IBM z Systems

What's New in z/OS

V2.2 Update

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IBM

z/OS and the IBM z13

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IBM z13 System Functions and Features

Five hardware models
Up to 141 processors configurable as CPs, zIIPs, IFLs, ICFs or optional SAPs (no zAAPs) •100-way on z/OS® V1.12 or V1.13 •Up to 141-way on z/OS V2.1 (non-SMT mode) •Up to 128-way on z/OS V2.1 (SMT mode) - max active threads in SMT mode is 213
Up to 10 TB of Redundant Array of Independent Memory (RAIM) ▪1 TB per z/OS LPAR on z/OS V1.12 or V1.13 ▪Up to 4 TB per z/OS LPAR plan for z/OS V2.2 – Also available for z/OS V2.1 with a PTF
Changed (node) cache structure
96 GB Fixed HSA
Up to 85 LPARs (Up to 60 LPARs with z/OS V1.12 on any LPAR)
Up to six logical channel subsystems (CSSs)
4 Subchannel Sets per CSS
Single Instruction Multiple Data (SIMD) instruction set
Two-way simultaneous multithreading (SMT) support for up to 128 cores (IFLs and zIIPs)
New and enhanced instructions
XL C/C++ ARCH(11) and TUNE(11) exploitation: New z13 hardware instruction support, SIMD (Vector support) and Vector data, Decimal Floating Point packed conversion facility support, Performance improvements

The New IBM z13™
Parts 1 & 2
Tuesday 11:15 & 1:45

(z/OS support in blue)

z/OS Support for the IBM z13
Wednesday 1:45

IBM zAware: z/OS and Linux® on IBM zSystems™
CPU Measurement Facility
Flash Express (Storage Class Memory-SCM)
CF exploitation of Flash Express
IBM z Systems Data Compression (zEDC) capability using zEDC Express
OSA Express5S
Shared RoCE Express Support
Greater than 256 PFID support
PCIe extended address translation
Enhanced the PCIe function definition
PCIe function measurement block changes
FICON Express16S
FICON® Dynamic Routing
High Performance FICON for z Systems (including zHPF extended distance II)
Fabric I/O Priority*
CryptoExpress5S: Next Generation Coprocessor support, Support architecture for up to 85 Domains, Format Preserving Encryption (FPE)
Integrated Coupling Adapter (ICA) Links
Increased number of coupling CHPIDs, from 128 to 256 per CEC
zBX Model 004 support

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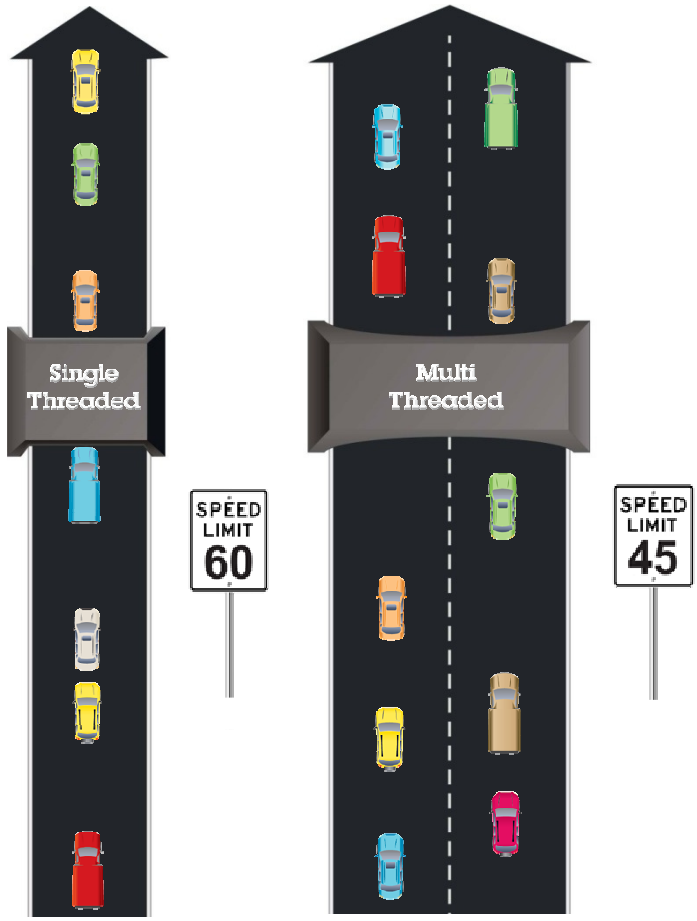
SMT

- "Simultaneous multithreading (SMT) permits multiple independent threads of execution to better utilize the resources provided by modern processor architectures."[1]
- With z13, SMT allows up to two instructions per core to run simultaneously to get better overall throughput
- SMT is designed to make better use of processors
- On z/OS, SMT is available for zIIP processing:
  - Two concurrent threads are available per core and can be turned on or off
  - Capacity (throughput) usually increases
  - Performance may in some cases be superior using single threading



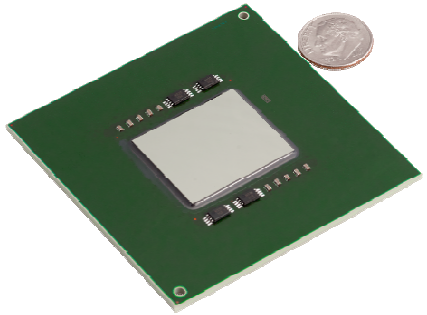
*Two lanes process more traffic overall***

[1] *Wikipedia®*

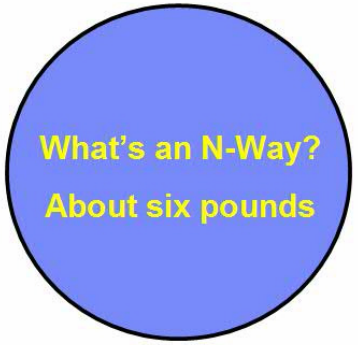
Note: Speed limit signs for illustration only

New z/OS n-Way Limits with z13

- z13 has up to 141 processors that can be configured as CPs or zIIPs for z/OS systems…and;
- …z/OS Version 2 has a 256-way architectural limit for multiprocessing
- In non-SMT mode, core=processor, and as 141 < 256, z/OS will be designed to support up to 141 processors in a single image
- In SMT mode, z/OS views *every* core as *two* processors
  - One or two processors can be online for zIIP cores, but…
  - One processor per CP core is always offline
- Thus, z/OS is supports up to 128 cores in a single image when SMT-2 mode is enabled for zIIPs
  - There is a CP:zIIP ratio of 1:2, so…with 43 CPs and 85 zIIPs, maximum active threads in SMT-2 mode is 213



IBM z13 processor chip



SMT Support

z/OS V2.2 Adds…

- Parmlib (IEAOPTxx) support for SMT enablement
- Operator commands for dynamically switching in and out of SMT mode
- SMF30 fields with normalized CPU time values in SMT mode
- SMF70 records with new SMT-related fields
- XES use of SMT mode for zIIP workloads to help improve physical processor utilization for synchronous requests
- Hardware Instrumentation Services (HIS) updates to provide measurement data in SMT mode
- RMF metrics for capacity planning and performance analysis

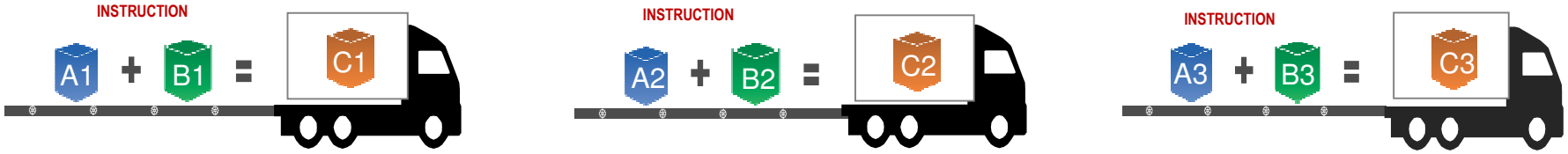
- **…all these available for z/OS V2.1 with PTFs**

SIMD (Single Instruction Multiple Data)

SIMD helps accelerate analytics through vector processing

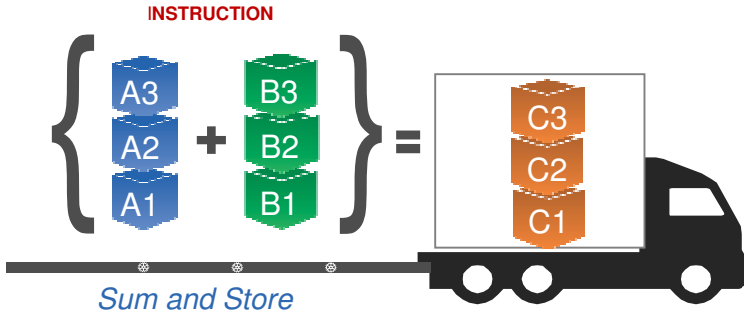
Scalar
Single Instruction, Single Data

Instruction is performed for *every data element*



SIMD
Single Instruction, Multiple Data

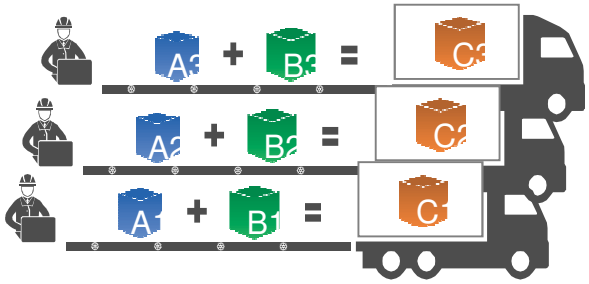
Perform instructions on *every element at once*



- **Smaller amount of code helps improve execution efficiency**
- **Process elements in parallel**
- **Supports analytics, compression, cryptography, video, imaging processing**

SIMD Support

z/OS V2.2 includes…



- HLASM support for new SIMD OpCodes
- MASS and ATLAS libraries included in z/OS
- Language Environment® enablement, dbx support
- z/OS XML System Services exploitation
- Various infrastructure enhancements to support new registers, etc.

