z/VSE Version 4 News and Views

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z/VSE Heritage

40+ Years of IBM Mainframe & VSE Evolution

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

§**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

§ **z/VSE V4.1**

- Batch and OLTP
- SOA
- still lovable
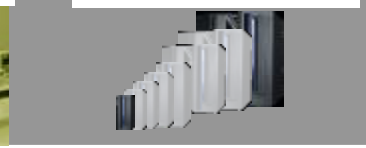
§ DOS/360

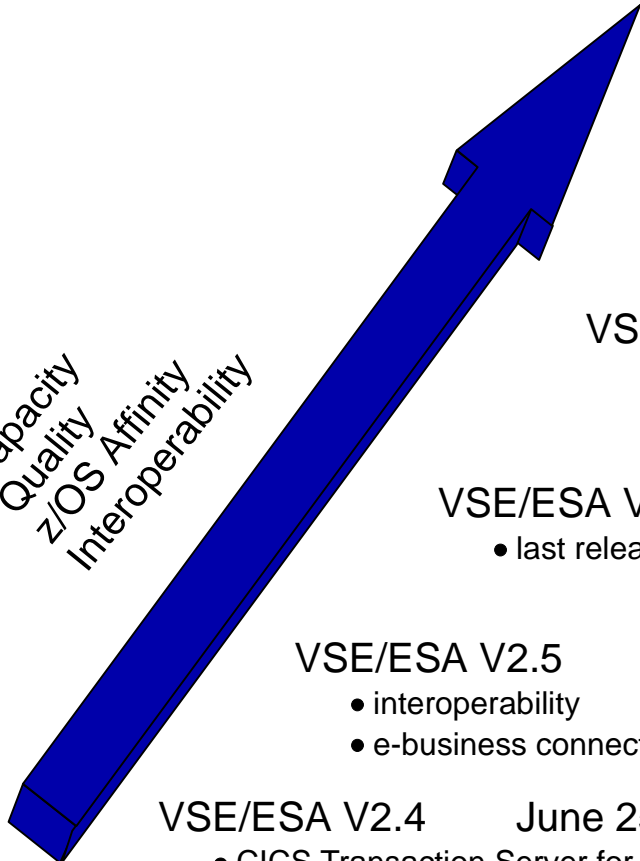- 1 batch partition
- basic, but lovable

| 1960s | 1970s | 1980s | 1990s | 2000s |

Recent VSE History

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

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

VSE/ESA V2.7   March 14, 2003
- enhanced interoperability
- ALS2 servers only

VSE/ESA V2.6   Dec 14, 2001
- last release to support pre-G5 servers

VSE/ESA V2.5   Sept 29, 2000
- interoperability
- e-business connectors

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

Capacity
Quality
z/OS Affinity
Interoperability

* z/VSE V3 can operate in 31-bit mode only, 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

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Changes since WAVV 2006

§ 03/31/2006 - EoS for VSE/ESA V2.6 effective

§ 04/27/2006 - IBM System z9 EC and z9 BC Announcement (incl z9 EC sub-cap models)

§ 04/27/2006 - z/VSE V4.1 Preview

§ 07/21/2006 - z/VSE V3.1.2 (service update and consolidation) available

§ 08/29/2006 - SOD for z/VSE support of TS1120 encrypting tape drive

§ 11/11/2006 - TCP/IP for VSE/ESA V1.5 Service Pak E

§ 01/09/2007 - z/VSE Version 4 Release 1 Announcement

§ 01/09/2007 - Midrange Workload License Charge (MWLC) for z/VSE V4

§ 02/06/2007 - z/VM Version 5 Release 3 Announcement

§ **02/28/2007 - EoS 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 (for z/VSE V4.1) available

z/VSE Status

VSE Version and Release	Marketed	Supported	End of Support
z/VSE V4.1	**Yes**	**Yes**	tbd
z/VSE V3.1	Yes	Yes	tbd
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 <u>only</u>**
  – 64-bit *real* addressing (31-bit *virtual* addressing)
    • up to 8 GB real processor storage
  – 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 (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)
  – Configurable Crypto Express2 (new accelerator option)
  – Secure FTP
  – TS1120 encrypting tape

z/VSE Version 4 Release 1 (cont.)

§ **IBM System Storage**
  - TS1120 encrypting tape
  - TS7700 Virtualization Engine
  - TS3500 Tape Library
  - SOD for TS3400 Tape Library
  - DS6000/DS8000 64K cylinder ECKD volumes

§ **TCP/IP for VSE/ESA V1.5 Service Pack E enhancements**, including
  - TCP/IP stack
  - Performance
  - FTP
  - Security and SSL
    • SecureFTP
    • CPACF AES-128
    • Crypto Express2 2048-bit RSA keys (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 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

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

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

IBM System z9 Exploitation

Functions	z/VSE V4.1	z/VSE V3.1 (Note 1)
z/Architecture mode only	Yes	No
64-bit *real* 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 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 Mainframe Servers

IBM Servers	z/VSE V4.1	z/VSE V3.1 (Note 1)
IBM System z9 Enterprise Class (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

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z/VSE support for IBM System Storage

New Standard in Pricing and Packaging	New Standard in Functionality, Performance, TCO

IBM TotalStorage DS6000	ESS 750 / 800	IBM TotalStorage DS8000

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 support for 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 compressed *then* encrypted – no change in media utilization
  – Encryption performed with minimal (< 1% data rate performance impact)

TS1120
500 GB
100 MB/sec

§ **z/VSE V4.1 supports Systems Managed Encryption**
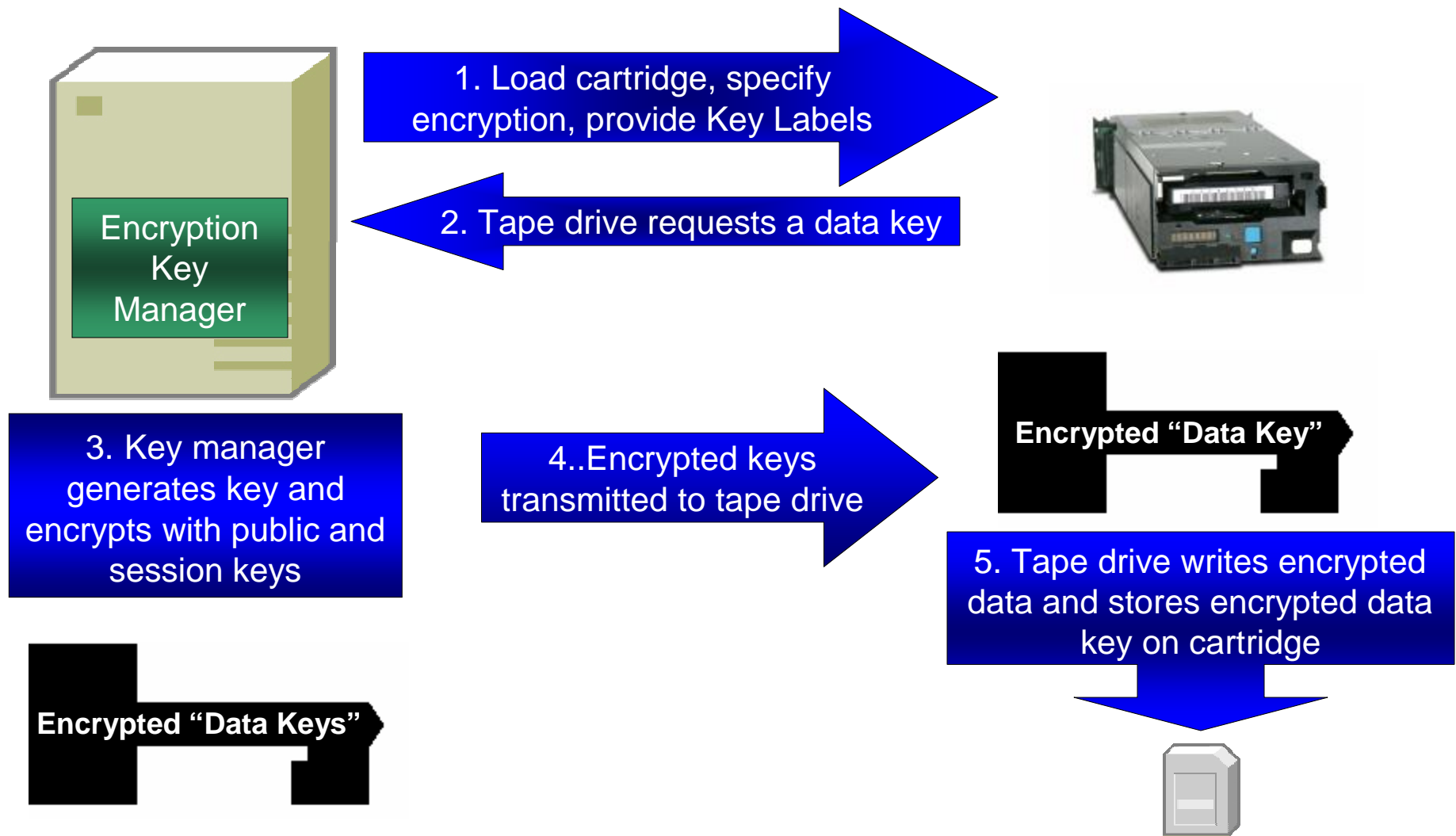 – Support available via PTF after z/VSE V4.1 GA
  – SOD for z/VSE V3.1

Encryption Key Manager

§ **IBM Encryption Key Manager (EKM) for Java platform™**
  – Runs on z/OS, AIX, Linux (incl System z), i5/OS, HP, Sun, & Windows
  – Secure TCP/IP connection between EKM and TS1120
  – Stores and manages labels and key encrypting keys
  – Supplies data encrypting keys to TS1120 on request
  – TS1120 encrypts files using data encrypting key
  – TS1120 stores encrypted data encrypting key on cartridge
    • data encryption key can be encrypted using two different key encryption keys

