IBM Systems & Technology Group

What's New in z/OS V2.1

Orange County Edition
Session 14660

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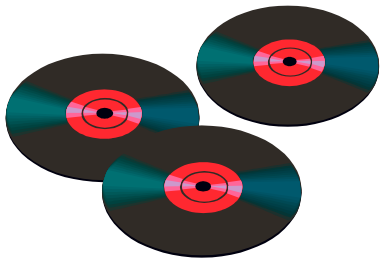
The SHARE MVSE "Top 40"…er, "39"



SHARE Helps Out!

- There were 800+ MVSE requirements…
- We asked for SHARE's help in focusing the effort
- SHARE came through!
- Special thanks to these people for boiling down the ocean:
  - Brad Carson, Tom Conley, Ed Jaffe, Robert Jenkins, Sam Knutson, Mary Anne Matyaz, Cheryl Watson, Dave Whitney (IBM)
  - (Apologies to anyone I've missed!)
- Original intent was the "MVSE Top 40"
  - …perhaps with apologies to Casey Kasem…
  - …but there was a large n-way tie for #40…
  - …**So, we got the "Top 39"**
- Due to timing, one was already satisfied in z/OS V1.13
  - PARM('AGGRGROW') Should be Default for zFS Mount
  - (Hey, we <u>like</u> the easy ones!)

The Result:

- In addition, we think we hit another twelve or so in z/OS V2.1:

1. Dynamic system symbol changes
2. Separate wait time limits (partial)
3. Dynamically add and delete MCS consoles
4. Consoles support for HMC 3270 emulator
5. D PPT command
6. Improve IEF212I message
7. Dynamically modify VLF
8. SETSMF without PROMPT at IPL time
9. IEBCOPY partially-qualfied member names
10. Multiple ISPF logical screens for SMP/E
11. TSO Logon Failure information (partial?)
12. REXX: Should Support Major Access Methods (partial)

That's ~33 %!

- As "No good deed goes unpunished*" …now it's time to focus on the new Top 50!

* Clare Boothe Luce, 1903-1987

IBM zEnterprise EC12 (zEC12) System Functions and Features

Five hardware models
Hexa-core 5.5 GHz processor chips
Up to 101 processors configurable as CPs, zAAPs, zIIPs, IFLs, ICFs, or optional SAPs (up to 64-way on z/OS V1.10, 100-way on z/OS V1.11 and higher)
Second generation out of order design
Improvements to pre-fetch instructions
Improved processor cache design
Up to 3TB of Redundant Array of Independent Memory **(**RAIM) – same as z196
Twice the HSA versus z196 (32 GB vs 16 GB)
Decimal-Floating-Point Zoned-Conversion Facility
Flash Express (Storage Class Memory-SCM)
1 MB Pageable Large Pages
Dynamic reconfiguration support for Flash Express
2 GB Large Page Support
Optional PLPA, COMMON page data sets
Crypto Express4S cryptographic coprocessors and accelerators
New support for IBM Enterprise PKCS #11 (EP11) coprocessor
DUKPT for MAC and Data Encryption, Europay, Mastercard, and Visa (EMV) CCA enhancements
New and enhanced instructions
IBM zAware
OSA-Express4S and OSA-Express5S (GbE LX and SX, 10 GbE LR and SR, and 1000BASE-T)

(z/OS® support in blue) (2013 support in red)

z/OS Software Support for IBM zEnterprise EC12 or zBC12 Server Tuesday 4:30

FICON Express8S
24K subchannels for FICON® channels
IBM zEnterprise Data Compression (zEDC) capability using zEDC Express
RDMA (Remote Direct Memory Access) support for z/OS over Converged Enhanced Ethernet RoCE)
Parallel Sysplex InfiniBand (PSIFB) Coupling Links
High Performance FICON for IBM System z®
CPU Measurement Facility
CFCC Level 18 and 19 enhancements
Transactional Execution Facility
Runtime Instrumentation Facility
Exploitation of new hardware instructions – XL C/C++ ARCH(10) and TUNE(10)
CCA 4.4 and other enhancements: RKX Key Export Wrap, UDX Reduction/Simplification, additional EP11 algorithms, expanded EMV support, AP Configuration simplification
Optional Non Raised Floor
Optional water cooling and DC Power
Optional overhead Power and I/O cabling
zBX Model 003 support of: ▪IBM WebSphere® DataPower® Integration Appliance XI50 for zEnterprise ▪Select IBM BladeCenter® PS701 Express blades or IBM BladeCenter HX5 blades
Unified Resource Manager (zManager) enhancements

IBM zEnterprise BC12 (zBC12) System Functions and Features

2 Models – H06, H13

Hexa-core 4.2 GHz processor chips

Up to 13 processors configurable as CPs, zAAPs, zIIPs, IFLs, ICFs, or optional SAPs

Second generation out of order design

Improvements to pre-fetch instructions

Improved processor cache design

Up to 496 GB RAIM

16 GB HSA separately managed

Up to 6 CPs at 26 capacity points

Decimal-Floating-Point Zoned-Conversion Facility

Flash Express (Storage Class Memory-SCM)

1 MB Pageable Large Pages

Dynamic reconfiguration support for Flash Express

2 GB Large Page Support

Optional PLPA, COMMON page data sets

Crypto Express4S cryptographic coprocessors and accelerators

New support for IBM Enterprise PKCS #11 (EP11) coprocessor

DUKPT for MAC and Data Encryption, Europay, Mastercard, and Visa (EMV) CCA enhancements

New and enhanced instructions

IBM zAware

OSA-Express4S and OSA-Express5S (GbE LX and SX, 10 GbE LR and SR, and 1000BASE-T)

(z/OS support in blue + red)

Introducing the IBM zEnterprise BC12 and EC12 … Wednesday 9:30

FICON Express8S

24K subchannels for FICON channels

IBM zEnterprise Data Compression (zEDC) capability using zEDC Express

RDMA (Remote Direct Memory Access) support for z/OS over Converged Enhanced Ethernet RoCE)

Parallel Sysplex® InfiniBand® (PSIFB) Coupling Links

High Performance FICON for System z

CPU Measurement Facility

CFCC Level 18 and 19 enhancements

Transactional Execution Facility

Runtime Instrumentation Facility

Exploitation of new hardware instructions – XL C/C++ ARCH(10) and TUNE(10)

CCA 4.4 and other enhancements: RKX Key Export Wrap, UDX Reduction/Simplification, additional EP11 algorithms, expanded EMV support, AP Configuration simplification

Non-raised floor option available

Overhead Cabling and DC Power Options

zBX Model 003 support of:
- IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise
- Select IBM BladeCenter PS701 Express blades or IBM BladeCenter HX5 blades

zManager enhancements

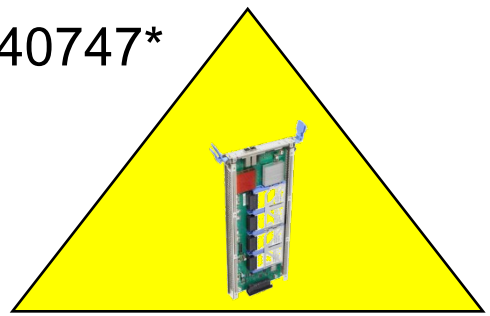
Flash Express Support

- Available for z/OS V1.13 with…
  - A zEC12 or zBC12 server with Flash Express
  - z/OS V1R13 RSM Enablement Offering web deliverable
    - http://www.ibm.com/systems/z/os/zos/downloads/
  - Dynamic Reconfiguration and optional PLPA/COMMON page data sets in enabling PTFs
  - …all these functions are included in z/OS V2.1
- z/OS designed to use Flash Express for:
  - Pageable large pages
  - Paging, when performance would be improved vs. disk-based paging
  - SVC and Standalone Dump
  - Speculative page-ins to help buffer workload spikes (such as market open)

zFlash Setup, Management and Configuration
Wednesday 11:00

z/Architecture® Extensions

- **CF support for Flash Express***
  - Requires z/OS V2.1 running on zEC12 or zBC12 servers with CFLEVEL 19
  - Support Flash Express for certain Coupling Facility list structures
  - Can allow keyed list structure data to be migrated to Flash Express memory
    - For example, when data consumers do not keep up with creators
    - Designed to migrate it back to real memory to be processed
  - With WebSphere MQSeries® for z/OS Version 7 (5655-R36):
    - Can buffer enterprise messaging workload spikes
    - Provide support for storing very large amounts of data in shared queue structures
    - Potentially allow several hours' worth of data to be stored without causing interruptions in processing
  - z/OS V2.1 RMF™ designed to provide measurement data and reporting capabilities for Flash Express on Coupling Facilities
  - Planned for 1H2014 availability with the PTF for APAR OA40747*
  - CFSIZER also updated for Flash Express:
    - http://www.ibm.com/systems/support/z/cfsizer/

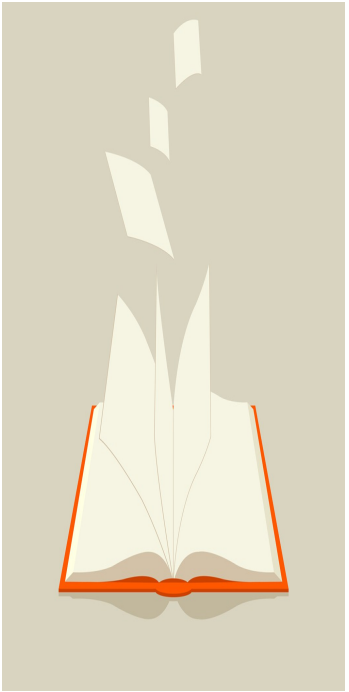


z/OS Parallel Sysplex z/OS 2.1 Update Tuesday 11:00

Large (1MB) Page Support

z/OS Large Memory: Size Does Matter Thursday 11:00

- **To use 1MB pages, you need…**
  - An IBM System z10® or later server
  - z/OS R12 or later, to use fixed large pages
  - z/OS V1R13 RSM Enablement Offering web deliverable to use pageable large pages on zEC12 and zBC12 servers
- **Current exploiters of fixed large pages:**
  - Java™ 6 SR1 and later, and its exploiters
    - Including WebSphere Application Server
  - z/OS R12 and later XL C/C++ programs using Language Environment®
  - The z/OS operating system, in z/OS R12 and up
  - IBM DB2® 10 for z/OS (5605-DB2) and up
- **Exploiters for *pageable* large pages:**
  - z/OS V1.13 and z/OS V2.1 Language Environment (with a runtime option)
  - A maintenance roll-up of IBM 31-bit and 64-bit SDK7 for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44)
  - DB2 10 and DB2 11 with the PTF for APAR PM85944
  - IMS™ 12 (5635-A03) Common Queue Server, with the PTF for APAR PM66866



- 2GB fixed page frames
  - If 1 MB pages are good…
  - …sometimes 2 GB pages are better!
  - Exploited by IBM 31-bit SDK for z/OS, Java Technology Edition, V7.0.0 (5655-W43) and SDK IBM 64-bit SDK for z/OS, Java Technology Edition, V7.0.0 (5655-W44)
  - Used by DB2 11 for buffer pools
  - Available for other large structures, other users
  - Supported on z/OS V2.1 or on z/OS V1.13 with the RSM enablement web deliverable and the PTF for APAR OA40967
- 100-way support for a single image on zEC12 servers
  - Support for processors 0-99
- New channel load balancing algorithm
  - zEC12 and zBC12 balancing based on CMR time

z/Architecture Extensions

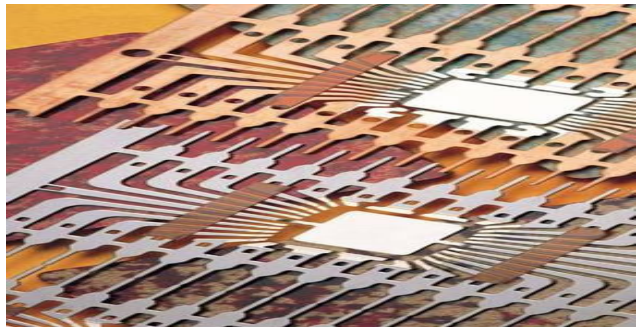
- **Transactional Execution (a/k/a Transactional Memory)**
  - Software-defined sequence treated by hardware as atomic "transaction"
    - TBEGIN
    - Change memory location A
    - Change memory location B
    - …
    - Change memory location *n*
    - TEND

  "All or nothing"

  No need for a lock

  - Enables significantly more efficient software
    - Highly-parallelized applications
    - Speculative code generation
    - Lock elision
  - Immediate exploitation by Java and initial development/test support for C/C++, HLASM in z/OS R13
    - IBM 31-bit and 64-bit SDK7 for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44) with maintenance
  - **Full C/C++ and z/OS support in V2.1;** plans for DB2, others*
  - IBM Enterprise COBOL for z/OS, V5.1 support with ARCH(10)
- **Software directives to improve hardware performance**
  - Data usage intent improves cache management
  - Branch preload improves branch prediction effectiveness
  - Block prefetch moves data closer to processor earlier, reducing latency
- **Decimal format conversions**
  - Enable broader exploitation of Decimal Floating Point facility with COBOL

Leading-edge Technology on System z Tuesday 3:00



ZOMG The Next COBOL Compiler Has Arrived! Wednesday 11:00 & 1:30

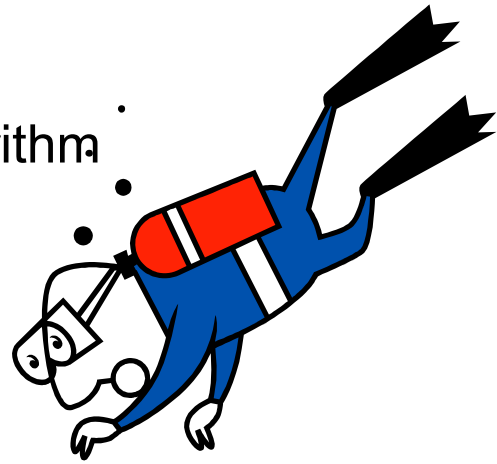
One Term, Two Functions

- **"Thin" interrupts for CFs**
  - CFCC polled for work to do, so all CF engines were 100% used
  - So, shared engine CFs had a very limited use case
    - A CF always used its entire PR/SM™ timeslice except in DYNDISP=YES mode
    - Not a great way to implement many/most production CFs
  - New CFCC design in CFLEVEL 19 on zEC12 and zBC12 servers along with XES/XCF changes designed to use a more interrupt-driven, hyrbrid approach
  - Should allow the use of shared engine coupling facilities in many production environments with acceptable performance
  - Intended to lower Parallel Sysplex entry costs by reducing the number of environments for which dedicated coupling facility (CF) engines are needed to achieve good performance
- **Also, new set of "thin" interrupts to be used by z/OS**
  - Designed to decrease response time on the average
  - Help reduce XCF and XES processing overhead and improve performance when processing asynchronous coupling facility operations and recognizing certain CF events

➢ **Also available on z/OS V1.12 and V1.13 with the PTFs for APARs OA38734, OA38781, OA37186, & OA42682**

Three Ways to Compress (and Decompress) on z/OS

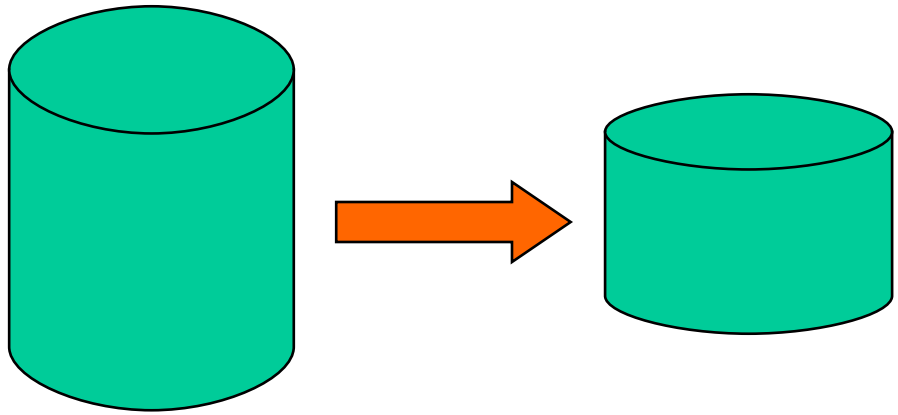
- Software compression
  - CPU-intensive
  - Much slower
  - Data can be inflated on anything supporting the same algorithm



