z/VSE Trends & Directions

April 2014

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No other workload processing is authorized for execution on an SE.

IBM offers SEs at a lower price than General Processors/Central Processors because customers are authorized to use SEs only to process certain types and/or amounts of workloads as specified by IBM in the AUT.

Agenda

- **z/VSE Status & Support**
- **z/VSE Strategy**
- **z/VSE Modernization Options**
- **z/VSE Reference Customers & Learning**
- **z/VSE Functional Enhancements**
  - **z/VSE V5.1, 5.1.1, 5.1.2**
  - **z/VSE V5.2**
- **Wrap-up**

z/VSE continues to deliver customer value

Protect
Integrate
Extend

Hardware Support
Capacity
Quality
z/OS Affinity
Interoperability

z/VSE V5.2 **April 25, 2014** NEW
- zEnterprise exploitation, DVD base install
- Networking & security enhancements
- SoD for CICS TS enhancements, z/VSE Vnext

z/VSE V5.1.2 **Jun 14, 2013**
- 64-bit I/O, security & DBCLI enhancements
- SoD for IPv6/VSE pricing, DVD base install

z/VSE V5.1.1 **Jun 15, 2012**
- CICS Explorer Monitoring
- LFP in LPAR, DBCLI connector

z/VSE V5.1 **Nov 25, 2011**
- z196 / z114 exploitation
- ALS to System z9 (and higher)
- 64-bit virtual addressing, LFP w/ z/VM
- SoD for CICS Explorer, LFP in LPAR

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

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

[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 April 2014)

VSE Version and Release	Marketed	Supported	End of Support
z/VSE V5.2 requires z9 or newer system	a	a	**tbd**
z/VSE V5.1 requires z9 or newer system	a	a	**tbd**
z/VSE V4.3 requires z900 or newer system	r	a	**10/31/2014**
z/VSE V4.2 incl CICS/VSE V2.3, DL/I V1.11	r	r	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

Service Extension Contracts available on request

[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

z/VSE support for IBM mainframe servers (as of April 2014)

IBM Servers	z/VSE V5.2	z/VSE V5.1	z/VSE V4.3	z/VSE V4.2 (out of service)
IBM zEnterprise EC12 & BC12	a	a	a	a
IBM zEnterprise 196 & 114	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	r	a	a
IBM eServer zSeries 900 & 800	r	r	a	a

Notes:

- z/VSE V4.3 End of Service 10/31/2014
- z/VSE V5.2 will be the last release that supports IBM System z9. Future releases of z/VSE will support IBM System z10 and higher.

z/VSE support of IBM zEnterprise EC12 and BC12

§ z/VSE Release Support

- z/VSE supports the zEC12 and zBC12 with z/VSE V4.3, z/VSE V5.1 and V5.2
  - No PTFs are required
  - For IOCP, EREP and HLASM PTFs, see PSP (subset 2827/ZVSE of 2827DEVICE, or subset 2828/ZVSE of 2828DEVICE, respectively)

§ OSA-Express5s 1000BASE-T – new with zBC12

- No z/VSE PTF required
  - 1000BASE-T supported with existing z/VSE functionality
  - Allow to configure OSA-Express5S with OSA/SF in HMC

§ Configurable Crypto Express4s – new with zEC12

- z/VSE toleration PTF required to use Crypto Express4s
  - Toleration PTF (DY47414) provided for z/VSE V5 only
- Crypto Express4s supported with existing z/VSE cryptographic functionality
  - Supported modes: (CCA) coprocessor and accelerator
  - PKCS #11 (EP11) coprocessor not supported

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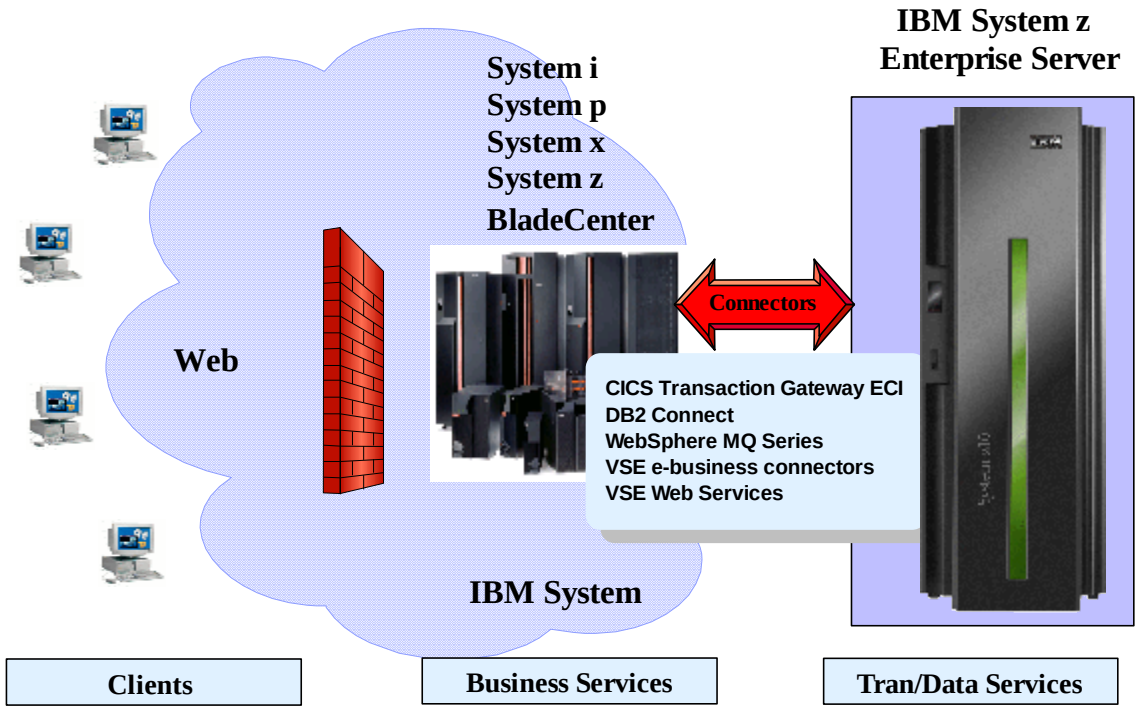
z/VSE strategy - invented in Y2000, still valid today and in the future

alias

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



Protect existing z/VSE investments

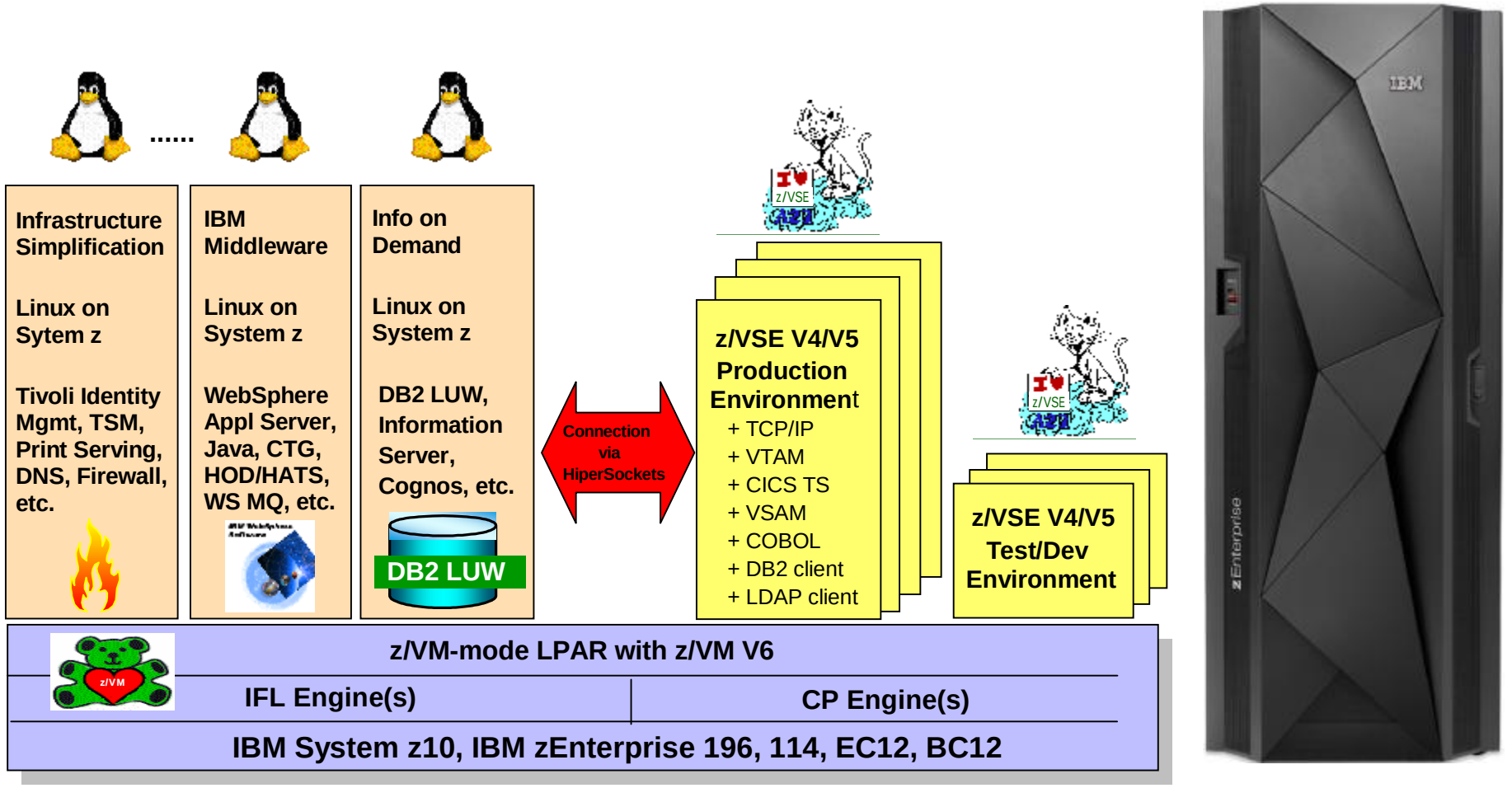
Integrate using middleware and z/VSE connectors

