



z/VSE Version 4 Release 1



z/VSE News and Views

WAVV 2008: Chattanooga, TN

G. M. (Jerry) Johnston
Senior Advisor – Boeblingen Lab
p798000@us.ibm.com

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40 Years of VSE

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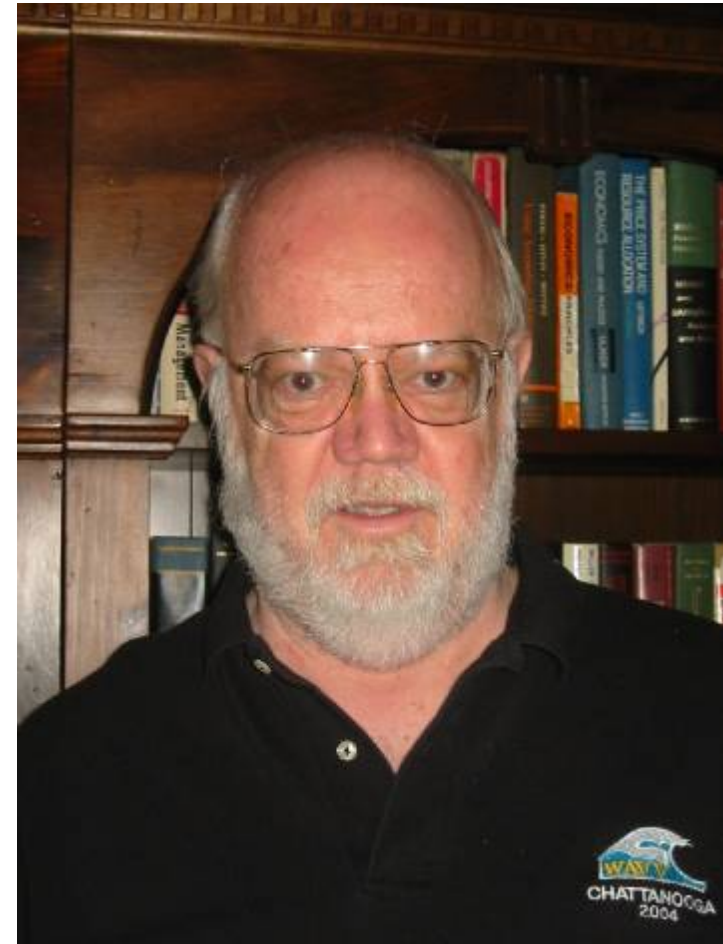
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Agenda

- § Heritage
- § z/VSE Version 4 Release 1
- § Midrange Workload License Charge
- § z/VSE V4.2 Preview
- § Tape Encryption Options
- § IT Modernization/Solutions
- § Mainframe Know-how
- § z/VSE Strategy
- § Summary/Wrap-up





Heritage

40 + years of ongoing refinement & evolution

IBM Development Lab – Boeblingen, Germany



40+ Years of IBM Mainframe & VSE Evolution

§ S/360->S/370->4300->9370->ES9000->S/390->zSeries->**z9->z10**

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

§ S/360 Model 30

- ▶ 30 KIPS (.03 MIPS)
- ▶ 16 – 64 KB

§ **System z9 BC**

- ▶ 26-480 MIPS (1-way)
- ▶ 8 – 64 GB

§ **DOS/360**

- ▶ 1 batch partition
- ▶ basic, but lovable

§ **z/VSE V4.1**

- ▶ Batch and OLTP
- ▶ SOA
- ▶ still lovable

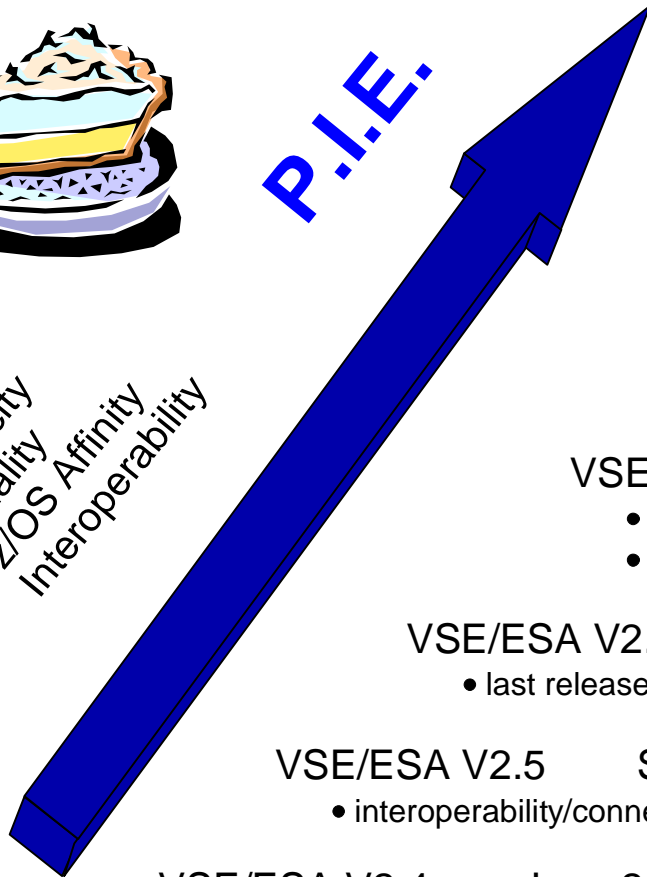


Recent History



P.I.E.

Capacity
Quality
z/OS Affinity
Interoperability



z/VSE V4.2 Preview Oct 9, 2007

- > 255 tasks
- target GA 4Q2008



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

- 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/connectors

VSE/ESA V2.4 June 25, 1999

- CICS Transaction Server for VSE/ESA



•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.

Changes in 2007 and 2008

- § 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 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
- § 06/29/2007 - z/VM V5.3 General Availability
- § 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 (z10 EC) announced**



z/VSE Status

VSE Version and Release	Marketed	Supported	End of Support
z/VSE V4.2 <i>Preview</i>	tbd... target 4Q2008	tbd	tbd
z/VSE V4.1	Yes	Yes	tbd
z/VSE V3.1	Yes... until 5/31/2008	Yes... until 7/31/2009	07/31/2009
VSE/ESA V2.7	No	No	02/28/2007



z/VSE Version 4 Release 1

z/VSE Version 4 Release 1

§ 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 z10 EC
- ▶ IBM System z9 EC and z9 BC servers
- ▶ IBM eServer zSeries 990, 890, 900, and 800 servers

§ **Capacity Measurement Tool (CMT)**

- ▶ fulfills SOD from July 2005

§ **New MWLC pricing metrics (z10 EC, z9 EC and z9 BC only)**

- ▶ Improved price/performance with full-capacity MWLC price points
- ▶ Sub-capacity MWLC option for added price/performance

§ **Encryption enhancements**

- ▶ CPACF enhancements (AES-128 (*1) , 192 (*2), 256 (*2))
- ▶ Configurable Crypto Express2 (new accelerator option)
- ▶ Secure FTP
- ▶ TS1120 encrypting tape
- ▶ Encryption Facility for z/VSE - optional priced feature

Note 1: z9 & z10

Note 2: z10 only



z/VSE Version 4 Release 1 (cont.)

§ IBM System Storage

- ▶ TS1120 encrypting tape
- ▶ *TS3400 Tape Library*
- ▶ TS3500 Tape Library
- ▶ TS7700 Virtualization Engine
- ▶ DS6000/DS8000 64K cylinder ECKD volumes

§ TCP/IP for VSE/ESA V1.5 Service Pack E enhancements, including

- ▶ Improved TCP/IP stack
- ▶ Performance
- ▶ FTP

§ Security and SSL

- ▶ SecureFTP
- ▶ exploit CPACF enhancements
- ▶ 2048-bit RSA keys (Crypto Express2 card required)
- ▶ Message Logging
- ▶ Telnet
- ▶ eMail
- ▶ BSE/C Socket API



z/VSE Version 4 Release 1 (cont.)

