



IBM Systems & Technology Group

What's New in z/OS V2.1

Second Beantown Edition
Session 13581

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DataPower*	DFSMSrmm	FICON*	IMS	Parallel Sysplex*	SYSREXX	System z9*	z10 EC	
DB2*	DFSORT	FlashCopy*	InfinBand*	PR/SM	RMF	System z10	z/Architecture*	
DFSMS	Domino*	HiperSockets	Language Environment*	RACF*	SYSREXX	System z10 Business Class	zEnterprise*	

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

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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 Server
Wednesday 11:00

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: <ul style="list-style-type: none"> 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)

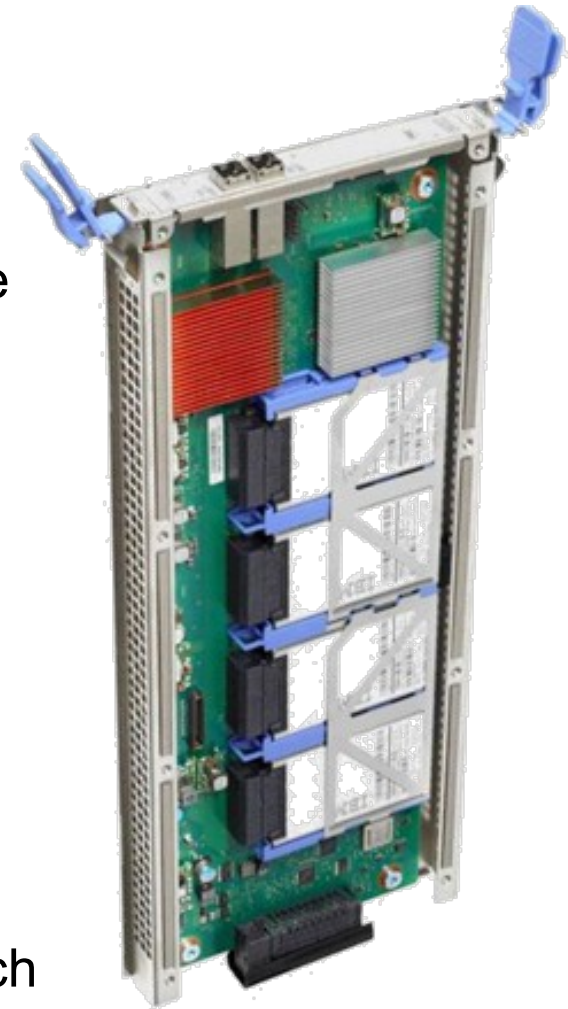


(z/OS support in blue + red)

FICON Express8S
24K subchannels for FICON channels
IBM zEnterprise Data Compression (zEDC) capability using zEDC Express
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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: <ul style="list-style-type: none"> ▪ 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)



**Flash Express Introduction,
Uses and Benefits
Wednesday 11:00**

**Flash Express Setup,
Management and
Configuration
Wednesday 1:30**

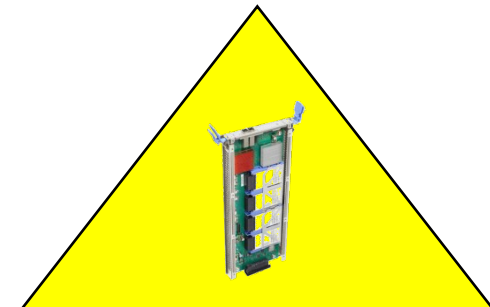
**Experiences with Using IBM
zEC12 Processor Flash
Express Memory
Tuesday 1:30**

z/Architecture® Extensions

• CF support for Flash Express*

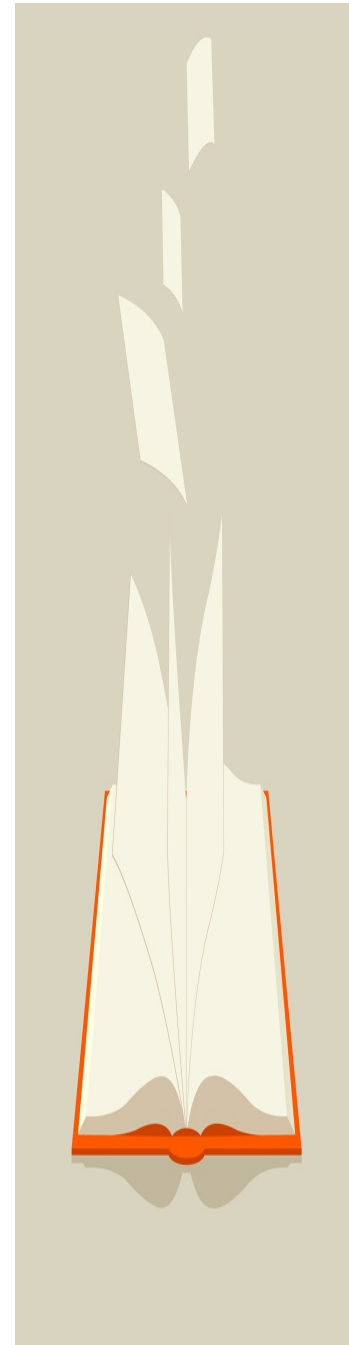
- Requires z/OS V2.1 running on zEC12 or zBC12 servers with CFLEVEL 19
- Support Flash Express for certain Coupling Facility list structures
- Can allow keyed list structure data to be migrated to Flash Express memory
 - For example, when data consumers do not keep up with creators
 - Designed to migrate 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*