Overview of Encryption Key Manager for Tape Encryption
- **key generation, communication and key storage**

Encryption
Key
Manager

1. Load cartridge, specify encryption, provide Key Labels

2. Tape drive requests a data key

3. Key manager generates key and encrypts with public and session keys

4..Encrypted keys transmitted to tape drive

Encrypted "Data Key"

5. Tape drive writes encrypted data and stores encrypted data key on cartridge

Encrypted "Data Keys"

z/VSE Comparison

§ z/VSE V3.1* (GA 3/2005)

- **ESA/390 (31-bit) mode only**
  - up to 2GB real processor storage
  - System z9 EC *and* z9 BC
  - 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
- 31-bit buffers for ACF/VTAM (via PTF)
- SOD for TS1120 encrypting tape

§ **z/VSE V4.1 (GA Planned 3/2007)**

- **z/Architecture (64-bit) mode <u>only</u>**
  - **up to 8 GB real processor storage**
  - System z9 EC *and* z9 BC
  - zSeries 990, 890, 900, 800
- **MWLC Pricing Metric (z9 <u>only</u>)**
  - **Full-capacity and sub-capacity mode**
- HiperSockets
- CPACF + enhancements
- Crypto Express2 (configurable)
- FPC/SCSI disk & NPIV + point-to-point
  - DS8000. DS6000, ESS
- FICON Express2 & 4
- OSA Express2
- 31-bit buffers for ACF/VTAM
- TS1120 encrypting tape

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Introducing a <u>New</u> Price Metric for z/VSE V4

Summary of z/VSE Price Metrics

IBM Servers	z/VSE V4.1	z/VSE V3.1 (Note 1)
IBM System z9 Enterprise Class – z9 EC (formerly z9-109)	**MWLC** (may be flat WLC)	GMLC, ELC, flat WLC
IBM System z9 Business Class – z9 BC	**MWLC** (A01 is zELC)	TWLC (A01 is zELC)
IBM eServer zSeries 990 and 900	GMLC, ELC, flat WLC	GMLC, ELC, flat WLC
IBM eServer zSeries 890	TWLC (110 is zELC)	TWLC (110 is zELC)
IBM eServer zSeries 800	zELC	zELC
S/390® Parallel Enterprise Server™ G5/G6	not applicable	GMLC, ELC, flat WLC
S/390® Multiprise® 3000	not applicable	GOLC

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Midrange Workload License Charge (MWLC)

§ Requires current hardware (IBM System z9 EC or z9 BC) *and* 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		
–	5696 234	HLASM	– 5686 068	IBM COBOL for VSE/ESA
–	5648 054	CICS TS for VSE/ESA V1	– 5686 A01	IBM C for VSE/ESA
–	5686 065	ACF/VTAM® VSE/ESA V4	– 5686 069	IBM PL/1 for VSE/ESA
–	5686 A04	TCP/IP for VSE/ESA V1.5	– 5746 SM3	IBM DFSORT/VSE V3
–	5648 099	DITTO/ESA® for VSE	– 5746 XX1	DL/I VSE
–	5697 F42	DB2 Server for VSE & VM	– 5686 A06	MQSeries® for VSE/ESA

§ 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 mode

§ Structured to help address new growth opportunities

MWLC Sample Stack vs. TWLC and FWLC
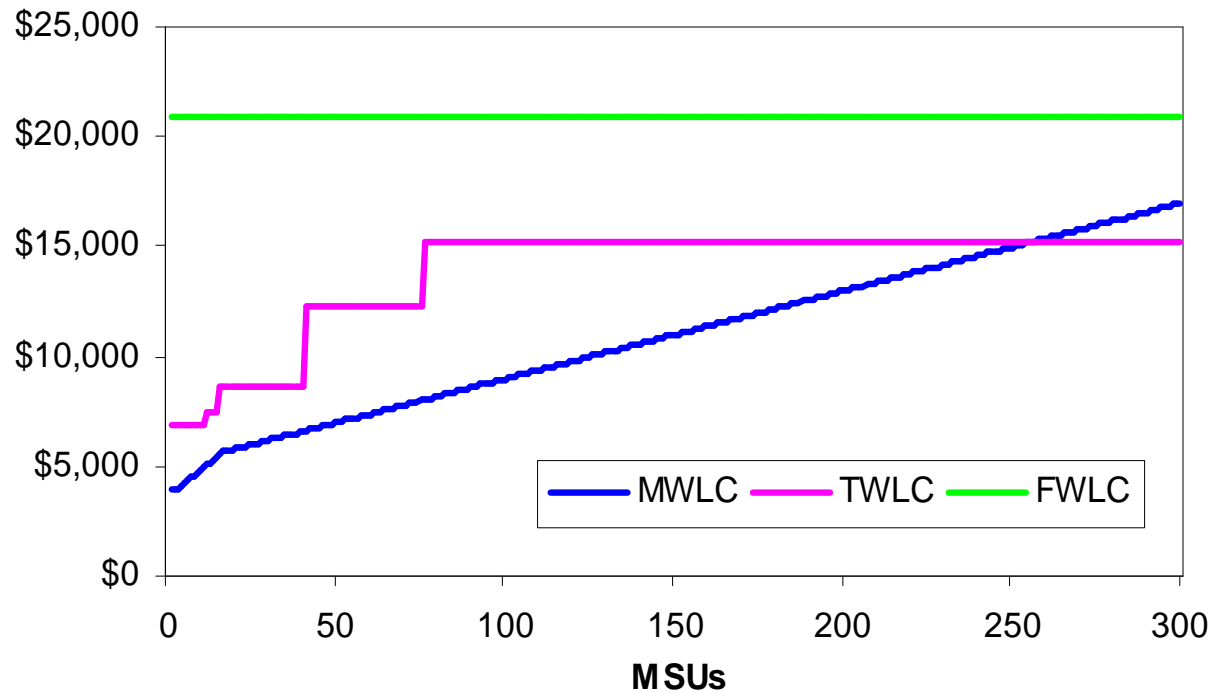
§ Customers may choose between MWLC/TWLC or MWLC/FWLC as appropriate to their machine

§ 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
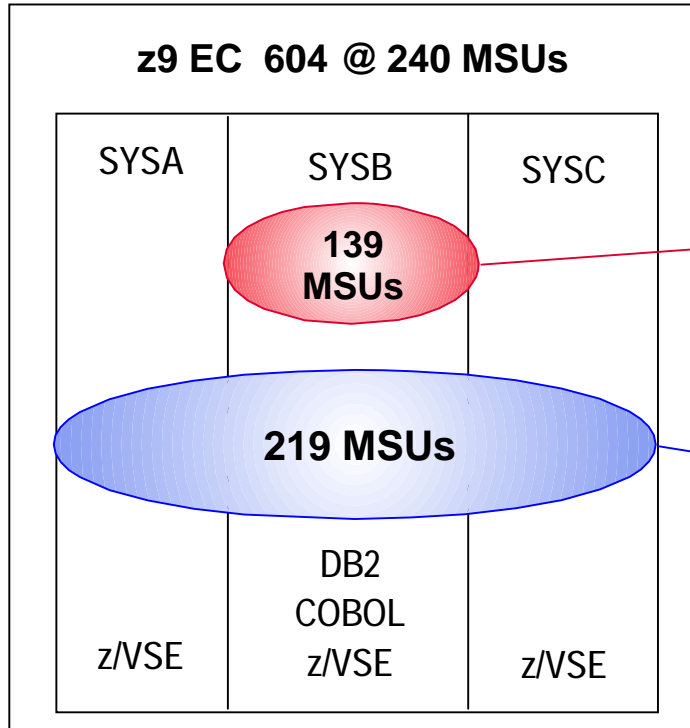
What is sub-capacity?