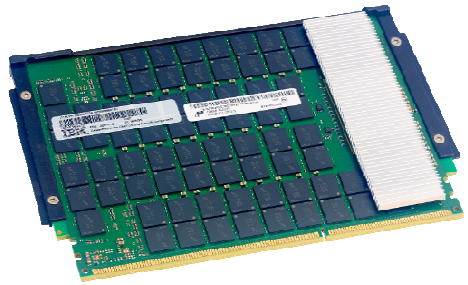
…all these available for z/OS V2.1 with PTFs (find them all with FIXCATs!)

Also, we have support for:

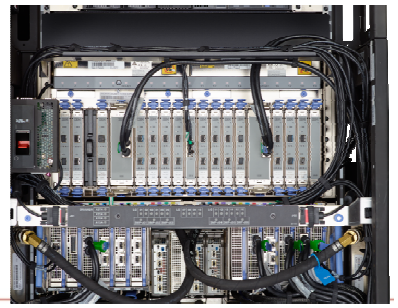
- z/OS XL C/C++ compiler, with new ARCH(11) and TUNE(11) parameters, in a web deliverable for z/OS V2.1 and included in z/OS V2.2
- IBM 31-bit SDK for z/OS, Java Technology Edition, Version 8 (5655-DGG) and IBM 64-bit SDK for z/OS, Java Technology Edition, Version 8 (5655-DGH)
- Enterprise PL/I for z/OS, V4.5 (5655-W67)
- Enterprise COBOL for z/OS, V5.2 (5655-W32)

WebSphere® Application Server for z/OS Liberty Profile V8.5.5.5 (5655-W65) applications using the Liberty profile and running with Java® 8 are expected to benefit from SIMD exploitation.

z/OS System Limits with z13



- **Up to 4 TB of real memory per LPAR**
  - For z/OS V2.2
  - For z/OS V2.1, with the PTF for APAR OA47439
  - (Note: HW limits to 1 TB per LPAR if old channel cards are carried forward)
- **Up to 4 subchannel sets**
  - Maximum primary device limit unchanged, at 65,280
    - ➢Limited by available subchannels in Subchannel Set 0
  - PPRC secondaries, PAV aliases, FlashCopy® targets can be defined in Subchannel Sets 0-3
  - Larger *practical* I/O configurations using advanced storage-related I/O functions can be supported with more subchannel sets



Fabric I/O Priority*

- z/OS V2.2 support for additional I/O priority capabilities
  - I/O priority already set by IOS and WLM
  - Used today by channel subsystem and IBM System Storage® DS8000® series for both read and write operations
- Planned to be extended to provide additional prioritization data for the FICON fabric
- Intended to get highest priority write operations done first when fabric is congested
- Will require:
  - A z13 processor
  - z/OS V2.2; or, z/OS V1.13 or z/OS V2.1 with PTFs for APARs OA47297 and OA44431
- Intended to provide end-to-end prioritization according to WLM policy for write operations
- Availability planned for 25 September 2015

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RDMA over Converged Ethernet

- **RoCE Support for SMC-R**
  - Requires z/OS V2.2 or z/OS V2.1 running on z13, IBM zEnterprise® EC12, or IBM zEnterprise BC12 servers with the RoCE Express feature
  - Shares memory between peer z/OS images
  - Read/write access to the same memory buffers without application changes
  - Designed to help increase transaction rates with low latency and reduced CPU cost
  - RMF support with new SMF74-9 records and PCIE Activity Report
  - Java support in IBM 31-bit and 64-bit SDK for z/OS Java Technology Edition, Version 7 (Java7R1, 5655-W43 and 5655-W44) or later

More Hardware Support

- RoCE Virtualization, designed to allow:
  - Sharing RoCE (RDMA over Converged Ethernet) cards across up to 31 z/OS images in a processor
  - Use of both 10GbE ports on the same adapter

IBM Java 8 and z13 - Hardware and Software Co-Design at Its Finest
Tuesday 8:30

Connect the Dots: a z13 and z/OS Dispatching Update
Tuesday 3:15

z13 Performance
Thursday 1:45

IBM z Systems Hardware Management Console (HMC) 2.13.0
Monday 1:45

z/OS Communications Server: Shared Memory Communications over RDMA (SMC-R) Protocol
Wednesday 10:00

A Whole Lot of Crypto

- z13 CPACF speed approximately *double* that of the zEC12's
  - Encryption and hashing both expected to be markedly faster
- New functions in Crypto Express5S with corresponding support, exploitation, and other improvements in ICSF Web Deliverable for z/OS V1.13 and z/OS V2.1 (not all require Express5S) designed to:
  - Help you meet emerging credit card processing standards using CCA-based services for key management, generation, transport, and derivation
  - Enhance support in the Remote Key Export callable service for key wrapping
  - Provide AES MAC enhancements to the Symmetric MAC Generate & Verify
  - Support some UDX callable services to CCA firmware:
    - Recover PIN From Offset, Symmetric Key Export with Data, Authentication Parameter Generate
  - Enhance Enterprise PKCS #11 mode to add secure key support for the Diffie-Hellman, Elliptic Curve Diffie-Hellman, RSA-PSS algorithms, and Secure DSA Domain Parameter Generation

*VISA Format Preserving Encryption (VFPE) technology forms part of Visa, Inc.'s Data Secure Platform (DSP). The use of this function requires a service agreement with Visa, Inc. You must maintain a valid service agreement with Visa when you use DSP/FPE.

More Compression Support

- **Extended Format BSAM and QSAM Compression**
  - Compressed Format data set support (available on z/OS V2.1 with PTF for APAR OA42195)
  - In addition to generic (DBBLIB) and tailored (supply a dictionary) compression
  - New COMPACTION option in DATACLAS definition
  - New values on COMPRESS parameter in IGDSMSxx
- **DFSMSdss data compression**
  - For DUMP & COPY, and when DFSMSdss is used as the data mover by DFSMShsm (available for z/OS V2.1 with PTF for APAR OA42243)
    - Up to 80% decrease in DFSMShsm CPU expected for L0-ML1 migration and up to 69% decrease for ML1 recall with zEDC compared to software-based compression & inflation*
    - Up to 50% less ML1 space with zEDC compared to software-based compression*

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

Configuring and Using SMF Logstreams with zEDC Compression
Thursday 3:15

z/OS 2.2 DFSMS Latest and Greatest
Monday 1:45

System z Batch Network Analyzer (zBNA) Tool – Because Batch is Back!
Tuesday 10:00

zBNA Hands-on Lab
Thursday 3:15

zEDC: Huge Response Time Improvements in Compression
Friday 11:15

z/OS V2.2

A smarter operating system with designs intended for*:

Usability and Skills

z/OSMF as a base element of z/OS; TCP/IP configuration; z/OSMF plug-in setup workflow; Updates to WLM, RMF, Incident Log, Software Management, WebISPF applications; New z/OSMF External Applications API; DJC and Deadline Scheduling for JES2; System Symbol enhancements…

Application Development

Web Enablement Toolkit, EU ordering rules for Unicode, ISPF improvements, DFSORT™ Date Functions, Enhanced RESTful data set and file APIs, Parallel Batch Scheduling, Improved JES3 symbol and JCL support, …

Scalability & Performance

More threads for z/OS UNIX® System Services, AMODE64 File System Services for zFS & NFS, CA-Level Locking for RLS, zFS performance, Even More Jobs for JES2, …

Enhancing Security

Signed SMF records, RFC 4556 X.509 support in Kerberos, RRSF Dynamic Node Reassignment, Multiple certificate approvers, PKI RFC 6277 Support, System SSL RFC 2560 OCSP Support, z/OS UNIX security improvements, BCPii audit records, …

