

Aktuelles rund um IBM Z und z/VSE – Teil I

IBM Z



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Aktuelle Produktfamilie IBM Z und IBM LinuxONE

IBM z14

Models: M01 - M05
GA: Sept. 2017

IBM z14

Model: ZR1
GA: Mai 2018

IBM LinuxONE Emperor II

Models: LM1 - LM5
GA: Sept. 2017

IBM LinuxONE Rockhopper II

Model: LR1
GA: Mai 2018

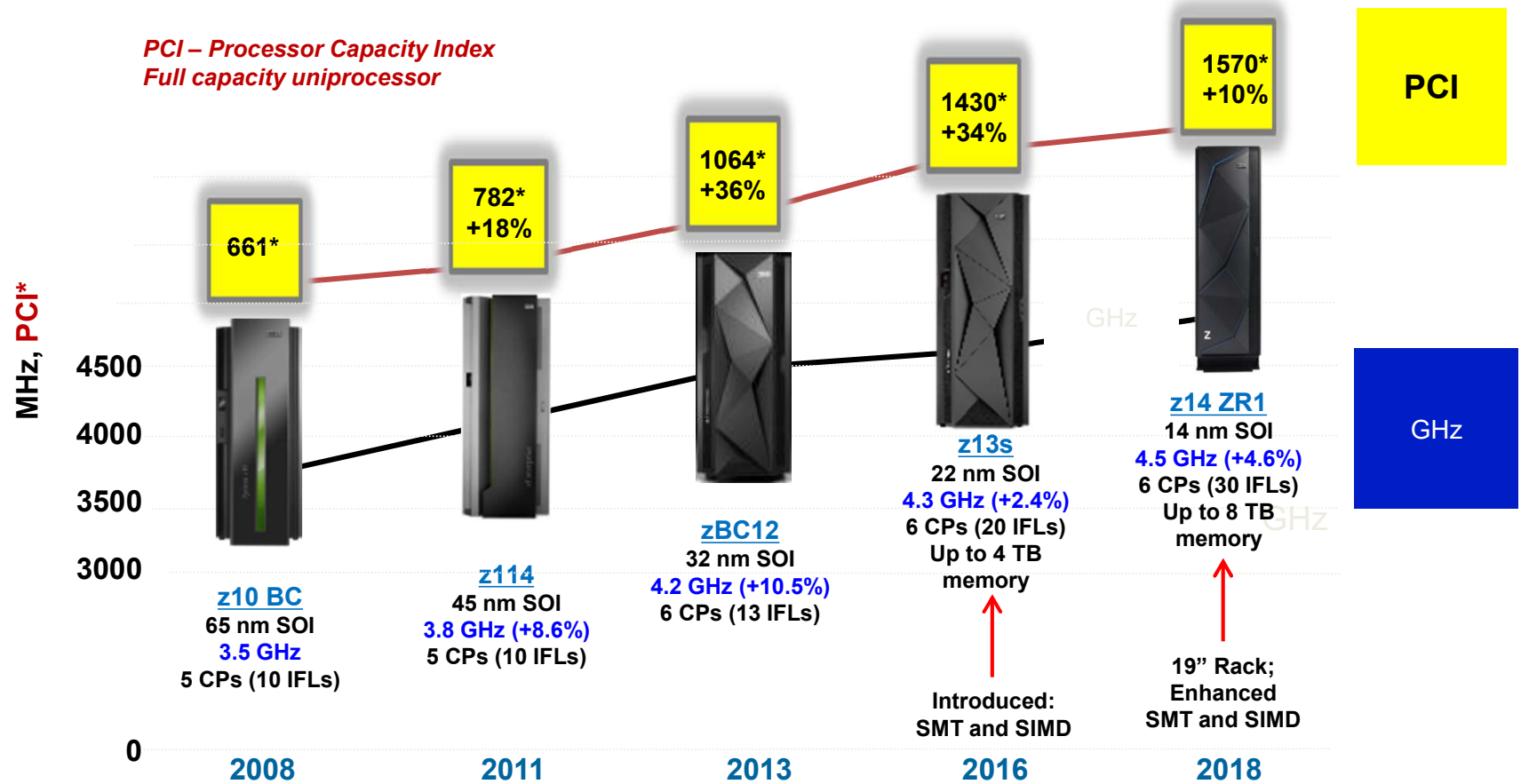


Built on the same technology

<https://apps.kaonadn.net/4882011/index.html#C148>

z14 ZR1 Continues the CMOS Mainframe Heritage

Uniprocessor Single Thread PCI* Improvements and GHz Increases

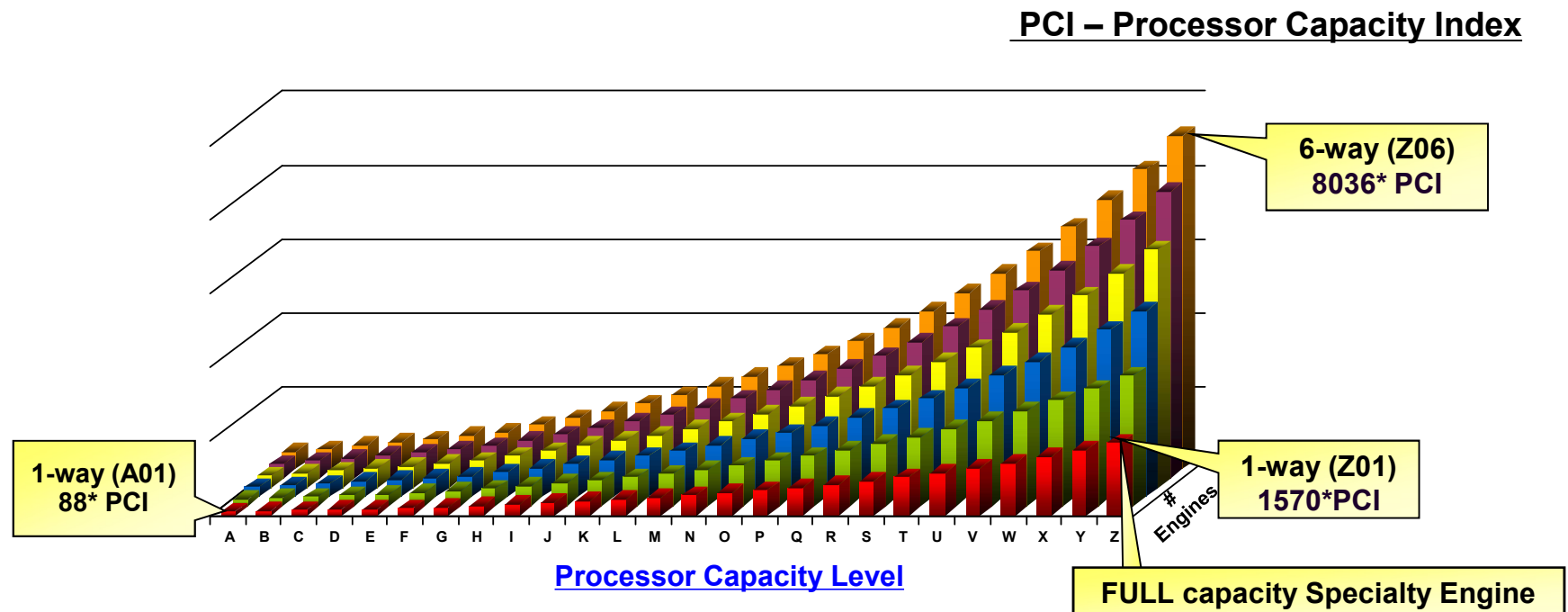


*Capacity and performance ratios are based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload.

