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z/VSE Announcements, Trends & Directions



Agenda

→ § IBM z13

§ z/VSE V6.1

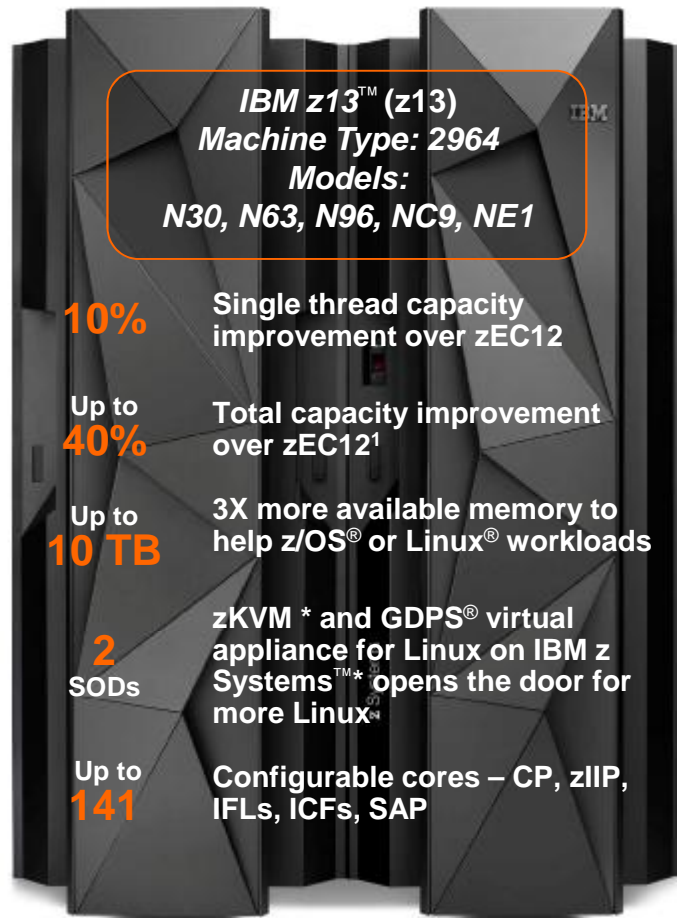
§ Statements of Direction

§ z/VSE Strategy

§ Summary



The IBM z13 – The mainframe optimized for the digital era



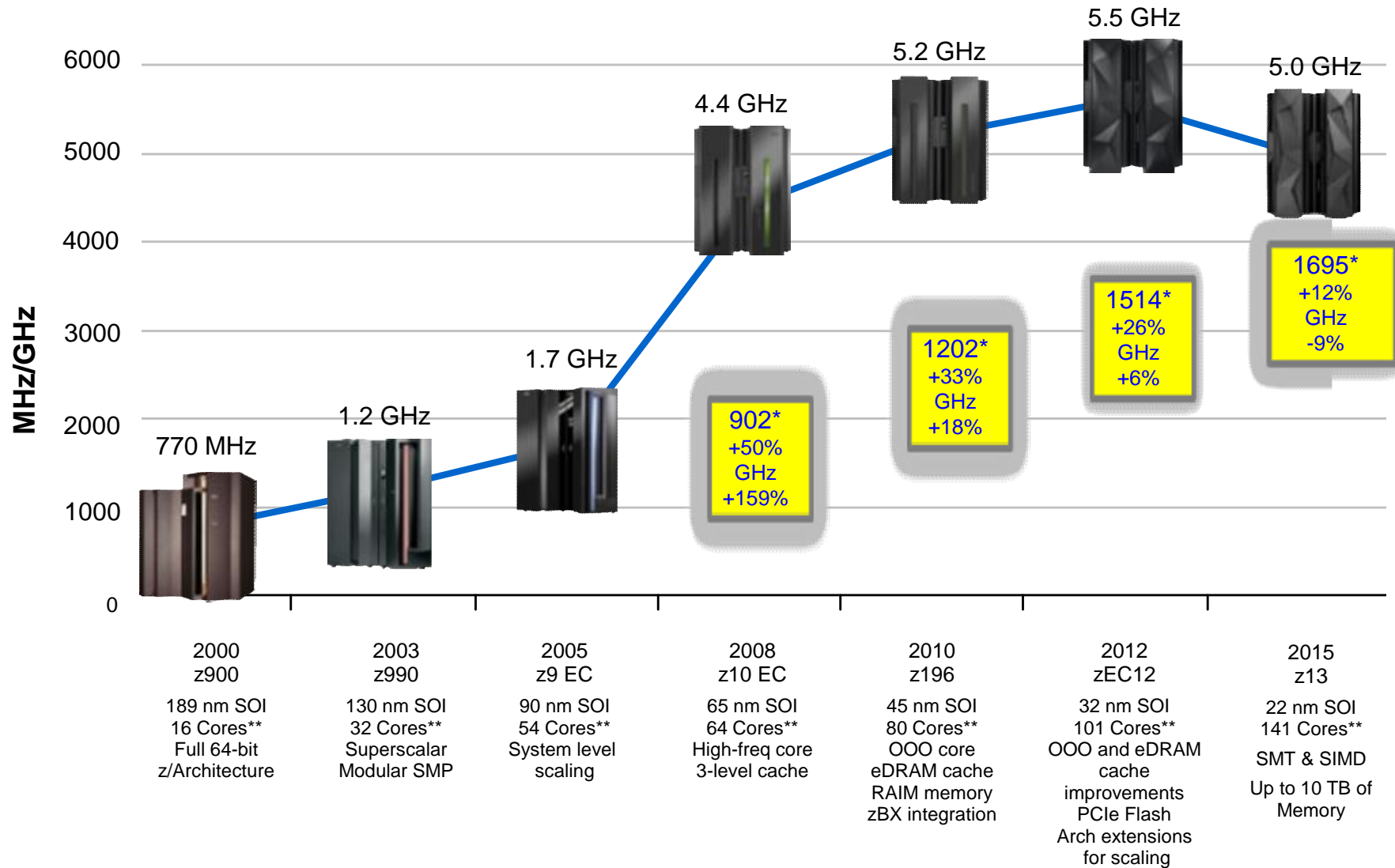
- Performance, scale, intelligent I/O and security enhancements to support transaction growth in the mobile world
- More memory, new cache design, improved I/O bandwidth and compression help to serve up more data for analytics
- Enterprise grade Linux solution, open standards, enhanced sharing and focus on business continuity to support cloud