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



Large (1MB) Page Support

- **Introduced in z/OS R10, PTF for z/OS R9**
 - Requires a IBM System z10[®] or later server
 - Implementation on z/OS R10-R12 fixes all large pages
 - z/OS V1R13 RSM Enablement Offering web deliverable supports pageable large pages on zEC12 and zBC12 servers
 - Note: Minimum real memory for pageable large pages is 4 GB
- **Current exploiters of fixed large pages:**
 - Java™ 6 SR1 and later, and its exploiters
 - Including WebSphere Application Server
 - z/OS R11 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)
- **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 (planned*)
 - 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, for the same reasons
 - 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)
 - Plans to exploit for DB2 buffer pools*
 - Available for other large structures, other users
 - Also available 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



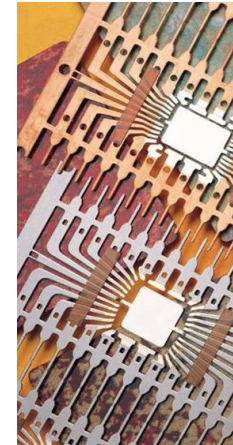
z/Architecture Extensions

• 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 pre-load 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

Transactional Execution Facility - What Is It and How Can You Use It to Your Advantage?
Thursday, August 15, 2013: 1:30

ZOMG The Next COBOL Compiler Has Arrived!
Monday 11:00

z/Architecture Instructions Added for EC12
Wednesday 1:30

Coupling

- **“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
 - 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, hybrid 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, a new set of interrupts to be used by z/OS to 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 and OA38781**

zEnterprise Data Compression

- New hardware feature and a corresponding z/OS feature
- Support for industry standard zlib compression
- SMF data compression
 - On zEC12, zBC12 with the compression feature and z/OS V2.1 with the zEDC feature
 - Can compress SMF data written to log streams
 - New SMFPRMxx keywords, corresponding IFASMFDDL support
 - Software-based decompression for z/OS V1.12 and V1.13 with the PTF for APAR OA41156
- BSAM/QSAM data compression
 - On zEC12, zBC12 with the compression feature
 - Planned for 1Q2014*
- DFSMSdss™ data compression
 - On zEC12, zBC12 with the compression feature
 - Planned for 3Q2014*
- Java and IBM Encryption Facility for z/OS support
 - On zEC12, zBC12 with the compression feature
 - 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)
 - Concurrent support for IBM Encryption Facility for z/OS (5655-P97) planned

**MVS Core
Technologies
Project (MVSE)
Opening and WSC
Hot Topics
Monday 11:00**



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 CS: Shared
Memory Communications -
RDMA (SMC-R), Parts 1 and 2
Tuesday 9:30 & 11:00**

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



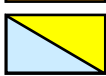
DFSMSHsm™ Storage Tiers, Better JES3 support for SMS-managed tape, SMS Management Class support for tape, zBX SMF performance records, DCM support for cascaded switches, z/OS UNIX Automount improvements, ...

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 or 3 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 ¹	R12	
R11	X	X	X	X	X	X	X	X	X	9/12 ²	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	9/13
V2R2²										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

- 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



- 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...



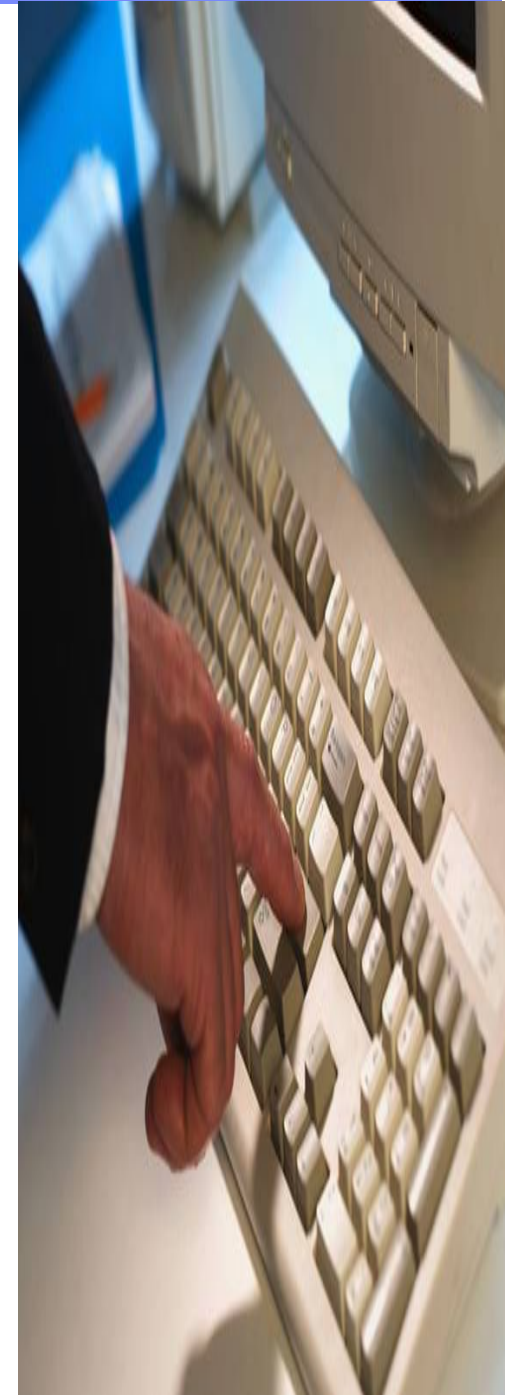
- **With z/OS Version 2, IBM remains committed to z/OS system integrity.**
- System integrity is defined for z/OS as the inability of any program not authorized by a mechanism under the installation's control to:
 - Circumvent or disable store or fetch protection; or,
 - Access a resource protected by 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.