Availability

Dynamic JES2 Checkpoint Tuning & Expansion, Private Area Virtual Storage Tracking in PFA, Dynamic TDS (LDAP) Compatibility Upgrades, Multi-target PPRC, Incremental FlashCopy, XCF message processing, LOGREC deallocation, O/C/EOV Dynamic Exits, …

Systems Management

Smarter Subsystem Interface processing, DFSMShsm Storage Tiers Extensions, Extensions to Health-Based Workload Routing, RMF Reporting Enhancements, Generic Tracker Improvements, …

Networking

64-bit TCP/IP Stack, RoCE Improvements, DVIPA Limit, CICS Sockets, Enterprise Extender Scalability, NIST SP800-131a, TLS Session Reuse, Resolver Improvements, …

z/OS Support Summary

Out of service

Service Extension available

Service Withdrawal Dates

z/OS	z9® EC z9 BC	z10 EC™ z10 BC™	z196 z114	zBX	zEC12 zBC12	z13	DS8000	TS1140 TS7700	End of Service	Coexists with z/OS...	Planned Ship Date[2]
R11	x	x	x	x	x		x	x	9/12	R13	
R12	x	x	x	x	x	x[3]	x	x	9/14[1]	V2R1	
R13	x	x	x	x	x	x	x	x	9/16[2]	V2R2[2]	
V2R1	x	x	x	x	x	x	x	x	2H18[2]	V2R3[2]	
V2R2		x	x	x	x	x	x	x	2H20[2]	V2R4[2]	2H15
V2R3[2]									2H22[2]	V2R5[2]	2H17[2]

Migrating to z/OS 2.2:
Parts 1 and 2
Tuesday 3:15 & 4:30

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

Usability and Skills

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Usability & Skills

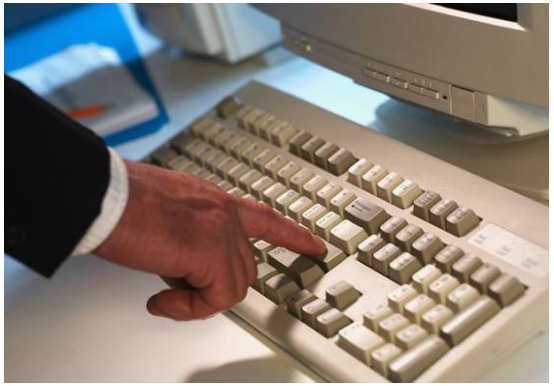
- **z/OSMF now a base element of z/OS**
  - No need to order separately
- **z/OSMF setup**
  - Plug-in configuration makes more use of workflows
- **New External Applications API**
  - Designed to provide a new way to hook in an application so it shows up persistently in the z/OSMF navigation tree
  - Intended to allow an application owner to supply a properties file, and allow the user import to the application

z/OSMF Roundtable
Tuesday 12:30

What's new in z/OSMF 2.2?
Monday 3:15

Lab: z/OSMF Hands-On Labs - Choose Your Own I & II
Tuesday & Thursday 11:15

z/OSMF 2.2 Implementation and Configuration
Wednesday 4:30



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Usability & Skills

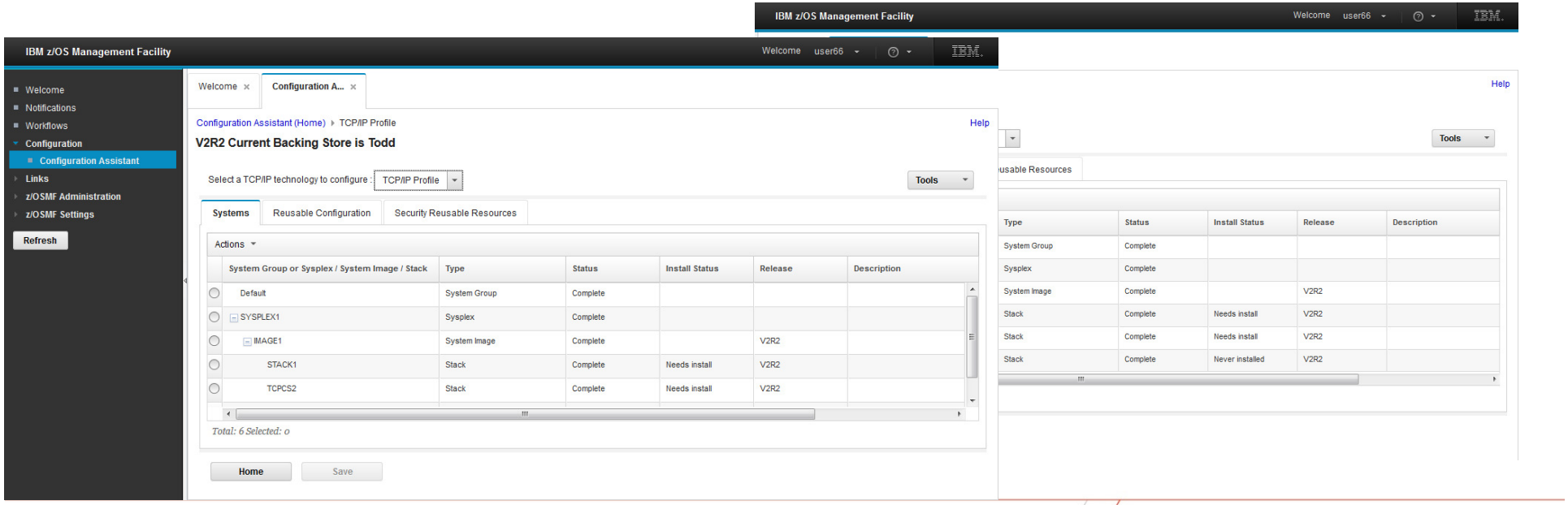
- **More z/OSMF enhancements**
  - Support for one workflow to call another
    - Intended to support reusable workflow building blocks
    - Can be used, for example, to provide configuration action support
  - Support for the definition of systems and user-defined groups
    - Intended to allow you to drive actions across appropriate groups, in addition to driving actions for specific members
    - Graphical display support to make it easy to see the topology
  - New REST APIs and some enhancements (about which more, later)

Usability & Skills

- **z/OS V2.2 Communications Server extends the IBM Configuration Assistant!**
  - Designed to support creating and storing new configuration profiles for TCP/IP stacks with integrated help
  - Intended to make it faster and easier to create and maintain TCP/IP configurations
  - Also: Statement of Direction for having the Configuration Assistant consume configuration data from an active stack to prime the tool!*

TCP/IP Stack Configuration with Configuration Assistant for z/OS V2R2 CS: Hands-on Lab Parts 1 and 2

Monday 10:00 & 3:15



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Usability & Skills

- **Incident Log improvements designed for:**
  - Viewing and managing problems for multiple sysplexes from an aggregated view
  - SFTP support for sending diagnostic data to vendors
- **Capacity Provisioning plug-in**
  - Support for capacity provisioning based on overall CPC-wide utilization
- **Related Support:**
  - z/OS V2.2 CEA support for CEAPRMxx controls on how many TSO/E address spaces are available for the z/OSMF ISPF task and allowed per user

Usability & Skills

- **"Dependent Job Control" planned for JES2**
  - Conceptually similar to //*NET JECL for JES3 but different
  - Designed to allow you to specify that **job groups** run in particular ways
    - No job (except the first) runs before other jobs it depends on
    - Support for parallel execution (with available INITs) so that multiple jobs can start once prerequisite jobs have finished
    - Corresponding support in SDSF and WLM Batch Initiator Management
  - Intended for convenient ad hoc scheduling of jobs that do not need formal production control
  - Corresponding operator command support for job groups

What's New in z/OS 2.2 JES2: Job Execution Controls Tuesday 1:45

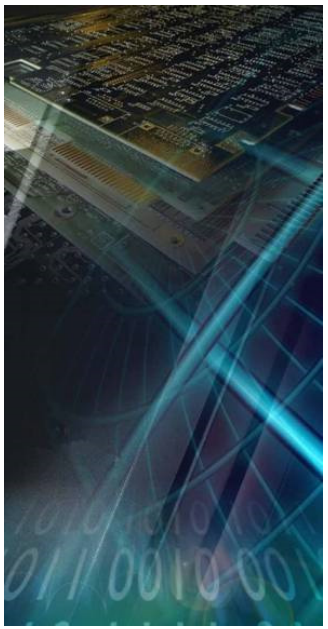
SDSF Product Update for z/OS 2.2 Monday 4:30

- **"Deadline Scheduling" planned for JES2**
  - Similar to some of the JES3 //*MAIN DEADLINE= function
    - But: "STARTBY" and "HOLDUNTL" vs. "DEADLINE"
  - As above, intended for ad hoc job scheduling
    - Jobs can tend to run at quiet, less-expensive times of day
    - Stop setting your alarm for oh-dark-thirty!

