

# z/VM Platform Update

October 19, 2015 Version 4.14

Bill Bitner  
z/VM Client Focus and Care  
[bitnerb@us.ibm.com](mailto:bitnerb@us.ibm.com)



# Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

BladeCenter*	FICON*	OMEGAMON*	RACF*	System z9*	zSecure
DB2*	GDPS*	Performance Toolkit for VM	Storwize*	System z10*	z/VM*
DS6000*	HiperSockets	Power*	System Storage*	Tivoli*	z Systems*
DS8000*	HyperSwap	PowerVM	System x*	zEnterprise*	
ECKD	IBM z13*	PR/SM	System z*	z/OS*	

\* Registered trademarks of IBM Corporation

## The following are trademarks or registered trademarks of other companies.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.  
 Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.  
 Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.  
 IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency which is now part of the Office of Government Commerce.  
 ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.  
 Java and all Java based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.  
 Linear Tape-Open, LTO, the LTO Logo, Ultrium, and the Ultrium logo are trademarks of HP, IBM Corp. and Quantum in the U.S. and  
 Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.  
 Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.  
 OpenStack is a trademark of OpenStack LLC. The OpenStack trademark policy is available on the [OpenStack website](#).  
 TEALEAF is a registered trademark of Tealeaf, an IBM Company.  
 Windows Server and the Windows logo are trademarks of the Microsoft group of countries.  
 Worklight is a trademark or registered trademark of Worklight, an IBM Company.  
 UNIX is a registered trademark of The Open Group in the United States and other countries.

\* Other product and service names might be trademarks of IBM or other companies.

### 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.  
 IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.  
 All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.  
 This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.  
 All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.  
 Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.  
 Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.  
 This information provides only general descriptions of the types and portions of workloads that are eligible for execution on Specialty Engines (e.g., zIIPs, zAAPs, and IFLs) ("SEs"). IBM authorizes customers to use IBM SE only to execute the processing of Eligible Workloads of specific Programs expressly authorized by IBM as specified in the "Authorized Use Table for IBM Machines" provided at [www.ibm.com/systems/support/machine\\_warranties/machine\\_code/aut.html](http://www.ibm.com/systems/support/machine_warranties/machine_code/aut.html) ("AUT"). No other workload processing is authorized for execution on an SE. IBM offers SE at a lower price than General Processors/Central Processors because customers are authorized to use SEs only to process certain types and/or amounts of workloads as specified by IBM in the AUT.

---

## Notice Regarding Specialty Engines (e.g., zIIPs, zAAPs and IFLs):

Any information contained in this document regarding Specialty Engines ("SEs") and SE eligible workloads provides only general descriptions of the types and portions of workloads that are eligible for execution on Specialty Engines (e.g., zIIPs, zAAPs, and IFLs). IBM authorizes customers to use IBM SE only to execute the processing of Eligible Workloads of specific Programs expressly authorized by IBM as specified in the "Authorized Use Table for IBM Machines" provided at [www.ibm.com/systems/support/machine\\_warranties/machine\\_code/aut.html](http://www.ibm.com/systems/support/machine_warranties/machine_code/aut.html) ("AUT").

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

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

## Acknowledgments – Platform Update Team

- Alan Altmark
- Bill Bitner
- Miguel Delapaz
- Glenda Ford
- John Franciscovich
- Les Geer
- Susan Greenlee
- Dan Griffith
- Brian Hugenbruch
- Emily Hugenbruch
- Romney White



# Fun with Numbers

- 200 ?
- 2 ?
- 3.36 million?

# Agenda

- Release Status and Information
- z/VM<sup>®</sup> Version 6 Release 3
- Futures and Statements of Direction





# Release Status and Information



# z/VM Release Status Summary



z/VM Level	GA	End of Service	End of Marktg.	Minimum Processor Level	Maximum Processor Level	Security Level
6.3	7/2013	12/2017 <sup>[4]</sup>		IBM System z10 <sup>®</sup>	-	EAL 4+ OSPP-LS
6.2	12/2011	12/2016 <sup>[2]</sup>	7/2013	IBM System z10 <sup>®</sup>	z13 <sup>[3]</sup>	-
6.1	10/2009	4/2013	12/2011	IBM System z10 <sup>®</sup>	zEC12	EAL 4+ OSPP-LS
5.4	9/2008	12/2016 <sup>[1]</sup>	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] Extended from original date (Announced February 4, 2014)

[3] Announced January 14, 2015

[4] Announced February 3, 2015

Marketed & Serviced

Serviced, but not Marketed

End of Service & Marketing

# z/VM Version 6

## Security Certification Results



- Common Criteria (ISO/IEC 15408)
  - **\*new\*** z/VM V6.3 has been certified: [BSI-DSZ-CC-0903](#)
  - z/VM V6.1 has been certified: [BSI-DSZ-CC-0752](#)
  - Evaluated to EAL 4+ for the Operating System Protection Profile (OSPP) with:
    - Virtualization extension (-VIRT)
    - Labeled Security extension (-LS)
  
- Federal Information Processing Standard (FIPS) 140-2
  - **\*new\*** z/VM V6.3 System SSL is FIPS 140-2 Validated<sup>(TM)</sup>
    - <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2014.htm#2139>
  - z/VM V6.1 System SSL is FIPS 140-2 Validated<sup>(TM)</sup>
    - <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2012.htm#1735>
  - Enablement requirements for certificate database and servers
  
- z/VM V6.2 is designed to conform to both Common Criteria and FIPS 140-2 evaluation requirements

