# Aktuelles zum IBM System Z

*Neuigkeiten rund um z/VSE*

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# Agenda

- **IBM z13 – Hardware - Betriebssysteme**
- **z/VSE – Heute und in Zukunft**
- **Statements of Direction**
- **CoD (Capacity On Demand)**
- **z/VSE 50 Jahre Innovation**

# 1984: Systeme 4341 / 4381

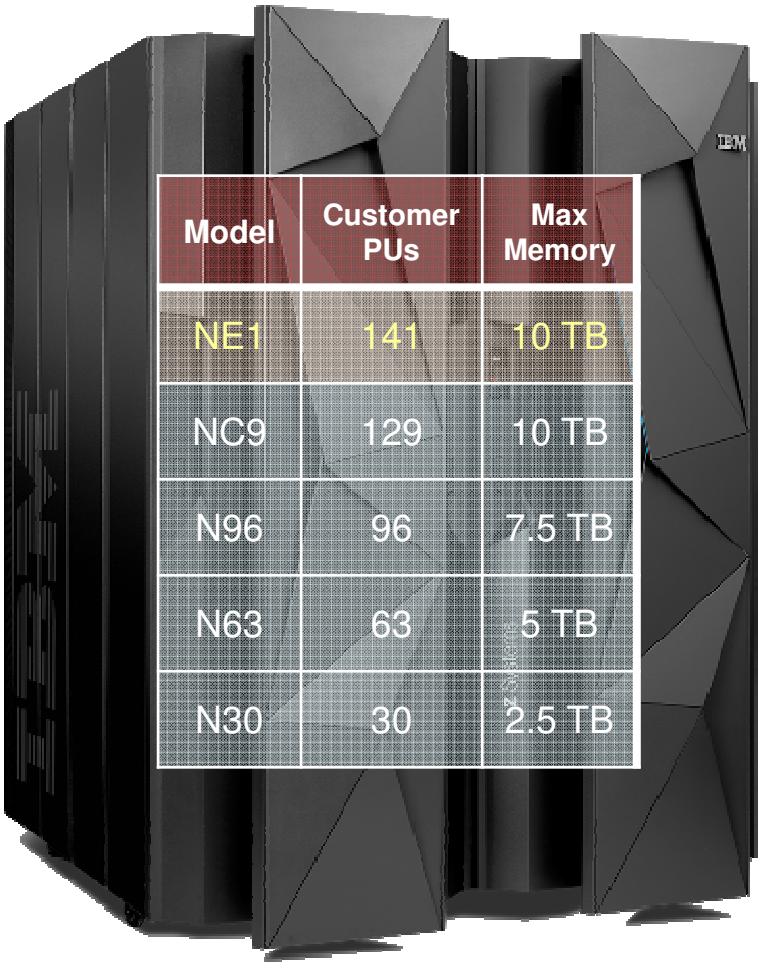
## 308x / 3090 / 9021 / 9672 / z900 / z990 / z9 EC / z10 EC / z196 / zEC12 / z13

# 1984: Systeme 4331 / 4361

## 9370 / 9221 / 9121 / MP2K / MP3K / z800 / z890 / z9 BC / z10 BC / z114 / zBC12

# z13 Overview

z13



| Model | Customer PUs | Max Memory |
|---|---|---|
| NE1 | 141 | 10 TB |
| NC9 | 129 | 10 TB |
| N96 | 96 | 7.5 TB |
| N63 | 63 | 5 TB |
| N30 | 30 | 2.5 TB |

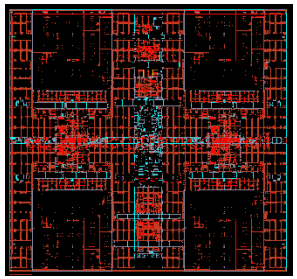
- Machine Type
  - 2964
- 5 Models
  - N30, N63, N96, NC9 and NE1
- Processor Units (PUs)
  - 39 (42 for NE1) PU cores per CPC drawer
  - Up to 24 SAPs per system, standard
  - 2 spares designated per system
  - Dependant on the H/W model - up to 30, 63, 96, 129,141 PU cores available for characterization
    - Central Processors (CPs), Internal Coupling Facility (ICFs), Integrated Facility for Linux (IFLs), IBM z Integrated Information Processor (zIIP), optional - additional System Assist Processors (SAPs) and Integrated Firmware Processor (IFP)
    - 85 LPARs, increased from 60
  - Sub-capacity available for up to 30 CPs
    - 3 sub-capacity points
- Memory
  - RAIM Memory design
  - System Minimum of 64 GB
  - Up to 2.5 TB GB per drawer
  - Up to 10 TB for System and up to 10 TB per LPAR (OS dependant)
    - LPAR support of the full memory enabled
    - 96 GB Fixed HSA, standard
    - 32/64/96/128/256/512 GB increments
  - Flash Express
- I/O
  - 6 GBps I/O Interconnects – carry forward only
  - Up to 40 PCIe Gen3 Fanouts @ 16 GBps each and Integrated Coupling Adapters @ 2 x 8 GBps per System
  - 6 Logical Channel Subsystems (LCSSs)
    - 4 Sub-channel sets per LCSS
- Server Time Protocol (STP)

# Vergleich z13 / zBC12 Leistungsdaten

| | CP (MIPS) Min | CP (MIPS) Max | MSUs Min | MSUs Max |
|---|---|---|---|---|
| z13 | 250 | 111.556 | 31 | 13.078 |
| zBC12 | 50 | 4.958 | 6 | 614 |

# z Systems - Processor Roadmap

## z10 2/2008



Workload Consolidation and Integration Engine for CPU Intensive Workloads

Decimal FP

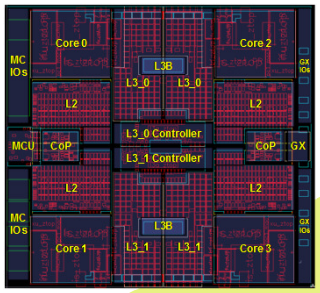
Infiniband

64-CP Image

Large Pages

Shared Memory

## z196 9/2010




Top Tier Single Thread Performance,System Capacity

Accelerator Integration

Out of Order Execution

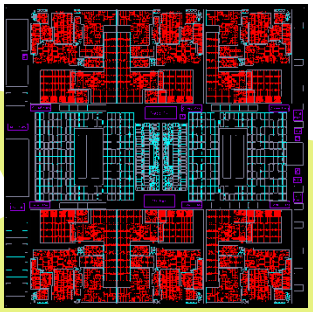
Water Cooling

PCIe I/O Fabric

RAIM

Enhanced Energy Management

## zEC12 8/2012



Leadership Single Thread, Enhanced Throughput

Improved out-of-order

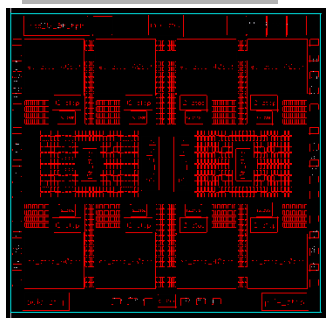
Transactional Memory

Dynamic Optimization

2 GB page support

Step Function in System Capacity

## z13 1/2015



Leadership System Capacity and Performance

Modularity & Scalability

Dynamic SMT

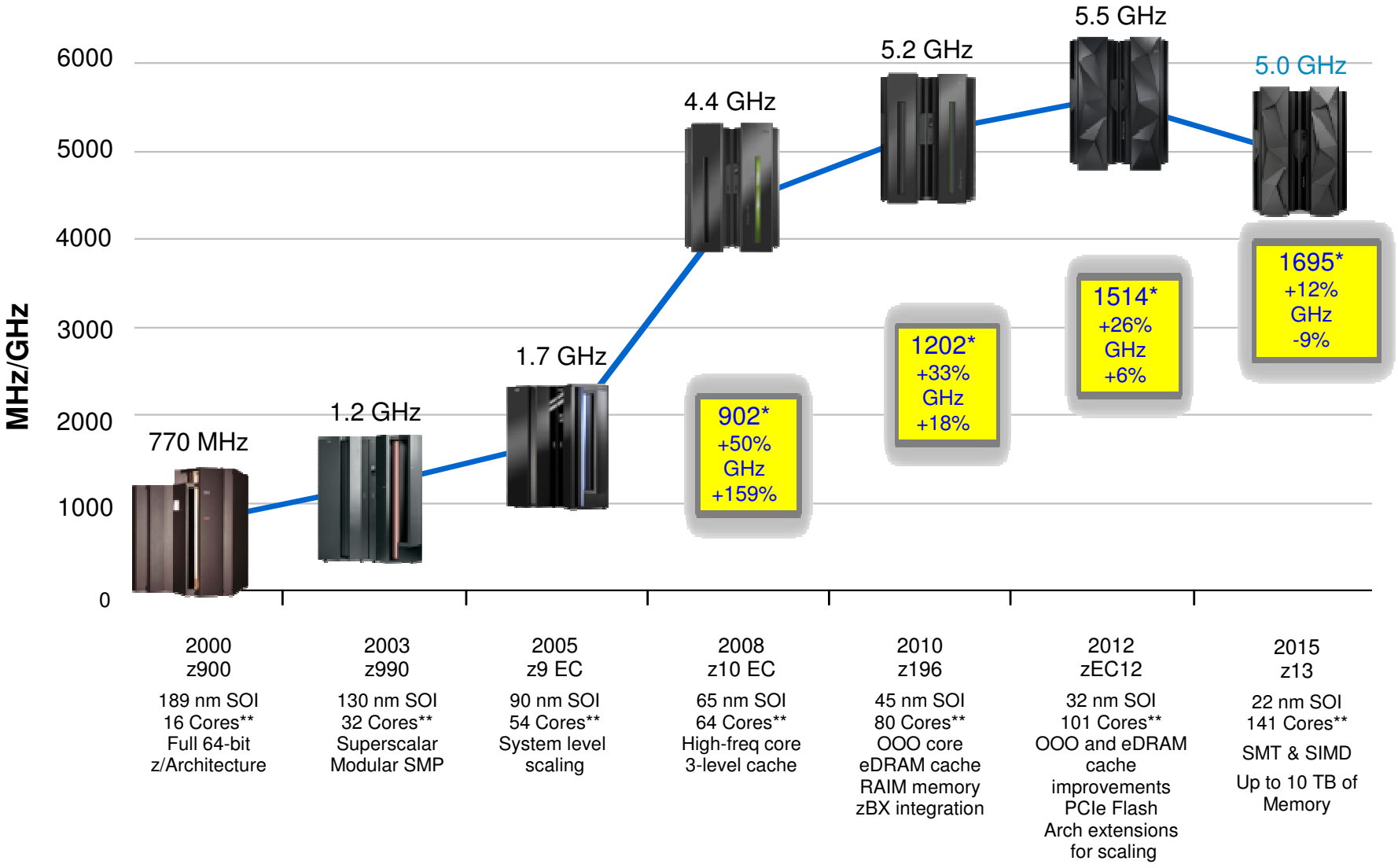
Supports two instruction threads

SIMD

PCIe attached accelerators (XML)