* PCI (MIPS) Tables are NOT adequate for making comparisons of IBM Z processors. Use IBM Capacity Planning Tools!

z14 ZR1 sub-capacity CP Granularity

- **26 CP capacity levels (26 x 6 = 156, since zBC12)**
- **Processor Value Unit for IFL = 100 (No change since z10 BC)**



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z14 ZR1 System Design Highlights

- 14 nm Processor Lithography with improved SIMD, SMT
- 10 Cores per PU SCM design (active cores: 5, 6, 7, 8, or 9)
- 19 inch rack
- Single Central Processing Complex (CPC) Drawer
- 1, 2, or 4 PU SCMs
- Integrated I/O with PCIe Direct Attach
- Single System Controller Chip (SC SCM)

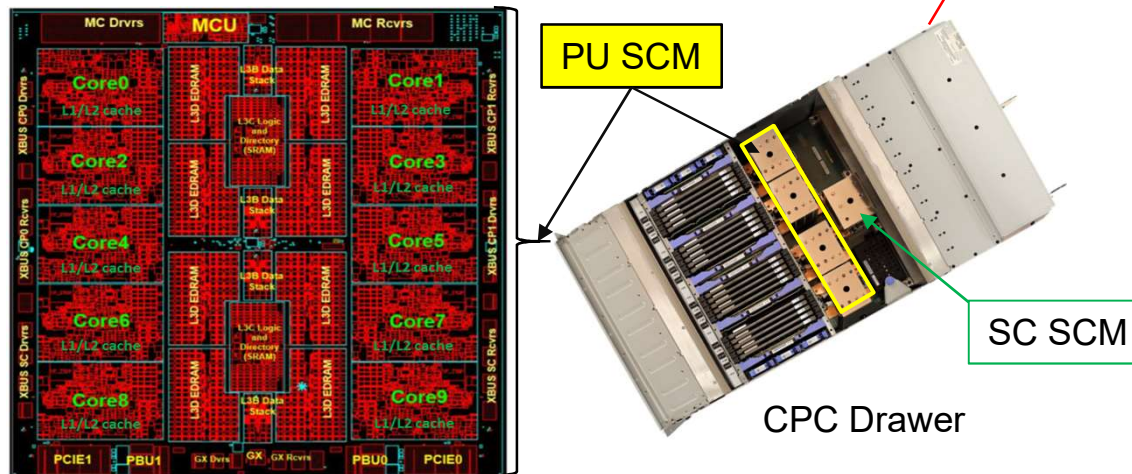


- New PCIe+ I/O Drawer
- Crypto Express6S
- OSA-Express7S 25GbE
- OSA-Express6S
- FICON Express16S+
- 25GbE and 10GbE RoCE Express2
- IBM zHyperLink Express
- Coupling Express Long Reach