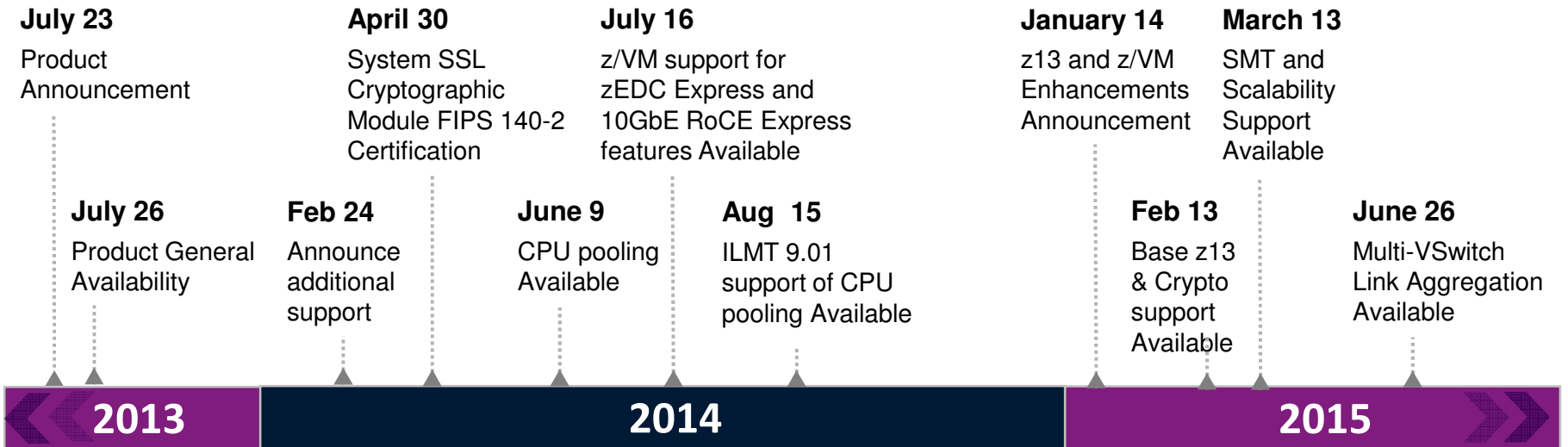


*A Certification Mark of NIST, which does not imply product endorsement by NIST, the U.S. or Canadian Governments.*

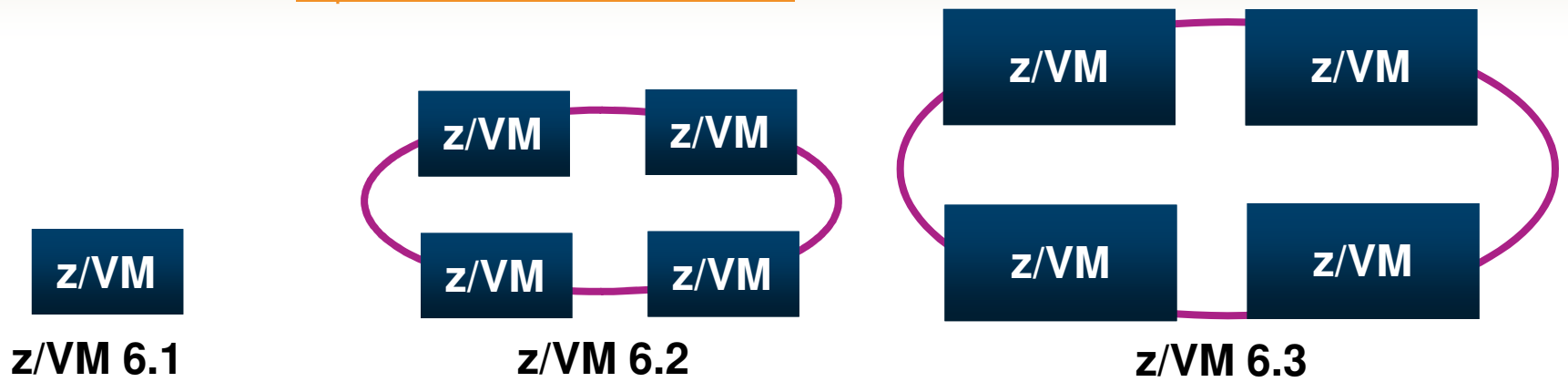
# z/VM Version 6 Release 3

# z/VM Version 6 Release 3

## Making Room to Grow Your Business



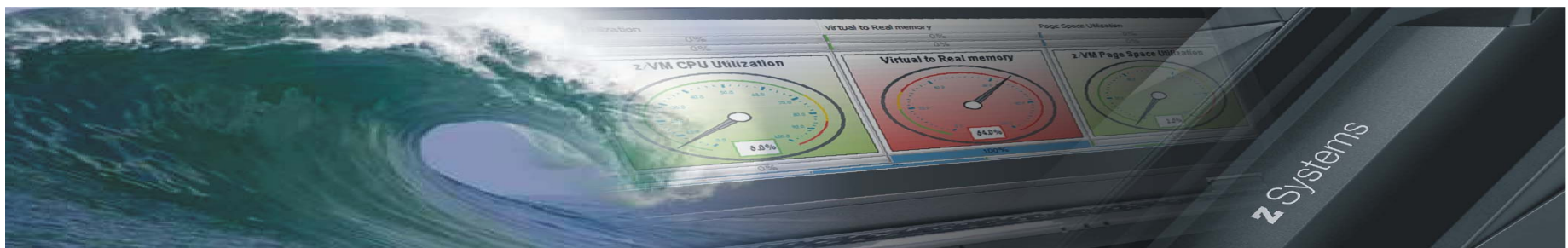
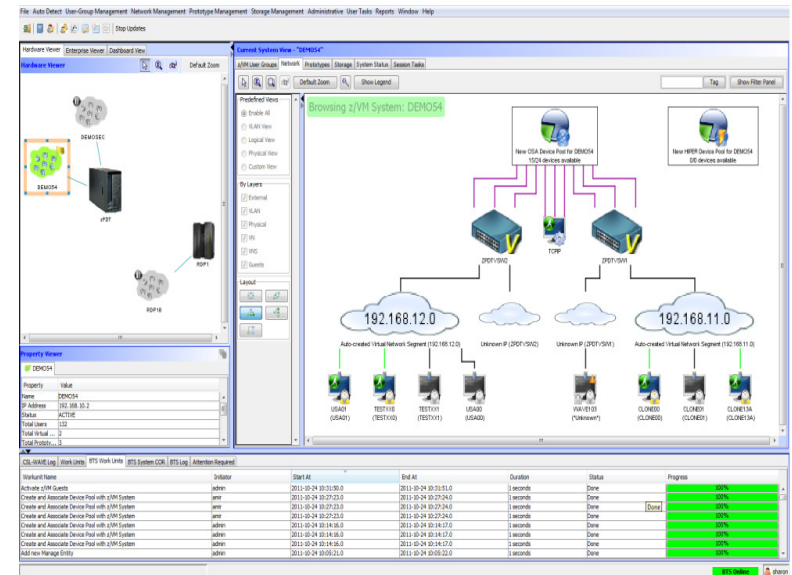
See <http://www.vm.ibm.com/zvm630/>