Business Analytics Optimized

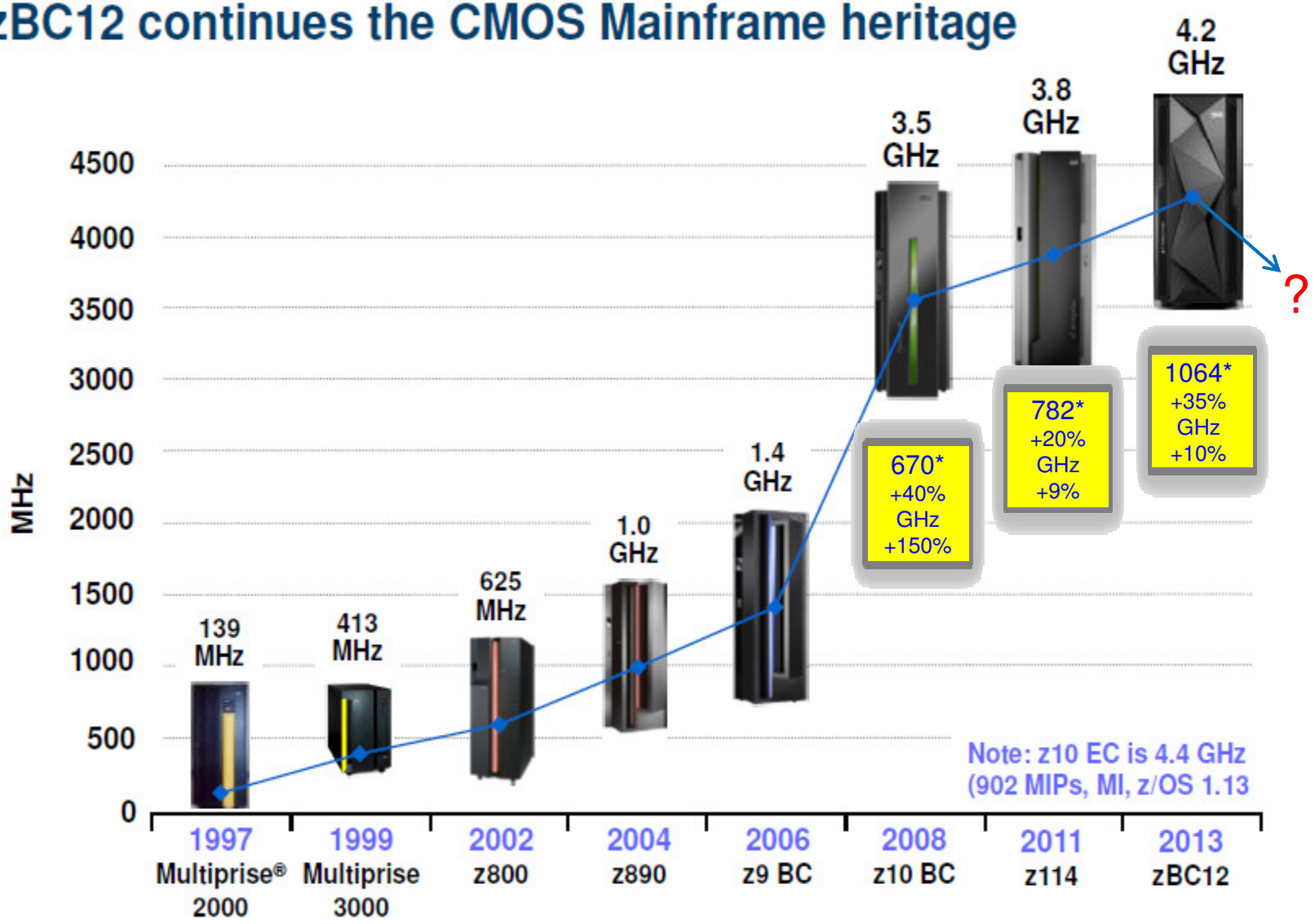
# z13 continues the CMOS mainframe heritage




* MIPS Tables are NOT adequate for making comparisons of z Systems processors. Additional capacity planning is required.

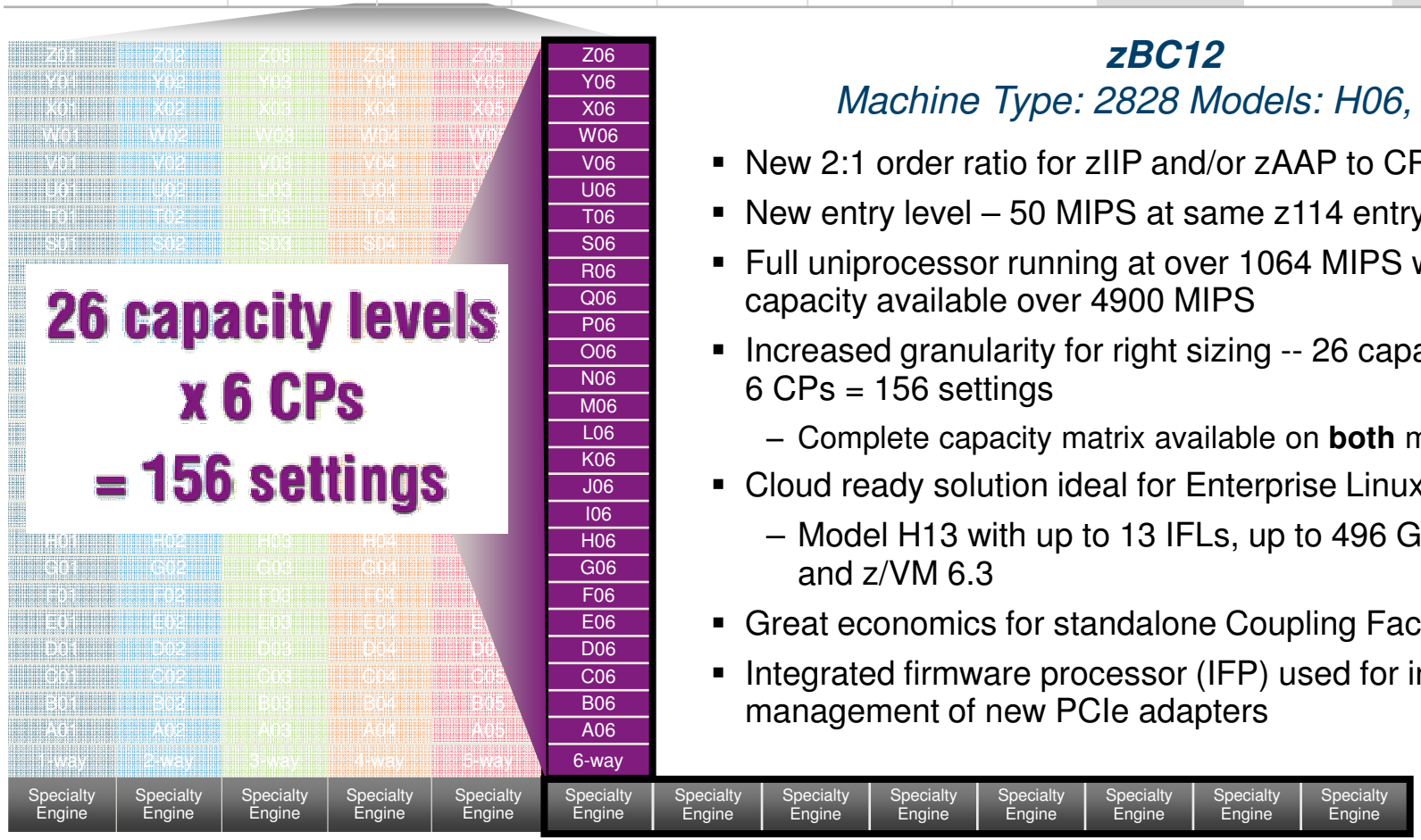
** Number of PU cores for customer use.

# zBC12 continues the CMOS Mainframe heritage



# Increased scale and flexibility provide room for growth

| Model | Total PUs | CPs | IFLs | zAAPs | zIIPs | ICFs | Std. SAPs | Add' l SAPs | Spares | IFP |
|---|---|---|---|---|---|---|---|---|---|---|
| **H06** | 9 | 0-6 | 0-6 | 0-4* | 0-4* | 0-6 | 2 | 0-2 | 0 | 1 |
| **H13** | 18 | 0-6 | 0-13 | 0-8** | 0-8** | 0-13 | 2 | 0-2 | 2 | 1 |




