



IBM Systems & Technology Group

What's New in z/OS

Session 8690



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DFSMSdss	IBM eServer	RACF*	System z10 Business Class	
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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	DS8000® DS6000™	TS1130	End of Service	Coexists with z/OS...	Planned Ship Date ²
R7	X	X	X	X	X ⁴	X ³	X ⁴	X ⁴	X	9/08	R9	
R8	X	X	X	X	X	X	X	X	X	9/09 ¹	R10	
R9	X	X	X	X	X	X	X	X	X	9/10 ¹	R11	
R10	X	X	X	X	X	X	X	X	X	9/11	R12	
R11	X	X	X	X	X	X	X	X	X	9/12 ²	R13 ²	
R12	X	X	X	X	X	X	X	X	X	9/13 ²	R14 ²	
R13²	X	X	X	X	X	X	X	X	X	9/14 ²	R15 ²	9/11 ²
R14²	X	X	X	X	X	X	X	X	X	9/15 ²	R16 ²	9/12 ²

Migrating to z/OS 1.12 Parts 1 and 2 (Wednesday, 1:30 and 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. IBM Lifecycle Extension for z/OS V1.7 (5637-A01) was required
4. Fee-based service extension required for support, or for some features

Hardware Support

z/OS and IBM zEnterprise Functions and Features¹

Five hardware models
Increased capacity processors
Up to 15 subcapacity CPs at capacity settings 4, 5, or 6
Up to 3 TB RAIM (real) memory ²
6.0 GB/sec InfiniBand [®] I/O interconnect
8 slot, 2 domain I/O drawer
Concurrent I/O drawer add, remove, replace
Optional water cooling
Optional High Voltage DC power
Optional overhead I/O cable exit
Up to 80 processors per server configurable as CPs, zAAPs, zIIPs, IFLs, ICFs, or SAPs (up to 32-way on R7, 64-way on R9, 80-way on R11)
New and enhanced instructions



Capacity Provisioning enhanced ⁴
Three subchannel sets per LCSS ³
Platform Management from HMC
CFCC Level 17 enhancements ⁴
Up to 128 Coupling Link CHPIDs
Improved processor cache design
Power save functions
Crypto Express3 enhancements ⁵
Secure key HMAC Support
Elliptic Curve Cryptography (ECC) Digital Signatures ³
CPACF enhancements ⁵
Out of order instruction execution
z/OS discovery and auto-configuration (zDAC) ³
OSA-Express3 Inbound Workload Queuing (IWQ) ³

z/OS exploitation in blue

IBM zEnterprise™ Overview: Tuesday 11:00

Everything a z/OS System Programmer Needs to Know to Exploit a z196 Server: Wed 3:00

1. z/OS R7 and z/OS R8 support require IBM Lifecycle Extension for z/OS (5637-A01 or 5638-A01). PTFs required for z/OS R8-R12; refer to the PSP.
2. Maximum of 1 TB per LPAR. Maximum supported by z/OS R7 is 512 GB. z/OS R8 and later are designed to support up to 4 TB per image.
3. z/OS R12 required
4. z/OS R12, or R10 or later with PTFs required
5. Cryptographic Support for z/OS V1.10 through z/OS V1.12 Web deliverable with the PTF for APAR OA33260 required.

Hardware Support

zEnterprise and z/OS Support for New Functions

	Minimum z/OS Level *
Basic zEnterprise server support	1.7 ^{1,2,4,6}
Toleration for more than 64 CPs on a server	1.7 ^{1,2,4}
Crypto Toleration	1.7 ^{1,2,4,5}
HiperDispatch node and cache support	1.10 ^{1,2}
Power Save Mode	1.10 ^{1,2}
CPU Measurement Facility	1.10 ^{1,2}
CF Level 17 exploitation	1.10 ^{1,2,7}
zHPF Response Time Reduction	1.10 ^{1,2}
Three Subchannel Sets	1.10 ^{1,2}
Crypto Exploitation	1.10 ^{1,2,3}
RMF™ Postprocessor Support for 4096-bit Crypto	1.10 ^{1,2}
IBM zEnterprise BladeCenter® Extension (zBX) Support, including Network Management and Performance Management	1.10 ^{1,2}
80-Way Single System Image Support	1.11 ¹
XL C/C++ ARCH(9) TUNE(9)	1.12
XL C/C++ HW Exploitation	1.12
zDAC Support	1.12
D OSAINFO Command Support	1.12
OSA-Express3 Inbound Workload Queueing	1.12



1. Additional features, service, or Web downloads required. 2. Please refer to the current PSP buckets for latest PTFs for IBM zEnterprise 196 (z196) Compatibility and new functions/features support. 3. z/OS V1.10, z/OS V1.11, or z/OS V1.12 with the Cryptographic Support for z/OS V1R10-V1R12 Web deliverable required 4. Lifecycle Extension required* 5. Crypto web deliverable required* 6. zIIP support web deliverable required HiperDispatch support on z/OS 1.7 7. Some functions require z/OS V1.12

A smarter operating system with designs for:

Improving Usability and Skills

z/OSMF Software

Deployment and Storage Management applications, User-level mount command for z/OS UNIX System Services, Automatic UCB updates, SDSF Sysplex functions to work without MQ, Catalog parmlib member, Better O/C/EOV Messages, Health Checks, ...

Integrating new Applications and Supporting Industry and Open Standards

Java/COBOL interoperability, Improved Support for unnamed sections, ISPF Edit Macros, Subsystem and Unauthorized XTIOT support, dbx hookless debug, DFSORT improvements, Job level return codes, ...

Scalability & Performance

Fully-shared zFS in a sysplex, RMODE 64 extensions, IFASMF DL improvements, 500K+ aliases per user catalog, Larger VVDSs, FREE=EOV, FTP support for large format data sets and EAS,...



Enhancing Security

RRSF over TCP/IP, LDAP improvements, SAF security for z/OSMF, NAS address checking and encryption negotiation, New restricted QNAMEs, PKI support for DB2 backstore, ICSF support for new HMACs, FTP & TN3270 password phrase support, ...

Improving Availability

Warn before TIOT exhaustion, CMDS enhancements, Parallel FTP for dump transfers, PFA ENQ tracking, RTD improvements, zFS Refresh, DADSM Dynamic Exits, JES3 dynamic spool addition, Better channel recovery, More ASID reuse, ...

Self Managing Capabilities

WLM and RMF to provide response time distribution for all goals, DFSMSHsm Journal Backup and space management improvements, ...

Extending the Network

IDS IPv6 support, NAT Traversal for IKEV2, NMI extensions, More VLANs per OSA port, more 64-bit TCP/IP, EE improvements, ...

z/OSMF Software Deployment

- New application to clone system software
- Support for all SMP/E-installed software
 - Anything anyone packages with SMP/E; no additional SMP/E metadata required
- Designed to let you:
 - Identify, modify, delete software instances
 - Generate jobs to copy a software instance
 - Verify cross-system and cross-product requisites
 - Compare source/target environment HOLDDATA
- Copies to include SMP/E target CSI data sets
 - Can opt to omit the DLIB zone for images you do not intend to service
 - Intended to help assure rigor in the cloning process
 - Help ensure you have a good inventory for service
- Designed to support both local copies (within a shared DASD environment) and remote copies (across a network)
 - Remote copies will require a running, remote z/OSMF



**z/OS Software
Deployment
Thursday 8:00**

**z/OSMF
Implementation
and Configuration
Tuesday 4:30**

z/OSMF Software Deployment Entry Panel

IBM z/OS Management Facility Welcome wasusr6 Log out IBM

Welcome Deployment

Help

Deployment

Use this task to deploy software. To get started, select the **Deploy Software** action. [Learn more...](#)

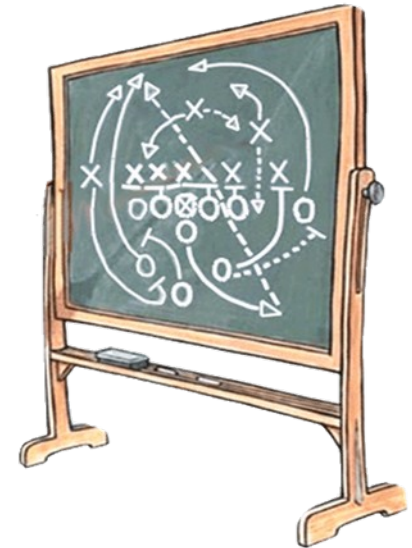
Deploy Software	Deploy a software instance, and manage existing deployments.
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Administration

Software Instances	Add your software to z/OSMF, and manage existing software instances.
Categories	Create and manage the categories to organize your software instances and deployments.
Global Zones	Add and manage the global zone CSI data sets that identify and describe your software.
Systems	Add and manage the z/OSMF host systems that have access to the DASD where your software resides.
FTP Servers	Add and manage the FTP servers for each system.
FTP Profiles	Add and manage the FTP settings to use when communicating with an FTP server.
HTTP Proxies	Add and manage the HTTP settings to use when communicating with a system.
Settings	Select the time zone in which to display date and time data. Indicate whether to display or suppress information messages.

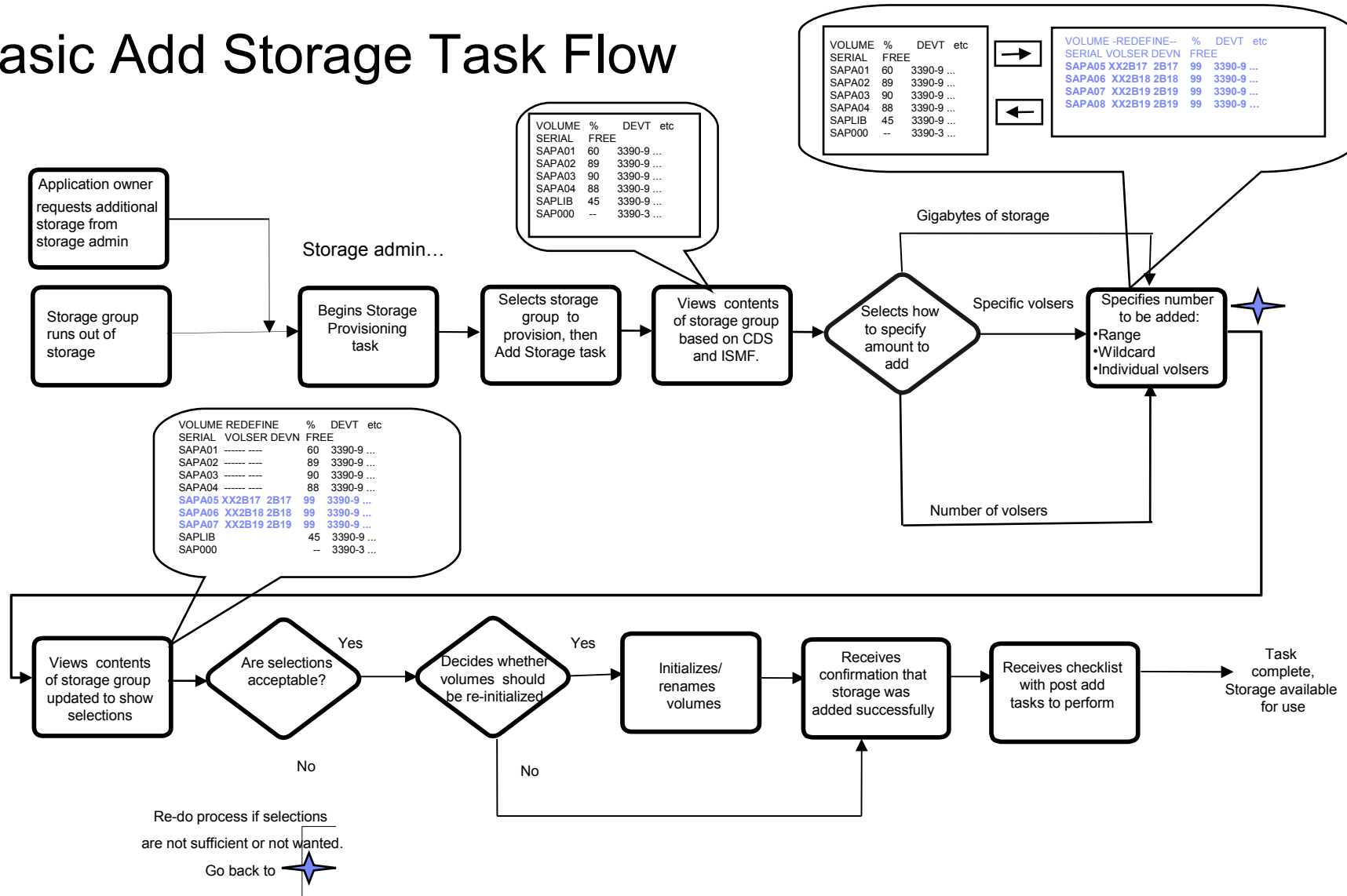
z/OSMF Storage Management application

- Define roles for storage administrator capabilities (user and master user)
- Define policies to assist in storage administration tasks
- Define containers for “extra predefined volumes”
- View storage group usage to find any exceeding storage capacity thresholds
- Add storage wizard to replace 23 tasks:
 - Decide which SCDS to change
 - Decide how much storage to add (default will be system-recommend based on policy)
 - Identify installation post-processing guidelines
 - Activate the modified SCDS



“Before”

Basic Add Storage Task Flow



Improving Usability and Skills

“After”—z/OSMF Disk Management Welcome Panel

The screenshot displays the IBM z/OS Management Facility web interface in a Mozilla Firefox browser. The browser's address bar shows the URL `https://svt5.storage.tucson.ibm.com:1033/zosmf/`. The page title is "IBM z/OS Management Facility" and the user is logged in as "zosmfad". The main content area is titled "Add Volumes" and contains the following text:

Add Volumes
Complete this wizard to add one or more volumes to a storage group.