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

System z @ 100 MSUs

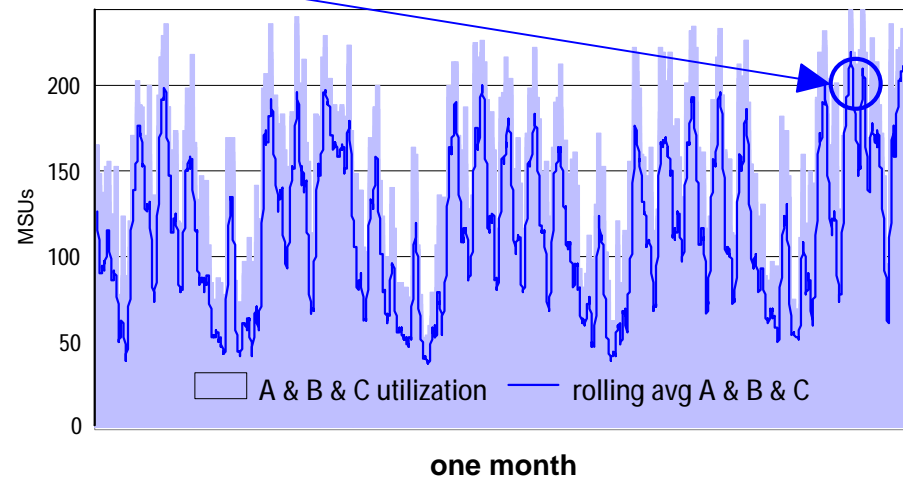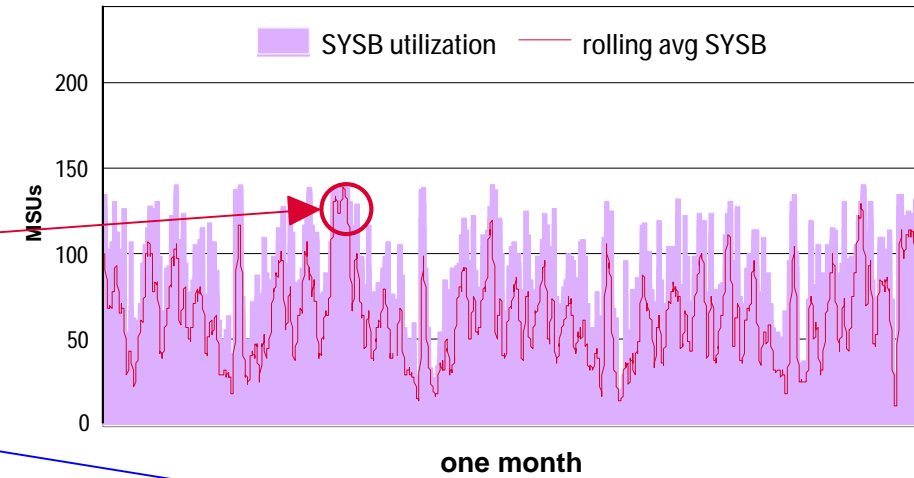| 50 MSUs	30 MSUs
DB2 CICS z/VSE	DFSORT® COBOL z/VSE
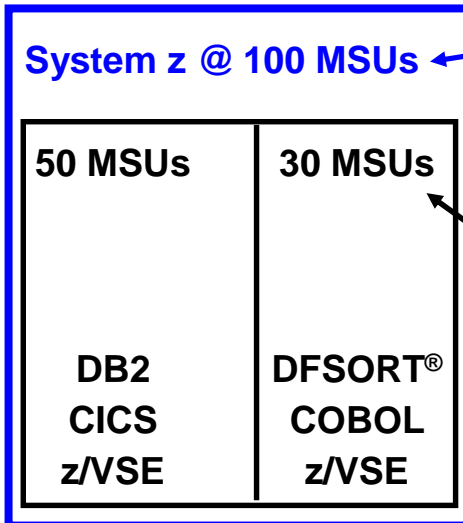
Sub-Capacity Pricing Metric relies on the utilization (based on peak 4-hour rolling average each month) of the LPAR(s) or guest Virtual Machines where a product executes.

Generic sub-capacity example

z9 EC 604 @ 240 MSUs

SYSA	SYSB	SYSC
	139 MSUs	
	219 MSUs	
z/VSE	DB2 COBOL z/VSE	z/VSE

Product	Sub-Cap MSUs
DB2	139 MSUs
COBOL	139 MSUs
z/VSE	219 MSUs

SYSB utilization — rolling avg SYSB

one month

A & B & C utilization — rolling avg A & B & C

one month

New z9 Opportunities with MWLC

§ **More MSUs for the same, or slightly lower, IBM software $**

– More capacity for future growth, workload spikes, seasonal factors, emergencies, etc.
  - disconnect hardware growth from software charges
  - grow into capacity gradually with a 1 MSU level of granularity
– IBM software $ respond to normal cyclicality
– Isolate middleware products to reduce software costs (depending on workload)
  - examine workload to identify where you might limit product use to specific LPARs (or VM guests)
  - limit LPAR (or VM guest) utilization to control software costs (optional)
  - expand production LPARs (or VM guests) without impacting other LPARs (or VM guests)
– Add IFL(s) and Linux-based IBM middleware to the mix for new workloads

§ **Pick the server that best meets your needs**

– High end and midrange z9 servers are no longer priced differently

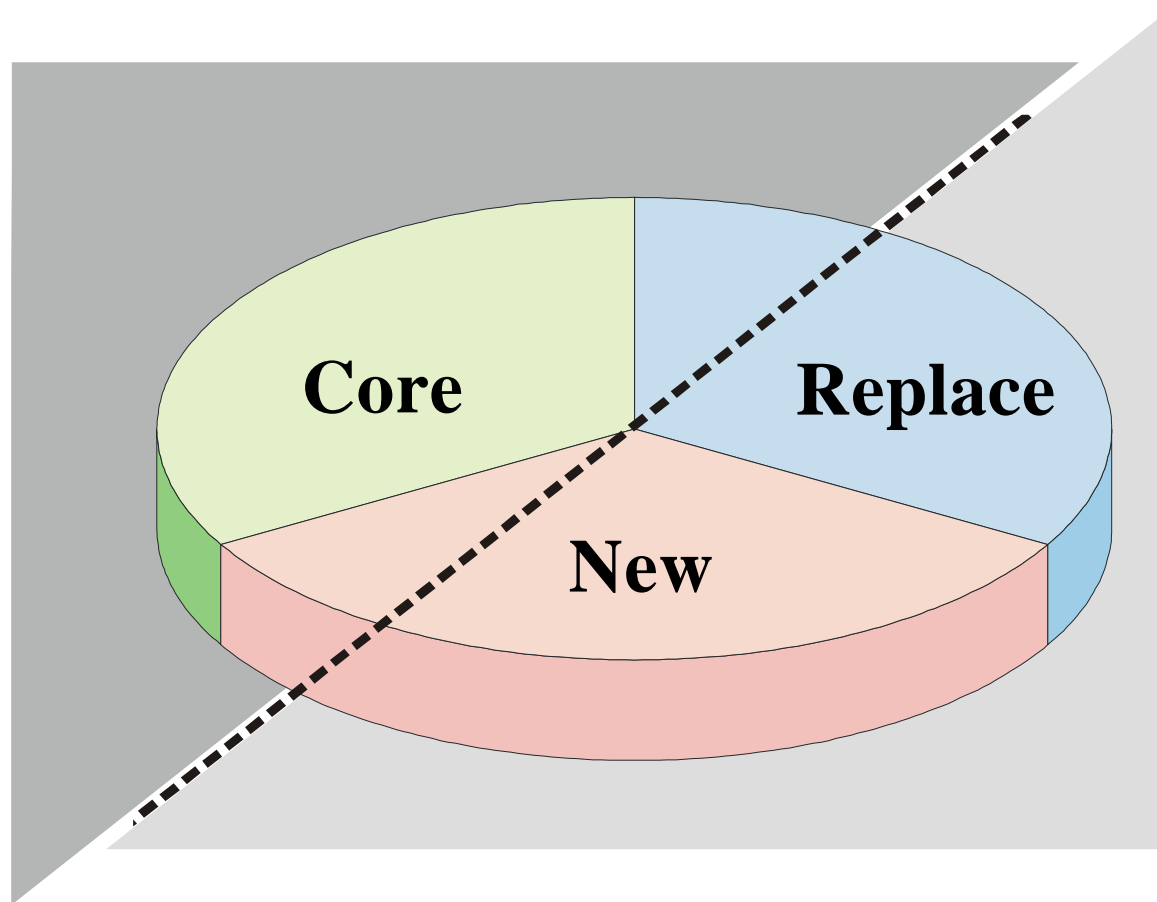§ **Consolidate servers in large accounts**

– Consolidate remote, vulnerable VSE workloads onto LPARs on System z9 EC servers primarily running z/OS at HQ

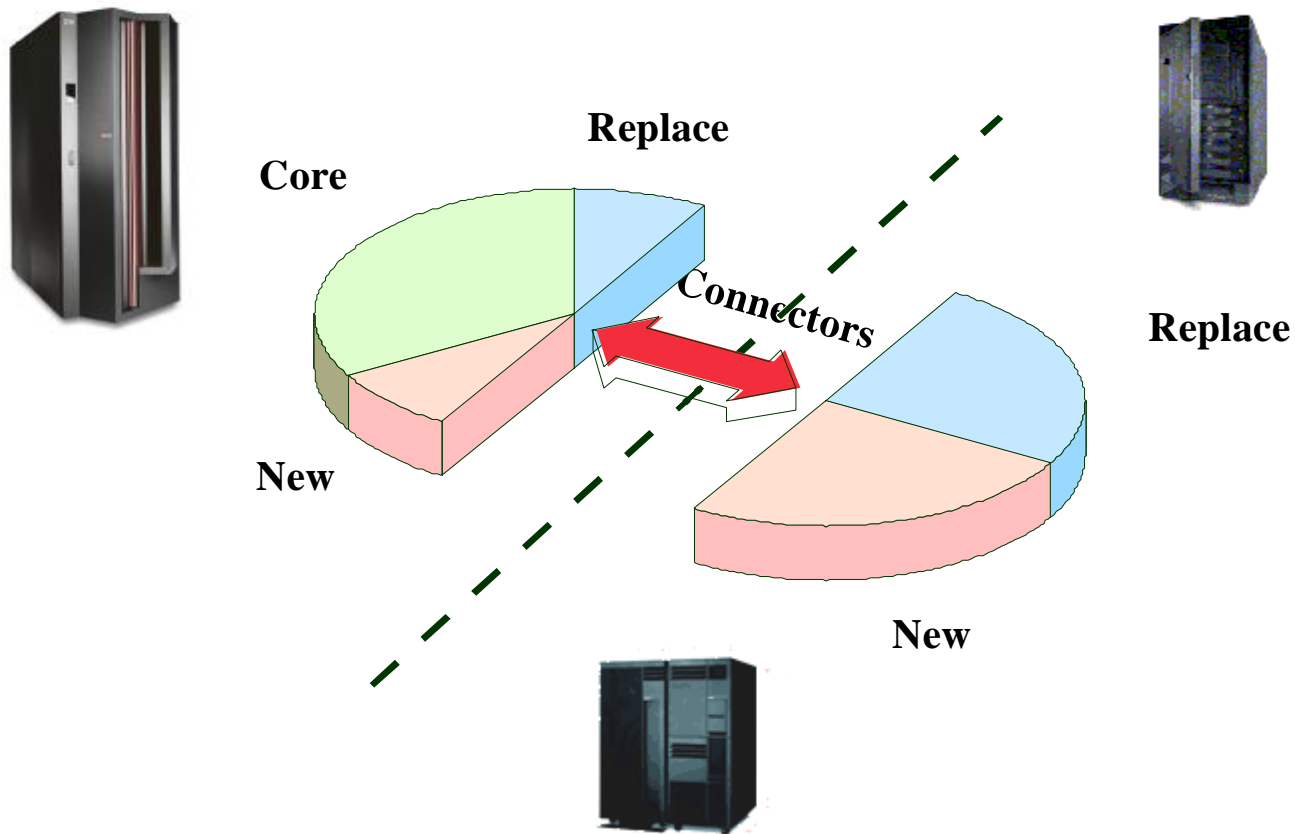§ **The same MSUs for lower IBM software $**

z/VSE Integration

Customer Application Portfolio:

Note: Pie arbitrarily divided into thirds. Percent of applications
In each category is unique to each customer

Integrating z/VSE into the IT network

Hybrid model

IBM System Storage

IBM System z
IBM System p5
IBM System x
IBM Blade Center
IBM System i5
OpenPower

IBM System z
Enterprise Server

Web

Connectors

CICS Transaction Gateway ECI
HOD/HATS
DB2 Connect / DB2 UDB DRDA
WebSphere MQ
VSE e-business connectors
VSE SOA Web services

Clients

Business Services

Tran/Data Services

Think *inside* the box

Linux on System z
(IFL engines)

z/VSE V4.1
(std engines)

Web

Connectors

CICS Transaction Gateway ECI
HOD/HATS
DB2 Connect / DB2 UDB DRDA
WebSphere MQ
VSE e-business connectors
VSE SOA Web services

z/VM V5.2+

LPAR or z/VM

IBM System z9

Clients	Business Services	Tran/Data Services

VSAM Connector

Linux on System z	z/VSE

Diagram content (Linux on System z side):
- WebSphere (opt)
- VSE Connector Client
- JDBC
- VSEScript
- Program

Diagram content (z/VSE side):
- TCP/IP
- VSE Connector Server
- CICS
- VSAM

VSE/VSAM Redirector

Linux on System z side:
- WebSphere
- DB2 UDB
- File Handler
- Redirector server

z/VSE side:
- TCP/IP
- Program
- CICS TS
- batch
- VSAM Request
- Redirector client
- VSAM

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 Redirector	Yes	Yes
VSAM, POWER, Librarian, ICCF lib, console	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 ECI	Yes	Yes
Host on Demand / Host Application Transformation	Yes	Yes
DB2 Connect/DB2 UDB (DB2 Server for VSE PRPQ)	Yes	Yes
WebSphere MQ (VSE Client no charge)	Yes	Yes

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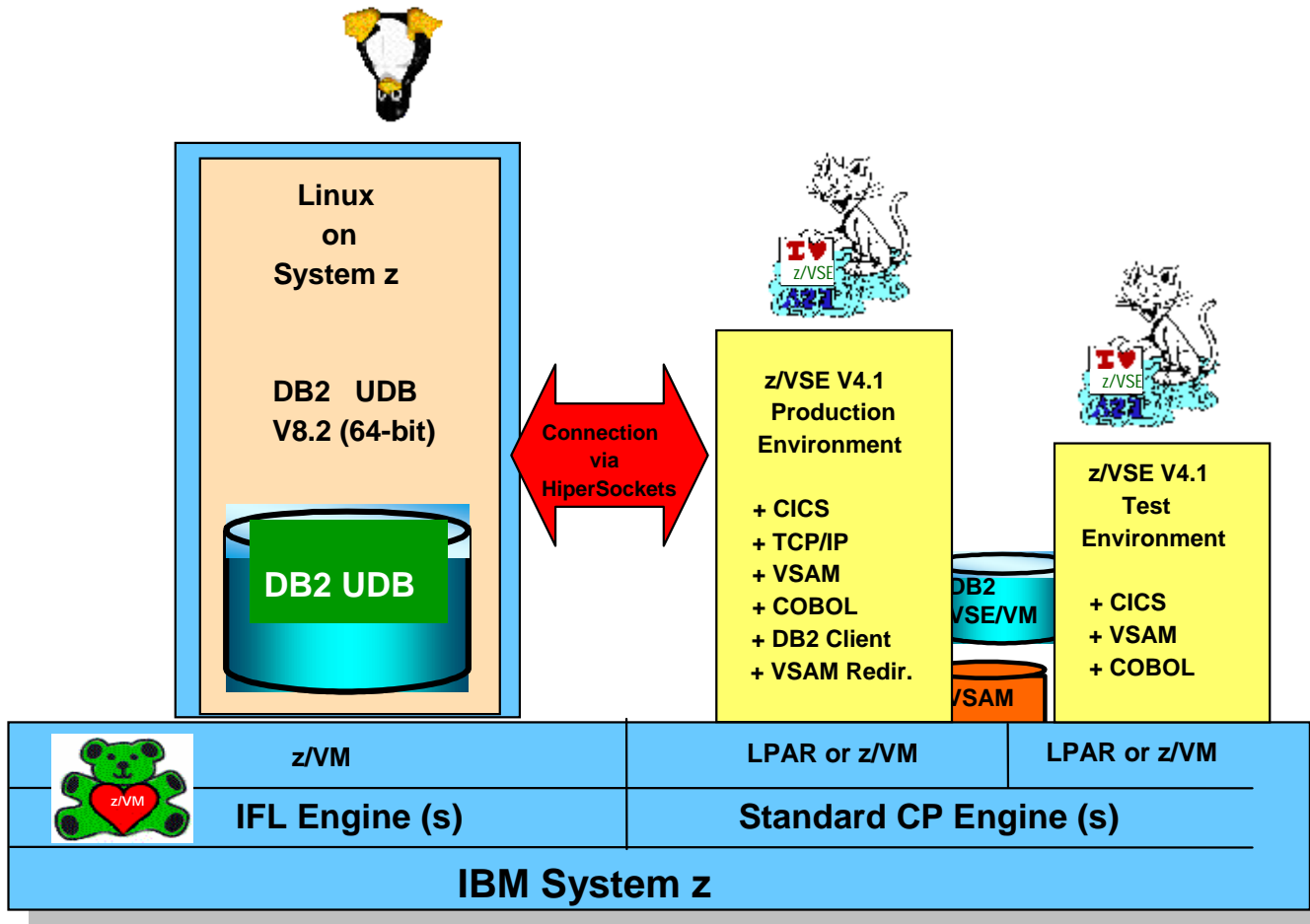# z/VSE V4 and Linux on System z

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VSE Customer Environment

§ Mixed servers (System z, System p, System x, System i, and competitive)
§ CICS and batch programs on VSE
§ VSAM data on VSE (plus some DB2, DL/I, or ISV database)
§ Relational data bases (DB2, Oracle, etc.) on distributed platforms
§ Data exchange via FTP

