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IBM

# IBM Enterprise2013

# z/OS V2.1 – New Content, Come and Get It!

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z/OS V2.1 was GA is 30 September 2013.

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# z/OS V2.1…

## Improving Usability and Skills

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

## Integrating new Applications and Supporting Industry and Open Standards

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

## Scalability & Performance

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

## Enhancing Security

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

## Improving Availability

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

## Self Managing Capabilities

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

## Extending the Network

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

# IBM zEC12 System Functions and Features

**Five hardware models**

**Hexa-core 5.5 GHz processor chips**

**Up to 101 processors configurable as CPs, zAAPs, zIIPs, IFLs, ICFs, or optional SAPs (up to 64-way on z/OS V1.10, 100-way on z/OS V1.11 and higher)**

**Second generation out of order design**

**Improvements to pre-fetch instructions**

**Improved processor cache design**

**Up to 3TB of Redundant Array of Independent Memory (RAIM) – same as z196**

**Twice the HSA versus z196 (32 GB vs 16 GB)**

**Decimal-Floating-Point Zoned-Conversion Facility**

**Flash Express (Storage Class Memory-SCM)**

**1 MB Pageable Large Pages**

**Dynamic reconfiguration support for Flash Express**

**2 GB Large Page Support**

**Optional PLPA, COMMON page data sets**

**Crypto Express4S cryptographic coprocessors and accelerators**

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

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

**New and enhanced instructions**

**IBM zAware**

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

**(z/OS support in blue)**

**(GA2 support in red)**

**FICON Express8S**

**24K subchannels for FICON channels**

**IBM zEnterprise Data Compression (zEDC) capability using zEDC Express**

**Shared Memory Communications-Remote Direct Memory Access (SMC-R) - 10GbE RoCE Express**

**Parallel Sysplex InfiniBand (PSIFB) Coupling Links**

**High Performance FICON for System z**

**CPU Measurement Facility**

**CFCC Level 18 and 19 enhancements**

**Transactional Execution Facility**

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

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

**Optional Non-Raised Floor**

**Optional water cooling and DC Power**

**Optional overhead Power and I/O cabling**

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

**zManager enhancements**

**Intro the New zBC12 and zEC12 Hardware Enh: Parts 1 and 2 – M 14:30, 16:15, T 13:00, 14:30**
**z/OS Software Support of IBM zEnterprise EC12 and zBC12 Server – F 9:00**

# IBM zBC12 System Functions and Features

**2 Models – H06, H13**

**Hexa-core 4.2 GHz processor chips**

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

**Second generation out of order design**

**Improvements to pre-fetch instructions**

**Improved processor cache design**

**Up to 496 GB RAIM**

**Twice the HSA versus z114 (16 GB vs 8 GB)**

**Up to 6 CPs at 26 capacity points**

**Decimal-Floating-Point Zoned-Conversion Facility**

**Flash Express (Storage Class Memory-SCM)**

**1 MB Pageable Large Pages**

**Dynamic reconfiguration support for Flash Express**

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- **Select IBM BladeCenter PS701 Express blades or IBM BladeCenter HX5 blades**

**zManager enhancements**

**(z/OS support in blue + red)**

**Intro the New zBC12 and zEC12 Hardware Enh: Parts 1 and 2 – M 14:30, 16:15, T 13:00, 14:30**

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# IBM zEnterprise Data Compression

- **New hardware feature and a corresponding z/OS priced feature**
  - Providing high-performance, low-latency compression without significant CPU overhead
  - Support for industry standard zlib compression

- **SMF data written to log stream compression**
  - On zEC12, zBC12 with the compression feature and z/OS V2.1 with the zEDC feature
  - New SMFPRMxx keywords, corresponding IFASMFDL support
  - Software-based decompression for z/OS V1.12 and V1.13 with the PTF for APAR OA41156

- **BSAM/QSAM data compression**
  - On zEC12, zBC12 with the compression feature
  - Planned for 1Q2014*

- **DFSMSdss™ data compression**
  - On zEC12, zBC12 with the compression feature
  - Planned for 3Q2014*

- **Java and IBM Encryption Facility for z/OS support**
  - On zEC12, zBC12 with the compression feature
  - Planned for future updates of IBM 31-bit and 64-bit SDK for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44)
  - Concurrent support for IBM Encryption Facility for z/OS (5655-P97) planned

> zEC12 Update RoCE, RDMA, Shared Memory Communications, and zEDC Express Adapter – W 13:00, Th 9:00

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# IBM zEC12 and zBC12 Flash Express is exploited by z/OS

- **With z/OS V2.1, and with z/OS V1R13 RSM Enablement Offering Web deliverable, for:**
  - Pagable Large Pages (1 MB)
  - Paging, when performance would be better than disk-based paging
  - SVC and Standalone Dump
- **With z/OS V2.1, and with z/OS V1.13 PTFs for APAR OA40968 on the z/OS V1R13 RSM Web deliverable, for:**
  - Storage Class Memory (SCM) Reconfiguration
    - For configuring SCM offline  (CF SCM,OFF command)
  - Allowing for no PLPA and Common area page data sets
    - *NONE* on the PAGE= parameter in IEASYSxx
- **With z/OS V2.1 running on zEC12 or zBC12 servers with CFLEVEL 19, CF support for Flash Express (planned for 1H2014)***
  - Certain Coupling Facility list structures, can allow keyed list structure data to be migrated to Flash Express memory.
  - WebSphere MQSeries® for z/OS Version 7 (5655-R36):
    - Can buffer enterprise messaging workload spikes
  - z/OS V2.1 RMF™ designed to provide measurement data and reporting capabilities for Flash Express on Coupling Facilities