Upgradeable from IBM zEnterprise® 196 (z196) and IBM zEnterprise EC12 (zEC12)

¹ Based on preliminary internal measurements and projections. Official performance data will be available upon announce and can be obtained online at LSPR (Large Systems Performance Reference) website at: <https://www-304.ibm.com/servers/resourceink/lib03060.nsf/pages/lspindex?OpenDocument> . Actual performance results may vary by customer based on individual workload, configuration and software levels

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z13 continues the CMOS mainframe heritage



* MIPS Tables are NOT adequate for making comparisons of z Systems processors. Additional capacity planning is required.
 ** Number of PU cores for customer use.

z/VSE hardware support status (as of June 2015)

<i>IBM z Systems</i>	z/VSE V6.1 (planned)	z/VSE V5.2	z/VSE V5.1	z/VSE V4.3 (EoS)	z/VSE V4.2 (EoS)
IBM z13	a	a	a	a	a
IBM zEnterprise EC12 & BC12	a	a	a	a	a
IBM zEnterprise 196 & 114	a	a	a	a	a
IBM System z10 EC & z10 BC	a	a	a	a	a
IBM System z9 EC & z9 BC	r	a	a	a	a
IBM eServer zSeries 990 & 890	r	r	r	a	a
IBM eServer zSeries 900 & 800	r	r	r	a	a



z/VSE on IBM z13

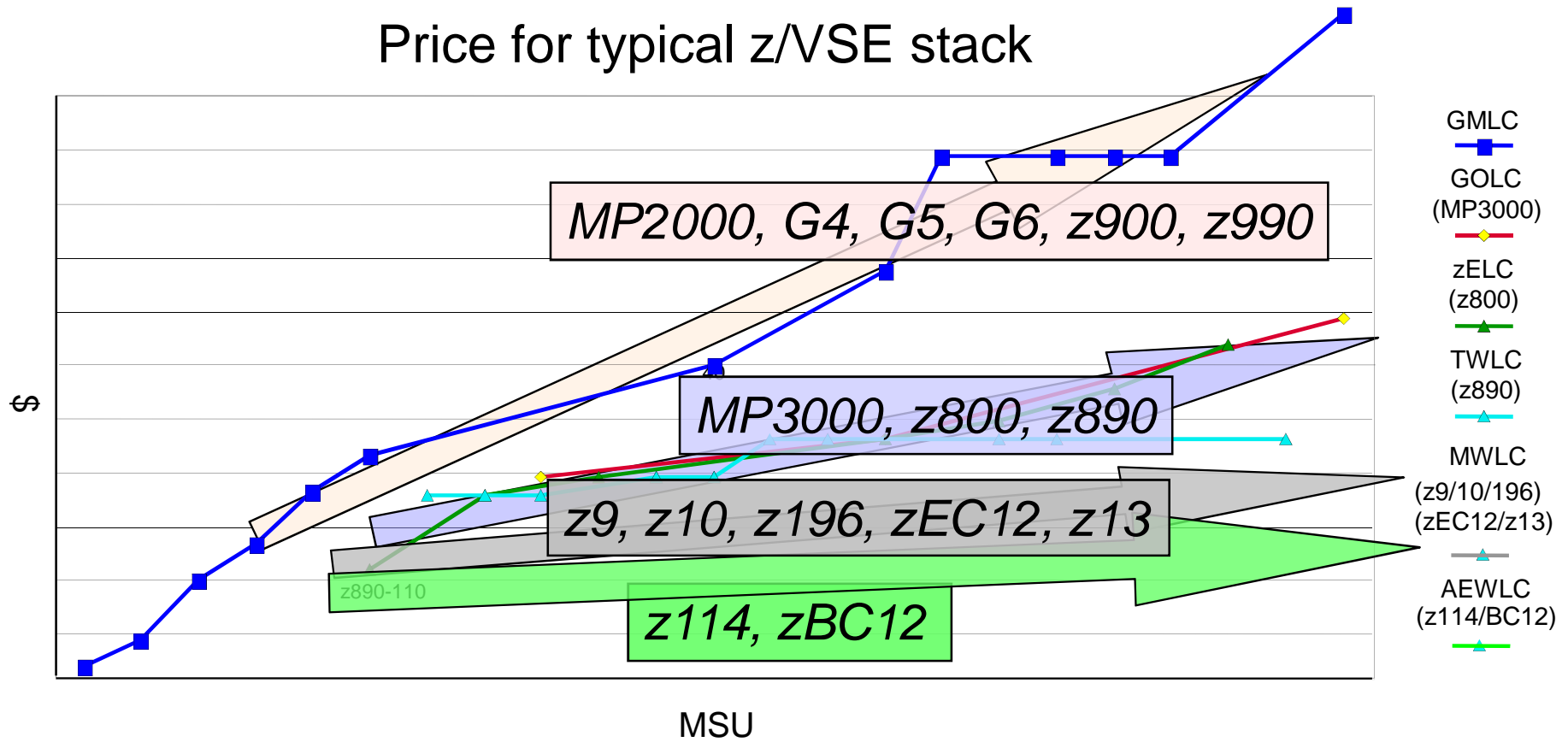
§ IBM z13 Toleration / Exploitation:

- Together with the **GA of z13** we delivered toleration **PTFs for z/VSE 5.1 and 5.2**
- **z/VSE**
 - can run in **more LPARs (85)**
 - supports **new Crypto Express5S** in coprocessor and accelerator mode
 - supports **more than 16 domains** with the new Crypto Express5S
 - supports **new FICON Express16S**
 - FICON-attached devices
 - FCP-attached SCSI disks
 - supports existing **OSA Express4S and 5S**
 - supports **newest version of SCRT**



z/VSE software pricing metrics

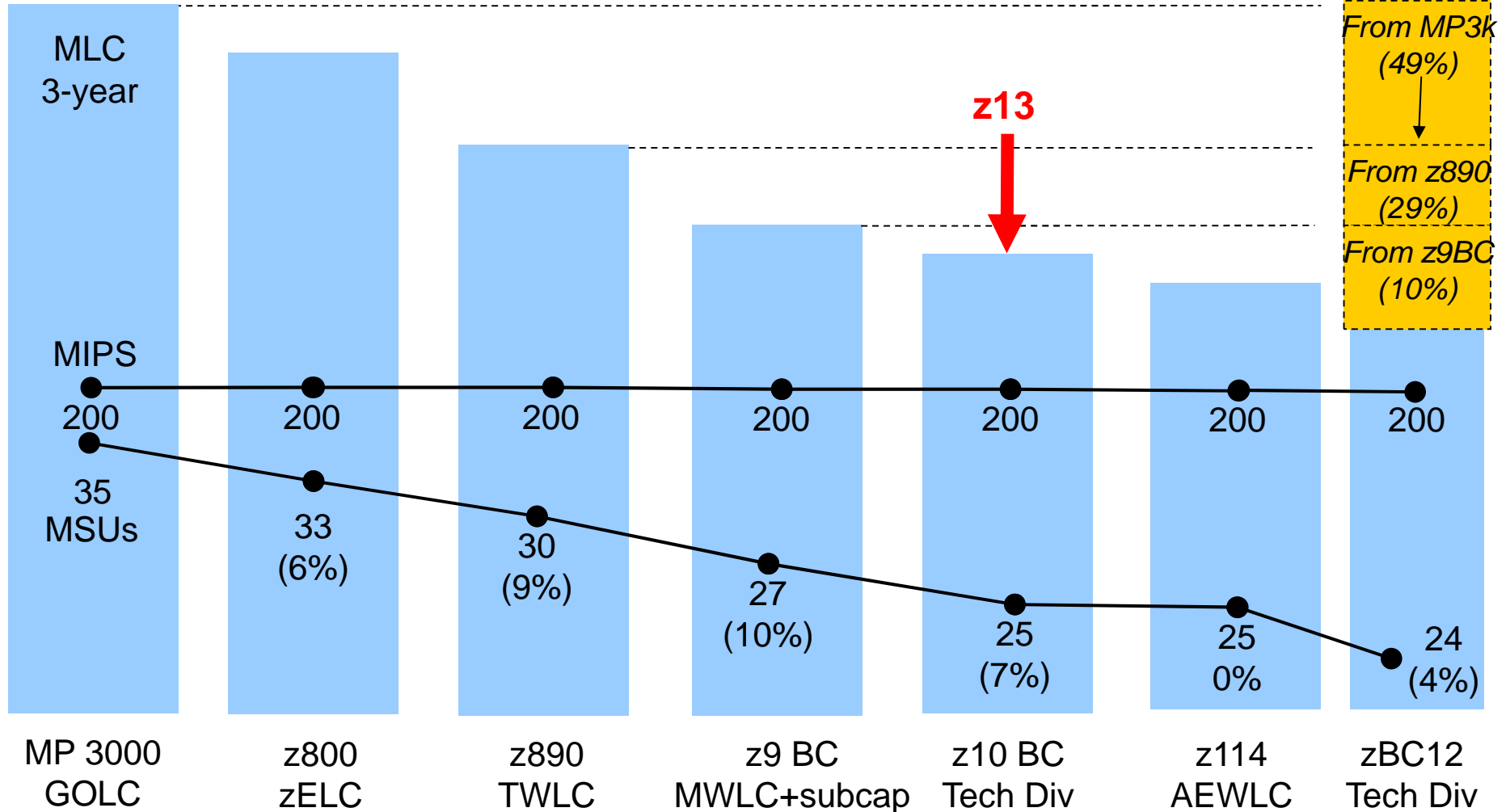
Price for typical z/VSE stack



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

MLC price performance across hardware generations

Example shows a typical z/VSE software stack at 200 MIPS



* MLC savings will vary significantly by customer - actual customer configuration must be priced out to be accurate.

* A typical z/VSE stack includes z/VSE CF, CICS TS, VTAM, TCP/IP, DB2, Ditto, Cobol, HLASM

General Price Action (GPA) for select software products

Announced August 12, 2014, Effective January 1, 2015

§ Monthly License Charges (MLC) increased

- VWLC, AWLC, EWLC, PSLC, **AEWLC (ie. z114 and zBC12)**

§ Approx 4% MLC increase, depending on the features selected, e.g.

- DB2 Server for VSE and VM V7
- MQ Series for VSE/ESA V2
- WebSphere MQ for z/VSE V3
- C, COBOL, PL/I, HLASM for MVS, VM, VSE
- Rational COBOL RT for z/VSE

§ Approx 7% MLC increase for CICS for z/VSE products on all software billing metrics (ie. all servers, high-end and low-end)

- CICS/VSE V2
- CICS TS for VSE/ESA V1
- CICS TS for z/VSE V2 (when available)

§ No price change on IBM Boeblingen owned software products

- z/VSE V4 and z/VSE V5 MLC remained unchanged
- IPv6/VSE V1 and TCP/IP V1 MLC remained unchanged



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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 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 V6.1 - 4Q2015
 Ø z13 exploitation
 Ø ALS to System z10
 Ø CICS TS for z/VSE V2.1 incl CICS Explorer update, support for channels & containers
 Ø TCP/IP for z/VSE V2.1
 Ø IPv6/VSE V1.2

+ SoD: Secure z/VSE Software Delivery

Announced on May 11, 2015, 50 years after DOS/360 g



z/VSE V6.1 – Exploitation of IBM z13 technology

Preview announced May 11, 2015, General Availability 4Q2015

§ Configurable Crypto Express5S – new with z13

- Support for both, IBM Common Cryptographic Architecture (CCA) coprocessor and accelerator mode
 - PKCS#11 (EP11) coprocessor is not supported
- Can be used in both, LPAR and z/VM guest environment
 - z/VM PTF is required
- More than 16 domain support allows a Crypto Express5S adapter to be shared across more than 16 domains, up to the maximum number of LPARs on the system
 - Provides the flexibility of mapping individual LPARs to unique crypto domains or continuing to share crypto domains across LPARs
- The Crypto Express4S card cannot be used with a z13.