z/OSMF Improvements

- New z/OSMF release with the new z/OS release...
- *And, can you spell “SPEs”?*
- New functions available for z/OSMF V1.13 and included in z/OSMF V2.1 are designed to provide:
 - More actions for software instances in Software Management (APAR PM73833)
 - Linking between Workload Manager and Resource monitoring (APARs PM74508 and PM74517)
 - Capacity Provisioning support for creating, editing, & activating configurations and policies (APAR PM74519)
 - Usability enhancements for Incident log and Classic ISPF (APARs PM74518 and PM74507)
 - 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 (APAR PM74502)

z/OSMF Hands-on Lab
Monday 3:00
Friday 11:00



z/OSMF improvements

- z/OSMF now 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!



**The New and Improved
z/OSMF 2.1
Tuesday 9:30**

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, drive key SMP/E reporting functions
 - *Available now for z/OSMF V1.13 on z/OS V1.13 with the PTF for APAR PM73833*
- **Capacity Provisioning application improvements**
 - Support to create and edit domain configurations and policies
 - IFL & SAP reporting support in addition to CP, zAAP, zIIP support
 - Designed to let you install domain configurations and policies
 - *Available now for z/OSMF V1.13 on z/OS V1.13 with the PTF for APAR PM74519*

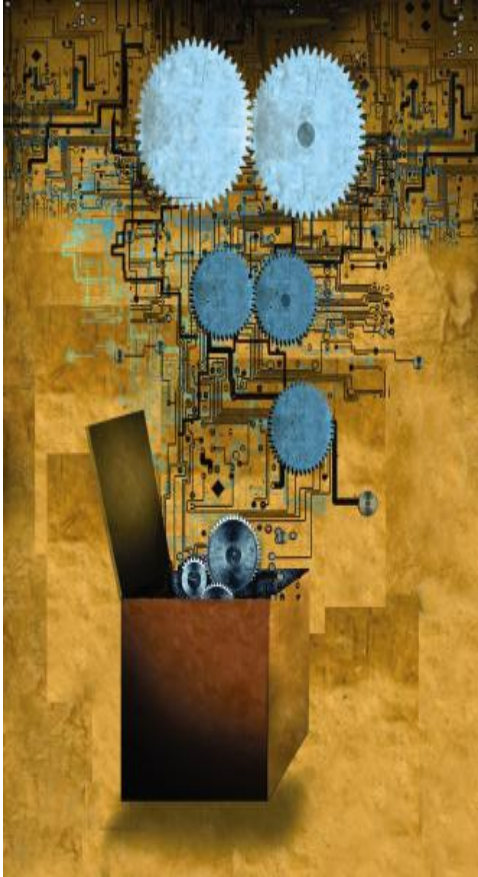
z/OSMF Software Management Capabilities Thursday 11:00



**z/OSMF Configuration Made Easy
Wednesday 8:00**

- 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)



**z/OS 2.1 Update
Discovery and
Autoconfiguration
Update
Tuesday 4:30**

- **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!)



**z/OS 2.1 CPC-wide
Dynamic Activate
Wednesday 3:00**

**What's New in z/OS
2.1 Hardware
Configuration
Definition
Tuesday 11:00**

**What's New with
DFSMS™ ICF Catalog
and IDCAMS
Monday 11:00**

- 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†!

† Partial?

- 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

**Old and New Tracking
Facility - From Console
Tracker to Generic Tracker
Tuesday 4:30**



- **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 XTIOs 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 3:00 & 4:30

- **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 Latest and
Greatest
Monday 3:00**

- **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 1:30**

- **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 XTIOE 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

- **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

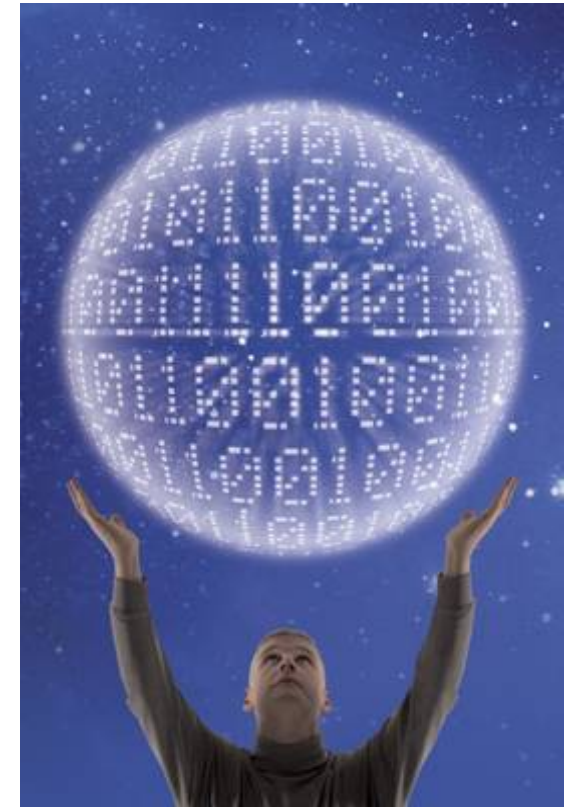
**SDSF Product
Update for z/OS 2.1
Tuesday 3:00**



Top 39er!