**System z Flash Express – Th 14:30, F 10:30**
**z/OS Parallel Sysplex Update – T 9:00, W 14:30**

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# z/OS Large (1MB) Pages…

- **Large (1MB) Page Support**
  - Introduced in z/OS R10, and PTF for z/OS R9
  - Requires a IBM System z10® or later server
  - Implementation on z/OS R10-R12 fixes all large pages

- **Pageable Large (1MB) Page Support**
  - Provided in z/OS V2.1, and z/OS R13 with the z/OS V1R13 RSM Enablement Offering Web deliverable
  - **Requires IBM zEC12 or zBC12 servers with Flash Express**
  - Note: Minimum real memory for pageable large pages is 4GB

- **Current exploiters of fixed large pages:**
  - Java 6 SR1 and later, and its exploiters
    - Including WebSphere Application Server
  - z/OS R11 and later XL C/C++ programs using Language Environment®
  - The z/OS operating system, in z/OS R12 and up
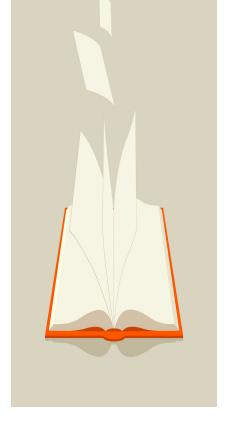  - IBM DB2® 10 for z/OS (5605-DB2)

- **Exploiters for *pageable* large pages:**
  - A maintenance roll-up of IBM 31-bit and 64-bit SDK7 for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44)
  - DB2 (planned*)
  - IMS™ Common Queue Server (planned for YE2013*)

**Large Memory Pages on z/OS – W 13:00**

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# IBM zEC12 and zBC12 Functions and Features

- **2GB fixed page frames**
  - 1 MB pages are good…
  - …sometimes 2 GB pages are better, for the same reasons (better TLB coverage)
  - Plans to exploit in DB2 buffer pools, and in Java*
  - Available for other large structures, other users
  - In z/OS V2.1, and in z/OS R13 RSM Web deliverable with the PTFs for APAR OA40967
    - Define with IEASYSxx LFAREA parameter
  - *No dependency on Flash Express to use*

- **100-way support for a single image on zEC12 servers**
  - Support for processors 0-99.  (z/OS V2.1 supports 256 CPs.)

- **CFCC Level 18 "writearound" support**
  - New z/OS function to allow batched updates to be written directly to disk without being cached in the CF by exploiters

- **CFCC Level 19 support**
  - Coupling thin interrupt support on z/OS R12 with PTFs, and higher
    - May make use of shared logical processors acceptable in more production coupling facilities
  - Resiliency improvements*

**z/OS Parallel Sysplex Update – T 9:00, W 14:30**

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# Architecture Extensions

- **Transactional Execution Facility**
  - Software-defined sequence treated by hardware as atomic "transaction"
    - TBEGIN
    - Change memory location A
    - Change memory location B
    - …
    - Change memory location *n*
    - TEND

    **"All or nothing"**

    **No need for a lock**

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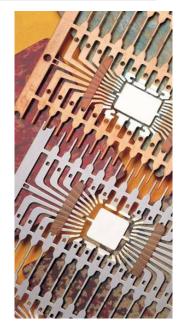    - Highly-parallelized applications
    - Speculative code generation
    - Renders locks unnecessary
  - Immediate exploitation by Java and initial development/test support for C/C++, HLASM in z/OS R13
    - IBM 31-bit and 64-bit SDK7 for z/OS Java Technology Edition, Version 7 (5655-W43 and 5655-W44)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

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# Some of Many z/OSMF V2.1 Enhancements

- **z/OSMF uses WAS with the Liberty profile!**
  - Expected to start more quickly and use less CPU

- **New Configuration Workflow application**
  - Wizard-like task sequencing with task assignments and notifications.
  - First exploiter: z/OSMF itself!

- **Enhanced Software Management application:**
  - End of service dates for products, SMP/E structure verification, find out where software instances are installed, find out where service is installed….and lots more!
    - In z/OSMF V2.1, and also in z/OSMF R13 with the PTF for APAR PM73833

- **Capacity Provisioning application improvements**
  - Create and edit domain configurations and policies, among other enhancements!
    - In z/OSMF V2.1, and also in z/OSMF R13 with the PTF for APAR PM74519.

- **What's New in z/OSMF V2.1?** – M 13:00, T 10:30

- **z/OSMF V2.1 Implementation and Configuration** – Th 13:00

- **z/OSMF Software Management Capabilities** – W 9:00

- **z/OSMF Resource Monitoring: Overview and Update** – W 10:30

- **z/OSMF Hands On Lab "Bonanza"!** W 13:00-17:30
  - **Using z/OSMF**
  - **z/OSMF Software Deployment**
  - **z/OSMF Software Management**

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# z/OS Discovery and Autoconfiguration (zDAC) Improvements

- Originally introduced in z/OS R12 and z196:
  - Designed to automatically perform a number of I/O configuration definition tasks for new and changed disk and tape controllers connected to a switch or director when attached to a FICON channel.

- With z/OS V2.1, zDAC can do point-to-point discovery:
  - zDAC now discovers switch-attached controllers
  - z/OS V2.1 zDAC also designed to discover directly-attached controllers and support mixed controller attachment (via switch and point-to-point)
  - Expected to make zDAC more useful for smaller configurations without switches
  - Better processing of device number and unit address constrained configurations
  - Improved discovery performance

  > **zDAC: One of Hardware Configuration Definition's Greatest Features! – Th 10:30**

  - …and lots more!

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

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

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- **Multiple SMP/E logical screens in ISPF**
  - z/OS V2.1 SMP/E designed to allow multiple logical screens
  - One logical screen per CSI data set is allowed for update (many for read!)