PCIe+ I/O drawer

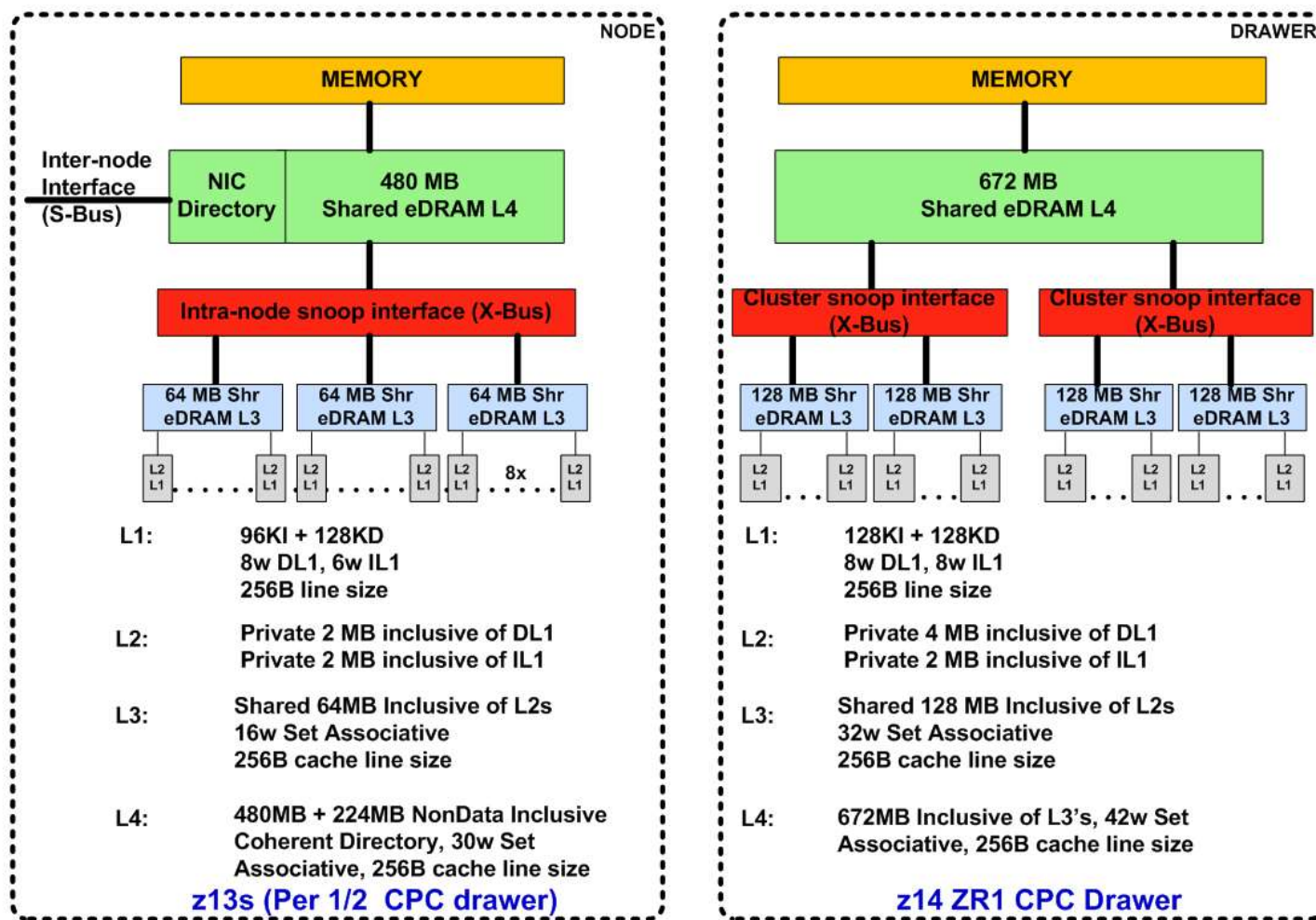


16 I/O slots



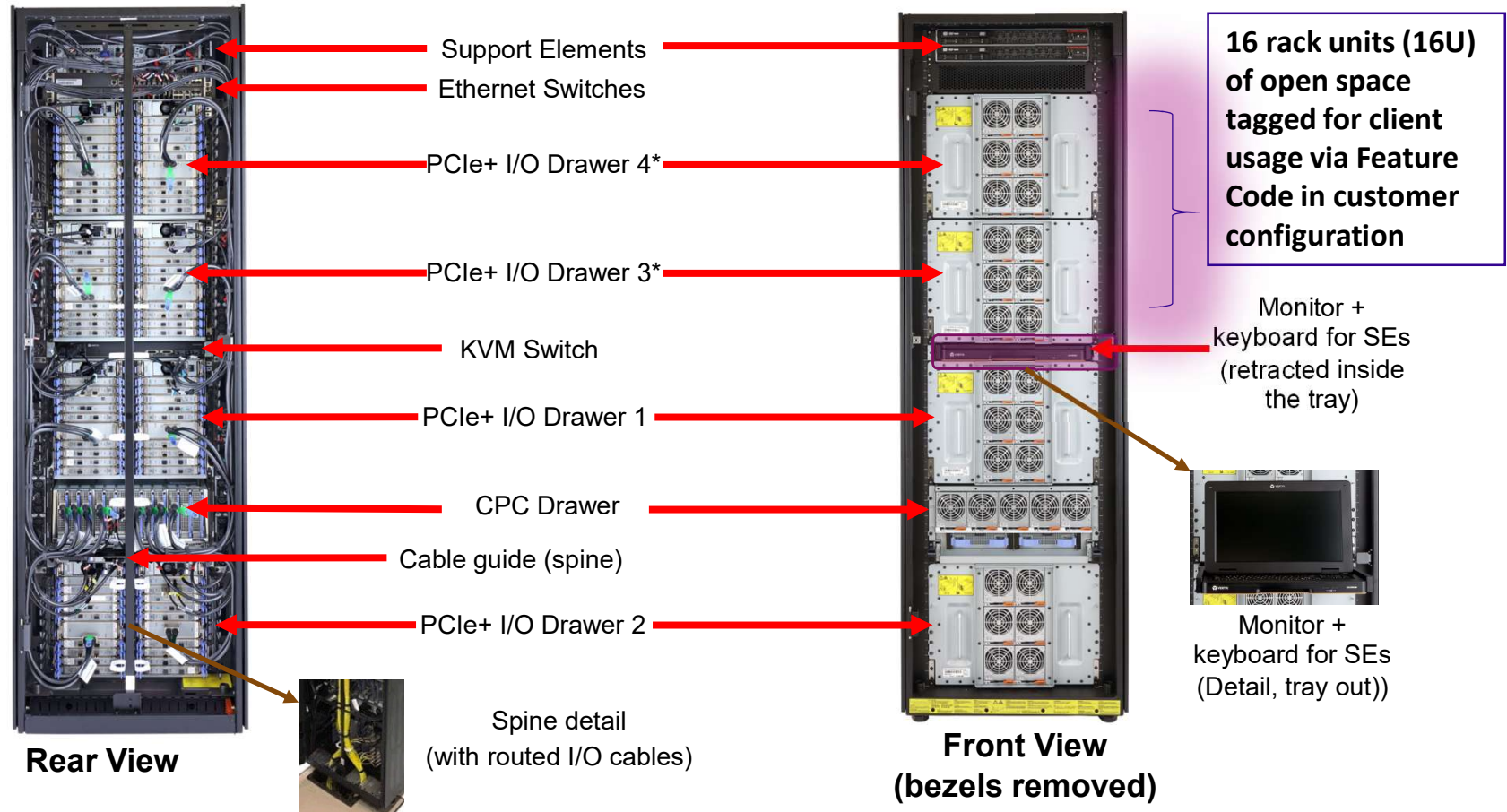
SCM – Single Chip Module

Cache topology comparison



z14 Model ZR1 Under the Covers

<https://apps.kaonadn.net/4882011/product.html#12/1277;C591>



Z14 ZR1: 16 rack units (16U) of open space

The diagram shows a central Z14 ZR1 server rack with 16U of open space. To the left, under the heading "Storage Networking", are four models: SAN256B-6, SAN512B-6, SAN64B-6, and SAN42B-R. To the right, under the heading "Flash and Hybrid Storage Systems", are four models: FlashSystem A9000, Storwize V7000 / V7000F, FlashSystem V9000, and FlashSystem FS900. A yellow starburst highlights "NEW!!! DS8880F Storage". On the far right is a tall DS8880 storage unit. The rack is divided into two main sections: "Storage Networking" (purple background) and "Flash and Hybrid Storage Systems" (purple background). The "Flash and Hybrid Storage Systems" section is further divided into two sub-sections: "z/VM®, Linux on Z (FCP only)" (orange background) and "z/OS, z/VM, z/TPF, zVSE®, Linux on Z" (purple background).