- 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)



**What's New with DFSMS
ICF Catalog and IDCAMS
Monday 11:00**

**Unclog Your Systems
With z/OS 2.1 - Something
New and Exciting in
Catalog Parts 1 & 2
Tuesday 1:30 & 3:00**

- **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



- 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



- CF structure rebuild performance
 - Before z/OS V2.1, all CF structures are 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

- **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: New
Features in z/OS 2.1
Tuesday 9:30**



- **GDG Support for PDSEs**

- In addition to sequential, direct, and PDS GDGs

- **BCPii GetBulk Support**

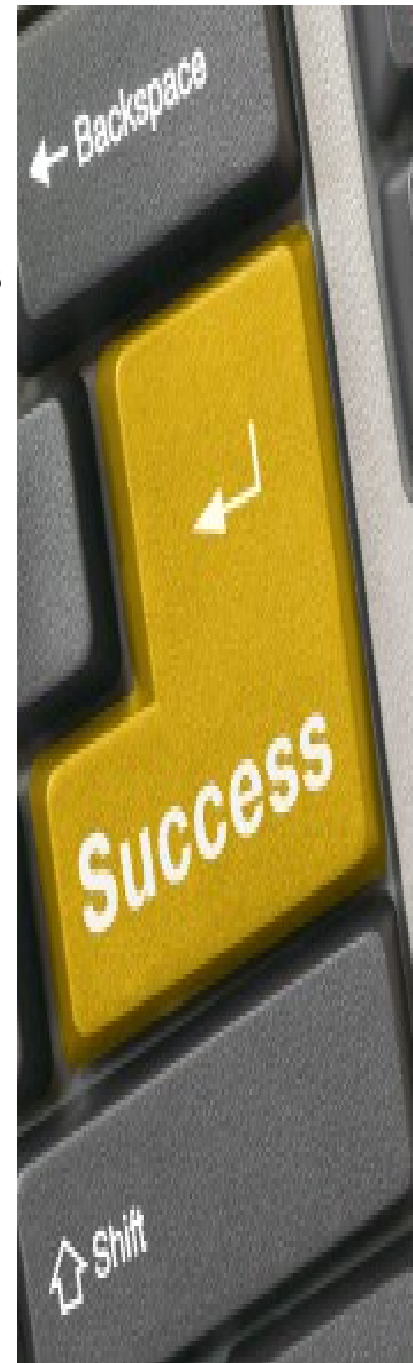
**What's New in BCPii in z/OS 2.1? Full
REXX Support and Faster Data Retrieval
Tuesday 3:00**

- 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

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 9:30



- **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 JES2
Product Update
and Latest
Status
Tuesday 9:30**



**What's New
with DFSMS
ICF Catalog
and IDCAMS
Monday 11:00**

- **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
Thursday 1:30**

- 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

What's New With DFSORT in z/OS 2.1 Tuesday 11:00

DFSMS DFSORT: The ICETOOL Cometh. Wednesday 9:30



- **Bigger non-SMS-managed VSAM Linear Data Sets**
 - New design limit is over 45 IB
 - 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



**What's new in
DFSMSdss
Thursday 8:00**

z/OS JES3 Product Update and What's New in z/OS 2.1?

Tuesday 4:30

- 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!
- 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!

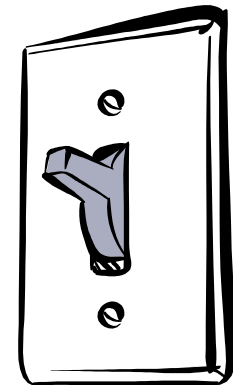
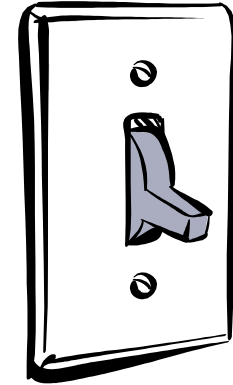



Top 39er!

- **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



- **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





- **New MODIFY VLF Command**

- Designed to allow you to 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

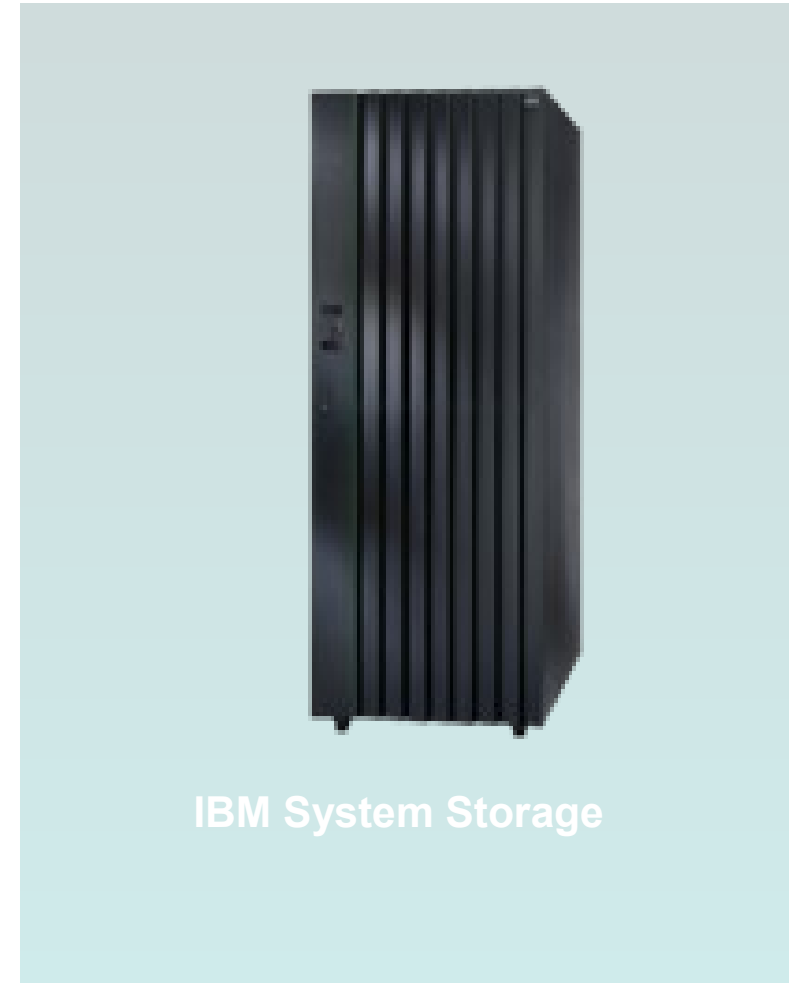
Top 39er!