> **A User Group Top Requirement!**

- **"TSO/E LOGON" failure messages**
  - z/OS V2.1 Allocation is designed to issue messages to the terminal
  - Intended to make it easier to diagnose data set allocation failures like:

> **A User Group Top Requirement!**

  - IKJ56455I EELLS LOGON IN PROGRESS AT 11:01:36 ON APRIL 30, 2012
  - **IEFA107I EELLS ISPFPROC SDBISPF0 DD01 - DATA SET EELLS.NO.SUCH.DATA.SET NOT FOUND**
  - IKJ56457I LOGON FAILED ALLOCATION UNSUCCESSFUL
  - IKJ56470I EELLS LOGGED OFF TSO AT 11:01:36 ON APRIL 30, 2012
  - IKJ56400A ENTER LOGON OR LOGOFF-

- **Generic Tracker**
  - Goodbye, old Consoles CNZTRKR; hello, new and improved generic tracker!
  - Removes many old tracker restrictions!
  - Helps to determine whether functions are in use

> **The Latest on the IBM Health Checker for z/OS (including Tracker) – F 9:00**

  - API planned so you can call it from within a health check (for example)
  - CNZTRKR calls will be automatically rerouted to new tracker
  - Operator commands control and provide tracking information

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Improving Usability and Skills

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- **Put GDGs in chronological order!**
  - New GDGORDER JCL DD statement keyword to specify that you get the generation datasets oldest generation first to newest, or the reverse
  - No need to sort or concatenate!
  - System default remains newest-to-oldest

- **ISPF potpourri (a partial list of planned enhancements):**
  - Edit support for an expandable command field (PF4, ZEXPAND)
  - Edit HILITE command to highlight the invalid lowercase JCL characters
  - Edit support for regular expressions in FIND and CHANGE commands
  - Support for dynamically allocated data sets using XTIOTs for EDIT, BROWSE, LMINIT, and LIBDEF
  - Improved enhanced member list function
  - ISPF directory list display for z/OS UNIX, UDLIST, DIRLIST planned to support a SRCHFOR function
  - Support for multiple logical screens on ISPF entry, and multi-screen exit (=XALL) when ending ISPF
  - Path name mask support in the z/OS UNIX Directory List Utility
  - Support in OPT3.4 for a "free" line command for multivolume data sets
  - Support in UDLIST lower-case path names

**ISPF Tips, Tricks, and Free-For-All – Th 13:00**

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- **Catalog alias processing improvements planned:**

  - Data set (NONVSAM) aliases in the master catalog that specify a different high-level qualifier for a data set will be searched for in the catalog "owning" the high-level qualifier

  - Creation dates to be stored in alias entries and listed by IDCAMS

  - Catalog connector alias entries to be kept when you temporarily delete a user catalog

- **"Improved IEF212I message"**
  - Really, it's a _new_ message:
  - IEFA107I JOBNAME PROCNAME STEPNAME DDNAME - DATA SET NO.SUCH.DATA.SET NOT FOUND
  - (Instead of IEF212I … DDNAME + 009)

- **SHAREOPTIONS correction for ACDS, COMMDS**
  - In z/OS V1.13, health check for incorrect SHAREOPTIONS
  - In z/OS V2.1 the system is designed to correct them automatically

**A User Group Top Requirement!**

**DFSMS and DFSMShsm: What's new in z/OS 2.1 – M 14:30, W 9:00**

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

- **More Health Checks**
  - VLF cache object age
  - RACF® check for database AIM Level 3
  - RACF check for whether users without OMVS segments will have them automatically assigned
  - RACF check for impending certificate expiration
  - Improved RACF sensitive resource checking (more later…)
  - Open/Close/EOV check for whether XTIOT is enabled
  - Checks for branch tracing enabled, mode tracing, and long-running PER SLIPs that can cause high system overheads
  - GRSRNLxx entries that can cause Catalog deadlocks

**The Latest on the IBM Health Checker for z/OS (including Tracker) – F 9:00**
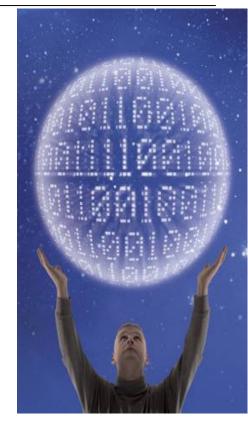
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# RLS for Catalogs

- R12 increased maximum catalog size and implemented CA Reclaim

- R13 increased the number of aliases per user catalog

- V2.1 supports record-level sharing for user and volume catalogs:

  - Expected to remove most size- and performance-related reasons for splitting user catalogs in a Parallel Sysplex

  - Most catalog contention likely to evaporate

  - Master catalog not RLS-eligible
    But it's typically entirely cached in CAS if set up as recommended

  - IDCAMS DEFINE USERCATALOG and ALTER USERCATALOG support for enabling/disabling RLS

- Remaining reasons to split a catalog are availability-related:

  - "Too many eggs in one basket"

  - Availability (expected recovery time for this catalog exceeds the Recovery Time Objective)

**DFSMS and DFSMShsm: What's new in z/OS 2.1 – M 14:30, W 9:00**

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

- **EXCP support for zHPF**
  - Designed to help improve I/O start rates and bandwidth on your existing hardware and fabric.
  - In addition to:
    - Media Manager (including VSAM, z/OS R11)
    - QSAM, BSAM, BPAM (z/OS R13)
    - EXCPVR (z/OS R13)

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# CF "writearound" support

- New z/OS function to allow batched updates to be written directly to disk without being cached in the CF, when requested by exploiter.