Both available with the PTF for APAR OA48782

Usability & Skills

- **JES2 Dynamic Checkpoint Tuning**
  - JES2 checkpoints defined in a multi-access spool (MAS) configuration must be tuned for hold and dormancy times on the MASDEF statement
  - You can pick good values…
  - …but it's hard to pick ones that are good *all the time*
  - z/OS V2.2 JES2 designed to tune them automatically

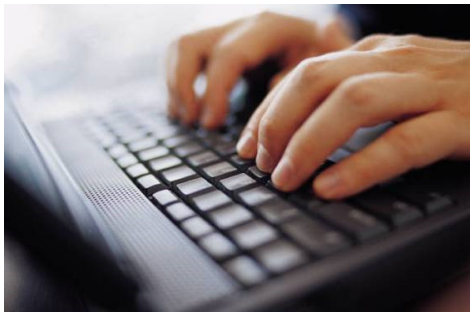


- **JES2 Step-Level Completion Codes**
  - In addition to existing support for job-level information
  - Summary-oriented information can help you interpret job output
  - New machine-readable JES2 EVENTLOG data set
  - Optional SMF30 support
  - SDSF support

Usability & Skills

SDSF Product Update for z/OS 2.2 Monday 4:30

- **SDSF Updates designed to provide:**



  - Address space information:
    - Virtual memory, device allocation, delays
  - Output disposition support for JES3
  - Support for *row-level commands* on a number of panels
  - A new facility for building REXX™ execs and running them as commands
    - Capture a set of actions taken within SDSF as REXX exec statements
    - Run a REXX exec against selected jobs and devices
  - Saving context-sensitive groups, more recallable commands, and support for user-specified notes about specific commands
  - Offloading a portion of some SDSF processing to zIIPs, when available
  - Display support for user IDs associated with enclaves in new panel column

Usability & Skills

- **Planned SDSF Updates:**
  - A new set of display functions expected to provide productivity enhancements for system programmers planned for 4Q2015*:
    - Commands to display data sets from any system within a Parallel Sysplex® that are APF authorized; are in the system's LPA list, link list, parmlib concatenation; or are page data sets
    - New command to search listed data sets for members matching a pattern
    - Displays for important information about systems in the same Parallel Sysplex, such as IPL, performance-related, address space and CPU summary, and storage information.

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Usability & Skills

- **Planned SMP/E ZONEMERGE enhancements:**
  - New ZONEMERGE CHECK function
  - Better processing of CIFREQ entries during ZONEMERGE
  - Planned for 1Q16 Delivery*

- **System Symbol enhancements designed to support:**
  - Longer system symbols, up to 16 characters
  - Symbol values longer than the corresponding symbol names, up to 44 characters long
    - Data set names, IP addresses, etc.
  - Larger symbol table

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Usability & Skills

z/OS 2.2
DFSMS Latest and Greatest
Monday 1:45

- **Support for More GDG Generations**
  - New GDGE designed to support for up to 999 generations
    - More than a year's worth at last!
    - Enablement via IGGCATxx: GDGEXTENDED(YES|NO)
    - New IDCAMS DEFINE keywords: EXTENDED|NOEXTENDED
  - Also, IDCAMS allows you to specify that unexpired GDSs be deleted when they would prevent creating a new generation

- **ISPF improvements**
  - New ISPF Configuration Utility option designed to create a new keyword file from an active ISPF configuration table, providing an easy way to recover a missing keyword source file
    - Available now for z/OS V2.1 with the PTF for APAR OA42680
  - Support for browsing data sets and members with over 2 billion (2,000,000,000) records (old limit was 99,999,999 records)
  - New mount table functions in z/OS UNIX directory list (OPT 3.17)

z/OS Little Enhancements: Many Small Potatoes Can Make a Big Meal
Weds 10:30

Usability & Skills

IBM Print Software: Hints, Tips and Short Subjects
Tuesday 11:15

- **Infoprint Server usability improvements**
  - Infoprint Server designed to support a new TSO/E command so authorized users can start and stop Infoprint® Server PrintWay extended mode printers
    - Intended to support interactive and batch environments, and to work with printers managed by an instance of Infoprint Server running in the same Parallel Sysplex
  - Infoprint Central will be designed to allow you to select TSO/E address space-related output data sets (those associated with TSUnnnnn job IDs) and display them in JES2 environments

- **bpxmtext support for NFS messages**
  - In addition to existing support for z/OS UNIX, Language Environment, Communications Server, zFS, and TFS

Usability & Skills

- **JES2 Support for (some) JES3 JECL**
  - z/OS V2.2 JES2 designed to allow you to specify that:
    - Some JES3 JECL statements be converted to JES2 equivalents…
    - …or, converted to equivalent JCL statements…
    - …when equivalent functions exist
  - Intended to make it:
    - Possible for some JES3 JECL statements to be used with JES2
    - Easier to write JES-agnostic JCL that runs the same way on both
    - Easier to convert from JES3 to JES2
  - Available now with the PTF for APAR OA48765
- **Generic Tracker Support for JES3 JECL**
  - z/OS V2.2 JES3 designed to use the z/OS Generic Tracker to help you identify use of a number of JES3 JECL statements
  - Intended to help you write JES-neutral JCL and help those who want to migrate from JES3 to JES2

Scalability and Performance

Scalability and Performance

VSAM and RLS New Functions in z/OS 2.1 and 2.2
Thursday 11:15

- **CA-Level Locking for RLS**
  - Today an entire data set's index is locked for a number of operations
    - Notably CI splits, CI reclaims, spanned-record processing
  - z/OS V2.2 designed to lock the index at the CA level
  - For all KSDS and RRDS (including AIXes and Catalogs)
  - CA split and reclaim still need the data set level lock
  - Expected to improve performance and make much larger data sets practical with high update activity
- **JES2 designed to support more jobs:**
  - Up to 1,000,000 jobs (from 400,000)
  - More JQEs, BERTs

z/OS 2.2 JES2 Product Update and Latest Status
Tuesday 10:00

Scalability and Performance

- **DFSORT support for zHPF**
  - z/OS V2.2 DFSORT designed to use zHPF
    - For SORTIN, SORTOUT, and OUTFIL
  - Expected to provide significant performance benefits where zHPF is available

- **zFS Performance**
  - z/OS V2.2 zFS designed to provide significant performance improvements for directory updates
  - zFS kernel support for AMODE64, allowing much larger data and object caches
  - Support to allow you to run zFS in the z/OS UNIX (OMVS) address space, which is expected to yield gains for all workloads using zFS file systems

New Features in z/OS 2.1 and z/OS 2.2 DFSORT Wednesday 3:15

zFS V5 Migration and Performance Wednesday 1:45

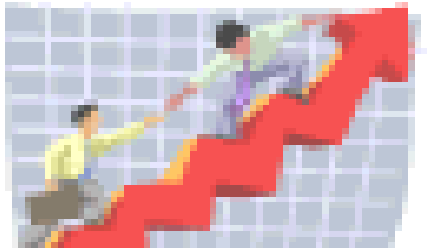
Why Are You Still on HFS? zFS V5: The Future Awaits! Thursday 1:45

Scalability and Performance

- **DSMShsm Fast Replication processing improvements**
  - Distributed dump processing across multiple LPARs for Fast Replication operations in a Parallel Sysplex
    - Intended to speed processing time for large DB2® copy pools
  - Allow stacking multiple copy pools on a single tape
  - Allow you to specify multitasking for processing Fast Replication requests even when it would use more tapes
  - Optionally write messages issued during the operation to a data set.

These enhancements are expected to be particularly valuable in DB2 environments.