- **RPCBIND/NFS re-registration**

- RPCBIND and NFS Servers designed to allow the NFS Server to re-register 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

Recent z/OS Enhancements You Can Use to Reduce Down Time
Thursday 1:30

- **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



**A New Frontier in the
Evolution of Space
Management ... Buckle In!
Monday 1:30**

**A New Frontier in the
Evolution of Space
Management...Blast Off!
Wednesday 1:30**

- 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



- **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)



- **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 Update
for z/OS 2.1 and 1.13
Wednesday 9:30**

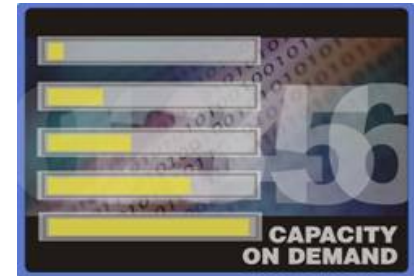
- **RMF enhancements:**

- 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, with SMF74-1 and SMF79-9 support
 - Also available on z/OS V1.12 and z/OS V1.13 with the PTF for APAR OA39993
- Global Mirror collision reporting in RMF Monitor I and SMF74-5 records
 - Also available on z/OS V1.12 and z/OS V1.13 with the PTF for APAR OA40376
- More information about CF links in Monitor I
 - Also available on z/OS V1.12 and z/OS V1.13 with the PTF for APAR OA37826



**RMF: The Latest
and Greatest
Wednesday 8:00**

- 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



**Capacity
Provisioning
Update for
z/OS 2.1
Monday 3:00**

- RMF to provide SMF 104 Records for zBX Activity

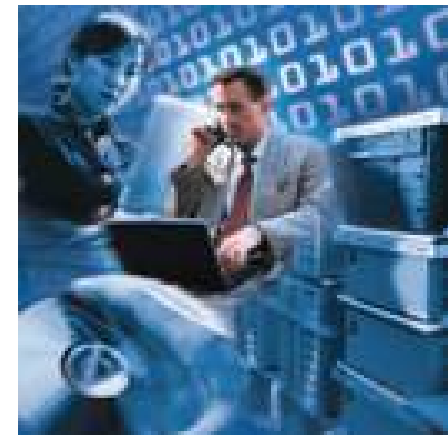
- Basic performance metrics for:
 - Linux® on IBM System z
 - Linux on IBM System x® running on zBX blades
 - AIX® running on zEnterprise BladeCenter Extension (zBX) blades
 - Microsoft® Windows® 2008 Server running on zBX blades (new!)
- Help support performance management, capacity planning activity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

- 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



- **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



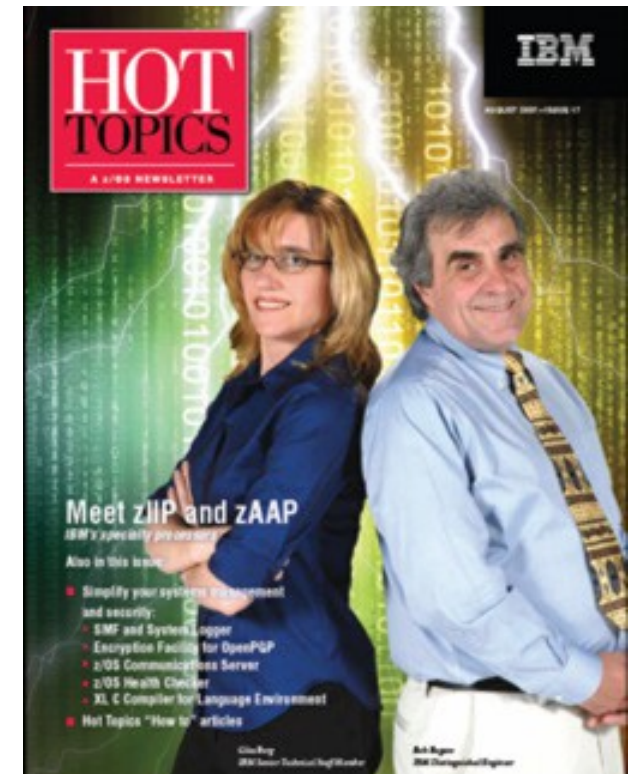
**z/OS SMF Logstream
Mode: Update and User
Experience Thursday
11:00**