# IBM Wave for z/VM 1.2



- IBM Wave is a virtualization management product for z/VM® and Linux® virtual servers that uses visualization to dramatically automate and simplify administrative and management tasks
- IBM Wave for z/VM 1.2
  - Announcement May 11, 2015
  - General Availability June 19, 2015
- Strengths
  - Intelligent Visualization
  - Simplified Monitoring
  - Unified Management



# A Different Better vs. A Standard Good

Management Software

Management Software



API-1

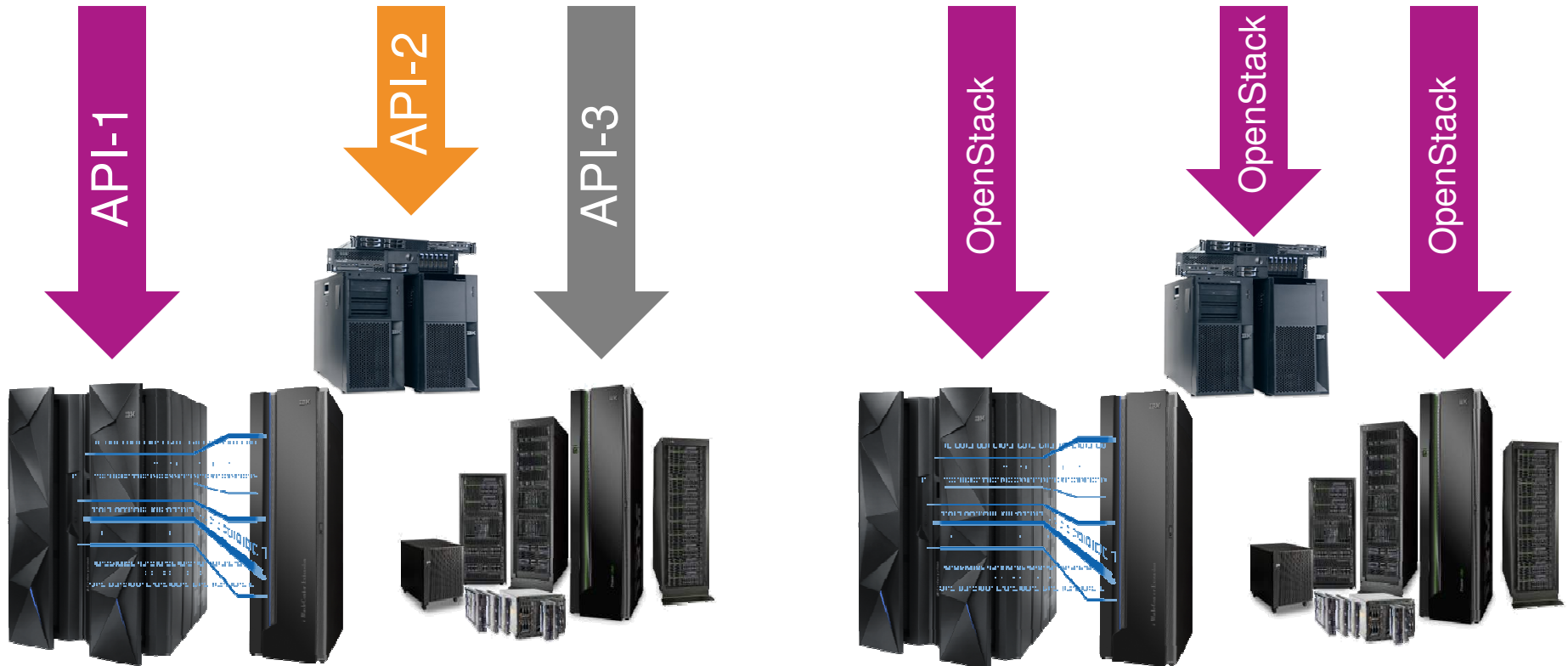
API-2

API-3

OpenStack

OpenStack

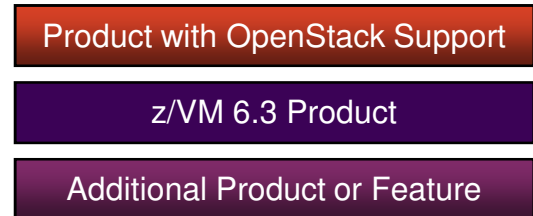
OpenStack



# The OpenStack Food Chain



- **Top Half of the Solution:**
  - An IBM Cloud Technology product or other vendor product will include the OpenStack support.
  - Portions of that OpenStack support will know z/VM (i.e. code that connects and understands how to talk to z/VM).
  
- **Bottom Half of the Solution:**
  - Rest APIs are used to communicate with the OpenStack code from the top half.
  - The xCAT (Extreme Cloud Administration Toolkit) Appliance utilizes new and existing Systems Management APIs (SMAPI) to interact with the z/VM system
  - SMAPI can interact with additional products or features (e.g. a directory manager).



## IBM Infrastructure Suite for z/VM and Linux 1.1.0

- Announced and Available
  - Announced September 2, 2014
  - Available September 5, 2014
  - Announcement Letter ENUS214-350
  
- Includes following products:
  - IBM Tivoli® OMEGAMON® XE on z/VM and Linux V4.3
  - IBM Tivoli Storage Manager, part of IBM Spectrum Protect, Extended Edition V7.1
  - IBM Operations Manager for z/VM V1.5
  - IBM Backup and Restore Manager for z/VM V1.3
  - IBM Wave for z/VM V1.2