## *zBC12*

*Machine Type: 2828 Models: H06, H13*

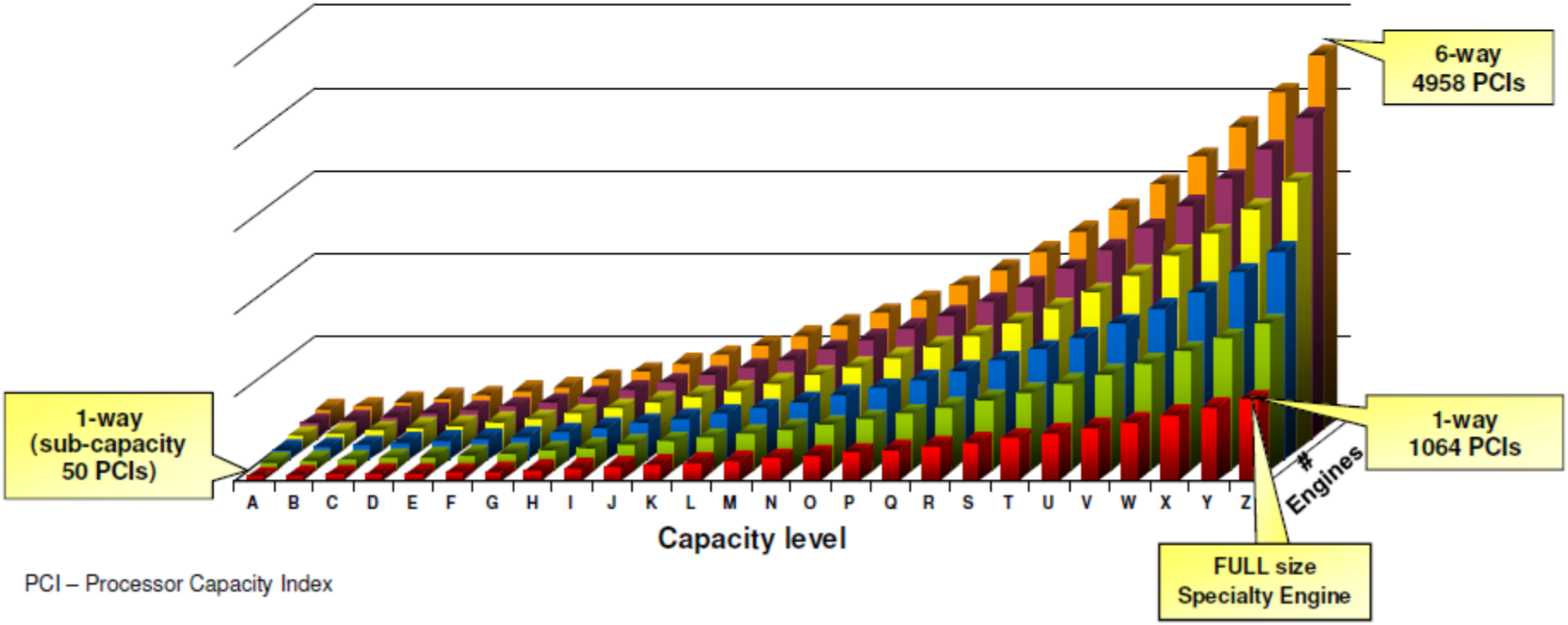
- New 2:1 order ratio for zIIP and/or zAAP to CP
- New entry level – 50 MIPS at same z114 entry price
- Full uniprocessor running at over 1064 MIPS with total capacity available over 4900 MIPS
- Increased granularity for right sizing -- 26 capacity levels x 6 CPs = 156 settings
  - Complete capacity matrix available on **both** models
- Cloud ready solution ideal for Enterprise Linux Server
  - Model H13 with up to 13 IFLs, up to 496 GB memory and z/VM 6.3
- Great economics for standalone Coupling Facility
- Integrated firmware processor (IFP) used for infrastructure management of new PCIe adapters

* Max available with 2 CPs
** Max available with 4/5 CPs

# zBC12 Sub-capacity Processor Granularity

- The zBC12 has 26 CP capacity levels (26 x 6 = 156)
  - Up to 6 CPs at any capacity level
    - All CPs must be the same capacity level
- The one for one entitlement to purchase one zAAP and/or one zIIP for each CP purchased is the same for CPs of any speed.
  - All specialty engines run at full speed
  - Processor Value Unit (PVU) for IFL = 100

| Number of zBC12 CPs | Base Ratio | Ratio z114 To zBC12 |
|---|---|---|
| 1 CP | z114 Z01 | 1.36 |
| 2 CPs | z114 Z02 | 1.37 |
| 3 CPs | z114 Z03 | 1.37 |
| 4 CPs | z114 Z04 | 1.36 |
| 5 CPs | z114 Z05 | 1.36 |
| 6 CPs | z114 Z05 | 1.56 |



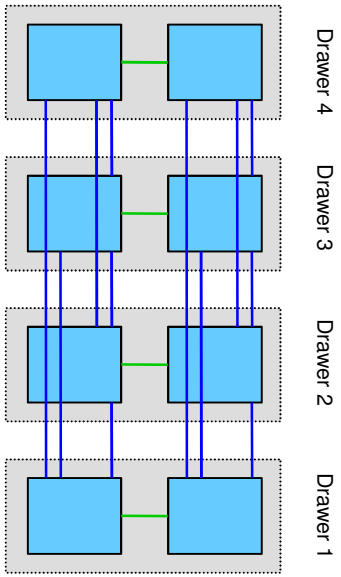

PCI – Processor Capacity Index

# z13 PU and SC SCM assembly

Capped PU

6x PU SCMs

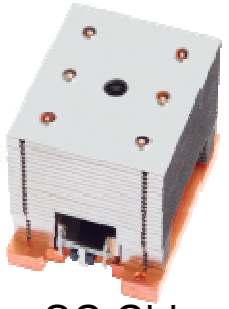
PU Chip




4 CPC Drawer System connectivity

2x SC SCMs (Air Cooled)

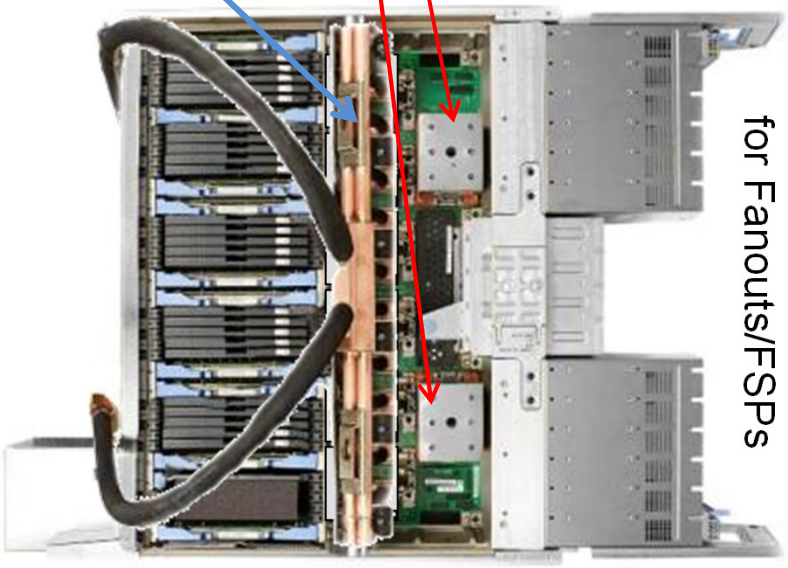
SC SCM with Thermal Module



6x PU SCMs under the cold-plates

Capped SC

SC Chip



Front of CPC Drawer for Fanouts/FSPs

Fully assembled CPC Drawer with the chilled water supply manifold lifted to the left

# IBM z13 – The platform for Cloud, Analytics, Mobile, Security, Social

| z13 [1] | |
|---|---|
| Up to 10 TB | >3X more available memory |
| Up to 141 | Configurable cores |
| Up to 85 | Configurable LPARs |
| IBM zAware | Maximize service levels |
| Larger Cache | More workloads per server |
| Crypto Express5S | Performance and function |
| SMT, SIMD | Enhanced performance |

| *Enterprise grade solutions:* | |
|---|---|
| IBM GDPS® Virtual Appliance | *Continuous availability & Disaster recovery* |
| IBM Spectrum Scale (IBM GPFS technology) | *Clustered file system* |
| *SOD:* KVM for z Systems | *Open source virtualization* |
| IBM Infrastructure Suite | *Management suite for z/VM and Linux* |
| IBM Wave for z/VM<br>IBM z/VM | *Intuitive virtualization management*<br>*Virtualization with efficiency at scale* |
| IBM z13 | *Unmatched server technology & capacity* |

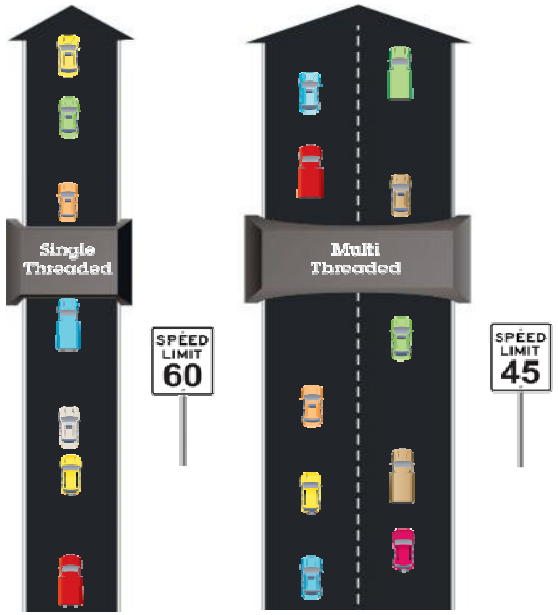
* All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

[1] Total capacity improvement over zEC12 of 40+ percent

NEW!