- **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**



- **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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- 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/>

- 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/>

**ICSF Update
2013
Wednesday
8:00**

- **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



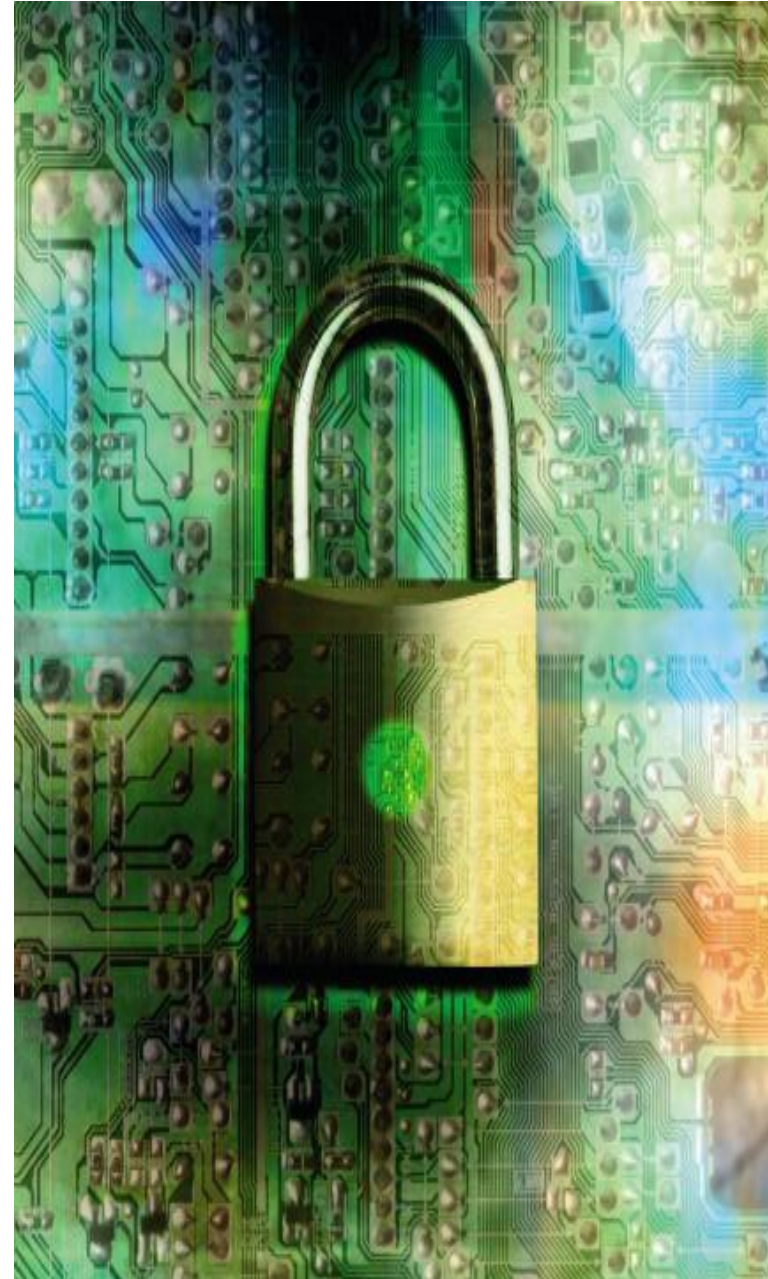
**RACF/PKI
Update 2013
Tuesday 9:30**



- **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

- **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



- 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)  
/*
```



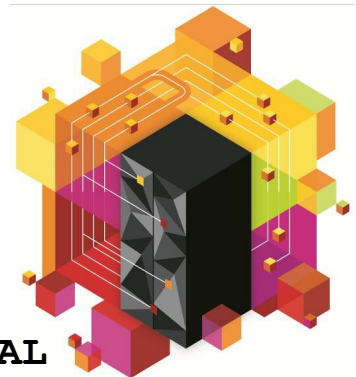
- Still more Batch Modernization...
 - New PARMDD EXEC keyword support for longer parameter strings
 - Mutually exclusive with PARM keyword
 - No other changes required for unauthorized programs
 - Authorized programs must be bound using LONGPARM or system will terminate the job at step initiation
 - 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

• 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

**Batch Modernization
in JES2 z/OS 2.1**

Tuesday 1:30

**z/OS 2.1 JES2 Symbol
Services and Other**

New Services

Thursday 4:30



- 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
- 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**

**z/OS 2.1 Print Products Latest
Status & New Features
Thursday 8:00**

- 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

- **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'FFFFFFFF') sum of mutexes and condition variables per shared segment
 - 4G-1 (x'FFFFFFFFF') 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
- **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
- **Also:**
 - Commonly-available UNIX services added for z/OS UNIX file I/O
 - New functions for converting multibyte Unicode to wide character data

**Heap Damage, Get
Into the Zone!
Friday 8:00**

**Heapzones and Pageframes and
Blocks, Oh My! (or We're Off to
See the z/OS 2.1)
Tuesday 4:30**

- **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



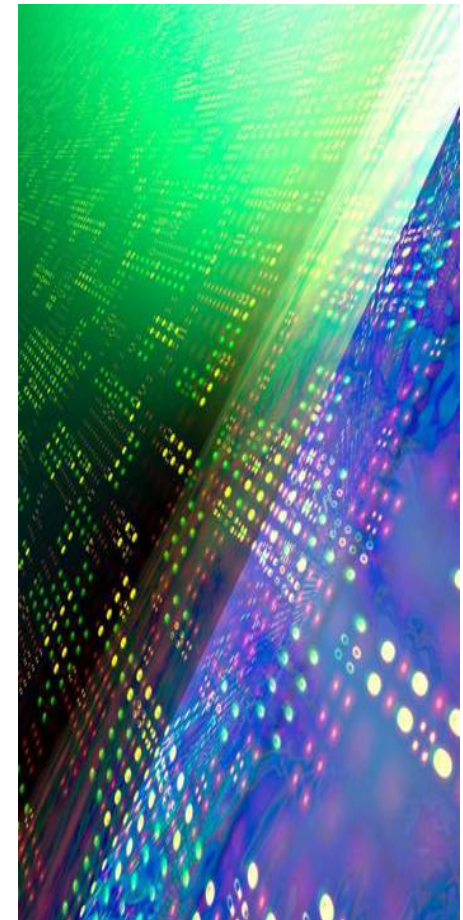
- **VSAM**

- 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 IXCNONE 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

**z/OS XCF
Note Pad
Usage and
Exploitation
Thursday 4:30**



- **Unicode 6.0 Support in Case, Collation, and Normalization Services**
 - These services designed to meet the Unicode 6.0 standard
- **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

**“What do you mean the binder's not working!”- A Guide to Resolving Unresolved Symbols
Monday 11:00**

Using the Binder to assemble your application together, Wednesday 11:00



- 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:
 - 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
- *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
- z/OS V2.1 XL C/C++ is designed to provide additional information for the debugger to use to make it easier to perform source code diagnosis while preserving better levels of application serviceability

**Make Your PL/I and C/C++ Code Fly
With the Right Compiler Options
Thursday 4:30**

- 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



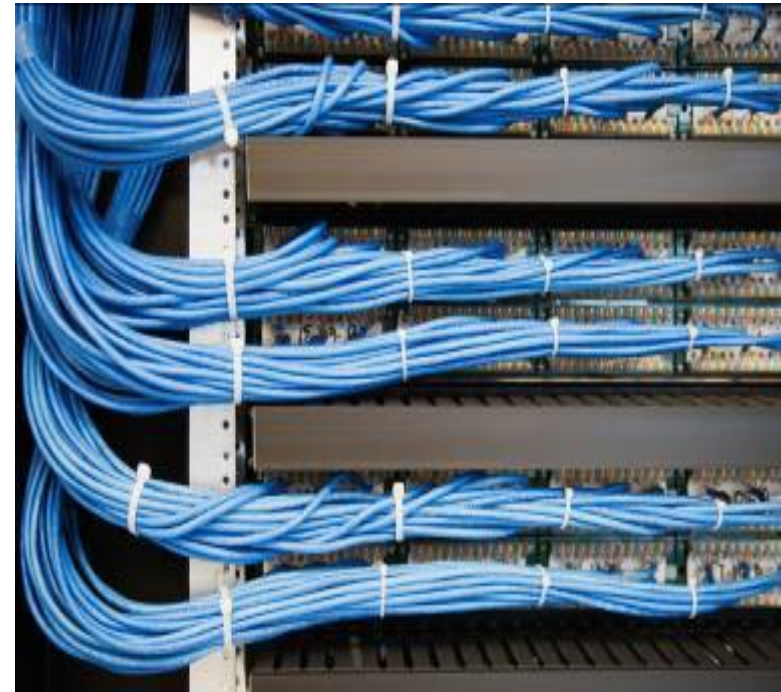
- **Enhanced fast path socket support**

- 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 Communication Server
Technical Update, Part 1 & 2
Monday, 9:30 and 11:00**



- **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



**Safe and Secure
Transfers with z/OS FTP
Wednesday 9:30**

- **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

**z/OS Communication
Server Intrusion
Detection Services
Wednesday 3:00**

- **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



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>

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



Statements of Direction*



New news

- IBM intends to provide zEDC support for BSAM and QSAM by the end 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.
- IBM Encryption Facility for z/OS (5655-P97) planned to exploit zEDC when the Java release supporting zEDC becomes available