§ SOA and Interoperability

- ▶ VTAPE interface to Tivoli® Storage Manager (TSM) to backup VSE data
- ▶ VSAM Redirector Capture Exit
- ▶ upgrade to JDK 1.5 (Java5) standard

§ Component changes

- ▶ ACF/VTAM V4.2 31-bit buffers
- ▶ BSM security logging and reporting
- ▶ VSE/POWER enhancements
- ▶ LE/VSE enhancements and z/OS affinity

§ Miscellaneous

- ▶ Single Supervisor
- ▶ SDAID
- ▶ VSAM tools

§ FSU from z/VSE V3.1 and VSE/ESA V2.7

§ Requires z/VM V5.2 (or later) if running under VM



z/VSE Support for IBM Mainframe Servers

IBM Servers	z/VSE V4.1	z/VSE V3.1 (Note 1)
IBM System z10 Enterprise Class (z10 EC)	Yes	Yes
IBM System z9 Enterprise Class (z9 EC, formerly z9-109)	Yes	Yes
IBM System z9 Business Class (z9 BC)	Yes	Yes
IBM eServer zSeries 990, 890, 900, 800	Yes	Yes
S/390® Parallel Enterprise Server™ G5/G6	No	Yes
S/390® Multiprise® 3000	No	Yes
S/390® Parallel Enterprise Server™ G1/2/3/4	No	No
S/390® Multiprise® 2000	No	No

Note 1: 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.

IBM System z Exploitation

Functions	z/VSE V4.1	z/VSE V3.1 (Note 1)
z/Architecture mode	Yes	No
64-bit <i>real</i> addressing (up to 8 GB proc storage)	Yes	No
Fibre Channel Protocol (FCP) for SCSI Disks	Yes+	Yes
CP Assist for Cryptographic Function (CPACF)	Yes+	Yes
Crypto Express2 (SSL clear key encryption assist)	Yes+	Yes
HiperSockets™ (including spanned HiperSockets)	Yes	Yes
FICON Express2™ & FICON Express4™	Yes	Yes
OSA Express 3 10Gb, OSA Express2 (incl 10Gb and Gb ethernet)	Yes	Yes
OSA Integrated Console Controller (OSA-ICC)	Yes	Yes
Up to 60 LPARs and 4 LCSSs	Yes	Yes

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z/VSE support for IBM System Storage

Flashcopy
Global Mirror (PPRC)

<p>New Standard in Pricing and Packaging</p> 		<p>New Standard in Functionality, Performance, TCO</p> 
<p>IBM TotalStorage DS6000</p>	<p>ESS 750 / 800</p>	<p>IBM TotalStorage DS8000</p>

IBM System Storage	DS6000	ESS 750, 800, 800Turbo	DS8000. DS8000 Turbo
ESCON	Not Avail	Yes	Yes
FICON	Yes	Yes	Yes
FCP/SCSI	Yes	Yes	Yes

z/VSE Comparison

§ z/VSE V3.1* (EoM 5/2008, EoS 7/2009)

- ▶ **ESA/390 (31-bit) mode only**
 - up to 2GB real processor storage
 - System z10 EC
 - System z9 EC *and* z9 BC
 - eServer zSeries 990, 890, 900, 800
 - **Multiprise 3000 & S/390 G5/G6**
- ▶ GMLC, GOLC, zELC, TWLC, etc.
- ▶ HiperSockets
- ▶ CPACF
- ▶ Crypto Express2 (configurable)
- ▶ FCP/SCSI disks & NPIV
 - DS8000, DS6000, ESS
- ▶ FICON Express2 & 4
- ▶ OSA Express2, OSA Express 3
- ▶ 31-bit buffers for ACF/VTAM (via PTF)
- ▶ TS1120 encrypting tape
- ▶ FSU from VSE/ESA V2.7 **and V2.6**

Note 1: 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

§ z/VSE V4.1

- ▶ **z/Architecture (64-bit) mode only**
 - up to 8 GB real processor storage
 - System z10 EC
 - System z9 EC *and* z9 BC
 - eServer zSeries 990, 890, 900, 800
- ▶ **MWLC Pricing Metric (z10 & z9 only)**
 - full-capacity and sub-capacity mode
- ▶ HiperSockets
- ▶ CPACF + **AES enhancements**
- ▶ Crypto Express2 (configurable)
- ▶ FPC/SCSI disk & NPIV + **point-to-point**
 - DS8000, DS6000, ESS
- ▶ FICON Express2 & 4
- ▶ OSA Express2, OSA Express3
- ▶ 31-bit buffers for ACF/VTAM
- ▶ TS1120 encrypting tape
- ▶ FSU from z/VSE V3.1 and VSE/ESA V2.7
- ▶ **Encryption Facility for z/VSE feature**

