv4 applications continue to run unchanged
- IPv6/VSE dual stack support allows applications to access the IPv4 and IPv6 networks simultaneously in either batch or CICS environment

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

IPv6/VSE Functionality

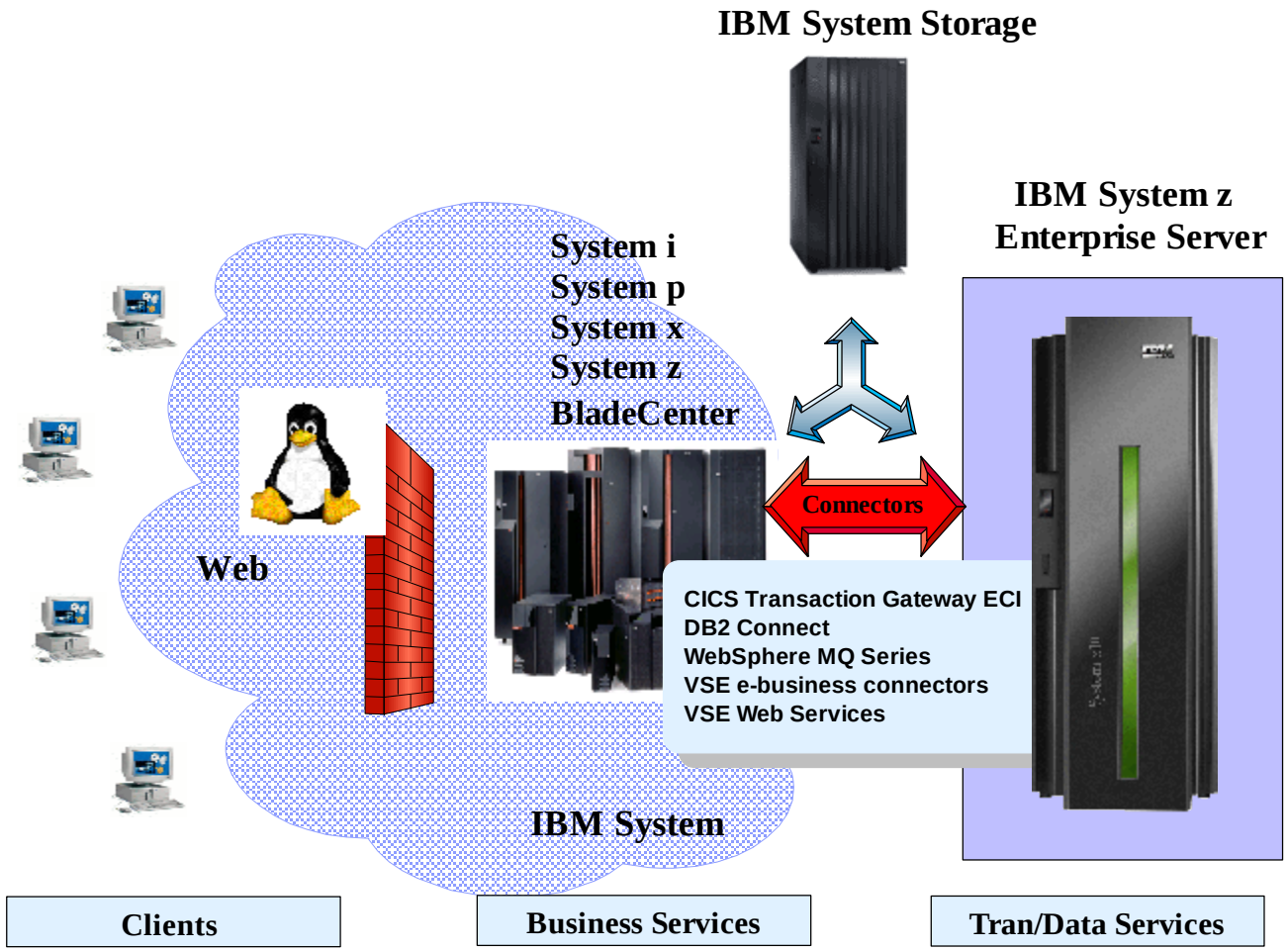
- **IPv6 TCP/IP stack**
  - Runs in a separate partition using its own stack ID
- **Dual stack support**
  - Connect to both, IPv4 and IPv6 stacks simultaniously in batch or CICS
  - Single CICS or batch applications can use both networks simultaniously
- **IPv6-enabled utility applications**
  - Running external to the IPv6/VSE stack partition for greater stability & performance
    - FTP server (POWER queues, VSAM catalogs, SAM file, z/VSE libraries, etc.)
    - Batch FTP client (access to remote host FTP servers)
    - TN3270E server (TN3270/TN3270E terminal and TN3270E printer sessions)
    - NTP server (Network Time Protocol server)
    - NTP client (sync TOD clock with external server)
    - System logger client (log selected console messages to a Linux syslog-ng daemon)
    - Batch email client (send email to a SMTP server)
    - Batch LPR (Line Printer Requestor)
    - Batch remote execution client (job in z/VSE can trigger a script to run on a remote host)
    - Batch PING (ping a remote host)
    - GZIP data compression (simple GZIP data compression)
    - REXX automation (uses z/VSE REXX EXECs for automation)