Extend with another platform to access new applications & solutions

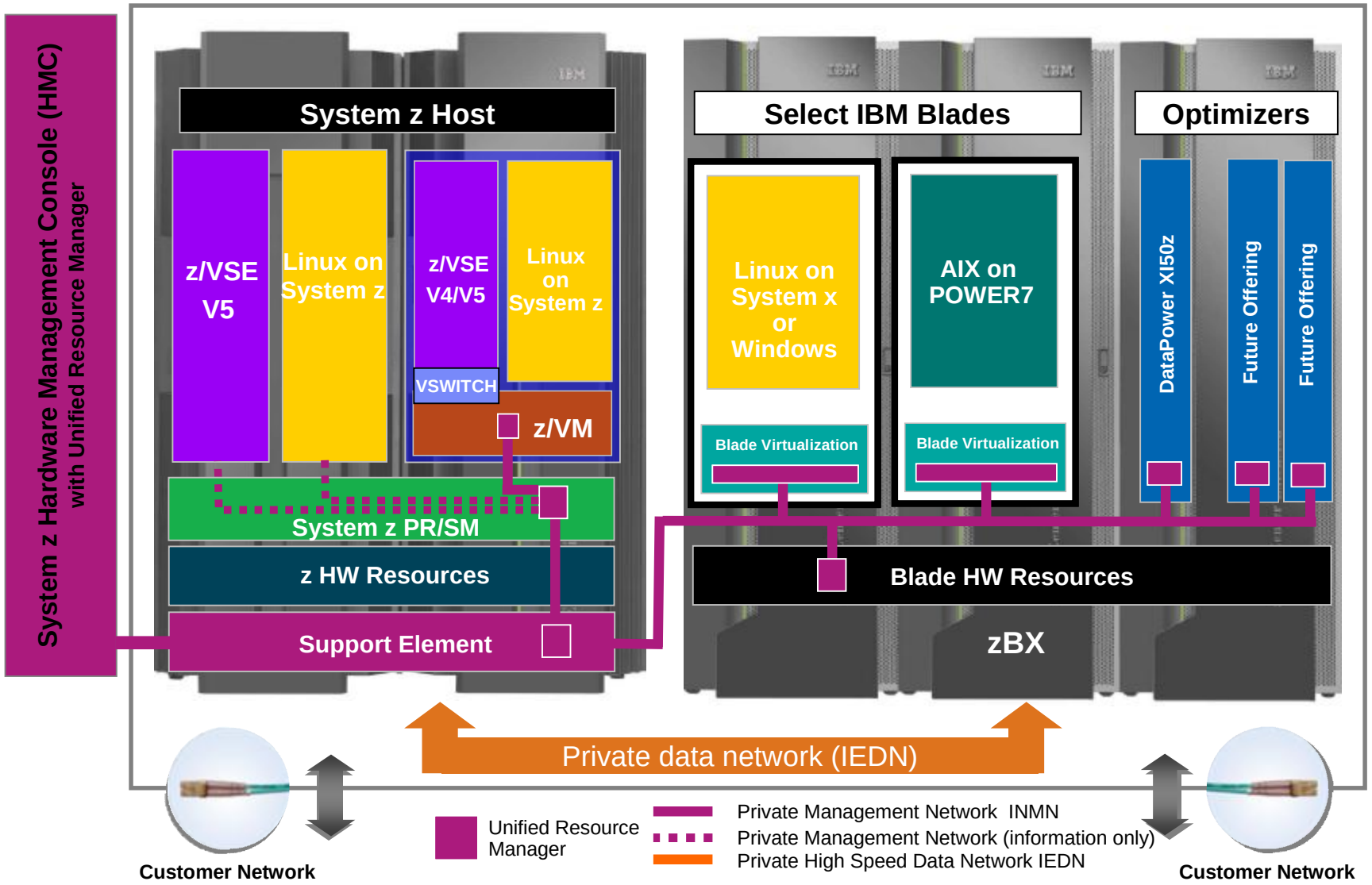
z/VSE strategy with Linux on z

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

Protect existing z/VSE investments
Integrate using middleware and z/VSE connectors
Extend with Linux on IBM System z technology & solutions



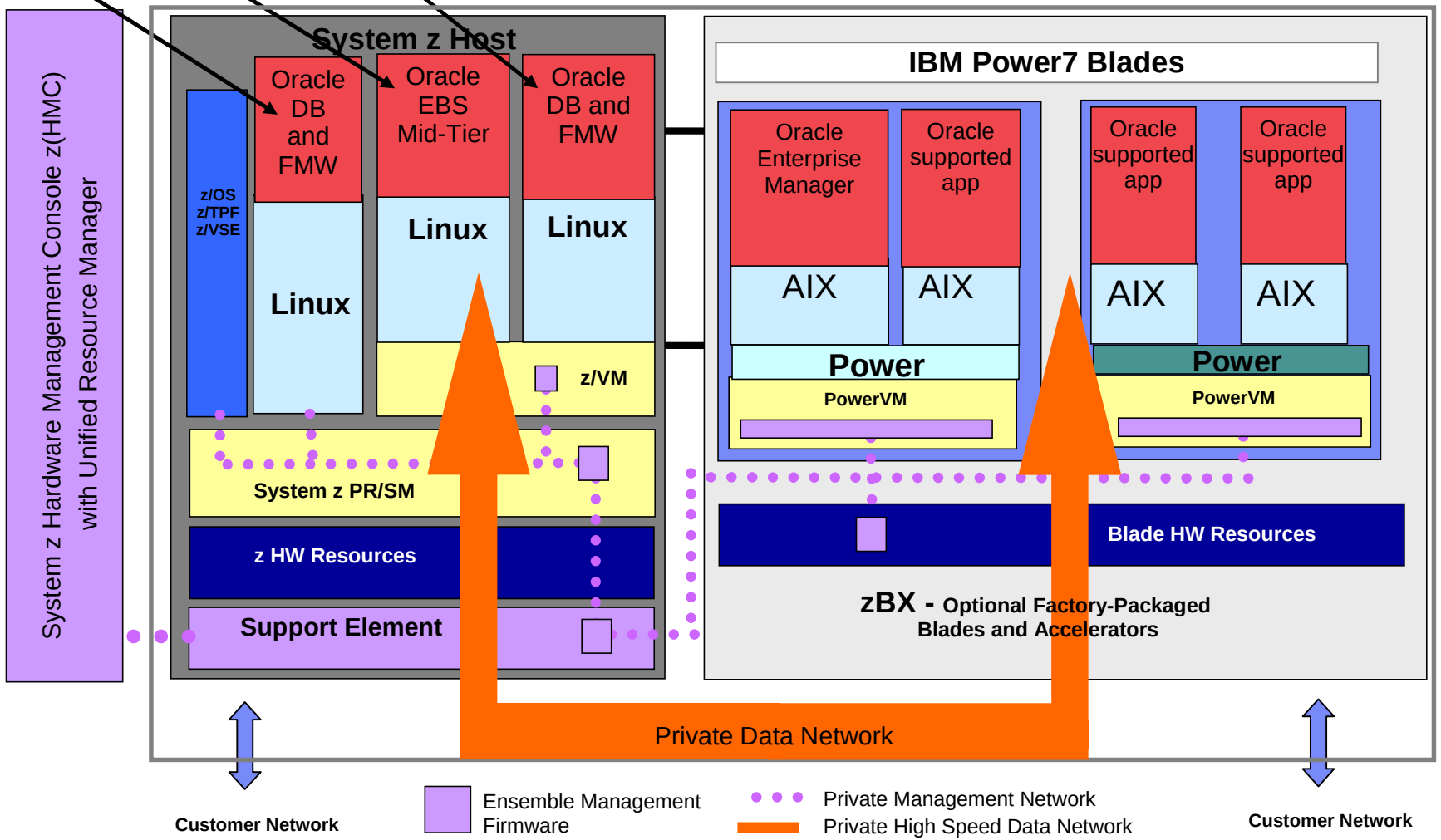
z/VSE exploitation of IBM zEnterprise - IEDN to zBX



Additional options with zEnterprise (Example: Oracle e-Business Suite)