- Designed to keep cached online transaction data more current

- Expected to help improve performance during batch updates

- Requires:

  - IBM zEC12 or zBC12 server with CFLEVEL 18 or 19…

  - **…or** IBM zEnterprise 196 (z196) server with CFLEVEL 17 and an MCL

  - Available back to z/OS R12 or z/OS R13

  - IBM DB2 11 for z/OS (5615-DB2)* with the PTF for APAR OA37550

**z/OS Parallel Sysplex Update – T 9:00, W 14:30**

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

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# CF structure rebuild performance

- Currently, all CF structures are rebuilt in parallel

- Considerable contention can result, slowing the process overall and (especially) slowing the process for the most important structures

- New design to process structures serially, more or less

- Intent is much faster recovery for critical structures and faster overall rebuild time

- System structures to be prioritized by the system

- Other structures optionally prioritized by policy

**z/OS Parallel Sysplex Update – T 9:00, W 14:30**

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- **PDSE Version 2**
  - Designed to improve read performance, reduce storage consumption
  - New PDSE member size limit planned over 125 times larger in most cases, and substantially larger than the maximum size of a PDS member
  - Intended to make it possible to provide additional scalability and usability benefits of using PDSEs in place of PDSs and make it feasible to use PDSEs instead of multiple large sequential data sets
  - Toleration support provided to z/OS R12 and R13.
  - Exploit with DSNTYPE= in JCL, and in IGDSMSxx

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

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

- **BCPii supports a System REXX (SYSREXX) API.**

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# zFS Scaling

- **New zFS Version 5 format, designed to:**
  - Significantly improve performance for file systems with large directories by using a tree structure
  - Remove explicit limits on the number of names that can be stored in zFS directories, including the <u>prior 65,535 subdirectory limit</u>
  - Increase the maximum file system size from <u>4 TB to 16 TB</u>
  - Support both zFS V4 and V5 directories in the same physical file system data set
    - *Exploit V5 after you do not expect to fallback to R13 or R12.*
  - Intended to allow you to migrate HFS file systems that contain directories with a large number of files to zFS with good performance

- Conversion option controls planned to include:
  - New option on IOEAGFMT to convert existing file systems
  - New IOEFSPRM parmlib parameter, CONVERTTOV5 ON|OFF, to convert directories on first access
  - New shell command operand to convert directories, zfsadm convert
  - Conversions designed to "fail safe," leaving a usable file system if the conversion does not succeed

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- **z/OS V2.1 JES2 and SDSF designed to support more spin data sets:**
  - Support for over 4 billion spin data sets (up to 4,294,967,296)
    - Up from 9,999,999
  - Intended to help improve availability for long-running address spaces
    - Allowing them to create more output data sets on spool before having to stop and restart them.
  - Available back to R13 with the PTFs for APARs OA38944 and PM59496
- **64-bit NFS server, designed to support:**
  - Larger sequential data sets, PDS/PDSE members
  - Processing files as large as 4 TB, up from 800 MB
  - Improved application performance for random access

- **Non-SMS managed VSAM LDS's can be larger than 4GB!**
  - Another zFS restriction bites the dust.
- **VSAM RLS enhancements**
  - Directory-Only Caching, allowing you to optionally bypass CF caching when the cost is more than the benefit.
  - A number of RLS control blocks move from SMSVSAM data space to 64-bit storage (VSCR)
  - IDCAMS PRINT, REPRO, IMPORT, and EXPORT support on open VSAM data set using RLS.

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- **DFSMShsm Fast Replication Enhancements**
  - Consistency Group Support
    - Designed to allow you to create consistent backups of DB2 log copy pools and recover them without performing conditional DB2 restarts
  - Also:
    - Recover Data Sets to any volume
    - Recover Data Sets with a New Name
    - *Rename a data set on physical copy (very convenient for indirect cataloging for zFS!)*

- **DFSMShsm designed to improve disk and tape performance**
  - Increased multitasking level with a new SETSYS command
  - Expected to be greatest when moving numerous small data sets
  - Intended to reduce elapsed migration time required

- **DFSMShsm planned to increase volume limit**
  - From 40 to 254 tape volumes per data set
  - Intended to allow you to migrate & back up larger data sets

**DFSMS and DFSMShsm: What's new in z/OS 2.1 – M 14:30, W 9:00**

**Enterprise2013**

- **JES3 dynamic spool volume removal**
  - Identify jobs using a spool volume
  - Dump those using the spool volume you want to remove
  - Remove the spool volume without a JES3 complex-wide restart using hot start or *MODIFY,CONFIG
  - Complements dynamic spool addition support in z/OS V1.13
  - Removes the need to perform a JES3 complex-wide IPL to remove a spool volume

- **Dynamic System Symbol updates**
  - Single system only
  - <u>Not</u> fully compatible with IEASYMUP or SYMUPDTE
  - New SETLOAD IEASYM keyword and IEASYMU2 program
    - IEASYMU2 is intended for temporary updates
    - Understand the considerations when using both!
  - New ENF73 signal on symbol update

> **A User Group Top Requirement!**

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

> **A User Group Top Requirement!**

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- **New operand on FORCE to terminate a task**
  - FORCE jobname,TCB=address
    - New ASCBNOFT bit to exempt all tasks in an address space from force
  - New MVS.FORCETCB.* SAF profiles in OPERCMDS class
  - Replace CALLRTM usermod from Level 2

- **Disabled Consoles Communication Facility (DCCF) support for WTOR Auto-Reply**
  - Support for branch-entered WTORs
  - Intended to help prevent synchronous WTORs from causing SFM to partition out systems with outstanding replies

- **RRS internal restart**
  - New optional internal RRS restart designed to quiesce RRS processing, clean up  logs, and resume processing, without taking RRS down

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# DFSORT™ Scaling improvements planned