Welcome
Use this wizard to add volumes to a storage group. Adding volumes consists of the following steps:

- Select volumes to add to the storage group. You can use the volumes that the wizard suggests for you or specify volumes.
- Generates volume names using rules that you define.
- Define initialization attributes for the volumes (volume serial, SMS status and VTOC settings).
- Update and optionally activate the control data sets (ACDS and SCDS).
- Review a summary of the volumes you are adding.

Do not show the Welcome step in the future

At the bottom of the wizard, there are four buttons: "< Back", "Next >", "Finish", and "Cancel".

z/OSMF R13 improvements

- **z/OSMF Capacity Provisioning Manager application**
 - Designed for easy monitoring of CPM status
- **z/OSMF Configuration Assistant for Communications Server**
 - Multiple release configuration support (both R12 and R13 systems)
 - Sysplex-wide policy definitions
 - IP address discovery from stacks
- **z/OSMF support for application linking**
 - Allow z/OSMF applications to link directly to others via URL
 - Both in-context linking and simple linking
 - Intended to make it simpler to navigate across apps
- **Expanded SAF-based security for z/OSMF user authorization and roles**
 - In addition to current z/OSMF security
 - Intended to be used in place of the current z/OSMF repository-based authorization support



z/OSMF 1.12 Overview
Tuesday 3:00

z/OSMF 1.12
Implementation and
Configuration
Tuesday 4:30

Manage Your
Workloads and
Performance
with z/OSMF
Friday 11:00

z/OSMF Hands-
on Lab
Thursday 4:30

Batch Modernization
Wednesday 4:30

- **JCL Improvements with JES2**
 - Stop journaled jobs on step boundaries
 - Job-level return codes
 - ✓ JOBRC=HIGHEST, LAST, STEPRC
 - Support for instream data sets in PROCs
 - ✓ ddname DD *
 - SPIN= DD JCL (and dynamic allocation) support for spin interval specification similar to that on JESLOG
 - ✓ SPIN=(UNALLOC, interval)

- **Remaining SDSF Sysplex functions no longer to require WebSphere MQ (aka MQSeries):**
 - WLM enclaves (ENC)
 - z/OS UNIX processes (PS)
 - Health checks (CK)
 - Resource monitor (RM) (JES2 only)

■ New Catalog Parmlib Member

- New optional IGGCATxx member
- CATALOG=(xx,yy, ...) in IEASYSxx
- Default is IGGCAT00
- Parmlib concatenation, multiple members supported
- Catalog defaults taken if no parmlib member found
- Support for specifying:
 - ✓ VVDS space defaults
 - ✓ Whether warning messages are issued for some delete commands
 - ✓ Catalog utilization warning message threshold
 - ✓ Limit on CAS service tasks (overrides any specification in SYSCATxx)
 - ✓ Whether to enable extension records for user catalog aliases
 - ✓ ...and more!

■ Warning message for usercatalog delete

- For catalogs with RECOVERY attribute
- Bypassed for those with ALTER authority to the master catalog

■ Automatically fix SMS CDS data set attributes

- Health check for NOREUSE in R12
- Automatically changed to REUSE in R13



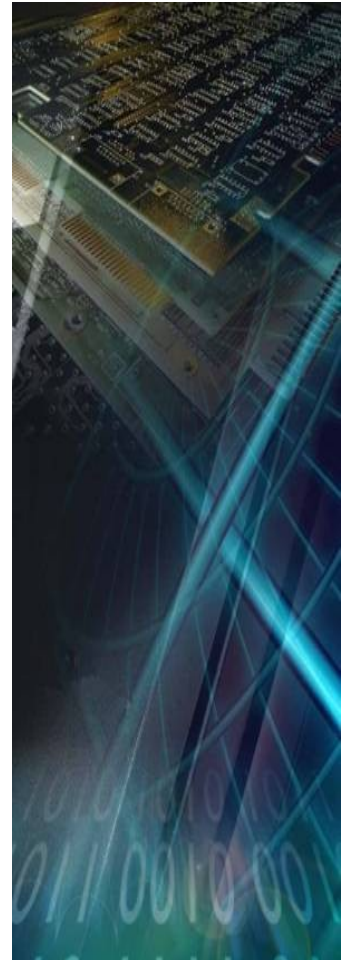
**What's New with
DFSMS ICF Catalog
and IDCAMS
Thursday 9:30**

**What's New in
DFSMS Overview
Monday 3:00**

- Automatic UCB updates for DFSMSdss RESTORE and DFSMSHsm Fast Replication Backup and Recovery processing
 - Specify a new REFUCB keyword in DEVSUPxx
 - Designed to make it unnecessary to issue VARY commands for these operations
- Better OPEN/CLOSE/End of Volume Messages
 - Additional information so you don't have to look up the message
 - New DEVSUPxx parameter to activate:
 - ✓ OCE_ABEND_DESCRIP = YES | NO
 - Example:

```
IEC145I 413-40,IFG0194F,RDASL1,RDSL1,SYSUT1,0920,,DATASET X
ERROR DESCRIPTION:
THE DEVICE DOES NOT SUPPORT THE RECORDING MODE
REQUESTED BY THE USER OR DETERMINED BY THE SYSTEM.
END ERROR DESCRIPTION: IEC145I
```

**What's New in
DFSMSdss and
System Data
Mover
Thursday 8:00**



DFSMSrmm improvements

- Automatic recovery for missing our out-of-sequence tape volumes
 - For multivolume data sets, DFSMSrmm will attempt to return the corrected list
 - New message: IEC716I ddname: TAPE MULTIVOLUME LIST CORRECTED
 - Note: Cannot use this if you specify OPTCD=B, which bypasses label anomaly processing
- Specify expiration date or VRS management for data sets
 - Help simplify retention policies, avoid batch VRS policy management, and enable you to determine how long a tape data set will be retained
- SEARCHDATASET command to allow searching tape data set metadata based on:
 - Date ranges
 - Relative values
 - SMS constructs
 - Catalog status



Health Checking

- Health Checker Framework improvements
 - Better control of check scheduling
 - New SYNCVAL keyword in HZSPRMxx parmlib member and MODIFY
 - Checks can raise message severity as conditions change
- New health checks:
 - Warn when zFS configuration option is not set to sysplex=filesys
 - Detect and report on tape library devices that had initialization errors at IPL time, provide explanation and suggested remedy



True cross-system sharing of zFS across a sysplex

- Direct I/O from all sharing systems
- No more function-shipping
- Performance improvements expected for what were “non-owning” systems

Support for (lots!) more aliases per user catalog

- z/OS R12 increased the maximum catalog size dramatically
- Existing limit on number of aliases is approximately 3,500 (depending on alias lengths)
- New limit in z/OS R13 expected to be over 500,000 (depending on alias lengths)
- New catalog connector extension record (Type V)
- Catalog parmlib member (IGGCATxx) keyword
- New command:
 - ✓ MODIFY CATALOG,ENABLE(EXTENDEDALIAS)
 - ✓ **Do not issue until all systems that will process the catalog are at R13!**

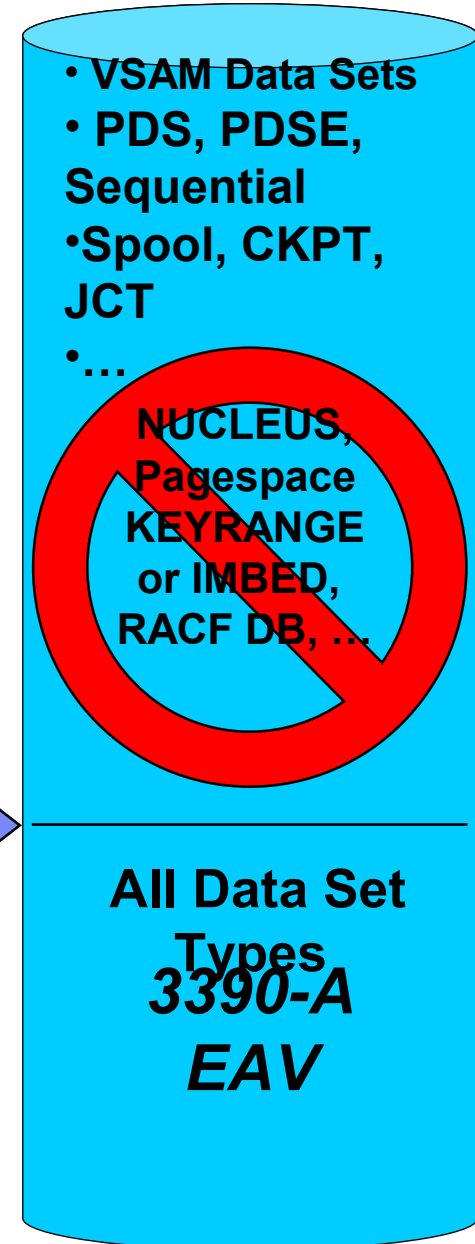


Scalability and Performance*

EAV Support:

- z/OS R10 introduced EAV with support for VSAM (incl. zFS)
- z/OS R11 added Extended Format Sequential and support for data sets spanning the 64K cylinder line
- z/OS R12 added:
 - PDS and PDSE (including load modules and program objects)
 - Plain vanilla (nonextended format) sequential
 - BDAM
 - GDG
 - LPALIB, LPA list, link list data sets, SYSn.IPLPARM, SVCLIB
 - Catalogs, VVDSs
 - JES2 and JES3 spool and checkpoint, JES3 JCT
 - DFSMSrmm, DFSMSHsm™ data sets
 - Standalone Dump data set and AMASPZAP support
 - VSAM AIX support in Language Environment
- **Planned for z/OS R13:**
 - SDSF support for output data sets
 - FTP support for SMS-managed and non-SMS-managed PS basic and large format; PDS and PDSE; and GDG data sets
- No support for above the line for:
 - Imbed and Keyrange attributes, incompatible CA sizes for VSAM
 - NUCLEUS, SVCLIB, LOGREC, VTOC, VTOCIX,
 - RACF databases, Page data sets, HFS data sets
 - Parmlib concatenation data sets
 - XRC Control, Master, or Cluster non-VSAM data sets

65,520 Cyls



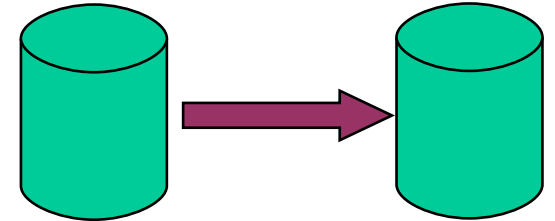
VVDS maximum size increase

- For VVDSs in and out of EAS
- Maximum VVDS space increased from 5,460 tracks to 5,825 cylinders
- Increases practical maximum number of data sets from hundreds of thousands per volume to millions per volume



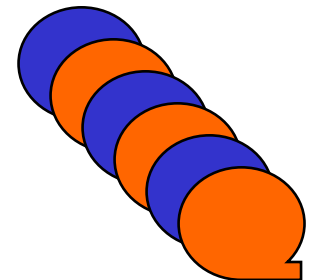
IEBCOPY improvements

- Better performance expected for PDS-PDS copies
- 31-bit track buffering
- Removal of requirement for APF authorization



New JCL parameter, FREEVOL=EOV

- Specifies that a tape for part of a multivolume data set be available at end of volume rather than end of step
- Can allow other jobs to use the tape immediately
- Can allow overlapped processing of multivolume tape data sets

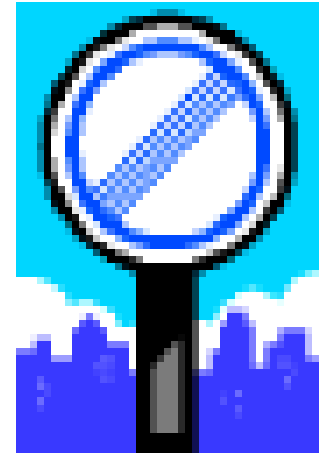


- **FTP support for large format data sets:**
 - FTP will be designed to allow you to transfer, restart transfers for, and allocate large format data sets
 - Support data sets larger than 65,525 tracks or more than 2 gigabytes of data, without requiring them to be SMS managed.
- **VSAM RLS improvements:**
 - Planned to support a new storage class (STORCLAS) attribute to specify whether VSAM RLS buffers and the associated resources are retained for a while or released immediately upon CLOSE
 - DCOLLECT to include information about this new attribute in SC records
 - Improved VSAM RLS buffer management of "aged" buffers
 - Expected to help improve performance when processing large RLS data sets



IFASMF DL Improvements

- Avoid reading to end of log stream
 - IFASMF DL starts reading a log stream at a point (approximately) representing a specified time
 - New SMARTENDPOINT keyword to specify that IFASMF DL should stop reading a log stream when a point representing double the MAXDORM value is reached
 - Avoids reading to end of log stream
- Allow entire log stream to be archived or deleted
 - Treat log streams as though they were SMF data sets
 - Will reset log stream starting point to next new block



RMODE 64

- The next step...
- Allow execution of enabled code above 2G
- Support for code above 2G that calls no system services and is not loaded by normal system “load” methods
- Handle and resume after I/O and external interrupts

Improving Availability*

CMDS Command enhancements

- CMDS ABEND,CMD=xxxxxxxx,ID=nnnn introduced in z/OS R12
- Enhanced in R13 to support an exclusion list for “non-abendable” commands
- CMDS FORCE command planned for z/OS R13, intended to be used when only alternative is IPL

Parallel FTP tool to be made part of z/OS

- IBM® z/OS® Problem Documentation Upload Utility
- Messages to be split between SYSPRINT and DEBUG data sets
- New program name, AMAPDUPL
 - ✓ Alias MTFTPS for compatibility

Message flood automation processing planned to:

- Increase message ID limit from 50 to 1024
- Allow up to 128 address spaces to be tracked per system
- Allow the default message set to be identified in a parmlib member
- Intended to increase the scope of message flood automation, improve its usability, and help improve system availability



Predictive Failure Analysis and Runtime Diagnostics Enhancements:

- **PFA ENQ tracking**
 - High and low rates for selected address spaces
 - High and low overall system rate
- **PFA JES2 SPOOL utilization tracking**
 - Track jobs started within an hour of IPL
 - Model the persistent jobs that use the most SPOOL space
 - Look for unexpectedly high usage
- **RTD improvements**
 - Start during IPL
 - Latch contention detection
 - z/OS UNIX System Services-related delays
- **PFA and RTD integration**
 - PFA to call RTD when it detects a lack in a tracked metric (e.g., WTOs, SMF records, lines in a job log, ENQs)
 - Intended to detect “classic” causes of hung address spaces, such as loops and serialization deadlocks

Detecting Soft Failures Using z/OS PFA: Basic and Advanced topics
Wednesday 11:00

z/OS Problem Determination Update: z/OSMF Incident Log, Runtime Diagnostics, PFA, and New Technologies
Tuesday 11:00



zFS Internal Restart

- Automatic recovery from severe PFS layer problems
- Remounts all mounted zFS filesystems
- Accessing open files may result in I/O errors or EAGAIN until refresh completes
- No configuration changes incorporated during restart
- Can also be operator initiated with new commands
 - ✓ MODIFY ZFS,REFRESH to refresh zFS
 - ✓ MODIFY ZFS,NSVALIDATE to validate control blocks and refresh if needed

JES3 Dynamic SPOOL Addition

- Add a SPOOL volume without a JES3 restart

Improved Channel Recovery

- Remove paths to all devices affected by a path error
 - Avoids repeated recovery for path errors as I/Os are driven to more devices along the path

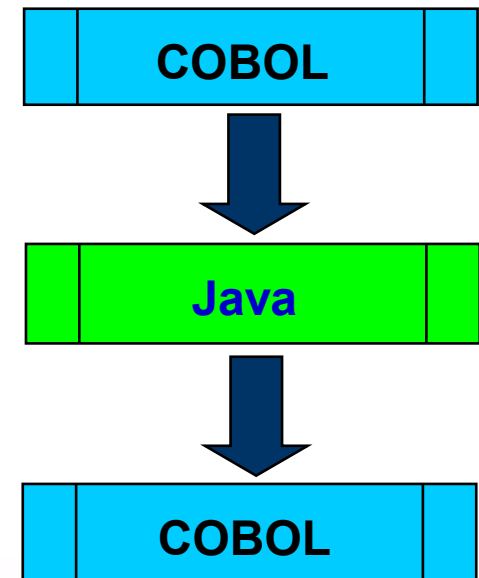


- **DADSM dynamic exits support**
 - IGGPRE00
 - IGGPOST0
- **ASID Reuse**
 - DEVMAN address space planned to be reusable
 - CATALOG, LLA, VLF, z/OS UNIX RESOLVER, TCP/IP, DFSMSrmm, and TN3270 already reusable
- **DADSM and CVAF planned to support concurrent service**
 - Dynamically update without IPL to help improve system and application availability



z/OS Batch Runtime environment—Java/COBOL interoperability

- Intended to provide the framework for Java to COBOL interoperability for transactional updates to DB2 while sharing database connections
- Designed to enable you to extend valuable COBOL assets using Java
- Note: Java programs eligible for zAAPs
- Requirements include:
 - IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6.0.1 (5655-R31)
 - DB2 V9.1 for z/OS (5635-DB2) or later with PTFs
 - IBM Enterprise COBOL for z/OS V4.1 (5655-S71) or later
 - Web services included in the WebSphere Application Server OEM Edition for z/OS packaged with the z/OS Management 3 Facility (z/OSMF) V1.13, or later.



User-level mounts and unmounts for z/OS UNIX

- BPXPRMxx support for limiting user mounts
- SAF-based security for allowing the function
- Can restrict which mountpoints a user may use and allow mounts only at empty mountpoints

Last stage of support for DSNTYPE=LARGE data sets in C/C++

- z/OS R8 implemented support using QSAM (noseek)
- z/OS R12 provided BSAM (seek) support for record I/O
- z/OS R13 to implement support for BSAM (seek) for binary and text I/O for OS data sets

Better Binder support for unnamed sections

- Today, there is no way to remove them...and they...accumulate
- Support planned for:
 - Removing all unnamed sections with a new binder option, STRIPSEC=PRIV
 - Specifying unnamed sections and symbols on binder control statements
 - ✓ Name a previously-unnamed section
 - ✓ Replace an unnamed section
 - ✓ CHANGE and REPLACE support for unnamed symbols



DFSMS support for very long retention periods

- RETPD=9999 was old limit (a bit over 27 years)
- New design limit is 93,000 days (a bit over 254 years)
- Notes:
 - 1-byte fields and 1900 epoch date limit expiration dates to YE2155
 - 99000 and 99366 remain as “never expire” dates no matter how derived
 - OAM and DFSMSrmm to support expiration dates up to the year 2264

SDSF support for REXX and Java access to OPERLOG

- In addition to access to syslog
- Use ISFLOG command for REXX
- Use ISFLogRunner class for Java

Key 8 program access to Key 9 DCBEs for OPEN

- No longer need to copy Key 9 DCBEs to Key 8 storage before OPEN
- Allow both DCB and DCBE to be in only Key 9 storage

XTIOT support for subsystem ACBs and DCBs

- Open processing support for being passed either a subsystem ACB or DCB
- DFAXTBAM must be set; subsystem must set DSABSSXT

SMB Server support for Common Internet File System (CIFS)

- Provide improved support for Linux on System z clients
- Add CIFS support to existing SMB FS support

64-bit storage support for subspaces

- Access to 64-bit private and 64-bit shared storage in subspace mode
- Note: No subspace storage isolation for 64-bit storage

ISPF support for line command-level Edit macros

- In addition to initial and command line-level macros

Authorized programs to be able to extend currently open allocations to new volumes

- New support in MODIFY TYPE=DEVICELIST
- Will update SMF and Allocation control blocks as needed

XTIOT and DSAB above support for unauthorized programs

- Allow when either S99TIOEX or S99ACUCB is set



DFSORT programming enhancements—now available

- PTF UK90025 for z/OS V1.10 and z/OS V1.11
- PTF UK90026 for z/OS V1.12
- New functions for translating ASCII, EBCDIC, hex, and binary characters
- RESIZE operator for ICETOOL you can use to change output record lengths
- New date field arithmetic operations
- ACCEPT option for the OUTFIL statement you can use to process subsets of output records
- Grouping function based on key changes
- Support for SET and PROC symbol substitution in control statements
- For more info see User Guide for DFSORT PTFs UK90025 and UK90026 at:
 - <http://www.ibm.com/support/docview.wss?rs=114&uid=isg3T7000242>





qsort() function for the z/OS Metal C Runtime Library

- Allow an array to be sorted using a function you supply
- Intended to relieve Metal C programmers from having to write sort routines with similar capabilities

Language Environment planned to support recovery from more abends during output and close operations for C/C++ programs

- Return to C/C++ programs indicating that an I/O error has occurred rather than issuing an abend
- Intended to provide a more predictable recovery environment when I/O errors are encountered

Support planned to allow tasks having subtasks in a WLM to leave it, and for subtasks of a task joining an enclave to be joined to it

- Available now on z/OS V1.11 and z/OS V1.12 with the PTFs for APARs OA33344 and OA33406

XCF planned to provide a simplified set of interfaces for passing messages within a Parallel Sysplex

- New services designed to allow a server to be established to process messages and for messages to be sent across the sysplex without first joining an XCF group
- Intended to make it easier to exploit XCF services for applications that do not require the member management and monitoring provided by the XCF group services interfaces

Language Environment planned to add support for initializing multiple CEEPIPI main environments under one TCB

- Designed to provide access to a user word for each environment
- Intended to help you migrate Preinitialization Compatibility Interface (PIC) environments to CEEPIPI

dbx “hookless” debug support

- In prior releases, dbx inserted EX instructions, aka “hooks,” at compilation time to provide debugging breakpoints
- In R13, dbx planned to provide support for programs compiled without hooks



z/OS Unicode Services planned to implement improved bidirectional character support

- For applications that process scripts written and read from right to left with imbedded string read from left to right
- Samples planned to show how to use these extended bidirectional services, with a sample object file planned that you can include with C applications

z/OS Unicode conversion information service planned to provide more information about CCSIDs

- To identify substitution, newline, line feed, carriage return, end-of-file, and space characters

Support planned to allow tasks using subspaces to access 64-bit private and shared virtual storage without using Branch in Subspace Group (BSG) instructions

- Intended to make it easier for applications to exploit 64-bit storage

z/OS UNIX planned provide the capability for IPv4 UDP datagram reply packets to flow on the same interface where the request arrived

- When server system has multiple home addresses with multiple routes back to the client or is using a DVIPA
- Designed to be similar to existing support for IPv6
- Intended to allow applications to require that the response to a request be restricted to the same IPv4 address from which the request was received.

LDAP improvements

- SHA-2 password hashing
 - Support for SHA224, SHA256, SHA384, and SHA512, both salted and unsalted
- Set search limits by groups of users
 - Override server-wide limits imposed by sizeLimit and timeLimit
 - 500-entry maximum is the default
 - Range is from 1 to 2147483647, or no limit
 - Administrator searches not bound by any limits
- Support for paged results as described in RFC2696
 - Get back segmented results, a specified number of entries per “page”
- Support for server-side sorting as described in RFC2891
 - Sorted search results based on a list of criteria, where each criterion represents a sort key
- 64-bit support for TDBM
 - DB2 ODBC 64-bit support
 - 64-bit TDBM/Bulkload, Idif2ds, DSCONFIG, GDBM support.
 - Support more data in TDBM using DB2 9 for z/OS (5635-DB2) with PTF UK50918 or later
- Support planned to enable Kerberos binds to be processed by Microsoft's Active Directory Server



RRSF via TCP/IP

- In addition to APPC
- Secure the links via AT-TLS
 - AT-TLS required; RRSF will refuse to use an unsecured link
 - Server- and client-side authentication will be used
 - Sample rule will specify strongest available encryption method
 - More and better encryption algorithms available in AT-TLS
 - ✓ Note: RRSF via APPC uses 56-bit DES
- Can allow an EE link used for this purpose to be changed to native TCP/IP
- New operand on TARGET operator command or issued during RACF subsystem initialization:
 - `PROTOCOL(TCP(ADDRESS(hostname_or_IP_address)))`

SAF-based security for z/OSMF

- New general resource class, probably to be named ZMFAPLA
 - Similar to EJBROLES class
- New grouping class, FZMFAPLA, for application visibility control
- Also need to create a ZMFDFLT, in the REALM class
 - Will be used eventually to allow multiple z/OSMF instances to run with a shared RACF database or a replicated database



Support for NAS to perform RFC 4120 address checking

- New switch in the KERB segment of the KERBDFLT profile
- Kerberos server should interrogate the addresses in tickets when CHKADDRS is set to YES
- New data returned by R_kerbinfo service

Support for encryption type negotiation in NAS

- As described in RFC 4537
- Allow stronger encryption than that supported by a KDC

ICSF support for additional HMAC algorithms

- Support for FIPS-198
- New HMAC generate and HMAC verify callable services
- Support planned for SHA-1, SHA-224, SHA-256, SHA-384, and SHA-512

TN3270 and FTP support for password phrases

- In addition to existing support for passwords



Restrict additional QNAMES to authorized programs:

- Already restricted:
 - QNAMES starting with SYSZ (such as SYSZVOLS)
 - ADRDFRAG, ADRDSN, ARCENQG, BWODSN, SYSCTLG, SYSDSN, SYSIEA01, SYSIEECT, SYSIEFSD, SYSIGGV1, SYSIGGV2, SYSPSWRD, SYSVSAM, and SYSVTOC
- Planned to be restricted:
 - ARCDSN, ARCBTAPE
 - ARCGPA, ARCBACV, and ARCMIGV, when converted from RESERVE to ENQ

PKI Services Support for DB2 Backstore

- Optional use of DB2 rather than native VSAM for Object Store (OST) and Issued Certificate List (ICL)
- Allows DB2-based queries and reporting
- Other advantages of DB2 apply (e.g., online REORG)
- Support for much larger CRLs
 - Note: Without DB2, z/OS R13 PKI Services planned to extend maximum CRL size from 32k to over 500k
- ICL duplexing via DB2
- Most value thought to be for large-scale certificate deployments



System SSL enhancements:

- ECC support for X.509 V3 certificates using the ECDSA and ECDH algorithms
 - Designed to let you to create them in key database files or ICSF PKCS#11 tokens
 - Certificate Management Services API support planned
- Extend use of ECC to enable TLS V1.0 and V1.1 handshakes with ECC cipher suites and digital certificates during connection negotiations per RFC 4492
- Support for ECC certificates residing in SAF key rings with their private keys stored in the ICSF PKDS
- Support for private keys in secure digital signature generation operations available through Crypto Express3 Coprocessor (CEX3C) cards on IBM zEnterprise servers

RACF support planned for generating ECC secure keys

- Using the CEX3Cs available for zEnterprise servers.
- New RACDCERT keywords designed to allow you to specify that an ECC key be stored in the ICSF public key data set (PKDS). Corresponding hardware ECC key support planned for PKI Services.
- Intended to allow you to expand your use of certificates with ECC keys protected by hardware.