Supported as native port

Applications not certified on LoZ can be run on AIX blades



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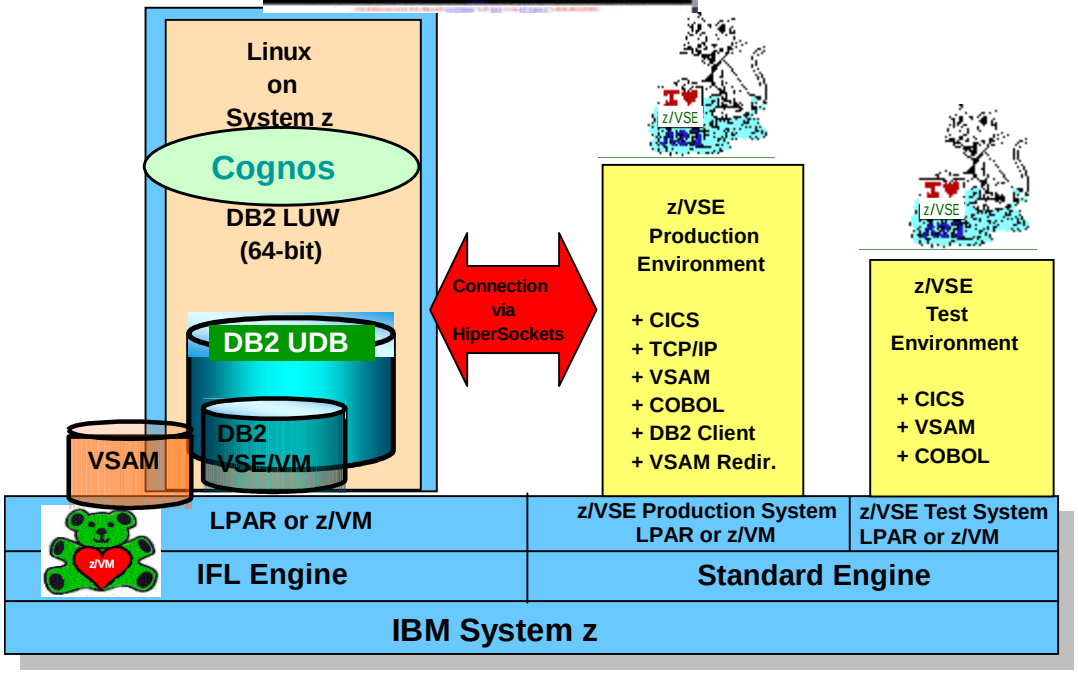
z/VSE SOA and Interoperability

Connector Functions	z/VSE V5.2	z/VSE V5.1	z/VSE V4.3	z/VSE V4.2 Out of service	z/VSE V4.1 Out of service
z/VSE Connectors (no additional charge)					
VSAM, POWER, Librarian, ICCF lib, console	Yes	Yes	Yes	Yes	Yes
VSAM Redirector	Yes	Yes	Yes	Yes	Yes
SOA Web Services, i.e. SOAP and XML	Yes	Yes	Yes	Yes	Yes
z/VSE Script and DL/1	Yes	Yes	Yes	Yes	Yes
DB2 Stored Procedures for VSAM and DL/1	Yes	Yes	Yes	Yes	Yes
VTAPE interface to IBM Tivoli Storage Manager (TSM)	Yes	Yes	Yes	Yes	Yes
LDAP client (LDAP server on another platform required)	Yes	Yes	Yes	Yes	
SNMP agent	Yes	Yes	Yes		
LFP from z/VSE to Linux TCP/IP in z/VM-mode LPAR	Yes	Yes	Yes		
z/VSE z/VM IP Assist (VIA)	Yes	Yes			
GDPS client	Yes	Yes			
LFP via zEnterprise HiperSockets Completion Queues	Yes	Yes			
z/VSE Database Call Level Interface (DBCLI) connector	Yes	Yes			
IPv6 support for z/VSE connectors	Yes				
IBM Middleware (priced)					
CICS Transaction Gateway ECI	Yes	Yes	Yes	Yes	Yes
Host on Demand / Host Application Transformation	Yes	Yes	Yes	Yes	Yes
DB2 Connect / DB2 UDB (DB2 Server for z/VSE V7.5 Client)	Yes	Yes	Yes	Yes	Yes
WebSphere MQ (z/VSE Client no charge)	Yes	Yes	Yes	Yes	Yes

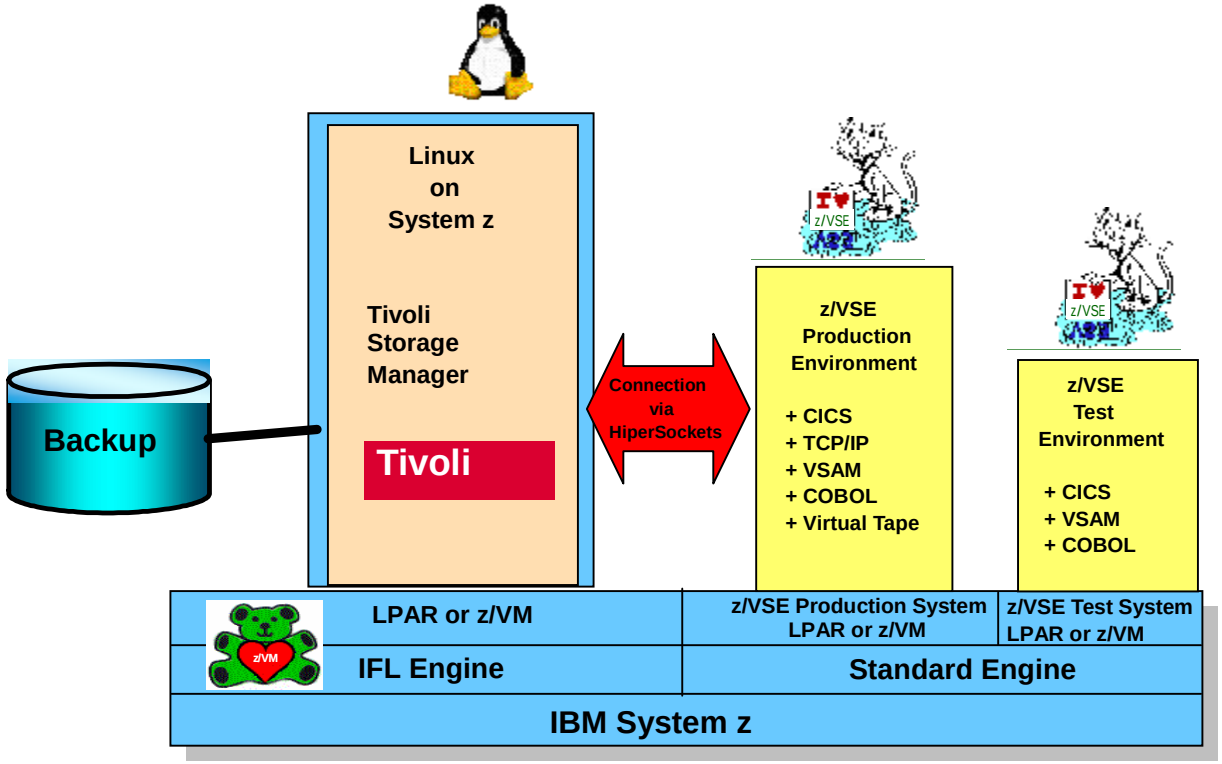
The No1 scenario, worldwide: DB2 LUW for z/VSE customers