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

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

> **A User Group Top Requirement!**

- **Add/remove MCS consoles dynamically**

> **A User Group Top Requirement!**

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

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

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- ## DFSMShsm Storage Tiers

  - Policy-based movement of SMS-managed data within L0

  - Intended for existing storage class and storage group constructs

  - Apply management class policies based on age and last reference to move the data from one class of device to another

    - For example, IBM System Storage® DS8700 and DS8800 SSD, HDD, SATA, or a mix

    - Can include Easy Tier devices

  - ML1 and ML2 planned to work as they do now

  - Intended to help you manage data residency to meet business goals and data management policies

**IBM System Storage**

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- **OAM Improvements designed to improve tape-related functions:**
  - Supporting larger block sizes for tape for better performance
  - Allow you to remove unneeded backup copies automatically
  - Enable OSREQ Store Sequence support on smaller object sizes
  - Enhance OAM interoperation with products such as IBM Tivoli® Automated Tape Allocation Manager for z/OS (ATAM, 5698-B15)
  - Enable you to tune tape library operations with a new SETTLIB option in CBROAMxx PARMLIB member

- **Improved JES3 support for SMS-managed tape libraries**
  - Better support the use of Main Device Scheduler for SMS-managed tape
  - New JES3_ALLOC_ASSIST=YES|NO parameter in DEVSUPxx
  - Inish deck changes for this support to define new esoteric names for clusters

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- **Improved DFSMSrmm™ support for SMS-managed tape**

  - DFSMSrmm designed to support tape data set retention periods using SMS Management Classes

  - Intended to set resulting expiration dates automatically, and support expiration of tape data sets after a specified period of inactivity

  - Extend EXPDT-based retention management to allow it to be based on volume sets or first files

- **FICON® Dynamic Channel path Management support for cascaded switches**

  - Existing FICON DCM is extended to support cascaded switches
    - Attaching a controller to a switch through another switch to a channel
  - Support planned for FICON limit of 2-level cascading for DCM

- **CPM support for defined capacity and group capacity limit**
  - Designed to increase options for manual and automated responses to capacity shortages

- **RMF to provide SMF 104 Records for zBX Activity**

  **RMF – The Latest and Greatest – T 9:00**

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

- **New DISPLAY PPT command, designed to:**
  - Display the <u>currently-effective</u> program properties table, the net from:

    **A User Group Top Requirement!**

  - The IBM default in CSECT IEFSDPPT…
  - …as modified by SCHEDxx during IPL…
  - …and perhaps further modified by T SCH commands

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- **WLM improvements:**

  - New classification group types, and some new and modified work qualifier types allow better classification of new DB2 and DDF workloads.
  - Support for up to 3,000 application environments, an increase from the prior limit of 999

- **RMF enhancements:**

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

  - More information about CF links in Monitor I
    - Also available on z/OS V1.12 and z/OS V1.13 with the PTF for APAR OA37826

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

- **System Logger threshold messages**
  - Specify that warning messages be issued based on thresholds for log stream primary storage consumption
  - Intended to help you avoid storage full conditions that can lead to performance degradation and outages

- **SMF BUFSIZMAX for log streams**
  - Designed to let you specify SMF log stream buffer sizes with a new DSPSIZMAX parameter in SMFPRMxx
    - Similar to BUFSIZMAX specification for SYS1.MAN data sets.
    - Support for DSPSIZMAX to be used when SMF is initialized also available back ro R12 with the PTF for APAR OA35175
  - z/OS V2.1 planned to support dynamic changes via SET SMF and SETSMF

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- **z/OS UNIX Automount Improvements**
  - Allow you to specify permission bits other than the defaults for file systems created automatically using an automount policy
  - Extend the use of static system symbols to the master file (/etc/auto.master)
    - Currently supported for MapName files only
  - Serialize automount appends across systems
  - Set owning system to a file system parent when appropriate to avoid unmount failures during OMVS shutdown

- **VSAM DATACLAS additions designed to let you specify:**
  - All System-Managed Buffering (SMB) record access bias values for VSAM data sets that can be specified in JCL in data classes
  - ACB RMODE31 override SMS data class specifications.

- **New ACS variable for EAS eligibility**
  - Intended to allow you to code ACS routines to route allocations appropriately

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- **IEBCOPY improvements**
  - COPYGROUP for PDSs
    - As for PDSE, copy aliases along with specified members automatically
    - PDS/PDS, PDSE/PDS, PDS/PDSE, PDSE/PDSE all work the same
  - Support for pattern matching
    - Using * and % in SELECT and EXCLUDE statements with COPYGROUP
- **Batch Modernization:**
  - Job Correlator
    - Unique 64-byte value assigned to each job in a sysplex
    - Intended to:
      - Provide a larger name space for jobs (adjunct to job name)
      - Help link jobs to output and other records
      - Provide a simple way for applications to determine the Job ID of a job that was just submitted
      - Planned to be available with the z/OSMF REST API
  - JES3 support for instream data in procedures
    - DDNAME DD * support in PROCs and INCLUDE groups
    - Similar to support introduced in z/OS V1.13 JES2

**A User Group Top Requirement!**

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

      `ALLOW` allows a downgrade when JCL has `ALLOW`
    - New JOB statement parameter, DSENQSHR=ALLOW, to use with jobclass of ALLOW or AUTO. `DSENQSHR=ALLOW,USEJC,DISALLOW`

      `USEJC` allows downgrade only when jobclass is `AUTO`

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

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

Then, shared ENQ

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

**Example:**
```
//  EXPORT SYMLIST=(DSNAME)
//  SET DSNAME=MY.DATA.SET
//  SET VOLSER=VOLUME
//*
//DELETEDS EXEC PGM=IDCAMS,REGION=300K,
//SYSPRINT  DD SYSOUT=*
//DEVICE    DD DSN=&DSNAME,VOLUME=&VOLUME,DISP=OLD
//SYSIN     DD *,SYMBOLS=JCLONLY
   DELETE –
     &DSNAME. –
     NONVSAM –
     PURGE –
     SCRATCH –
     FILE(DEVICE)
/*
```