DFSMShsm DB2 Backup Enhancements
Tuesday 11:15



Scalability and Performance

- **XRC Write Pacing**
  - z/OS Global Mirror (XRC) designed to work with…
    - z/OS WLM; and,
    - DS8000 with the z/OS Global Mirror feature…
  - …to throttle low-priority writes when they would cause significant delays that might affect response time
  - Designed to allow you to specify that write delays be imposed for different classes of work based on WLM definitions when needed
  - Intended to:
    - Make it unnecessary to adjust write pacing settings and monitor data set residency
    - Improve system responsiveness to more important work
  - Requires a DS8870 with an MCL
  - Available now for z/OS V1.13 and z/OS V2.1 with the PTFs for APARs OA41906, OA44004, and OA43453

Scalability and Performance

- **(Lots!) more threads for z/OS UNIX**
  - z/OS V2.2 UNIX designed to support as many as 320,000 threads, up from approximately 32,000
    - Actual practical limit for depends on services used and additional storage they require

z/OS 2.2 UNIX Systems Services Latest Status and New Features
Wednesday 11:15

- **LLA improvements**
  - Designed to make it more likely that certain program objects, such as those compiled using COBOL Version 5 (5655-W32), can be cached by LLA in VLF
  - Intended to help to improve performance for such program objects in LLA-managed libraries
  - Available now for z/OS V1.13 and z/OS V2.1 with the PTF for APAR OA45127

Availability

Availability

- **Private Area Virtual Storage Tracking in PFA**
  - Designed to track data based on new fields in VSM's LDA
- **Support for dynamic TDS (LDAP) Compatibility Upgrades**
  - New "transition mode" designed for LDAP server
    - Intended to allow higher compatibility level and new back ends to be specified
    - Support for directing LDAP requests to the transition mode server
  - Designed to allow new specifications to be effective for the Parallel Sysplex once other LDAP servers in the 'plex have been shut down
    - Subsequently restarted servers designed to use new specifications
  - Restart the original TM server to complete the process

- **Dynamic JES2 Checkpoint Expansion**
  - Assuming enough space, designed to allow you to increase Checkpoint size without a cold start

Availability

- **JES3 DSI Change**
  - *Not* Dynamic System Interchange; that "other" DSI: Data Set Integrity
  - In releases before z/OS V2.2, PPTNDSI must be set in IEFSDPPT (and not overridden by specifying DSI in SCHEDxx)
    - Default PPT entry for IATINTK remains:
      - C9C1 E3C9 D5E3 D240 ED10 (byte 8 bit 5 is PPTNDSI)
  - This causes JES3 to use S99NORES ("don't ENQ") for its allocations
  - z/OS V2.2 designed to support specifying DSI for JES3 in SCHEDxx
    - Default PPT still contains PPTNDSI for JES3 for now

- **Better Subsystem Interface (SSI) Initialization Processing:**
  - SSCVT entry no longer intended to be built when initialization routines (INITRTNs) are not found
  - Support for a new command to delete a subsystem:
    - SETSSI DELETE,SUBNAME=ssss,FORCE
    - (There are some restrictions!)

- **Dynamic Exit support for O/C/EOV**
  - Support for the Tape Installation Exits: Volume Mount, File Start, File Validate, File End and Label Anomaly

Availability

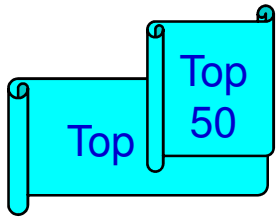
- **HyperSwap support for Multi-Target Peer-to-Peer Replication (MT-PPRC)**
  - Define up to *two* PPRC targets
  - HyperSwap® support for marking:
    - One as a preferred failover target
    - One as an alternative failover target
  - Requires:
    - z/OS V2.2; or, z/OS V1.13 or z/OS V2.1 with the PTFs for APARs OA43661 and OA46683
    - DS8000 with 7.4 microcode and MT-PPRC features
    - GDPS®/Multitarget Metro Mirror; or,
    - IBM Tivoli® Storage Productivity Center for Replication for System z V5.2 (5698-Z11); or,
    - IBM Tivoli Storage Productivity Center, V5.2 (5608-PC1 or 5725-F93)

Multi-Target Replication with IBM DS8870 Thursday 8:30

Availability

- **Multiple Incremental FlashCopy**
  - z/OS V2.2 designed to support up to 12 targets for incremental FlashCopy
  - Can copy a number of faster than repetitive, full-volume FlashCopy
  - Intended to help:
    - Provide more flexibility and resilience
    - Better protect application availability
    - Provide improved data protection across physical volume failures
  - Available now for z/OS V1.13 and z/OS V2.1 with PTFs for APARs OA45412 and PI22256
  - Requires IBM DS8870 Storage Subsystem with the 7.4 microcode feature

IBM DS8870 Enterprise Storage News and Review Thursday 3:15



- **Support for moving LOGREC**
  - z/OS V2.2 designed to allow LOGREC data sets to be deallocated
  - Updated SETLOGRC command designed to allow you to deallocate an in-use LOGREC data set and allow you to specify a new data set name
  - Intended to allow you to discontinue the use of a particular LOGREC data set when switching to either a log stream or a different LOGREC data set

Availability

- **Log stream offload data set preallocation**
  - Intended to help avoid situations offload delays from causing system problems and provide more time to react
  - Support for Logger policy, an API, an operator command, and new warning messages
- **SLIP command enhancements**
  - z/OS V2.2 SLIP processing designed to allow you to specify an operator command
    - Designed to be issued when the trap is matched
    - Intended to provide an easy way to issue commands during problem diagnosis
  - PER SLIPs designed to capture the BEAR
    - Breaking Event Address Register, the last “branch-from” address

Top 50

Systems Management

Systems Management

- **DFSMShsm Storage Tiers Extensions designed to support:**
  - Command-initiated transitions for tier demotion within L0 for storage admins:
    - MIGRATE VOLUME|STORAGEGROUP support for new MIGRATIONONLY and TRANSITIONONLY keywords
    - MIGRATE DATASETNAME support for new TRANSITION keyword
  - A corresponding user-level HMIGRATE command, ARCHMIG service
  - MIGRATE STORAGEGROUP
  - *Lateral* transitions with MIGRATE STORAGEGROUP MOVE

Transitioning to Transitioning with DFSMShsm Wednesday 4:30

- **Start/Stop Support for Infoprint Server Daemons:**
  - Designed to let you use started tasks in place of daemons
  - Much better integration with typical recovery tools (MPF, SA, ARM, SFM, NetView®, etc.) expected
- **Generic Tracker Improvements**
  - GTZTRACK designed to create new SMF 117 records
  - Can allow you to split GTZTRACK records into a dedicated log stream and run IFASMFDL later to retrieve all tracked program events after some period of time (e.g., to find migration actions)
  - REXX interface

Systems Management

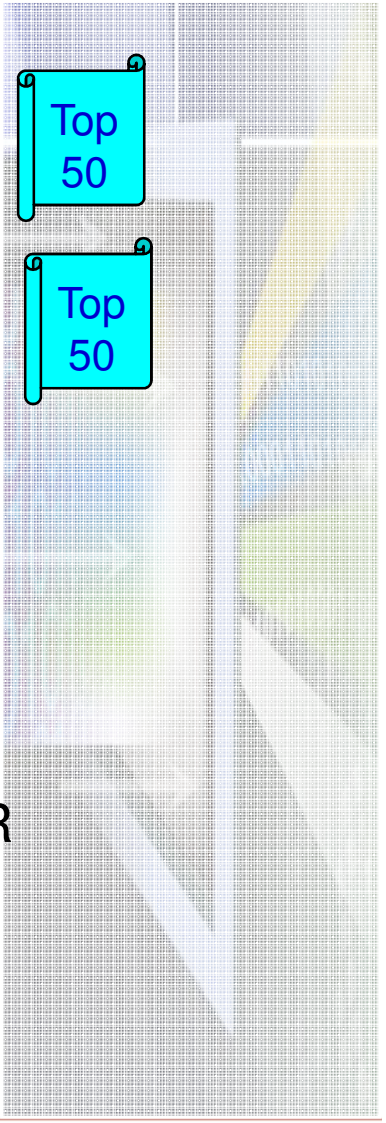
- **DFSMS™ improvements:**
  - Support for a new USER_ACSVAR variable for which up to three values can be set in IGDSMSxx members for use with ACS routines
    - SETSMS command support for dynamic changes
  - DISPLAY SMS,SG command designed to display the space usage statistics for a specified pool storage group
  - Support for specifying storage group space warning thresholds
    - *Set lower thresholds for warning messages!*
  - New secondary space reduction specification in DEVSUPxx intended to allow data sets to extend by less than specified secondary space when it avoids allocating space on additional volumes
    - Designed to provide support for non-striped SMS-managed VSAM data sets and non-VSAM data sets
    - Corresponding F DEVMAN support
  - Support for modifying SMS Space parameters in the DADSM preprocessing exit (IGGPRE00)

Systems Management

- **FICON Dynamic Routing health check**
  - Requires:
    - A z13 processor
    - IBM System Storage DS8000 series devices with a minimum MCL
    - z/OS V2.2
    - Also available for z/OS V1.13 and z/OS V2.1 with the PTF for APAR OA47297
  - Designed to:
    - Check fabric, channel subsystem, disk control units
    - Help assure dynamic routing requirements are met when dynamic routing has been enabled for one or more FICON switches
  - Intended to help you identify misconfiguration errors that can result in data integrity exposures

Systems Management

- **Parmlib Specification of Storage Limits in SMFLIMxx**
  - Intended to cover the common cases for limits on 24-bit, 31-bit, and 64-bit storage
  - Intended to help reduce the need for IEFUSI exits
  - Also, JCL support to allow you to specify individual limits for 24-bit & 31-bit storage with REGIONX
- **More Easy Tier® Integration**
  - z/OS V2.2 supports a new interface provided by IBM System Storage Easy Tier
  - Designed to allow software to help steer data placement within Easy Tier volumes
  - Intended to help guide appropriate tier placement
  - Requires z/OS V1.13 or z/OS V2.1 with the PTF for APAR OA45236 and IBM DS8870 Storage Subsystem with the 7.4 microcode feature
  - **Used by DB2 10 and DB2 11 for reorgs, with the PTF for APAR PI35321**