System i

I5/OS / Linux DB2

DB2 UDB

System p

AIX / Linux SAP DB2 / ORACLE

DB2 UDB

System x Server Farm

IP

IP

Windows / Linux DB2 / ORACLE

DB2 UDB

Data Exchange via FTP

z/VSE Production Environment

+ TCP/IP
+ CICS
+ VTAM
+ COBOL

+ VSAM
+ DB2

VSAM

DB2 VSE/VM

z/VSE Test Environment

+ CICS
+ VSAM
+ COBOL

LPAR or z/VM | LPAR or z/VM
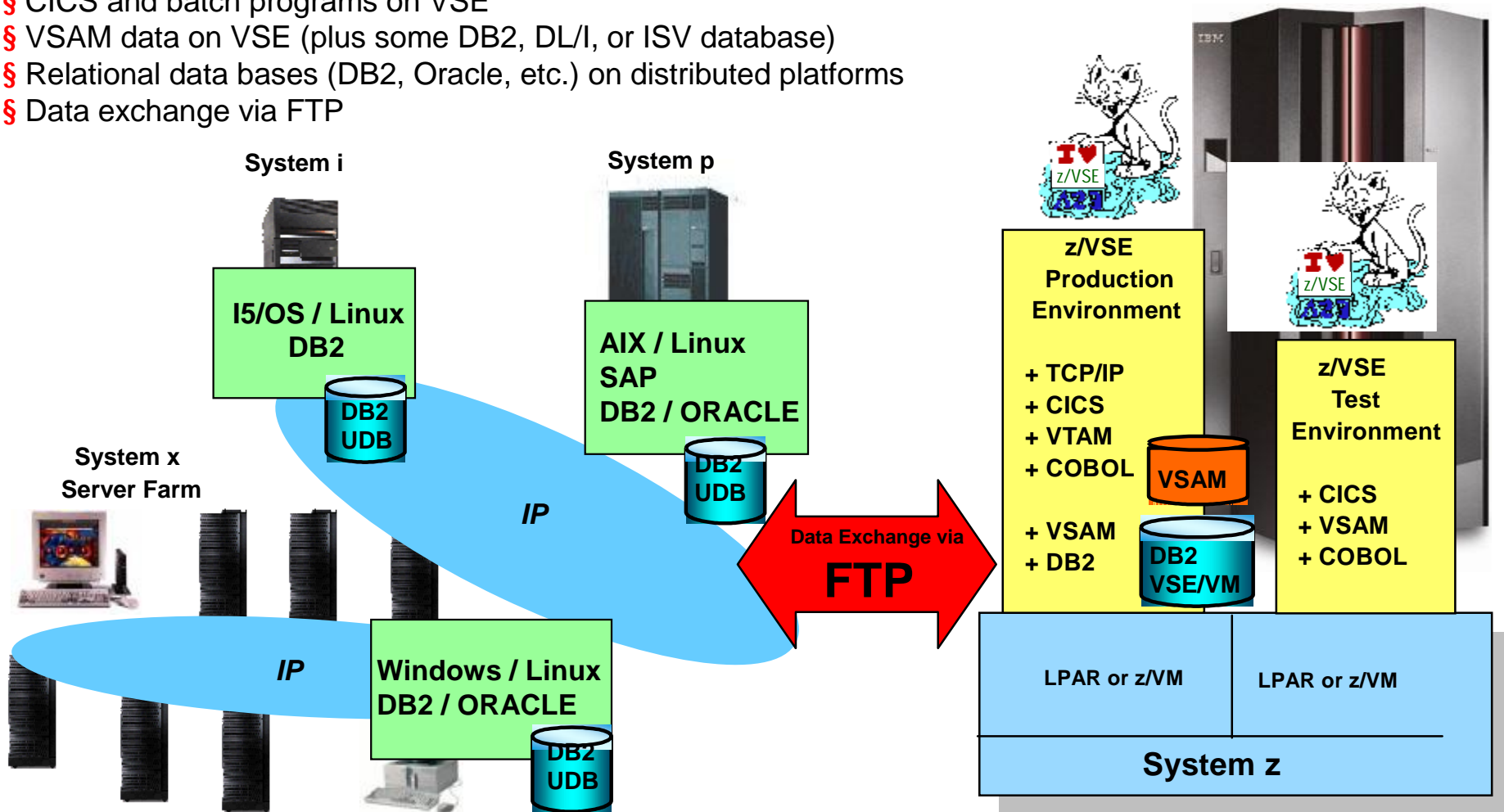
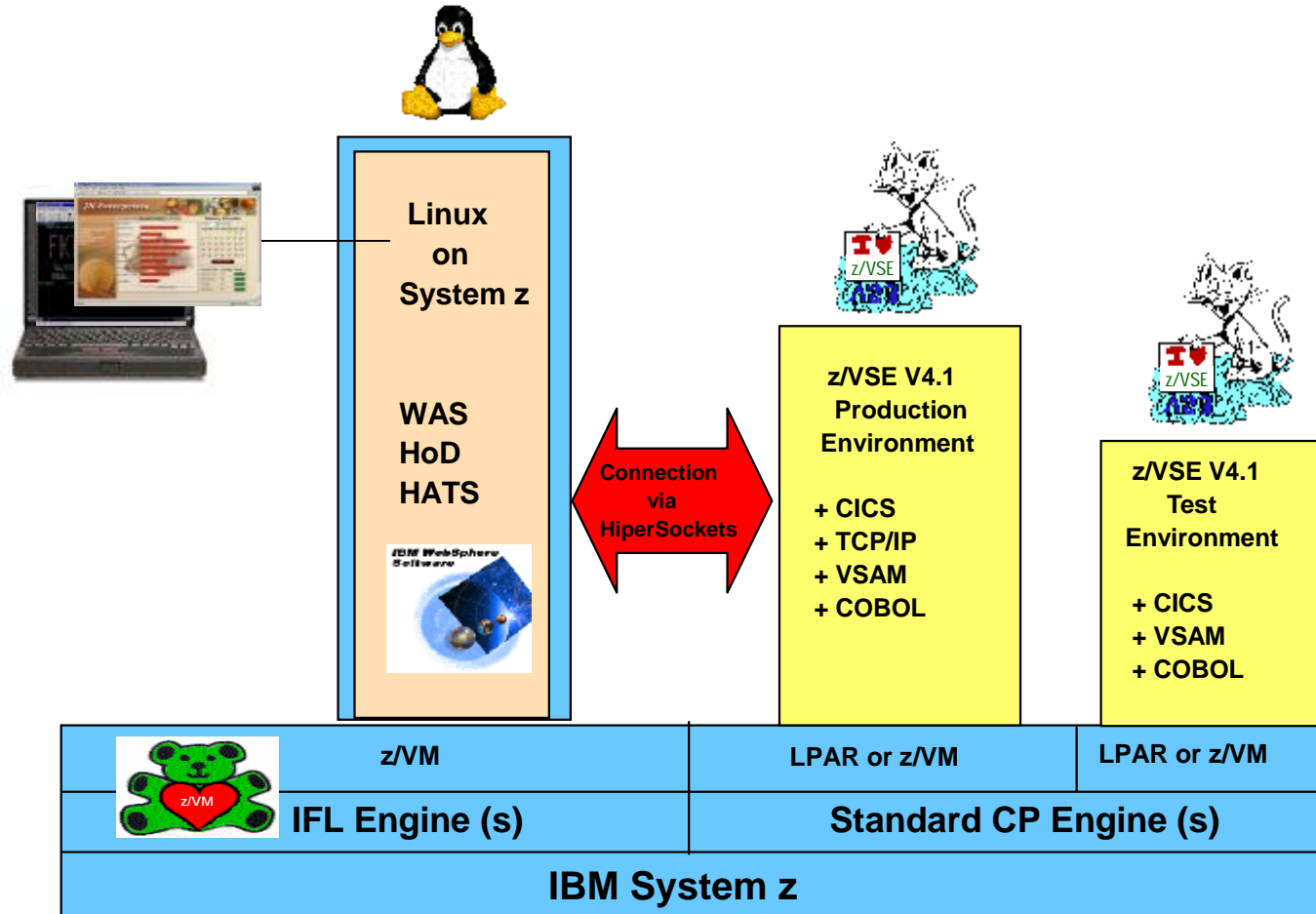**System z**

Most important requirement: **Access to new applications!**

Scenario 1: DB2 UDB (64-bit) for VSE Customers

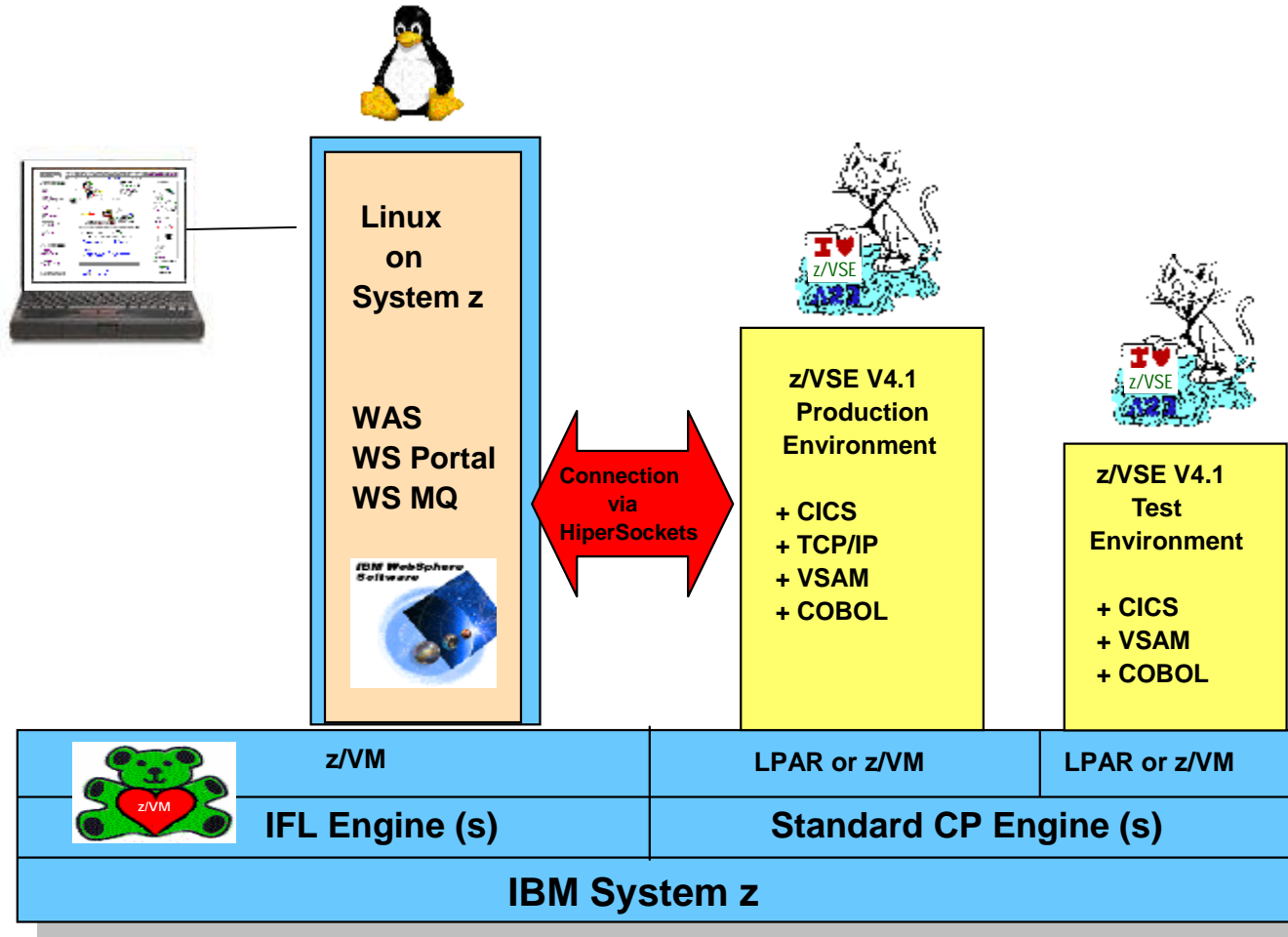## Data consolidation and data warehouse solutions with DB2 UDB on System z