z/VSE Strategy

alias

- 3-tier Strategy
- Hybrid Strategy
- Connector Strategy
- Migration Strategy
- Coexistence Strategy
- Linux Surround Strategy

- **PIE Strategy**

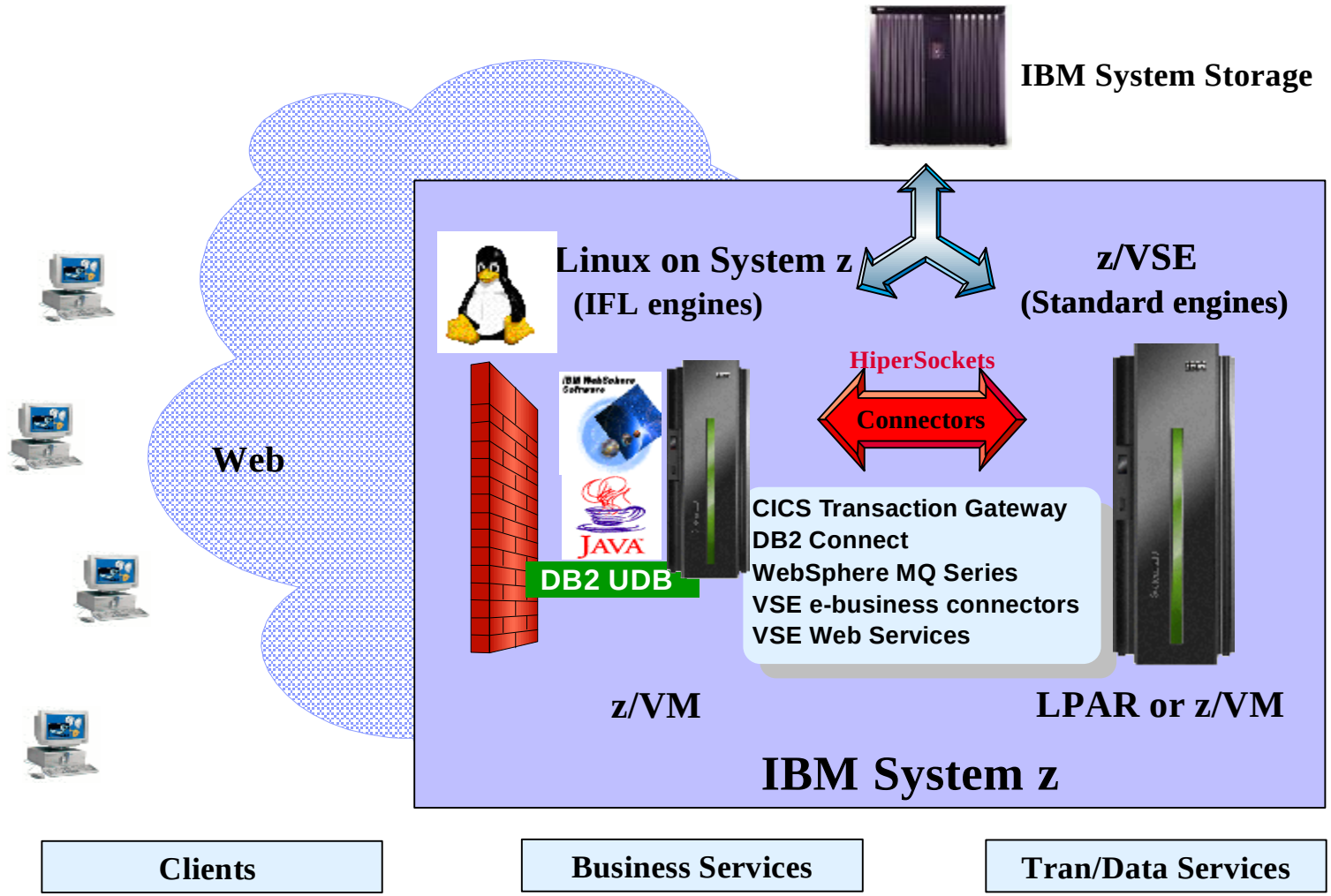