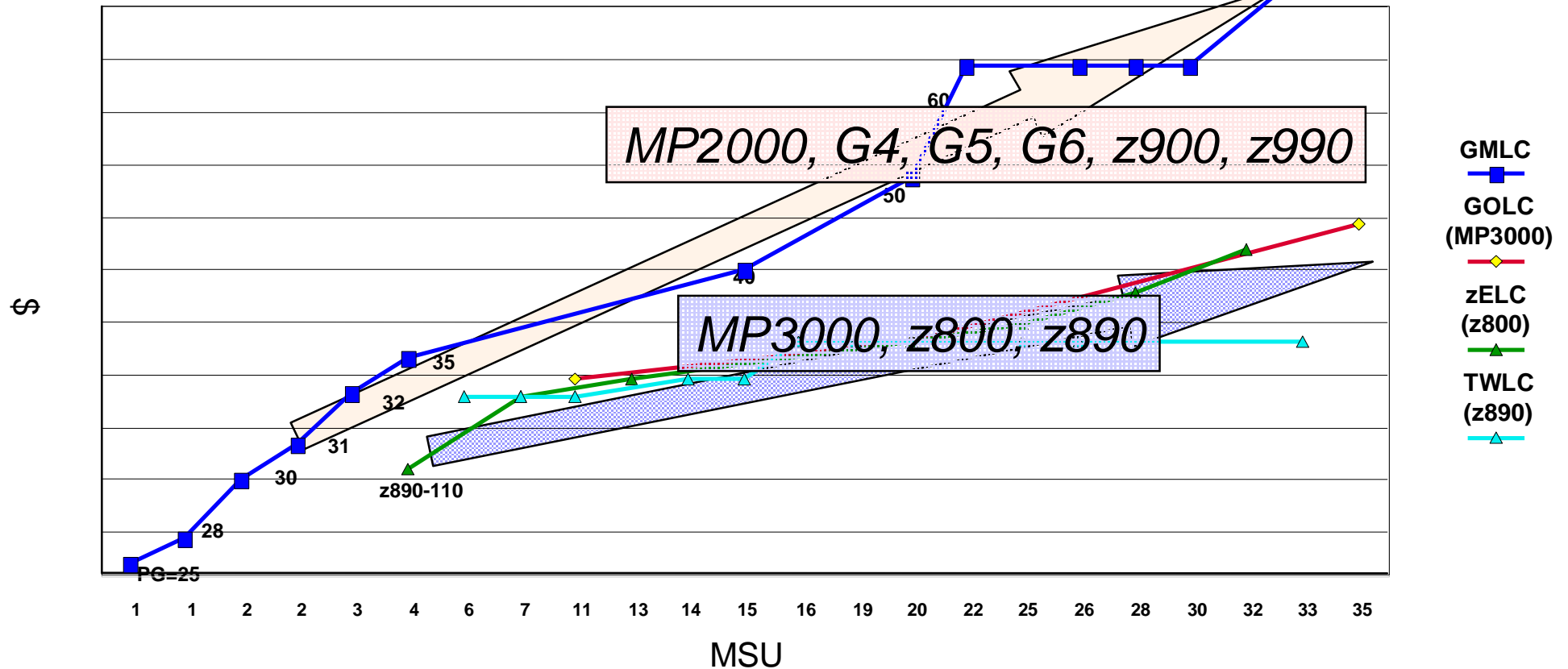


Midrange Workload License Charge

MWLC - A New Price Metric for z/VSE V4

Traditional VSE Price/Performance

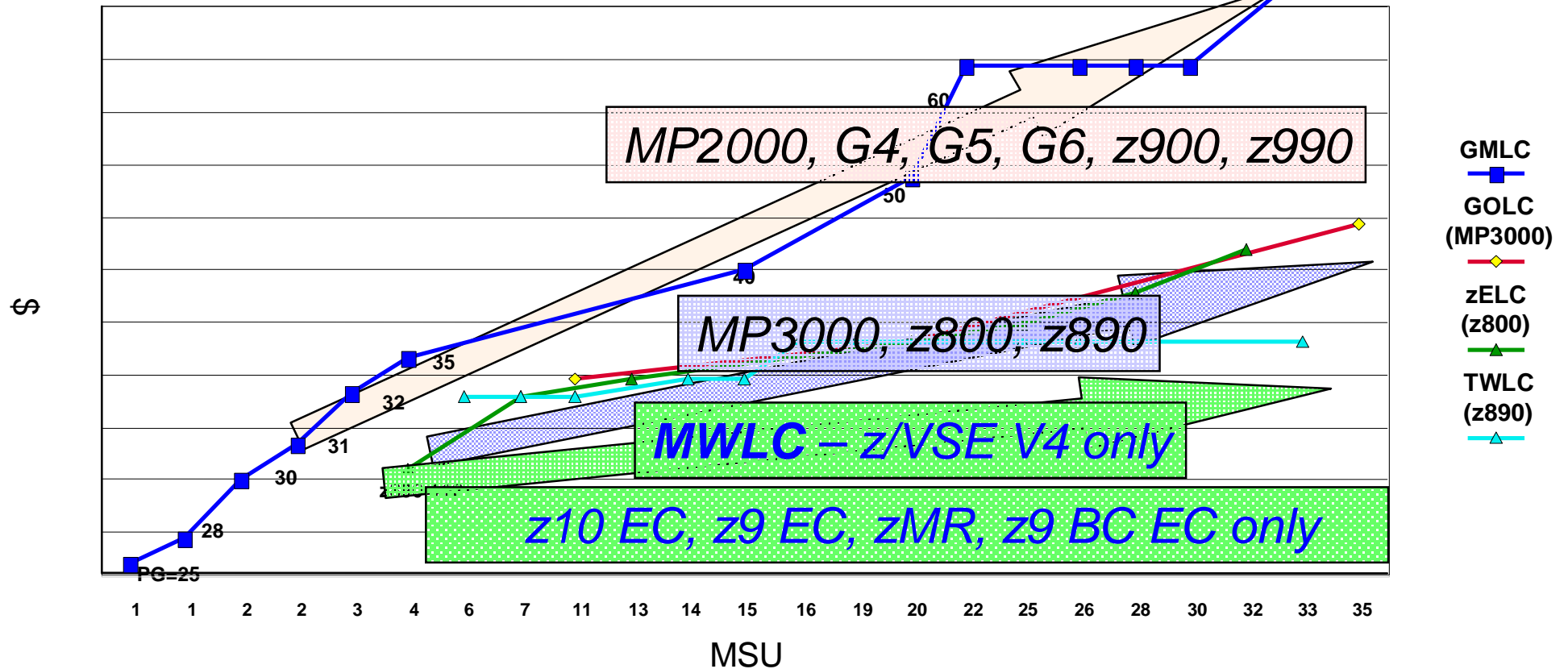
Price for representative z/VSE stack



z/VSE stack used consists of z/VSE CF, CICS TS, VTAM, TCP/IP, DB2

Price/Performance with MWLC

Price for representative z/VSE stack



z/VSE stack used consists of z/VSE CF, CICS TS, VTAM, TCP/IP, DB2

Midrange Workload License Charge (MWLC)

§ Requires current servers (IBM System [z10 EC](#), z9 EC, z9 BC) & sfwr ([z/VSE V4](#))

▶ exception: z9 BC Capacity Setting A01 remains zELC

§ VSE Central Functions + 12 IBM middleware products are eligible

▶ 5686 CF8	VSE Central Functions	▶ 5686 068	IBM COBOL for VSE/ESA
▶ 5696 234	HLASM	▶ 5686 A01	IBM C for VSE/ESA
▶ 5648 054	CICS TS for VSE/ESA V1	▶ 5686 069	IBM PL/1 for VSE/ESA
▶ 5686 065	ACF/VTAM® VSE/ESA V4	▶ 5746 SM3	IBM DFSORT/VSE V3
▶ 5686 A04	TCP/IP for VSE/ESA V1.5	▶ 5746 XX1	DL/I VSE
▶ 5648 099	DITTO/ESA® for VSE	▶ 5686 A06	MQSeries® for VSE/ESA
▶ 5697 F42	DB2 Server for VSE & VM		

§ Full-capacity and sub-capacity MWLC options

▶ **full-capacity mode offers improved price/performance compared to GOLC, zELC, and TWLC alternatives**

▶ **additional price/performance possible through sub-capacity option**

▶ **SCRT V14.2 available for z/VSE**

§ Structured to help address new growth opportunities

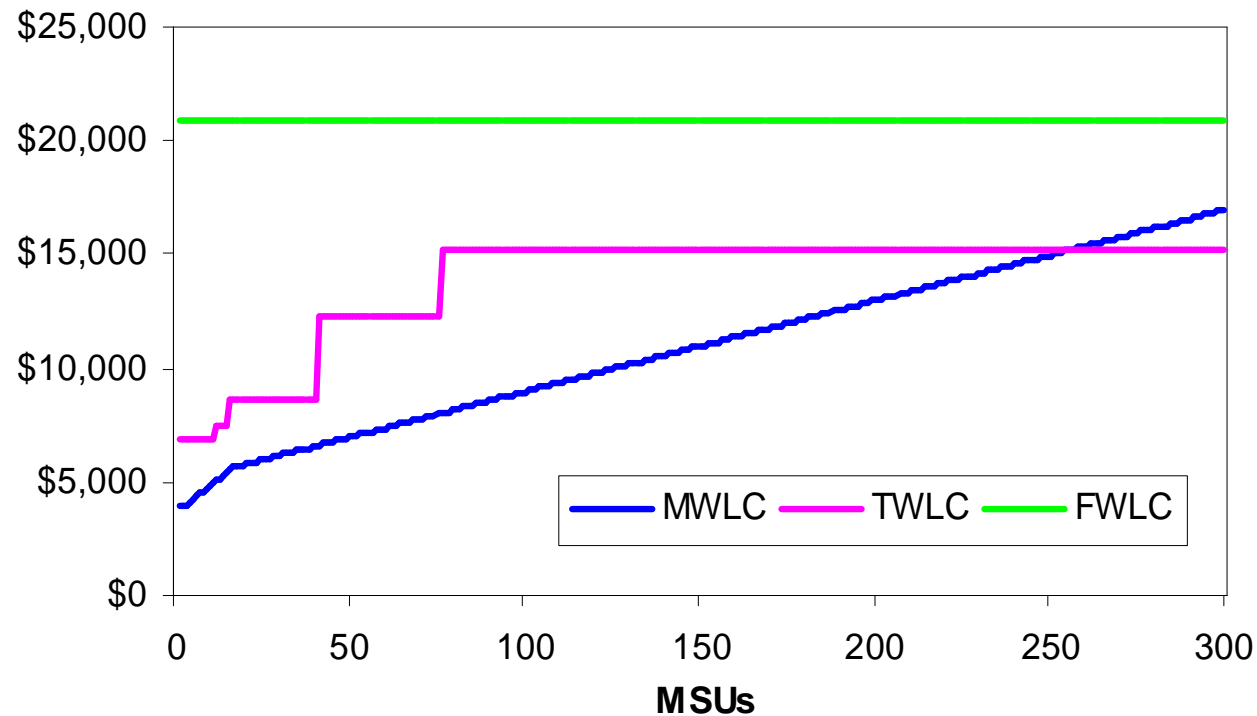
▶ **attractive full-capacity prices**

▶ **pay for measured utilization**

▶ **new opportunities for consolidation**



MWLC Sample Stack vs. TWLC and FWLC



- § Customers may choose between MWLC/TWLC or MWLC/FWLC as appropriate to their machine
- § Additional price/performance may be possible with sub-capacity mode

*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL

*Prices subject to change without notice; all prices shown in USD

What is sub-capacity?



System z @ 100 MSUs

50 MSUs	30 MSUs
DB2 CICS z/VSE	DFSORT® COBOL z/VSE

Full-Capacity Pricing Metric relies on the total rated capacity (measured in MSUs) of the MACHINE where a product executes.

Sub-Capacity Pricing Metric relies on the utilization (based on peak 4-hour rolling average each month) of the LPAR(s) or guest virtual machines where an eligible product executes.