Linux on System z

DB2 UDB V8.2 (64-bit)

DB2 UDB

Connection via HiperSockets

z/VSE V4.1 Production Environment

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

DB2 VSE/VM

VSAM

z/VSE V4.1 Test Environment

+ CICS
+ VSAM
+ COBOL

z/VM	LPAR or z/VM	LPAR or z/VM
IFL Engine (s)	**Standard CP Engine (s)**	

IBM System z

Scenario 2: „Webification" of VSE Applications

Web enable existing applications with Internet / Intranet frontend

Linux
on
System z

WAS
HoD
HATS

Connection
via
HiperSockets

z/VSE V4.1
Production
Environment

+ CICS
+ TCP/IP
+ VSAM
+ COBOL

z/VSE V4.1
Test
Environment

+ CICS
+ VSAM
+ COBOL

z/VM

LPAR or z/VM
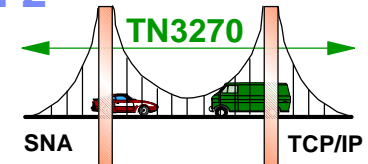
LPAR or z/VM

IFL Engine (s)

Standard CP Engine (s)

IBM System z

Scenario 3: WebSphere Portal for VSE Customers

Portal for administration and integration of employees / customers / partners

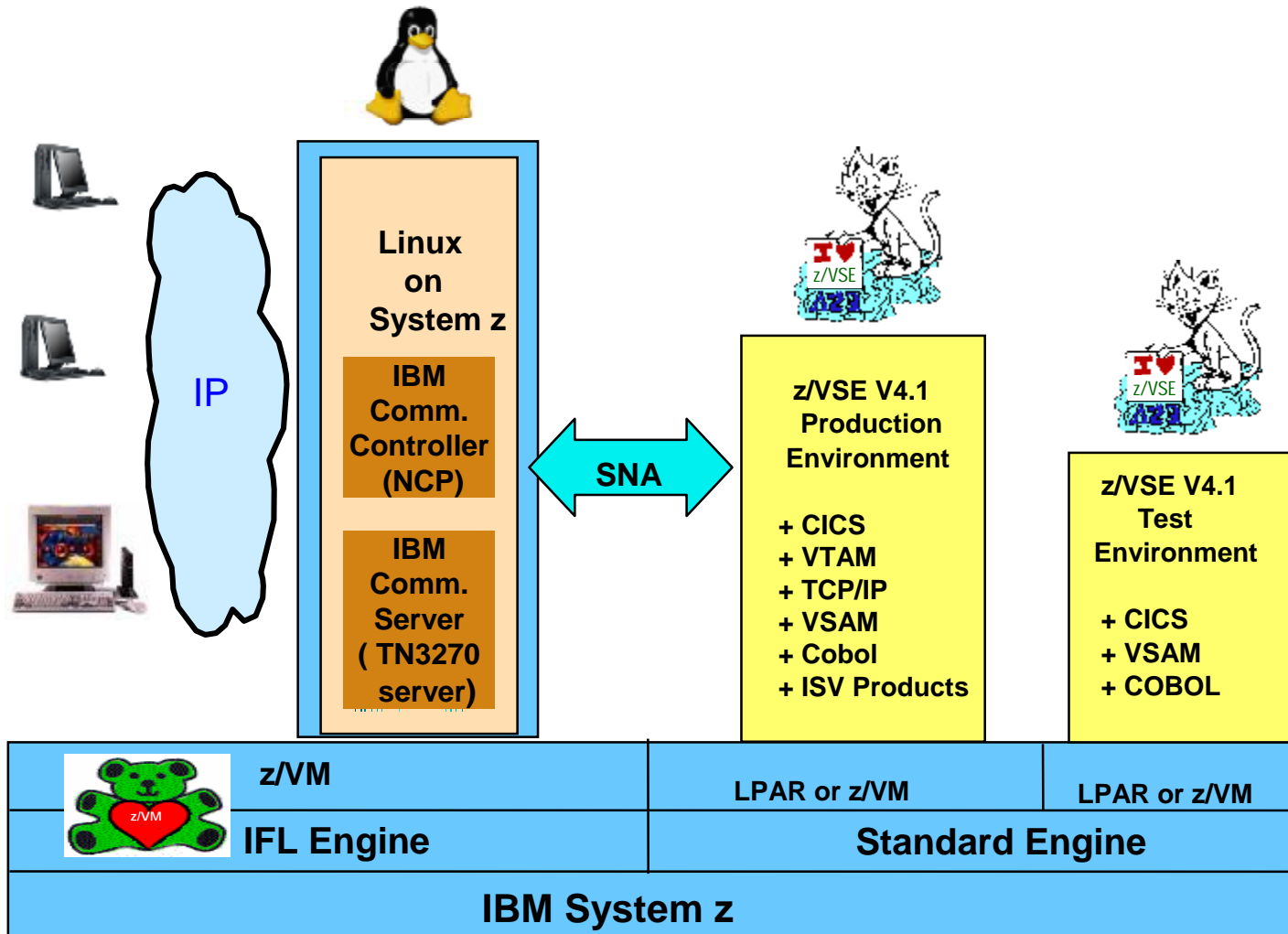| Linux on System z		z/VSE V4.1 Production Environment	z/VSE V4.1 Test Environment
WAS WS Portal WS MQ	Connection via HiperSockets	+ CICS + TCP/IP + VSAM + COBOL	+ CICS + VSAM + COBOL
z/VM		LPAR or z/VM	LPAR or z/VM
IFL Engine (s)		Standard CP Engine (s)	
IBM System z			

Scenario 4: Network Infrastructure Simplification

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

TN3270

SNA   TCP/IP

Easy, high-value transition

IP

Linux on System z

IBM Comm. Controller (NCP)

IBM Comm. Server (TN3270 server)

SNA

z/VSE V4.1 Production Environment

+ CICS
+ VTAM
+ TCP/IP
+ VSAM
+ Cobol
+ ISV Products

z/VSE V4.1 Test Environment

+ CICS
+ VSAM
+ COBOL

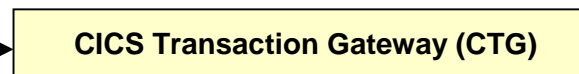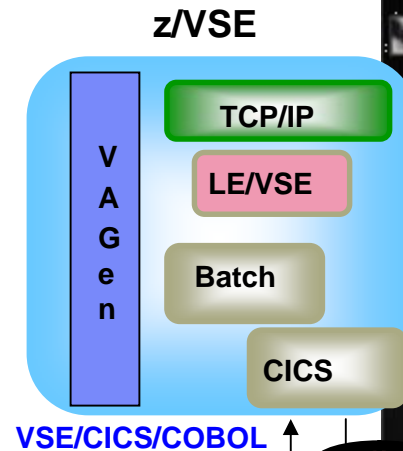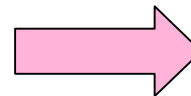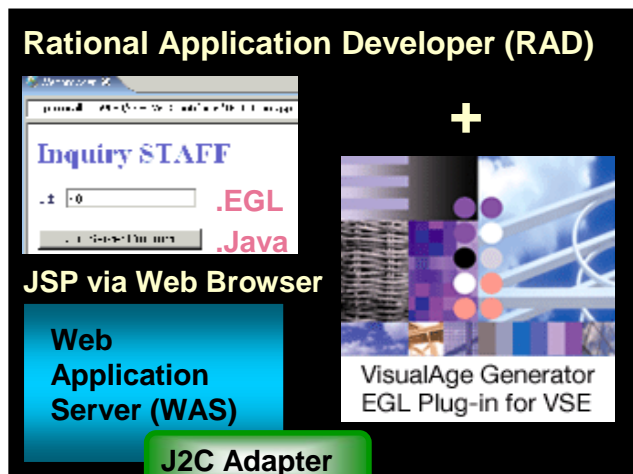| z/VM	LPAR or z/VM	LPAR or z/VM
IFL Engine	**Standard Engine**	

IBM System z

Scenario 5: Application Development for VSE

Modern, Cross Platform Application Development Environment

VisualAge Generator EGL Plug-in for VSE *

NEW

PC/Workstation

Rational Application Developer (RAD)

Inquiry STAFF

.EGL
.Java

JSP via Web Browser

Web Application Server (WAS)

VisualAge Generator EGL Plug-in for VSE

J2C Adapter

z/VSE

V A G e n

TCP/IP

LE/VSE

Batch

CICS

VSE/CICS/COBOL

CICS Transaction Gateway (CTG)

VSAM/ DB2
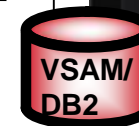
§ WebSphere Application Server – the integration platform

§ Enterprise Generation Language (EGL), Visual Age Generator

§ Java™ 2 Platform, Enterprise Edition (J2EE) connection Architecture (J2C/JCA)

§ Java Server Pages (JSP), as Front-End representation technology

Scenario 6: Backup/Restore Concepts for VSE

Integrate z/VSE with TSM on Linux on System z

NEW

Linux
on
System z

Tivoli
Storage
Manager
(TSM)