IBM Ported Tools for z/OS (5655-M23)

- Planned to provide the sudo utilities in the PTF for APAR OA34949, planned for availability in March 2011
- Include as part of the Supplementary Toolkit for z/OS feature
- Designed to deliver the sudo (su "do") open source tools that allow system administrators to delegate authority to users or groups of users

z/OS Communications Server intrusion detection technology planned to add support for IPv6 and more attack types

- Intended to provide IPv6 intrusion detection security and help you prevent certain error situations and denial of service attacks
- Configuration Assistant for z/OS Communications Server planned to help you configure the new IDS support

VIPARANGE DVIPA Security

- Support for RACF profiles controlling which user IDs can create and destroy VIPARANGE DVIPAs planned to be extended
- Allow you to specify ranges of VIPARANGE DVIPAs or individual VIPARANGE DVIPA addresses

IPSec support for FIPS 140-2 cryptographic mode planned to be enhanced

- AES-GCM and AES-GMAC support planned when using sysplex-wide security associations in FIPS 140-2 mode
- IKE daemon planned to use new ICSF services in FIPS mode

IKEv2 support

- Added to z/OS Communications Server V1.12
- In V1.13, Communications Server planned to add Network Address Translation (NAT) traversal support using IKEv2 for IPv4
- Intended to make it easier to migrate to IKEv2 if you use NAT
- Also, sysplex-wide security associations support planned for IPSec tunnels negotiated using IKEv2 and IPv4 addresses



Better DFSMSHsm journal backups

- Old way was to lock the journal for the entire backup
- New design:
 - Read control record
 - Back up journal data described by original control record
 - Lock journal, back up control record, back up balance of journal
- Expected to be much less disruptive for very active DFSMSHsm systems
- Should be particularly nondisruptive if run when DFSMSHsm activity is at its nadir for the day
- Note: Must specify SETSYS JOURNAL(RECOVERY) to use this function

**What's New in
DFSMSHsm
Tuesday 11:00**

DFSMSHsm Space Management improvements

- New option to specify that space management to start when any volume in an automigration storage group exceeds the utilization threshold rather than using Interval Migration processing
- Intended to make DFSMSHsm space management more responsive while reducing IM overhead
- Also, improvements planned for volume data set list processing so data movement can start sooner

Other planned DFSMSHsm improvements

- ARCCMDxx parmlib member support for BEGIN and END specifications and multiple host IDs for ONLYIF keyword to allow you to specify groups of parameters related to one or more DFSMSHsm hosts with a single ONLYIF keyword
- New SETSYS subcommand you can use in place of the existing patch command to reduce the number of fast replication backup messages
- New subparameter for the HSEND RELEASE RECALL command you can use to specify that DFSMSHsm avoid recalling data sets from missing or faulty tapes while releasing the hold on recalls from DASD
- More info from HSEND QUERY COMMONQUEUE(RECALL) to identify originating hosts so you can more easily cancel a recall request
- A new patch you can use to suppress DFSMSHsm messages when no storage groups or copy pools are eligible to be processed for various space management, backup, and restore operations



RMF monitoring for zEnterprise ensembles:

- RMF planned to provide CIM-based performance data gatherers:
 - Linux on System z
 - Linux on System x
 - AIX systems
- Designed to provide a consistent monitoring solution for zEnterprise ensembles
- Along with the Resource Monitoring plug-in for the z/OS Management Facility, first made available with z/OSMF V1.12, this is intended to display performance metrics from those platforms and combine them with z/OS metrics in common graphic views

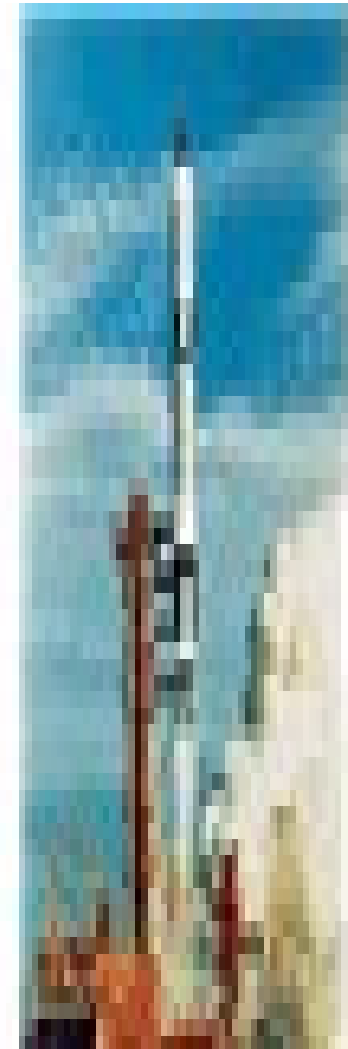


Response time distributions to be calculated by WLM and reported by RMF for velocity and discretionary goals

- As for response time goals, planned to be reported in 14 “buckets”
- Unlike response time goal reporting, mid-points planned to be recalculated and changed as appropriate

Planned OAM improvements

- Support for file systems in the disk level for zFS and NFS, in addition to DB2-backed object storage
 - Planned to allow you to use z/OS UNIX file systems to store, retrieve, and delete objects, and to move objects between file systems and other locations in the OAM hierarchy
 - Intended to provide you more flexible ways to configure your OAM storage hierarchy
- Wildcard support for the MODIFY OAM,START,STORGRP command to allow you to initiate OSMC storage group processing for multiple object and object backup storage groups in single commands
- Dynamic update capabilities to enable changing the maximum number of tape drives OAM allocates to an object or object backup storage group without restarting OAM
- Enhancing, MOVEVOL to improve performance when moving objects from a source volume that contains a large number of OAM collections
- Shipping CTICBR00 in the SMP/E-managed parmlib so you can use parmlib concatenation instead of copying it from samplib to parmlib during migration
- Enhancing SMF Type 85 records to add counter fields with higher maximum values, in addition to the existing fields in KB.



**What's New With
OAM Object Support
Monday 4:30**

InfoPrint improvements

- Support for specifying either a primary or a secondary JES2 subsystem
 - Intended to allow you to isolate your print data on a secondary JES2 spool so unexpectedly large amounts of print output cannot cause impacts to the primary JES2 subsystem
- PrintWay Extended Mode designed to allow you to select output to be printed based on the amount size of each job, and direct it appropriately
 - For example, direct large print jobs to high-speed, high-volume printers and small ones to lower-speed distributed printers
 - Intended to remove one of the last significant inhibitors for migrating from Infoprint Server PrintWay Basic Mode to Extended Mode
- PrintWay Extended Mode enhancements planned for emailing documents:
 - Include text and line-data documents in the body of an email
 - Use a subset of RFC 2822-compliant email headers in line-data documents without modifying JCL or 3 printer definitions
 - Send different documents from a print job to the same people or to different people using email headers, job attributes, or JCL, and include common introductory text in each
- Infoprint Central planned to support:
 - Showing the age of print jobs
 - Displaying print jobs by age
 - Displaying new PrintWay Extended Mode fields used for job selection in printer property

Continued focus on IPv6

- We have been talking about IPv4 address exhaustion for a couple of years now...
- The last IPv4 address was assigned to a regional pool by IANA in February 2011
- IPv4 address exhaustion expected this year as Regional Internet Registry pools run dry
- More than you ever wanted to know at:
<http://www.potaroo.net/tools/ipv4/index.html>

➤ If your z/OS system talks to the outside world and does not yet speak IPv6 you need to get going!



**IANA IPv4
Address Space
Registry**

Last Updated

2011-02-03

Networking*

- More flexibility planned for specifying reserved ranges of TCP/IP ports
- New CSSMTP server design for better memory and JES resource management when retrying mail send operations
- Improve z/OS system resolver processing when name servers are unresponsive
- Autonomic recovery planned for APPN routing tree corruption
- New design to monitor for CSM-constrained conditions and taking specified recovery actions
- Enterprise Extender connectivity tests initiated using the DISPLAY NET,EEDIAG,TEST=YES command when firewalls block ICMP messages expected to complete more quickly

**What's New in z/OS
Communications
Server?
Monday, 11:00**

**zEnterprise System -
Network Architecture
and Virtualization
Overview (Part 1)
Tuesday 9:30**

**zEnterprise System -
z/OS IEDN network
design and
implementation (Part 2)
Tuesday 11:00**

Networking*

- New DISPLAY TCPIP, TELNET command you can use to display a list of TN3270E Telnet servers
- New Network Management Interface (NMI) functions for the system resolver, and improvements to the NMI TMI_Copybuffer callable services
- Sysplex Distributor takeover and distribution of IPSec tunnels and traffic for dynamic VIPAs using IKEv2 planned for better workload balancing
- New design for more-responsive VIPAROUTE processing when TCP/IP stacks join or leave the group and when OMPROUTE is recycled

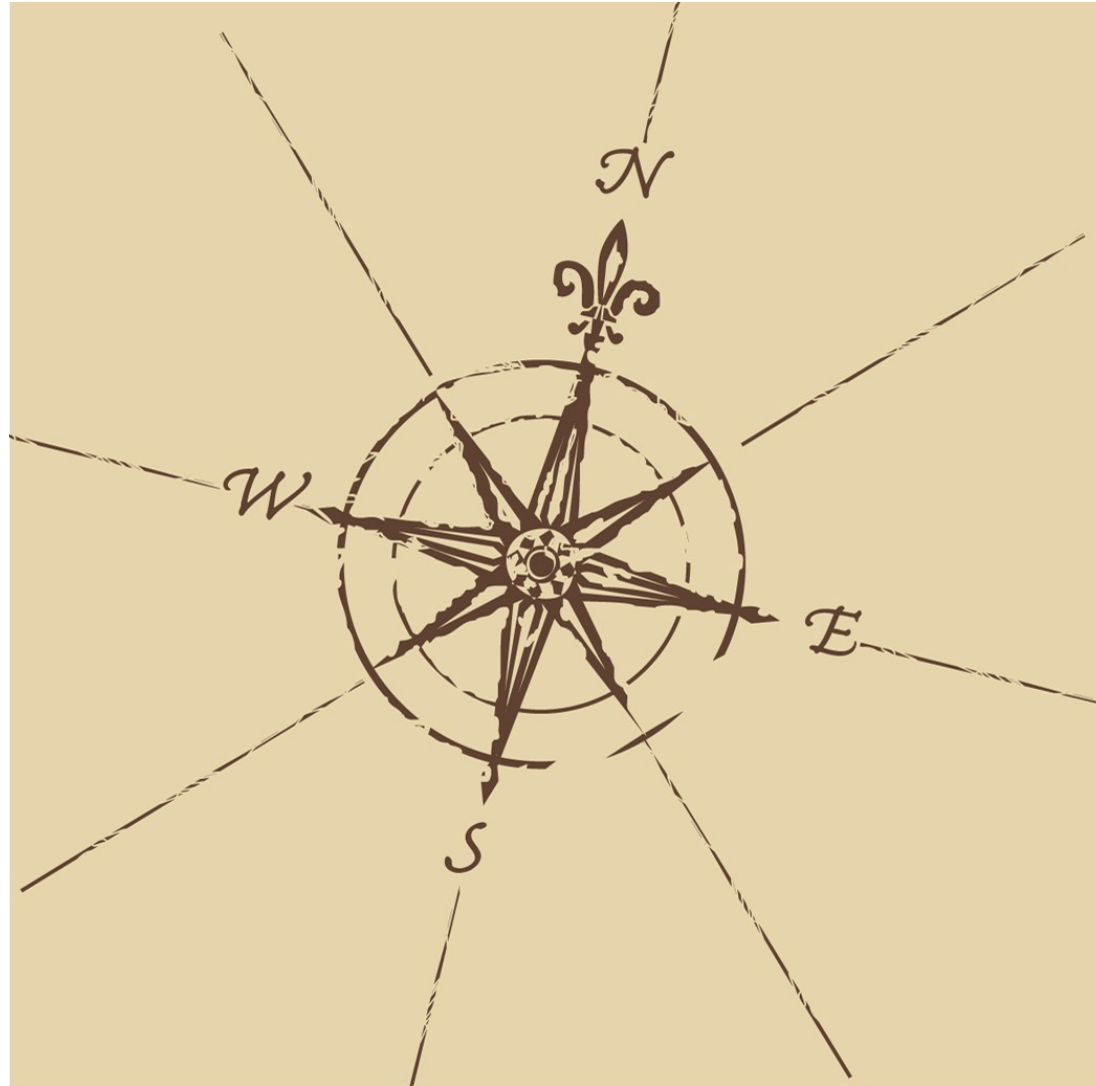
**What's Coming in z/OS Communication Server
Monday 1:30**



Microsoft Windows Support*

- The Microsoft Windows-based Capacity Provisioning Manager application is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition
- DFS SMB Server planned to support clients running both the 32- and 64-bit versions of Microsoft Windows 7 Professional, Microsoft Windows 7 Enterprise, and Microsoft Windows 7 Ultimate Editions
- NFS planned to provide support for the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition with Open Text NFS Client(TM) or Open Text NFS Server(TM) installed
- HCM is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition
- z/OS PKI Services is planned to add support to enable Mozilla-based web browsers on Windows and Linux platforms to use smart cards when generating certificates and to enable Microsoft Internet Explorer 6, Internet Explorer 7, and Internet Explorer 8 to use an updated PKI application that includes its own ActiveX controls, which allows users to install renewed certificates

Statements of Direction*



Reminders:

- z/OS V1.12 is the last release to include z/OS Distributed File Service support using the Distributed Computing Environment (DCE) architecture
 - IBM recommends the z/OS Network File System (NFS) as a replacement
 - Support in Distributed File Service for Server Message Block (SMB) architecture remains, and is not affected by this withdrawal of support
- In a future release, IBM plans to remove the capability to change the default Language Environment run-time options settings via SMP/E installable USERMODs. IBM recommends using the CEEPRMxx parmlib member to change the default Language Environment run-time options for the system.
 - Support for NONOVR added in z/OS R12
- z/OS V1.12 is planned to be the last release to include the z/OS UNIX System Services Connection Scaling functions provided by the Connection Manager and Process Manager components.

Reminders:

- IBM has discontinued software delivery on 3480, 3480 Compressed (3480C), and 3490E tape media.