Systems Management

- **RMF Enhancements**
  - z/OS V2.2 RMF designed to support new Monitor III reports:
    - A Job USAGE report to display information about address space resource consumption, including I/O-related, CPU-related, memory-related, and GRS-related information
      - The Monitor III Job USAGE report also added to the report list for the RMF Distributed Data Server
      - Similar information returned by the RMF DDS in XML format when requested
    - A new SCM Activity report, with corresponding DDS support and new SMF74-10 records
    - Three new reports showing zFS-related Parallel Sysplex wide data, overview, file system, and kernel information
    - RMF Monitor III support for a new PCIE Activity report for zEDC and RoCE features available on zEC12 and later servers
      - Also, support for an RMF DDS XML format

Systems Management

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

Systems Management

- **GRS monitoring improvements:**
  - SMF Type 87 records and GRS Monitor function were introduced in z/OS V1.13 and z/OS V2.1 (with the PTF for APAR OA42221)
  - z/OS V2.2 GRS designed to support a new subtype for SMF Type 87-2 records to help you identify users of GRS enqueue/dequeue and RESERVE
  - z/OS V2.2 also designed to provide filtering options in a new GRSMONxx parmlib member to allow you to limit tracing to particular address spaces or resources
- **Capacity Provisioning Enhancements**
  - z/OS V2.2 Capacity Provisioning Manager and its z/OSMF plug-in supports provisioning based on overall CPC-wide utilization
  - Also designed to support relinquishing capacity when CPC utilization falls
- **More IPL Information by Default…**
  - z/OS V2.2 designed to provide a new IPL-time message, IOS128I, that includes the IPL device number, subchannel set, and volume serial number

Top 50

Systems Management

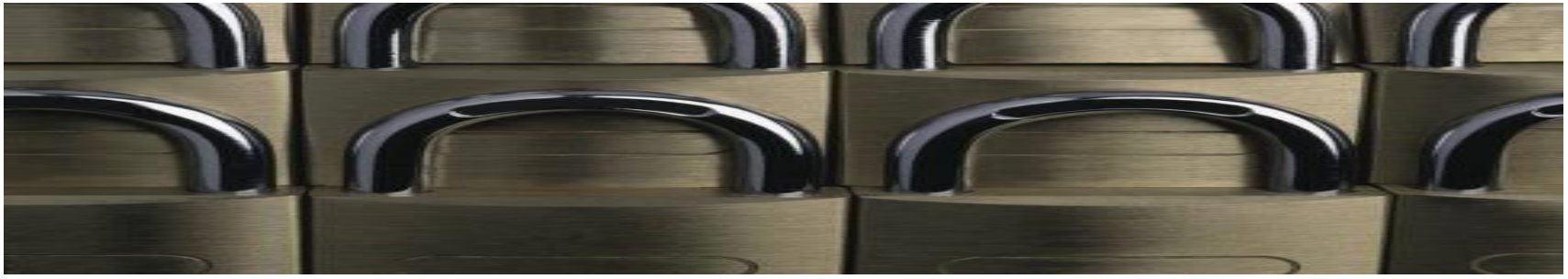
- **ISPF Edit Pack Disablement**
  - z/OS V2.2 ISPF option designed to allow you to completely disable the use of ISPF Edit Pack
  - Designed to allow you to help control CPU utilization and help assure that new data sets processed by ISPF can be easily processed by other programs
- **SMF Recording Extensions**

  - z/OS V2.2 DFSMSdfp™ designed to add job ID (such as Jnnnnnnn, to SMF14 and SMF15 (non-VSAM data set activity) records
  - z/OS V2.2 IBM Tivoli Directory Server (ITDS, LDAP) designed to allow you to specify that a number of additional events be recorded in the LDAP activity log and in SMF83 records
- **New STP Messages**
  - A number of events can cause problems with STP
  - Messages to identify these events were issued to the HMC…
  - …but console messages allow alerts and automation…
  - So z/OS V2.2 is designed to provide a number of new STP messages

Enhancing Security

Enhancing Security

- **SMF record signing, designed to provide:**
  - Tamper detection for SMF's repository of audit data written to log streams
  - Uses CPACF symmetric algorithm for hashing to support needed data rates and CEXnC card for signatures
  - Groups of records to be signed, with chained signatures
  - A new SMF2 trailer record with the signature for each group
  - IFASMFDP support for verifying the signatures
    - To verify signatures:
      1. Unload using IFASMFDL
      2. Process the SMF data with IFASMFDP
  - SMF2 record format documented to allow signature verification



Enhancing Security

- **z/OS V2.2 PKI Services support for:**
  - Optionally requiring multiple approvers to create new certificates, to help prevent the creation of unauthorized certificates
  - Signing OCSP responses with the client-specified algorithm per RFC 6277 to improve interoperability of PKI Services and OCSP clients
  - SHA-224 and SHA-256 with DSA for signing certificates, CRLs, OCSP responses, and verifying certificate requests
- **New SMF records for APF List Updates**
  - From T PROG, SETPROG, & CSVAPF
  - SMF Type 90 Subtype 37 records

Enhancing Security

- **PKINIT (RFC 4556) support in Network Authentication Services**
  - Designed to provide X.590 certificate-based authentication for Kerberos
- **Separate OPERCMDS profiles for display/change aspects of F CATALOG**
  - Designed to support a new profile
    - MVS.MODIFY.STC.CATALOG.CATALOG.SECURE
  - Intended to restrict access to the two different flavors of MODIFY CATALOG:
    - READ access to allow display commands
    - UDPATE to allow actual changes to Catalog behavior

Enhancing Security

- **New z/OS V2.2 SAF and RACF® functions for z/OS UNIX**
  - –Designed to provide two new functions:
    - ➢ Allow users with access to a new SUPERUSER.FILESYS.DIRSRCH profile in the UNIXPRIV class to list files in a directory, without being authorized to read or alter the files
    - ➢ Allow you to protect file system data sets with new FSEXEC class profiles intended to prevent programs stored in them from being run
  - –Intended to help you improve z/OS UNIX security

z/OS UNIX User and File Security Monday 3:15

Enhancing Security

- **RRSF Improvements**
  - Support for ignoring inbound updates for specified systems
    - For example, specify on production systems that updates made to test systems be ignored
    - Intended to help prevent inadvertent escalations of privilege
  - Designed to support operator command-based dynamic movement of the MAIN RRSF system
    - Intended to make this process much simpler
- **BCPii SMF Audit Records**
  - New SMF Type 106 records for HWISET and HWICMD events
  - Intended to allow you to audit updates to attribute values for CPC processor weights, image profiles, and activation profiles; and, for operations affecting a CPC or image such as image activations

Enhancing Security

- **RACF password encryption algorithm change (we did a prior Statement of Direction):**
  - Designed to allow you to transition from 56-bit single DES to AES
  - Available on z/OS V1.13 and z/OS V2.1 with PTFs for APARs OA43998 (SAF) & OA43999 (RACF)

- **Other password-related enhancements for z/OS V2.2 RACF:**
  - No default passwords for new users
  - No need for an ICHDEX01 exit to use password encryption!
  - Password phrases supported with the RACLINK DEFINE command

Enhancing Security

- **System SSL:**
  - OCSP Support, designed to:
    - Retrieve revocation status information for x.509 certificates as described by RFC 2560; retrieve CRL information as described by RFC 3280 and 5280
    - Intended to help you ensure valid certificates used for SSL and TLS
    - z/OS V2.2 Communications Server has corresponding AT-TLS support
  - Support for PKCS #12 certificate files for applications
    - Intended to provide better interoperation for applications that create PKCS #12 key store files, such as Java-based applications
    - Available for z/OS V1.13 and z/OS V2.1 with the PTF for APAR OA45216
  - Support for the secure key functions available with CEX4 and later crypto features on zEC12 and later processors when configured in EP11 mode
    - Supporting secure DSA keys for signing and fixed ECDH key exchanges
  - Support for allowing SSL session reuse across different TCP ports; corresponding support to allow FTP data connections to reuse associated SSL sessions for AT-TLS and native SSL users of FTP

Enhancing Security

- **More RACF Sensitive Resource Health Checks for:**
  - ICSF
  - RACF password encryption technique
  - Password controls
  - RRSF work data sets
  - More z/OS UNIX System Services resources

- **Read-Only AUDITOR support designed to provide:**
  - A new ROAUDIT attribute intended to be a “look but don’t touch” setting
  - Designed to preclude changes to RACF audit events;
  - Otherwise, the same as AUDITOR