# z/VM – Simultaneous Multithreading (SMT)

- Objective is to improve capacity, not performance
- Allows z/VM to dispatch work on up to two threads of a z13 IFL
- VM65586 for z/VM 6.3 **only**
  - PTFs available since March 13, 2015
- Transparent to virtual machine
  - Guest does not need to be SMT aware
  - SMT is not virtualized to the guest
- z13 SMT support limited to IFLs and zIIPs
  - z/VM support is only for IFLs
- SMT is disabled by default
  - Requires a System Configuration setting and re-IPL
  - When enabled, applies to the entire system
- Potential to increase the overall capacity of the system
  - Workload dependent




*Which approach is designed for the higher volume of traffic? Which road is faster?*

**Illustrative numbers only*

# z/VSE hardware support status (as of May 2015)

| *IBM z Systems* | 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 | ✔ | ✔ | ✔ | ✔ | ✔ |
| IBM zEnterprise EC12 & BC12 | ✔ | ✔ | ✔ | ✔ | ✔ |
| IBM zEnterprise 196 & 114 | ✔ | ✔ | ✔ | ✔ | ✔ |
| IBM System z10 EC & z10 BC | ✔ | ✔ | ✔ | ✔ | ✔ |
| IBM System z9 EC & z9 BC | ✘ | ✔ | ✔ | ✔ | ✔ |
| IBM eServer zSeries 990 & 890 | ✘ | ✘ | ✘ | ✔ | ✔ |
| IBM eServer zSeries 900 & 800 | ✘ | ✘ | ✘ | ✔ | ✔ |

# z/VM Release Status Summary (as of April 2015)

UPDATE

| z/VM Level | GA | End of Service | End of Marktg. | Minimum Processor Level | Maximum Processor Level | Security Level |
|---|---|---|---|---|---|---|
| 6.3 | 7/2013 | 12/2017[5] | | IBM System z10® | - | EAL 4+[2] OSPP-LS |
| 6.2 | 12/2011 | 12/2016[3] | 7/2013 | IBM System z10® | z13 [4] | - |
| 6.1 | 10/2009 | 4/2013 | 12/2011 | IBM System z10® | zEC12 | EAL 4+ OSPP-LS |
| 5.4 | 9/2008 | 12/2016[1] | 3/2012 | IBM eServer zSeries 800& 900 | zEC12 | - |
| 5.3 | 6/2007 | 9/2010 | 9/2010 | z800, z900 | z196 | EAL 4+ CAPP/LSPP |

[1] Or later (Announced August 6, 2014)
[2] Targeted Security Level in V6.3 SOD
[3] Extended from original date (Announced February 4, 2014)
[4] Announced January 14, 2015
[5] Announced February 3, 2015

Marketed & Serviced

Serviced, but not Marketed

End of Service & Marketing

# Supported Linux on z Systems Distributions

| Distribution | z13 | zEnterprise - zBC12 and zEC12 | zEnterprise - z114 and z196 | System z10 and System z9 |
|---|---|---|---|---|
| RHEL 7 | ✔ (1,3) | ✔ (4) | ✔ (4) | ✘ |
| RHEL 6 | ✔ (1,3) | ✔ (5) | ✔ | ✔ |
| RHEL 5 | ✔ (1,3) | ✔ (6) | ✔ | ✔ |
| RHEL 4 (*) | ✘ | ✘ | ✔ (9) | ✔ |
| SLES 12 | ✔ (2,3) | ✔ | ✔ | ✘ |
| SLES 11 | ✔ (2,3) | ✔ (7) | ✔ | ✔ |
| SLES 10 (*) | ✘ | ✔ (8) | ✔ | ✔ |
| SLES 9 (*) | ✘ | ✘ | ✔ (10) | ✔ |

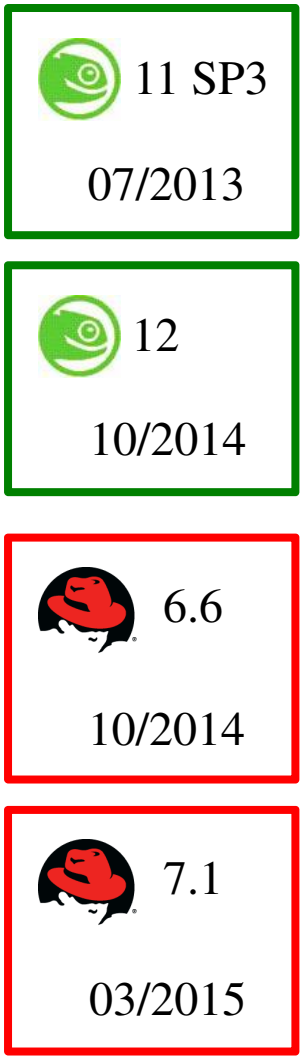
✔ Indicates that the distribution (version) has been tested by IBM on the hardware platform, will run on the system, and is an IBM supported environment. Updates or service packs applied to the distribution are also supported. Please check with your service provider which kernel-levels are currently in support.

See www.ibm.com/systems/z/os/linux/resources/testedplatforms.html for latest updates and details.

# Linux Distributions (as of April 2015)

- SLES 10 SP4: Available since 04/2011
  - Kernel 2.6.16, GCC 4.1.0
- SLES 11 SP3: Available since 07/2013
  - Kernel 3.0, GCC 4.3.4
- SLES 12: Available since 10/2014
  - Kernel 3.12.36 (since 01/2015), GCC 4.8

- RHEL 5.11: Available since 09/2014
  - Kernel 2.6.18, GCC 4.1.0
- RHEL 6.6: Available since 10/2014
  - Kernel 2.6.32, GCC 4.4.0
- RHEL 7.1: Available since 03/2015
  - Kernel 3.10.0, GCC 4.8




# 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**

# Agenda

- IBM z13 - Hardware - Betriebssysteme
- z/VSE – Heute und in Zukunft
- Statements of Direction
- CoD (Capacity On Demand)
- z/VSE 50 Jahre Innovation

# 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***
- zEnterprise exploitation
- IEDN connection to zBX
- 64-bit virtual memory objects
- ALS to System z9
- z/VSE z/VM IP Assist (VIA)

**+ SoD: CICS Explorer, LFP in LPAR**

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

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

**+ SoD: CICS Explorer Update, DVD Install, IPv6/VSE price reduction**

***z/VSE V5.2 - 2Q2014***
- Additional zEnterprise exploitation
- DVD install
- 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***
- z13 exploitation
- ALS to System z10
- CICS TS for z/VSE V2.1 incl CICS Explorer update, support for channels & containers
- TCP/IP for z/VSE V2.1
- IPv6/VSE V1.2

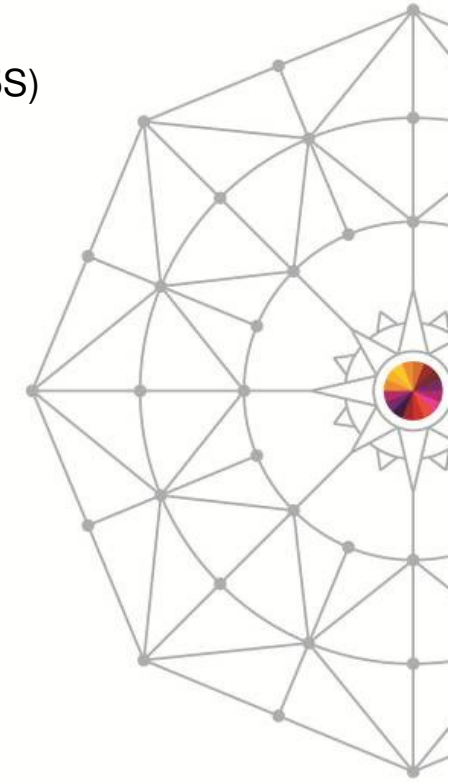
**+ SoD: Secure z/VSE Software Delivery**

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

# z/VSE Version 5 Release 2

*Announced April 7, 2014, General Availability April 25, 2014*

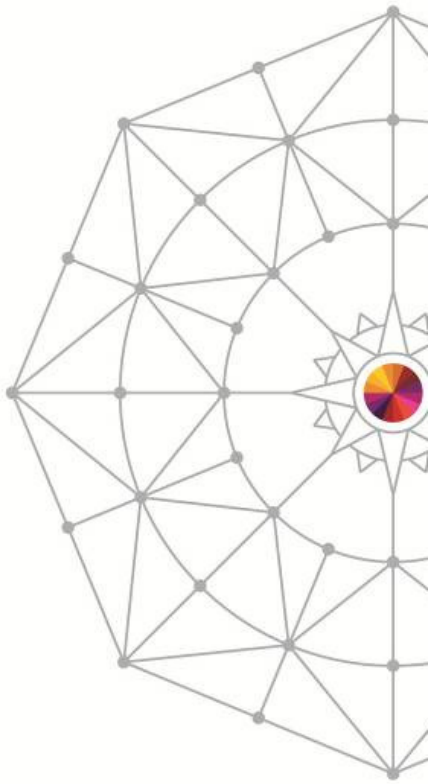
- **Hardware Exploitation**
  - Integration of PTFs delivered with z/VSE V5.1.2+
    - zBC12 exploitation (incl. support for Crypto Express4S, OSA-Express5S)
    - TS1140 tape drive (incl. encryption capabilities)
  - Virtual disk in 64-bit virtual memory objects
- **Ease of Use**
  - Install from DVD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




# z/VSE Version 6 Release 1

*Preview announced May 11, 2015, General Availability 4Q2015*

- **Exploitation of** innovative IBM z13 technology
  - Configurable Crypto Express5S for data encryption and SSL acceleration
  - FICON Express16S supporting a link rate of 16 Gbps
- **New version of CICS TS for z/VSE V2.1**
  - Update and control capabilities to CICS resources for the CICS Explorer system management tool
  - New API to enable the transfer of large amounts of structured data between CICS applications to meet the needs of growing workloads
- **TCP/IP for z/VSE V2.1** (new version): designed to include firewall functionality
- **IPv6/VSE V1.2** (new release) will provide firewall functionality, increased network availability, and other enhancements
- Add **trigger functionality for the WebSphere MQ Client** for z/VSE
- Selected enhancements are also available with PTFs for z/VSE V5.x
- z/VSE V6.1 requires an initial installation
  - Fast Service Upgrade (FSU) from z/VSE V5.x is not supported



NEW!

# 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

NEW!

# 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

**TS7700**

- **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

**FlashSystem 840**

- **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

**Storwize V7000**

NEW!

# z/VSE V6.1 – CICS TS for z/VSE V2.1

*Preview announced May 11, 2015, General Availability 4Q2015*

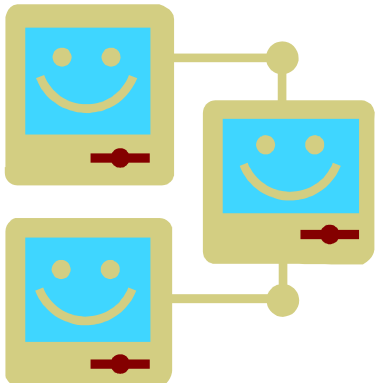
- **New CICS TS version for z/VSE**
  - The first major CICS TS update since 1999
- **Only available for z/VSE V6.1 and later, replaces CICS TS for VSE/ESA V1.1.1**
  - CICS TS for VSE/ESA V1.1.1 still delivered with z/VSE V5.2
- **New CICS TS build includes:**
  - CICS Explorer update & control capability
    - 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

NEW!