# February 24, 2014 Announcements

# Enhancing the Foundation for Virtualization

- Release for Announcement – zBX and zEnterprise System Enhancements

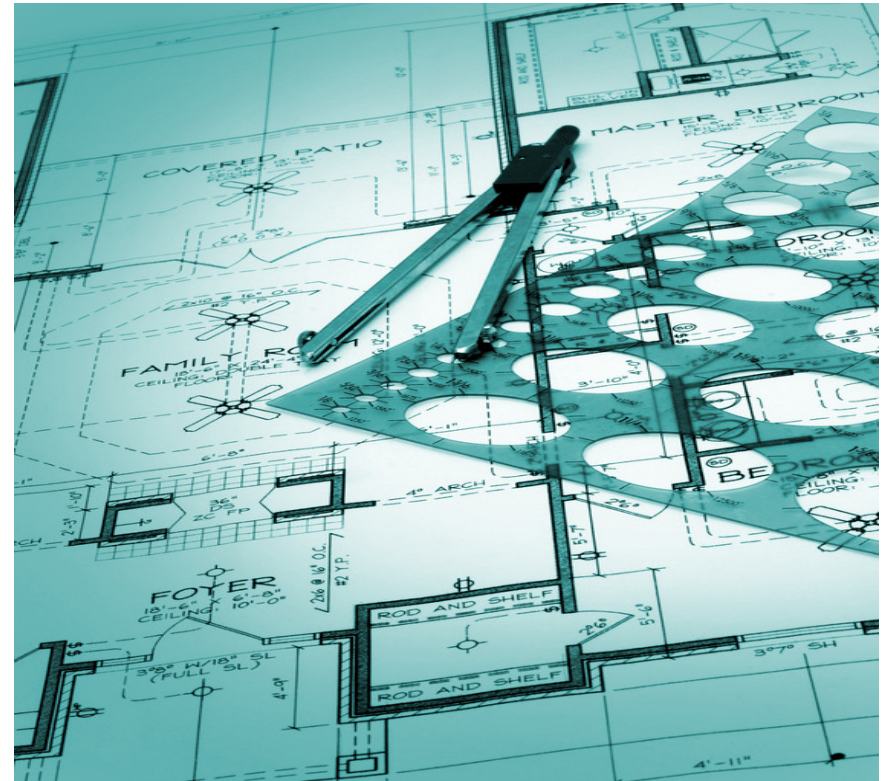
- February 24, 2014
- <http://www.vm.ibm.com/zvm630/apars.html>

- Hardware Support

- 10GbE RoCE Express Feature
- zEDC Express Feature

- Software Enhancements

- CPU Pooling
- Environment Information Interface



# CPU Pooling

- Fine-grained CPU limiting for a group of virtual machines
  
- Define one or more pools in which a limit of CPU resources is set.
  
- Two flavors of limits:
  - LIMITHARD - Percentage of system
  - CAPACITY – Number of CPUs
  
- Coexists with individual limit shares
  - More restrictive limit applies
  
- Support Details
  - z/VM 6.3 with APAR VM65418 – Available
    - Part of RSU 1501



## Environment Information Interface

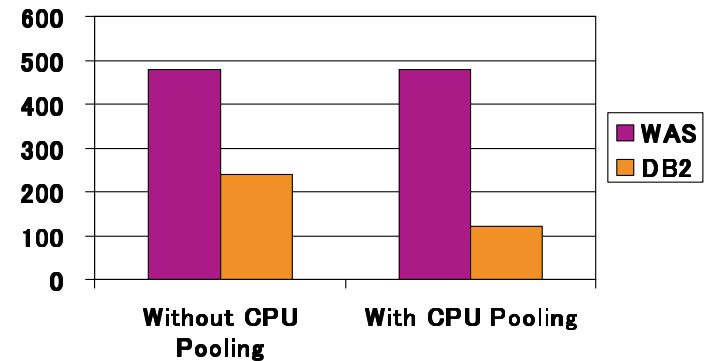
- New interface allow guest to capture execution environment
  - Configuration and Capacity information
  - Various Levels:
    - Machine, logical partition, hypervisor, virtual machine
- New problem state instruction Store Hypervisor Information (STHYI)
- Includes support for CPU Pooling enhancement
- Foundation for future software licensing tools
  - IBM License Metric Tool 9.0.1 updated August 2014- <http://ibm.biz/cpupoolilmt>
  - Greater flexibility for IBM Passport Advantage products
- Support details:
  - z/VM 6.3 with APAR VM65419 – Available
    - Part of RSU 1501



# CPU Pooling Example

- 4 WAS production guests
  - Requires 4-engine WAS entitlement
- Create a 1-IFL pool
- Put the 2 DB2 production guests in pool
  - Requires 1-engine DB2 entitlement (avoiding the need for 2-engine DB2 entitlement without CPU pooling)

PVU Entitlements



- Allows new workloads and additional workload consolidation to be more cost effective

Note: All PVU Entitlement examples based on zEC12 (120 PVU per IFL) – will look proportionally the same on zBC12 (100 PVU per IFL)

# January 14, 2015 Announcements

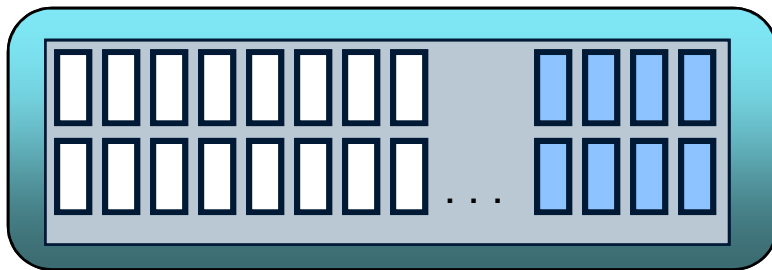
# Expanding the Horizon of Virtualization

- Release for Announcement – The IBM z13™
  - January 14, 2015
  - [Announcement Link](#)
  
- z/VM Compatibility Support
  - PTFs available February 13, 2015
  - Also includes Crypto enhanced domain support
  - z/VM 6.2 and z/VM 6.3
  - No z/VM 5.4 support
  
- Enhancements and Exploitation Support - only on z/VM 6.3
  - IBM z13 Simultaneous Multithreading
  - Increased Processor Scalability
  - Multi-VSwitch Link Aggregation Support (Link Aggregation with Shared OSAs)
  
- Performance Report at <http://www.vm.ibm.com/perf/reports/zvm/html/>

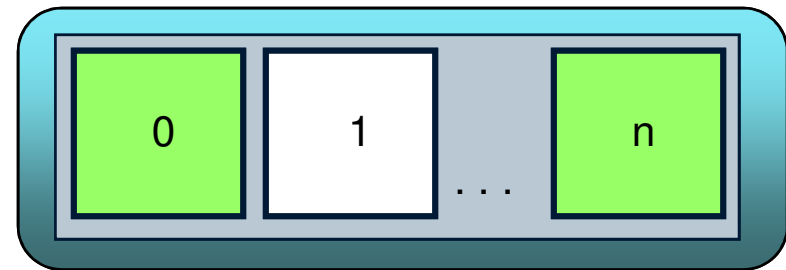


## z/VM Support for Crypto Express5S

- z/VM supports the z13 and Crypto Express5S feature
  - z/VM 6.2 and z/VM 6.3 only
  - APAR VM65577
- Expanded domain selection for dedicated domains
  - z/VM supports architected limits for CryptoExpress domains
  - CryptoExpress5S supports 85 domains per feature, with a maximum of 16 features
- Selection of APVIRT domains in System Configuration
  - Avoid collisions when reassigning domains in user directory
  - Minimize need for LPAR restart