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



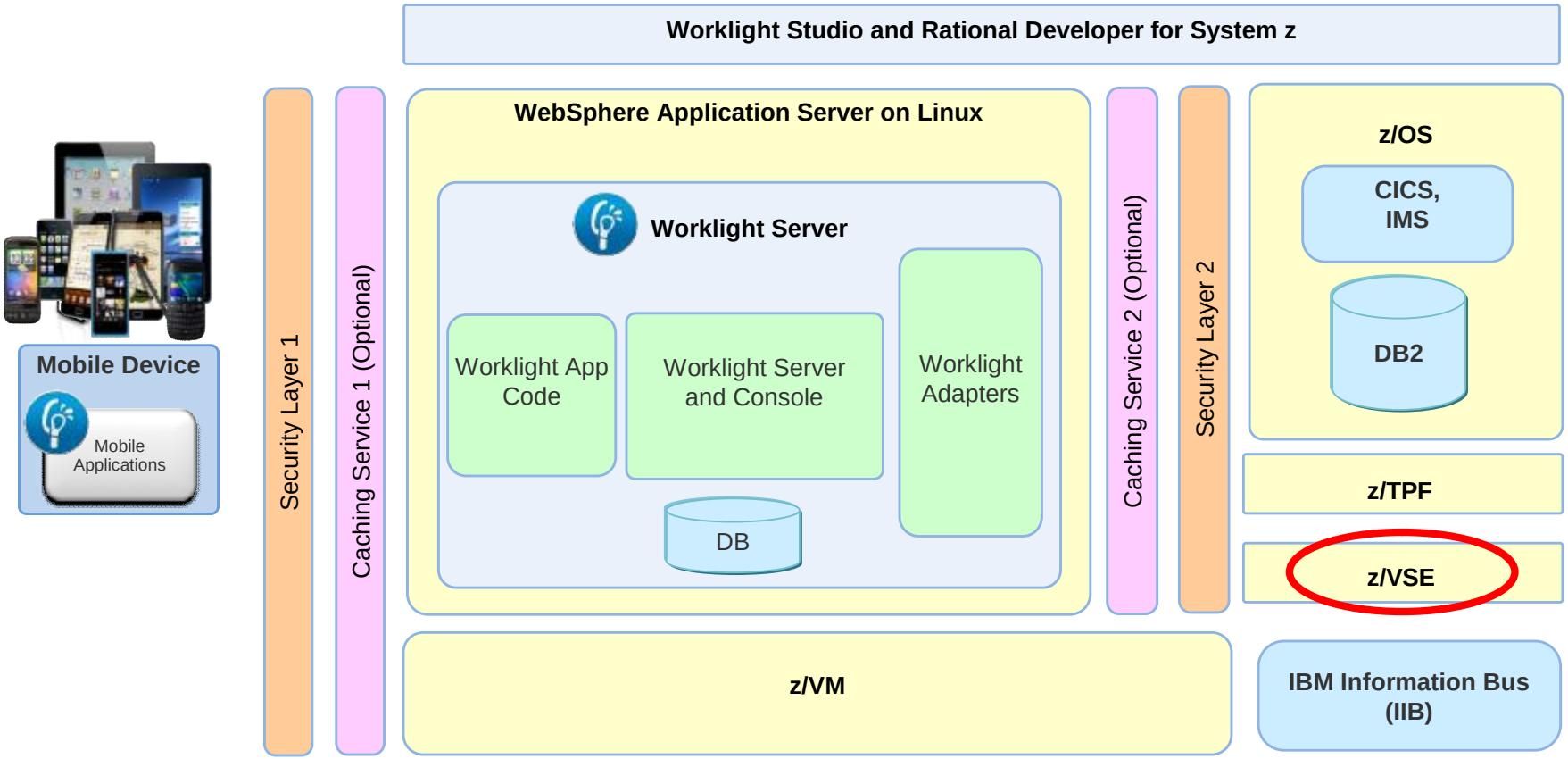
Evolving usage scenario: Backup / Restore concept for z/VSE