§ FICON Express16S – new with z13

- For FICON-attached devices as well as FCP-attached SCSI disks
- Supports a link data rate of 16 Gbps
- Autonegotiation to 4 or 8 Gbps for synergy with existing switches, directors, and storage devices
 - 2 Gbps control units cannot be attached

§ OSA Express4S and OSA Express5S

- Reuse of existing card from zEC12 and/or zBC12
 - Both cards can be configured with OSA/SF in HMC





z/VSE V6.1 – Exploitation of IBM System Storage

Preview announced May 11, 2015, General Availability 4Q2015

- **IBM System Storage TS7700 Virtualization Engine Release 3.2**

- Supports back-end physical tape attachments to a TS7720 with logical volume sizes up to 25 GB
- Copy Export function can be used for disaster recovery purposes
- Multi-Cluster Grid Support enables disaster recovery or high availability solutions

- **FCP-attached SCSI disks can be used with:**

- IBM Storwize® V7000 Midrange Disk System
- IBM Storwize® V5000 Midrange Disk System
- IBM Storwize® V3700 Entry Disk System
- IBM XIV® Storage System
- IBM SAN Volume Controller
- IBM FlashSystem™ V840

- **IBM System Storage DS8870 Release 7.4**

- Newest member of the IBM System Storage DS8000 series
- Supports FICON-attached ECKD and FCP-attached SCSI disks



TS7700



FlashSystem 840



Storwize V7000



z/VSE V6.1 – CICS TS for z/VSE V2.1

Preview announced May 11, 2015, General Availability 4Q2015

§ New CICS TS version for z/VSE

§ The first major CICS TS update since 1999

§ Only available for z/VSE V6.1 and later, replaces CICS TS for VSE/ESA V1.1.1

§ CICS TS for VSE/ESA V1.1.1 still delivered with z/VSE V5.2

§ New CICS TS build includes:

§ CICS Explorer update & control capability

- Update resources as you would do with transactions on your CICS terminal
- Enable / disable CICS resources
- Change selected CICS definitions

§ Channel & Container support

§ New API, ported from CICS TS for z/OS V3.1

§ Allows users to transfer any amount of data up to the size of the CICS partition

§ Lifts the 32k COMMAREA limitation

§ Language support for C, COBOL, HLASM and PL/I

§ CICS requirements

§ More current cypher suites (AES128/256) to CICS Web Support

§ Support for EXEC CICS INQUIRE SYSTEM OSLEVEL

§ Millisecond support in EXEC CICS ASKTIME and EXEC CICS FORMATTIME



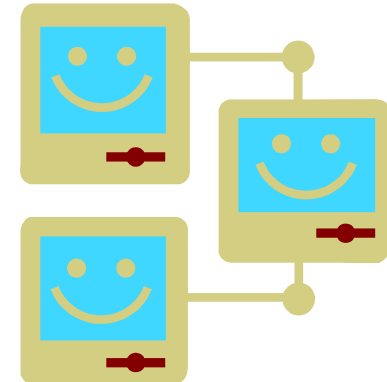


z/VSE V6.1 – Networking enhancements

Preview announced May 11, 2015, General Availability 4Q2015

§ TCP/IP for z/VSE V2.1

- § A new version of CSI's TCP/IP stack
- § Levelset based on TCP/IP for VSE/ESA 1.5G
- § New white-list firewall feature
- § Internal processing improvements
 - Cross memory services for external partition socket requests
 - New utilities for automation and TN3270 services
 - Enhanced TLS/SSL cryptography



§ IPv6/VSE V1.2

- § A new release of BSI's TCP/IP stack
- § Basic firewall support
- § Automated OSA Express failover using hot swap devices for high availability
- § Improved stack CPU optimization
- § Improved SSL support including TLS 1.2 and DH/ECC sockets
- § Virtual IP address support using virtual network devices

WebSphere MQ Server for z/VSE – Withdrawn

§ End of Marketing Announcement

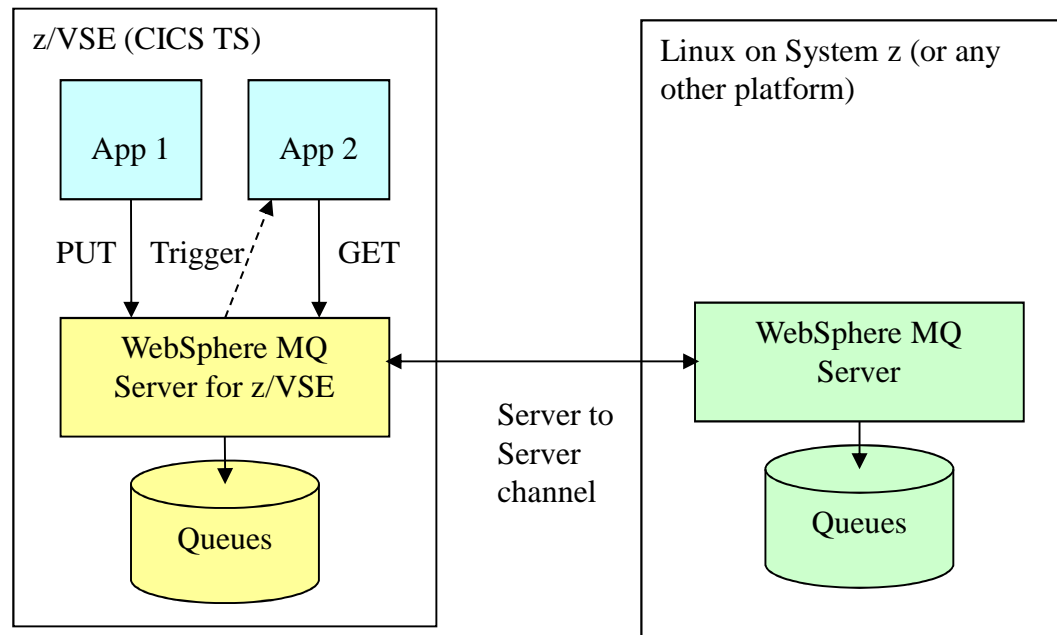
- IBM WebSphere MQ for z/VSE 3.0 (5655-U97) announced EoM on June 3, 2014
- EoM effective since Sep 8, 2014

§ End of Service Announcement

- WebSphere MQ for z/VSE 3.0 announced EoS on Aug 5, 2014
- EoS planned to become effective by Sep 30, 2015
- Individual service extension contracts can be requested for service beyond Sep 30, 2015 for a period of at least 3 years.