- **Console auto-logoff support:**
  - Designed to allow you to specify a timeout for consoles
  - Intended to be similar to timeouts for TSO/E and z/OS UNIX users
  - Automatically logging users from unattended consoles is intended to help you improve security
  - Also, support for SAF-based control over whether the same user can log on to more than one console at a time

Enhancing Security

- **More TCP/IP Startup Filtering**
  - z/OS Communications Server supports a set of default IP filters
    - Specified in the TCP/IP Profile
    - Intended to help you protect the stack during initialization
    - Before Policy Agent installs an IPSec policy
  - z/OS V2.2 Communications Server designed to allow you to specify additional default filter parameters
    - Source and destination address ranges
    - Source and destination port ranges

Intended to allow greater flexibility in configuring the default filter rules

Application Development

Application Development

- **Client Web Enablement Toolkit**
  - Designed to enable applications written in C/C++, COBOL, PL/I, and HLASM to participate easily as a REST client
  - Support for:
    - A z/OS JSON parser, able to build or modify JSON text
    - An HTTP/HTTPS protocol enabler
  - JSON parser available for z/OS V2.1 with the PTF for APAR OA46575
  - HTTP enabler also available on z/OS V2.1 with the PTF for OA46622

Application Development

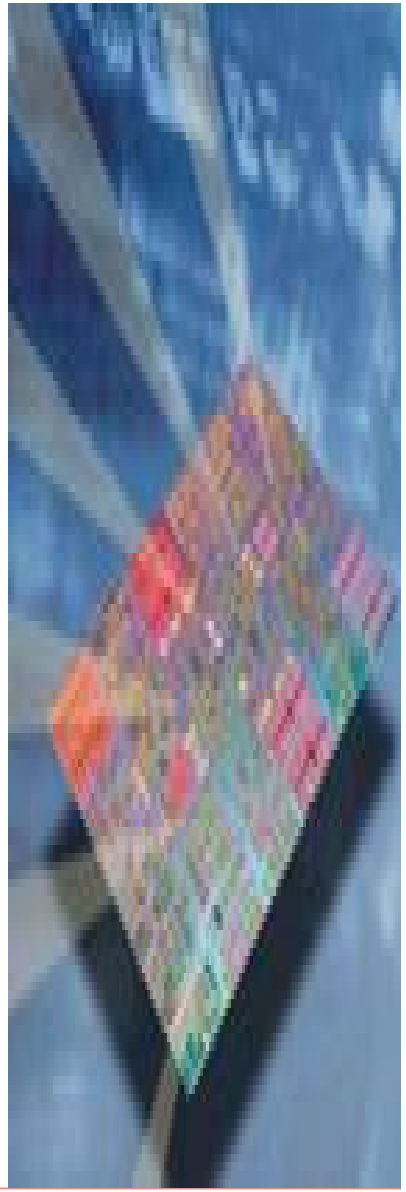
- **DFSORT date functions**
  - WEEKNUM is designed to convert input dates to numbers representing corresponding weeks of the year
  - AGE is designed to calculate the time between a given date and the current date
  - Both are intended to provide additional flexibility in creating reports and to help improve the usability of reports generated with these new functions
- **Infoprint Server Customized Text**
  - z/OS V2.2 Infoprint Server designed to provide new function in IP PrintWay™ extended mode for adding personalized text to emailed notes that include print output
  - For example, add a greeting (such as "Dear Ms. Doe,") at the beginning of a note with an attachment

Application Development

- **New z/OS V2.2 XL C/C++ functions also available with a Web Deliverable for z/OS V2.1:**
  - Inline assembler statements support, designed…
    - Not to require Metal C compilation
    - To allow you to easily use specialized instructions
  - Runtime architecture blocks, designed to:
    - Allow you to use one source file optimized for multiple hardware architecture levels
    - Select the appropriate path at execution time
    - Help improve performance on different hardware levels
- **More z/OS V2.2 XL C/C++ function designed to provide:**
  - Automatic conversion of code to take advantage of the vector facility
    - Intended to allow more efficient use of the hardware and improve application performance
    - dbx support for debugging C/C++ programs using SIMD instructions running under z/OS UNIX

Application Development

- **Support for 64-bit shared large (1 MB) Pages**
  - Designed to allow you to specify that the system should try to back shared memory objects above the bar using 1M pages
- **New and improved symbol support in JES3 designed to support:**
  - Instream substitution, longer symbols, and ENF78 support
- **Improved batch support in JES3, with:**
  - Support for //OUTPUT JCL statement improvements
  - DDNAME, MERGE, and PROCLIB JCL support
- **z/OS V2.2 CIM includes Version 2.2 of the SBLIM CIM client for Java**
  - Designed to be a JSR48-compliant implementation

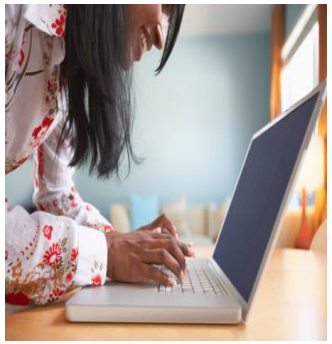


Application Development

- **New REST APIs for Software Management**
  - Designed to allow you to create, retrieve information about, change, and delete software instances
- **Enhanced RESTful data set and file APIs in z/OSMF designed to allow you to:**
  - Get a list of data sets matching a pattern
  - Get a list of files in a z/OS UNIX directory
  - Retrieve information about a data set or file (e.g., attributes, member lists)
  - Create, delete, rename, copy, or move a data set or file
  - Browse or edit a data set or file (up to 8 MB in size)

Application Development

- **Jobs REST API updates designed to support**
  - Retrieving the new step-level completion codes in JES2 environments
  - Running under a secondary subsystem
  - Holding and releasing jobs
- **New Workflow functions**
  - REST API designed to allow exploiters to initiate, monitor, and terminate workflows
  - Support for workflow defaults & automatic workflow steps
  - Support for one workflow to call another



- **New ISPF functions**
  - An application to specify whether ISPF or the application should process L/R scroll commands.
  - Support for zSTART as the default command stack variable
  - More mixed-case character support
  - Support for ISPDTLC to pass its RC in variable ZISPFRC.

Application Development

- **OpenSSH 6.4p1 now part of z/OS:**
  - Same level included in IBM Ported Tools V1.3.0 (5655-M23)
  - Support for FIPS 140-2 and Kerberos planned for 4Q2015 with the PTF for APAR OA48013*
  - Note: IBM plans to provide future enhancements to OpenSSH in z/OS (Statement of direction in the z/OS V2.2 preview announcement) *

- **EU Ordering Rules for Unicode collation service, and HKSCS conversions**
  - Support for common collation sequence across the EU
    - EOR / EN 13710 standard and German tailoring defined by the European Committee for Standardization (CEN)
    - (e.g., how do you sort “a,” “ã,” “à,” “á,” “æ,” “ä,” and “ą”?)
  - Also, support for 4-byte HKSCS-2008 conversions

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Networking

Networking

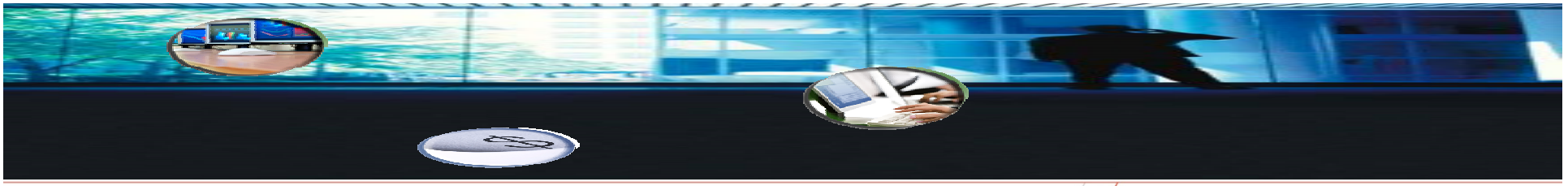
- **RoCE Improvements, designed to support**
  - z/OS V2.2 Communications Server support for the new RoCE virtualization capability on z13 processors and for sharing across up to 31 z/OS images
    - Also be designed to allow you to use both ports in the RoCE adapter
  - Support for selecting between TCP/IP and RoCE transport layer protocols automatically based on traffic characteristics and to support MTU sizes up to 4K for RoCE adapters
  - Also available on z/OS V2.1 with the PTF for APARs OA44576 and PI12223; corresponding RMF support with the PTF for OA44524
  - z/OS V2.2 Communications Server tool designed to show the percentage of RoCE-eligible TCP traffic
    - Available for z/OS V1.13 with the PTF for PI27252 and z/OS V2.1 with the PTF for APAR PI29165