Integrate z/VSE with TSM on Linux on System z

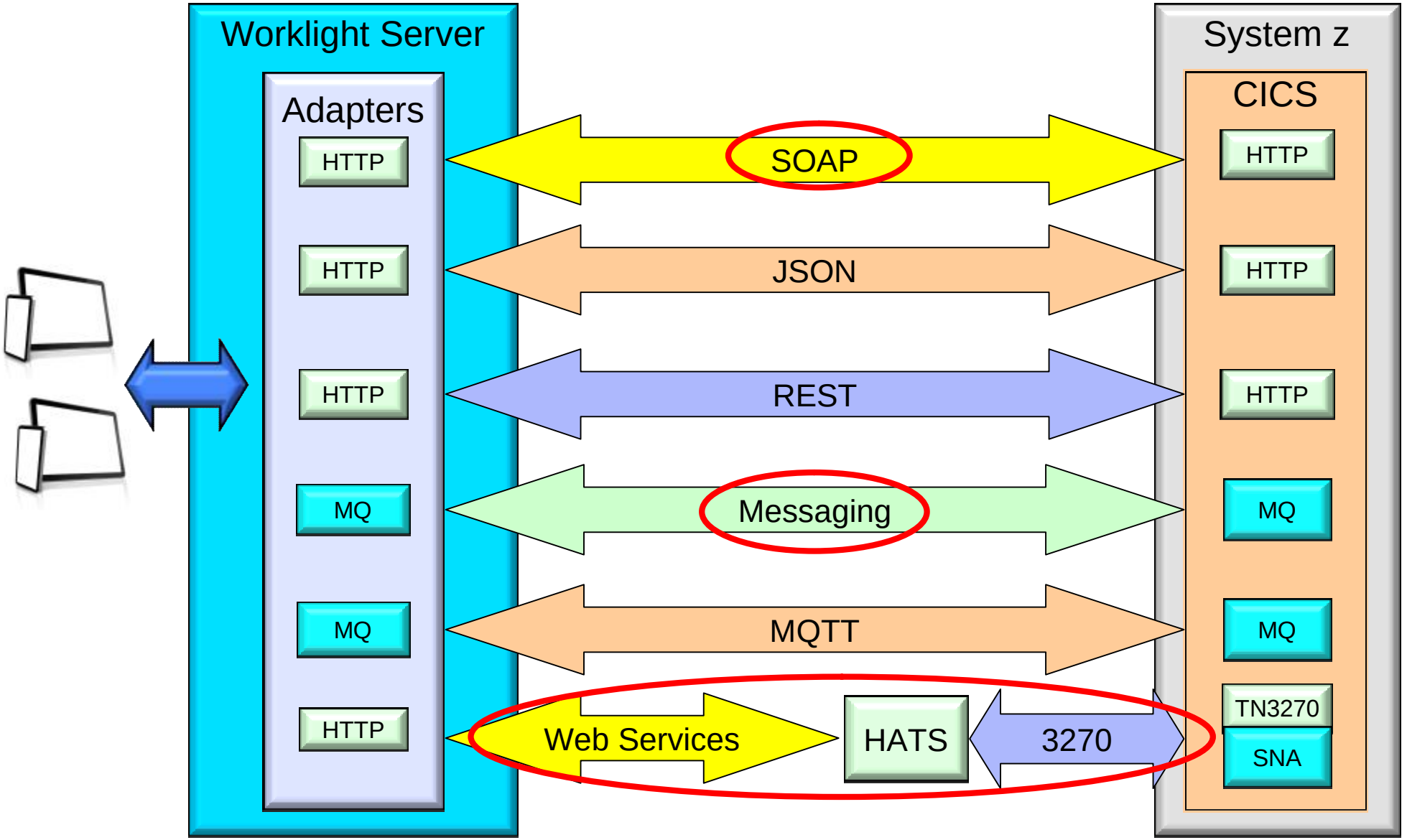


IBM Worklight – Mobile Architecture Overview for System z

Connect your mobile apps to data on System z



CICS Connectivity Options with IBM Worklight

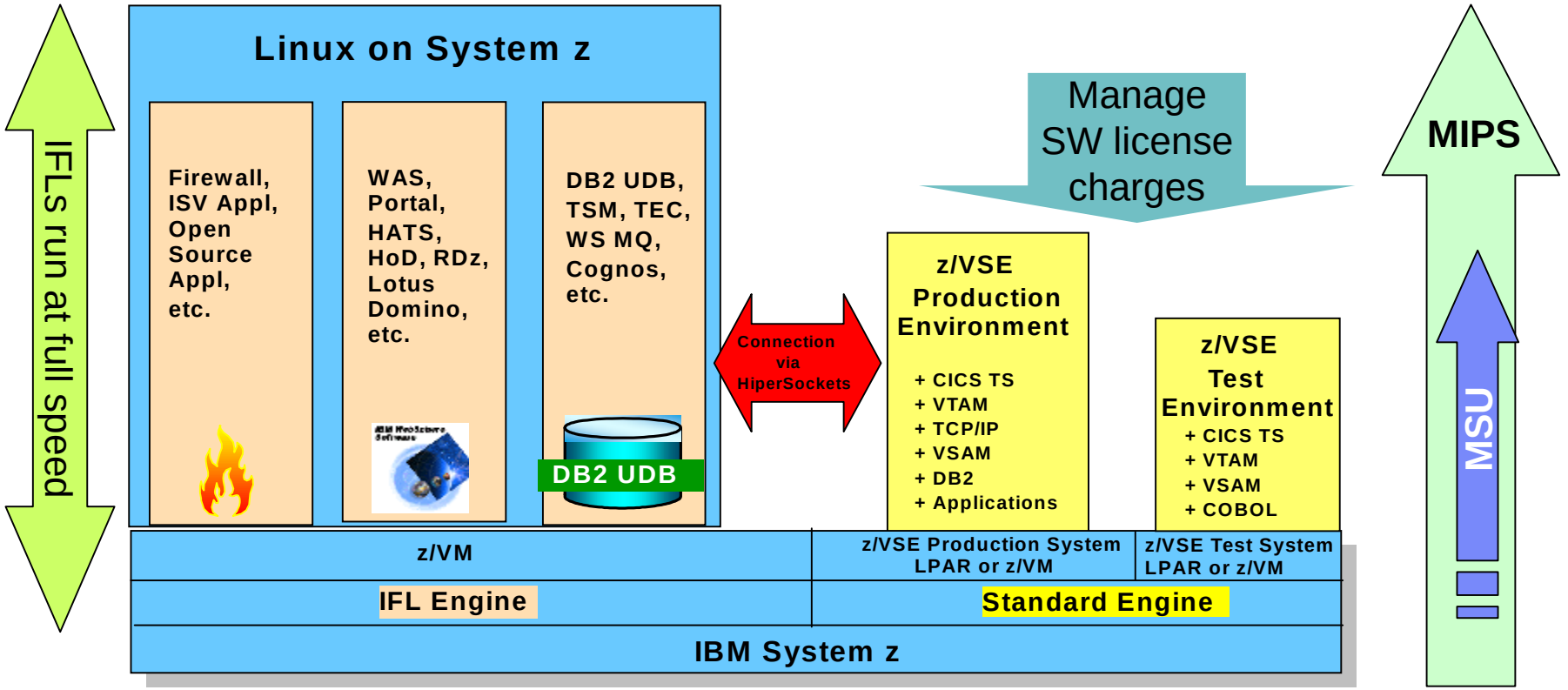


Combine the scenarios, manage software cost

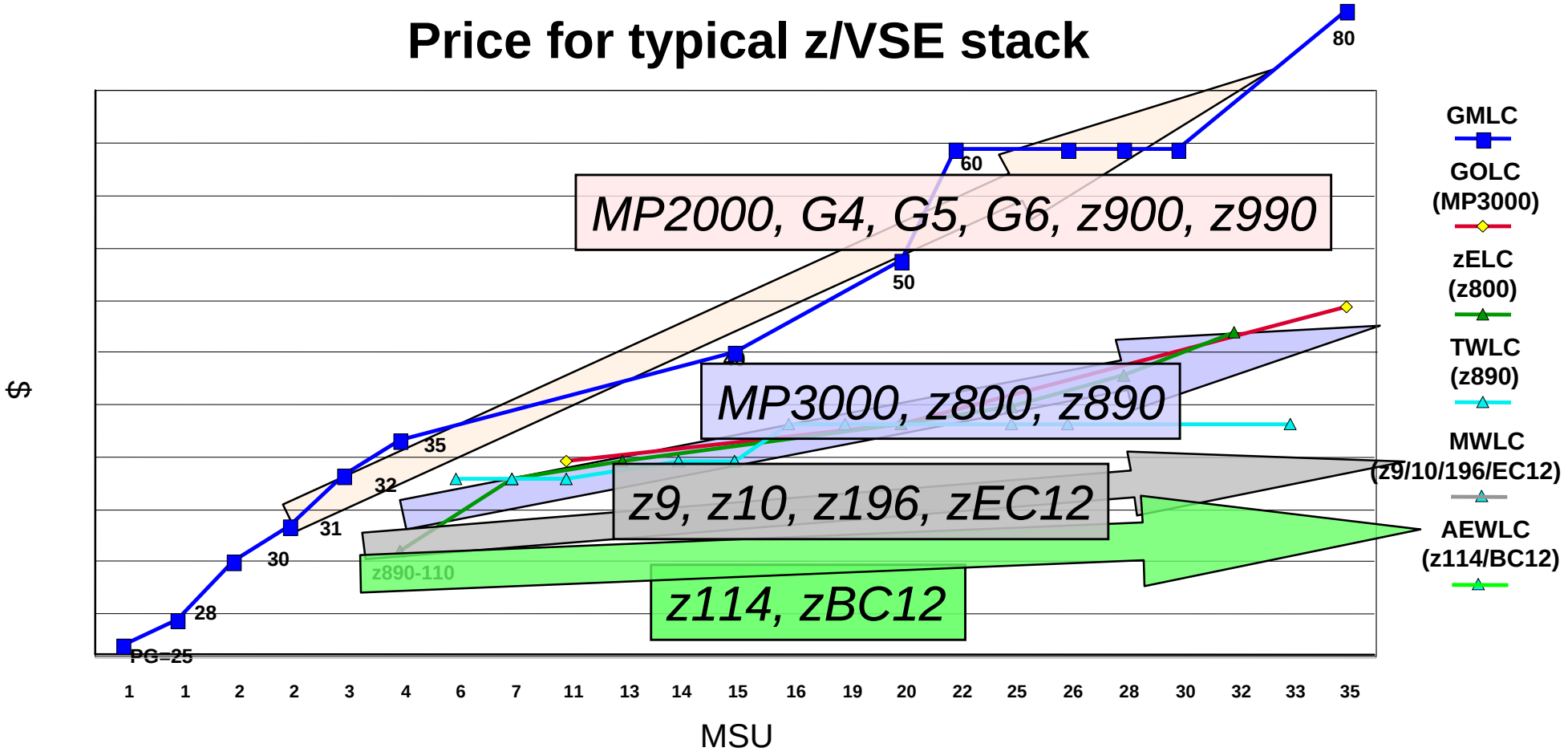
Protect existing z/VSE investments

Integrate using middleware and z/VSE connectors

Extend with Linux technology and new solutions



MWLC on z9/z10/z196 and zEC12, AEWLC on z114 and zBC12



Typical z/VSE stack consists of z/VSE Operating System, LE, CICS TS, VTAM, TCP/IP, DB2

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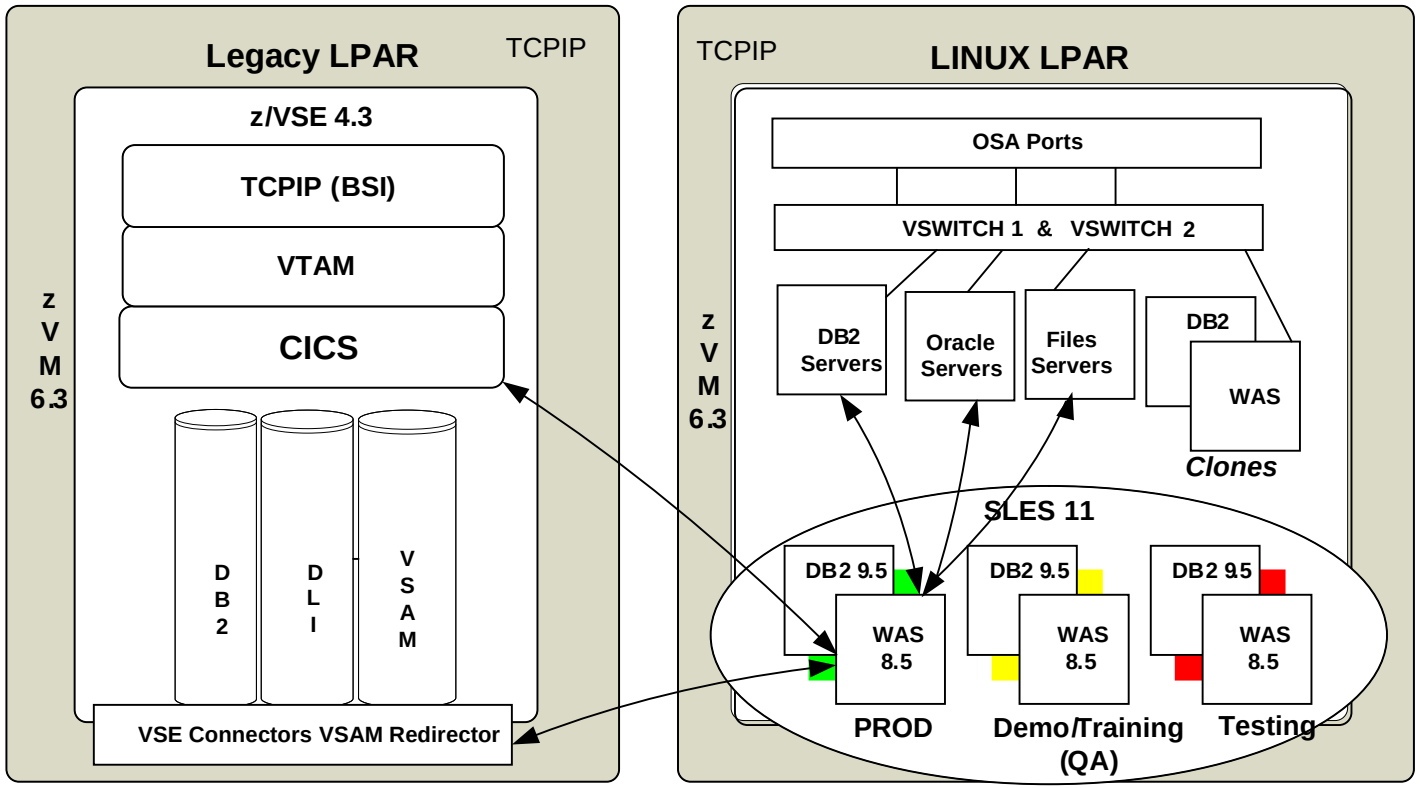
Supreme Court of Virginia



- 1 + 1 zBC12 (M01/M02)
- 2 + 1 CPs
- 8 + 8 IFLs
- 240 + 240 GB memory
- 4 z/VM V6.3 LPARs
- 12 z/VSE V4.3 guests
- 156+ SLES 11 guests
- WAS V8.5
- DB2 V9.5
- Oracle on z (10g)

§ **2x zBC12 (M01/M02), 1x production, 1x development**
- Serves 325 courts, 5.000+ users (3.8 million new cases in 2013)
- Integrating z/VSE, DB2/UDB and WebSphere applications
- eMagistrate system serves 125 locations, 3100 trans per day
- eCommerce* applications integrating z/VSE and WebSphere appls

VJEFS- Virginia Judicial Electronic Filing System
Winner of the Governor's 2013 Commonwealth Technology Award

Fratelli Carli S.p.A.