- ServerPac and CBPDO are available on DVD; the SystemPac[®], ProductPac[®], and FunctionPac fee-based offerings; and selective follow-on Service (SFS) for the fee offerings are planned to be available on DVD.
 - IBM recommends using Internet delivery, but DVD support may provide an option for those who cannot use it
 - Installation using DVD requires a workstation with a network connection to the z/OS driving system



New news

- The Customized Offerings Driver is now available on DVD
 - Requires the use of the HMC to restore it
 - Offers an option if you need the COD and don't have a compatible tape drive
 - Note: Tape restores are expected to be faster!
- z/OS V1.13 is planned to be the last release to support multi-file system zFS aggregates, including zFS clones
 - Support for the zfsadm clone command and mount support for zFS file system data sets containing a cloned (.bak) file system will be removed
 - IBM recommends that you use copy functions such as pax and DFSMSDss to back up z/OS UNIX file systems to separate file systems.
 - Support for zFS compatibility mode aggregates will remain.
- z/OS V1.13 is planned to be the last release to support BPX.DEFAULT.USER
 - IBM recommends that you either use the BPX.UNIQUE.USER support that was introduced in z/OS V1.11, or assign unique UIDs to users who need them and assign GIDs for their groups.



New news

- z/OS V1.13 is planned to be the last release to provide the z/OS Capacity Provisioning support that utilizes the System z API for communication with the Support Element (SE) or Hardware Management Console (HMC).
 - This protocol is based on IP network connection using SNMP.
 - IBM recommends configuring the Capacity Provisioning Manager for communication via the z/OS BCP Internal Interface (BCPii) protocol. The SE and HMC support for the System z API remains, and is not affected by this withdrawal of support.

- z/OS V1.13 is planned to be the last release in which the BIND 9.2.0 function will be available.
 - If you use the z/OS BIND 9.2.0 function as a caching-only name server, use the resolver function, which became generally available in z/OS V1.11, to cache Domain Name Server (DNS) responses.
 - If you use the z/OS BIND 9.2.0 function as a primary or secondary authoritative name server, investigate using BIND on Linux for System z or BIND on an IBM blade in an IBM zEnterprise BladeCenter Extension (zBX).



The Future Runs on System z

Optimize your z/OS environment





IBM Systems & Technology Group

What's New in z/OS

Session 8690



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28 February 2011

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Notes:

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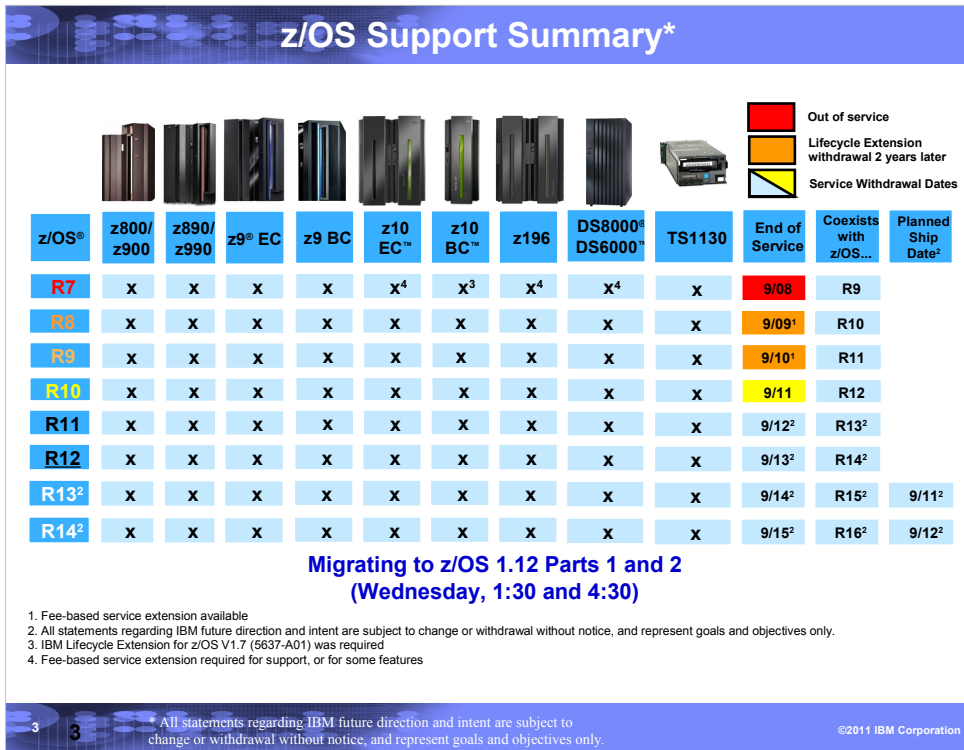
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This chart summarizes much of the information about z/OS that you need to know. Server and DASD hardware support, end of service dates, coexistence, and planned availability dates are shown here for existing and planned releases through z/OS R14

Note that:

- The lowest supported level of z/OS is R10 (without Lifecycle Extension)
- R12 is the currently orderable release (until September 2011)

Hardware Support

z/OS and IBM zEnterprise Functions and Features¹

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Five hardware models</td></tr> <tr><td>Increased capacity processors</td></tr> <tr><td>Up to 15 subcapacity CPs at capacity settings 4, 5, or 6</td></tr> <tr><td>Up to 3 TB RAIM (real) memory²</td></tr> <tr><td>6.0 GB/sec InfiniBand[®] I/O interconnect</td></tr> <tr><td>8 slot, 2 domain I/O drawer</td></tr> <tr><td>Concurrent I/O drawer add, remove, replace</td></tr> <tr><td>Optional water cooling</td></tr> <tr><td>Optional High Voltage DC power</td></tr> <tr><td>Optional overhead I/O cable exit</td></tr> <tr><td>Up to 80 processors per server configurable as CPs, zAAPs, zIIPs, IFLs, ICFs, or SAPs (up to 32-way on R7, 64-way on R9, 80-way on R11)</td></tr> <tr><td>New and enhanced instructions</td></tr> </table>	Five hardware models	Increased capacity processors	Up to 15 subcapacity CPs at capacity settings 4, 5, or 6	Up to 3 TB RAIM (real) memory ²	6.0 GB/sec InfiniBand [®] I/O interconnect	8 slot, 2 domain I/O drawer	Concurrent I/O drawer add, remove, replace	Optional water cooling	Optional High Voltage DC power	Optional overhead I/O cable exit	Up to 80 processors per server configurable as CPs, zAAPs, zIIPs, IFLs, ICFs, or SAPs (up to 32-way on R7, 64-way on R9, 80-way on R11)	New and enhanced instructions		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Capacity Provisioning enhanced⁴</td></tr> <tr><td>Three subchannel sets per LCSS³</td></tr> <tr><td>Platform Management from HMC</td></tr> <tr><td>CFCC Level 17 enhancements⁴</td></tr> <tr><td>Up to 128 Coupling Link CHPIDs</td></tr> <tr><td>Improved processor cache design</td></tr> <tr><td>Power save functions</td></tr> <tr><td>Crypto Express3 enhancements⁵</td></tr> <tr><td>Secure key HMAC Support</td></tr> <tr><td>Elliptic Curve Cryptography (ECC) Digital Signatures³</td></tr> <tr><td>CPACF enhancements⁵</td></tr> <tr><td>Out of order instruction execution</td></tr> <tr><td>z/OS discovery and auto-configuration (zDAC)³</td></tr> <tr><td>OSA-Express3 Inbound Workload Queuing (IWQ)³</td></tr> </table>	Capacity Provisioning enhanced ⁴	Three subchannel sets per LCSS ³	Platform Management from HMC	CFCC Level 17 enhancements ⁴	Up to 128 Coupling Link CHPIDs	Improved processor cache design	Power save functions	Crypto Express3 enhancements ⁵	Secure key HMAC Support	Elliptic Curve Cryptography (ECC) Digital Signatures ³	CPACF enhancements ⁵	Out of order instruction execution	z/OS discovery and auto-configuration (zDAC) ³	OSA-Express3 Inbound Workload Queuing (IWQ) ³
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Crypto Express3 enhancements ⁵																												
Secure key HMAC Support																												
Elliptic Curve Cryptography (ECC) Digital Signatures ³																												
CPACF enhancements ⁵																												
Out of order instruction execution																												
z/OS discovery and auto-configuration (zDAC) ³																												
OSA-Express3 Inbound Workload Queuing (IWQ) ³																												

z/OS exploitation in blue

IBM zEnterprise™ Overview: Tuesday 11:00

Everything a z/OS System Programmer Needs to Know to Exploit a z196 Server: Wed 3:00

¹ z/OS R7 and z/OS R8 support require IBM Lifecycle Extension for z/OS (5637-A01 or 5638-A01). PTFs required for z/OS R8-R12; refer to the PSP.
² Maximum of 1 TB per LPAR. Maximum supported by z/OS R7 is 512 GB. z/OS R8 and later are designed to support up to 4 TB per image.
³ z/OS R12 required.
⁴ z/OS R12, or R10 or later with PTFs required.
⁵ Cryptographic Support for z/OS V1.10 through z/OS V1.12 Web deliverable with the PTF for APAR OA33260 required.

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Integration and exploitation of IBM zEnterprise System

• IBM introduces the IBM zEnterprise System -- a system that combines the gold standard of enterprise computing with built-in function to extend IBM's mainframe-like governance and qualities of service to special-purpose workload optimizers and general-purpose application serving. End-to-end management is enabled for this heterogeneous environment by the IBM zEnterprise Unified Resource Manager, which provides energy monitoring and management, goal-oriented policy-based workload monitoring and management, increased security, virtual networking, and data management, consolidated in a single interface that can be tied to business requirements. An IBM zEnterprise System is composed of the IBM zEnterprise 196, the IBM zEnterprise Unified Resource Manager, the IBM zEnterprise BladeCenter Extension (zBX), and optimizers or blades.

• The IBM zEnterprise 196 server adds additional scalability and performance capabilities for your z/OS environment.

- The new 96-way core design (with 80 cores that are customer configurable) delivers massive scalability for secure data serving and transaction processing for large-scale businesses. The performance of a z196 (2817) processor is expected to be 1.3 to 1.5 times the performance of a z10 EC (2097) based on workload and model. The largest z196 (2817-780) is expected to exceed 1.6 times the capacity of the largest z10 (2097-764). It has up to twice the available real memory, 3 terabytes (TB) per server (with up to 1 TB real memory per LPAR) compared to the z10 EC Model E64. New quad-core 5.2 GHz processor chips, with more than 100 new instructions to enable improved code efficiency, are also designed to help improve the execution of Java and CPU-intensive workloads. For example,

Hardware Support

zEnterprise and z/OS Support for New Functions

	Minimum z/OS Level *
Basic zEnterprise server support	1.7 ^{1,2,4,6}
Toleration for more than 64 CPs on a server	1.7 ^{1,2,4}
Crypto Toleration	1.7 ^{1,2,4,5}
HiperDispatch node and cache support	1.10 ^{1,2}
Power Save Mode	1.10 ^{1,2}
CPU Measurement Facility	1.10 ^{1,2}
CF Level 17 exploitation	1.10 ^{1,2,7}
zHPF Response Time Reduction	1.10 ^{1,2}
Three Subchannel Sets	1.10 ^{1,2}
Crypto Exploitation	1.10 ^{1,2,3}
RMF™ Postprocessor Support for 4096-bit Crypto	1.10 ^{1,2}
IBM zEnterprise BladeCenter® Extension (zBX) Support, including Network Management and Performance Management	1.10 ^{1,2}
80-Way Single System Image Support	1.11 ¹
XL C/C++ ARCH(9) TUNE(9)	1.12
XL C/C++ HW Exploitation	1.12
zDAC Support	1.12
D OSAINFO Command Support	1.12
OSA-Express3 Inbound Workload Queueing	1.12



1. Additional features, service, or Web downloads required. 2. Please refer to the current PSP buckets for latest PTFs for IBM zEnterprise 196 (z196) Compatibility and new functions/features support. 3. z/OS V1.10, z/OS V1.11, or z/OS V1.12 with the Cryptographic Support for z/OS V1R10-V1R12 Web deliverable required. 4. Lifecycle Extension required* 5. Crypto web deliverable required* 6. zIP support web deliverable required HiperDispatch support on z/OS 1.7 7. Some functions require z/OS V1.12.

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A smarter operating system with designs for:

Improving Usability and Skills

z/OSMF Software
Deployment and Storage
Management applications,
User-level mount command
for z/OS UNIX System
Services, Automatic UCB
updates, SDSF Sysplex
functions to work without
MQ, Catalog parmlib
member, Better O/C/EOV
Messages, Health Checks, ...

Integrating new Applications and Supporting Industry and Open Standards

Java/COBOL interoperability,
Improved Support for unnamed
sections, ISPF Edit Macros,
Subsystem and Unauthorized
XTIOT support, dbx hookless
debug, DFSORT improvements,
Job level return codes, ...

Scalability & Performance

Fully-shared zFS in a sysplex,
RMODE 64 extensions,
IFASMF DL improvements,
500K+ aliases per user catalog,
Larger VVDSs, FREE=EOV,
FTP support for large format
data sets and EAS, ...



Enhancing Security

RRSF over TCP/IP, LDAP
improvements, SAF security for
z/OSMF, NAS address checking and
encryption negotiation, New restricted
QNAMEs, PKI support for DB2
backstore, ICSF support for new
HMACs, FTP & TN3270 password
phrase support, ...

Improving Availability

Warn before TIOT exhaustion,
CMD5 enhancements, Parallel
FTP for dump transfers, PFA
ENQ tracking, RTD
improvements, zFS Refresh,
DADSM Dynamic Exits, JES3
dynamic spool addition, Better
channel recovery, More ASID
reuse, ...

Self Managing Capabilities

WLM and RMF to provide
response time distribution for all
goals, DFSMSHsm Journal
Backup and space management
improvements, ...