# 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 1.5F
  - 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

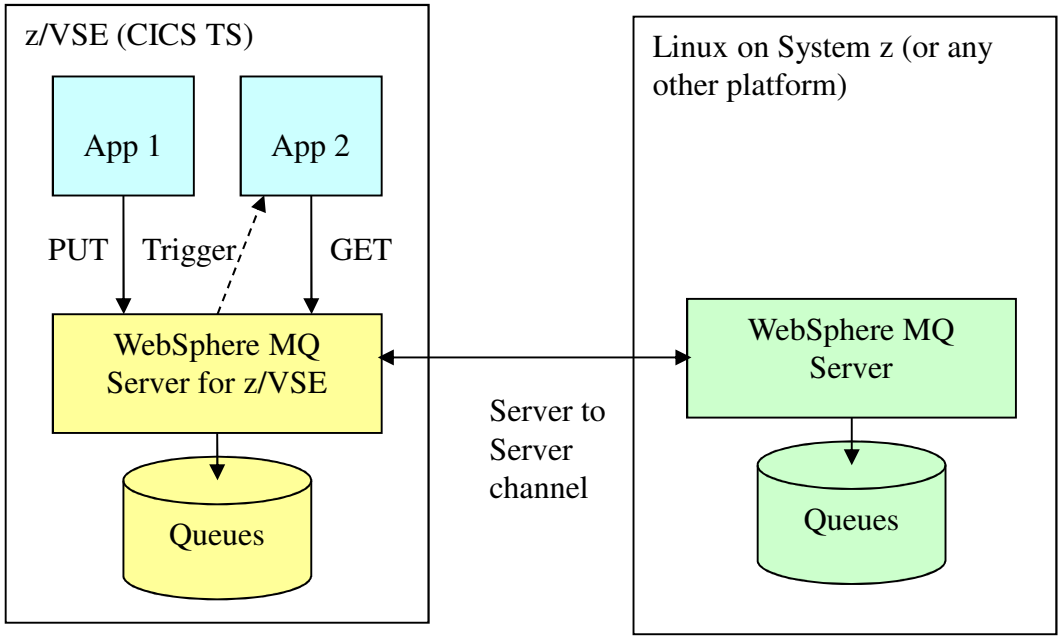


- **IPv6/VSE V1.2**
  - A new release of BSI's TCP/IP stack
  - Basic firewall support
  - Automated OSA Express failover using hot swap devices for high availability
  - Improved stack CPU optimization
  - Improved SSL support including TLS 1.2 and DH/ECC sockets
  - Virtual IP address support using 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

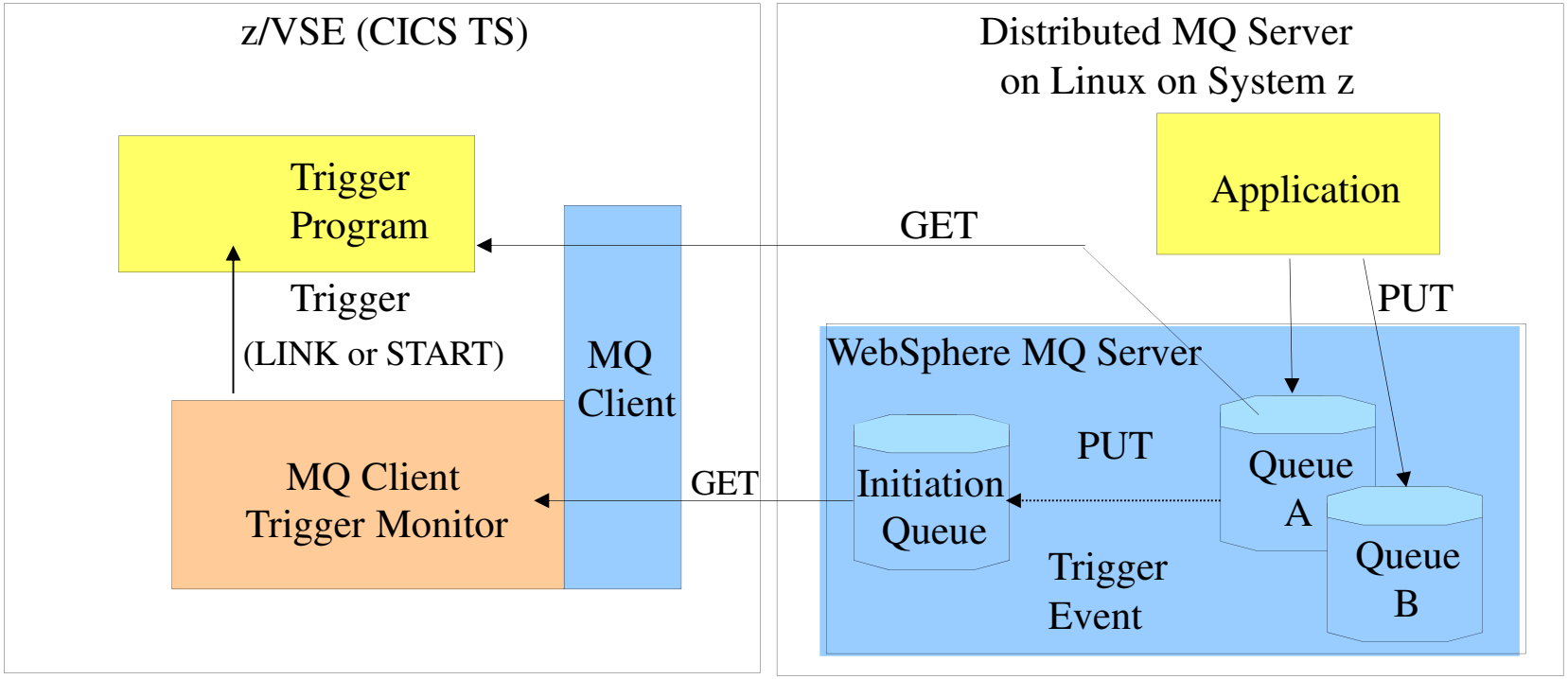
- EoM: http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&appname=iSource&supplier=897&letternum=ENUS914-104
- EoS: http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&appname=iSource&supplier=897&letternum=ENUS914-150

NEW!

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

*Preview announced May 11, 2015, General Availability 4Q2015*

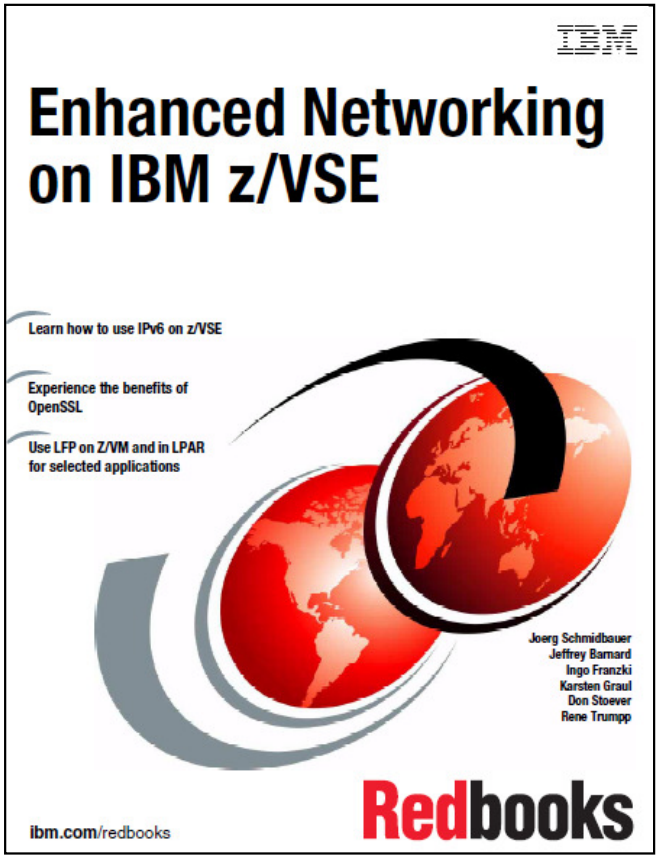
- **Trigger z/VSE CICS TS programs with z/VSE MQ client**
- **Similar to how an MQ server on z/VSE would trigger a program**



# Updated Redbook: Enhanced Networking on IBM z/VSE – SG24-8091

*Update available since December 31, 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.