Other examples of uses for 16u Reserved include IBM 1u HMC, TKE, Power Systems™, NVMe

IBM DS8882F Rack Mounted



- ✓ From 6.4 TB to 368.64 TB of all-flash capacity
- ✓ From 64 GB to 256 GB of memory cache (DRAM)
- ✓ From 8 to 16 FCP/FICON ports
- ✓ 2 flexible options:

1

16U to be mounted into:

- IBM Z ZR1
- IBM LinuxOne Rockhopper II

2

16U expandable to 17U (with an additional 1U keyboard/display):
To be mounted into an already existing 19-inch FF standard rack

<https://apps.kaonadn.net/4882011/product.html#12/1290;C947>

IBM z14 ZR1 Overview - Functions & Features

ONE hardware model (z14 Model ZR1)
zArchitecture Mode ONLY
Up to 30 processors configurable as CPs, zIIPs, IFLs, ICFs or optional SAPs (no zAAPs). Up to 6 CPs (for z/OS) and 156 Subcapacity settings. Full capacity of a uniprocessor: 1570 PCI
Up to 8 TB of memory protected with Redundant Array of Independent Memory (RAIM) • Up to 4 TB per z/OS LPAR with z/OS V2.3, V2.2 and 2.1
Changed Node/Cache structure
64 GB Fixed HSA
Channel Subsystem scalability • Up to 40 LPARs • Up to three (3) Channel Sub Systems (CSSs) • 3 Subchannel Sets per CSS
HiperDispatch Enhancements
Two-way simultaneous multithreading (SMT) • Support for SAPs
New and enhanced instructions
XL C/C++ ARCH(12) and TUNE(12) exploitation: • New z14 hardware instruction support • Vector Programming Enhancements • Auto-SIMD enhancements to make use of new data types • Packed Decimal support using vector registers
• 10 GbE RoCE-Express2 New HW for GA2: • OSA-Express7S 25GbE • 25GbE RoCE Express2
Hardware Instrumentation Services (CPUMF)



19" Rack

New for GA2 in BLACK,

Fast Memory Clear
Much faster CPACF • Pervasive Encryption (Armored z) • Coupling Facility Encryption • Data Set and Network Encryption
IBM Virtual Flash Memory & CF Exploitation of VFM
Guarded Storage Facility (GSF)
Instruction Execution Protection (IEP)
CF Level 23: • Async. Cross-Invalidation of CF Cache Structures • Dynamic I/O reconfiguration for Standalone CFs CF Level 22: • List Notification Enhancements • CF Processor Scalability • CF Request Diagnostics • Encryption Support
Entropy-Encoding Compression Enhancements
FICON Express16S+
OSA-Express6S and 7S • Inbound Workload Queueing for IPSec (IWQ IPSec)
zHyperLink® Express
Crypto Express6S exploitation • Next Generation Coprocessor support • Support for Coprocessor in PCI-HSM Compliance Mode • GA2 Cryptographic Enhancements
• Architected for up to 85 domains on Crypto Express6S
Integrated Coupling Adapter (ICA SR) links CHPID CS5
Coupling Express Long Reach (CE LR) CHPID CL5
STP enhancement – CTN Split and Merge

Highlights for z/VSE in GREEN

IBM z14 ZR1: Support of z/VM and z/VSE

z/VM with APARs in z/VM 6.4 and 7.1:

- https://www-01.ibm.com/support/docview.wss?uid=isg1_3907DEVICE_3907-ZVM

z/VSE with APARs in z/VSE V5.2,V6.1 and V6.2:

- http://www-01.ibm.com/support/docview.wss?uid=isg1_3907DEVICE_3907-ZVSE
- Following HW features are supported by z/VSE
 - IPL and run in **z/Architecture** mode
 - Better performance with **SIMD** support for Vendor and Customers using assembler
 - Faster I/O with **FICON Express16S+** with link rate of 16 Gbps (ECKD/DASD & SCSI/FCP)
 - Including **zHPF**
 - Including **ICKDSF PAV enablement**
 - **Integrated Storage or other options** (IBM or non-IBM, till 16U standard rack)
 - Better performance with **OSA Express6S and 7S**
 - Better performance with HW Encryption with **Crypto Express6S and CPACF**
 - Including **>16 domains & ECC** support





**Fragen beantworte ich gerne
im Anschluss der Veranstaltung**

oder später → melden Sie sich einfach bei mir:



Vielen Dank für Ihre Aufmerksamkeit!