§ WebSphere MQ Client for z/VSE continues to be available

- No EoM / EoS planned for the WebSphere MQ client for z/VSE



§ EoM: <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&appname=iSource&supplier=897&letternum=ENUS914-104>

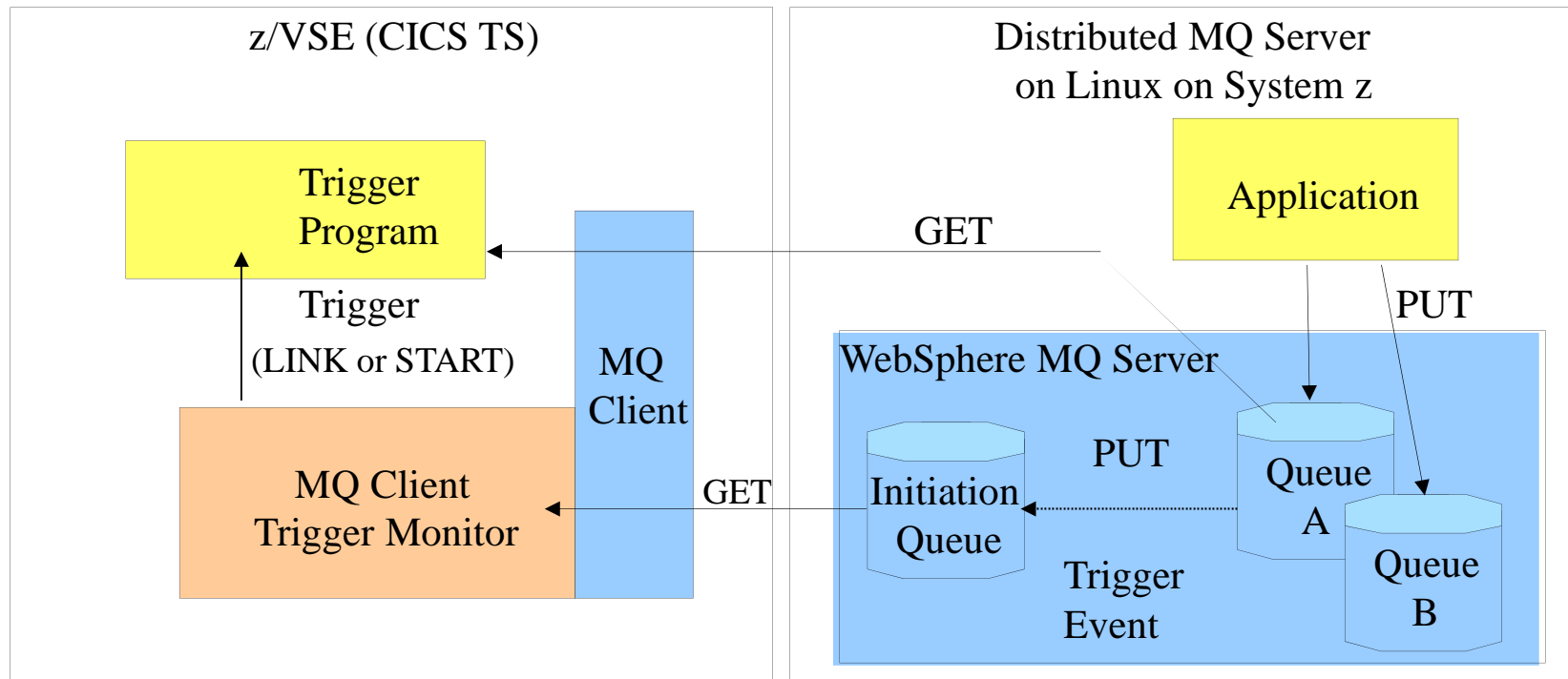
§ EoS: <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&appname=iSource&supplier=897&letternum=ENUS914-150>



z/VSE V6.1 – Trigger monitor for WebSphere MQ client

Preview announced May 11, 2015, General Availability 4Q2015

- **Trigger z/VSE CICS TS programs with z/VSE MQ client**
- **Similar to how an MQ server on z/VSE would trigger a program**



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z/VSE Central Function becomes z/VSE

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

- SOD launched in 4/2014
- Fulfilled with z/VSE V6.1 in 4Q2015
- Today:
 - z/VSE CF V7 is contained in z/VSE V3
 - z/VSE CF V8 is contained in z/VSE V4
 - z/VSE CF V9 is contained in z/VSE V5
- Future:
 - z/VSE CF Vx is eliminated and renamed into z/VSE V6



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CICS DDM stabilization

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.

- SOD launched in 4/2014
- Fulfilled with z/VSE V6.1 in 4Q2015

- Most likely no effect on z/VSE customers because no known user of DDM

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Secure z/VSE software delivery

IBM plans to remove support for unsecured FTP connections used for z/VSE software and service delivery. It is planned that new z/VSE software (products and service) downloads will require the use of HTTPS (Hypertext Transfer Protocol Secure, supporting the TLS and SSL cryptographic protocols) or Download Director with encryption.

- SOD launched in 5/2015



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Product delivery of z/VM on DVD / Electronic only

Product Delivery of z/VM on DVD/Electronic only: z/VM V6.3 will be the last release of z/VM that will be available on tape. Subsequent releases will be available on DVD or electronically.

- SOD launched in 1/2015
- No more tapes for z/VM product delivery for future z/VM releases
- Allows testing resources to be spent else where
- Watch out for z/VSE announcements

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GDPS / PPRC Multiplatform resiliency capability

In the first half of 2015, IBM intends to deliver a GDPS/Peer to Peer Remote Copy (GDPS/PPRC) multiplatform resiliency capability for customers who do not run the z/OS operating system in their environment. This solution is intended to provide IBM z Systems customers who run z/VM and their associated guests, for instance, Linux on z Systems, with similar high availability and disaster recovery benefits to those who run on z/OS. This solution will be applicable for any IBM z Systems announced after and including the zBC12 and zEC12.