CEX5C 0



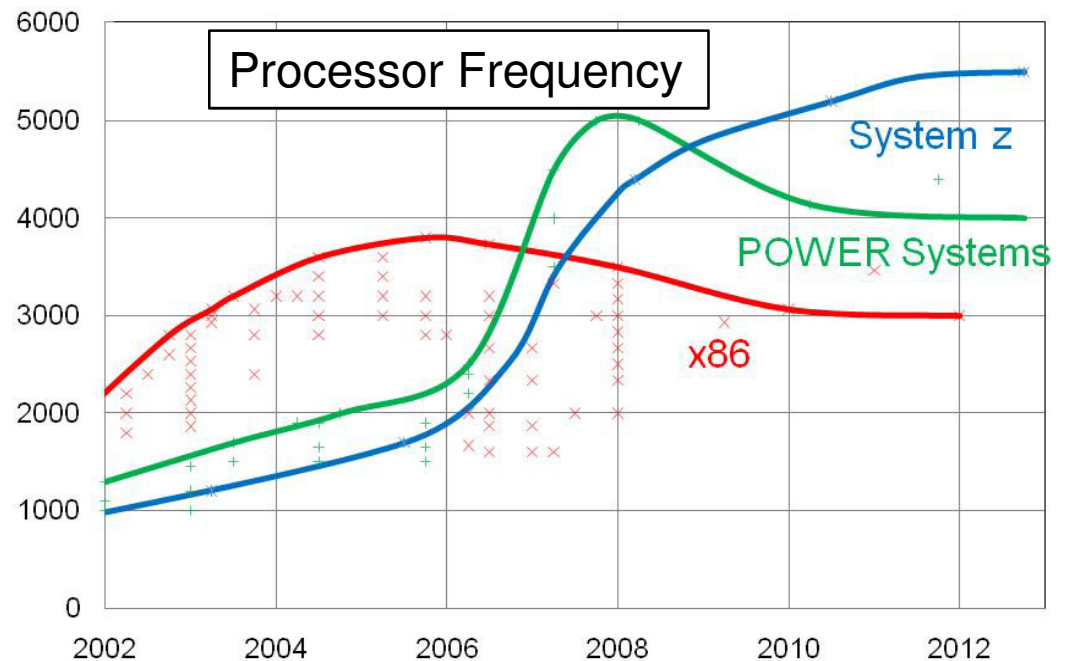
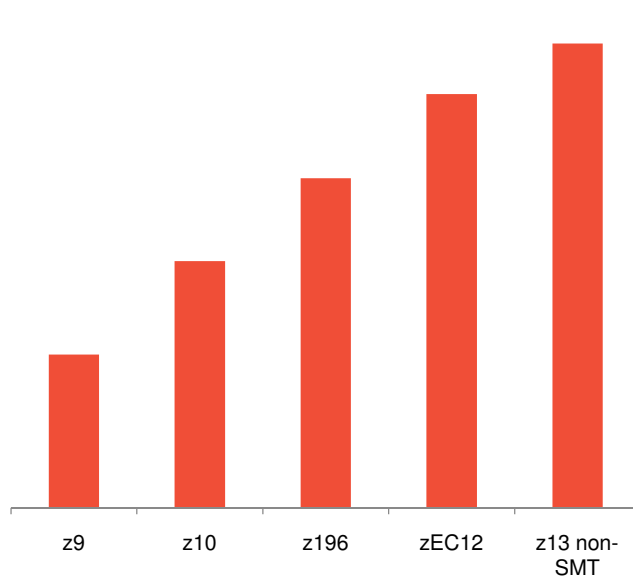
CEX5A 1



## Why Simultaneous Multithreading?

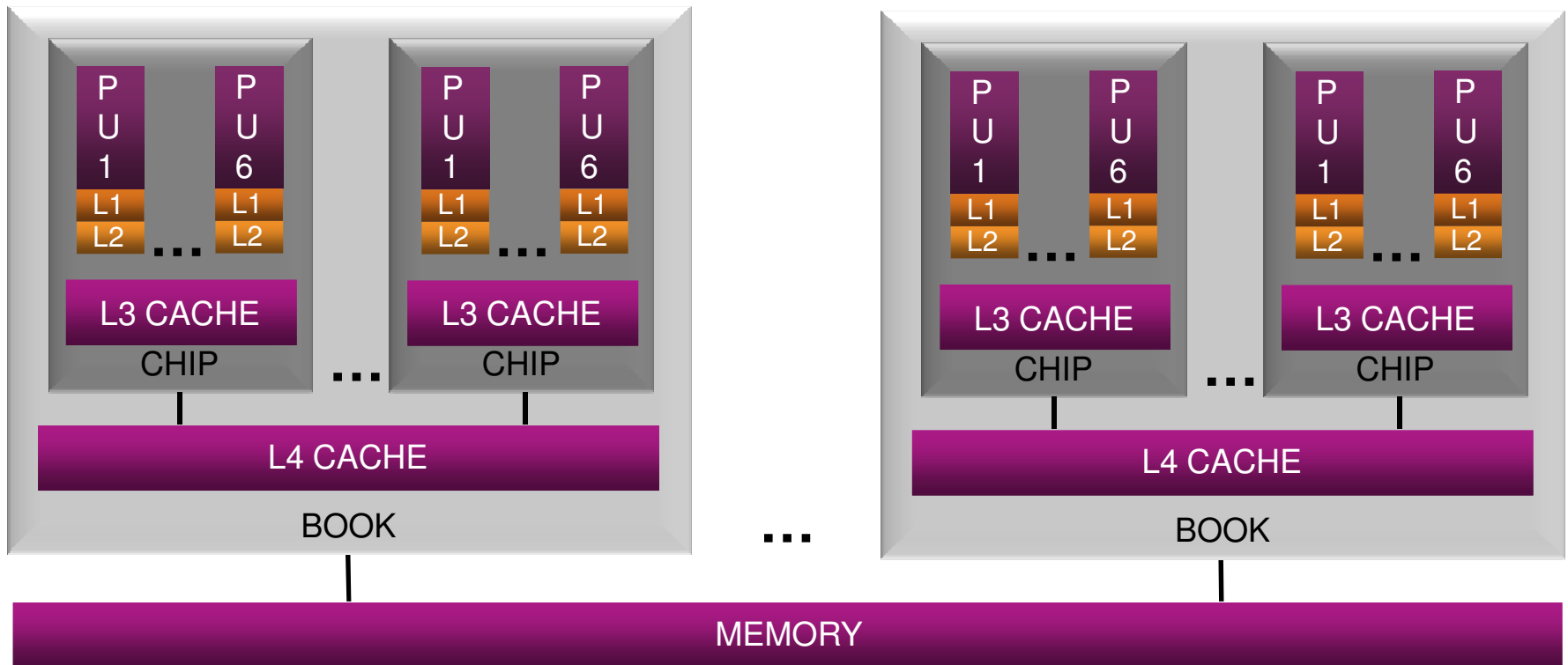
- Other architectures are already doing it.
- We're reaching the physical limits of the machine, we can't just keep making chips smaller and faster.
- We need now to look at ways to use the chip resources more efficiently.