- Compression coprocessor-based instructions
  - Dictionary-based compression, generic or tailored
  - Can be inflated on a System z processor
  - All compression consumes apparent CP cycles
    - Compression done on the coprocessor, but accounted for as CP busy time because the CP is unavailable until the coprocessor is done
- New zEDC Express adapter for zEC12 and zBC12 and zEnterprise Data Compression (zEDC) for z/OS V2.1
  - Compression work is offloaded to the card
  - Minimal CP cycles consumed
  - zlib-based, industry-standard deflate compression
  - Data can be inflated anywhere zlib processing is available

zEnterprise Data Compression

- Now available:
  - Card & z/OS feature
  - Support for industry standard zlib compression
  - zlib library in z/OS V2.1
  - SMF data compression
  - Software-based decompression support for SMF data on z/OS V1.12 and V1.13
  - Java support
  - IBM Encryption Facility support

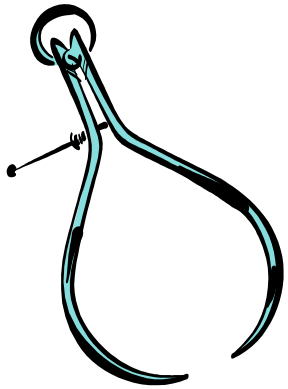


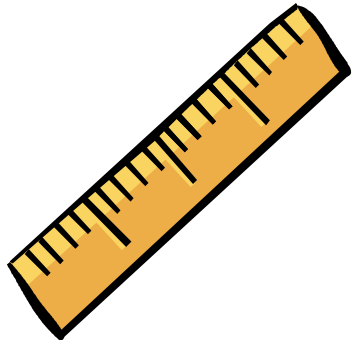
SMF Data Compression

- For SMF data written to log streams
  - We expect about a 4:1 compression ratio for SMF data
  - Designed to significantly increase SMF recording rates
  - Can specify that all SMF data or SMF data written to selected log streams be compressed
  - New SMFPRMxx COMPRESS keyword on LSNAME and DEFAULTLSNAME
  - New PERMFIX subparameter of COMPRESS to balance fix/unfix overhead with available real memory
- Corresponding IFASMFDL support
  - Automatic inflation on z/OS V2.1 with feature and HW support
  - SOFTINFLATE parameter for software-based decompression
    - For z/OS V1.12 & z/OS V1.13, with the PTF for APAR OA41156
    - Included in z/OS V2.1
    - Intended to be used when zEDC is not available

Measurements

- SMF and RMF support
  - SMF14 and SMF15 records show compression ratios
  - SMF14CDS has the size of the compressed-format data set
  - SMF14UDS is the uncompressed size
  - New SMF14CMPTYPEzEDC field
  - SMF 74 subtype 9 records created by RMF include new PCIe, zEDC Express data
  - RMF Monitor I PCIE Activity Report:
    - I/O queue and execution time
    - Compressed and uncompressed data transfer rates
    - Number of compression and decompression requests





IBM System z Batch Network Analyzer

- Helping determine if you have files that are candidates for zEDC: the IBM System z Batch Network Analyzer
  - A free, Microsoft Windows-based “as is” tool to analyze batch windows using SMF data
  - Available to Customers, Business Partners and IBMers
  - Replaces the old BWATOOL
  - PC based, graphical and text reports
    - Including Gantt charts and support for Alternate Processors

- Available from NA Advanced Technical Support
  - http://w3.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS5126
- zBNA can help identify zEDC Compression Candidates
  - Identify zEDC compression candidates across specified time spans, like batch windows
  - Help estimate utilization of a zEDC feature and help size number of features needed
  - Generate a list of data sets by job which already do hardware compression and may be candidates for zEDC
  - Generate lists of data sets by job which might be zEDC candidates but are not in extended format
- Initial support was December 2013—updates made in January and February 2014

What You'll Need to Use zEDC

- New Hardware and z/OS features:
  - zEDC Express adapter for zEC12 and zBC12
  - zEnterprise Data Compression (zEDC) for z/OS V2.1
  - For software inflation of compressed SMF data, the PTF for APAR OA41156 on z/OS V1.12 and z/OS V1.13
  - zlib on other platforms where you want to process compressed data
- Other products:
  - Java support in IBM 31-bit and 64-bit SDK for z/OS Java™ Technology Edition, Version 7 Release 1 (5655-W43 and 5655-W44) (IBM SDK 7 for z/OS Java)
  - IBM Encryption Facility for z/OS support with PTF UA72250

zEnterprise Data Compression: What is it and How Do I Use it?
Wednesday 4:30

Planned Compression Support*

- Extended Format BSAM and QSAM Compression
  - New support for Compressed Format data sets planned for 1Q2014 with the PTF for APAR OA42195
  - In addition to generic (DBBLIB) and tailored (supply a dictionary) compression
  - New COMPACTION option in DATACLAS definition
  - New values on COMPRESS parameter in IGDSMSxx
- DFSMSdss data compression
  - Planned for DUMP, COPY, and when DFSMSdss is used as the data mover by DFSMShsm™ for 3Q2014 with the PTF for APAR OA42243
  - When a disk output data set is used

z/OS zEnterprise Data Compression Usage and Configuration
Thursday 1:30

Compression Ratios and Performance*

- **Compression rates will vary with the data…**
  - But internal testing shows us ~4X compression for SMF data
  - Last SHARE, I said I expected (at least) ~2X compression for Extended Format BSAM/QSAM data, but we had not tested yet

- ***Test numbers are in!***
  - For BSAM/QSAM we see up to 4X compression for zEDC
    - That's as much as *2X better* than generic or tailored compression
  - Also, for BSAM/QSAM we see 80% or more CPU time reduction compared to tailored and generic compression
    - CPU cost for zEDC is ~0.1sec/GB in testing on a zEC12

* Based on projections and/or measurements completed in a controlled environment. Results may vary by customer based on individual workload, configuration and software levels.

- (Note: LZ compression is used in the tape controllers already)

RDMA over Converged Ethernet

- **RoCE Support for SMC-R**
  - Requires z/OS V2.1 running on zEC12, zBC12 servers with the RoCE Express feature
  - Shares memory between peer z/OS images
  - Read/write access to the same memory buffers without application changes
  - Designed to help increase transaction rates with low latency and reduced CPU cost
  - RMF support with new SMF74-9 records and PCIE Activity Report
  - Java support planned*
    - For future updates of IBM 31-bit and 64-bit SDK for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44)

z/OS V2R1 Communications Server: Shared Memory Communications - RDMA (SMC-R), Parts 1 & 2
Tuesday 9:30 & 11:00

z/OS V2.1

Designed for a smarter computing with designs for:

Improving Usability and Skills

New z/OSMF Workflow & Software Management, CPM improvements; HCD/HCM HMC-wide Activate; Health Checking, zDAC improvements, Generic Tracker, Delete member name masking, D PPT,…

Integrating new Applications and Supporting Industry and Open Standards

More Batch Modernization; ASCII support in more z/OS UNIX® System Services shell commands and utilities; IXCNOTE; More mutexes and shared condition variables in z/OS UNIX; Generalized Alignment Support in the Binder, Font element, TSO/E REXX™, Nested PIPI, Heap check zones, IEBCOPY enhancements …

Scalability & Performance

100-way SMP, 2 GB pages, pageable 1 MB pages, transactional memory support on zEC12, zBC12; RLS for Catalogs, zFS V5, Serial CF structure rebuild, EXCP support for zHPF, 8-character Job classes, PDSE V2, CFLEVELs 18 & 19, Parallel recall for batch …

Enhancing Security

LPAP access to crypto, ICSF & RRSF enhancements, SAF job class control, Certificate enhancements, z/OS UNIX timeouts; System SSL support for TLS 1.2 and NSA Suite B, …

Improving Availability

JES3 dynamic spool volume removal, Dynamic System Symbol updates, Flash Express support, RRS improvements, FORCE TCB, DCCF support for WTOR Auto-Reply, HMC 3270 console support, …

Self Managing Capabilities

DFSMShsm™ Storage Tiers, Better JES3 support for SMS-managed tape, SMS Management Class support for tape, zBX SMF performance records, DCM support for cascaded switches, z/OS UNIX Automount improvements, …

Extending the Network

RoCE support, Enhanced Fastpath sockets, SACK support, new FTP security exits, TCP Profile syntax check, Intrusion Detection improvements, DVIPA affinity, …

z/OS Support Summary

Out of service

Lifecycle Extension withdrawal 2 years later

Service Withdrawal Dates

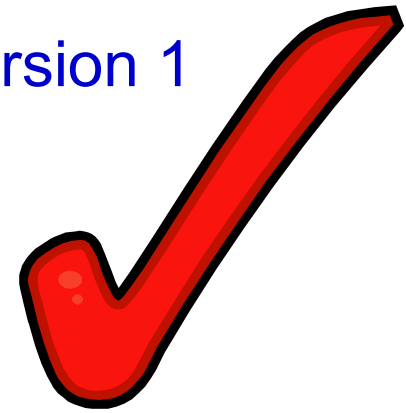
z/OS	z800/ z900	z890/ z990	z9® EC z9 BC	z10 EC™ z10 BC	z196 z114	zBX	zEC12 zBC12	DS8000® DS6000®	TS1140 TS7700	End of Service	Coexists with z/OS...	Planned Ship Date[2]
R10	x	x	x	x	x	x	x[3]	x		9/11	R12	
R11	x	x	x	x	x	x	x	x	x	9/12[1]	R13	
R12	x	x	x	x	x	x	x	x	x	9/14[2]	V2R1	
R13	x	x	x	x	x	x	x	x	x	9/16[2]	V2R2[2]	
V2R1			x	x	x	x	x	x	x	2H18[2]	V2R3[2]	
V2R2[2]										2H20[2]	V2R4[2]	2H15[2]

Migrating to z/OS 2.1: Parts 1 & 2
Monday 3:00 & 4:30

1. Fee-based service extension available
2. All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.
3. Fee-based service extension required for support, or for some features

A Word About Standards*

- Generally speaking, z/OS Version 2 is designed to provide the same support of standards as z/OS Version 1
- These include the applicable standards or parts thereof…
  - FIPS
  - EMVCo and PCI
  - Common Criteria
  - RFCs
  - IPv6 Phase 2 Ready and USGv6 Profile Version 1.0 (NIST SP500-267)
  - Unicode
  - De facto industry standards
  - etc.
- …for the functions in z/OS Version 2 existed in z/OS Version 1



System Integrity

- First MVS™ system integrity statement issued in 1973—about 40 years ago!
  - It defined “System Integrity”
  - It applied to specific products, most of which are now part of z/OS
  - It said we would accept APARs for system integrity exposures
- Programming standards have been in place for decades for prevention
- System integrity competency center reviews code, helps resolve issues
- Reaffirmed periodically in various announcements for MVS, OS/390®, and z/OS
- In the z/OS 1.9 availability announcement, IBM expanded the scope of system integrity to encompass the entire z/OS product
- Once in a while, we have forgotten to reaffirm our commitment to system integrity on a version boundary…
- …and a number of people asked about it as a result.
- So…for the record…

System Integrity

- **With z/OS Version 2, IBM remains committed to z/OS system integrity.**

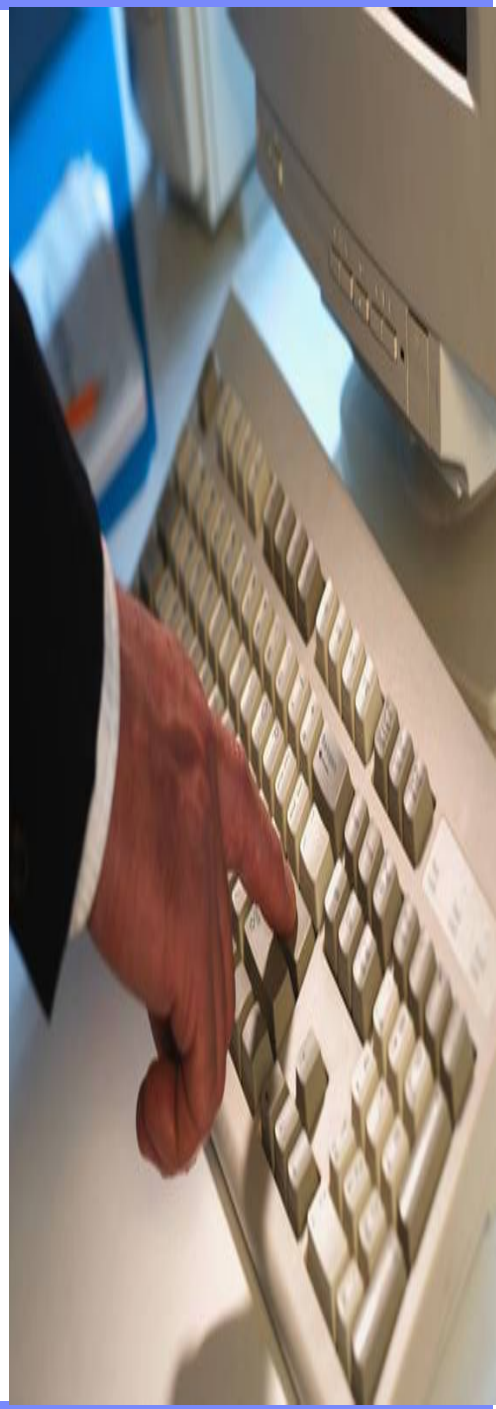
- System integrity is defined for z/OS as the inability of any program not authorized by a mechanism under the installation's control to:
  - Circumvent or disable store or fetch protection; or,
  - Access a resource protected by the z/OS Security Server (RACF®); or,
  - Obtain control in an authorized state; that is, in supervisor state, with a protection key less than eight (8), or Authorized Program Facility (APF) authorized.

- In the event that an IBM System Integrity problem is reported, IBM will always take action to resolve it.