Sub-Capacity Concept: Rolling 4-Hour Average

Capture the 4-hour rolling average of utilization for each interval in the month

4-Hour Rolling Average

11 am (8,9,10,11): 35 MSUs

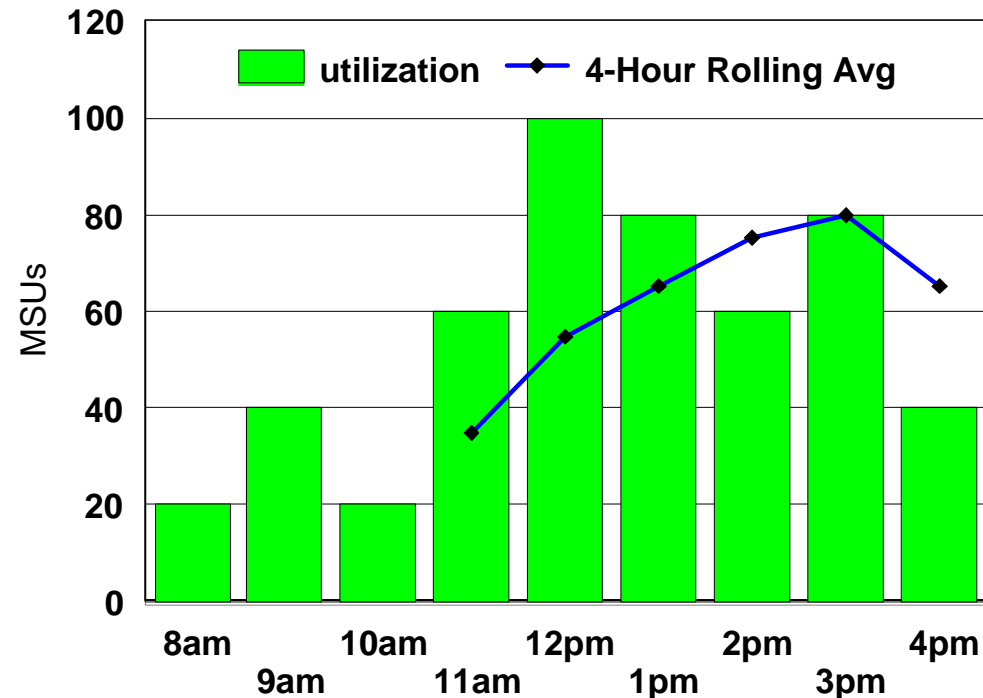
12 pm (9,10,11,12): 55 MSUs

1 pm (10,11,12,1): 65 MSUs

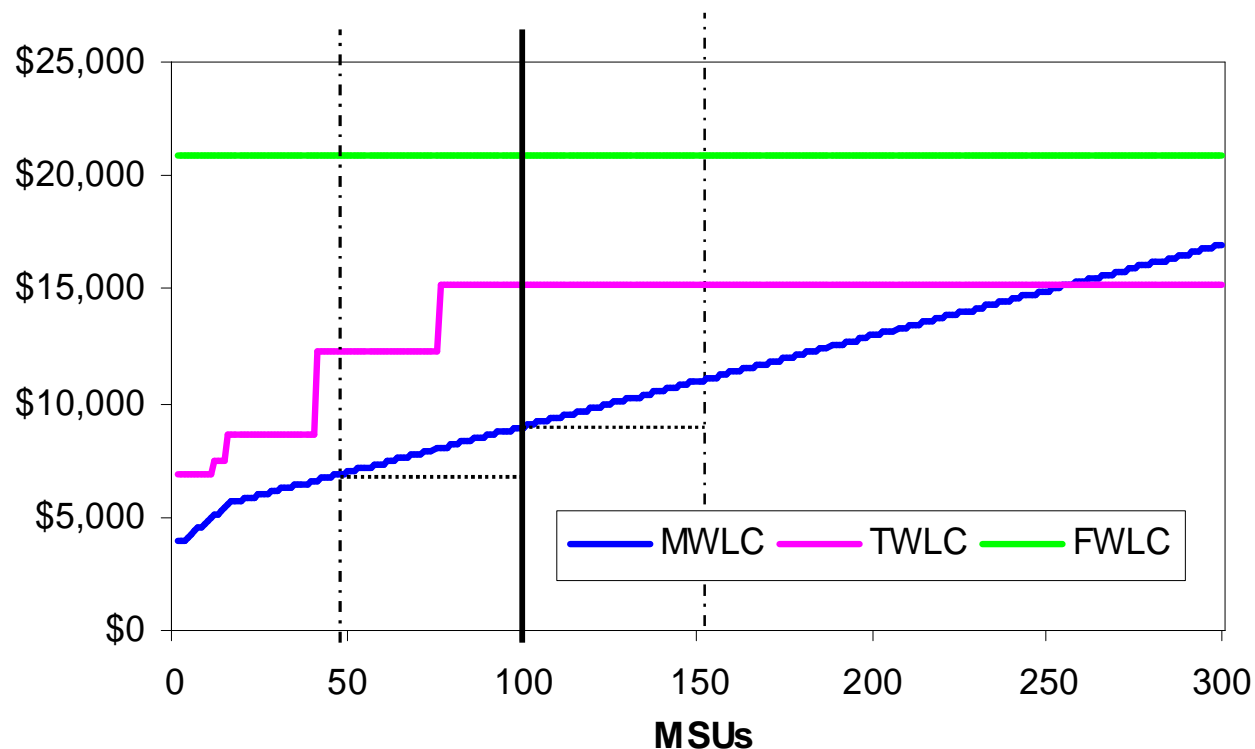
2 pm (11,12,1,2): 75 MSUs

3 pm (12, 1, 2, 3): 80 MSUs

4 pm (1, 2, 3, 4): 65 MSUs



MWLC Sample Stack vs. TWLC and FWLC



- § Customers may choose between MWLC/TWLC or MWLC/FWLC as appropriate to their machine
- § Additional price/performance may be possible with sub-capacity mode

*Sample software stack includes: VSE CF V8, HLASM, VTAM, DITTO, COBOL

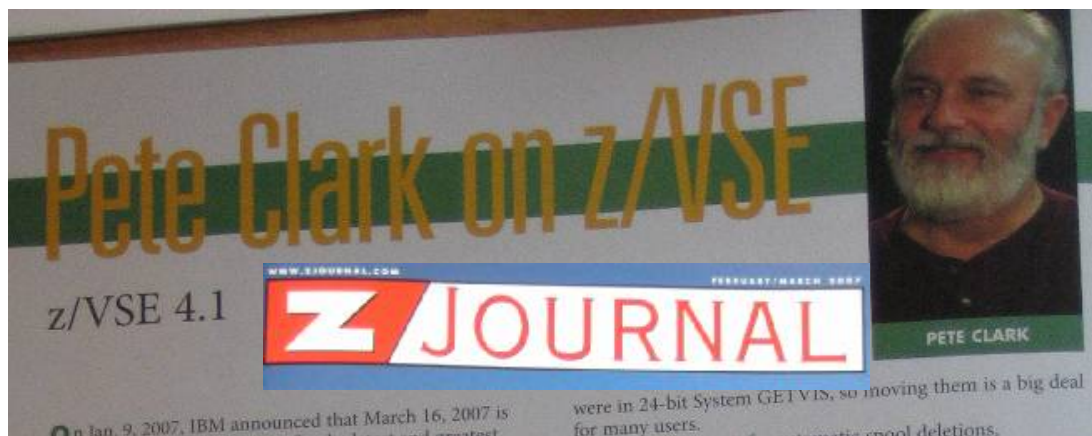
*Prices subject to change without notice; all prices shown in USD



z/VSE V4.2 Preview



Press and Analyst Statements



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.

Even 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.

© Arcati Limited, 2007 Source: The Arcati Mainframe Yearbook 2007, UK 33

IBM VSE mainframe operating system gets upgrade

By Mark Fontecchio, News Writer
21 Mar 2007 | SearchDataCenter.com

RSS FEEDS: [IT infrastructure news](#)



IBM has upgraded the VSE mainframe operating system to include storage, security and networking improvements, as well as introduced pricing schemes that can lower mainframe software licensing costs.