“The company provides rapid support for our needs through the use of IT and cutting-edge technology. What we expect from IBM and its partners is gold-standard technical support, total integration between the System z and distributed systems and easily-accessed in-depth vertical konwledge.“ Edoardo Flumiani, Information Technology Manager – Fratelli Carli S.p.A.

“Fratelli Carli had choosen IBM System z10® because it‘s extremely reliable, secure and gives us the opportunity to integrate modern Linux Systems with fast ‘legacy‘ applications.

I decided to install the DB2 in the Linux engine because this means the corporate data is available for both legacy systems and distributed systems.“

“What I‘d like most is to have the ability to coordinate all the other different Intel and Linux systems we have in the company from the mainframe system.“ Marco Gardini, IT Operations Manager - Fratelli Carli S.p.A.

America First Credit Union

Building a thriving member base on next-generation infrastructure

25% cost saving
by consolidating Linux environment

Simplifies licensing
to provide a transparent cost structure for software

More processing power
within smaller footprint, supporting growth

The transformation: AFCU wanted to tackle escalating transaction volumes before they ran the risk of limiting its growth. By dramatically increasing processing power within a higher-density footprint, the organization gained headroom for future expansion without sending costs spiraling.

"IBM is helping us stay ahead of the curve."
—Scott Ellis, Senior IS Manager of Information Systems and Data Services, America First Credit Union

Solution components

Software
- IBM z/VSE®
- IBM DB2® for Linux, UNIX and Windows
- IBM Tivoli®
- IBM WebSphere®

Hardware
- IBM® zEnterprise® EC12
- IBM Power Systems™
- IBM XIV® and IBM System Storage®

AMERICA FIRST CREDIT UNION

AutoData Norge AS

Automotive Spare Parts Distributor AutoData Norge AS added SUSE® Linux Enterprise Server to existing IBM® mainframe running z/VSE® for IBM System z®

Reliable and flexible environment for serving customers

Reduced software maintenance cost by running new workloads on an **I**ntegrated **F**acility for **L**inux while keeping all licensed MIPS available for z/VSE

Combined
Reliability and long standing experience on z/VSE with Simplicity, support and agility of Linux on System z

"Everything we do is driven by our customers, and SUSE Linux Enterprise Server for System z allows us to be much more responsive to their needs.„ Stein Sandvold Chief Operating Officer AutoData Norge AS

www.suse.com/success/stories/autodata-norge-as.html

NWK – converted all z/VSE applications onto SLES on System z

SUSE

Success Story

Enterprise Linux Servers

NWK

Seeking to boost the flexibility and reliability of its mainframe environment, agricultural service provider NWK chose to migrate its entire z/VSE mainframe workload to SUSE® Linux Enterprise Server for System z. The company is using one IFL on its new IBM zEnterprise 114 server, improving processing speeds by more than 70 percent compared with the old platform and gaining a stable, reliable platform for running its most important financial applications and business systems.

Overview

NWK Limited is a leading agricultural service provider, operating in the North Western Province of South Africa since 1909. The organisation provides both independent farmers and large-scale producers with a variety of products and services, as well as expert advice and financing. NWK employs more than 2,000 people and reported revenue of more than $200 million in 2012. The company's activities include retail trading, grain storage and marketing, the production of day-old broilers, feed production, transport and food processing.

Challenge

With an extensive network of operational outlets and subsidiaries, ensuring the continued growth and profitability of NWK's operating segments requires tight control over business systems and financial processes. To achieve this, the company has custom-developed a broad suite of financial applications for managing a full spectrum of processes from credit control to general ledger.

For the past 18 years, NWK has trusted in the reliability and stability of the IBM mainframe platform to support these vital business systems. The company previously ran all of its applications under the IBM z/VSE operating system, but a growing need for greater flexibility and support prompted the IT team to consider alternative options.

Solution

Linux quickly emerged as the front runner in NWK's search for a new operating system, its flexibility giving the company considerable scope for embracing a more open infrastructure model.

After evaluating the different distributions of Linux available on the mainframe, NWK chose to deploy SUSE Linux Enterprise Server for IBM System z—a decision that was strongly guided by the platform's reliability and the close collaboration between SUSE and IBM.

NWK

NWK at a glance:

A leading supplier of agricultural products and services, NWK has been operating in the North West Province of South Africa for more than 100 years

- **Industry and Location**
  Agriculture, Lichtenburg, South Africa
- **Products and Services**
  SUSE Linux Enterprise Server for System z
- **Results**
  - *Improves processing speeds and reduces database backup window by more than five times*
  - *Offers strong reliability for key financial applications and business systems*
  - *Supports a more open and flexible infrastructure model*

After evaluating the different distributions of Linux® available on the mainframe, NWK chose to deploy SUSE Linux Enterprise Server for IBM System z®—a decision that was strongly guided by the platform's reliability and the close collaboration between SUSE and IBM.

"We have been running SUSE Linux Enterprise Server on the IBM zEnterprise® 114 (z114) for a few months now and everything has been operating very smoothly," says Eddie Leighton.

"We support around 450 users on one IFL with an average CPU usage of 60 to 70 percent, and so far performance has been excellent, even when running at 100 percent utilization."

The z114 running SUSE Linux Enterprise Server for System z offers 600 MIPS versus the 172 MIPS of NWK's previous mainframe, which translates into significantly faster processing for a number of key tasks.

SUSE Linux Enterprise Server provides NWK with solid performance, and a reliable platform for running its most important workloads.

"The IBM z114 is a fantastic server and SUSE Linux Enterprise Server for System z really helps us to get the most out of it. The solution has met all of our requirements in terms of performance and stability."

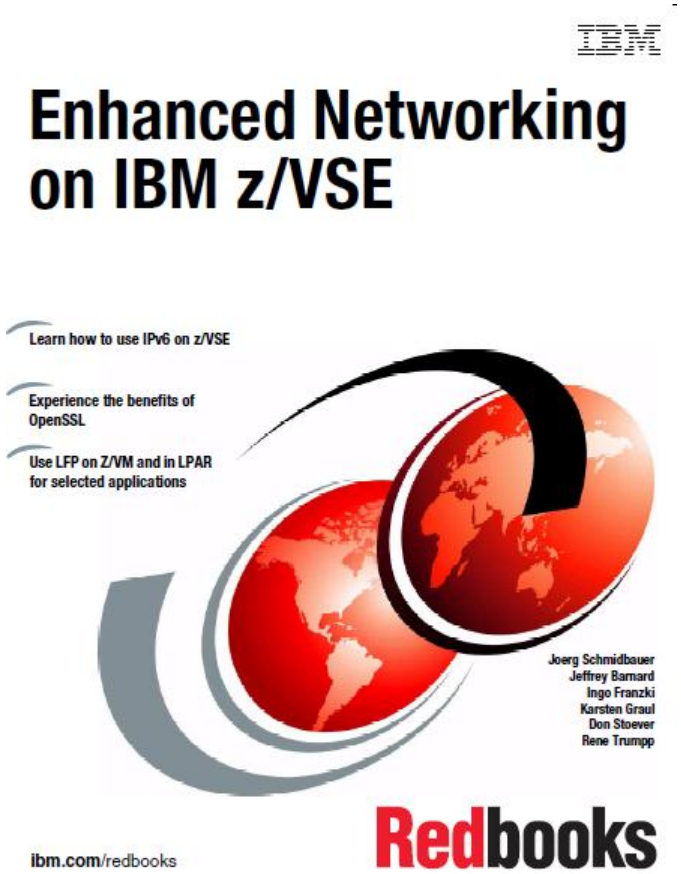
- EDDIE LEIGHTON, Technology Manager, NWK

www.suse.com/success/stories/nwk.html

New Redbook: Enhanced Networking on IBM z/VSE - SG24-8091

Available since February 6, 2014
http://www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg248091.html

This IBM Redbooks publication helps you install, tailor, and configure new networking options for z/VSE that are available with TCP/IP for VSE/ESA, IPv6/VSE, and Fast Path to Linux on System z (Linux Fast Path). We put a strong focus on network security and describe how the new OpenSSL-based SSL runtime component can be used to enhance the security of your business.



z/VSE and z/VM-Linux customer conferences in 2014

- **German GSE in Frankfurt (Germany)**
  - April 7-9, 2014
- **WAVV in Covington (Kentucky)**
  - April 13-16, 2014
- **IBM System z Technical University in Budapest (Hungria)**
  - May 12-16, 2014
- **IBM Enterprise Systems in Las Vegas (Nevada)**
  - Oct 6-10, 2014
- **GSE European Working Group in Dresden (Germany)**
  - Oct 20-22, 2014

z/VSE live virtual classes (webcasts)

- **March 2014**
  - TCP/IP for z/VSE Update
- **January 2014**
  - Update on Encryption and SSL
- **November 2013**
  - Exploit new z/VSE solutions with zBC12 in a virtualized environment
- **October 2013**
  - Language Environment for z/VSE
- **September 2013**
  - z/VSE CMT and SCRT Update
- **June 2013**
  - How to avoid or handle CICS storage availability problems
- **June 2013**
  - z/VSE Security Enhancements
- **April 2013**
  - Important Update on z/VSE Enhancements
- **March 2013**
  - z/VSE Release Migration Considerations - Part 2
- **February 2013**
  - z/VSE Release Migration Considerations - Part 1
- **December 2012**
  - System z Hardware Exploitation in z/VSE
- **October 2012**
  - VSE/POWER – all the News since z/VSE 4.2
- **September 2012**
  - Securing Data Transfers using IPv6/VSE
- **July 2012**
  - The New z/VSE Database Connector (DBCLI)
- **May 2012**
  - IPv6 in z/VSE
- **March 2012**
  - Monitoring Principles and z/VSE Monitoring Options

Replays available!