Extending the Network

IDS IPv6 support, NAT
Traversal for IKEV2, NMI
extensions, More VLANs per
OSA port, more 64-bit TCP/IP,
EE improvements, ...

z/OSMF Software Deployment

- New application to clone system software
- Support for all SMP/E-installed software
 - Anything anyone packages with SMP/E; no additional SMP/E metadata required
- Designed to let you:
 - Identify, modify, delete software instances
 - Generate jobs to copy a software instance
 - Verify cross-system and cross-product requisites
 - Compare source/target environment HOLDDATA
- Copies to include SMP/E target CSI data sets
 - Can opt to omit the DLIB zone for images you do not intend to service
 - Intended to help assure rigor in the cloning process
 - Help ensure you have a good inventory for service
- Designed to support both local copies (within a shared DASD environment) and remote copies (across a network)
 - Remote copies will require a running, remote z/OSMF



**z/OS Software
Deployment
Thursday 8:00**

**z/OSMF
Implementation
and Configuration
Tuesday 4:30**

z/OSMF Software Deployment Entry Panel

IBM z/OS Management Facility Welcome wasusr6 [Log out](#)

[Welcome](#) [Deployment](#) [Help](#)

Deployment
Use this task to deploy software. To get started, select the **Deploy Software** action. [Learn more...](#)

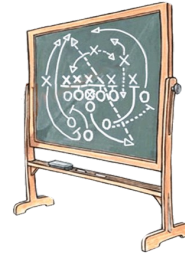
Deploy Software	Deploy a software instance, and manage existing deployments.
---------------------------------	--

Administration

Software Instances	Add your software to z/OSMF, and manage existing software instances.
Categories	Create and manage the categories to organize your software instances and deployments.
Global Zones	Add and manage the global zone CSI data sets that identify and describe your software.
Systems	Add and manage the z/OSMF host systems that have access to the DASD where your software resides.
FTP Servers	Add and manage the FTP servers for each system.
FTP Profiles	Add and manage the FTP settings to use when communicating with an FTP server.
HTTP Proxies	Add and manage the HTTP settings to use when communicating with a system.
Settings	Select the time zone in which to display date and time data. Indicate whether to display or suppress information messages.

z/OSMF Storage Management application

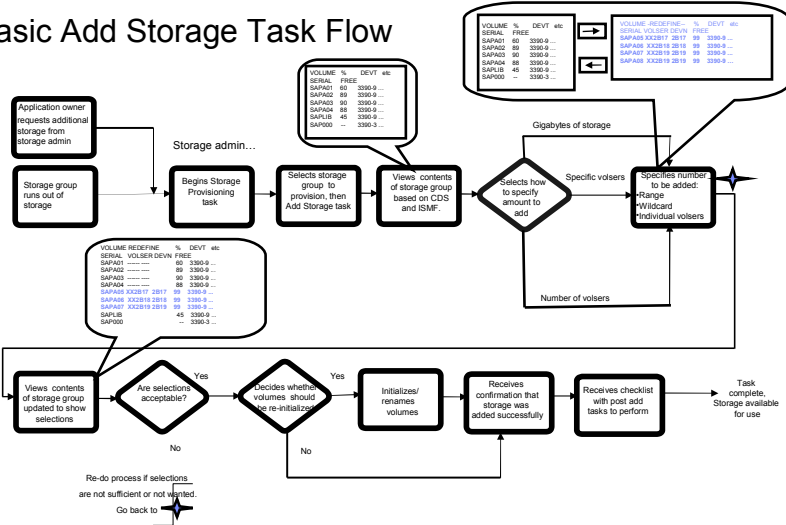
- Define roles for storage administrator capabilities (user and master user)
- Define policies to assist in storage administration tasks
- Define containers for “extra predefined volumes”
- View storage group usage to find any exceeding storage capacity thresholds
- Add storage wizard to replace 23 tasks:
 - Decide which SCDS to change
 - Decide how much storage to add (default will be system-recommend based on policy)
 - Identify installation post-processing guidelines
 - Activate the modified SCDS



Improving Usability and Skills

“Before”

Basic Add Storage Task Flow



Improving Usability and Skills

“After”—z/OSMF Disk Management Welcome Panel

The screenshot shows a web browser window titled "IBM z/OS Management Facility - Mozilla Firefox: IBM Edition". The address bar displays "https://svt5.storage.tucson.ibm.com:1033/zosmf/". The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. Below the address bar, there are several tabs, including "Most Visited", "Getting Started", "Latest Headlines", "Customize Links", "Free Hotmail", and two "IBM Business Transfor..." tabs. The main content area shows the "IBM z/OS Management Facility" interface. On the left is a navigation pane with a tree view containing "Welcome", "Links", "Storage", "DASD Management", and "z/OSMF Administration". A "Refresh" button is located below the tree. The main content area is titled "Welcome" and "DASD Management". It shows a breadcrumb trail: "DASD Management > Storage Groups > Add Volumes". The "Add Volumes" section is active, displaying a wizard. The wizard has a "Welcome" step selected in a list on the left, which also includes "Select Volumes", "Generate Volume Names", "Define Initialization Attributes", "Initialize and Activate", and "Summary". The main content of the wizard says "Complete this wizard to add one or more volumes to a storage group." and "Use this wizard to add volumes to a storage group. Adding volumes consists of the following steps:" followed by a bulleted list: "Select volumes to add to the storage group. You can use the volumes that the wizard suggests for you or specify volumes.", "Generates volume names using rules that you define.", "Define initialization attributes for the volumes (volume serial, SMS status and VTOC settings).", "Update and optionally activate the control data sets (ACDS and SCDS).", and "Review a summary of the volumes you are adding." There is a checkbox labeled "Do not show the Welcome step in the future" which is currently unchecked. At the bottom of the wizard are buttons for "< Back", "Next >", "Finish", and "Cancel". The status bar at the bottom of the browser shows "Transferring data from svt5.storage.tucson.ibm.com..." and "Enabled".

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z/OSMF R13 improvements



- **z/OSMF Capacity Provisioning Manager application**
 - Designed for easy monitoring of CPM status
- **z/OSMF Configuration Assistant for Communications Server**
 - Multiple release configuration support (both R12 and R13 systems)
 - Sysplex-wide policy definitions
 - IP address discovery from stacks
- **z/OSMF support for application linking**
 - Allow z/OSMF applications to link directly to others via URL
 - Both in-context linking and simple linking
 - Intended to make it simpler to navigate across apps
- **Expanded SAF-based security for z/OSMF user authorization and roles**
 - In addition to current z/OSMF security
 - Intended to be used in place of the current z/OSMF repository-based authorization support

**z/OSMF 1.12 Overview
Tuesday 3:00**

**z/OSMF 1.12
Implementation and
Configuration
Tuesday 4:30**

**Manage Your
Workloads and
Performance
with z/OSMF
Friday 11:00**

**z/OSMF Hands-
on Lab
Thursday 4:30**

- **JCL Improvements with JES2**
 - Stop journaled jobs on step boundaries
 - Job-level return codes
 - ✓ JOBRC=HIGHEST, LAST, STEPRC
 - Support for instream data sets in PROCs
 - ✓ ddname DD *
 - SPIN= DD JCL (and dynamic allocation) support for spin interval specification similar to that on JESLOG
 - ✓ SPIN=(UNALLOC, interval)
- **Remaining SDSF Sysplex functions no longer to require WebSphere MQ (aka MQSeries):**
 - WLM enclaves (ENC)
 - z/OS UNIX processes (PS)
 - Health checks (CK)
 - Resource monitor (RM) (JES2 only)

▪ New Catalog Parmlib Member

- New optional IGGCATxx member
- CATALOG=(xx,yy, ...) in IEASYSxx
- Default is IGGCAT00
- Parmlib concatenation, multiple members supported
- Catalog defaults taken if no parmliib member found
- Support for specifying:
 - ✓ VVDS space defaults
 - ✓ Whether warning messages are issued for some delete commands
 - ✓ Catalog utilization warning message threshold
 - ✓ Limit on CAS service tasks (overrides any specification in SYSCATxx)
 - ✓ Whether to enable extension records for user catalog aliases
 - ✓ ...and more!

▪ Warning message for usercatalog delete

- For catalogs with RECOVERY attribute
- Bypassed for those with ALTER authority to the master catalog

▪ Automatically fix SMS CDS data set attributes

- Health check for NOREUSE in R12
- Automatically changed to REUSE in R13



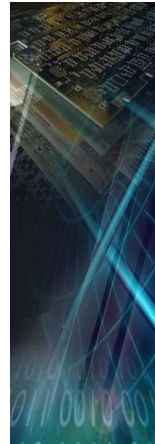
**What's New with
DFSMS ICF Catalog
and IDCAMS
Thursday 9:30**

**What's New in
DFSMS Overview
Monday 3:00**

- **Automatic UCB updates for DFSMSdss RESTORE and DFSMSHsm Fast Replication Backup and Recovery processing**
 - Specify a new REFUCB keyword in DEVSUPxx
 - Designed to make it unnecessary to issue VARY commands for these operations
- **Better OPEN/CLOSE/End of Volume Messages**
 - Additional information so you don't have to look up the message
 - New DEVSUPxx parameter to activate:
 - ✓ OCE_ABEND_DESCRIP = YES | NO
 - Example:

```
IEC145I 413-40,IFG0194F,RDASL1,RDSL1,SYSUT1,0920,,DATASET X
ERROR DESCRIPTION:
THE DEVICE DOES NOT SUPPORT THE RECORDING MODE
REQUESTED BY THE USER OR DETERMINED BY THE SYSTEM.
END ERROR DESCRIPTION: IEC145I
```

**What's New in
DFSMSdss and
System Data
Mover
Thursday 8:00**



DFSMSrmm improvements

- **Automatic recovery for missing our out-of-sequence tape volumes**
 - For multivolume data sets, DFSMSrmm will attempt to return the corrected list
 - New message: IEC716I ddname: TAPE MULTIVOLUME LIST CORRECTED
 - Note: Cannot use this if you specify OPTCD=B, which bypasses label anomaly processing
- **Specify expiration date or VRS management for data sets**
 - Help simplify retention policies, avoid batch VRS policy management, and enable you to determine how long a tape data set will be retained
- **SEARCHDATASET command to allow searching tape data set metadata based on:**
 - Date ranges
 - Relative values
 - SMS constructs
 - Catalog status



Health Checking

- Health Checker Framework improvements
 - Better control of check scheduling
 - New SYNCVAL keyword in HZSPRMxx parmlib member and MODIFY
 - Checks can raise message severity as conditions change
- New health checks:
 - Warn when zFS configuration option is not set to sysplex=filesys
 - Detect and report on tape library devices that had initialization errors at IPL time, provide explanation and suggested remedy



True cross-system sharing of zFS across a sysplex

- Direct I/O from all sharing systems
- No more function-shipping
- Performance improvements expected for what were “non-owning” systems

Support for (lots!) more aliases per user catalog

- z/OS R12 increased the maximum catalog size dramatically
- Existing limit on number of aliases is approximately 3,500 (depending on alias lengths)
- New limit in z/OS R13 expected to be over 500,000 (depending on alias lengths)
- New catalog connector extension record (Type V)
- Catalog parmlib member (IGGCATxx) keyword
- New command:
 - ✓ MODIFY CATALOG,ENABLE(EXTENDEDALIAS)
 - ✓ **Do not issue until all systems that will process the catalog are at R13!**

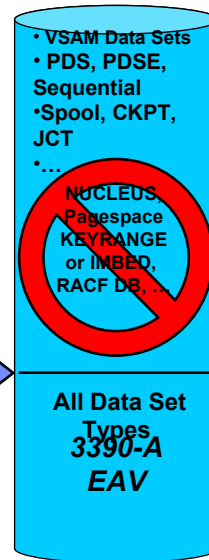


Scalability and Performance*

EAV Support:

- z/OS R10 introduced EAV with support for VSAM (incl. zFS)
- z/OS R11 added Extended Format Sequential and support for data sets spanning the 64K cylinder line
- z/OS R12 added:
 - PDS and PDSE (including load modules and program objects)
 - Plain vanilla (nonextended format) sequential
 - BDAM
 - GDG
 - LPALIB, LPA list, link list data sets, SYSn.IPLPARM, SVCLIB
 - Catalogs, VVDSs
 - JES2 and JES3 spool and checkpoint, JES3 JCT
 - DFSMSrmm, DFSMSHsm™ data sets
 - Standalone Dump data set and AMASPZAP support
 - VSAM AIX support in Language Environment
- **Planned for z/OS R13:**
 - SDSF support for output data sets
 - FTP support for SMS-managed and non-SMS-managed PS basic and large format; PDS and PDSE; and GDG data sets
- **No** support for above the line for:
 - Imbed and Keyrange attributes, incompatible CA sizes for VSAM
 - NUCLEUS, SVCLIB, LOGREC, VTOC, VTOCIX,
 - RACF databases, Page data sets, HFS data sets
 - Parmlib concatenation data sets
 - XRC Control, Master, or Cluster non-VSAM data sets

65,520 Cyls



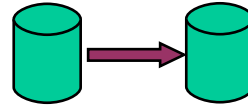
VVDS maximum size increase

- For VVDSs in and out of EAS
- Maximum VVDS space increased from 5,460 tracks to 5,825 cylinders
- Increases practical maximum number of data sets from hundreds of thousands per volume to millions per volume



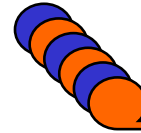
IEBCOPY improvements

- Better performance expected for PDS-PDS copies
- 31-bit track buffering
- Removal of requirement for APF authorization



New JCL parameter, FREEVOL=EOV

- Specifies that a tape for part of a multivolume data set be available at end of volume rather than end of step
- Can allow other jobs to use the tape immediately
- Can allow overlapped processing of multivolume tape data sets



- **FTP support for large format data sets:**
 - FTP will be designed to allow you to transfer, restart transfers for, and allocate large format data sets
 - Support data sets larger than 65,525 tracks or more than 2 gigabytes of data, without requiring them to be SMS managed.
- **VSAM RLS improvements:**
 - Planned to support a new storage class (STORCLAS) attribute to specify whether VSAM RLS buffers and the associated resources are retained for a while or released immediately upon CLOSE
 - DCOLLECT to include information about this new attribute in SC records
 - Improved VSAM RLS buffer management of "aged" buffers
 - Expected to help improve performance when processing large RLS data sets