Improving Usability and Skills

z/OSMF Improvements

- New z/OSMF release with the new z/OS release
- New functions included in z/OSMF V2.1 and available for z/OSMF V1.13 designed to provide:
  - More actions for software instances in Software Management
  - Linking between Workload Manager and Resource monitoring
  - Capacity Provisioning support for creating, editing, & activating configurations and policies
  - Usability enhancements for Incident log and Classic ISPF
  - Enhanced RESTful interface for submitting z/OS jobs from data sets and z/OS UNIX files; support for additional browsers; and, enhanced filtering for table displays
- *Available for z/OSMF V1.13 with the PTFs for APARs PM73833, PM74502, PM74507, PM74508, PM74517, PM74518, and PM74519*



Improving Usability and Skills

z/OSMF improvements

- z/OSMF V2.1 uses WAS with the Liberty profile
  - Designed to simplify z/OSMF setup & cut memory footprint
  - Expected to start more quickly and use less CPU
- New configuration workflow application
  - Workflow definition metadata files define task lists to achieve a configuration goal:
    - Can be used to drive creation of JCL
    - REXX execs and shell scripts supported within generated batch jobs
  - UI designed to present tasks to appropriate people via a new "Notifications" function in order; for example, to:
    - System programmers
    - Security administrators
    - Storage administrators
  - Wizard-like task sequencing, with tasks presented to additional people as dependencies are met
  - First exploiter: z/OSMF itself!
  - And…there's a z/OS V2.1 Migration workflow!: http://www.ibm.com/systems/z/os/zos/tools/downloads/index.html

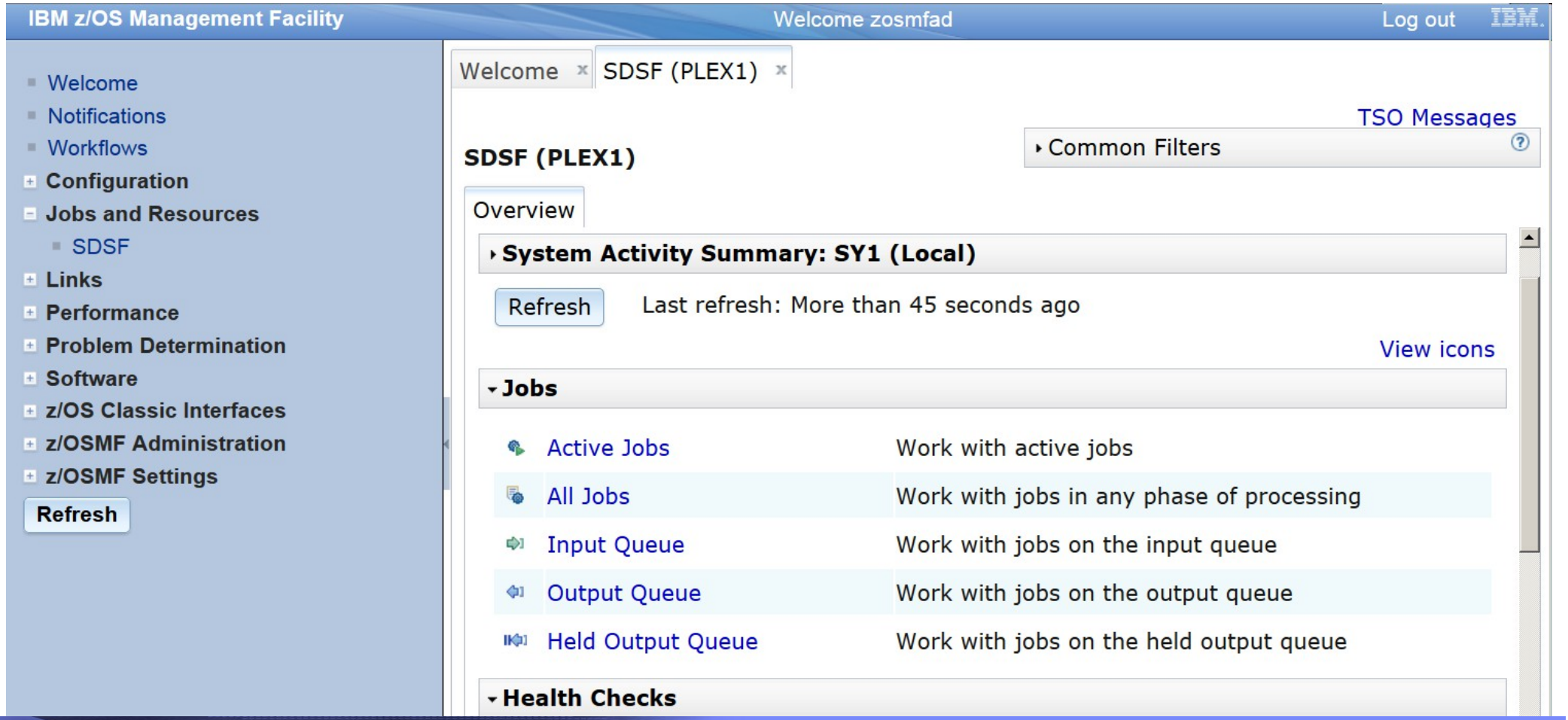
z/OSMF 2.1 Implementation and Configuration Thursday 8:00

The New and Improved z/OSMF 2.1 Tuesday 3:00

Improving Usability and Skills

z/OSMF improvements

- New SDSF application planned for z/OSMF V2.1*
  - Browser-based version of SDSF
  - Many of the same functions provided by ISPF- and TSO/E-based SDSF
  - Planned for 1Q2014 with the PTF for APAR PM86303



z/OSMF improvements

- New Software Management application function designed to show you:
  - A list of SMP/E-installed software
  - Vendor product number, version, release, and modification level based on data from SMP/E entries
  - End of service dates for products based on vendor-supplied files
  - Where software instances are installed
  - Where PTFs are installed (and not installed)
  - Whether structures are consistent between SMP/E, data sets, and catalogs
  - …and, to drive key SMP/E reporting functions
  - *Available for z/OSMF V1.13 on z/OS V1.13 with the PTF for APAR PM73833*

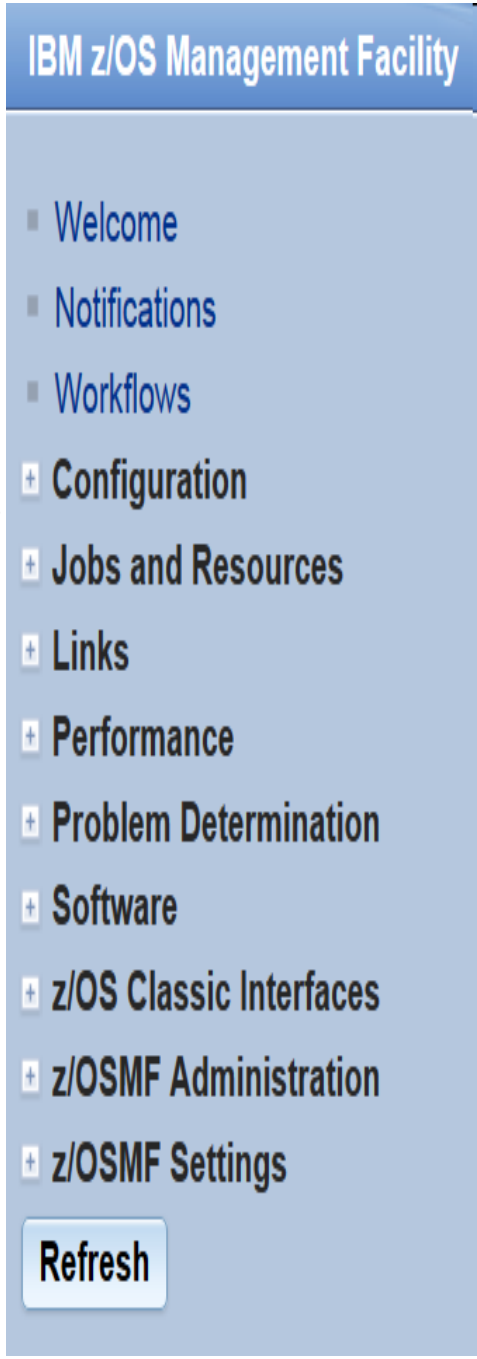
z/OSMF Software Management Capabilities Thursday 11:00

z/OSMF Software Management Hands-on Lab Thursday 3:00

Improving Usability and Skills

z/OSMF improvements

- More planned support for z/OSMF in 1Q2014 with the PTF for APAR PM98630*:
  - A new API to for importing applications into z/OSMF
  - Workflow improvements
  - Display recent historical performance information in the Resource Monitoring application and for exporting to a csv file
  - Add comments to WLM service definition actions
  - New Software Management functions:
    - Make it easier to add non-SMP/E-managed data sets to a software instance
    - Easier editing of mount points for the z/OS UNIX™ System Services file system
  - Use the Ctrl key on most PC keyboards as the Enter key in the ISPF task
  - Support in the REST Jobs API to hold and release jobs, and to work with jobs using a secondary JES2 subsystem
  - Two new z/OSMF REST services for viewing lists of data sets and z/OS UNIX files and directories
  - A new workflow designed to help you configure z/OSMF plug-ins quickly and easily



Improving Usability and Skills

- zDAC improvements designed to support:
  - Point-to-point discovery
    - zDAC now discovers switch-attached controllers
    - z/OS V2.1 zDAC also designed to discover directly-attached controllers and support mixed controller attachment (via switch and point-to-point)
    - Expected to make zDAC more useful for smaller configurations without switches
  - Dynamic Channel Path Management (DCM) for FICON channels
  - Better processing of device number and unit address constrained configurations
  - Capability to specify switch and CHPID maps to guide path selection
  - Improved discovery performance

(Reminder: zDAC requires a zEnterprise server)

Improving Usability and Skills

- HMC complex-wide IODF Activate
  - Designed to support all z/OS and z/VM LPARs managed in the same HMC complex, or a subset
    - Same CEC, different CEC
    - Same Sysplex, different Sysplex
    - On IBM System z9® and later servers
    - For z/OS V1.12 (5694-A01), z/VM V5.4 (5741-A05), and later when initiated from a system running z/OS V2.1
  - Initiate from HCD or HCM
  - Intended to reduce the need to activate I/O configuration changes one LPAR at a time

- Catalog parmlib member enhancements
  - IGGCATxx parmlib member introduced in z/OS V1.13 supported most things you can specify on MODIFY CATALOG command keywords
  - In z/OS V2.1, support extended to support remaining F CATALOG keywords…
  - …and for some SYSCATxx and LOADxx parameters
  - (We still need some data for early IPL processing to open parmlib!)

Improving Usability and Skills

- Multiple SMP/E logical screens in ISPF
  - z/OS V2.1 SMP/E designed to allow multiple logical screens
  - One logical screen allowed per SMP/E CSI & zone for read
  - Only one logical screen may be used for an SMP/E CSI being updated

Top 39er!

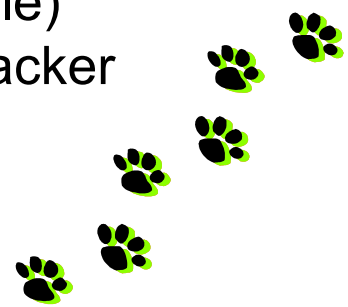
- "TSO/E LOGON" failure messages
  - z/OS V2.1 Allocation is designed to issue messages to the terminal
  - Intended to make it easier to diagnose data set allocation failures like:
    - IKJ56455I EELLS LOGON IN PROGRESS AT 11:01:36 ON APRIL 30, 2012
    - IEFA107I EELLS ISPFPROC SDBISPF0 DD01 - DATA SET EELLS.NO.SUCH.DATA.SET NOT FOUND
    - IKJ56457I LOGON FAILED ALLOCATION UNSUCCESSFUL
    - IKJ56470I EELLS LOGGED OFF TSO AT 11:01:36 ON APRIL 30, 2012
    - IKJ56400A ENTER LOGON OR LOGOFF-

Top 39er!

Improving Usability and Skills

- PDSE Member-Level Recovery
  - Keep multiple generations of each PDSE member
  - Recover a prior version using ISPF edit or the DESERV API
  - SMS DATACLAS, DESERV API support
  - Specify maximum member generations at PDSE Version 2 allocation time
  - System-wide maximum specification with a new MAXGENS_LIMIT keyword in IGDSMSxx
  - Available now with the PTF for APAR OA42358

- Generic Tracker
  - Goodbye, CNZTRKR; hello, generic tracker
  - Call a simple interface (like CNZTRKR, but different) designed to help you determine whether functions are in use
  - New API so you can call it from within a health check (for example)
  - CNZTRKR calls designed to be automatically rerouted to new tracker
  - Operator command to provide tracking information



Improving Usability and Skills

- GDGs in chronological order!
  - New GDGORDER JCL DD statement keyword
  - Can specify that generations be returned from oldest to newest
  - No need to sort or concatenate!
  - System default remains newest-to-oldest
- ISPF potpourri (a partial list of enhancements):
  - Edit support for Unicode data
  - Edit support for an expandable command field
  - Edit HILITE command to highlight the invalid lowercase JCL characters
  - Edit support for regular expressions in FIND and CHANGE commands
  - Support for dynamically allocated data sets using XTIOTs for EDIT, BROWSE, LMINIT, and LIBDEF
  - Improved enhanced member list function
  - ISPF directory list display for z/OS UNIX, UDLIST, DIRLIST support for a SRCHFOR function
  - Support for multiple logical screens on ISPF entry, and multi-screen exit when ending ISPF
  - Path name mask support in the z/OS UNIX Directory List Utility
  - Support in OPT3.4 for a “free” line command for multivolume data sets
  - Support in UDLIST lower-case path names

ISPF Hidden Treasures and New Features - Parts 1 & 2
Thursday 1:30 & 4:00

Improving Usability and Skills

- Catalog alias processing improvements:
  - Data sets with (NONVSAM) aliases defined using SYMBOLICRELATE to be searched for in the catalog "owning" the high-level qualifier
  - Creation dates to be stored in alias entries and listed by IDCAMS
  - Catalog connector alias entries to be kept when you temporarily delete a user catalog
- "Improved IEF212I message"

Top 39er!

  - Really, it's a *new* message:
  - IEFA107I JOBNAME PROCNAME STEPNAME DDNAME - DATA SET NO.SUCH.DATA.SET NOT FOUND
  - (Instead of IEF212I … DDNAME + 009)
- SHAREOPTIONS correction for ACDS, COMMDS
  - In z/OS V1.13, health check for incorrect SHAREOPTIONS
  - In z/OS V2.1 the system is designed to correct them automatically

DFSMS "Freebies and Hidden Gems" in z/OS 2.1 Monday 3:00

Improving Usability and Skills

- Automatic start for Health Checker address space
  - Health Checker designed to start at IPL time
  - Parmlib support in a new HZSPRMxx member

Health Checker for z/OS 2.1 Update Tuesday 11:00

- More Health Checks
  - VLF cache object age
  - RACF check for database AIM Level 3
  - RACF check for whether users without OMVS segments will have them automatically assigned
  - RACF check for impending certificate expiration
  - Improved (not new) RACF sensitive resource checking
  - Open/Close/EOV check for whether XTIOT is enabled
  - Checks for branch tracing enabled, mode tracing, and long-running PER SLIPs that can cause high system overheads
  - GRSRNLxx entries that can cause Catalog deadlocks

Write a Dynamic Severity Health Check and Avoid Assembler Monday 1:30

Improving Usability and Skills

- SDSF enhancements:
  - System symbol support on the Filter command
  - Sorting up to 10 display columns
  - Support for limiting displays to JESplex scope
  - Security access tracing
- More Data Set Types supported for Problem Determination Upload Utility (PDUU):
  - PDS and PDSE
  - RECFM U
- Multiple concurrent logons in a Parallel Sysplex
  - Supported for JES2 in z/OS V1.12
  - Now supported for JES3 in z/OS V2.1
- SETSMF allowed without PROMPT at IPL time
  - Makes dynamic changes easier

Top 39er!