Networking

- **64-bit TCP/IP Stack**
  - TCP/IP stack designed to support AMODE 64
- **Enterprise Extender (EE) scalability**
  - Intended to improve performance for configurations with very large number of EE endpoints
- **DVIPA Limit**
  - Single-stack limit now designed support 4K application instance DVIPAs (was previously 1K)
- **Automatic Segment Sizes for VIPAROUTEs**
  - Designed to automatically set the appropriate maximum segment size for each IPv4 route, to simplify VIPAROUTE configuration and help improve performance

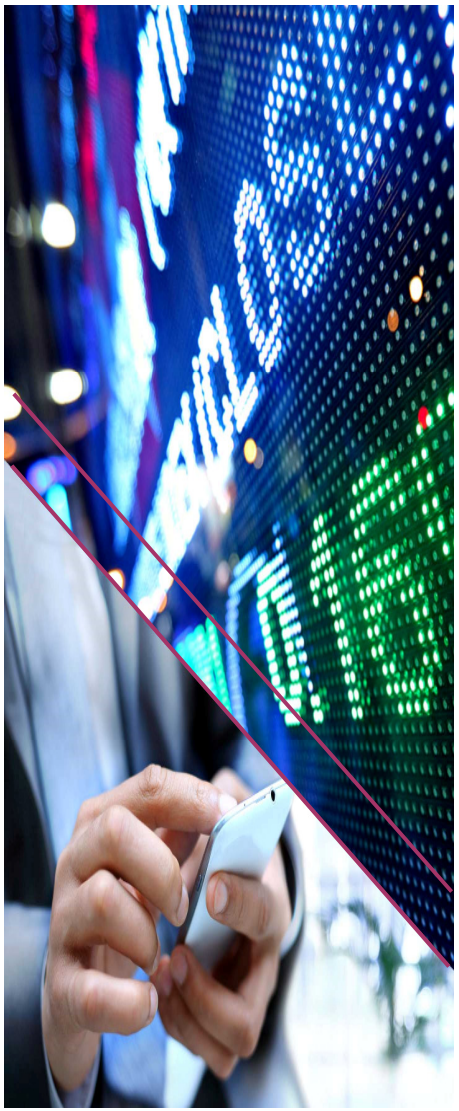
z/OS V2R2 Communications Server: Technical Update Parts 1 and 2

Monday 10:00 & 11:15



Networking

- **NIST SP800-131a support designed for:**
  - TLSv1.1, TLSv1.2, SHA-2 hashes, and encryption key strengths of more than 111 bits in sendmail
  - SNMP Agent, SNMP command, and SNMP manager API support for the 128-bit AES
  - Updated Digital Certificate Access Server (DCAS) support, for TLSv1.1 and TLSv1.2, including 2-byte ciphers
  - Support for centralized policy agent client/server communication using TLSv1.1 and TLSv1.2, including support for 2-byte ciphers
  - These capabilities also available on z/OS V2.1 with the PTFs for APARs PM96891, PM96896, PM96898, and PM96901 (PTFs UI13120, UI13138, UI13139, and UI13140)

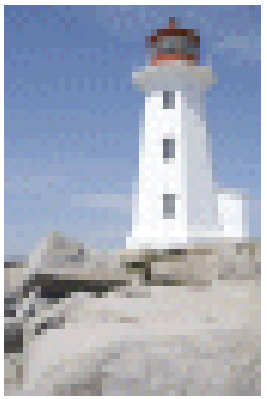


Networking

- **TLS Session Reuse designed to provide:**
  - Reduced overhead
  - One less opportunity to intercept a connection
- **CICS Sockets**
  - Communications Server enhanced the CICS® Sockets Listener interface
  - Designed to provide CICS additional information about local and remote session partners
  - Intended to be used by CICS Explorer® or Session Monitor to provide transaction tracking capabilities
  - Requires IBM CICS Transaction Server for z/OS, V4.2 (5655-S97) or CICS Transaction Server for z/OS, V5.1 (5655-Y04)
- **Resolver Improvements designed for:**
  - Round-robin reordering of cached IP address lists for each host name
  - Nondisruptive tracing for long-running address spaces
    - New CTRACE option to capture same data as the Trace Resolver; dynamic start & stop; IPCS formatting support

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

Statements of Direction*



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- Note: The statements of direction in this presentation have been edited for brevity. Please see their full text in the z/OS V2.2 availability announcement.

IBM intends to deliver a number of SDSF enhancements, including new commands that will be designed to display:

- Things to help you perform address space level diagnosis: active TCBs, CDEs, allocated data sets, and ENQ conflicts
- Virtual storage map and common storage utilization, including orphaned common storage
- Info about catalogs, mounted z/OS UNIX file system data sets, and SMF data sets
- ASID-related virtual storage information, including allocated storage by subpool
- Information about real, virtual, and auxiliary storage consumption by ASID
- Information about active subsystems, and identify a number of IBM subsystems such as DB2 and WebSphere MQ

Additional SDSF displays will be intended to provide:

- SMS-related information, including active classes and the volumes in storage groups
- Parallel Sysplex information about XCF structures, groups, and members
- WLM-related information, including service and reporting classes
- Support for browsing virtual memory contents for an address space
- Generic tracker information

Finally, SDSF is planned to provide a new facility that will be designed to help you manage dynamic exits, which will be intended to make it easier to display active exits and to manage activation, deactivation, and replacement of system exits.

IBM plans extend the Configuration Assistant for z/OS to support making dynamic configuration changes to an active TCP/IP configuration, and to import existing TCP/IP profile data.

z/OS V2.2 is planned to be the last release to include the Trivial File Transfer Protocol Daemon (TFTPD) function in z/OS Communications Server.

z/OS V2.2 is planned to be the last release to include the TCP/IP legacy device drivers for FDDI and Token Ring (LCS with LINKs FDDI and IBMTR), Token Ring (MPCIPA with LINK IPAQTR), and ENet and FDDI (MPCOSA with LINKs OSAENET and OSAFDDI). If you are using any of these devices, IBM recommends you migrate to newer devices such as OSA Express QDIO and HiperSockets. Note that this withdrawal is only for TCP/IP device types, and not to for any of the SNA device drivers.

z/OS V2.2 is planned to be the last release to provide support in the Common Information Model (CIM) component for the Java Managed Provider Interface (JMPI).

z/OS V2.2 is planned to be the last release to support the DFSMSrmm™ CIM Provider.

z/OS V2.2 is planned to be the last release to include a number of TSO/E-based System Data Mover (SDM) related commands. Except for the query commands (CQUERY, FCQUERY, RQUERY, XQUERY, XSTATUS), and the XSET command, which will remain, IBM recommends you use the REXX version of these commands instead. For more information about using the REXX commands, see z/OS DFSMS Advanced Copy Services.

As previously announced, the Simple Mail Transport Protocol Network Job Entry (SMTPD NJE) Mail Gateway and Sendmail mail transports are planned to be removed from z/OS. IBM now plans for z/OS V2.2 to be the last release to include these functions. If you use the SMTPD NJE Gateway to send mail, IBM recommends you use the existing CSSMTP SMTP NJE Mail Gateway instead. Also, IBM announced plans to provide a replacement program for the Sendmail client that would not require programming changes. Those plans have changed, and IBM now plans to provide a compatible subset of functions for Sendmail in the replacement program and to announce those functions in the future. Programming changes or alternative solutions to currently provided Sendmail functions might be required. No replacement function is planned in z/OS Communications Server to support using SMTPD or Sendmail as a (SMTP) server for receiving mail for delivery to local TSO/E or z/OS UNIX System Services user mailboxes, or for forwarding mail to other destinations.

z/OS V2.1 is planned to provide support for up to 4 TB of real memory in a single LPAR on z13 processors. This support will be intended to help support more workload per z/OS image and more memory-intensive applications.

IBM plans to add OpenSSH to z/OS and enhance it by providing Kerberos support, which is designed to enable single sign-on from Microsoft® Windows® domains, and also to leverage the capabilities of IBM zEnterprise Data Compression (zEDC). These capabilities are also planned to be made available in the version of OpenSSH that is part of IBM Ported Tools for z/OS.

IBM plans to remove support for unsecured FTP connections used for z/OS software and service delivery 1Q2016. For z/OS software (products and service) direct-to-host downloads will require the use of FTPS or HTTPS. Use the Connectivity Test website to verify your system setup well in advance. Note: No change is required to use Download Director with encryption to download packages to a workstation and transfer them to z/OS later; however, you can also verify Download Director with the Connectivity Test. The Connectivity Test can be found at: https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en_US&source=cbct

- z/OS V2.2 is planned to be the last release to support:
  - The HCD LDAP backend for use with the IBM Tivoli Directory Server for z/OS (LDAP)
  - The DRXRC log stream option for system logger. IBM recommends you use other available mirroring options with IBM z/OS Global Mirror (zGM), also known as Extended Remote Copy (XRC), or GDPS instead

- z/OS V2.2 is planned to be the last release to include the RMF XP support for Microsoft Windows Server.


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