Source: SearchDataCenter.com, March 2007

IBM Systems MAGAZINE

Features

Print

Ahead of the Pack

July 2007

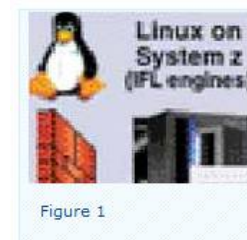


Figure 1

Although z/OS* is correctly regarded as the flagship OS for the IBM* System z** platform, z/VSE* remains an important part of IBM's mainframe portfolio and a viable option for many satisfied IBM customers. At the risk of oversimplification, z/VSE is similar to z/OS but relatively smaller, simpler and less capable. z/VSE is designed for smaller IBM mainframe clients with somewhat less demanding requirements. For z/VSE users, many of whom have been using it for decades, z/VSE is robust enough without additional applications found in z/OS, and comes

with a lower TCO than z/OS. However, both z/OS and z/VSE are equally committed to product quality and customer service that are second to none.

Heritage

z/VSE V4 has a long tradition that spans more than four decades. DOS/360 was launched in 1965 along with the famed IBM System/360*. Originating as a basic alternative to OS/360*, a distant ancestor of z/OS, DOS/360 quickly became a workhorse OS, especially for the popular S/360 Model 30. In the 1970s and '80s,

Source: Systems Magazine, July/August 2007

z/VSE Version 4 Release 2 Preview

§ **Preview** 10/09/2007, General Availability target: 4Q2008

§ **z/Architecture mode only**

- ▶ 64-bit *real* addressing (31-bit *virtual* addressing)
 - up to **32** GB real processor storage
- ▶ IBM System z10 EC servers
- ▶ IBM System z9 EC and z9 BC servers
- ▶ IBM eServer zSeries 990, 890, 900, and 800 servers

§ **More than 255 VSE tasks**

§ **MWLC pricing metrics** (z10 EC, z9 EC, and z9 BC only)

- ▶ Improved price/performance with full-capacity MWLC price points
- ▶ Sub-capacity MWLC option for added price/performance
- ▶ SCRT V14.2 runs 'natively' on z/VSE V4.1 and later (GA 10/10/2007)

§ **Encryption enhancements**

- ▶ CPACF enhancements (AES-128, 192, 256)
- ▶ Configurable Crypto Express2 (new accelerator option)
- ▶ SecureFTP
- ▶ IBM System Storage TS1120 encrypting tape
- ▶ Encryption Facility for z/VSE V1.1 optional, priced feature (GA 11/30/2007)

§ **Security and Auditability enhancements**

§ **SOA and Interoperability**

§ **FSU** from z/VSE V4.1 and V3.1

§ **Requires z/VM V5.2 (or later) if running as a VM guest**

§ **SOD - last z/VSE release to offer CICS/VSE V2.3**





Tape Encryption Options

help address privacy and critical regulatory issues

IBM TS1120 Tape Drive Encryption

§ IBM System Storage TS1120 - first encrypting tape drive

- ▶ Standard feature on new TS1120 tape drives
- ▶ Supports “traditional” and “encrypted” modes of operation
 - encryption “disabled” unless otherwise specified
- ▶ Implements data encryption using AES-256 encryption
- ▶ Data is automatically compressed *then* encrypted – no change in media utilization
- ▶ Encryption performed with minimal (< 1% data rate performance impact)



TS1120
500 GB
100 MB/sec

§ Systems Managed Encryption with z/VSE V4.1 & V3.1

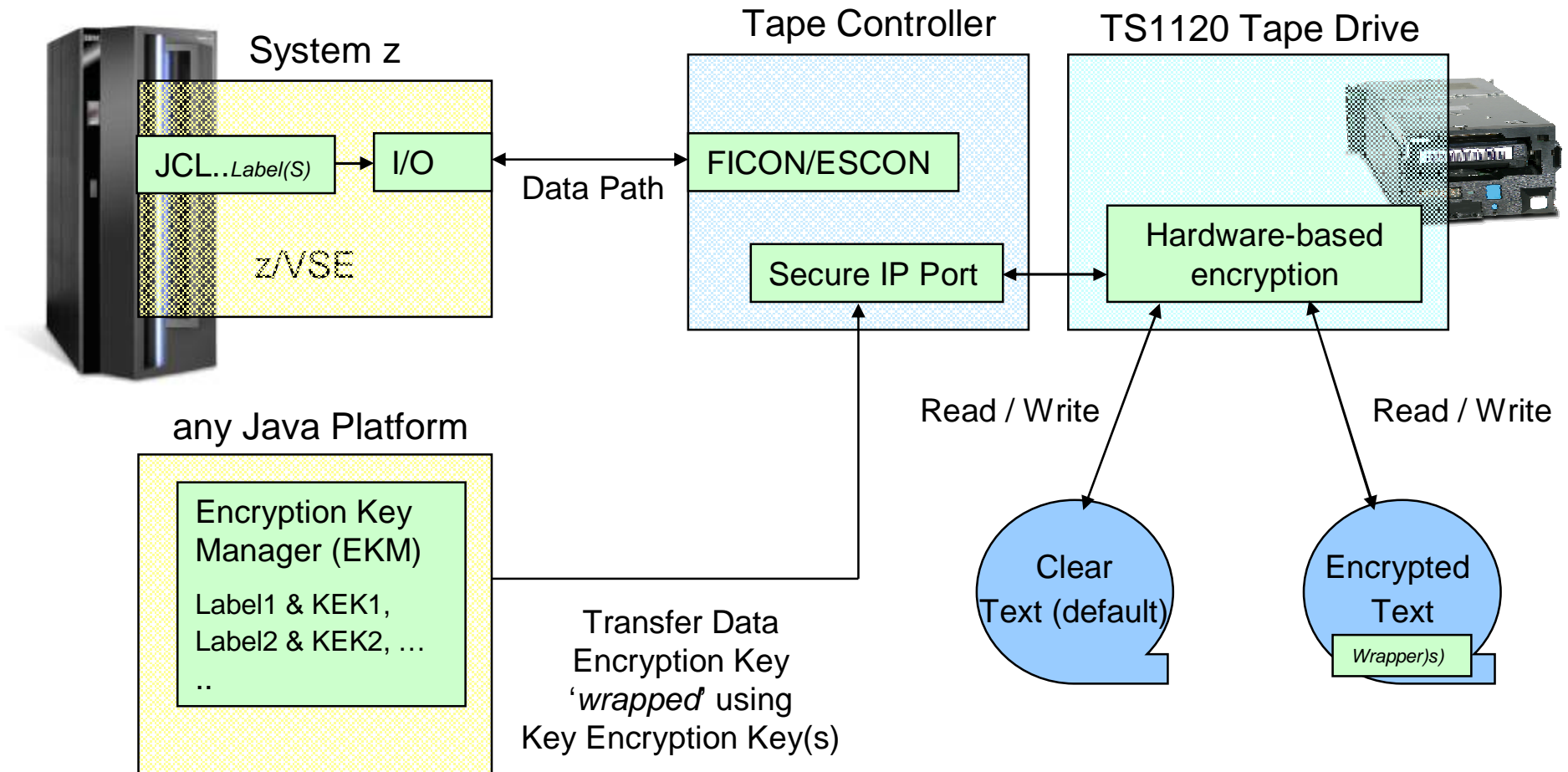
§ IBM Encryption Key Manager (EKM) for Java platform™

- ▶ EKM stores and manages *labels* and *key encrypting keys*
 - runs on z/OS, AIX, Linux (incl System z), i5/OS, HP, Sun, & Windows
- ▶ Secure TCP/IP connection between EKM and TS1120
- ▶ ESM supplies data encrypting keys to TS1120 on request
- ▶ TS1120 encrypts files using data encrypting key (DEK)
- ▶ TS1120 stores *encrypted* data encrypting key on cartridge
 - DEK can be encrypted using two different KEKs