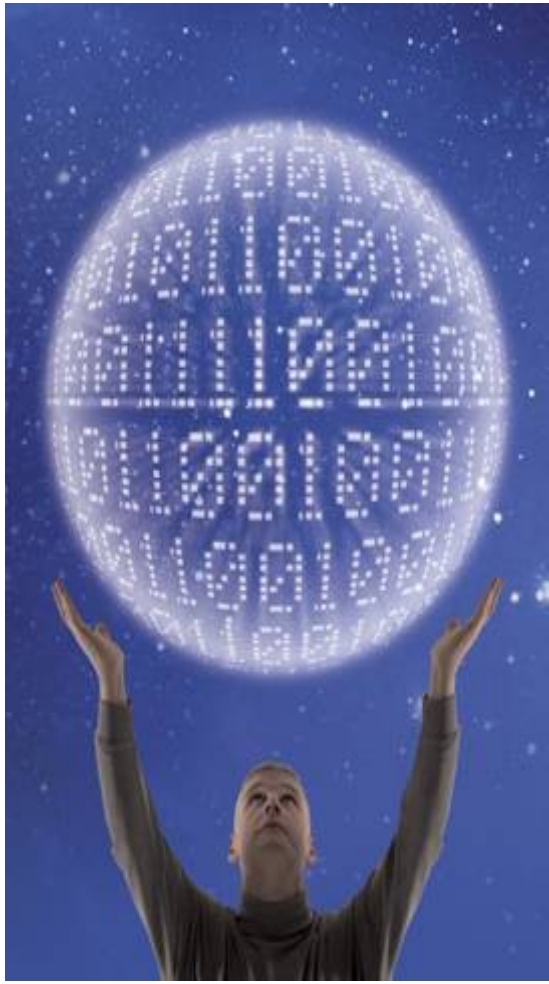
SDSF Product Update for z/OS 2.1
Tuesday 4:30

SDSF Hidden Treasures
Thursday 3:00

SDSF for New Users Hands-on Lab
Tuesday 9:30

Scalability and Performance

- RLS for Catalogs
  - R12 increased maximum catalog size and implemented CA Reclaim
  - R13 increased the number of aliases per user catalog
  - V2.1 designed to support record-level sharing for user and volume catalogs:
    - - Expected to remove most size- and performance-related reasons for splitting user catalogs in a Parallel Sysplex
    - - Most catalog contention likely to evaporate
    - - Master catalog not RLS-eligible
      - - But it's typically entirely cached in CAS if set up as recommended
    - - IDCAMS DEFINE USERCATALOG and ALTER USERCATALOG support for enabling/disabling RLS
  - Remaining reasons to split a catalog are availability-related:
    - "Too many eggs in one basket"
    - Availability (expected recovery time for this catalog exceeds the RTO)



Using RLS with Your Catalogs – a How-To Tuesday 11:00

Scalability and Performance

- System Logger separation of CF-based and DASD-only logs
  - In z/OS R9 processing could be separated into different tasks for test and production log streams
  - In z/OS V2.1, Logger will be designed to support separation of CF-based and DASD-only log stream processing as well
  - Intended to support higher rates of log stream offload data set allocations, reduce primary storage full conditions, and support higher overall concurrent log stream offload rates
  - Also available for z/OS V1.13 with the PTF for APAR OA38613

- EXCP support for zHPF
  - In addition to:
    - Media Manager (including VSAM, z/OS R11)
    - QSAM, BSAM, BPAM (z/OS R13)
    - EXCPVR (z/OS R13)

  Also available on z/OS V1.12 and z/OS V1.13 with the PTF for APAR OA38185

I/O Synergy: The Whole is Greater than the Parts
Thursday 4:30

Scalability and Performance

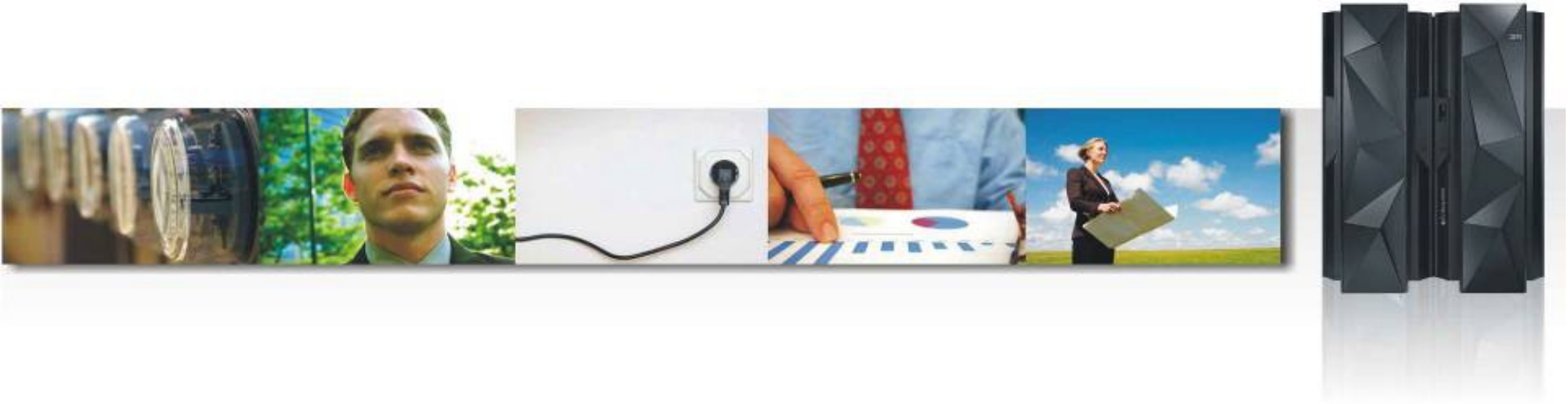
- CF “writearound” support
  - New z/OS function designed to allow batched updates to be written directly to disk without being cached in the CF
  - Designed to keep cached online transaction data more current
  - Expected to help improve performance during batch updates
  - Requires, at a minimum:
    - IBM zEC12 or zBC12 server with CFLEVEL 18…
    - **…or** IBM zEnterprise 196 (z196) or zEnterprise 114 (z114) server with CFLEVEL 17 and an MCL
    - z/OS R12 or z/OS R13
    - IBM DB2 **11** for z/OS (5615-DB2) with the PTF for APAR OA37550

DB2 11 For z/OS Overview Monday 1:30

Scalability and Performance

- CF structure rebuild performance
  - Before z/OS V2.1, all CF structures were rebuilt in parallel when duplexing is initiated
  - Considerable contention can result, slowing the process overall and (especially) slowing the process for the most important structures
  - New design to process structures serially, more or less
  - Intent is much faster recovery for critical structures and faster overall rebuild time
  - System structures to be prioritized by the system
  - Other structures optionally prioritized by policy

z/OS Parallel Sysplex
z/OS 2.1 Update
Tuesday 11:00



Scalability and Performance

- PDSE Version 2
  - Designed to improve read performance, reduce storage consumption
  - New PDSE member size limit over 125 times larger in most cases, and substantially larger than the maximum size of a PDS member
  - Intended to make it possible provide additional scalability and usability benefits of using PDSEs in place of PDSs and make it feasible to use PDSEs instead of multiple large sequential data sets

The Future of PDSE: The Version 2 Format
Thursday 11:00

- GDG Support for PDSEs
  - In addition to sequential, direct, and PDS GDGs

- BCPii GetBulk Support
  - Get multiple attribute queries in one go
  - Reduce the time required for such queries significantly
  - Support for multiple attribute requests for CPC, image, capacity record, activation profile, and image user groups
  - Supported for IBM System z9 and later servers
  - Expected to yield performance benefits most noticeable for interactive system management applications

What's New in BCPii in z/OS 2.1? Full REXX Support and Faster Data Retrieval
Wednesday 8:00

Scalability and Performance

zFS Scaling

- **New zFS Version 5 format, designed to:**
  - Significantly improve performance for file systems with large directories by using a tree structure
  - Remove explicit limits on the number of names that can be stored in zFS directories, including the prior 65,535 subdirectory limit
  - Increase the maximum file system size from 4 TB to 16 TB
  - Support both zFS V4 and V5 directories in the same physical file system data set
  - Intended to allow you to migrate HFS file systems that contain directories with a large number of files to zFS with good performance
- **Conversion options include:**
  - New option on IOEAGFMT to convert existing file systems
  - New IOEFSPRM parmlib parameter, CONVERTTOV5 ON|OFF, to convert directories on first access
  - New shell command operand to convert directories, zfsadm convert
  - Conversions designed to “fail safe,” leaving a usable file system if the conversion does not succeed

z/OS 2.1 zFS Function Update
Wednesday 3:00

Scalability and Performance

- z/OS V2.1 JES2 and SDSF designed to support more spin data sets:
  - Support for over 4 billion spin data sets (up to 4,294,967,296)
    - Up from 9,999,999
  - Intended to help improve availability for long-running address spaces
  - Available on z/OS V1.13 with the PTFs for APARs OA38944 and PM59496
  - Toleration support (only) on z/OS V1.12 with the PTFs for APARs OA38944 and PM59496
- 64-bit NFS server, designed to support:
  - Larger sequential data sets, PDS/PDSE members
  - Processing files as large as 4 TB, up from 800 MB
  - Improved application performance for random access
- RLS enhancements
  - Directory-Only Caching, designed to allow you to optionally bypass CF caching
  - A number of RLS control blocks move from SMSVSAM data space to 64-bit storage
  - IDCAMS PRINT, REPRO, IMPORT, and EXPORT to access data sets in RLS mode

z/OS 2.1 JES2 Product Update and Latest Status Tuesday 9:30

DFSMS Advanced: Leveraging VSAM RLS Best Practices Wednesday 1:30

Scalability and Performance

- DFSMShsm Fast Replication Enhancements
  - Consistency Group Support
    - This can allow you to create consistent backups of DB2 log copy pools and clone DB2 systems without performing disruptive conditional DB2 restarts much of the time
  - Also:
    - Recover Data Sets to any volume
    - Recover Data Sets with a New Name
- DFSMShsm designed to improve disk and tape performance
  - Increased multitasking level with a new SETSYS command
  - Expected to be greatest when moving numerous small data sets
  - Intended to reduce elapsed migration time required
- DFSMShsm support for increased tape volume limit
  - From 40 to 254 tape volumes per data set
  - Intended to allow you to migrate & back up larger data sets

What's New in DFSMShsm Tuesday 9:30

Scalability and Performance

- DFSORT™ Scaling improvements
  - Blockset sorting support for programs running in 64-bit addressing mode
    - Intended to help relieve storage constraints
  - Improved memory management
    - Better balance the memory requirements of multiple large concurrent sorts
    - New TUNE option to specify storage be obtained incrementally
  - Support for larger memory object work space, 64 GB to 1 TB
    - Allows you to sort more data in memory object work file

Scalability and Performance

- Bigger non-SMS-managed VSAM Linear Data Sets
  - New design limit is over 45 TB
    - Old limit was 4 GB
    - zFS V5 supports up to 16 TB; should make it much easier to migrate from HFS to zFS without performance impacts
- Extended Format Version 2
  - New type of Extended Format data set
  - DFSMSdss support for FlashCopy® when copying sequential, non-striped, multivolume EF V2 data sets
  - IDCAMS REPRO support for CI mode processing of sequential, non-striped, multivolume EF V2 data sets
- DFSMSdfp™ tape performance
  - Suppress trailer label read operations when DISP=PASS is coded for consecutive files
  - Expected to be noticeable for reading large numbers of consecutive tape files

Improving Availability

z/OS JES3 Product Update and What's New in z/OS 2.1 Tuesday 3:00

JES3 Spool Management Thursday 1:30

- JES3 dynamic spool volume removal
  - Identify jobs using a spool volume
  - Dump those using the spool volume you want to remove
  - Remove the spool volume without a JES3 complex-wide restart, using either hot start or *MODIFY,CONFIG
  - Complements dynamic spool addition support in z/OS V1.13
  - Designed to avoid JES3 complex-wide IPLs to remove spool volumes
- Dynamic System Symbol updates
  - Single system only
  - Not fully compatible with IEASYMUP or SYMUPDTE
  - New SETLOAD IEASYM keyword
  - New ENF73 signal on symbol update via SETLOAD IEASYM
  - ***New news!*** New IEASYMUP2 in LINKLIB via PTF for APAR OA42569
    - Intended for temporary updates
    - Make sure you understand the ins and outs!

Top 39er!

- z/OS Console support for HMC 3270 console
  - For z/OS console, during and after IPL
  - Intended to add another backup console
  - Designed to allow small z/OS LPARs to run without OSA-ICC

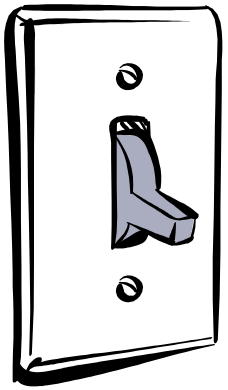
Top 39er!

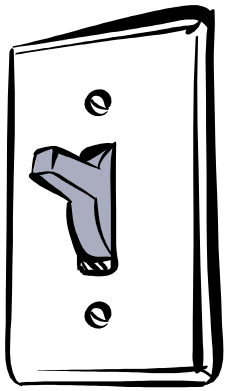
Improving Availability

- New operand on FORCE to terminate a task
  - FORCE jobname,TCB=address
  - New ASCBNOFT bit to exempt all tasks in an address space from force
  - New MVS.FORCETCB.* SAF profiles in OPERCMDS class for access control
  - Replace CALLRTM usermod from Level 2
- DCCF support for WTOR Auto-Reply
  - Support for branch-entered WTORs
  - Intended to help prevent synchronous WTORs from causing SFM to partition out systems with outstanding replies
  - Also, new support to tell you the current destination of an outstanding DCCF WTOR
- RRS internal restart
  - New optional internal RRS restart designed to quiesce RRS processing, clean up logs, and resume processing, without taking RRS down

Improving Availability

- New functions for FICON switches
  - Take components of switches supporting new SMI-S functions offline or bring them online
    - Also available on z/OS V1.12 and z/OS V1.13 with the PTFs for APARs OA38145 and OA38303
  - Single Point of Failure (SPOF) detection improvements for switches supporting the Read Port Availability function
    - Designed to detect common points of failure for virtualized switches
    - Compatible with DCM for FICON
    - Also available on z/OS V1.12 and z/OS V1.13 with the PTF for OA40876





Improving Availability

- New MODIFY VLF Command
  - Designed to allow you to a specify COFVLFxx member
  - Update VLF classes & associated major names
  - Change MaxVirt and AlertAge for existing classes
  - Designed to help avoid performance impacts, by avoiding VLF restart

Top 39er!

- Add/remove MCS consoles dynamically
  - Support for adding/removing distributed mode MCS consoles
  - SET CON designed to process a CONSOLxx member to add consoles
  - SETCON designed to allow you to specify a console to be removed
  - Intended to help improve availability by removing another reason for system and sysplex-wide IPLs

Top 39er!

- RPCBIND/NFS re-registration
  - RPCBIND and NFS Servers designed to allow the NFS Server to reregister with RPCBIND when RPCBIND is restarted
  - Designed to help preserve existing connections
  - Designed to allow new mounts when RPCBIND is restarted
  - Intended to let you avoid an NFS Server restart to improve availability

z/OS Little Enhancements: Many Small Potatoes Can Make a Big Meal Thursday 11:00

z/OS Planned Outages - Control Them, Instead of the Other Way Around Thursday 3:00

Self-Managing Capabilities

- DFSMShsm Storage Tiers
  - Designed for policy-based movement of SMS-managed data within L0
  - Intended to existing storage class and storage group constructs
  - Apply management class policies based on age and last reference to move the data from one class of device to another
    - For example, IBM System Storage® DS8700 and DS8800 SSD, HDD, SATA, or a mix
    - Can include Easy Tier™ devices
  - ML1 and ML2 still work as they do now
  - Intended to help you manage data residency to meet business goals and data management policies

IBM System Storage

What's New in DFSMShsm Tuesday 9:30

Self-Managing Capabilities

- OAM Improvements designed to improve tape-related functions:
  - Larger block sizes for tape for better performance
  - Allow you to remove unneeded backup copies automatically
  - Enable OSREQ Store Sequence support on smaller object sizes
  - Enhance OAM interoperation with products such as IBM Tivoli® Automated Tape Allocation Manager for z/OS (ATAM, 5698-B15)
  - Enable you to tune tape library operations with a new SETTLIB option in CBROAMxx PARMLIB member
- Improved JES3 support for SMS-managed tape libraries
  - Better support the use of MDS for SMS-managed tape
  - New JES3_ALLOC_ASSIST=YES|NO parameter in DEVSUPxx
  - Inish deck changes for this support to define new esoteric names for clusters

Self-Managing Capabilities

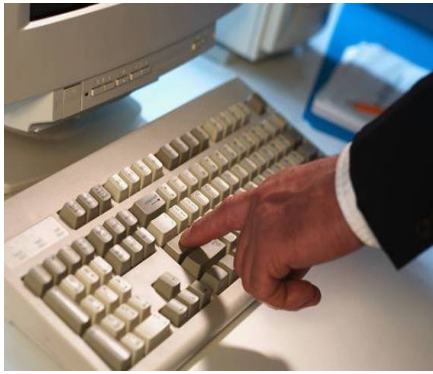
- Improved DFSMSrmm™ support for SMS-managed tape
  - DFSMSrmm designed to support tape data set retention periods using SMS Management Classes
  - Intended to set resulting expiration dates automatically, and support expiration of tape data sets after a specified period of inactivity
  - Extend EXPDT-based retention management to allow it to be based on volume sets or first files
- FICON Dynamic Channel path Management support for cascaded switches
  - Existing FICON DCM is extended to support cascaded switches
    - Attaching a controller to a switch through another switch to a channel
  - Support for FICON limit of 2-level cascading for DCM
    - (Channel, two switches, control unit)

Self-Managing Capabilities

- WLM improvements:
  - New types of classification groups and qualifier types you can use to define rules like SPM more consistently
  - Support for up to 3,000 application environments, an increase from the prior limit of 999

Workload Management (WLM) Update for z/OS 2.1 and 1.13 Monday 3:00

- RMF enhancements:
  - RMF designed to offload some processing to zIIP processors in a Parallel Sysplex (when a zIIP is available)
  - 1 MB page and Flash Express reporting enhancements
    - Also available on z/OS V1.13 with the RSM Enablement Offering web deliverable and the PTF for APAR OA38660
  - Support for new interrupt delay time measurement on zEC12 and zBC12 systems
    - SMF74-1 and SMF79-9 support
    - z/OS V1.12 and V1.13 support with PTF for APAR OA39993
  - Global Mirror collision reporting in RMF Monitor I and SMF74-5 records
    - z/OS V1.12 and V1.13 support with PTF for APAR OA40376
  - More information about CF links in Monitor I
    - z/OS V1.12 and V1.13 support with PTF for APAR OA37826



RMF: The Latest and Greatest Monday 11:00

Self-Managing Capabilities

- CPM support for defined capacity and group capacity limit
  - Designed to increase options for automated response to capacity shortages
  - Also, commands and reports for SAPs, IFLs, and ICFs
  - And, policy-based control for releasing OOCoD capacity

- RMF to provide SMF 104 Records for zBX Activity
  - Basic performance metrics for:
    - Linux® on IBM System z
    - Linux on IBM System x® running on zBX blades
    - AIX® running on zEnterprise BladeCenter Extension (zBX) blades
    - Microsoft® Windows® 2008 Server running on zBX blades (new!)
  - Help support performance management, capacity planning activity across the Hybrid

Understanding z/OSMF for the Performance Management Sysprog Monday 4:30

- New DISPLAY PPT command, designed to:
  - Display the currently-effective program properties table, the net from:
  - The IBM default in CSECT IEFSDPPT…
  - …as modified by SCHEDxx during IPL…
  - …and perhaps further modified by T SCH commands

Top 39er!