Protect existing z/VSE investments

Integrate using middleware and z/VSE connectors

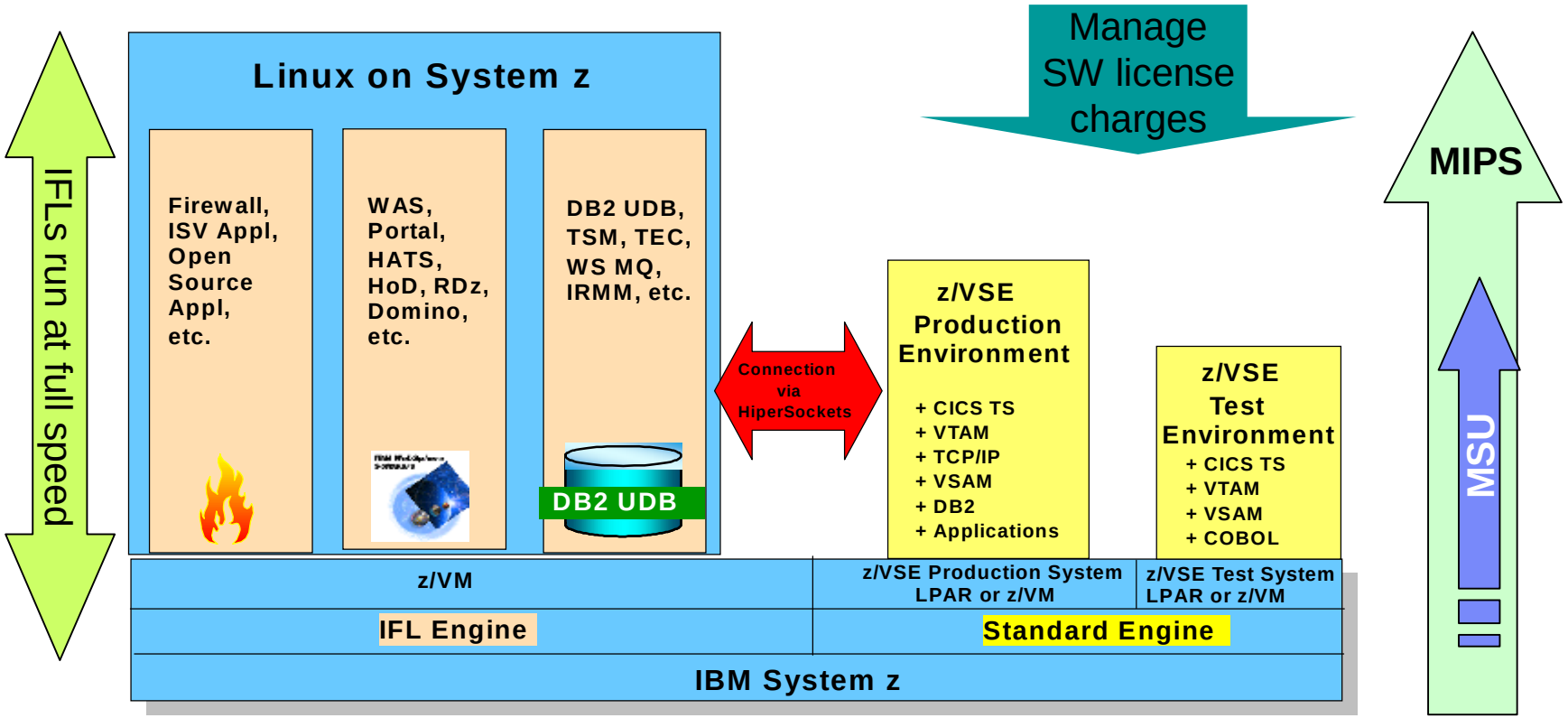
Extend with Linux on IBM System z technology & solutions