Work per Virtual CPU-second



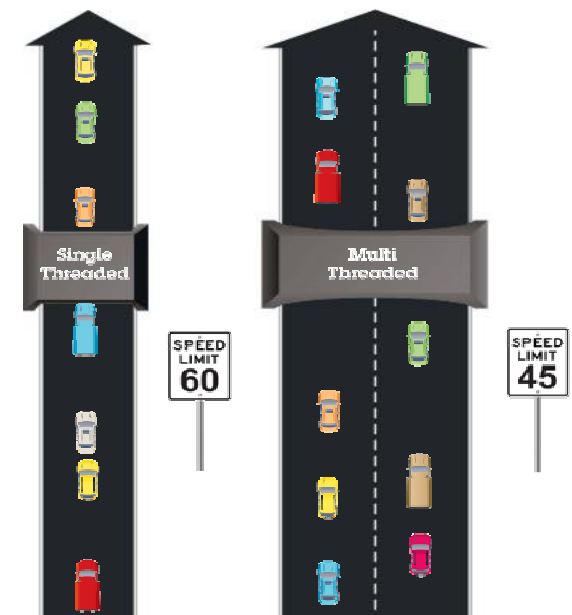
# System Layout Concepts

- Processor cache structures become increasingly complex and critical to performance



# 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 March 13, 2015
- At least z13 millicode bundle 11
- 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

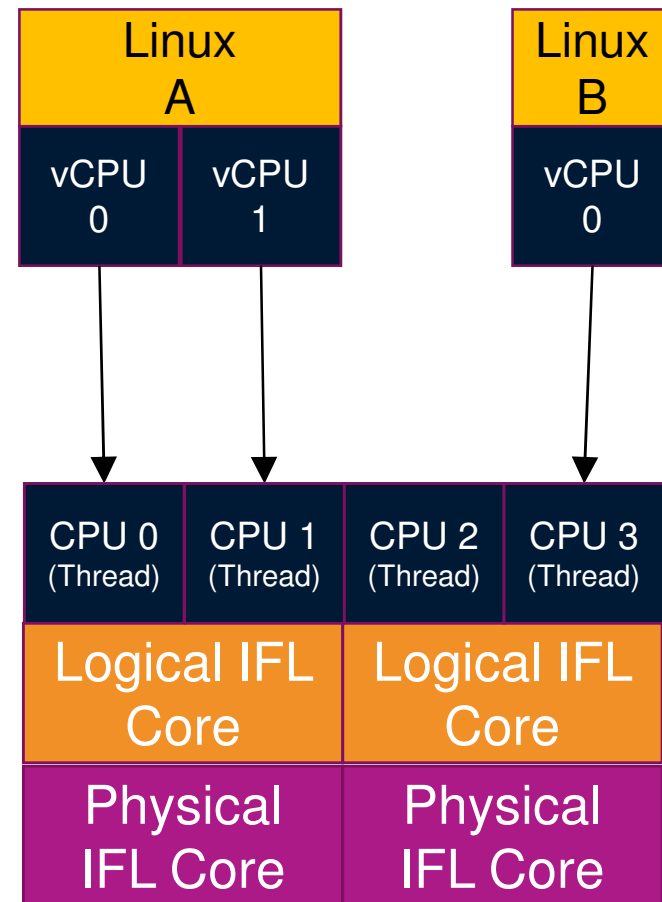


*Which approach is designed for the higher volume of traffic? Which road is faster?*

*\* Illustrative numbers only*

# SMT Usage

- Physical IFL Cores with SMT allow up to two threads to be used. You purchase these.
- Logical IFL Cores are presented to z/VM as in the past. You define these in the logical partition definition on HMC.
- z/VM creates a CPU or logical processor associated with each thread for it to use. Reflected in commands like QUERY PROCESSORS.
- The virtual CPUs of guests can then be dispatched on different threads intelligently, based on topology information.



## Increased CPU Scalability

- Various improvements to allow z/VM systems to be larger in terms of processors and more efficient, improving the n-way curve
  
- APARs VM65586 & VM65696 for z/VM 6.3 **only**
  - PTFs available March 13, 2015
  
- For z13
  - With SMT disabled, increases logical processors supported from 32 to 64
  - With SMT enabled, the limit is 32 cores (64 threads)
  
- For processors prior to z13
  - Limit remains at 32 cores
  - May still benefit from improved n-way curves