Self-Managing Capabilities

- STP maximum time variance check
  - z/OS V2.1 Timer Services designed to issue a message when using STP when unacceptable variance is detected between UTC and TOD clock
  - Intended to help U.S. stock exchange members meet SEC rules for record timestamps for the Order Audit Trail System (OATS)

- System Logger threshold messages
  - For primary storage use
  - Intended to help you avoid storage full conditions that can lead to performance degradation and outages

- SMF BUFSIZMAX for log streams
  - Designed to let you specify SMF log stream buffer sizes with a new DSPSIZMAX parameter in SMFPRMxx
    - Support for DSPSIZMAX to be used when SMF is initialized also available for z/OS V1.12 and V1.13 with the PTF for APAR OA35175
  - z/OS V2.1 support for dynamic changes via SET SMF and SETSMF

Self-Managing Capabilities

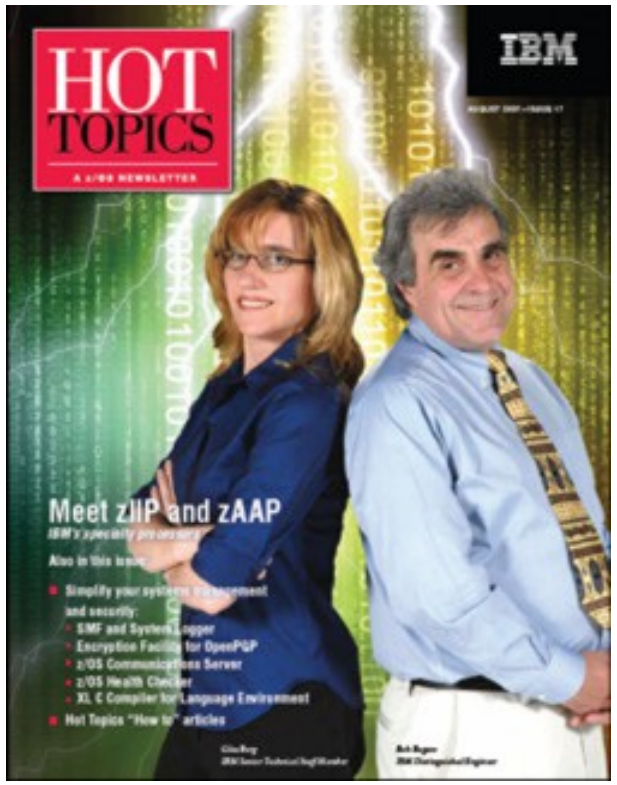
- z/OS UNIX Automount Improvements
  - Allow you to specify permission bits other than the defaults for file systems created automatically using an automount policy
  - Extend the use of static system symbols to the master file (/etc/auto.master)
    - Previously supported for MapName files only
  - Serialize automount appends across systems
  - Set owning system to a file system parent when appropriate to avoid unmount failures during OMVS shutdown
- VSAM DATACLAS additions designed to let you specify:
  - System-Managed Buffering (SMB) record access bias
  - ACB RMODE31 override
- New ACS variable for EAS eligibility
  - Intended to allow you to code ACS routines to route allocations appropriately

z/OS 2.1 Unix Systems Services Latest Status and New Features Tuesday 1:30

Self-Managing Capabilities

- New I/O Fabric diagnostics
  - D MATRIX support designed to display fabric health information
  - Two new health checks to report on I/O rate discrepancies between channel paths and control unit response times

- zAAP workloads on zIIP engines:
  - zAAP-eligible work can run on a zIIP even when a zAAP is installed on the same server
  - Intended only to help facilitate migration and testing of zAAP workloads on zIIPs
  - Also available on z/OS V1.12 and V1.13 with the PTF for APAR OA38829



System z Security Portal

- Want to be notified about Security and Integrity APARs? Sign up!
  - IBM recommends that you promptly install security and integrity PTFs
  - SECINT PTFs are included in RSUs periodically
  - The System z Security Portal can help you stay more current with SECINT PTFs by providing SMP/E HOLDDATA you can use to identify these fixes before they are marked RSU
  - The System z Security Portal also provides associated Common Vulnerability Scoring System (CVSS) V2 ratings for new APARs*
  - To get this information you must register!
    - Because widespread specifics about a vulnerability could increase the likelihood that an attacker could successfully exploit it
    - In response to customer requests to maintain the confidentiality
    - Other requirements on the website
  - IBM recommends that you visit the System z Security Portal site at http://www.ibm.com/systems/z/advantages/security/integrity_zos.html to get the information you need to register
  - Questions can be directed to: syszsec@us.ibm.com

- Note: According to the Forum of Incident Response and Security Teams (FIRST), the Common Vulnerability Scoring System (CVSS) is an "industry open standard designed to convey vulnerability severity and help to determine urgency and priority of response." IBM PROVIDES THE CVSS SCORES "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. CUSTOMERS ARE RESPONSIBLE FOR ASSESSING THE IMPACT OF ANY ACTUAL OR POTENTIAL SECURITY VULNERABILITY IN THEIR SPECIFIC ENVIRONMENT. IBM DOES NOT PROVIDE A CVSS ENVIRONMENT SCORE. THE CVSS ENVIRONMENT SCORE IS CUSTOMER ENVIRONMENT SPECIFIC AND WILL IMPACT THE OVERALL CVSS SCORE. CUSTOMERS SHOULD EVALUATE THE IMPACT OF ANY ACTUAL OR POTENTIAL SECURITY VULNERABILITY IN THEIR SPECIFIC ENVIRONMENT.
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Enhancing Security

- ICSF Enhancements included in z/OS V2.1 base
  - Support for Derived Unique Key Per Transaction (DUKPT) for message authentication code (MAC) and data encryption keys
    - Intended to be compliant with the ANSI X9.24 part 1 Retail Financial Services Key Management standard
    - Intended for the symmetric key management used for financial services such as ATM transactions
  - Support for a new Cipher Text Translate CCA function designed to process sensitive data encrypted under one key
  - Enhanced key wrapping to help ensure a key is not wrapped with a weaker key, to help you comply with industry cryptographic standards, including ANSI X9.24 Part 1 and PCI-HSM
    - Requires enhanced CCA firmware in the Crypto Express coprocessor
  - New random number cache intended to improve application performance
  - Support for new mode that configures Crypto Express4S coprocessors in Enterprise PKCS #11 mode
    - RACF support for generation of ECC and RSA secure keys using Crypto Express4S
    - Corresponding PKCS #11 secure key support for PKI Services
    - System SSL designed to allow certificates with secure PKCS #11 ECC and RSA certificates to be used for some SSL/TLS handshakes and through its Certificate Management APIs
    - Designed to provide the cryptographic services and assurance needed to meet EU requirements for Qualified Digital Signatures
  - ICSF designed to improve I/O performance for the PKDS and PKCS #11 TKDS
  - FIPS 140-2 setup simplification for ICSF

- Available now from: http://www.ibm.com/systems/z/os/zos/downloads/

Enhancing Security

- New ICSF Enhancements in the Cryptographic Support for z/OS V1R13-z/OS V2R1 web deliverable:
  - Support for emerging EMVCo (American Express, MasterCard, Visa) standards:
    - CCA-based services for key management, generation transport, derivation
    - Requires a minimum level of CCA firmware in a CryptoExpress3 coprocessor, or a CryptoExpress4S coprocessor
  - Improved Remote Key Export service
    - Requires a minimum level of CCA firmware in a CryptoExpress3 coprocessor, or a CryptoExpress4S coprocessor
  - Improved User Defined Extensions (UDX) support for Recover PIN from Offset, Symmetric Key Export with Data, and Authentication Parameter Generate
    - Requires a minimum level of CCA firmware in a CryptoExpress3 coprocessor, or a CryptoExpress4S coprocessor
  - Support for AES MAC enhancements to Symmetric MAC Generate and Verify services, to allow keys longer than 128 bits for XCBC-MAC processing
  - New CryptoExpress4S support with enhanced EP11 firmware with a minimum microcode level:
    - Secure Key PKCS#11 support for D-H, ECC D-H, and RSA-PSS algorithms
    - Support for Enterprise PKCS#11 applications to change key compliance modes using Set Attribute Value
    - Support for ECC keys generated using Brainpool curves in FIPS mode
    - ICSF designed to improve I/O performance for the PKDS and PKCS #11 TKDS
  - A variety of performance, debug, and usability improvements

  - Available now from: http://www.ibm.com/systems/z/os/zos/downloads/

Enhancing Security

- More Cryptographic Enhancements:
  - CCA enhancement support for the zEC12, zBC12, z196, and z114 with an MCL when a Crypto Express4S (zEC12, zBC12) or Crypto Express3 (zEC12, zBC12, z196, z114) PCIe adapter is configured as a CCA coprocessor
    - Support for new PIN processing function defined by the German banking industry organization (DK) , including key management support for new AES key types, AES key derivation support, and several DK-specific PIN and administrative functions, with the PTF for APAR OA42246
    - Support for additional DK PIN processing functions planned including Deterministic PIN Generate, Personal Account Number Translate, PIN Reference Value Card Number Update, PIN Reference MAC Generation, and the ability to Regenerate a new PIN reference value for a changed account number. Planned with the PTF for APAR OA43906 in the first quarter of 2014.*
  - CCA enhancements planned for 1Q14 for Message Authentication Codes and new PKA Key Translate for the zEC12, zBC12, z196, and z114 servers with an MCL when a Crypto Express4S (zEC12, zBC12) or Crypto Express3 PCIe adapter is configured as a CCA coprocessor:
    - Support for MACs using AES-CMAC algorithm with the PTF for APAR OA43906.
  - ICSF and CCA support to reduce the need for User Defined Extensions (UDXs). CCA is designed to support additional algorithms used to translate RSA CRT keys, so new UDXs do not need to be created for each ICSF or CCA level. Support planned with the PTF for APAR OA43816 in 1Q14.

ICSF Update
Monday 1:30

Enhancing Security

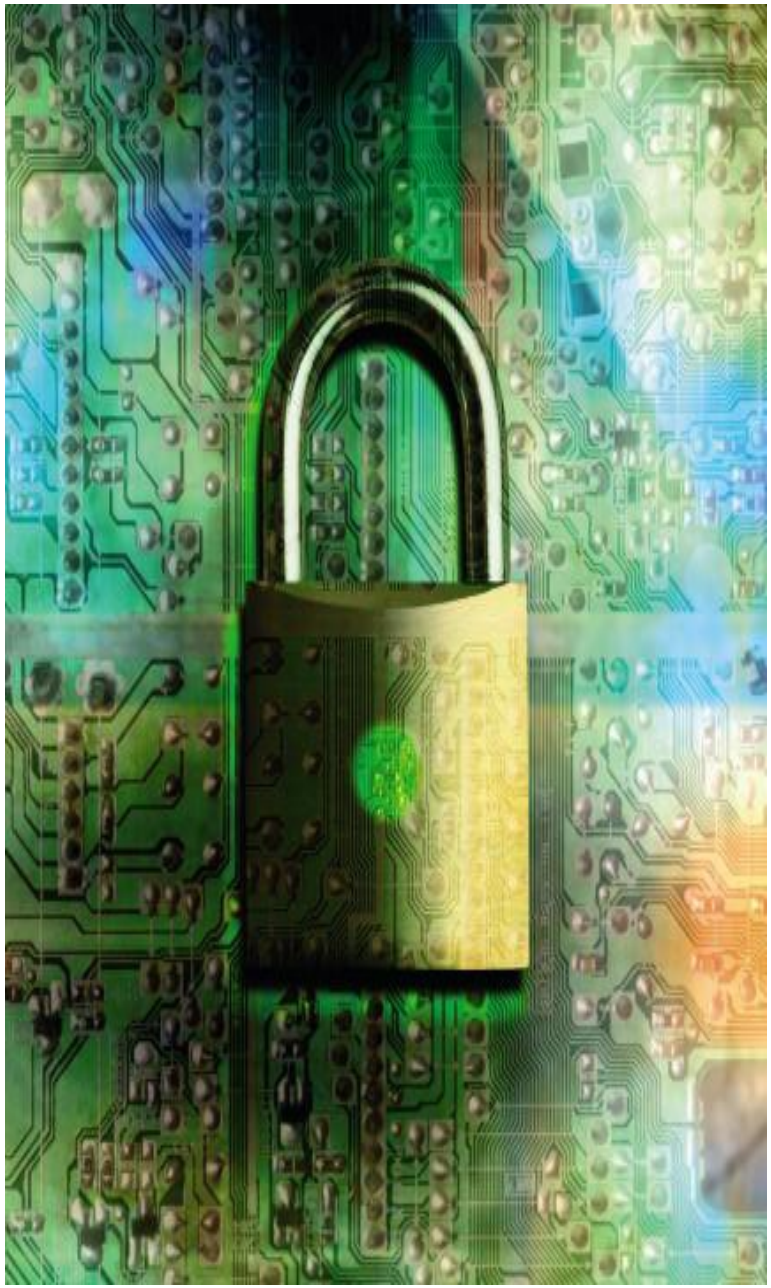
- RRSF
  - z/OS V1.13 introduced TCP/IP-based RRSF support for IPv4
  - z/OS V2.1 designed to support IPv6…
  - …and for using elliptic curve cryptography (ECC)-based certificates for establishing the AT-TLS sessions
  - Intended to allow use of stronger encryption algorithms with RRSF
- Certificate processing improvements:
  - Health check on impending certificate expiration
  - System SSL validation according to RFC 5280, RFC 3280, or RFC 2459
  - Support for Extended Validation (EV) X.509 digital certificates in PKI Services
  - Improved displays for RACF certificates, certificate chains, and key rings
  - RACF to enhance certificate request processing for certificates issued by external Certificate Authorities to help ensure private keys associated with the fulfilled certificates are not inadvertently deleted.
  - Optional PKI Services message when CRL processing ends

RACF/PKI Update Monday 3:00

Enhancing Security

- SAF job class controls
  - Support for both JES2 and JES3
  - Intended to allow you to supplant exits with new profiles in the JESJOBS class
- z/OS UNIX timeout support:
  - New BPXPRMxx parameter
  - Specify whether users who logged in using rlogin, telnet, or the TSO OMVS command should be logged off after a period of inactivity
  - Intended to help you improve system security
- RACF Sensitive Resources Health Check
  - Checks additional FACILITY class resources for:
    - Active APF list
    - Active link list
    - Active LPA lists
    - Access to system dump data
    - Access to certain z/OS UNIX System Services functions.
  - Intended to help identify potential security exposures

Top 39er†!