- SOD launched in 1/2015
- Fulfilled as an IBM services offering on 04/30/2015

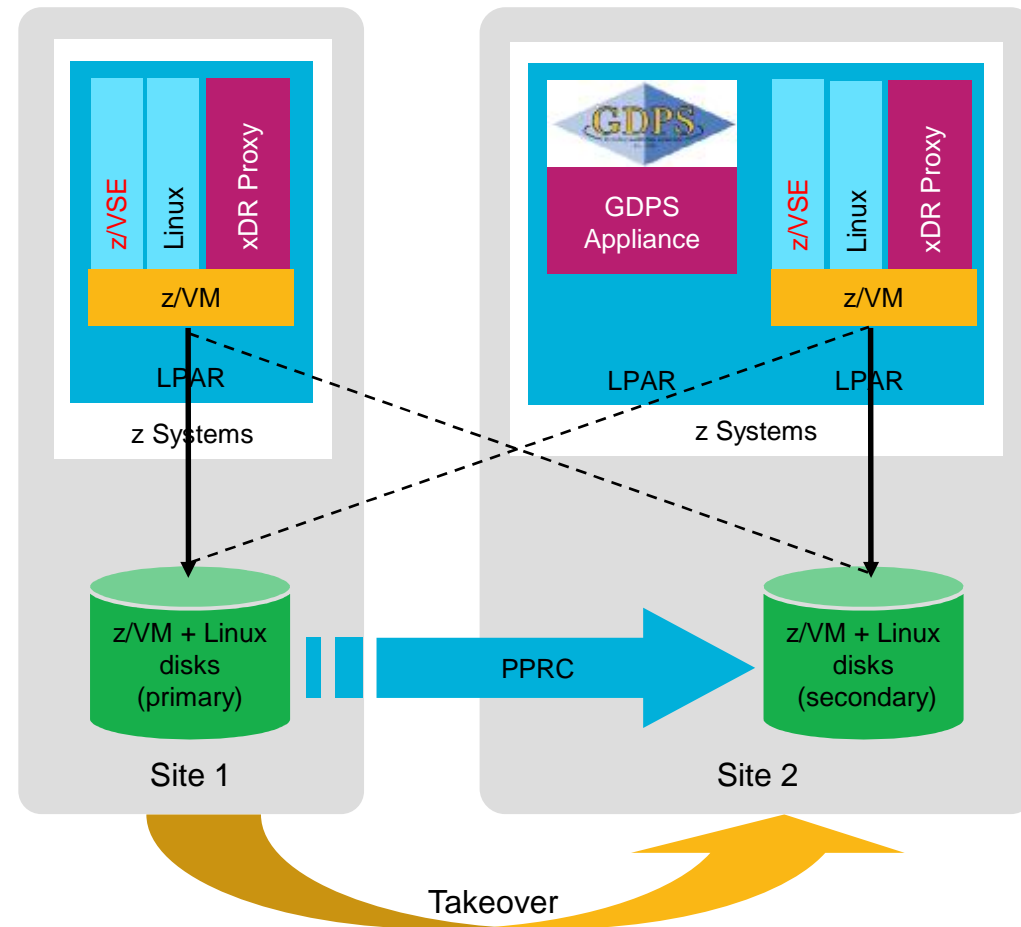
- Lower the skill expense of running a GDPS environment, particularly for those customers with little, or no, z/OS background
- Might be applicable for VM/VSE customers, too

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Disaster recovery for Linux on z Systems and z/VSE

GDPS Virtual Appliance extends GDPS capabilities into z/VM and Linux on z Systems environments that do not have z/OS

- Single point of control and automation reduces the need for highly specialized skills to handle recovery and planned site switches
- Manages remote copy environment and keeps data available and consistent for operating systems and applications.
- HyperSwap® function protects against failures to disk subsystems.
- Monitoring and automation to ensure reliable and rapid recovery via automated processes
- GDPS Virtual Appliance requires:
 - General purpose engine
 - z/VM and Linux on z Systems
 - ECKD Disk



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KVM offering for IBM z Systems

In addition to the continued investment in z/VM, IBM intends to support a Kernel-based Virtual Machine (KVM) offering for z Systems that will host Linux on z Systems guest virtual machines.

The KVM offering will be software that can be installed on z Systems processors like an operating system and can co-exist with z/VM virtualization environments, z/OS, Linux on z Systems, z/VSE, and z/TPF.

The KVM offering will be optimized for z Systems architecture and will provide standard Linux and KVM interfaces for operational control of the environment, as well as providing the required technical enablement for OpenStack for virtualization management, allowing enterprises to easily integrate Linux servers into their existing infrastructure and cloud offerings.

- SOD launched in 1/2015



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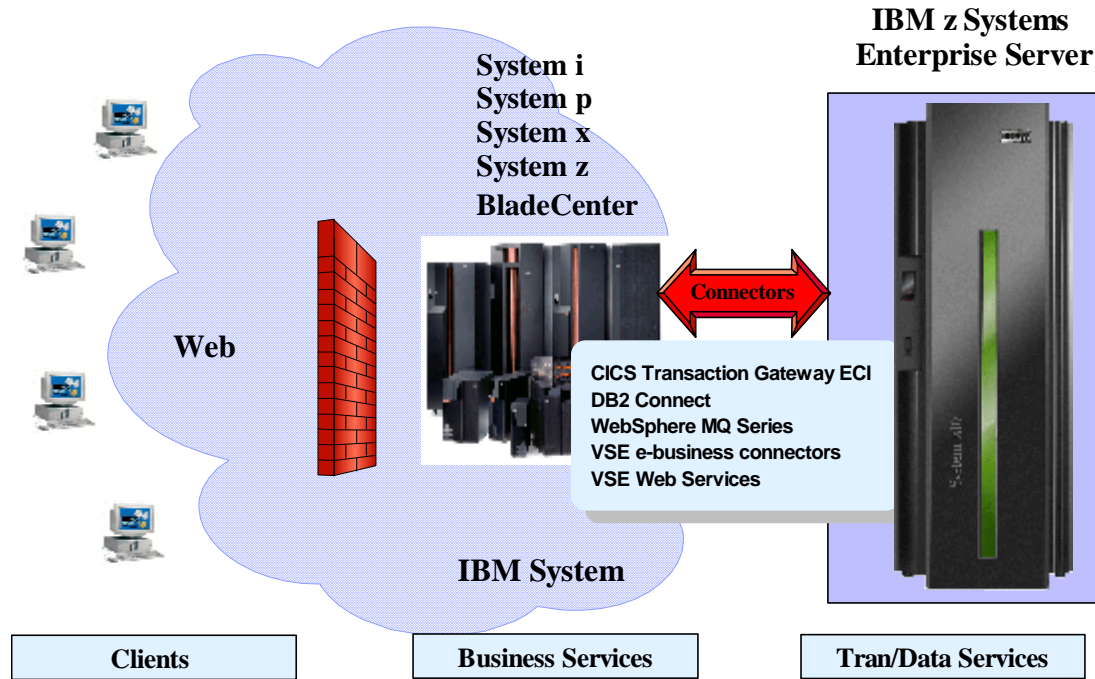
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z/VSE strategy – invented in Year 2000, still valid today and into the future