Dates and replays @
ibm.com/systems/z/os/zvse/education/

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z/VSE continues to demonstrate IBM's commitment

Hardware Support
More Capacity
Quality
z/OS Affinity
Interoperability
Protect Integrate Extend

z/VSE V4.3 - 4Q2010
- Ø z196 toleration / exploitation
- Ø 4-digit device addresses
- Ø 24-bit virtual storage constraint relief
- Ø IPv6/VSE as optional product
- Ø Linux Fast Path with z/VM

+ SoD: 64-bit virtual support

z/VSE V5.1 - 4Q2011
- Ø zEnterprise exploitation
- Ø IEDN connection to zBX
- Ø 64-bit virtual memory objects
- Ø ALS to System z9
- Ø z/VSE z/VM IP Assist (VIA)

+ SoD: CICS Explorer, LFP in LPAR

z/VSE V5.1.1 - 2Q2012
- Ø CICS Explorer Monitoring
- Ø Universal database connector
- Ø Linux Fast Path in LPAR

z/VSE V5.1.2 - 2Q2013
- Ø 64-bit I/O for applications
- Ø Networking enhancements
- Ø Security enhancements

+ SoD: CICS Explorer Update, DVD Install, IPv6/VSE Price Reduction

z/VSE V5.2 - 2Q2014
- Ø Additional zEnterprise exploitation
- Ø DVD install
- Ø Networking and security enhancements

+ SoD: New version of z/VSE, ALS to System z10, support for channels & containers in CICS TS for z/VSE

Announced on April 7, 2014, jointly with Mainframe50 anniversary

z/VSE V5.1 – General Availability since Nov 25, 2011

§ 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, zEnterprise z196/z114, and zEC12

§ 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

§ IBM zEnterprise exploitation

- Support Static Power Save Mode for MWLC clients with subcapacity option on z196 and zEC12
- 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 V5.1.1 – General Availability since June 15, 2012

§ Support IBM CICS Explorer – the new face of CICS Transaction Server

- Add value to CICS TS for VSE/ESA
- New systems management framework for CICS TS (consists of client and server part)
- Client part of CICS Explorer common for z/OS and z/VSE, server part requires CICS TS and z/VSE V5.1
- *Fulfills SOD in z/VSE V5.1 Preview Announcement (RFA54520), 04/12/2011*

§ Fast Path to Linux on System z (LFP) in LPAR

- Allows TCP/IP applications to communicate with TCP/IP stack on Linux w/o using a TCP/IP stack on z/VSE
- LFP in a z/VM guest environment available since z/VSE V4.3 – now LPAR support is added
- LFP in LPAR requires HiperSockets Completion Queue function of zEnterprise
- *Fulfills SOD in zEnterprise Announcement (RFA54727), 07/12/2011*
- *Fulfills SOD in z/VSE V5.1 Announcement (RFA55492), 10/12/2011*

§ z/VSE database connector for z/VSE applications

- Allows to utilize a new Call Level Interface (CLI) to advanced database functions
- Flexibility to use a database server on a platform other than z/VSE (for example in a zBX environment)

z/VSE V5.1.2 – General Availability since June 14, 2013

- **Support innovative zEnterprise EC12/BC12 technology**
  - Configurable Crypto Express4S
  - OSA-Express4S 1000BASE-T
  - OSA-Express5S 1000BASE-T
- **Support enhanced IBM System Storage options**
  - TS1140 tape drive (with encryption capabilities)
  - TS7700 Virtualization Engine Release 3.0 (includes disk-based encryption)
  - DS8870 (for use with both, ECKD and FCP-attached SCSI disks)
  - Storwize V7000 Release 6.4 (for use with FCP-attached SCSI disks)
- **64-bit Input / Output processing for applications**
  - Enhances 64-bit virtual support by allowing to use 64-bit virtual storage also for I/O buffers
  - Benefits from increased processor storage of latest zEnterprise servers
- **Extend z/VSE connectivity and networking options in heterogeneous environments**
  - z/VSE database connector connection pooling – performance improvement
  - Configurable HiperSockets buffers – for improved throughput to Linux on System z
- **Provide IPv6/VSE security enhancements**
  - Secure Sockets Layer (SSL) support – secure transmission of data to and from remote systems
  - Exploits hardware-assisted encryption with System z cryptographic adapters and CPACF

z/VSE Statements of Direction (SOD)

Announced with z/VSE V5.1.2 on April 2, 2013

Fulfilled with z/VSE V5.2 in 4/2014

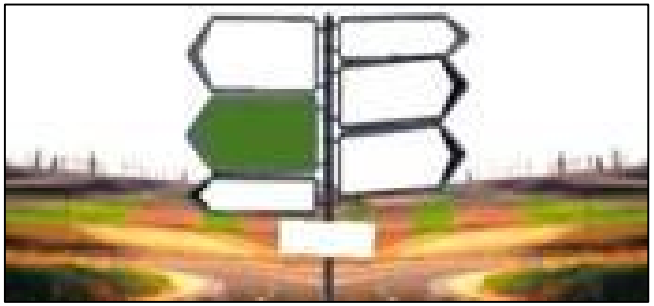
§ **IBM intends to add functionality that allows initial installation of z/VSE without requiring a physical tape.**

- Clients who use a tape for initial installation only, may no longer be forced to include a tape in the z/VSE configuration.
- With this ease of use function IBM will fulfill client requirements.

§ **IBM intends in the future to enhance IBM CICS Explorer for IBM CICS Transaction Server for VSE/ESA to provide updates to CICS resources.**

Fulfilled as of July 1, 2013

§ **It is planned to reduce the AEWLC and MWLC list price of IPv6/VSE V1.1.**



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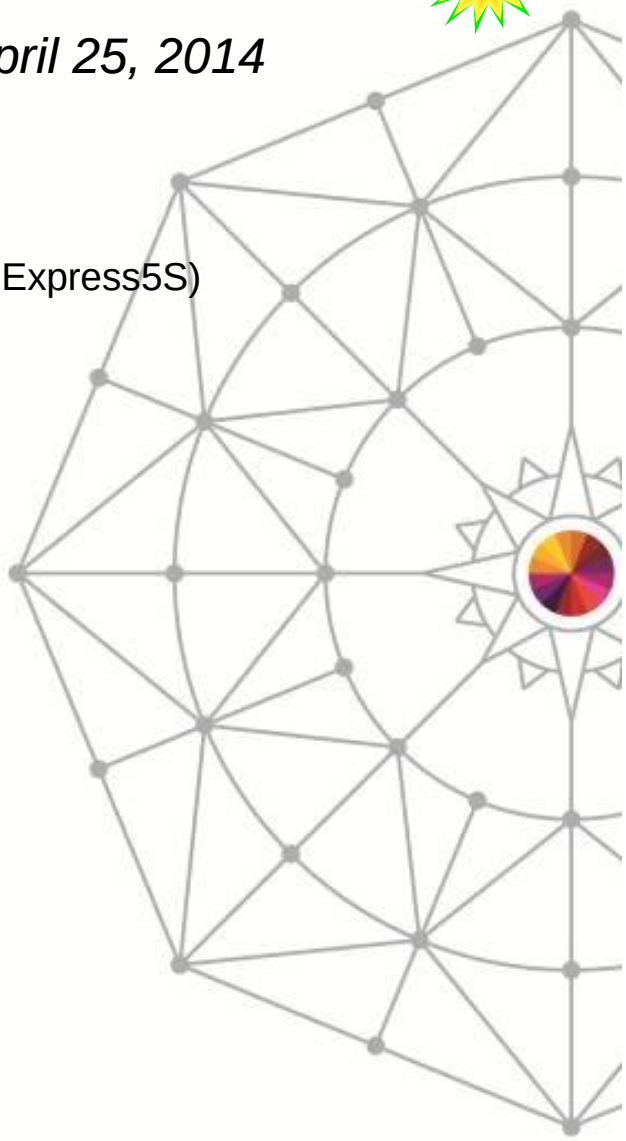
z/VSE V5.2

Announced April 7, 2014, General Availability planned for April 25, 2014



§ Hardware Exploitation
- – Integration of PTFs delivered with z/VSE V5.1.2+
  - zBC12 exploitation (incl. support for Crypto Express4S, OSA-Express5S)
  - TS1140 tape drive (incl. encryption capabilities)
- – Virtual disk in 64-bit virtual memory objects

§ Ease of Use
- – Install from DVD for ECKD devices
  - Tape-less system for initial install

§ Networking
- – IPv6 enhancements

§ Security
- – Auditing enhancements
- – OpenSSL integration

§ Customer Requirements

New z/VSE Statements of Direction (SODs)