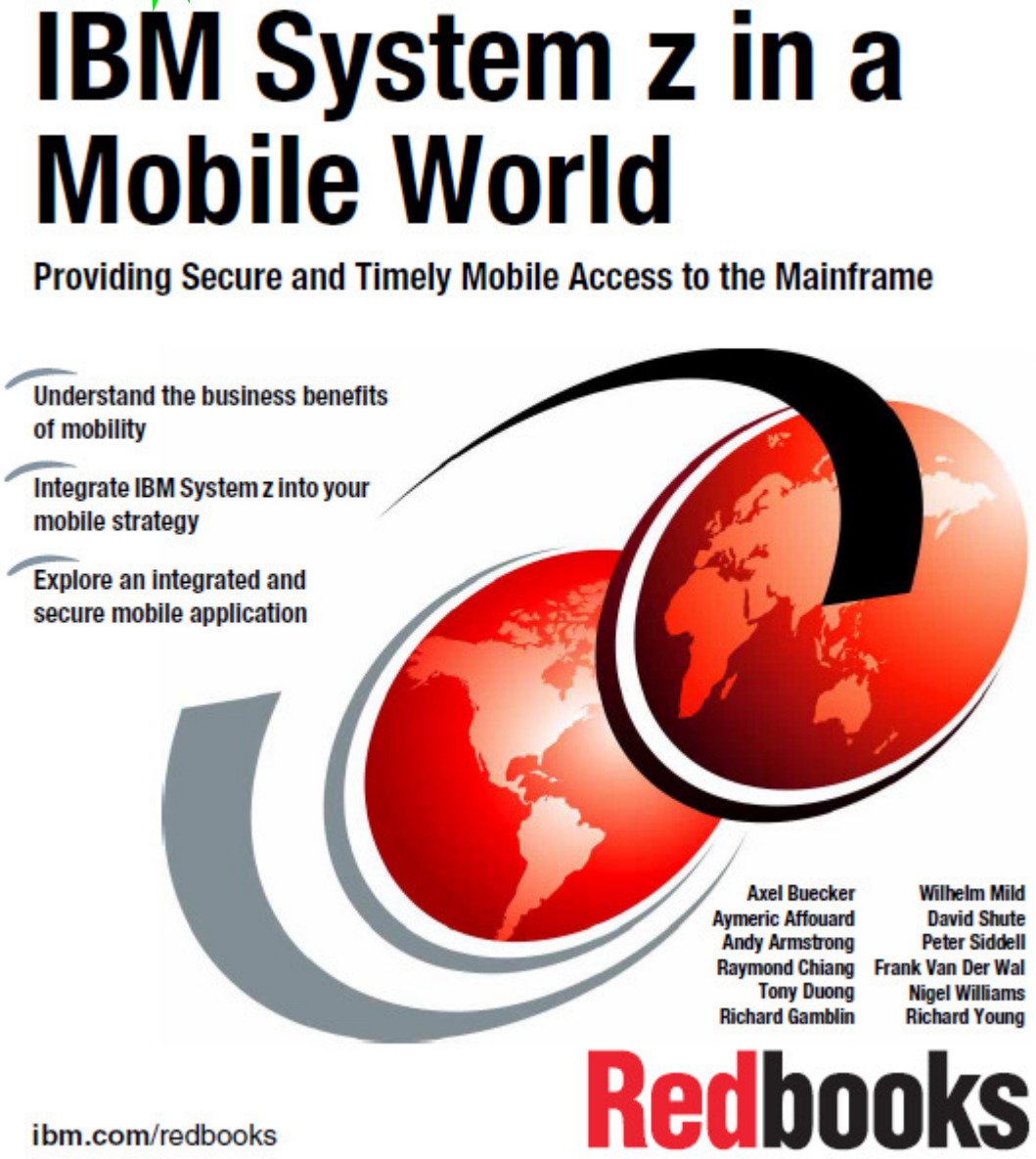

Chapter 1. Networking options overview
Chapter 2. TCP/IP for VSE/ESA
Chapter 3. IPv6/VSE
Chapter 4. Fast Path to Linux on System z
Chapter 5. OpenSSL
Chapter 6. Comparison of stacks and protocols
Appendix A. API reference

NEW!

# New Redbook

Table of Contents:

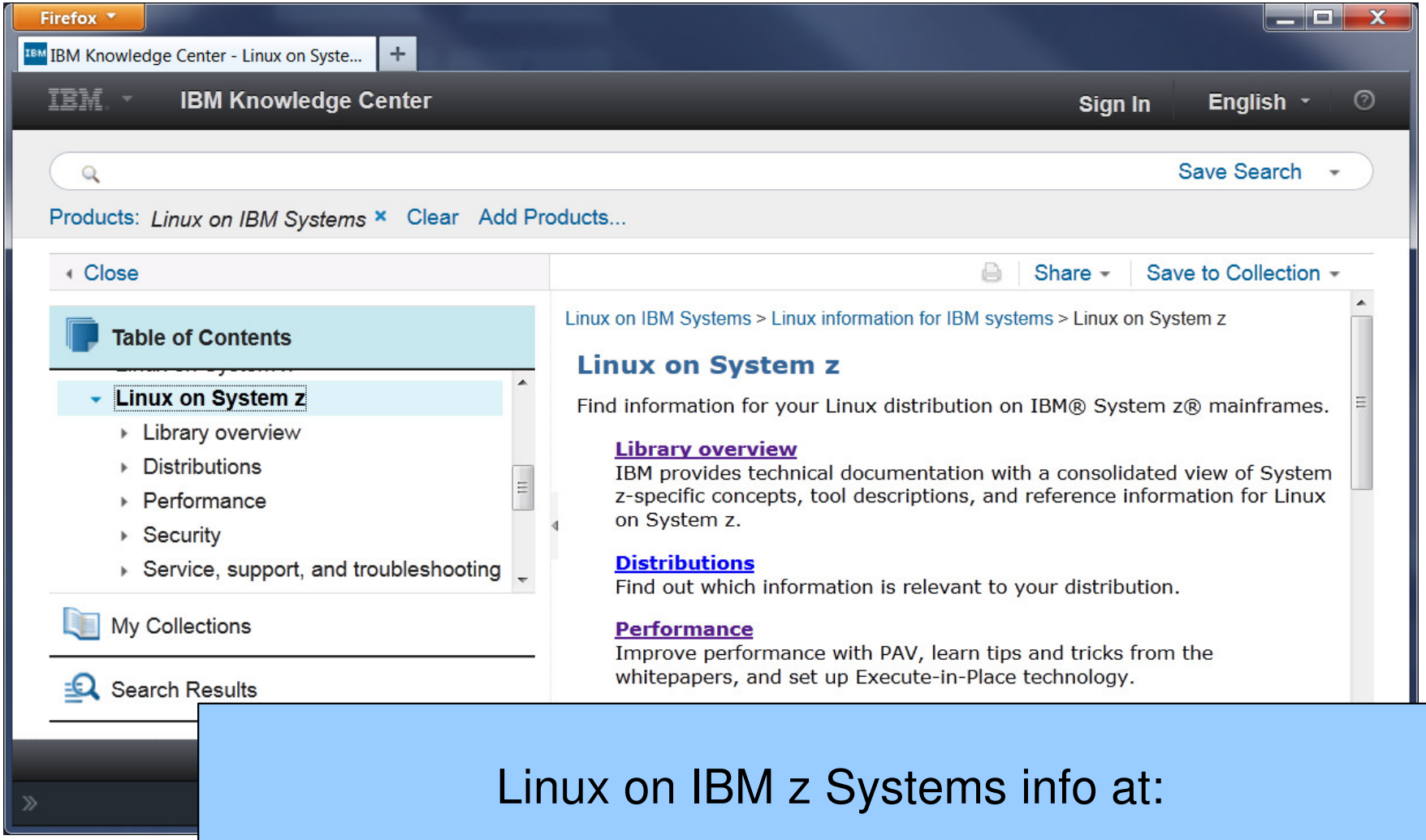
1. Understanding the business context in a mobile world
   - Business drivers
   - IBM MobileFirst
   - SoE and SoR
   - IBM Worklight
   - Industry use cases
2. Architecting and planning the solution
   - Deployment models
   - Enterprise architecture
   - Designing for resilience
   - Designing for security
3. Customer scenario
   - Overview of scenario
   - Agile approach to deliver applications
   - Deploying to a HA infrastructure
   - Enabling E2E security
   - Mobile analytics




http://www.redbooks.ibm.com/abstracts/sg248215.html

NEW!

# ibm.com/support/knowledgecenter/




Linux on IBM z Systems info at:

**ibm.com/support/knowledgecenter/linuxonibm/liaaf/lnz_r_main.html**

# Agenda

- IBM z13 – Hardware - Betriebssysteme
- z/VSE – Heute und in Zukunft
- Statements of Direction
- CoD (Capacity On Demand)
- z/VSE 50 Jahre Innovation

# ALS to IBM System z10

**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.**

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

- Remember:
  - z/VM V6 requires System z10 and higher
  - SLES 12 and RHEL 7 require zEnterprise 196 and higher

| *IBM z Systems* | z/VSE V6.1 | z/VSE V5.2 | z/VSE V5.1 | z/VSE V4.3 (EoS) |
|---|---|---|---|---|
| IBM z13 | ✔ | ✔ | ✔ | ✔ |
| IBM zEnterprise EC12 & BC12 | ✔ | ✔ | ✔ | ✔ |
| IBM zEnterprise 196 & 114 | ✔ | ✔ | ✔ | ✔ |
| IBM System z10 EC & z10 BC | ✔ | ✔ | ✔ | ✔ |
| IBM System z9 EC & z9 BC | ✘ | ✔ | ✔ | ✔ |
| IBM eServer zSeries 990 & 890 | ✘ | ✘ | ✘ | ✔ |
| IBM eServer zSeries 900 & 800 | ✘ | ✘ | ✘ | ✔ |

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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

NEW!

# 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

- 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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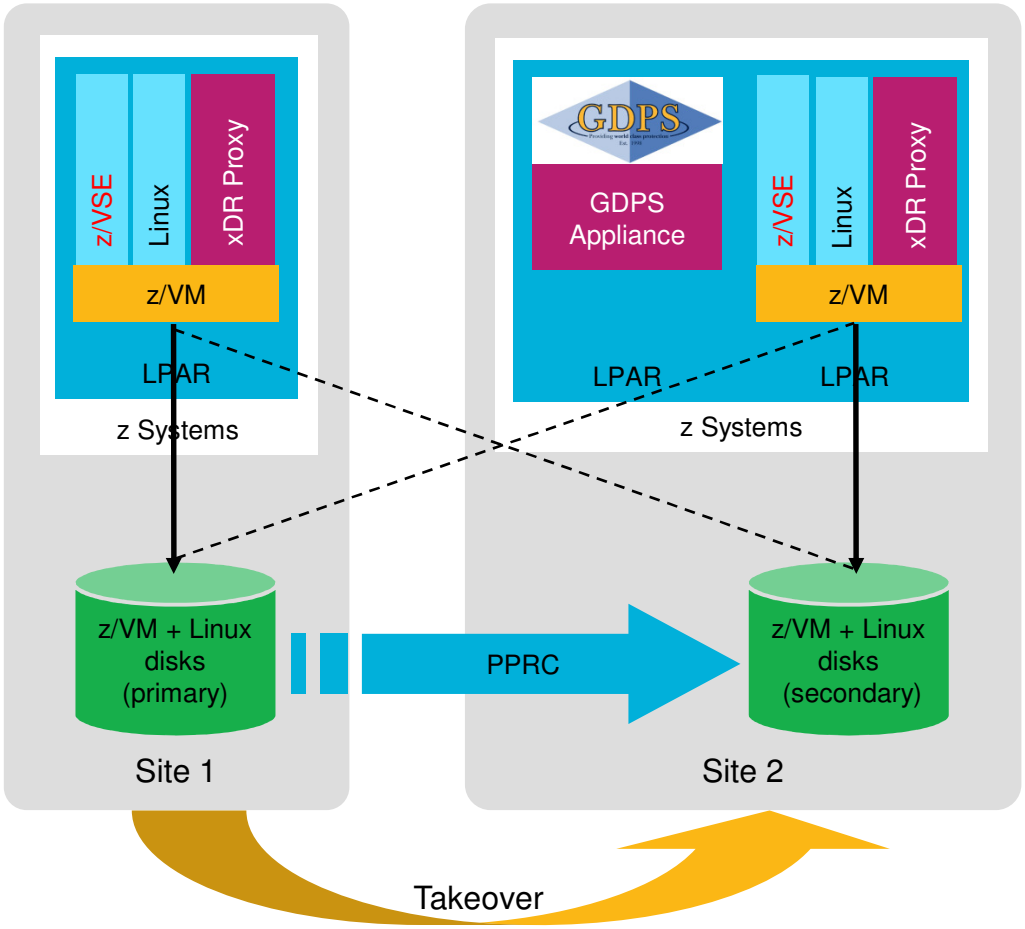
NEW!