alias


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

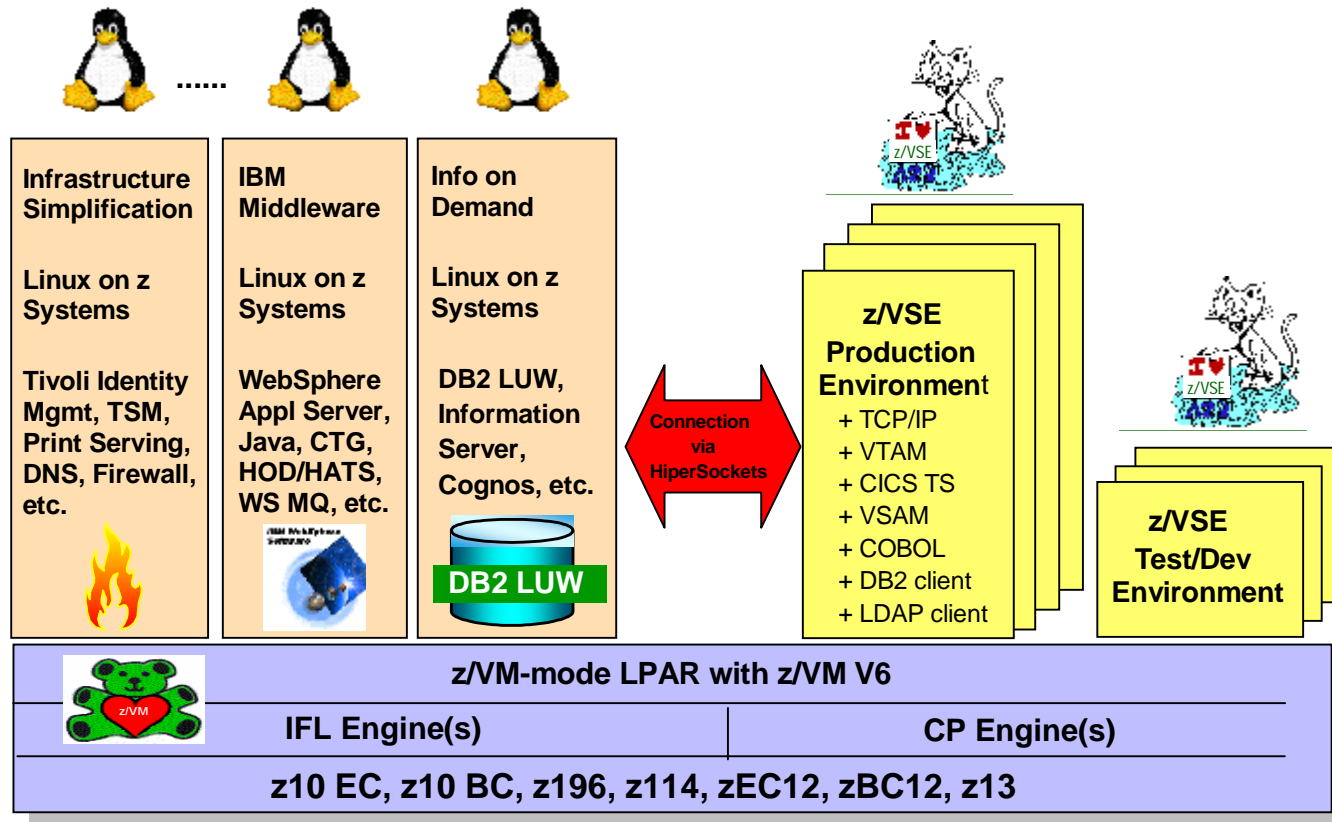


- P**rotect existing z/VSE investments
- I**ntegrate using middleware and z/VSE connectors
- E**xtend with another platform to access new applications & solutions