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- **Batch Modernization, continued…**

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

**Example:**

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

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## And Still More Batch Modernization:

- ## Batch Parallel Recall
    - Allocation to determine whether data sets to be allocated have been migrated
    - For DFSMShsm-migrated data sets, Allocation is planned to:
        - Issue recall requests during step initiation
        - Wait for all recalls to complete
        - Continue with Allocation processing needed to start the step
    - New ALLOCxx keyword to enable, and SETALLOC support
        - BATCH_RCLMIGDS(SERIAL,PARALLEL)

- ## 8-character Job classes
    - JOB statement to support 8-character alphanumeric job classes
    - Expands maximum number of job classes for JES2
        - JES3 will continue to support a maximum of 255 job classes
        - No explicit limit planned for JES2
    - JES3 supports 8-character job classes via JECL (//*MAIN CLASS=xxxxxxxx)
    - JES3 to continue to override CLASS from the JOB statement when CLASS is coded on the //*MAIN statement

```
//NICE JOB CLASS=PAYROLL, …
```

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- **New SYSTEM and SYSAFF JOB JES-independent statement keywords**
  - Allow you to specify z/OS MVS system names, JES2 MAS member names, and JES3 MAIN names
  - New ALLOCxx keyword to enable, and SETALLOC support
- **Delete member name masking**
  - New IDCAMS function to delete specified members by pattern
  - Asterisk is a wildcard, per cent sign is positional
  - Examples:
    - DELETE SOME.DATA.SET(STUFF*)
    - …to delete all members starting with "STUFF"
    - DELETE SOME.DATA.SET(STUFF%A)
      …to delete all members with STUFFxA, where x is any character
- **Multivolume RLSE improvements**
  - To release unused space for SMS-managed multivolume data sets:
    - On the current volume
    - On all subsequent volumes
  - Via RLSE in JCL or equivalent DYNALLOC text unit

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- **WebSphere Extended Deployment Compute Grid for z/OS, V8.0**
  - New framework for single-threaded Java applications
  - z/OS supports for xJCL constructs via keyword/value pairs to allocate files, specify checkpointing
  - Intended to use commit interval management

- **Batch Run Time Environment: Java/PLI/COBOL interoperability**
  - Similar to Java/COBOL interoperability in R13, planned to provide transactional integrity for DB2 between Java, COBOL, <u>and PLI</u> programs
  - VSAM as an resource manager
  - Provide TVS integrity among Java, COBOL, and PLI programs via RRS
  - Requirements planned to include:
    IBM 31-bit SDK for z/OS, Java Technology Edition, V6.0.1
    Enterprise PL/I Version 4 Release 2 (5655-W67)
    DB2 V9 (5635-DB2) or DB2 10 (5605-DB2) with PTFs

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

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

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

- **More threads for z/OS UNIX**
    - z/OS V2.1 UNIX System Services supports more threads on the system

- **More z/OS UNIX pipes**
    - Planned to support up to 15,360 pipes, up from the prior limit of 8,730

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- **Language Environment support for check zones**
  - New function to help expose memory overlays that cause heap damage
  - HEAPZONES run-time option designed to allow you to specify that each storage area requested have a check zone appended
  - Language Environment designed to detect a program storing data in a check zone
  - Intended to help you find problems that might otherwise be more difficult to identify
  - Designed to help you test application code—*new, changed, and existing!*

- **TSO/E REXX Enhancements**
  - Enhancements to EXECIO, LISTDSI, and STORAGE:

    **A User Group Top Requirement!**

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

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- **New IXCNOTE interface for XCF**

  - Designed to support notes with up to 1024 bytes of application data

  - Designed to allow applications to:

    - Create and delete "note pads"

    - Create, read, modify, or delete notes in note pads they are connected to

  - XCF will be designed to create note pads in CF list structures

  - New API intended to help improve Parallel Sysplex flexibility and usability for application programmers

  - Available on z/OS V1.13 with the PTF for APAR OA38450

- **TMP Support for SYSREXX™**

  - All functions of the CONSOLE host command environment

  - Designed to support system and subsystem commands, and monitoring message traffic with an EMCS console

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

- **Support for Japanese Industrial Standards (JIS)**
    - For Extended UNIX Code (EUC): JIS X 0201, JIS X 0208, and JIS X 0212
    - New support is designed to add three new CCSIDs: CCSID 17338, CCSID 21434, and CCSID 37818
    - These CCSIDs extend Japanese Unicode support to include 83 additional NEC characters

- **Generalized Alignment support in the Binder**
    - Planned to support the boundary alignment from byte to 4K page alignment
    - As specified in object modules when building program objects & load modules
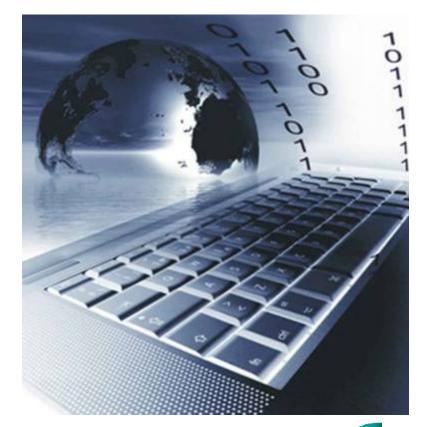    - When COMPAT=CURR on z/OS V2.1 (or V2.1 is specified)

**Enterprise2013**

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

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

  - New support for:

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

**Enterprise2013**

- **ICSF Enhancements (HCR77A0, included in z/OS V2.1)**

  - Support for Derived Unique Key Per Transaction (DUKPT) for message authentication code (MAC) and data encryption keys

    - Intended to be compliant with the ANSI X9.24 part 1 Retail Financial Services Key Management standard

    - Intended for the symmetric key management used for financial services such as ATM transactions

  - Support for a new Cipher Text Translate CCA function designed to process sensitive data encrypted under one key

  - Enhanced key wrapping to help ensure a key is not wrapped with a weaker key, to help you comply with industry cryptographic standards, including ANSI X9.24 Part 1 and PCI-HSM

    - Requires enhanced CCA firmware in the Crypto Express coprocessor

  - New random number cache intended to improve application performance

  - Support for new mode that configures Crypto Express4S coprocessors in Enterprise PKCS #11 mode

    - RACF planned to support generation of ECC and RSA secure keys using Crypto Express4S

    - Corresponding PKCS #11 secure key support planned for PKI Services

    - System SSL planned to allow certificates with secure PKCS #11 ECC and RSA certificates to be used for some SSL/TLS handshakes and through its Certificate Management APIs

    - Designed to provide the cryptographic services and assurance needed to meet EU requirements for Qualified Digital Signatures

  - ICSF designed to improve I/O performance for the PKDS and PKCS #11 TKDS

  - FIPS 140-2 setup simplification for ICSF

  - Available now from: http://www.ibm.com/systems/z/os/zos/downloads/ as "" Cryptographic Support for z/OS V1R12-R13" Web deliverable

**Enterprise2013**

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

**RACF for z/OS V2.1 Update – T 13:00**

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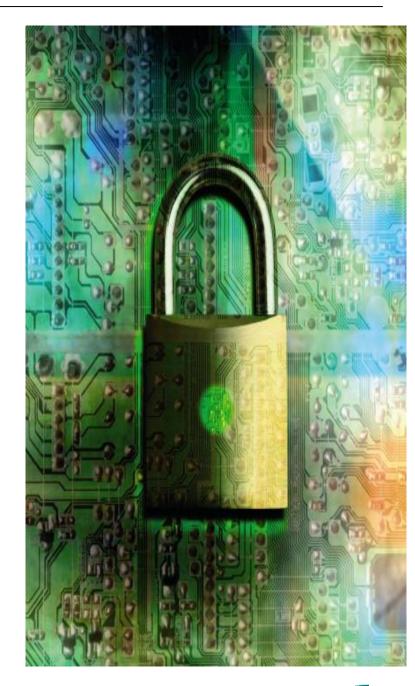
- **SAF job controls**
  - Support planned for both JES2 and JES3
  - Intended to allow you to supplant exits with new profiles in the JESJOBS class

- **z/OS UNIX timeout support planned:**
  - New BPXPRMxx parameter
  - Specify whether users who logged in using rlogin, telnet, ftp, or the TSO OMVS command should be logged off after a period of inactivity
  - Intended to help you improve system security

- **RACF Sensitive Resources Health Check**
  - Checks additional FACILITY class resources for:
    - Active APF list
    - Active link list
    - Active LPA lists
    - Access to system dump data
    - Access to certain z/OS UNIX System Services functions.
  - Intended to help identify potential security exposures

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- **System SSL TLS 1.2 Support**

  - Support for higher-strength cryptographic ciphers defined in RFCs 5246, 5288, and 5289, including SHA-256 and SHA-384 hashing

  - Support for ciphers using symmetric AES-GCM during TLS handshakes and application payload exchanges

  - Also available on z/OS V1.13 with the PTF for APAR OA39422

- **System SSL NSA Suite B compliance**

  - Support for Suite B Cryptography based on RFC 5430, an implementation of TLS V1.2

  - Designed to meet the United States government cryptographic algorithm policy for national security applications

- **Remote access to System z Crypto via LDAP**
  - Think of this as *Crypto-As-A-Service*
  - Store and manage key material inside the boundaries of the System z Hardware Security Module in the crypto card
  - Enable System z secure key crypto via LDAP extended operations provided by z/OS ITDS
  - Can isolate callers to specified cryptographic domains by label
  - Designed to route crypto operations and data to an LPAR designated to process secure key operations
  - Intend to enhanced ICTX plug-in to provide native SDBM and SASL bind authentication, and 64-bit support
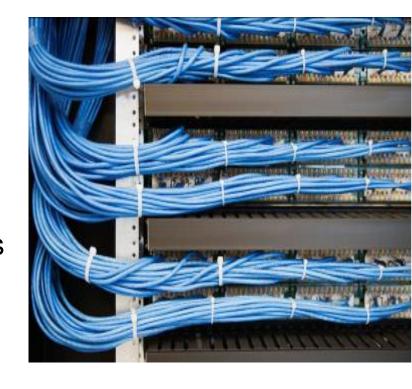
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## Enhanced fast path socket support

z/OS 2.1 Communications Server Technical Update  – M 13:00, T 16:15

- Fast path sockets-like performance
- For all sockets using socket APIs
- Designed to reduce CPU consumption, particularly for interactive workloads

## SACK support

- Selective ACKnowledgements and packet retransmissions
- As described by RFCs 2018 and 3517
- Intended to reduce packet retransmissions when multiple packets are missed in a window

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- # Resolver startup file fault tolerance

  - Resolver designed to start when setup file errors are detected
  - Intended to allow TCP/IP stacks and other dependent applications to start

- # Support for QDIOACCEL with IPSEC

  - QDIOACCELERATOR designed to improve performance by allowing packets to be directly routed between HiperSockets and OSA QDIO connections
  - New function designed to provide the support with IPSEC enabled