Announced April 7, 2014 – jointly with Mainframe50 Anniversary

- **IBM intends to provide new capability in a future release of IBM CICS Transaction Server for z/VSE to provide:**
  - **i. Updates to CICS resources for CICS Explorer, and**
  - **ii. Channels and Containers to enable the transfer of large amounts of data between CICS applications.**

- **Support for CICS Distributed Data Management (DDM) is stabilized in CICS TS for VSE/ESA V1.1.1. In a future release of CICS TS for z/VSE, IBM intends to discontinue support for CICS DDM.**

- **z/VSE V5.2 will be the last release that supports IBM System z9. Future releases of z/VSE will support IBM System z10 and higher.**

- **IBM intends to rename the product z/VSE Central Functions to z/VSE in a new z/VSE version.**

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Agenda

- z/VSE Status & Support
- z/VSE Strategy
- z/VSE Modernization Options
- z/VSE Reference Customers & Learning
- z/VSE Functional Enhancements
  - z/VSE V5.1, 5.1.1, 5.1.2
  - z/VSE V5.2
- Wrap-up

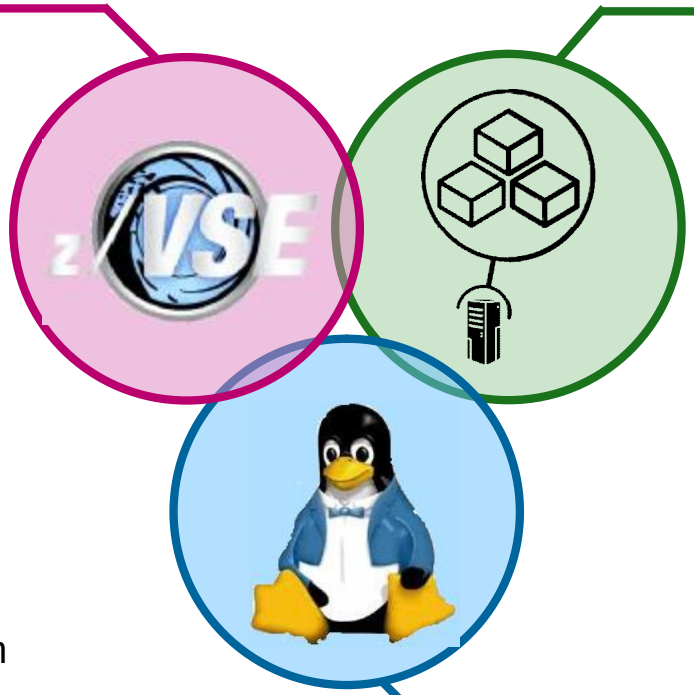
Leveraging the successful z/VSE strategy to build a smarter planet

Protect existing investments

Legacy applications and data on z/VSE

Key Capabilities

- 64-bit virtual addressing to reduce memory constraints through exploitation of data in memory
- Exploitation of selected zEnterprise functions and features as well as IBM System Storage options



Integrate with other Systems

Connect to, and run backend System z applications

Build mobile applications

Key Capabilities

- z/VSE Connectors to Java capable clients, SOAP (Web Service), DRDA
- New DBCLI API for database connections
- Linux Fast Path

Extend for new workloads

Use the combination of Linux on System z and z/VSE

Key Capabilities

- Leverage Linux on System z for
  - Information on demand
  - IBM middleware
  - Infrastructure simplification

The z/VSE evolution continues

z/VSE Vnext
- ALS to System z10 (and higher)
- Channels & container in CICS TS for z/VSE
- CICS Explorer enhancements

z/VSE V5.2 April 25, 2014
- zEnterprise exploitation, DVD base install
- Networking & security enhancements
- SoD for CICS TS enhancements, z/VSE Vnext

z/VSE V5.1.2 Jun 14, 2013
- 64-bit I/O, security & DBCLI enhancements
- SoD for IPv6/VSE pricing, DVD base install

z/VSE V5.1.1 Jun 15, 2012
- CICS Explorer Monitoring
- LFP in LPAR, DBCLI connector

z/VSE V5.1 Nov 25, 2011
- z196 / z114 exploitation
- ALS to System z9 (and higher)
- 64-bit virtual addressing, LFP w/ z/VM
- SoD for CICS Explorer, LFP in LPAR

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

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

Protect
Integrate
Extend

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.

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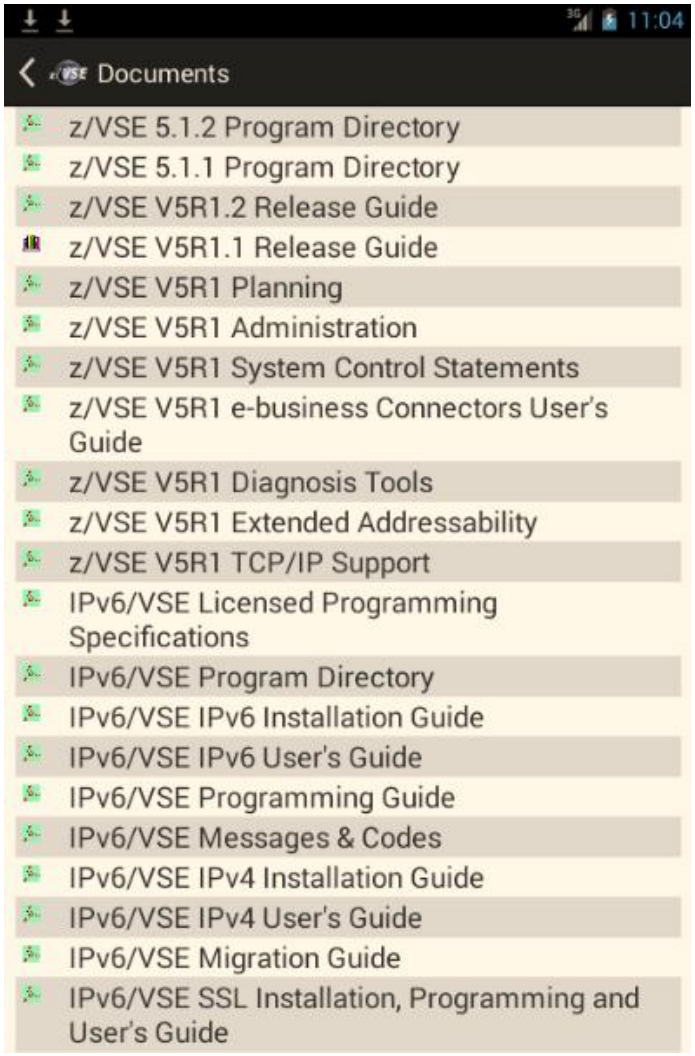

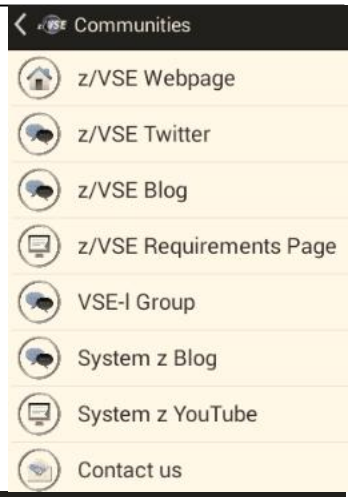

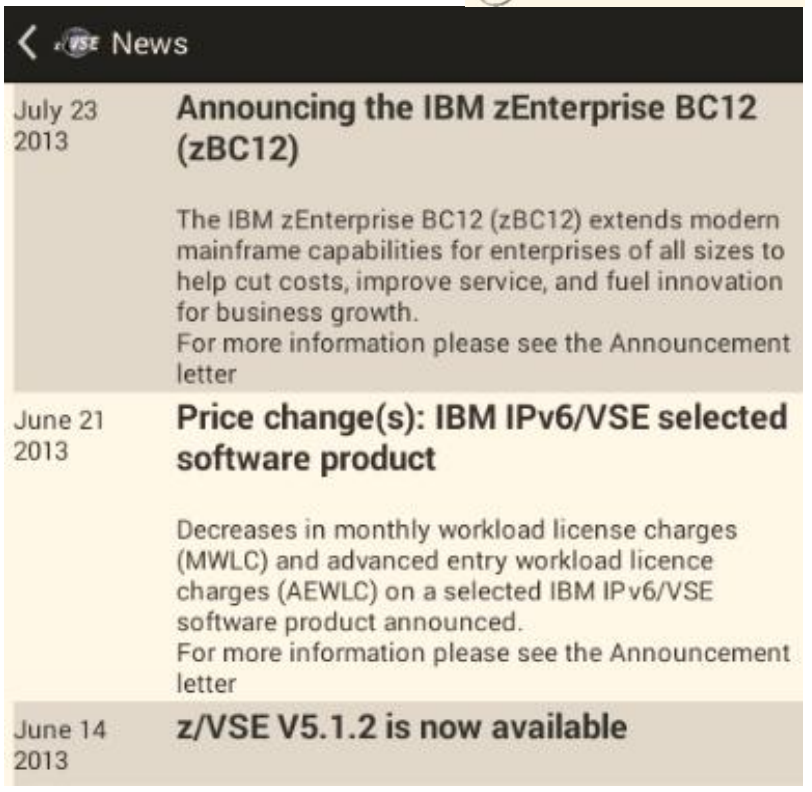

Questions?