IFASMF DL Improvements

- Avoid reading to end of log stream
 - IFASMF DL starts reading a log stream at a point (approximately) representing a specified time
 - New SMARTENDPOINT keyword to specify that IFASMF DL should stop reading a log stream when a point representing double the MAXDORM value is reached
 - Avoids reading to end of log stream
- Allow entire log stream to be archived or deleted
 - Treat log streams as though they were SMF data sets
 - Will reset log stream starting point to next new block



RMODE 64

- The next step...
- Allow execution of enabled code above 2G
- Support for code above 2G that calls no system services and is not loaded by normal system “load” methods
- Handle and resume after I/O and external interrupts

Improving Availability*

CMDS Command enhancements

- CMDS ABEND,CMD=xxxxxxx,ID=nnnn introduced in z/OS R12
- Enhanced in R13 to support an exclusion list for “non-abendable” commands
- CMDS FORCE command planned for z/OS R13, intended to be used when only alternative is IPL

Parallel FTP tool to be made part of z/OS

- IBM® z/OS® Problem Documentation Upload Utility
- Messages to be split between SYSPRINT and DEBUG data sets
- New program name, AMAPDUPL
 - ✓ Alias MTFTPS for compatibility

Message flood automation processing planned to:

- Increase message ID limit from 50 to 1024
- Allow up to 128 address spaces to be tracked per system
- Allow the default message set to be identified in a parmlib member
- Intended to increase the scope of message flood automation, improve its usability, and help improve system availability



Improving Availability*

Predictive Failure Analysis and Runtime Diagnostics Enhancements:

- **PFA ENQ tracking**
 - High and low rates for selected address spaces
 - High and low overall system rate
- **PFA JES2 SPOOL utilization tracking**
 - Track jobs started within an hour of IPL
 - Model the persistent jobs that use the most SPOOL space
 - Look for unexpectedly high usage
- **RTD improvements**
 - Start during IPL
 - Latch contention detection
 - z/OS UNIX System Services-related delays
- **PFA and RTD integration**
 - PFA to call RTD when it detects a lack in a tracked metric (e.g., WTOs, SMF records, lines in a job log, ENQs)
 - Intended to detect “classic” causes of hung address spaces, such as loops and serialization deadlocks

**Detecting Soft Failures Using
z/OS PFA: Basic and
Advanced topics
Wednesday 11:00**

**z/OS Problem Determination
Update: z/OSMF Incident
Log, Runtime Diagnostics,
PFA, and New Technologies
Tuesday 11:00**



zFS Internal Restart

- Automatic recovery from severe PFS layer problems
- Remounts all mounted zFS filesystems
- Accessing open files may result in I/O errors or EAGAIN until refresh completes
- No configuration changes incorporated during restart
- Can also be operator initiated with new commands
 - ✓ MODIFY ZFS,REFRESH to refresh zFS
 - ✓ MODIFY ZFS,NSVALIDATE to validate control blocks and refresh if needed

JES3 Dynamic SPOOL Addition

- Add a SPOOL volume without a JES3 restart

Improved Channel Recovery

- Remove paths to all devices affected by a path error
 - Avoids repeated recovery for path errors as I/Os are driven to more devices along the path



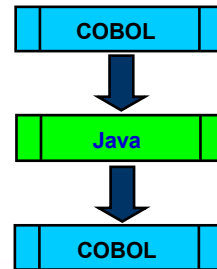
Improving Availability*

- **DADSM dynamic exits support**
 - IGGPRE00
 - IGGPOST0
- **ASID Reuse**
 - DEVMAN address space planned to be reusable
 - CATALOG, LLA, VLF, z/OS UNIX RESOLVER, TCP/IP, DFSMSrmm, and TN3270 already reusable
- **DADSM and CVAF planned to support concurrent service**
 - Dynamically update without IPL to help improve system and application availability



z/OS Batch Runtime environment—Java/COBOL interoperability

- Intended to provide the framework for Java to COBOL interoperability for transactional updates to DB2 while sharing database connections
- Designed to enable you to extend valuable COBOL assets using Java
- Note: Java programs eligible for zAAPs
- Requirements include:
 - IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6.0.1 (5655-R31)
 - DB2 V9.1 for z/OS (5635-DB2) or later with PTFs
 - IBM Enterprise COBOL for z/OS V4.1 (5655-S71) or later
 - Web services included in the WebSphere Application Server OEM Edition for z/OS packaged with the z/OS Management 3 Facility (z/OSMF) V1.13, or later.



User-level mounts and unmounts for z/OS UNIX

- BPXPRMxx support for limiting user mounts
- SAF-based security for allowing the function
- Can restrict which mountpoints a user may use and allow mounts only at empty mountpoints

Last stage of support for DSNTYPE=LARGE data sets in C/C++

- z/OS R8 implemented support using QSAM (noseek)
- z/OS R12 provided BSAM (seek) support for record I/O
- z/OS R13 to implement support for BSAM (seek) for binary and text I/O for OS data sets

Better Binder support for unnamed sections

- Today, there is no way to remove them...and they...accumulate
- Support planned for:
 - Removing all unnamed sections with a new binder option, STRIPSEC=PRIV
 - Specifying unnamed sections and symbols on binder control statements
 - ✓ Name a previously-unnamed section
 - ✓ Replace an unnamed section
 - ✓ CHANGE and REPLACE support for unnamed symbols

DFSMS support for very long retention periods

- RETPD=9999 was old limit (a bit over 27 years)
- New design limit is 93,000 days (a bit over 254 years)
- Notes:
 - 1-byte fields and 1900 epoch date limit expiration dates to YE2155
 - 99000 and 99366 remain as "never expire" dates no matter how derived
 - OAM and DFSMSrmm to support expiration dates up to the year 2264



SDSF support for REXX and Java access to OPERLOG

- In addition to access to syslog
- Use ISFLOG command for REXX
- Use ISFLogRunner class for Java

Key 8 program access to Key 9 DCBEs for OPEN

- No longer need to copy Key 9 DCBEs to Key 8 storage before OPEN
- Allow both DCB and DCBE to be in only Key 9 storage

XTIOT support for subsystem ACBs and DCBs

- Open processing support for being passed either a subsystem ACB or DCB
- DFAXTBAM must be set; subsystem must set DSABSSXT

SMB Server support for Common Internet File System (CIFS)

- Provide improved support for Linux on System z clients
- Add CIFS support to existing SMB FS support

64-bit storage support for subspaces

- Access to 64-bit private and 64-bit shared storage in subspace mode
- Note: No subspace storage isolation for 64-bit storage

ISPF support for line command-level Edit macros

- In addition to initial and command line-level macros

Authorized programs to be able to extend currently open allocations to new volumes

- New support in MODIFY TYPE=DEVICELIST
- Will update SMF and Allocation control blocks as needed

XTIOT and DSAB above support for unauthorized programs

- Allow when either S99TIOEX or S99ACUCB is set



DFSORT programming enhancements—now available

- PTF UK90025 for z/OS V1.10 and z/OS V1.11
- PTF UK90026 for z/OS V1.12
- New functions for translating ASCII, EBCDIC, hex, and binary characters
- RESIZE operator for ICETOOL you can use to change output record lengths
- New date field arithmetic operations
- ACCEPT option for the OUTFIL statement you can use to process subsets of output records
- Grouping function based on key changes
- Support for SET and PROC symbol substitution in control statements
- For more info see User Guide for DFSORT PTFs UK90025 and UK90026 at:
 - <http://www.ibm.com/support/docview.wss?rs=114&uid=isg3T7000242>



qsort() function for the z/OS Metal C Runtime Library

- Allow an array to be sorted using a function you supply
- Intended to relieve Metal C programmers from having to write sort routines with similar capabilities



Language Environment planned to support recovery from more abends during output and close operations for C/C++ programs

- Return to C/C++ programs indicating that an I/O error has occurred rather than issuing an abend
- Intended to provide a more predictable recovery environment when I/O errors are encountered

Support planned to allow tasks having subtasks in a WLM to leave it, and for subtasks of a task joining an enclave to be joined to it

- Available now on z/OS V1.11 and z/OS V1.12 with the PTFs for APARs OA33344 and OA33406

XCF planned to provide a simplified set of interfaces for passing messages within a Parallel Sysplex

- New services designed to allow a server to be established to process messages and for messages to be sent across the sysplex without first joining an XCF group
- Intended to make it easier to exploit XCF services for applications that do not require the member management and monitoring provided by the XCF group services interfaces

Language Environment planned to add support for initializing multiple CEEPIPI main environments under one TCB

- Designed to provide access to a user word for each environment
- Intended to help you migrate Preinitialization Compatibility Interface (PIC) environments to CEEPIPI

dbx “hookless” debug support

- In prior releases, dbx inserted EX instructions, aka “hooks,” at compilation time to provide debugging breakpoints
- In R13, dbx planned to provide support for programs compiled without hooks



z/OS Unicode Services planned to implement improved bidirectional character support

- For applications that process scripts written and read from right to left with imbedded string read from left to right
- Samples planned to show how to use these extended bidirectional services, with a sample object file planned that you can include with C applications

z/OS Unicode conversion information service planned to provide more information about CCSIDs

- To identify substitution, newline, line feed, carriage return, end-of-file, and space characters

Support planned to allow tasks using subspaces to access 64-bit private and shared virtual storage without using Branch in Subspace Group (BSG) instructions

- Intended to make it easier for applications to exploit 64-bit storage

z/OS UNIX planned provide the capability for IPv4 UDP datagram reply packets to flow on the same interface where the request arrived

- When server system has multiple home addresses with multiple routes back to the client or is using a DVIPA
- Designed to be similar to existing support for IPv6
- Intended to allow applications to require that the response to a request be restricted to the same IPv4 address from which the request was received.

LDAP improvements

- SHA-2 password hashing
 - Support for SHA224, SHA256, SHA384, and SHA512, both salted and unsalted
- Set search limits by groups of users
 - Override server-wide limits imposed by sizeLimit and timeLimit
 - 500-entry maximum is the default
 - Range is from 1 to 2147483647, or no limit
 - Administrator searches not bound by any limits
- Support for paged results as described in RFC2696
 - Get back segmented results, a specified number of entries per "page"
- Support for server-side sorting as described in RFC2891
 - Sorted search results based on a list of criteria, where each criterion represents a sort key
- 64-bit support for TDBM
 - DB2 ODBC 64-bit support
 - 64-bit TDBM/Bulkload, Idif2ds, DSCONFIG, GDBM support.
 - Support more data in TDBM using DB2 9 for z/OS (5635-DB2) with PTF UK50918 or later
- Support planned to enable Kerberos binds to be processed by Microsoft's Active Directory Server



RRSF via TCP/IP

- In addition to APPC
- Secure the links via AT-TLS
 - AT-TLS required; RRSF will refuse to use an unsecured link
 - Server- and client-side authentication will be used
 - Sample rule will specify strongest available encryption method
 - More and better encryption algorithms available in AT-TLS
 - ✓ Note: RRSF via APPC uses 56-bit DES
- Can allow an EE link used for this purpose to be changed to native TCP/IP
- New operand on TARGET operator command or issued during RACF subsystem initialization:
 - `PROTOCOL(TCP(ADDRESS(hostname_or_IP_address)))`

SAF-based security for z/OSMF

- New general resource class, probably to be named ZMFAPLA
 - Similar to EJBROLES class
- New grouping class, FZMFAPLA, for application visibility control
- Also need to create a ZMFDFLT, in the REALM class
 - Will be used eventually to allow multiple z/OSMF instances to run with a shared RACF database or a replicated database



Enhancing Security*

Support for NAS to perform RFC 4120 address checking

- New switch in the KERB segment of the KERBDFLT profile
- Kerberos server should interrogate the addresses in tickets when CHKADDRS is set to YES
- New data returned by R_kerbinfo service

Support for encryption type negotiation in NAS

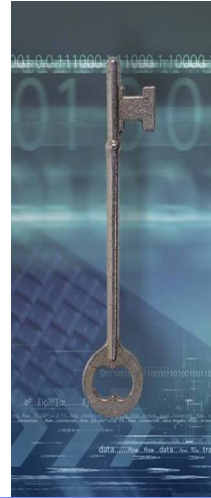
- As described in RFC 4537
- Allow stronger encryption than that supported by a KDC

ICSF support for additional HMAC algorithms

- Support for FIPS-198
- New HMAC generate and HMAC verify callable services
- Support planned for SHA-1, SHA-224, SHA-256, SHA-384, and SHA-512

TN3270 and FTP support for password phrases

- In addition to existing support for passwords



Restrict additional QNAMES to authorized programs:

- Already restricted:
 - QNAMES starting with SYSZ (such as SYSZVOLS)
 - ADRDFRAG, ADDRDSN, ARCENQG, BWODSN, SYSCTLG, SYSDSN, SYSIEA01, SYSIEECT, SYSIEFSD, SYSIGGV1, SYSIGGV2, SYSPSWRD, SYSVSAM, and SYSVTOC
- Planned to be restricted:
 - ARCDSN, ARCBTAPE
 - ARCGPA, ARCBACV, and ARCMIGV, when converted from RESERVE to ENQ

PKI Services Support for DB2 Backstore

- Optional use of DB2 rather than native VSAM for Object Store (OST) and Issued Certificate List (ICL)
- Allows DB2-based queries and reporting
- Other advantages of DB2 apply (e.g., online REORG)
- Support for much larger CRLs
 - Note: Without DB2, z/OS R13 PKI Services planned to extend maximum CRL size from 32k to over 500k
- ICL duplexing via DB2
- Most value thought to be for large-scale certificate deployment



System SSL enhancements:

- ECC support for X.509 V3 certificates using the ECDSA and ECDH algorithms
 - Designed to let you to create them in key database files or ICSF PKCS#11 tokens
 - Certificate Management Services API support planned
- Extend use of ECC to enable TLS V1.0 and V1.1 handshakes with ECC cipher suites and digital certificates during connection negotiations per RFC 4492
- Support for ECC certificates residing in SAF key rings with their private keys stored in the ICSF PKDS
- Support for private keys in secure digital signature generation operations available through Crypto Express3 Coprocessor (CEX3C) cards on IBM zEnterprise servers

RACF support planned for generating ECC secure keys

- Using the CEX3Cs available for zEnterprise servers.
- New RACDCERT keywords designed to allow you to specify that an ECC key be stored in the ICSF public key data set (PKDS). Corresponding hardware ECC key support planned for PKI Services.
- Intended to allow you to expand your use of certificates with ECC keys protected by hardware.