**Encryption Key
Manager**



IBM Tape Encryption – TS1120

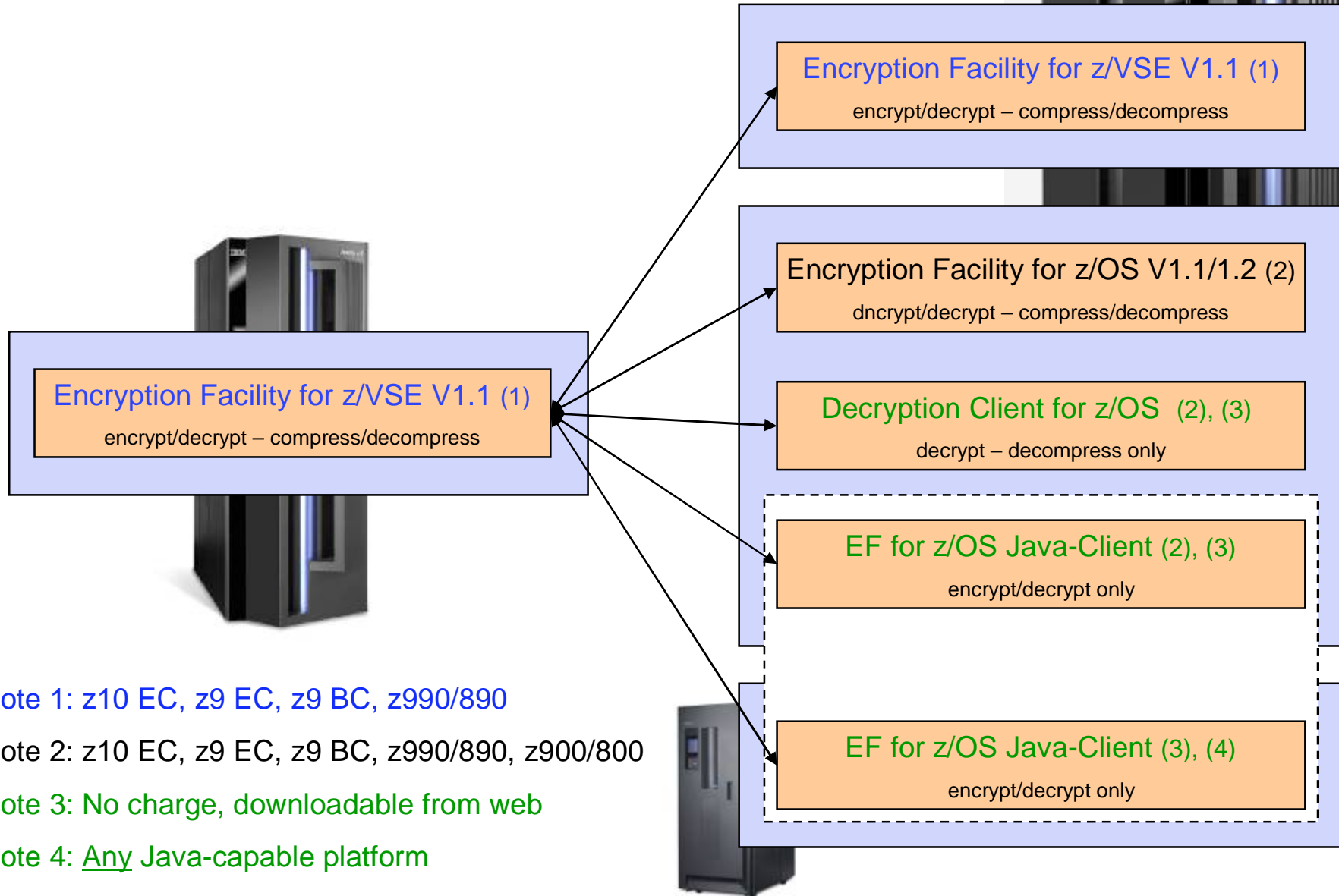


Encryption Facility for z/VSE V1.1



- § **Announce:** 10/09/2007
- § **GA:** 11/30/2007
- § **Optional priced feature for VSE Central Functions V8**
 - ▶ requires z/VSE V4.1 or later
 - ▶ MWLC-eligible
- § **Requires CP Assist for Cryptographic Function (CPACF)**
 - ▶ CPACF is a no charge feature only on z10 EC, z9 EC, z9 BC, z990 and z890 servers
- § **Protection using Password-based or RSA-based (Public/Private) Key Encrypting Keys**
 - ▶ TCP/IP for VSE/ESA V1.5 required for RSA-based keys
 - ▶ KEYMAN (or equivalent) no charge, downloadable tool recommended for RSA-based keys
- § **Option to compress data** (compression must occur prior to encryption)
- § **Extends affinity between z/VSE and z/OS**
 - ▶ function roughly equivalent to EF for z/OS V1.1
 - ▶ data format compatible with EF for z/OS V1.1/1.2 (Encryption Facility System z format)
 - EF for z/VSE tapes can be read by EF for z/OS, EF for z/OS Java Client, and Decryption Client for z/OS
 - EF for z/OS V1.1 and EF for z/OS Java client tapes can be read by EF for z/VSE V1.1
- § **Complements z/VSE support for IBM TS1120 tape**
 - ▶ *TS1120 is the preferred solution for high volume backup/archive*
 - ▶ *EF option for limited backup/archive and/or exchange with partners who have no TS1120*

Encryption Facility for z/VSE V1.1



Note 1: z10 EC, z9 EC, z9 BC, z990/890

Note 2: z10 EC, z9 EC, z9 BC, z990/890, z900/800

Note 3: No charge, downloadable from web

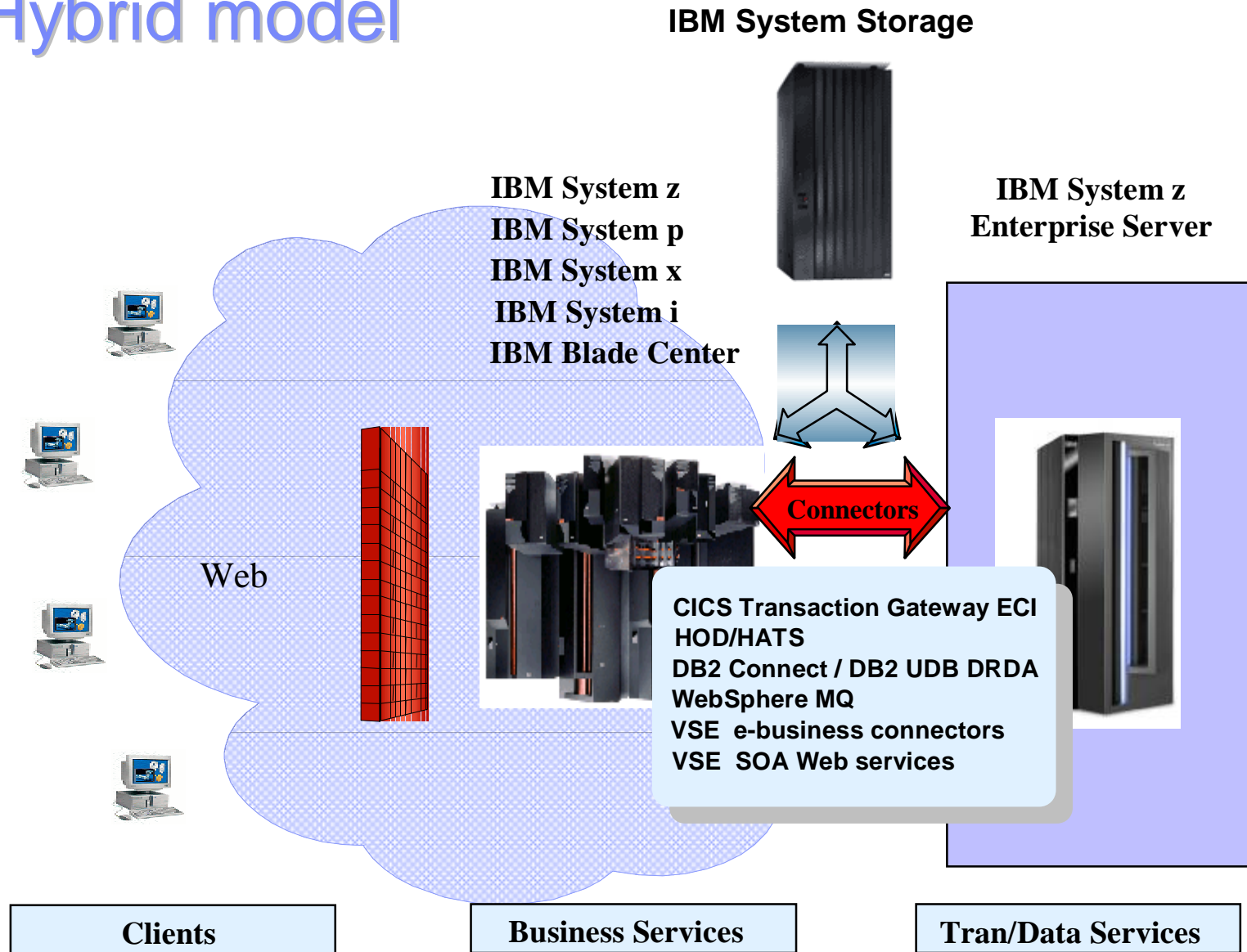
Note 4: Any Java-capable platform



IT Modernization/Solutions

*modernize core VSE workloads, leverage
z/VSE and Linux on System z for new business
solutions*