**z/OS 2.1 Communications Server
Technical Update  – M 13:00, T 16:15**

- # New FTP subcommands

  - MVSPut and MVSGet designed to simplify the transfer of sequential and partitioned (PDS and PDSE) data sets between z/OS systems

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- **FTP client security exit points**
  - Two new exits, a command user exit and a reply user exit
  - Intended to be used to implement customer security policy


- **New command to verify TCP profile syntax**
  - V TCPIP,,SYNTaxcheck,dsname
  - Can run on any system at the same level


- **Intrusion Detection:**
  - Enhanced IDS IP fragment attack detection
  - Limit defensive filter logging to avoid log overruns


- **DVIPA affinity**
  - Preferentially associate a DVIPA with the original application

**z/OS 2.1 Communications Server
Technical Update – M 13:00, T 16:15**

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# IBM will NOT remove support for unsecured FTP connections **October 1, 2013** as originally planned.

•

• Current methods are remain available:
  • Regular FTP
  • FTPS (FTP using SSL)
  • Download Director (unaffected, and will remain available)

• IBM servers used for System z software downloads:
  • deliverycb-bld.dhe.ibm.com
  • deliverycb-mul.dhe.ibm.com
• IBM recommends you use the Connectivity Test website in advance:

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

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# Statements of Direction*

**New news**

- **z/OS V1.13 is the last release to support the Microsoft Windows based Capacity Provisioning Control Center (CPCC)**
  - IBM intends to enhance the z/OSMF-based Capacity Provisioning application

- **z/OS V2.1 is planned to be the last release to include Version 1 of the Standards Based Linux Instrumentation for Manageability (SBLIM) CIM client for Java**
  - Version 2 of the SBLIM client, which is designed to be a JSR48-compliant implementation, is included in z/OS V1.13 and planned to be included in z/OS V2.1
  - IBM recommends that users of SBLIM Version 1 convert to Version 2

- **z/OS V1.13 is the last release to provide support for Integrated Call Level Interface (ICLI)**
  - Use DRDA instead

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**New news**

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

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Reminders:

- **z/OS V1.13 is 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 is removed in z/OS V2.1.
    - 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 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

- **z/OS V1.13 is 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 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)

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Reminders:

- z/OS V1.13 is the final release for which the IBM Configuration Assistant for z/OS Communications Server tool that runs on Microsoft Windows will be provided by IBM
  - Currently an as-is, nonwarranted web download
  - Use the supported z/OSMF Configuration Assistant application instead

- z/OS V1.13 is the last release to support a staged migration for JES2 and JES3. z/OS V2.1 and higher require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.

- z/OS V1.13 is the last release to support changing the default Language Environment runtime options settings using SMP/E-installable USERMODs. IBM recommends using the CEEPRMxx PARMLIB member to set these options.

- With the introduction of the SAF mode authorization in z/OSMF 1.13, IBM withdraws support for Repository mode authorization in z/OSMF V2.1. Both modes are supported on z/OSMF V1.13 to allow customers time to migrate to the new authorization mode.

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# Reminders:

- **z/OS V2.1 supports these System z server models and later server models:**

  - IBM System z9 Enterprise Class and IBM System z9 Business Class
  - IBM System z10 Enterprise Class and IBM System z10 Business Class
  - IBM zEnterprise 196 (z196) and IBM zEnterprise 114 (z114)

- **z/OS Version 2 supports these DASD control units, or later ones:**

  - 3990 Model 3 or 3990 Model 6
  - 9393
  - 2105
  - 2107
  - 2421, 2422, 2423, or 2424

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# Handy Resources

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# z/OS Support Summary

| Release | z900/ z800 WdfM | z990/ z890 WdfM | z9 EC z9 BC WdfM | z10 EC z10 BC WdfM | z196 CPC | z114 CPC | z196/ z114 w/zB X | zEC12 | zBC12 | End of Service | Extended Defect Support[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| z/OS V1.7[2] | X | X | X | X | X | | | | | 9/08[1] | 9/10[1] |
| z/OS V1.8[2] | X | X | X | X | X | X | | | | 9/09[1] | 9/11[1] |
| z/OS V1.9[2] | X | X | X | X | X | X | | | | 9/10[1] | 9/12[1]* |
| z/OS V1.10 | X | X | X | X | X | X | X | X | X | 9/11[1] | 9/13[1]* |
| z/OS V1.11 | X | X | X | X | X | X | X | X | X | 9/12[1] | 9/14[1]* |
| z/OS V1.12 | X | X | X | X | X | X | X | X | X | 9/14* | 9/16[3]* |
| z/OS V1.13 | X | X | X | X | X | X | X | X | X | 9/16* | 9/19[3]* |
| z/OS V2.1[4]* | | | X | X | X | X | X | X | X | 9/18* | 9/21[3]* |

1    The IBM Lifecycle Extension for z/OS provides the ability for customers to purchase extended defect support for that release of z/OS for up to 24 months after the z/OS release's end of service date
2    See IBM GTS services for additional fee-based extended service
3    Optional extended service is planned to be offered
4    z/OS V2.1 planned for GA on 30 Sept, 2013
•    Planned. All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

**WdfM** – Server has been withdrawn from Marketing

**Legend**

| |
|---|
| Out of Lifecycle Extension for z/OS support[2] |
| Defect support provided with Lifecycle Extension for z/OS |
| Generally supported |

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## IBM Platform Test - Servers

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**We're here to help**

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

→ Contact now

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

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

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

### z/OS Platform Evaluation Test (zPET)

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

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

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

**Some resources:**
- Test experience reports about HW, OS, middleware
- Hints & Tips
- Samples

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

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# The Future Runs on System z

Optimize your z/OS environment

z/OS

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