IBM Ported Tools for z/OS (5655-M23)

- Planned to provide the sudo utilities in the PTF for APAR OA34949, planned for availability in March 2011
- Include as part of the Supplementary Toolkit for z/OS feature
- Designed to deliver the sudo (su "do") open source tools that allow system administrators to delegate authority to users or groups of users

z/OS Communications Server intrusion detection technology planned to add support for IPv6 and more attack types

- Intended to provide IPv6 intrusion detection security and help you prevent certain error situations and denial of service attacks
- Configuration Assistant for z/OS Communications Server planned to help you configure the new IDS support

VIPARANGE DVIPA Security

- Support for RACF profiles controlling which user IDs can create and destroy VIPARANGE DVIPAs planned to be extended
- Allow you to specify ranges of VIPARANGE DVIPAs or individual VIPARANGE DVIPA addresses

IPSec support for FIPS 140-2 cryptographic mode planned to be enhanced

- AES-GCM and AES-GMAC support planned when using sysplex-wide security associations in FIPS 140-2 mode
- IKE daemon planned to use new ICSF services in FIPS mode

IKEv2 support

- Added to z/OS Communications Server V1.12
- In V1.13, Communications Server planned to add Network Address Translation (NAT) traversal support using IKEv2 for IPv4
- Intended to make it easier to migrate to IKEv2 if you use NAT
- Also, sysplex-wide security associations support planned for IPSec tunnels negotiated using IKEv2 and IPv4 addresses



Self-Managing Capabilities*

Better DFSMSShm journal backups

- Old way was to lock the journal for the entire backup
- New design:
 - Read control record
 - Back up journal data described by original control record
 - Lock journal, back up control record, back up balance of journal
- Expected to be much less disruptive for very active DFSMSShm systems
- Should be particularly nondisruptive if run when DFSMSShm activity is at its nadir for the day
- Note: Must specify SETSYS JOURNAL(RECOVERY) to use this function

**What's New in
DFSMSShm
Tuesday 11:00**

DFSMSShm Space Management improvements

- New option to specify that space management to start when any volume in an automigration storage group exceeds the utilization threshold rather than using Interval Migration processing
- Intended to make DFSMSShm space management more responsive while reducing IM overhead
- Also, improvements planned for volume data set list processing so data movement can start sooner

Other planned DFSMSHsm improvements

- ARCCMDxx parmlib member support for BEGIN and END specifications and multiple host IDs for ONLYIF keyword to allow you to specify groups of parameters related to one or more DFSMSHsm hosts with a single ONLYIF keyword
- New SETSYS subcommand you can use in place of the existing patch command to reduce the number of fast replication backup messages
- New subparameter for the HSEND RELEASE RECALL command you can use to specify that DFSMSHsm avoid recalling data sets from missing or faulty tapes while releasing the hold on recalls from DASD
- More info from HSEND QUERY COMMONQUEUE(RECALL) to identify originating hosts so you can more easily cancel a recall request
- A new patch you can use to suppress DFSMSHsm messages when no storage groups or copy pools are eligible to be processed for various space management, backup, and restore operations



Self-Managing Capabilities*

RMF monitoring for zEnterprise ensembles:

- RMF planned to provide CIM-based performance data gatherers:
 - Linux on System z
 - Linux on System x
 - AIX systems
- Designed to provide a consistent monitoring solution for zEnterprise ensembles
- Along with the Resource Monitoring plug-in for the z/OS Management Facility, first made available with z/OSMF V1.12, this is intended to display performance metrics from those platforms and combine them with z/OS metrics in common graphic views



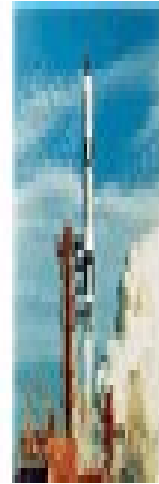
Response time distributions to be calculated by WLM and reported by RMF for velocity and discretionary goals

- As for response time goals, planned to be reported in 14 “buckets”
- Unlike response time goal reporting, mid-points planned to be recalculated and changed as appropriate

Self-Managing Capabilities*

Planned OAM improvements

- Support for file systems in the disk level for zFS and NFS, in addition to DB2-backed object storage
 - Planned to allow you to use z/OS UNIX file systems to store, retrieve, and delete objects, and to move objects between file systems and other locations in the OAM hierarchy
 - Intended to provide you more flexible ways to configure your OAM storage hierarchy
- Wildcard support for the MODIFY OAM, START, STORGRP command to allow you to initiate OSMC storage group processing for multiple object and object backup storage groups in single commands
- Dynamic update capabilities to enable changing the maximum number of tape drives OAM allocates to an object or object backup storage group without restarting OAM
- Enhancing MOVEVOL to improve performance when moving objects from a source volume that contains a large number of OAM collections
- Shipping CTICBR00 in the SMP/E-managed parmlib so you can use parmlib concatenation instead of copying it from samplib to parmlib during migration
- Enhancing SMF Type 85 records to add counter fields with higher maximum values, in addition to the existing fields in KB.



**What's New With
OAM Object Support
Monday 4:30**

Self-Managing Capabilities*

InfoPrint improvements

- Support for specifying either a primary or a secondary JES2 subsystem
 - Intended to allow you to isolate your print data on a secondary JES2 spool so unexpectedly large amounts of print output cannot cause impacts to the primary JES2 subsystem
- PrintWay Extended Mode designed to allow you to select output to be printed based on the amount size of each job, and direct it appropriately
 - For example, direct large print jobs to high-speed, high-volume printers and small ones to lower-speed distributed printers
 - Intended to remove one of the last significant inhibitors for migrating from Infoprint Server PrintWay Basic Mode to Extended Mode
- PrintWay Extended Mode enhancements planned for emailing documents:
 - Include text and line-data documents in the body of an email
 - Use a subset of RFC 2822-compliant email headers in line-data documents without modifying JCL or 3 printer definitions
 - Send different documents from a print job to the same people or to different people using email headers, job attributes, or JCL, and include common introductory text in each
- Infoprint Central planned to support:
 - Showing the age of print jobs
 - Displaying print jobs by age
 - Displaying new PrintWay Extended Mode fields used for job selection in printer property

Continued focus on IPv6

- We have been talking about IPv4 address exhaustion for a couple of years now...
- The last IPv4 address was assigned to a regional pool by IANA in February 2011
- IPv4 address exhaustion expected this year as Regional Internet Registry pools run dry
- More than you ever wanted to know at: <http://www.potaroo.net/tools/ipv4/index.html>

➤ If your z/OS system talks to the outside world and does not yet speak IPv6 you need to get going!



**IANA IPv4
Address Space
Registry**

Last Updated

2011-02-03

Networking*

- More flexibility planned for specifying reserved ranges of TCP/IP ports
- New CSSMTP server design for better memory and JES resource management when retrying mail send operations
- Improve z/OS system resolver processing when name servers are unresponsive
- Autonomic recovery planned for APPN routing tree corruption
- New design to monitor for CSM-constrained conditions and taking specified recovery actions
- Enterprise Extender connectivity tests initiated using the DISPLAY NET,EEDIAG,TEST=YES command when firewalls block ICMP messages expected to complete more quickly

**What's New in z/OS
Communications
Server?
Monday, 11:00**

**zEnterprise System -
Network Architecture
and Virtualization
Overview (Part 1)
Tuesday 9:30**

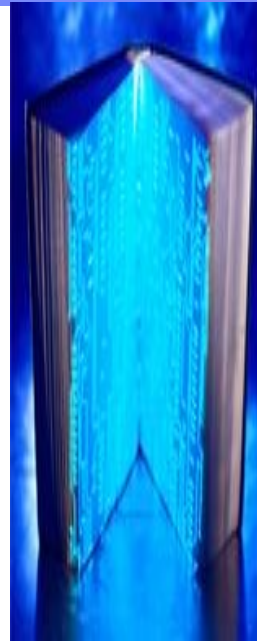
**zEnterprise System -
z/OS IEDN network
design and
implementation (Part 2)
Tuesday 11:00**



Networking*

- New DISPLAY TCPIP, TELNET command you can use to display a list of TN3270E Telnet servers
- New Network Management Interface (NMI) functions for the system resolver, and improvements to the NMI TMI_Copybuffer callable services
- Sysplex Distributor takeover and distribution of IPSec tunnels and traffic for dynamic VIPAs using IKEv2 planned for better workload balancing
- New design for more-responsive VIPAROUTE processing when TCP/IP stacks join or leave the group and when OMPROUTE is recycled

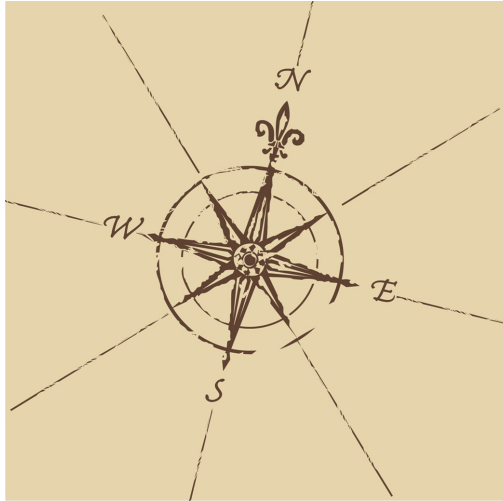
**What's Coming in z/OS Communication Server
Monday 1:30**



Microsoft Windows Support*

- The Microsoft Windows-based Capacity Provisioning Manager application is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition
- DFS SMB Server planned to support clients running both the 32- and 64-bit versions of Microsoft Windows 7 Professional, Microsoft Windows 7 Enterprise, and Microsoft Windows 7 Ultimate Editions
- NFS planned to provide support for the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition with Open Text NFS Client(TM) or Open Text NFS Server(TM) installed
- HCM is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition
- z/OS PKI Services is planned to add support to enable Mozilla-based web browsers on Windows and Linux platforms to use smart cards when generating certificates and to enable Microsoft Internet Explorer 6, Internet Explorer 7, and Internet Explorer 8 to use an updated PKI application that includes its own ActiveX controls, which allows users to install renewed certificates

Statements of Direction*



Reminders:

- z/OS V1.12 is the last release to include z/OS Distributed File Service support using the Distributed Computing Environment (DCE) architecture
 - IBM recommends the z/OS Network File System (NFS) as a replacement
 - Support in Distributed File Service for Server Message Block (SMB) architecture remains, and is not affected by this withdrawal of support
- In a future release, IBM plans to remove the capability to change the default Language Environment run-time options settings via SMP/E installable USERMODs. IBM recommends using the CEEPRMxx parmlib member to change the default Language Environment run-time options for the system.
 - Support for NONOVR added in z/OS R12
- z/OS V1.12 is planned to be the last release to include the z/OS UNIX System Services Connection Scaling functions provided by the Connection Manager and Process Manager components.

Reminders:

- IBM has discontinued software delivery on 3480, 3480 Compressed (3480C), and 3490E tape media.
- ServerPac and CBPDO are available on DVD; the SystemPac®, ProductPac®, and FunctionPac fee-based offerings; and selective follow-on Service (SFS) for the fee offerings are planned to be available on DVD.
 - IBM recommends using Internet delivery, but DVD support may provide an option for those who cannot use it
 - Installation using DVD requires a workstation with a network connection to the z/OS driving system

New news

- The Customized Offerings Driver is now available on DVD
 - Requires the use of the HMC to restore it
 - Offers an option if you need the COD and don't have a compatible tape drive
 - Note: Tape restores are expected to be faster!
- z/OS V1.13 is planned to be the last release to support multi-file system zFS aggregates, including zFS clones
 - Support for the zfsadm clone command and mount support for zFS file system data sets containing a cloned (.bak) file system will be removed
 - IBM recommends that you use copy functions such as pax and DFSMSdss to back up z/OS UNIX file systems to separate file systems.
 - Support for zFS compatibility mode aggregates will remain.
- z/OS V1.13 is planned to be the last release to support BPX.DEFAULT.USER
 - IBM recommends that you either use the BPX.UNIQUE.USER support that was introduced in z/OS V1.11, or assign unique UIDs to users who need them and assign GIDs for their groups.



New news

- z/OS V1.13 is planned to be the last release to provide the z/OS Capacity Provisioning support that utilizes the System z API for communication with the Support Element (SE) or Hardware Management Console (HMC).
 - This protocol is based on IP network connection using SNMP.
 - IBM recommends configuring the Capacity Provisioning Manager for communication via the z/OS BCP Internal Interface (BCPii) protocol. The SE and HMC support for the System z API remains, and is not affected by this withdrawal of support.

- z/OS V1.13 is planned to be the last release in which the BIND 9.2.0 function will be available.
 - If you use the z/OS BIND 9.2.0 function as a caching-only name server, use the resolver function, which became generally available in z/OS V1.11, to cache Domain Name Server (DNS) responses.
 - If you use the z/OS BIND 9.2.0 function as a primary or secondary authoritative name server, investigate using BIND on Linux for System z or BIND on an IBM blade in an IBM zEnterprise BladeCenter Extension (zBX).



The Future Runs on System z



Optimize your z/OS environment