# 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

NEW!

# KVM offering for IBM z Systems

*What and why?*

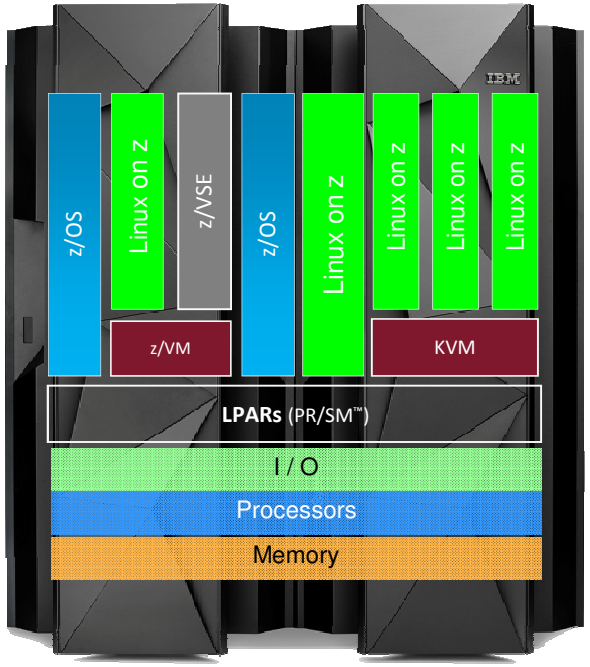
## Client Pain Points

- Complexity and time required to implement server virtualization
- Virtualization vendor lock-in
- TCO for server virtualization solutions
- Closed proprietary solutions
- Lack of seamless integration with new cloud technologies like OpenStack

## KVM Solution

- Simplifies configuration and operation of server virtualization
- Leverage common Linux admin skills to administer virtualization
- Provides an Open Source virtualization choice
- Lower cost virtualization alternative for Linux workloads
- Flexibility and agility leveraging the Open Source community
- Easily integrate into Cloud/OpenStack environments

- New software distribution of KVM on z Systems
- An additional option for virtualization on z Systems
- Coexistance with z/VM‘s support of Linux on z Systems
- The IBM commitment to z/VM remains steadfast

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# z/VSE Linux Growth Offering

- **Objective**: Provide z/VSE customers with a z/VM-Linux environment to expand into new workloads such as Cloud, Analytics, Mobile, Security, etc.

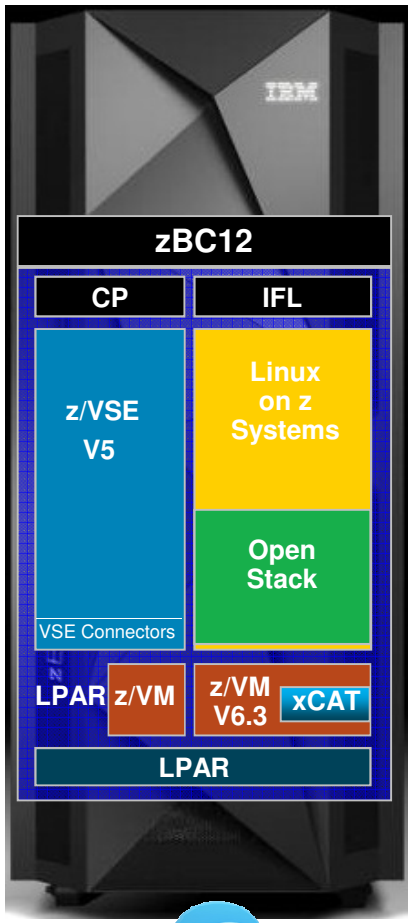
- For z/VSE customers acquiring a zBC12* and z/VSE V5, the customer can receive all of the following components with the zBC12 and z/VSE V5 at the same price as the zBC12 and z/VSE V5:
  - one IFL*
  - incremental 32 GB memory (incremental to memory ordered for the zBC12)
  - z/VM V6 (base and features) for the IFL (up to 10 Value Units)
  - IBM Wave V1 for the IFL (up to 10 Value Units)
  - z/VM S&S and IBM Wave S&S for the IFL for 3 years

- **Requirements:**
  - Applicable to zBC12 C01 or larger
  - All components must be ordered at the same time
  - z/VSE V5 must be licensed at the same time as the server purchase (or earlier)

* Maintenance is not included in this offering

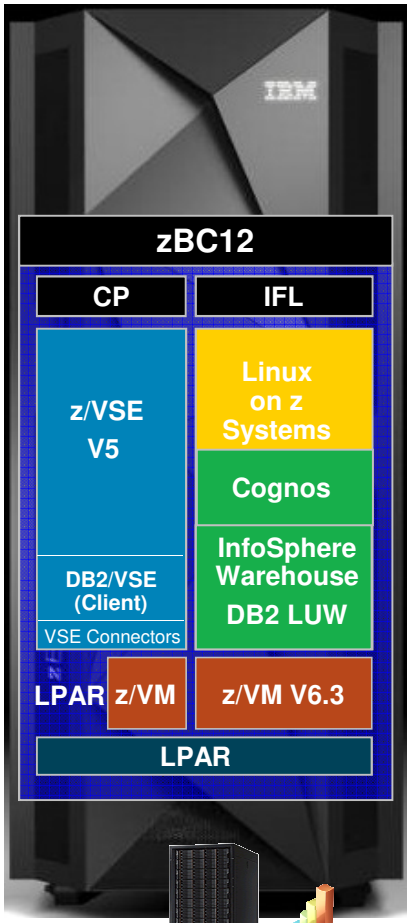
# z/VSE Linux Growth Offering – CAMS solution examples

## Cloud



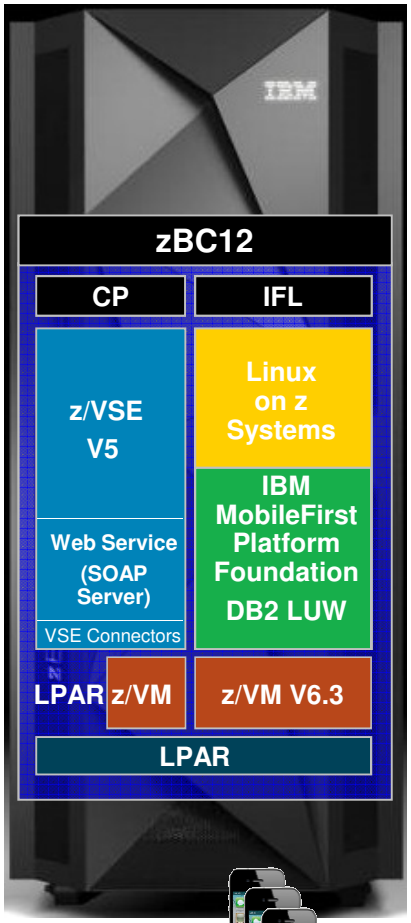


## Analytics



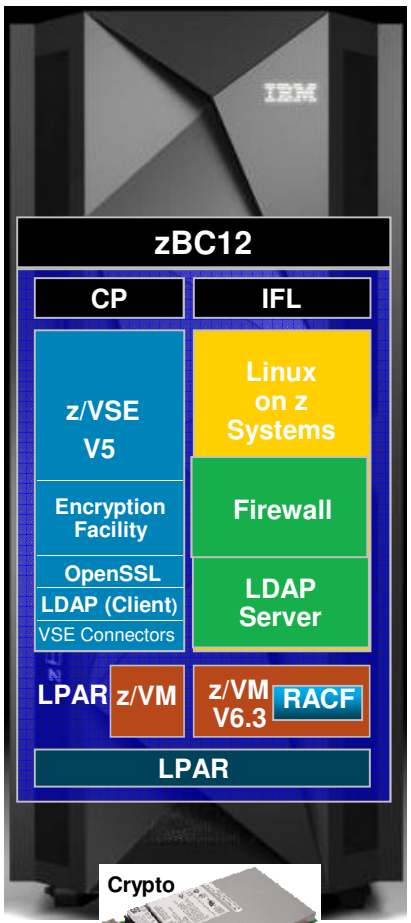


## Mobile





## Security





and many more ....

# Agenda

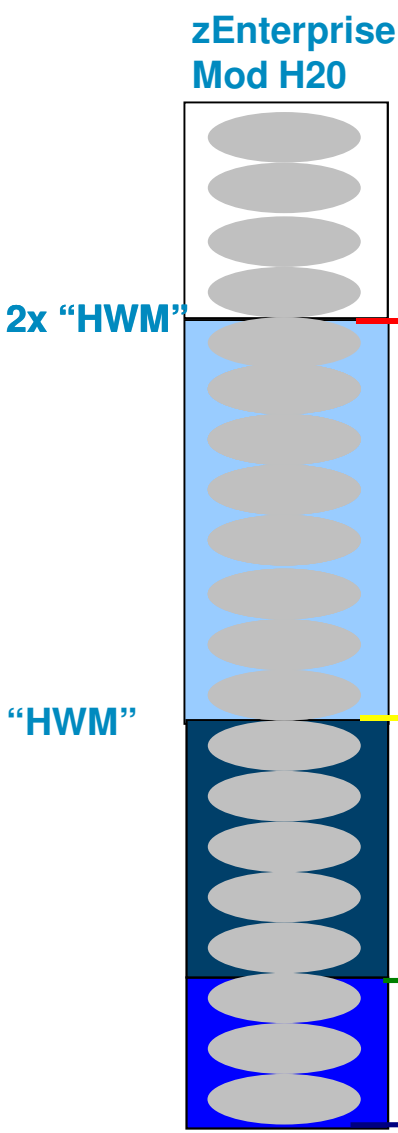
- IBM z13 – Hardware - Betriebssysteme
- z/VSE – Heute und in Zukunft
- Statements of Direction
- CoD (Capacity On Demand)
- z/VSE 50 Jahre Innovation

# Capacity on Demand – zEnterprise

zEnterprise uses the Capacity on Demand (CoD) architecture implemented on z10. This architecture improved the capability to access and manage processing capacity on a temporary basis, providing increased flexibility for On Demand environments.