## Areas Improved with Scalability Enhancements

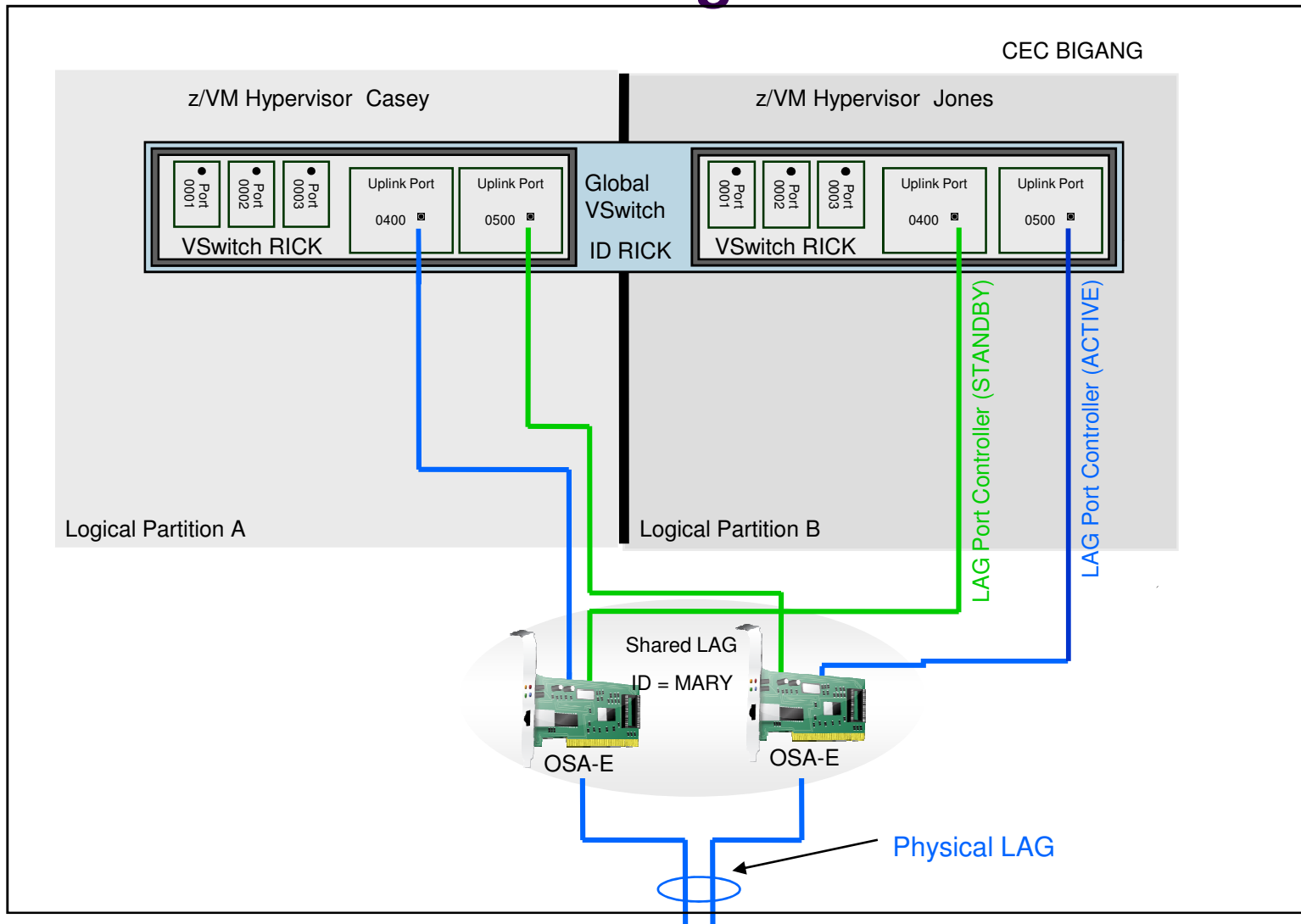
- z/VM Scheduler Lock
  - Management of internal stacked work
  - Guests going into a wait state
  
- Locking for Memory Management
  - Most benefit during system initialization and when very constrained with memory
  
- Serialization and processing of VDisk I/Os
  
- Batching and processor-local queues for VSWITCH buffers

## Multi-VSwitch Link Aggregation

- Link Aggregation is ability to combine or aggregate up to 8 OSAs to increase the bandwidth available to a VSwitch
- This enhancement makes it possible to do Link Aggregation with VSwitches with shared OSAs rather than previous the requirement for dedicated OSAs
- Allows a port group of OSA-Express features to span VSwitches within a single or multiple z/VM systems.
  - Cannot be shared with non-z/VM logical partitions
- APARs VM65583 (CP), PI21053 (TCP/IP), VM65528 (Performance Toolkit), and VM65670 (SMAPI) for z/VM 6.3 **only**
  - PTFs planned to be available June 26, 2015
- Available only on the z13
  - Requires OSA enhancements introduced with the z13
- Allows better consolidation and availability while improving TCO



# Multi-VSwitch LAG Configuration





# September 2015 Updates

## Securing the Path to Virtualization

- Updates to RACF for z/VM V6.3 – **APAR VM65719**
  - PTFs available 14 September, 2015
  - Security enhancements include:
    - Password Encryption upgrade
    - Helpdesk support
    - Special character support
    - Minimum password change intervals
  
- Updates to the z/VM TLS/SSL Server – **APARs PI40702, VM65717, VM65718**
  - PTFs available 14 September, 2015
  - Maintains FIPS 140-2 and NIST SP 800-131a compliance
  - Function includes:
    - System SSL V2.1 Equivalency (V6.3 only)
    - AES Galois/Counter Mode Encryption (V6.3 only)
  - **Changes to default cipher suites and protocols (all releases)**
  
- More information at <http://www.vm.ibm.com/security/>



# RACF Password Encryption Upgrade

- Enables of a stronger encryption mechanism of passwords and/or passphrases in a RACF database
  - *Matches support delivered by z/OS APAR OA43999*
  - *Strengthen RACF database against offline attacks*
  - Mitigate compliance issues of older encryption algorithms
  
- Migration to KDFAES is for an entire RACF database
  - May cause problems if sharing this RACF database with another system!
  - Utilities available to convert databases and clean password histories
  
- Some restrictions may apply
  - Support is for z/VM 6.3 only
  - RACF template has been updated; run RACFCONV accordingly
  - CPACF (Feature 3863) must be enabled