† **Partial**

Enhancing Security

- System SSL TLS 1.2 Support
  - Support for higher-strength cryptographic ciphers defined in RFCs 5246, 5288, and 5289, including SHA-256 and SHA-384 hashing
  - Support for ciphers using symmetric AES-GCM during TLS handshakes and application payload exchanges
  - Also available on z/OS V1.13 with the PTF for APAR OA39422
- System SSL NSA Suite B compliance
  - Support for Suite B Cryptography based on RFC 5430, an implementation of TLS V1.2
  - Designed to meet the United States government cryptographic algorithm policy for national security applications
  - IBM TDS (LDAP) support for NIST SP 800-131A and NSA Suite B

Enhancing Security

- Support for remote access to System z Crypto via LDAP
  - Think of this as *Crypto-As-A-Service*
  - Store and manage key material inside the boundaries of the System z Hardware Security Module in the crypto card
  - Enable System z secure key crypto via LDAP extended operations provided by z/OS ITDS
  - Can specify that callers be isolated to specified cryptographic domains by label
  - Designed to route crypto operations and data to an LPAR designated to process secure key operations
  - Intend to enhanced ICTX plug-in to provide native SDBM and SASL bind authentication, and 64-bit support
  - IBM has contributed an OpenCryptoki (PKCS#11) remote cryptography provider to the open source community intended to be included in Linux distributions to ease implementation

- Batch Modernization:
  - *"Interactive is 'manual.' Batch is 'automatic.'"*

    -Gary Puchkoff
  - Job Correlator
    - Unique 64-byte value assigned to each job in a sysplex
    - Intended to:
      - Provide a larger name space for jobs (as an adjunct to job name)
      - Help link jobs to output and other records
      - Provide a simple way for applications to determine the Job ID of a job that was just submitted
    - Available with z/OS V2.1 and the z/OSMF V2.1 REST API

- More Batch Modernization…
  - Dynamic ENQ downgrade support in GRS, and JCL support:
    - In a multistep job, change an exclusive ENQ to shared ENQ for a data set
      - After the last job step with DISP=OLD, MOD, or NEW has ended
    - New JES2 Job Class parameter, DSENQSHR=AUTO|ALLOW|DISALLOW
    - New JOB statement parameter, DSENQSHR=ALLOW, to use with ALLOW

```
//GREAT    JOB (accounting),DSENQSHR=ALLOW
//STEP1    EXEC PGM=WHATEVER
//OLD      DD DSN=MY.DATA.SET,DISP=NEW,…
//STEP2    EXEC PGM=SOMEPGM
//STILLOLD DD DSN=MY.DATA.SET,DISP=MOD
//STEP3    EXEC PGM=EXPCT806
//SHR4NOW  DD DSN=MY.DATA.SET,DISP=SHR
//STEP4    EXEC PGM=IDUNNO
//OLDAGAIN DD DSN=MY.DATA.SET,DISP=OLD
//STEP5    EXEC PGM=NOCLUE
//SHR4EVER DD DSN=MY.DATA.SET,DISP=SHR
//STEP6    EXEC PGM=WHOKNOWS
//STILLSHR DD DSN=MY.DATA.SET,DISP=SHR
```

Exclusive ENQ until last DISP=OLD, NEW, or MOD step done

Then, shared ENQ

- Even more Batch Modernization…
  - JES2 symbols support for instream data and Submit
    - New step-level EXPORT statement to list system and JCL symbols available to be resolved, and new callable service support for access to them
    - New SYMBOLS keyword for DD * and DD DATA to control substitution

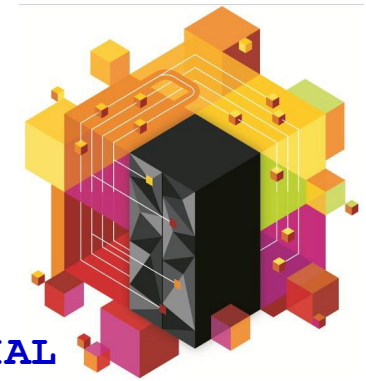
Example:

```
//  EXPORT SYMLIST=(DSNAME)
//  SET DSNAME=MY.DATA.SET
// SET VOLSER=VOLUME
//*
//DELETEDS EXEC PGM=IDCAMS,REGION=300K,
//SYSPRINT  DD SYSOUT=*
//DEVICE    DD DSN=&DSNAME,VOLUME=&VOLUME,DISP=OLD

//SYSIN     DD *,SYMBOLS=JCL

  DELETE -
    &DSNAME. -
    NONVSAM  -
    PURGE    -
    SCRATCH  -
    FILE(DEVICE)
/*
```

- Still more Batch Modernization…
  - New PARMDD EXEC keyword support for longer parameter strings
    - Mutually exclusive with PARM keyword
    - No other changes required for unauthorized programs
    - Authorized programs must be bound using LONGPARM or system will terminate the job at step initiation
    - Supports parameter lists from 1 to 32,760 bytes long

Example:

```
//NOTAREAL JOB (accounting info),MSGLEVEL=(1,1),CLASS=BATCHLOW,
// NOTIFY=&SYSUID
//*
//UNAUTH   EXEC PGM=MYPGM,PARMDD=PARMS
//IN       DD DISP=SHR,DSN=MY.DATA.SET
//OUT      DD DISP=(,CATLOG),DSN=MY.NEW.DATA.SET, …
//PRINT    DD SYSOUT=*
//PARMS    DD *
LONG PARAMETER LIST HERE IN THE DATA SET NAMED BY PARMDD.
NOTE THAT IT NEED NOT BE AN INSTREAM DATA SET.  A SEQUENTIAL
DATA SET, A MEMBER OF A PDS OR PDSE, OR Z/OS UNIX FILE WILL
WORK AS WELL.  AND, IF I COUNTED RIGHT, THEN THIS VERY VERY
LONG PARAMETER LIST IS NOW WELL OVER 100 CHARACTERS IN LENGTH
AND I CAN STOP TYPING!
/*
```



Yet more Batch Modernization:

- Batch Parallel Recall
  - Allocation determines whether data sets to be allocated have been migrated
  - For DFSMShsm-migrated data sets, Allocation is now designed to:
    - Issue recall requests during step initiation
    - Wait for all recalls to complete
    - Continue with Allocation processing needed to start the step
  - New ALLOCxx keyword to enable, and SETALLOC support

- 8-character Job classes
  - JOB statement support for 8-character alphanumeric job classes
  - Expands maximum number of job classes for JES2
    - JES3 continues to support a maximum of 255 job classes
    - JES2 now supports a maximum of 512 job classes
  - JES3 supports 8-character job classes via JECL (//*MAIN CLASS=xxxxxxxx)
  - JES3 to continue to override CLASS from the JOB statement when CLASS is coded on the //*MAIN statement

//NICE JOB CLASS=PAYROLL, …

Have I mentioned "Batch Modernization" today?

- New JCL Constructs:
  - SYSTEM and SYSAFF JOB statement keywords
    - Allow you to specify z/OS MVS system names, JES2 MAS member names, and JES3 MAIN names
    - New ALLOCxx keyword to enable, and SETALLOC support
  - New JCLLIB PROCLIB statement for JES2
  - JES2 support for new MERGE and DDNAME keywords for the OUTPUT statement

Batch Modernization in z/OS 2.1 JES2 Thursday 8:00

- Support for the use of system symbols in JCL
  - For both JES2 and JES3
- JES3 support for instream data in procedures
  - DDNAME DD * support in PROCs and INCLUDE groups
  - Similar to support introduced in z/OS V1.13 JES2

- IEBCOPY improvements designed to support:
  - COPYGROUP for PDSs
    - As for PDSE, copy aliases along with specified members automatically
    - PDS/PDS, PDSE/PDS, PDS/PDSE, PDSE/PDSE all to work the same
  - Pattern matching
    - Using * and % in SELECT statements with COPYGROUP

Top 39er!

- Delete member name masking
  - New IDCAMS function to delete specified members by pattern
  - Asterisk is a wildcard, per cent sign is positional
  - Examples:
    - DELETE SOME.DATA.SET(EELLS*)
      - …to delete all members starting with “EELLS”
    - DELETE SOME.DATA.SET(EELLS%A)
      - …to delete all members with EELLSxA, where x is any character
- Multivolume RLSE improvements
  - In z/OS V2.1, the system is designed to release unused space for SMS-managed multivolume data sets:
    - On the current volume
    - On all subsequent volumes
  - Via RLSE in JCL or equivalent DYNALLOC text unit

- WebSphere Extended Deployment Compute Grid for z/OS, V8.0
  - New framework for single-threaded Java applications
  - z/OS supports for xJCL constructs via keyword/value pairs to allocate files, specify checkpointing
  - Intended to use commit interval management
- Batch Run Time Environment: Java/PLI/COBOL interoperability
  - Similar to Java/COBOL interoperability in R13, now designed to provide transactional integrity for DB2 between Java, COBOL, and PLI programs
  - Support for VSAM as an resource manager
  - Intended to provide TVS integrity among Java, COBOL, and PLI programs via RRS
  - Requirements include:
    - IBM 31-bit SDK for z/OS, Java Technology Edition, V6.0.1
    - Enterprise PL/I Version 4 Release 2 (5655-W67)
    - DB2 V9 (5635-DB2) or DB2 10 (5605-DB2) with PTFs

- z/OS Font Collection
  - New base element includes:
    - AFP Font Collection for S/390 (5648-B33)
    - IBM Infoprint Fonts for z/OS V1.1 (5648-E76)
    - Compatibility Fonts feature of IBM Print Services Facility V4.4 for z/OS (5655-M32)
    - World Type fonts that are part of the InfoPrint Font Collection V3.1 available for other operating system platforms
    - Double-byte Asian fonts
  - Intended to eliminate the need to include font products and features in z/OS orders and assure that fonts are always available on z/OS systems

z/OS 2.1 Print Products Latest Status & New Features
Wednesday 9:30

- Infoprint Server Improvements, designed to:
  - Replace attributes in the aopd.conf file and AOP variables with information stored in the Printer Inventory
    - Designed to allow you to use Infoprint Server's ISPF application to perform most System Administrator and Printer Administrator tasks
  - Support dynamic configuration changes for most options
  - Add job accounting information to SMF Type 6 records
  - Support using System Logger for the Common Message Log
    - Rather than files in the z/OS UNIX System Services file system
    - Intended to allow you to manage message log data without shutting down Infoprint Services without interruption

- More mutexes and shared condition variables in z/OS UNIX
  - A mutex (mutual exclusion) is a UNIX serialization mechanism (roughly analogous to ENQ with SCOPE=SYSTEM)
  - A condition variable can be associated with a mutex, and programs running in multiple threads can make decisions based on its value
  - Current limit per memory segment is 64K-1 sum of mutexes and condition variables
  - Current z/OS system limit for that sum is 128K
  - Current limits will remain for unauthorized users
  - z/OS V2.1 designed to support these new authorized limits:
    - 16M-1 (x'FFFFFF') sum of mutexes and condition variables per shared segment
    - 4G-1 (x'FFFFFFFF') sum system limit
  - Authorization via UID(0) or READ (or higher) access to the SUPERUSER.SHMMCV.LIMIT resource in the UNIXPRIV class
- More threads for z/OS UNIX
  - z/OS V2.1 UNIX System Services supports more threads on the system
- More z/OS UNIX pipes
  - Support for up to 15,360 pipes, up from the prior limit of 8,730

z/OS 2.1 Unix Systems Services Latest Status and New Features Tuesday 1:30

- Language Environment support for check zones
  - New function to help expose memory overlays that cause heap damage
  - HEAPZONES run-time option designed to allow you to specify that each storage area requested have a check zone appended
  - Designed to detect a program storing data in a check zone
  - Intended to help you find problems that might otherwise be more difficult to identify
  - Designed to help you test application code—*new, changed, and existing!*
- Nested Preinitialized Environments under a single task
  - Allow you to call main routines in one preinitialized environment from another
  - Take advantage of multiple persistent preinitialized environments to improve application performance

Heap Damage, Get Into the Zone!
Wednesday 9:30

- Language Environment Support for Blocked I/O
  - Program access to blocked records should improve performance
  - For read, write, and repositioning operations
  - …in addition to existing record-level access

Heapzones and Pageframes and Blocks, Oh My! (or We're Off to See the z/OS 2.1)
Tuesday 9:30

- Also:
  - Commonly-available UNIX services added for z/OS UNIX file I/O
  - New functions for converting multibyte Unicode to wide character data

- TSO/E REXX Enhancements
  - Enhancements to EXECIO, LISTDSI, and STORAGE:
    - Retrieve information about data sets in EAS on EAVs
    - Also, PDSE, concatenated, multivolume, and tape data set support
    - Support I/O to undefined and spanned record format data sets
    - Improve the usability of EXECIO, LISTDSI

Top 39er†!