Hybrid model

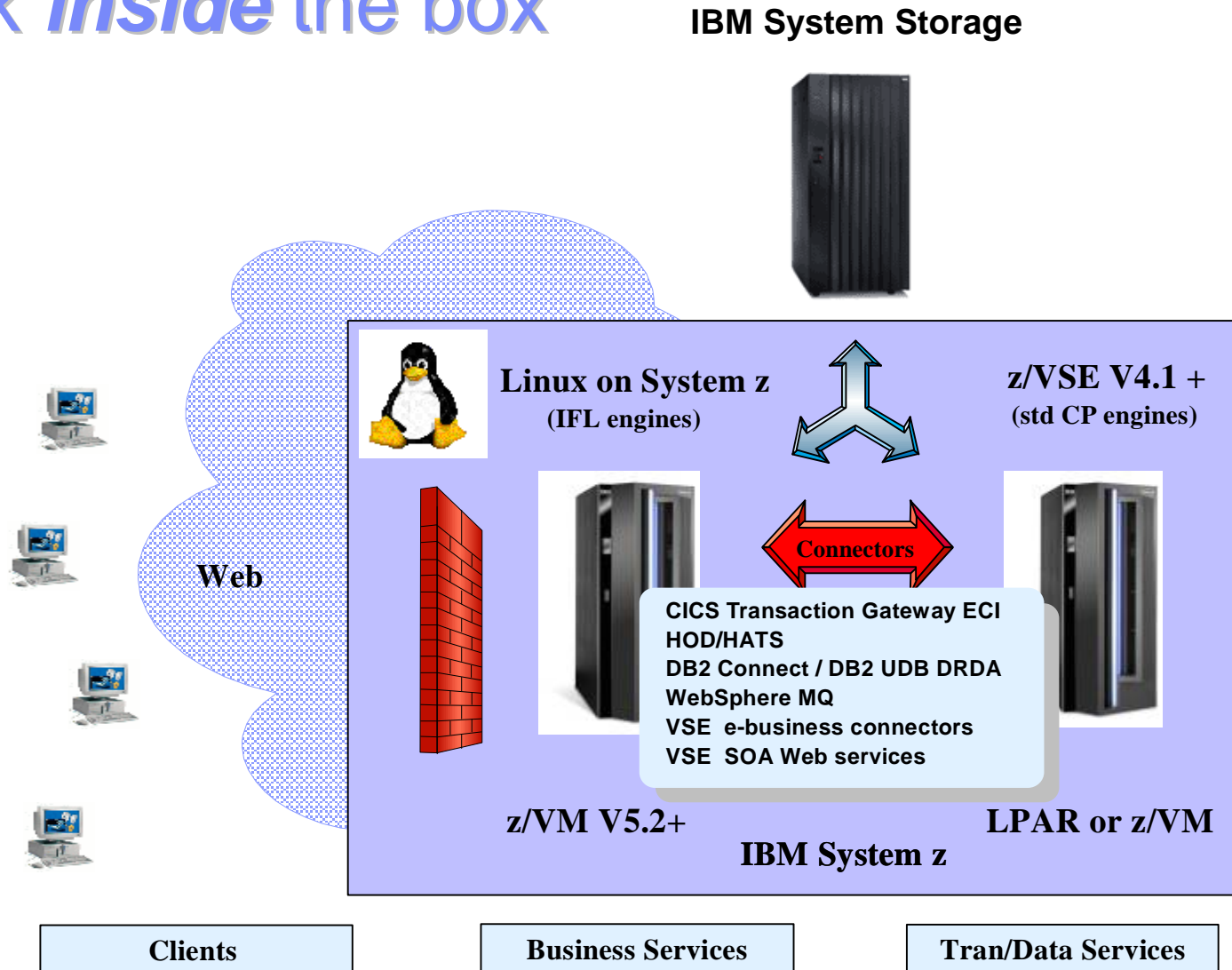


z/VSE SOA and Interoperability

Connector Functions	z/VSE V4.1	z/VSE V3.1 (Note 1)
VSE Connectors (no additional charge)		
SOA Web Services, i.e. SOAP and XML	Yes	Yes
VSAM, POWER, Librarian, ICCF lib, console	Yes	Yes
VSAM Redirector	Yes	Yes
VSE Script and DL/1	Yes	Yes
DB2 Stored Procedures for VSAM and DL/1	Yes	Yes
IBM Middleware (priced)		
CICS Transaction Gateway (CTG) ECI	Yes	Yes
Host on Demand / Host Application Transformation (HATS)	Yes	Yes
DB2 UDB/DB2 Connect	Yes	Yes
WebSphere MQ (no charge VSE Client)	Yes	Yes

Note 1: 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 System z hardware

Think *inside* the box





z/VSE Strategy

simple as Pie

z/VSE “PIE” Strategy

- § Help **P**rotect existing customer investments in core z/VSE programs, data, equipment, IT skills, *plus* business processes, end user training
 - ▶ Modernize, i.e. extend z/VSE resources to Web
 - ▶ Exploit IBM servers, storage, and software
 - ▶ z/OS affinity
- § Help **I**ntegrate z/VSE with the rest of IT, based on open and industry standards
 - ▶ VSE connectors and SOA Web services
 - ▶ IBM middleware
- § Help **E**xtend solutions with Linux on System z
 - ▶ Linux as the preferred platform for major new workloads
 - leverage existing core VSE investments
 - low cost, low risk, fast time-to-market for new solutions
 - ▶ Infrastructure or line-of-business applications
 - ▶ Low TCO and consolidation (infrastructure simplification)



z/VSE V4 and Linux on System z



Infrastructure Simplification

Linux on System z

Firewall, DNS, Print serving, etc.

IBM Middleware

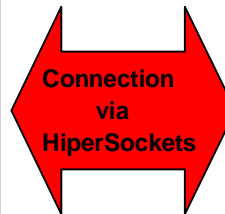
Linux on System z

WAS, Java, CTG, HOD/HATS, WS MQ, etc.

Info on Demand

Linux on System z

DB2 9 (64-bit UDB)



z/VSE V4 Production Environment

- + TCP/IP
- + VTAM
- + CICS TS
- + VSAM
- + COBOL
- + DB2 Client

z/VSE Test/Dev Environment

	z/VM V5.3	z/VM or LPAR	z/VM or LPAR
	IFL Engine(s)	CP Engine(s)	
IBM System z10 EC, z9 EC, or z9 BC			

Project 'Big Green'

§ IBM to reallocate \$1 billion each year:

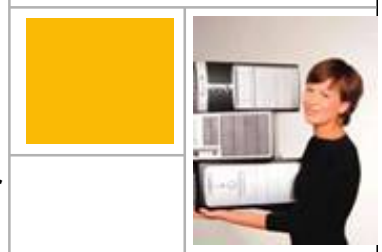
- To accelerate “green” technologies and services
- To offer a roadmap for clients to address the IT energy crisis while leveraging IBM hardware, software, services, research, and financing teams
- To create a global “green” team of almost 1,000 energy efficiency specialists from across IBM

§ Re-affirming a long standing commitment at IBM:

- Energy conservation efforts from 1990 – 2005 have resulted in a 40% reduction in CO₂ emissions and a quarter billion dollars of energy savings
- Annually invest \$100M in infrastructure to support remanufacturing and recycling best practices
- *Will double compute capacity by 2010 without increasing power consumption or carbon footprint saving 5 billion kilowatt hours per year ... equals energy consumed by Paris – “the City of Lights”.*

§ What “green” solutions can mean for clients:

- For the typical 25,000 square foot data center that spends \$2.6 million in power annually, energy costs could be cut in half
- Equals the reduction of emissions from taking 1,300 automobiles off of the road