z/VSE strategy with Linux on z Systems

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

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



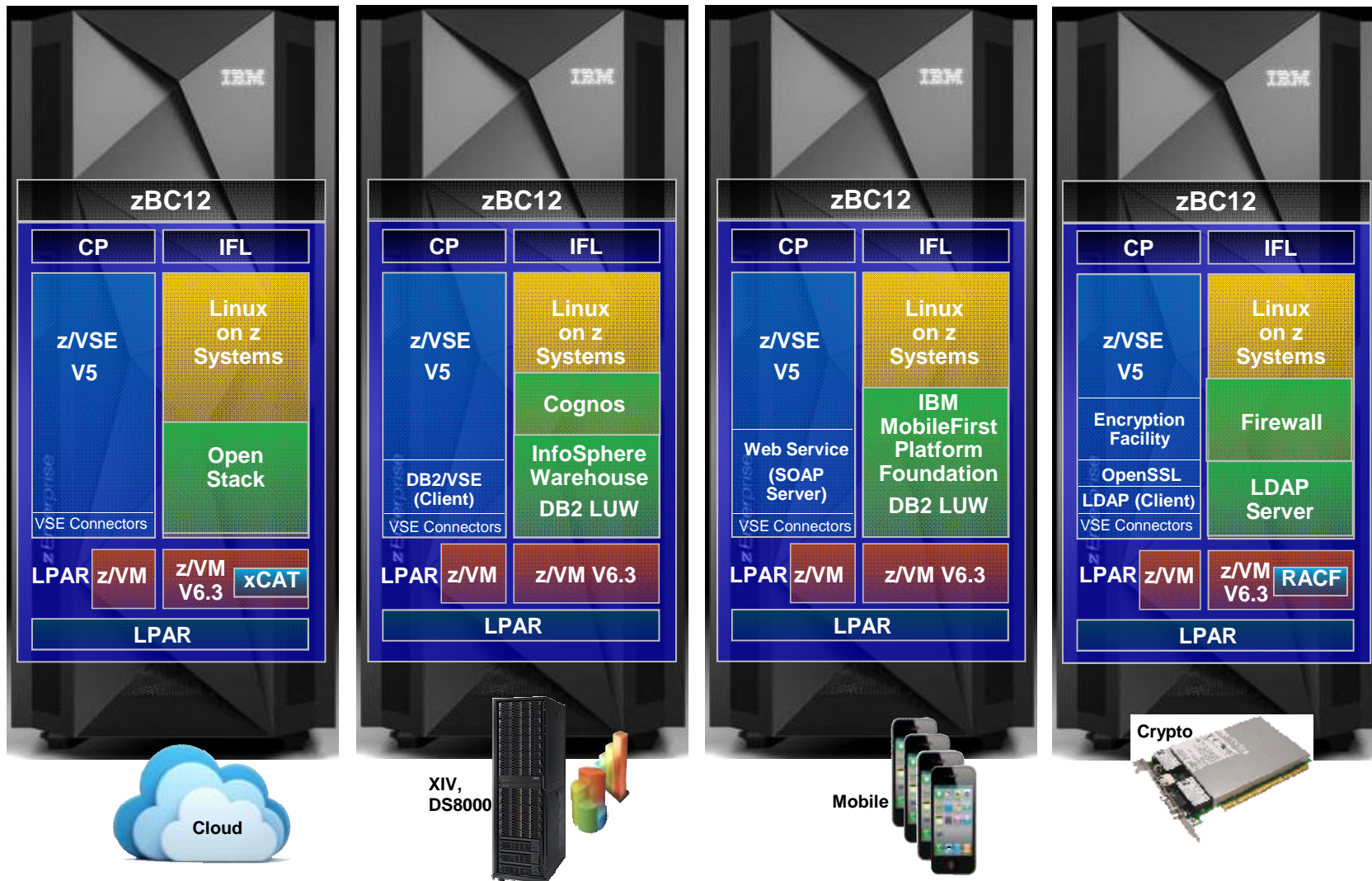
z/VSE Linux Growth Offering – CAMS solution examples

Cloud

Analytics

Mobile

Security



and many more

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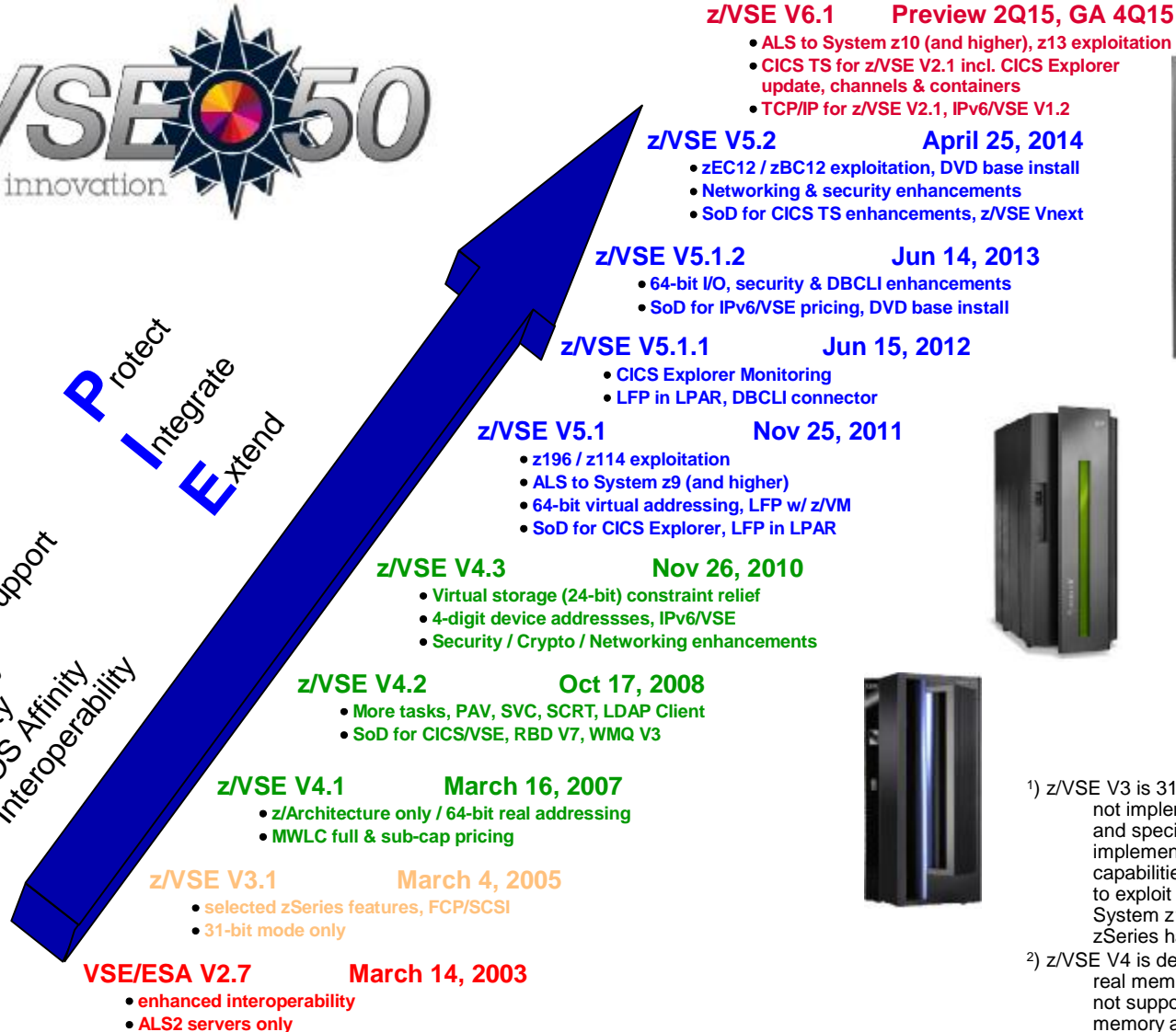


z/VSE continues to deliver customer value



Hardware Support
Capacity
Quality
z/OS Affinity
Interoperability

Protect
Integrate
Extend



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

50 years of innovation



z Systems



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