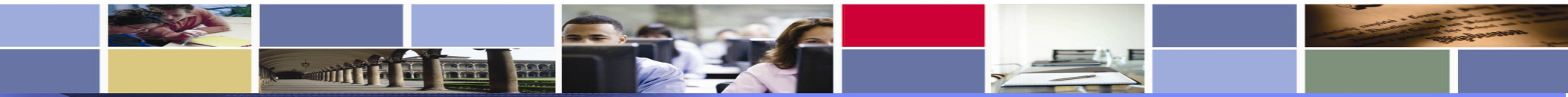
- z/OS V2.1 DFSORT designed to support:
  - Alphanumeric tests for compare and parse
  - More symbol support
  - Support for up to 1,000 PARSE fields, up from the prior limit of 100
  - Support for up to 50-character strings to be appended to VL records

- VSAM
  - Catalog Search Interface designed to return more information about buffers, indexes, maximum concurrent requests, number of tracks/volume, and more information about aliases defined using SYMBOLICRELATE
  - SHOWCB designed to return allocated vs. used buffers for NSR and LSR

† Partial

- New IXCNOTE interface for XCF
  - Designed to support notes with up to 1024 bytes of application data
  - Designed to allow applications to:
    - Create and delete "note pads"
    - Create, read, modify, or delete notes in note pads they are connected to
  - XCF will be designed to create note pads in CF list structures
  - New API intended to help improve Parallel Sysplex flexibility and usability for application programmers
  - Available on z/OS V1.13 with the PTF for APAR OA38450
- TMP Support for SYSREXX™
  - Support for all functions of the CONSOLE host command environment
  - Designed to support system and subsystem commands, and monitoring message traffic with an EMCS console

- Unicode 6.0 Support in Case, Collation, and Normalization Services
  - These services designed to meet the Unicode 6.0 standard
  - Also, z/OS Unicode support for the Hong Kong Supplementary Character Set (HKSCS-2008) for CCSID 1377 and 1375 with the PTF for APAR OA43021
- Support for Japanese Industrial Standards (JIS)
  - For Extended UNIX Code (EUC): JIS X 0201, JIS X 0208, and JIS X 0212
  - New support is designed to add three new CCSIDs: CCSID 17338, CCSID 21434, and CCSID 37818
  - These CCSIDs extend Japanese Unicode support to include 83 additional NEC characters
  - Also, support added for the rupee currency symbol used by India
- Generalized Alignment support in the Binder & Symbol Tracing
  - Support for boundary alignment from byte to 4K page alignment
  - As specified in object modules when building program objects & load modules
  - When COMPAT=CURR on z/OS V2.1 (or V2.1 is specified)
  - Also, new SYMTRACE option to provide more information about symbols



- z/OS V2.1 C/C++
  - As usual, “keeping up with the Joneses” (new hardware function, that is):
    - ARCH(10) and TUNE(10) options for new zEC12, zBC12 functions such as:
      - Execution hint
      - Load and trap
      - Miscellaneous instruction extension
      - Transactional execution
    - Also available for prototype/test on z/OS V1.13 with the PTFs for APARs PM59592, PM59593, PM59589, and PM59595
    - CPU-intensive performance tests showed 6% (31-bit) to 11% (64-bit) improvement*
  - *Nine* new debug level options
  - Support for additional features of the C11 standard
    - Including complex type creation, static assertions, the "does not return" function attribute, explicit conversion operators, strongly scoped enums, rvalue references, and the right angle brackets function
  - Support for a named, non-"main" function to have the same setup as the main function, and for interprocedural analysis (IPA) performance enhancements for code with mixed (AMODEs)
  - A new INCLUDE compiler option
  - Designed to provide additional information for the debugger to use

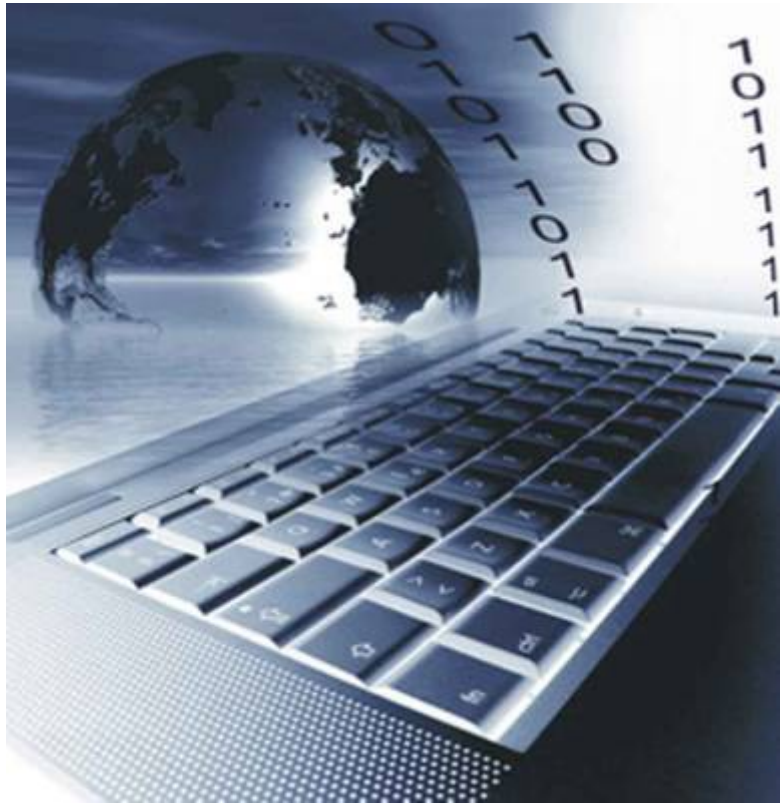
* The performance improvements are based on internal IBM lab measurements. All benchmarks were built using the XPLINK, HGPR, O3, HOT, and IPA(LEVEL(2) with PDF compiler options. The benchmarks compiled with the V1R13 compiler were built using the ARCH(9) TUNE(9) options; the benchmarks compiled with the V2R1 compiler used ARCH(10) TUNE(10). Performance results for specific applications will vary,

- ASCII conversion support in more z/OS UNIX System Services shell commands and utilities
  - Already supported for:

    chtag – Change file tag information
    find -- Find a file meeting specified criteria
    iconv -- Convert characters from one code set to another
    dd -- Convert and copy a file
    cp -- Copy a file
    mv -- Rename or move a file or directory
    pax -- Interchange portable archives
    ex -- Use the ex text editor
    vi -- Use the display-oriented interactive text editor

  - New support for:

    cat -- Concatenate or display text files
    cmp -- Compare two files
    comm –
    cut—
    diff -- Compare two text files and show the differences
    dircmp -- Compare directories
    ed—
    egrep -- Search a file for a specified pattern
    expand—
    fgrep -- Search a file for a specified pattern
    file -- Determine file type
    grep -- Search a file for a specified pattern
    head -- Display the first part of a file
    more -- Display files on a page-by-page basis
    paste—
    sed—
    strings—
    tail -- Display the last part of a file
    unexpand—
    unique—
    wc -- Count newlines, words, and bytes

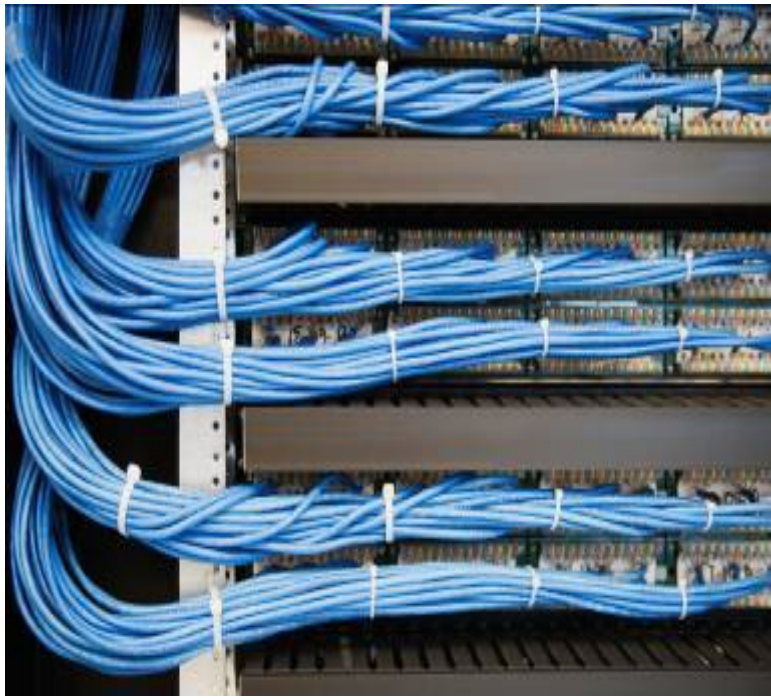


Networking

- Enhanced fast path socket support
  - Designed to provide fast path sockets-like performance for all sockets using socket APIs
  - Designed to reduce CPU consumption, particularly for interactive workloads
- SACK support
  - Selective ACKnowledgements and packet retransmissions
  - As described by RFCs 2018 and 3517
  - Intended to reduce packet retransmissions when multiple packets are missed in a window

z/OS V2R1 Communications Server Technical Update, Parts 1 & 2
Monday 9:30 & 11:00

z/OS V2R1 Communications Server Performance Update
Wednesday 11:00



Networking

- Resolver startup file fault tolerance
  - Resolver designed to start when setup file errors are detected
  - Intended to allow TCP/IP stacks and other dependent applications to start
- Support for QDIOACCEL with IPSEC
  - QDIOACCELERATOR designed to improve performance by allowing packets to be directly routed between HiperSockets™ and OSA QDIO connections
  - New function designed to provide that support with IPSEC enabled
- New FTP subcommands
  - MVSPut and MVSGet designed to simplify the transfer of sequential and partitioned (PDS and PDSE) data sets between z/OS systems

Networking

- FTP client security exit points
  - Two new exits: command user exit and reply user exit
  - Intended to be used to implement security policy
- New command designed to verify TCP profile syntax
  - V TCPIP,,SYNTaxcheck,dsname
  - Can run on any system at the same level
- Intrusion Detection:
  - Enhanced IDS IP fragment attack detection
  - Limit defensive filter logging to avoid log overruns
- DVIPA affinity
  - Preferentially associate a DVIPA with the original application

z/OS Communication Server Intrusion Detection Services Thursday 11:00

Preventive Service

- IBM plans a number of changes to z/OS preventive service ordering, to be made effective 3Q 2014:
  - In Shopz, the z/OS "all licensed products" service package type and z/OS Internet delivery service subscriptions will be removed
  - ServiceLink z/OS ESO packages will be supported only when used to order service for selected FMIDs
  - z/OS preventive service orders will be based on installed products, not on licensed products
- IBM recommends use of the SMP/E RECEIVE ORDER command
  - Simplest way to get z/OS service
  - Can automate service acquisition using local batch scheduling tools
  - Alternatively, you can use Shopz or the ServiceLink z/OS ESO option
- No changes to corrective service ordering
- For more information:
  - http://www.ibm.com/software/shopzseries
  - http://www.ibm.com/ibmlink

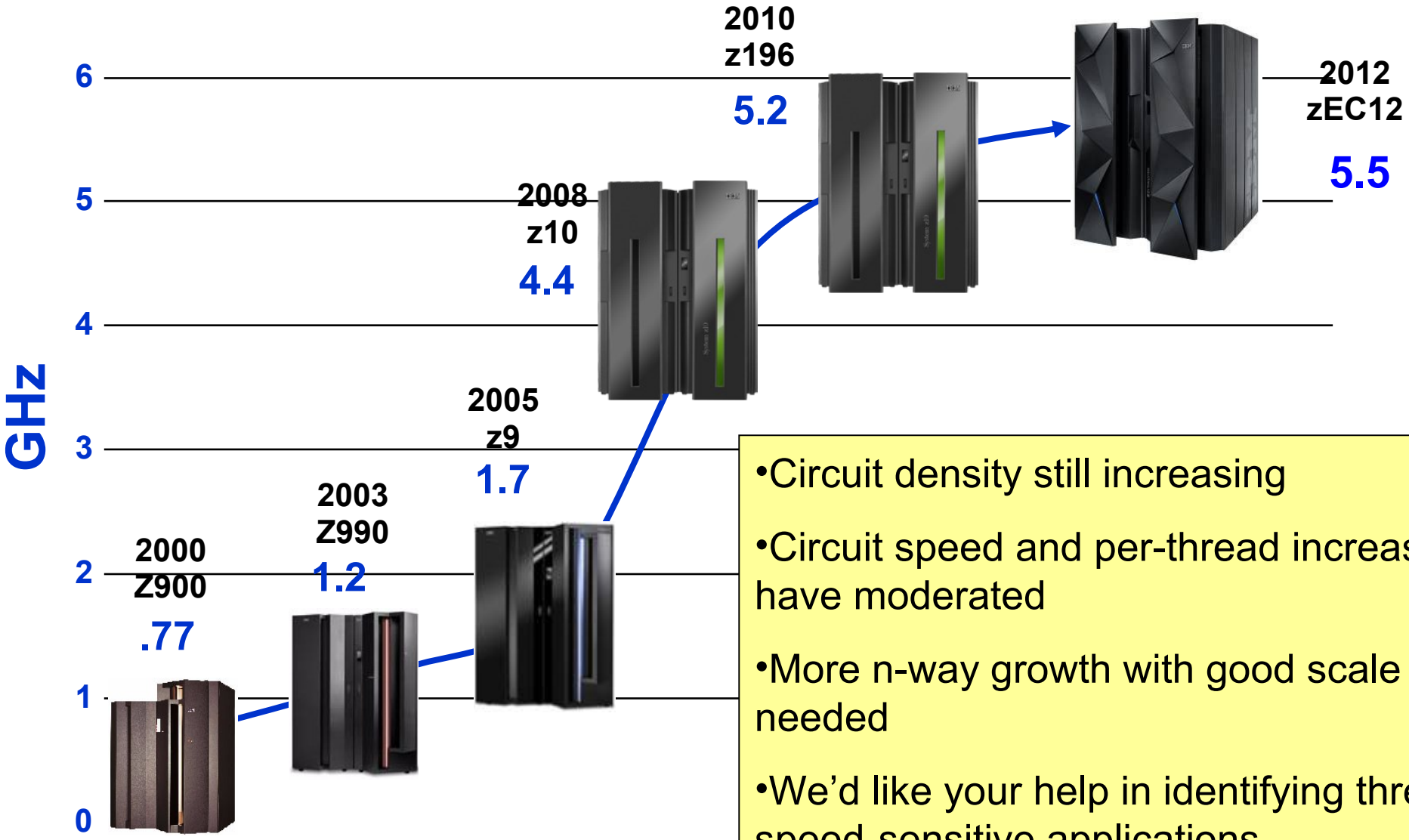
Software Delivery Reminder*

Secure z/OS Software Delivery

- Previously IBM planned to remove support for unsecured FTP connections
  - ~~**October 1, 2013**~~
- We got some feedback that more time to transition to secured FTP connections was needed
- IBM now plans to extend the date before this option is eliminated
- Secured connections will still be required eventually
- Take steps now to position your enterprise for the required withdrawal of standard FTP connections
- If you plan to use FTPS, IBM recommends that you visit the Connectivity Test website to verify your system setup and start using FTPS to download your order.
- No change is required for Download Director with encryption
- Connectivity Test web site in advance:

https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en_US&sour

Another Look at the Frequency Curve



- Circuit density still increasing
- Circuit speed and per-thread increases have moderated
- More n-way growth with good scale needed
- We'd like your help in identifying thread-speed-sensitive applications
- Help enable system growth through parallelism by sending SMF30s to IBM

We'd like your help!

1. Collect data for reporting on top CPU-consuming tasks

- Need the z/OS PTF for OA39629
  - Captures top CPU-consuming TCB for each address space
- Generate Type 30 interval records

2. Send the data to IBM

- Preferred: RMF, MXG, MICS, or TDS reports on SMF 30 data
  - MXG 30.04 with Change 30.119
  - MICS
  - TDS V181 with PTF for APAR PM75066 MAX_CPU_TASK_PCT and MAX_CPU_TASK columns
  - (PGM name on EXEC statement will aid in analysis)
- Also accepted: Raw SMF30 data
- Send data and any questions to:

Mark Wisniewski (d86maw1@us.ibm.com)

Statements of Direction*

* Statements regarding IBM future direction and intent are subject to change or withdrawal, and represent goals and objectives only.

Statements of Direction*

- **Enhanced RACF password encryption algorithm planned**
  - Will be designed to provide improved cryptographic strength in RACF password algorithm processing
  - Intended to help protect RACF password data in the event that a copy of a RACF database becomes inadvertently accessible.

- **New function is planned for z/OSMF V2.1:**
  - Support for the Microsoft™ Internet Explorer 10 browser
  - OpenSSH SFTP support for the Incident Log
  - Integrated management of generated jobs in the Software Management application
  - Workflow improvements
  - z/OSMF REST services support for editing and browsing files and data sets.

* Statements regarding IBM future direction and intent are subject to change or withdrawal, and represent goals and objectives only.

Statements of Direction*

- **z/OS V2.1 is planned to be the last z/OS release to provide software support for several TCP/IP device drivers**
  - IBM recommends migrating to more recent device types, such as OSA-Express QDIO and HiperSockets™
  - Planned to be removed:
    - Asynchronous Transfer Mode (ATM)
    - Common Link Access To Workstation (CLAW)
    - HYPERChannel
    - Channel Data Link Control (CDLC)
    - SNALINK (both LU0 and LU6.2)
    - X.25

- **Note: Support for SNA device drivers is not affected.**

* Statements regarding IBM future direction and intent are subject to change or withdrawal, and represent goals and objectives only.

Statements of Direction*

- **IBM intends to remove the SMTPD NJE Mail Gateway and Sendmail mail transports from z/OS Communications Server in the future**
  - If you use the SMTPD NJE Gateway to send mail, IBM recommends you use the existing CSSMTP SMTP NJE Mail Gateway instead.
  - The Sendmail client program can also be used to send mail messages
    - Replacement function using CSSMTP as the SMTP transport planned; will be designed to not require application programming changes
    - No replacement function planned to support using SMTPD or Sendmail as a (SMTP) server for receiving mail for delivery to local TSO/E or z/OS UNIX System Services user mailboxes, or for forwarding mail to other destinations.