 - Intended to complement the software compression support that exists today with Encryption Facility OpenPGP support
- IBM plans future updates of IBM 31-bit and 64-bit SDK for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44) (IBM SDK 7 for z/OS Java) to provide exploitation of the zEDC Express feature and of Shared Memory Communications-Remote Direct Memory Access (SMC-R)
 - In addition, improved integration of Java with core z/OS workload management facilities is planned to provide new Java APIs that use the WLM SYSEVENT QRYCONT macro, designed to support adaptive concurrent online and batch workloads in Java-based processing environments such as WebSphere Compute Grid.



New news

- 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



New news

- 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 V1.13 is the last release to provide support for Integrated Call Level Interface (ICLI)
 - You can use DRDA instead
- 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



New news

- 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

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.

- 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

**And...an IBM SHARE
“Bonus” ...**

IBM System z Mastery Certification - Hands-On LAB

Monday 6:00

Room 202 (Hynes Convention Center)

Speaker: Kathy Pfeiffer(IBM Corporation)

The IBM System z and z/OS Fundamentals Mastery test is a worldwide recognized, proctored exam that provides an avenue for both students and professionals to distinguish their z/OS expertise from others by testing knowledge contained in the IBM Introduction to the New Mainframe: z/OS Basics textbook. The fee to take the test is normally \$95, however, the IBM Academic Initiative System z team is offering this test to you at no cost during the conference. The test provides:

- A reliable, valid, and fair method of assessing z/OS knowledge**
- A method of building and validating the knowledge of individuals and organizations**
- A recognized tool for professional development**

To prepare, study the textbook at:

www.redbooks.ibm.com/abstracts/sg246366.html. The test is timed (90 minutes) and multiple choice format.

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](#)

IBM Systems > System z > Operating systems >

MAIN FRAME SERVERS

zFavorites for System z



zFavorites for System z is a collection of links to helpful System z Web sites. It has links to various interest categories, such as products, product documentation, software and solutions, support and more. Use the navigation bar to the left to select your area of interest.

Tip: Use your browser's "Find In Page" function, to help locate the subject you are interested in

Featured links

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- [z/OS Internet Library](#)
- z/OS information centers:
 - | [Basic Skills](#) | [V1R11](#) | [V1R12](#) | [V1R13](#) |
 - [IBM Education Assistant for z/OS](#)
 - [IBM Academic Initiative for zSeries](#)
 - [IBM WebSphere Training \(Free Web-based courses\)](#)
 - [LookAt: Messages](#)
 - [LookAt Mobile Edition**](#)
 - [IBM trials and betas](#)

Products

[Back to the top](#)

- [IBM System z](#)
- [z Hardware](#)
- [z Operating systems](#)

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>

Related links

- Resources for business partners
- Resources for developers



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>

The screenshot shows the IBM website's navigation bar with the IBM logo, a search box, and a menu with options like Home, Solutions, Services, Products, Support & downloads, and My IBM. Below the navigation bar, there's a breadcrumb trail: IBM Systems > System z > Operating systems > z/OS. The main content area is titled 'z/OS V1R13.0 migration and installation'. It features a sidebar with links for 'z/OS', 'About z/OS', 'Software', 'How to Buy', 'Installation & Migration', 'News', 'Support', 'Downloads', 'Education', 'Library', and 'Contact z/OS'. The main text describes the new capabilities of z/OS V1.13, such as batch programming and usability functions. It also includes a 'Related links' section with various installation planning and migration resources, and an 'Announcement Letters for z/OS V1R13' section with links to V1R13 z/OS and Management Facility announcement letters. On the right side of the page, there are two boxes: 'z/OS migration & installation resources' with a list of version links (V1.13 to V1.1) and 'z/OS V1.13 migration teleconference' with a link to a replay now available for the Accelerate your migration to z/OS V1R13 teleconference.