Tivoli

Managed Backup

Connection via HiperSockets

z/VSE V4.1
Production
Environment

+ CICS
+ TCP/IP
+ VSAM
+ COBOL
+ Virtual Tape

z/VSE V4.1
Test
Environment

+ CICS
+ VSAM
+ COBOL

z/VM	LPAR or z/VM	LPAR or z/VM
IFL Engine (s)	Standard CP Engine (s)	
IBM System z		
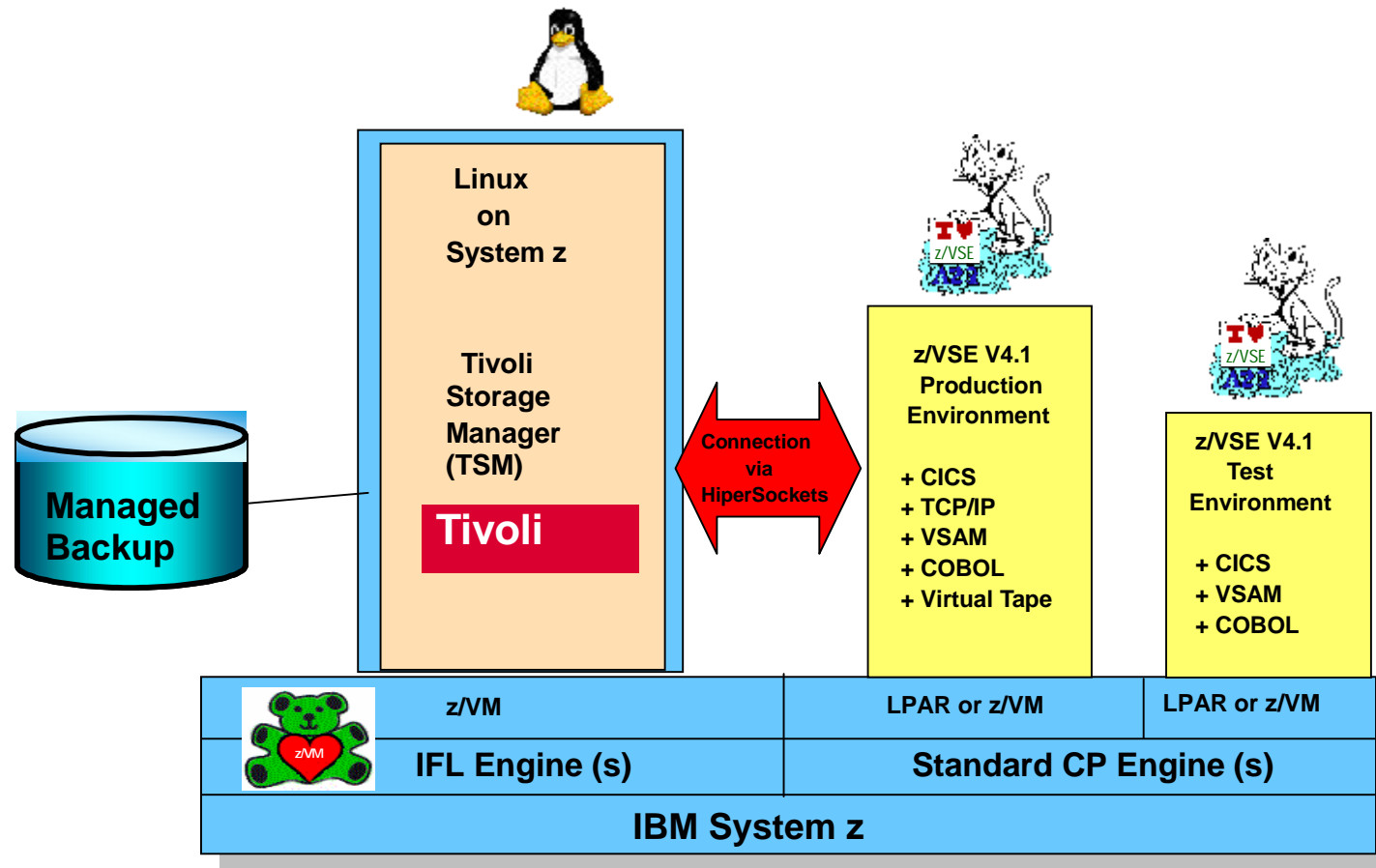
Linux Advantages for z/VSE Customers

§ **Linux applications based on IBM Middleware**
  – WebSphere Application Server
  – DB2 UDB
  – Lotus® Domino™
  – Communications Server
  – advanced Application Development tools

§ **Linux-based open source and/or ISV applications**
  – Linux on System z exploits 64-bit capabilities
  – Complement 31-bit core VSE applications

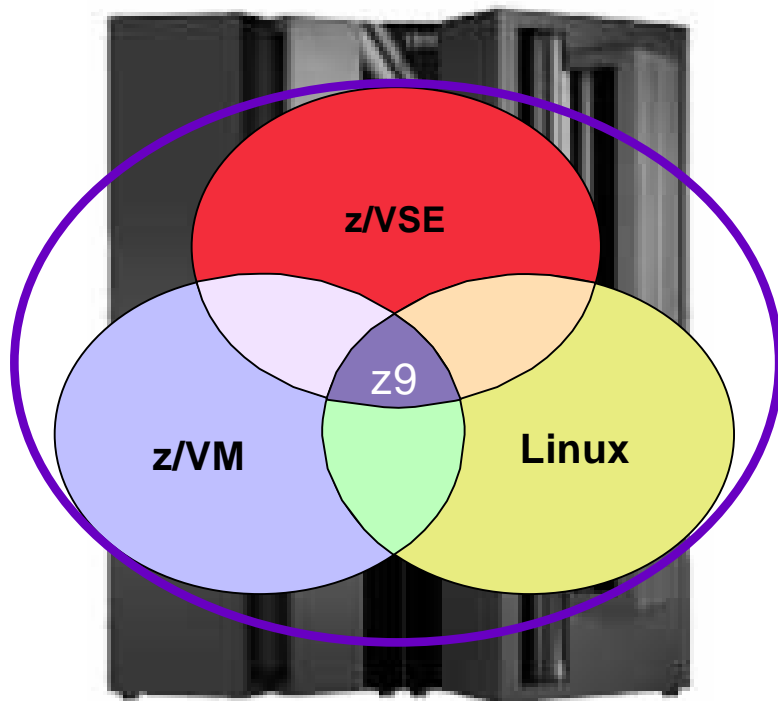§ **Integrate Linux and z/VSE solutions**
  – Linux access to core z/VSE applications and data
  – z/VSE access to new Linux applications and data

§ **Infrastructure simplification**
  – Consolidate existing distributed servers
  – TCO benefits of Linux and System z

IBM System z Processor
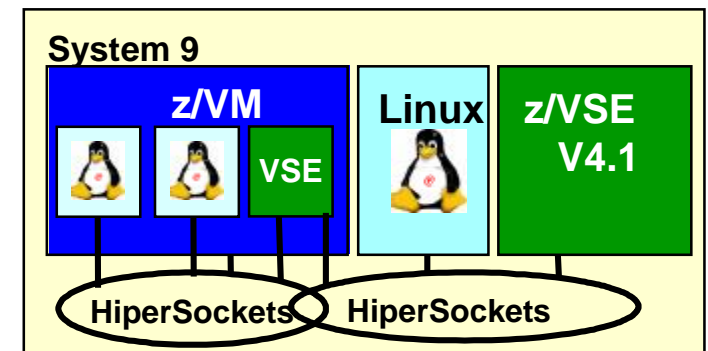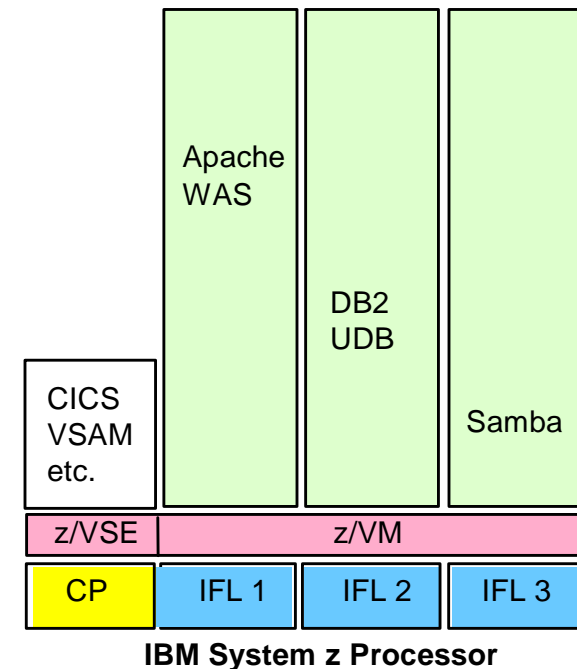
Exploiting the System z Platform