- CBU Capacity Back Up
- CPE Capacity for Planned Events
- OOCoD On/Off Capacity on Demand (On/Off CoD)
- CIU Customer Initiated Upgrade

# Capacity - Terminology




| | |
|---|---|
| Dormant Capacity | This represents the amount of uncharacterized PUs (Engines). |
| **Temporary capacity** | This represents an optional capacity that is added to the current server capacity for a limited amount of time.<br><br>Activated via On/OffCoD |
| **Purchased capacity "High Water Mark"**<br><br>**Unassigned Capacity** | Capacity delivered and owned by the customer<br>This is capacity that has been purchased but is not currently active |
| **Permanent capacity** | This is the capacity purchased and activated by the customer. |

# IBM zEnterprise Hardware Withdrawals from Marketing

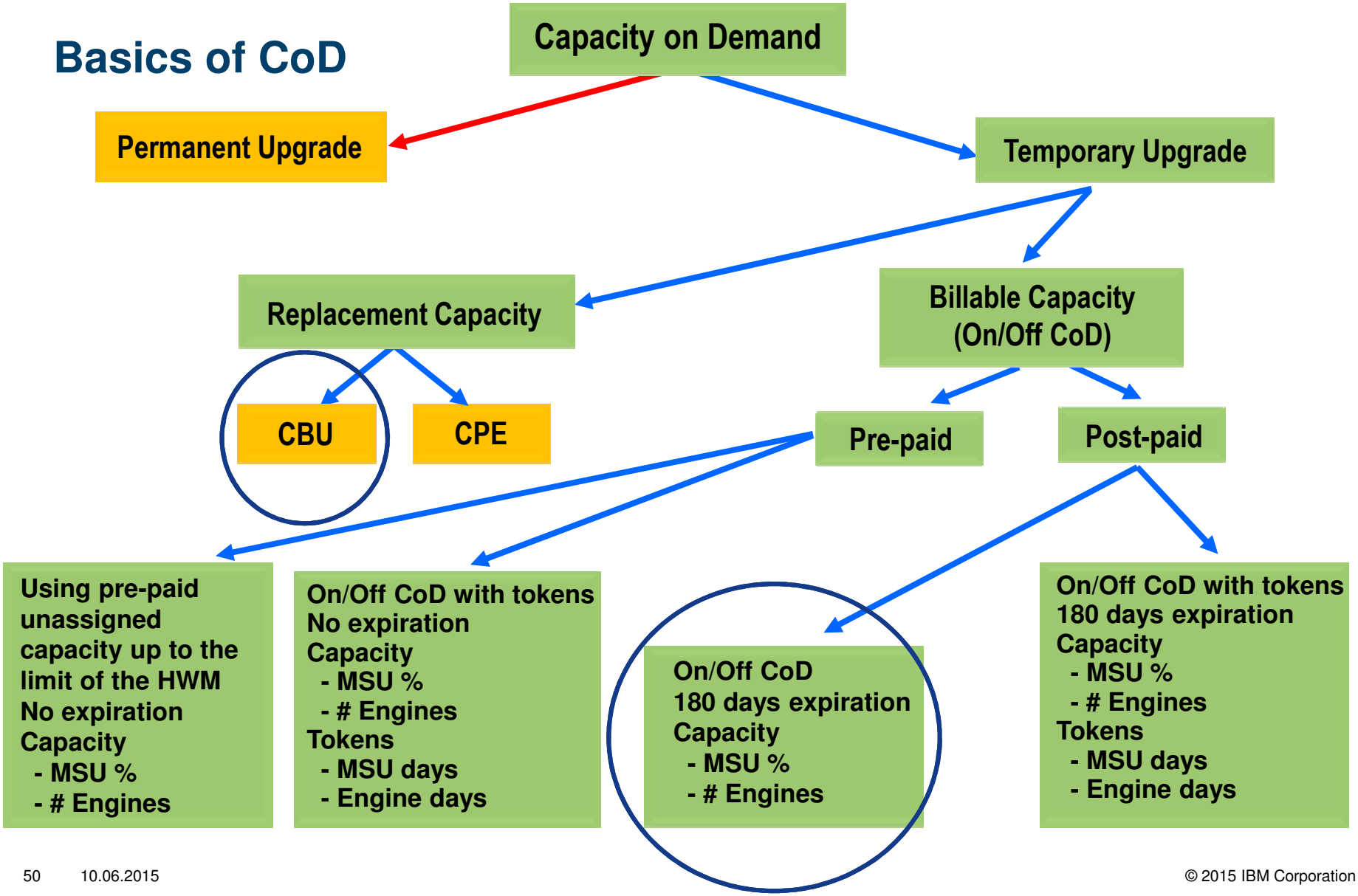
- **Effective June 30, 2014, IBM is withdrawing from marketing:**
  - All models of the IBM zEnterprise 196 (z196) and all upgrades to the z196 from the IBM System z9 EC (z9 EC), or IBM System z10 EC (z10 EC).
  - All models of the IBM zEnterprise 114 (z114) and all upgrades to the z114 from the IBM System z9 BC (z9 BC), or IBM System z10 BC (z10 BC).
  - The zEnterprise BladeCenter Extension (zBX) Model 002. Model conversions and hardware MES features applied to an existing z196 or z114 server or to an existing zBX Model 002.
  - Field installed features and conversions that are delivered solely through a modification to the machine's Licensed Internal Code (LIC) will continue to be available until June 30, 2015. After June 30, 2015, features and conversions that are delivered solely through a modification to the LIC will be withdrawn.
  - The Capacity on Demand offerings that are configured prior to withdrawal are usable until the offering expiration date or termination date, as applicable.

# Zeitlicher Ablauf und Auswirkung der Abkündigung

- **30. Juni 2014 Abkündigung MES (physischer Umbau)**
  - Keine zusätzlichen Karten mehr
  - nur noch Freischalten des bereits verbauten Speichers
  - Nur noch µCode Änderungen möglich
  - Keine Auswirkungen auf CBU-Record oder CoD
  - MES als reiner µCode ist immer noch möglich (Kapazitätsänderungen)

- **30. Juni 2015 Abkündigung LICCC (µCode)**
  - Keine Änderungen an z114 mehr möglich
  - CoD kann letztmalig für z114 erneuert werden
  - ooCoD-Record ist temporär und hat 180 Tage Laufzeit
  - CIU-Record ist permanent und hat kein direktes Verfallsdatum
  - Prepaid ooCoD Record hat kein Expiration Date
  - Download für alle Records muss spätestens am 30.6.2015 erfolgen
  - MES auf zBC12 ist weiterhin möglich

# Basics of CoD



# Möglichkeiten zum 30. Juni 2015

- **CoD-Record erneuern zum 30. Juni 2015**
  - Laufzeit 180 Tage, Expiration spätestens am 27.12.2015
  - Danach keine Hochrüstmöglichkeit mehr über ooCoD Postpaid

- **Alternative 1: Permanenter Upgrade zum 30. Juni 2015**
  - Aufrüsten auf höhere Leistung mit CIU (Customer Initiated Upgrade)
  - CIU Record für permanenten Upgrade anfordern und laden
  - Aktivierung erst nach 27.12.2015
  - System ist ab Aktivierung permanent auf neuer Kapazität
  - Kosten entstehen für permanenten Upgrade bei Download (außer bei HWM)
  - Auswirkungen auf Wartungsgebühren ab Aktivierung
  - Auswirkung auf Softwaregebühren ab Aktivierung

- **Alternative 2: PrePaid ooCoD Record bestellen/installieren zum 30.6.2015**
  - Nutzung wie ooCoD Postpaid
  - Planung für Nutzungstage und MSUs für Restlaufzeit der Maschine
  - Kosten für Prepaid Token (‚Zehnerkarte‘)
  - Kein Expiration Date
  - Migration auf Nachfolgesystem möglich

# Agenda

- IBM z13 – Hardware - Betriebssysteme
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# z/VSE continues to deliver customer value


**z/VSE V6.1 Preview 2Q15, GA 4Q15**
- ALS to System z10 (and higher), z13 exploitation
- CICS TS for z/VSE V2.1 incl. CICS Explorer update, channels & containers
- TCP/IP for z/VSE V2.1, IPv6/VSE V1.2

**z/VSE V5.2 April 25, 2014**
- zEC12 / zBC12 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.

# Meet the z/VSE team and celebrate 50 years of innovation !

- German GSE in Berlin (Germany)
  - April 27-29, 2015

- Edge2015 in Las Vegas (Nevada)
  - May 11-15, 2015

- IBM System z Technical University in Dublin (Ireland)
  - May 18-22, 2015

- z/VM z/VSE Linux on z Systems Workshop in Binghamton (New York)
  - June 25-27, 2015

- GSE European Working Group in Böblingen (Germany)
  - Oct 19-21, 2015

z/VSE 50 years of innovation


# z/VSE

## 50 years of innovation

IBM

# z/VSE Live Virtual Classes

z/VSE @ http://www.ibm.com/zvse/education/

LINUX + z/VM + z/VSE @ http://www.vm.ibm.com/education/lvc/

Read about upcoming LVCs on @ http://twitter.com/IBMzVSE

Join the LVC distribution list by sending a short mail to zvse@de.ibm.com

# Thank You


Please forward your questions or remarks to

zvse@de.ibm.com
albert.gebhart@de.ibm.com

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HiperSockets
HyperSwap
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IMS
Language Environment*
MQSeries*
Multiprise*
NetView*
On demand business logo
OS/390*
Parallel Sysplex*
PR/SM
Processor Resource/Systems Manager
RACF*
Resource Link
RMF
S/390*
Sysplex Timer*
System z9
TotalStorage*
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**Notes**:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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