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/>

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Overview | Mission | Hints & Tips | Library | Samples

Welcome to System z Platform Test, also known as Integration Test. Our organization consists of various teams, including:

- ↓ [z/OS Platform Evaluation Test \(zPET\)](#)
- ↓ [Linux Virtual Servers Platform Evaluation Test](#)
- ↓ [Consolidated Service Test \(CST\)](#)
- ↓ [Other z/OS test strategies and testing environments](#)

New! Recently we released a new edition of our test report which describes our experiences testing on z/OS V1R13. This new edition, titled *z/OS V1R13.0 System z Platform Test Report for z/OS and Linux Virtual Servers*, is located in our [Test Report Library](#).

z/OS Platform Evaluation Test (zPET)

We are a team of z/OS testers and system programmers who run a [Parallel Sysplex](#) on which we perform the final verification of a [z/OS](#) release before it becomes generally available to customers. As we do our testing, we gather our experiences, hints, tips, and recommendations and we publish them as the **System z Platform Test Report for z/OS and Linux Virtual Servers**, formerly known as the *z/OS Parallel Sysplex Test Report*. You can find our test reports in our [Test Report Library](#).

We publish a new test report with each new release of z/OS and provide a refreshed edition in between z/OS releases.

We also publish a Parallel Sysplex recovery book, *z/OS System z Parallel Sysplex Recovery (GA22-7286-01)*. This book describes our

We're here to help

Want to work with System z Integration Test? We're here to help.

→ [Contact now](#)

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>

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- Information Management
- Lotus software
- Power: AIX
- Power: IBM i
- Power: Linux
- Rational software
- System z
- Tivoli software
- WebSphere software

Courseware

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Community

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IBM Academic Initiative > Software & hardware > System z Academic Initiative program

Learn Teach Connect Support

Participating schools

↓ Overview ↓ Learn the basics ↓ Get trained

Companies worldwide rely on the leading-edge IBM System z platform.

Overview

 The IBM Academic Initiative System z program seeks to ensure that the next generation of mainframe experts will be available to help more companies and organizations leverage the superior security, availability, scalability, and efficiency of the mainframe. The demand for IT skills is growing, especially for students who have mainframe or enterprise computing skills.

Enterprise Computing: Why you should teach it and your students should learn about it

IBM continues to modernize and simplify the mainframe platform, while partnering with IBM customers, business partners and academia from around the world to build more of the skills that industry demands. There has never been a better time to teach your students about large systems.

- All of the top 25 world banks run their businesses on mainframes.
- 71% of global Fortune 500 companies are System z clients.
- 9 out of the top 10 global life/health insurance providers process their high-volume transactions on a mainframe.

▶ Check out these resources to learn more

IBM System z Mastery Test

 Available to students and professors at testing centers worldwide!

→ Learn more

IBM System z Job Board

 Connecting the mainframe community with students and experienced professionals seeking System z job opportunities

→ Learn more

Call for entries

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/development/university/systemz/index.html>



The Future Runs on System z

Optimize your z/OS environment