§ **z/VSE** *designed to provide*
  – protection of core IT investments
  – robust, secure enterprise server
  – cost-effective solutions
  – interoperability with network/servers
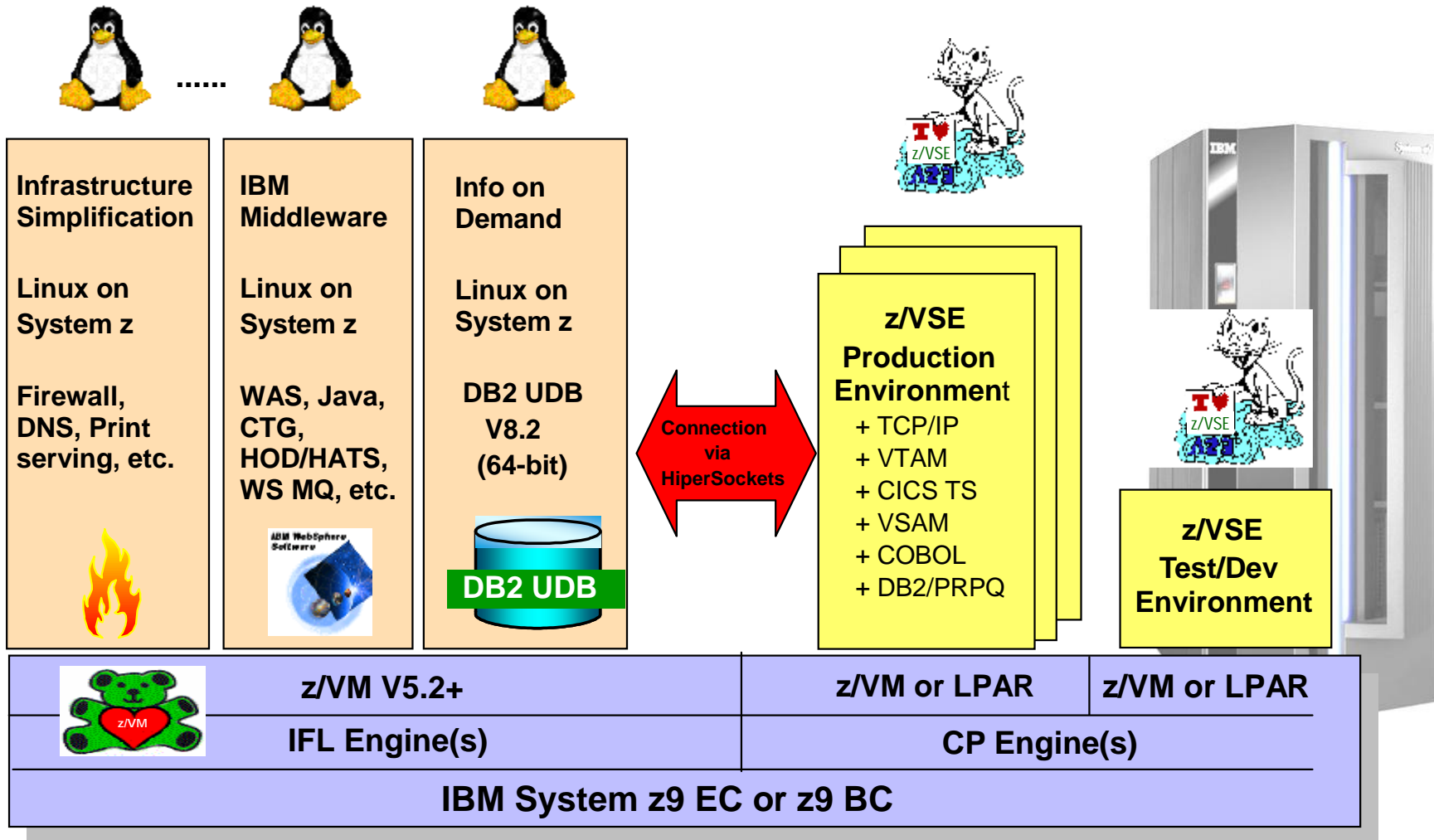 – z/OS affinity

§ **Linux on System z**
  – large portfolio of new applications
  – platform for IBM middleware
  – infrastructure simplification
  – massive scalability

§ **z/VM** *designed to provide*
  – highly flexible, secure
  – robust, industrial strength
  – multiple VSE and Linux images
  – designed to exploit System z

z/VSE V4 and Linux on System z

				z/VSE Production Environment	z/VSE Test/Dev Environment

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 UDB V8.2 (64-bit)

DB2 UDB

Connection via HiperSockets

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

z/VSE Test/Dev Environment

z/VM V5.2+	z/VM or LPAR	z/VM or LPAR
IFL Engine(s)	CP Engine(s)	

IBM System z9 EC or z9 BC

Summary/Wrap-up

29.05.2007

z/VSE Version 4 Release 1

§ Announce 1/9/2007 (Preview 4/29/2006)

§ **General Availability 3/16/2007**

§ **z/Architecture (64-bit) mode only**
  – Up to 8 GB real processor storage
  – System z9 EC *and* z9 BC
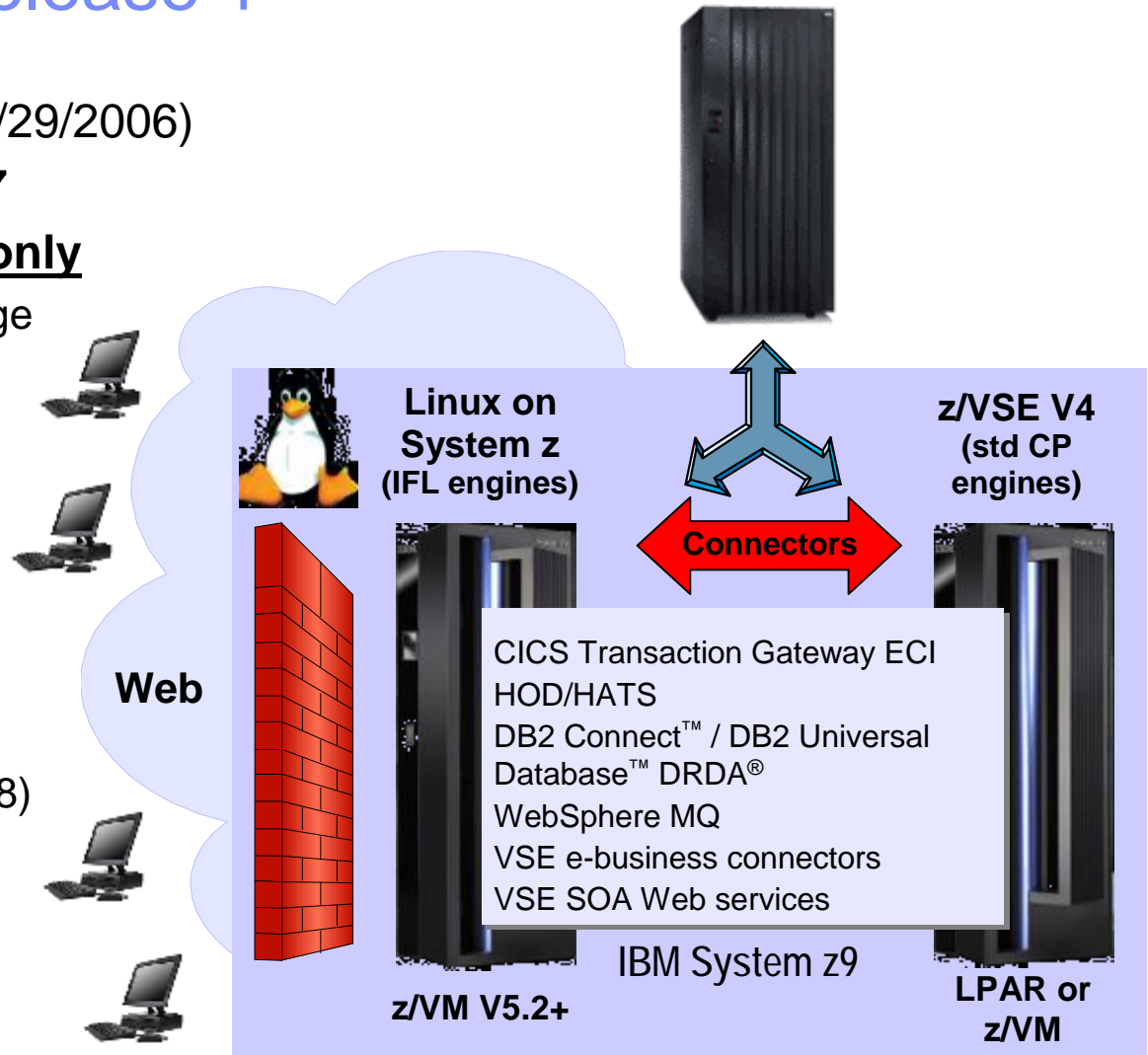 – zSeries 990, 890, 900, 800

§ **New MWLC pricing metrics**
  (z9 only)
  – Low full capacity price points
  – Sub-capacity option

§ **Encryption enhancements**
  – CPACF enhancements (AES-128)
  – Crypto Express2 (configurable)
  – TS1120 encrypting tape
  – SecureFTP

§ **SOA and interoperability**

Linux on System z (IFL engines)

z/VSE V4 (std CP engines)

Connectors

Web

CICS Transaction Gateway ECI
HOD/HATS
DB2 Connect™ / DB2 Universal Database™ DRDA®
WebSphere MQ
VSE e-business connectors
VSE SOA Web services

IBM System z9

z/VM V5.2+

LPAR or z/VM

Clients	Business Services	Tran/Data Services

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.

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Linux on System z

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DB2 UDB

Connection via HiperSockets

z/VSE V4.1 Production Environment
+ TCP/IP
+ VTAM
+ CICS TS
+ VSAM
+ COBOL
+ DB2/PRPQ

z/VSE V4.1 Test/Dev Environment

z/VM V5.2+	:LPAR or z/VM	LPAR or z/VM
IFL Engine (s)	Standard CP Engine (s)	

IBM System z9 EC or z9 BC

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 preferred platform for new workloads
  - • leverage existing core VSE investments
  - • low cost, low risk, fast time-to-market
- – New line-of-business applications
- – Low TCO and infrastructure simplification

z/VSE Directions

§ **Protect**

    – basic hardware support and selective exploitation

- IBM System z9 (incl 64-bit real memory, CPACF, Crypto Express2, FICON Express4, etc.)
- IBM TotalStorage (incl DS8000 Turbo, TS1120 encryption, IBM 3400 tape library, etc.)

    – value

- availability / integrity / reliability / security
- continuity / stability / z/OS affinity
- ease-of-use / maintainability / serviceability
- lower total cost of ownership (TCO) / flexible terms and conditions
- specific customer requests (WAVV, GSE, individuals, etc. requirements)

§ **Integrate**

    – connectivity based on open and industry standards

    – network integration (including VSE Connectors & SOA web services)

§ **Extend**

    – integrate / new workloads exploit capabilities of Linux on IBM System z

    – low risk, low cost, fast time-to-market

Thanks for listening

Your friends, the VSE development team