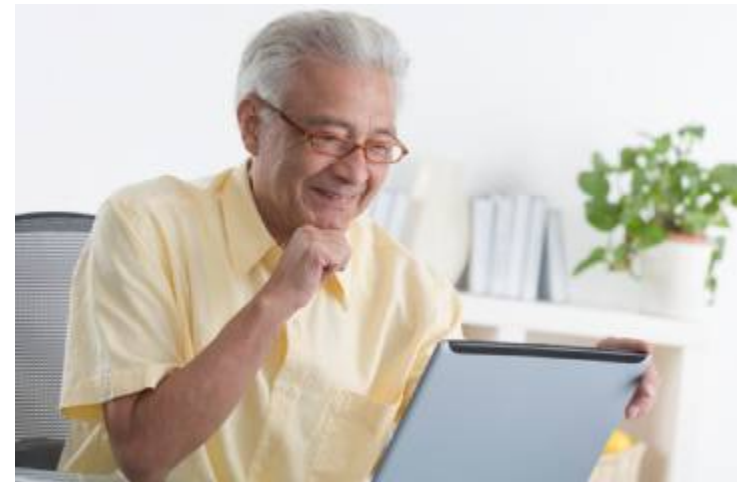


Mainframe Know-how

how to maintain? expand?

Mainframe Know-how

- § **Demographics rule**
- § **Increasing concern among customer executives**
- § **IBM Academic Initiative**
 - ▶ IBM and the VSE community can help
 - ▶ in the end, it's a customer responsibility
- § ***I feel another 'PIE' coming on.....***



Mainframe Know-how

§ Protect



§ Retention –

- ▶ *Veteran staff at the peak of their value (technical skills, business and industry experience, etc.)*
- ▶ Retirement-eligible continue to work
 - exploit hard won skills & experience
 - provide mentoring
 - continue learning and development
- ▶ Flexible work schedules
 - part-time, work at home, accommodate personal needs, travel, volunteering, etc.
 - changes to existing HR policies may be needed
- ▶ Competitive Pay
- ▶ Creative job assignments to maintain interest and enthusiasm

Mainframe Know-how

§ Integrate



§ Cross Train IT

- ▶ mixed teams - already familiar with business needs, company policy, etc.
- ▶ mainframe / distributed background
- ▶ exploit variety of skills – i.e. mainframe programming can be done in C
- ▶ exploit z/VSE connectors & middleware

§ Education

- ▶ WAVV , IBM Tech Conference
- ▶ Live Virtual Classes (LVC)
- ▶ Classes from Business Partners

§ Tools to Enhance Productivity

- ▶ 'Eclipse' Open AD framework
 - taught in many academic IT programs
 - rich selection of tools
 - can be used for several platforms
- ▶ learn/use common tools as default
 - specialized tools as appropriate

Mainframe Know-how

§ Extend



§ Leverage Academic Resources

- ▶ IBM Academic Initiative and/or your local Community College, etc.
- ▶ establish contact with Professors
 - make them aware of your needs
 - offer scholarships
- ▶ student work programs
 - apprenticeship / internship / co-op
- ▶ hire graduates

§ Training

- ▶ organized on-the-job training
 - team with veteran
 - phased introduction; testing, PD, etc.
 - creative job assignments
- ▶ WAVV, IBM Tech Conference
- ▶ Live Virtual Classes (LVC)
- ▶ Classes from Business Partners

§ Contracts with Service Providers

- ▶ specialized skills
- ▶ one-time projects



Summary/Wrap-up

z/VSE Version 4 Release 1

§ Preview 4/29/2007, Announce 1/9/2007, **GA 3/16/2007**

§ **z/Architecture (64-bit) mode only**

- ▶ 64-bit real addressing (31-bit virtual addressing)
 - Up to 8 GB real processor storage
- ▶ IBM System **z10 EC**, z9 EC *and* z9 BC
- ▶ IBM eSeries zSeries 990, 890, 900, 800

§ **New MWLC pricing metrics (z10 & z9 only)**

- ▶ low full-capacity price points
- ▶ sub-capacity option

§ **Encryption enhancements**

- ▶ CPACF enhancements
- ▶ Crypto Express2 (configurable)
- ▶ SecureFTP
- ▶ TS1120 encrypting tape
- ▶ **Encryption Facility for z/VSE**



Web



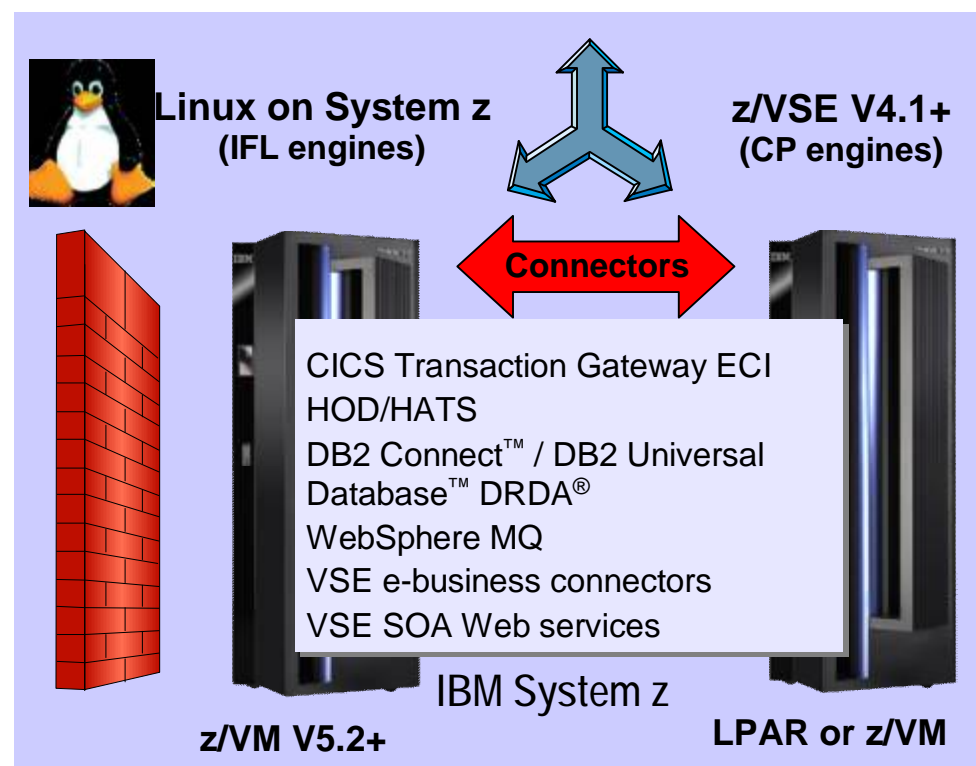
§ **Security and auditability enhancements**

§ **SOA and interoperability**

§ **FSU from z/VSE V3.1 & VSE/ESA V2.7**

§ **Requires z/VM V5.2 or later (if using VM)**

IBM System Storage



z/VSE Learning Opportunities

§ z/VSE V4 Live Virtual Classes

- § z/VSE and MWLC Announcement Overview
- § Midrange Workload Licence 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
- § Using Encryption Technology with z/VSE
- § DB2 Server for VSE & VM V7.5
- § Modern Application Dev for z/VSE
- § z/VSE Application Development Demo
- § *more planned – watch z/VSE web site*

Note: Charts are available on the z/VSE web site the day of the call. Replay available usually the next day after the call. For more information, please see the z/VSE web site at:

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

§ z/VSE-related Events

§ 2008 European IBM Tech Conference -

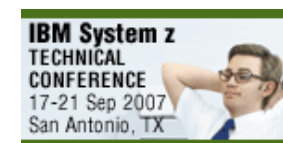
featuring z/OS, z/VM, z/VSE, and Linux on System z

- ▶ May 5 - 9
- ▶ Dresden, Germany

§ 2008 US IBM System z Expo -

featuring z/OS, z/VM, z/VSE, and Linux on System z

- ▶ Las Vegas, NV
- ▶ October 13 – 17



§ 2009 WAVV Conference -

featuring z/VM, z/VSE, and Linux on System z

- ▶ May 15 - 19
- ▶ Orlando, FL



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



Thanks for listening



Your friends, the VSE development team