* Statements regarding IBM future direction and intent are subject to change or withdrawal, and represent goals and objectives only.

Statements of Direction*

Reminders:

- IBM intends to provide zEDC support for BSAM and QSAM in 1Q14
  - Intended to help you save disk space, improve effective channel and network bandwidth…
  - …without incurring significant CPU overhead…
  - …and, improve the efficiency of cross-platform data exchange
- IBM plans to provide support for DFSMSdss to exploit zEDC by the end 3Q14
  - Designed for DUMP and RESTORE, and when DFSMShsm uses DFSMSdss as a data mover
  - Intended to provide efficient compression with lower CPU overheads than the processor- and software-based compression methods already available.

Statements of Direction*

Reminders:

- IBM intends to provide exploitation of the Flash Express feature on zEC12 and zBC12 servers with CFLEVEL 19 for certain coupling facility list structures in the first half of 2014
  - Designed to allow list structure data to be migrated to Flash Express memory as needed when the consumers of data do not keep pace with its creators
  - … migrate it back to real memory to be processed later
  - With WebSphere MQ for z/OS Version 7 (5655-R36), expected to provide significant buffering against enterprise messaging workload spikes
  - Potentially allowing several hours' data to be stored without causing interruptions in processing.
  - RMF planned to provide measurement data and reporting capabilities

Statements of Direction*

Reminders:

- z/OS V2.1 is planned to be the last release to include Version 1 of the Standards Based Linux Instrumentation for Manageability (SBLIM) CIM client for Java
  - Version 2 of the SBLIM client, which is designed to be a JSR48-compliant implementation, is included in z/OS V1.13 and planned to be included in z/OS V2.1
  - IBM recommends that users of SBLIM Version 1 convert to Version 2
- z/OS V2.1 is planned to be the last release to support the SNMP subagent function of Infoprint Server for communication with PSF-managed printers.
  - IBM recommends you use the existing functions in z/OS Infoprint Central instead
- IBM intends for z/OS V2.1 to be the last release to support the GATEWAY configuration statement in the TCP/IP profile
  - Use the BEGINROUTES/ENDROUTES configuration block to replace GATEWAY

Statements of Direction*

Reminders:

- The Cryptographic Support for z/OS V1R12-R13 web deliverable is planned to be the last level of ICSF to support IBM eServer™ zSeries® 800 and 900 (z800, z900) servers
  - Future levels of ICSF are planned to require an IBM eServer zSeries 890 and 990 (z890, z990) or later server
  - Important! This is the same level of ICSF planned to be incorporated in z/OS V2.1, but z/OS V2.1 itself is planned to require an IBM System z9 EC, IBM System z9 BC, or later server
- z/OS V2.1 is planned to be the last release to include the IBM HTTP Server Powered by Domino® (IHS powered by Domino)
  - IBM recommends you use the IBM HTTP Server Powered by Apache, which is available in z/OS Ported Tools
  - IBM plans to provide documentation help with migration to IBM HTTP Server Powered by Apache
- z/OS V2.1 is planned to be the last release to support the z/OS BookManager® Build optional feature

Statements of Direction*

Reminders:

- z/OS V1.13 is the final release for which the IBM Configuration Assistant for z/OS Communications Server tool that runs on Microsoft Windows is provided by IBM
  - Currently an as-is, nonwarranted web download
  - Use the supported z/OSMF Configuration Assistant application instead
- z/OS V1.13 is the last release to support a staged migration for JES2 and JES3. Future releases will require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.
- z/OS V1.13 is the last release to support changing the default Language Environment runtime options settings using SMP/E-installable USERMODs. IBM recommends using the CEEPRMxx PARMLIB member to set these options
- With the introduction of the SAF mode authorization in z/OSMF 1.13, IBM intends to withdraw support for Repository mode authorization in a future release. Both modes are being currently supported to allow customers time to migrate to the new authorization mode.

Reminders:

- z/OS V2.1 supports these System z server models and later server models:
  - IBM System z9 Enterprise Class and IBM System z9 Business Class
  - IBM System z10 Enterprise Class (z10 EC™) and IBM System z10 Business Class™ (z10 BC™)
  - IBM zEnterprise 196 (z196) and IBM zEnterprise 114 (z114)
  - IBM zEnterprise EC12 (zEC12) and IBM zEnterprise BC12 (zBC12)
- z/OS Version 2 is planned to require these DASD control units, or later ones:
  - 3990 Model 3 or 3990 Model 6
  - 9393
  - 2105
  - 2107
  - 2421, 2422, 2423, or 2424

Handy Resources

System z Social Media

- **System z official Twitter handle:**
  - @ibm_system_z
- **Top Facebook pages related to System z:**
  - Systemz Mainframe
  - IBM System z on Campus
  - IBM Mainframe Professionals
  - Millennial Mainframer
- **Top LinkedIn Groups related to System z:**
  - Mainframe Experts Network
  - Mainframe
  - IBM Mainframe
  - System z Advocates
  - Cloud Mainframe Computing
- **YouTube**
  - IBM System z
- **List Servers**
  - IBM-MAIN
  - MVS-OE
  - RACF-L
  - IBMTCP-L
  - ISPF-L
  - LINUX-390
  - TSO-REXX (and TSOREXX)
  - VMESA-L
  - VSE-L

- **Leading Blogs related to System z:**
  - Evangelizing Mainframe (Destination z blog)
  - Mainframe Performance Topics
  - Common Sense
  - Enterprise Class Innovation: System z perspective
  - Mainframe
  - MainframeZone
  - Smarter Computing Blog
  - Millennial Mainframer
  - SHARE.org

z Favorites Page

Handy links to:

- Just about everything!
  - z/OS platform libraries
  - z/OS wizards
  - Downloads
  - Support
  - Redbooks®
  - Education Assistant
  - WebSphere courses
  - LookAt (and LookAt Mobile Edition)
  - Product info
  - & lots more…
- URL: http://www.ibm.com/developerworks/university/systemz/index.html

z/OS Basics Page

z/OS basic skills information center

New to z/OS?

New to z/OS? You've come to the right place! The z/OS basic skills information center is the fastest way to learn and become productive on z/OS.

Once you've learned the basic z/OS concepts and skills presented here, you can find the z/OS product documentation at the z/OS Internet Library Web site.

What's New

In June 2010, We added an enhanced "online workloads" section with new detailed information on IMS and DB2 for z/OS.

- **Mainframe concepts**
  HTML | PDF
  Get started with the mainframe.
- **z/OS concepts**
  HTML | PDF
  Get started with the fundamental concepts of z/OS.
- **Application programming on z/OS**
  HTML | PDF
- **z/OS system installation and maintenance**
  HTML | PDF
  What the system programmer does.
- **Data and storage management on z/OS**
  HTML | PDF
  All about storing and managing data on z/OS.
- **Online workloads for z/OS**

What's new

- Find out what's new in the z/OS basic skills IC

Related links

- z/OS Internet Library

IBM Academic Initiative

- Mainframe education opportunities

Podcast

- Who uses mainframe computers? podcast

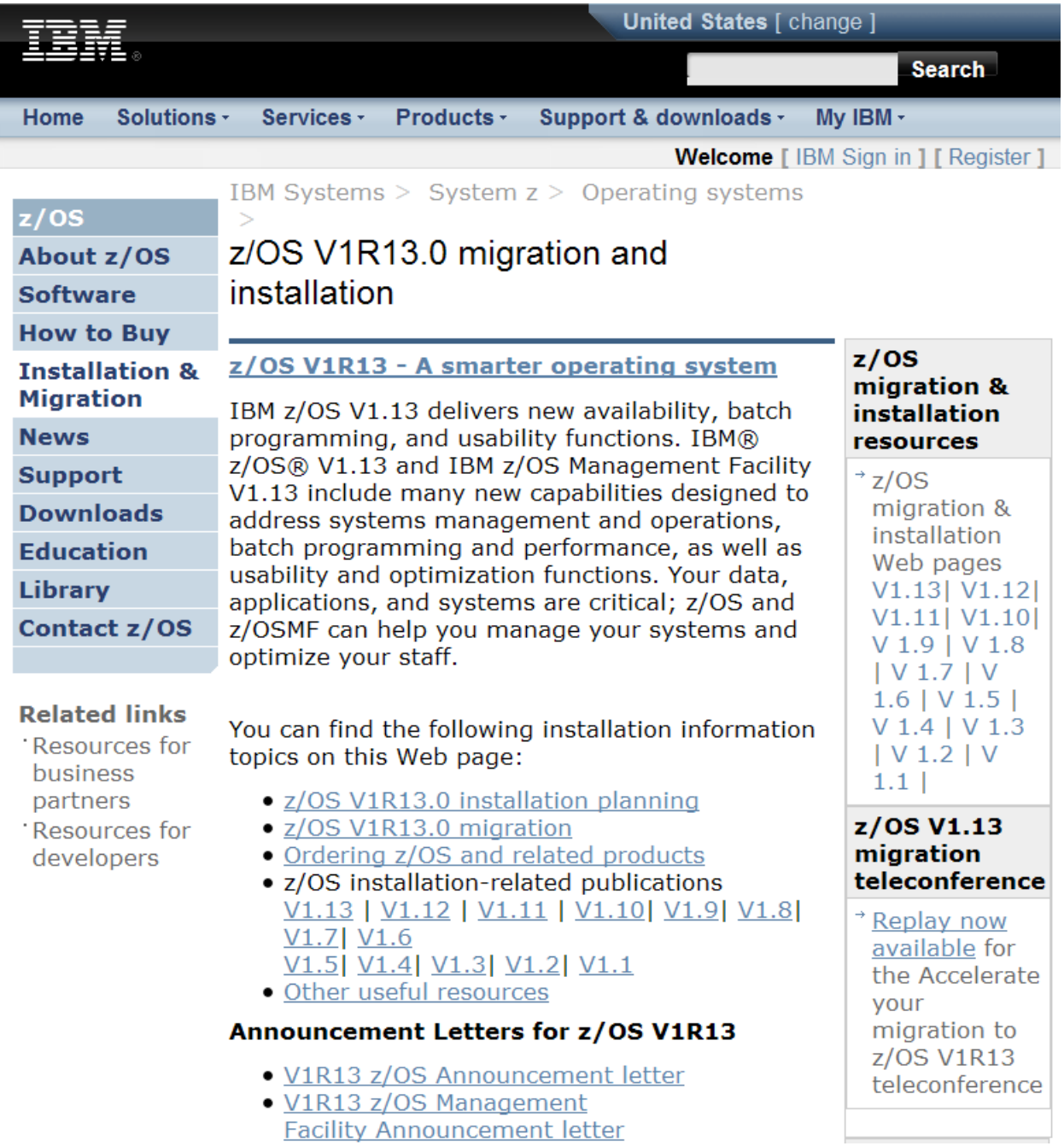
Some resources:

- Entry-level books on PDF
- Reusable JCL collection
- 30-minute courses
- Glossary of z/OS terms

Handy links to:

- z/OS Library
- IBM Academic Initiative
- URL: http://publib.boulder.ibm.com/infocenter/zos/basics/index.jsp

z/OS Installation Page



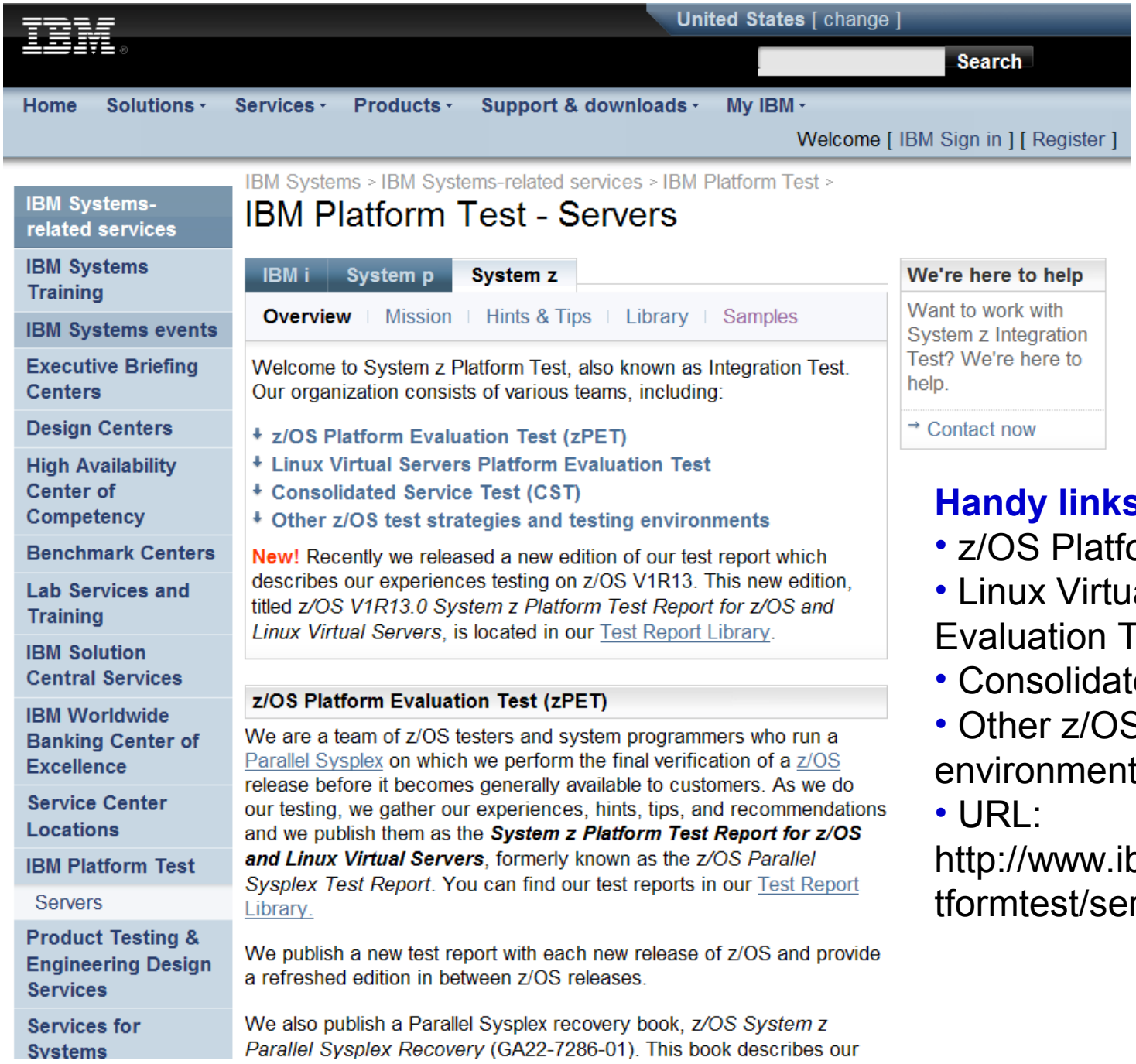
Some resources:

- Related books on PDF
- Telecon replay
- Hints & Tips
- Samples

Handy links to:

- Related books in BookManager format
- Minimum levels of IBM products that run on z/OS V1R13.0
- ShopzSeries
- Announcement letters
- CPPUPDTE documentation
- URL: http://www.ibm.com/systems/z/os/zos/installation/

z/OS Platform Test Website



Some resources:

- Test experience reports about HW, OS, middleware
- Hints & Tips
- Samples

Handy links to:

- z/OS Platform Evaluation Test
- Linux Virtual Servers Platform Evaluation Test
- Consolidated Service Test (CST)
- Other z/OS test strategies and testing environments
- URL: http://www.ibm.com/systems/services/platformtest/servers/systemz.html

System z Academic Initiative Page

Some resources:

- Textbooks on PDF
- Sample Mastery exams
- IBM System z Job Board

Handy links to:

- System z Seminar Schedule
- Upcoming technical conferences
- Online resources
- URL: http://www.ibm.com/developerworks/university/systemz/index.html


IBM
The Future Runs on System z


Optimize your z/OS environment
z/OS