z/VSE PIE Strategy with Linux on System z

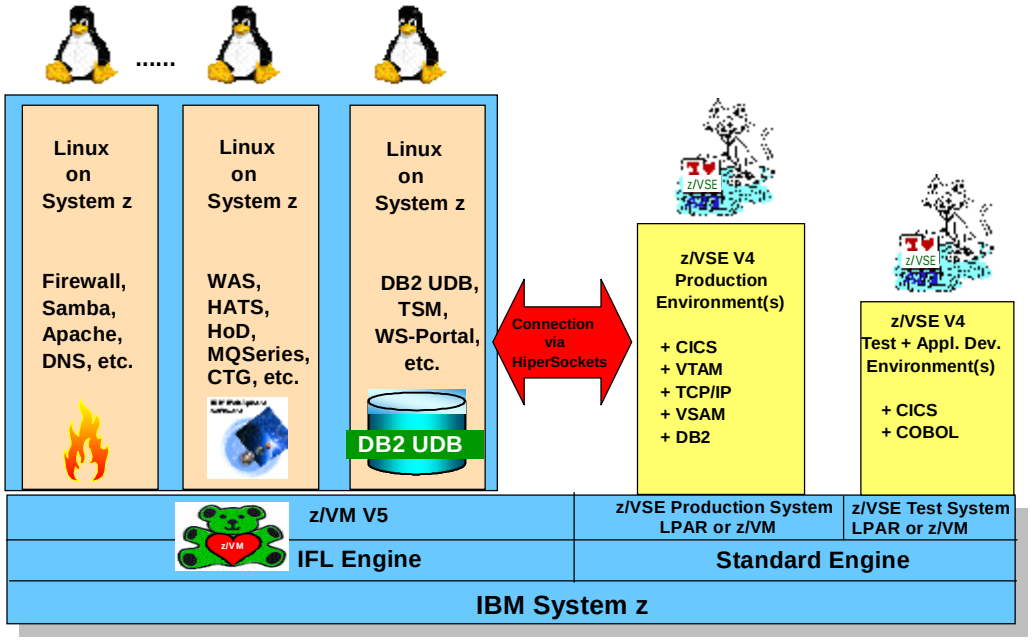


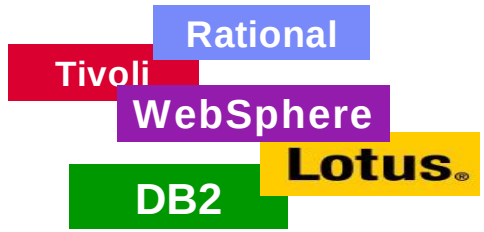
MWLC allows to “manage” MSU consumption and software cost “Pay for what you use”