## SMT Prorated Core Time Support

- APAR VM65680 available for z/VM 6.3 on September 2, 2015
- Applies only to z/VM systems where SMT has been enabled
- This support enforces capacity limits using core time rather than thread time so that a CPU Pool will not be limited prematurely.
- Following interfaces have been updated:
  - Commands: DEFINE CPUPOOL, QUERY CPUPOOL, SET CPUPOOL , SET SHARE
  - Accounting records
  - Monitor records
  - Store hypervisor information (STHYI) instruction
- Also resolves SRN005 Abends in previous APAR VM 65613
- CPU Pooling and ILMT can now be used without the need to potentially adjust the pool values to be equivalent to non-SMT environment.
- Use QUERY CPUPOOL to determine if APAR is applied (shows core instead of cpu)

## Virtual CPU Time with SMT

- Raw Time
  - The actual time that the virtual CPU was dispatched (run under SIE)
  
- MT 1 Equivalent
  - Estimated normalization to what raw time would be if running on a dedicated core, as opposed to one of two threads on a core.
  - Meant for being “fair” to that individual application / process
  - Could be used for resource usage charge back if mixing SMT and non-SMT or bridging between the two
  
- Prorated Core Time
  - Estimated division of core usage by a virtual CPU
  - Splits up core usage, dealing with scenarios of either 1 thread running or 2 threads running simultaneous
  - Meant for being “fair” to the system, as opposed to individual application / process
  - Used for CPU Pooling as software license management is at the core level

# Hardware Support

# Support for IBM z13

- **Updates for z/VM 6.2 and 6.3**
  - <http://www.vm.ibm.com/service/vmreqz13.html>
  - Many components affected
  - **Note: Directory space requirements increased slightly.**
- No z/VM 5.4 Support
- No z/VM 6.1 Support even if you have extended support contract.
- **PSP Bucket**
  - Upgrade **2964DEVICE**
  - Subset **2964/ZVM**
- **If running Linux, please also check for required updates prior to migration.** **WARNING!**



# Tested Linux Platforms

<http://www.ibm.com/systems/z/os/linux/resources/testedplatforms.html>

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)	✓



# August 17, 2015 Announcements

# IBM LinuxONE Portfolio <sup>TM</sup>

*Linux Your Way*

*Linux without Limits*

*Linux without Risk*





Great demo on LinuxONE from Donna Dillenberger  
Search: Donna Dillenberger LinuxONE Demo  
<https://www.youtube.com/watch?v=VWBNoIwGEjo>  
Watch it! Share it!!



# Statements of Direction

July 23, 2013  
January 14, 2015

- Subset of IBM Statements of General Direction that are most important to the z/VM environment. See announcement materials for additional statements.
- Subject to change or withdrawal without notice, representing IBM goals and objectives only.

## Completed Statements of Direction

Statement of Direction	From Announce Letter
Enhanced RACF® password encryption algorithm for z/VM	January 2015
KVM Offering for z Systems	January 2015
GDPS/PPRC Multiplatform Resiliency Capability	January 2015
Security Evaluation of z/VM 6.3	July 2013
FIPS 140-2 Validation of z/VM 6.3	July 2013
Support of 10 GbE RoCE Express Feature	July 2013
Support of zEDC Express Feature	July 2013
Stabilization of z/VM 5.4 Support	July 2013

- Requires support from hardware and/or guests operating systems as appropriate
- Refer to [www.vm.ibm.com](http://www.vm.ibm.com) or [www.vm.ibm.com/security](http://www.vm.ibm.com/security) for more information

# Withdrawal of Support for Expanded Storage

July 23, 2013

z/VM 6.3 will be the last release to support expanded storage (XSTOR) as part of the paging configuration. With the enhanced memory management support added in z/VM V6.3, expanded storage is no longer recommended as part of the paging configuration. z/VM can run efficiently in a configuration using only central storage

- In z/VM 6.3, it is recommended to configure all processor memory as central storage.
  - Support remains to use expanded storage in z/VM 6.3, but is suggested for use only in special cases.

## z/VM Support for Single Instruction Multiple Data (SIMD)

January 14, 2015

In a future deliverable IBM intends to deliver support to enable z/VM guests to exploit the Vector Facility for z/Architecture (SIMD).

- The Single Instruction Multiple Data (SIMD) was introduced as part of the z13, allowing use of the new Vector Facility.
- The initial z/VM support for z13 does not contain the virtualization of SIMD, which would allow guests to exploit it and gain potential performance benefits.

## Removal of Support for Expanded Storage

January 14, 2015

z/VM V6.3 is the last z/VM release that will support Expanded Storage (XSTORE) for either host or guest usage. The IBM z13 server family will be the last z Systems server to support Expanded Storage (XSTORE).

- The previous SoD spoke of removal of paging to expanded storage, but there is more.
- All z/VM support for expanded storage will be removed in future release
  - Attaching to guests
  - Minidisk Cache
  - Paging
  - etc.
- This SoD also goes on to speak to hardware support being removed as well, after the z13 server family.



## Removal of ESA/390 Architecture Mode

January 14, 2015

**The IBM z13 will be the last z Systems server to support running an operating system in ESA/390 architecture mode;** all future systems will only support operating systems running in z/Architecture mode. This applies to operating systems running native on PR/SM as well as operating systems running as second level guests. IBM operating systems that run in ESA/390 mode are either no longer in service or only currently available with extended service contracts, and they will not be usable on systems beyond IBM z13. However, all 24-bit and 31-bit problem-state application programs originally written to run on the ESA/390 architecture will be unaffected by this change.

- While a hardware statement, there are potentially changes required for z/VM.
- Note implication of older operating systems.

## Stabilization of z/VM 6.2 Support

January 14, 2015

The IBM z13 server family is planned to be the last z Systems server supported by z/VM V6.2 and the last z systems server that will be supported where z/VM V6.2 is running as a guest (second level). This is in conjunction with the statement of direction that the IBM z13 server family will be the last to support ESA/390 architecture mode, which z/VM V6.2 requires. z/VM V6.2 will continue to be supported until December 31, 2016, as announced in Withdrawal Announcement [914-012](#), dated February 04, 2014.

- While z/VM 6.2 will be supported until the end of 2016, there will **not** be support for the next server family.
- Similar to the statement of direction with z/VM 5.4 not supported on z13.

## Product Delivery of z/VM on DVD/Electronic Only

January 14, 2015

**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.

- No more tapes for z/VM product delivery for future z/VM releases.
- Allows testing resources to be spent else where.

# Summary

# Summary

- z/VM protecting the customer today and tomorrow
  - Scalability
  - Stability
  - Maintainability
  - Usability

Not a z Systems Ladder