- Midrange Workload License Charge for z/VSE V4 and System z10 and z9
- Sub-capacity pricing option (for z/VSE environment)



z/VSE - Delivering on our Strategy





45 years

§ Protect

- Virtual storage constraint relief
- System z10 technology exploitation
- Enhanced storage options

§ Integrate

- 4-digit device addresses
- IPv6
- Network & systems management enhancements

§ Exte

- IPv

VSE capacity planning analysis

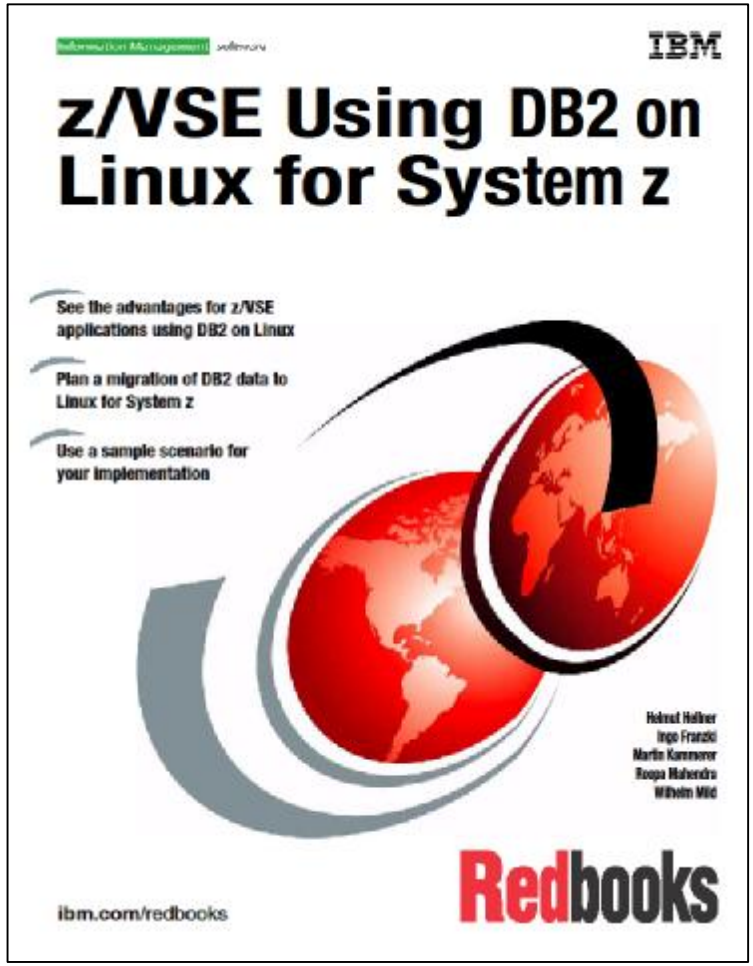
- **IBM Techline offers z/VSE capacity planning analysis**
  - quick health check of z/VSE set up
  - position accounts to migrate onto newer hardware platforms
  - free of charge

- Contact your Business Partner or IBM Sales Rep

New Red Book on z/VSE using DB2 on Linux

Contents:

- Chapter 1. Overview of a future oriented DB2 environment
- Chapter 2. Planning DB2
- Chapter 3. Environment setup and customization
- Chapter 4. DB2 data migration and application dependencies
- Chapter 5. Monitoring and tuning
- Appendix A. Configuration members
- Appendix B. Database manipulation



http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg247690.html?Open

For more Information go to ...

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Questions?