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Preview: z/OS Version 1 Release 13 and z/OS Management Facility Version 1 Release 13 are planned to offer new availability, batch programming, and usability functions

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At a glance

IBM® z/OS® Version 1 Release 13 and IBM z/OS Management Facility (z/OSMF) Version 1 Release 13 are planned to include many new capabilities to address systems management and operations, batch programming and performance, as well as usability and optimization functions. Your data, applications, and systems are critical; z/OS and z/OSMF can help you manage your systems and optimize your staff.

z/OS Management Facility V1.13 is planned to offer several enhancements designed to:

- Clone z/OS images and deploy software more easily and consistently, using a new z/OSMF software deployment task.
- Define new storage volumes to SMS quickly and easily using a single UI, using a new z/OSMF disk management task.
- More easily maintain highly secure network connections with an updated z/OSMF-based Configuration Assistant for z/OS Communications Server.
- Integrate the z/OS experience with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-based applications.

z/OS V1.13 is planned to offer several enhancements designed to:

- Help you get early warning of certain system issues before they become obvious to help you act quickly and decisively with updated z/OS Predictive Failure Analysis® and Runtime Diagnostics functions.
- Help you shorten batch windows using JCL improvements in JES2 environments.
- Simplify application programming with a new z/OS base component, z/OS Batch Runtime environment, designed to enable COBOL and Java™ to interoperate for DB2® with transactional integrity so you can enhance and extend existing COBOL batch application programs using Java.
- Improve I/O performance for z/OS UNIX® workloads in a Parallel Sysplex® using direct I/O with fully shared zFS file systems, and improve zFS availability with a new zFS internal restart function.
- Provide more options you can use to secure your data with newer, faster, and more scalable encryption and security capabilities incorporated in IBM Tivoli® Directory Server for z/OS (LDAP), RACF®, z/OS System SSL, and z/OS PKI Services.
- Improve system responsiveness with less-disruptive DFSMShsm™ journal and control data set (CDS) backups.

Overview

Businesses are turning to the IBM zEnterprise System class of servers to expand upon their traditional mainframe workloads, by consolidating, managing, and securing the tier of servers that, in turn, rely on System z®. The zEnterprise System brings a new dimension to computing by integrating IBM technologies to improve productivity of today's multi-architecture data centers and enables you to focus more on your business and workloads and less on complex infrastructure underpinnings.

z/OS is at the heart of zEnterprise workloads. Just as the zEnterprise servers challenge traditional views of technology and management, so too is z/OS altering the views of what an operating system should do.

z/OS, already a highly available system, brings a new dimension to system availability by giving you the ability to predict and act to prevent potential system issues. z/OS V1.13 has designs for autonomics and smart operations which can help you proactively avoid errors and reduce risk from outages. For example, the real-time predictive capabilities of z/OS Predictive Failure Analysis (PFA) not only are planned to be enhanced with more monitoring of system metrics, but in some instances are designed to automatically invoke z/OS Runtime Diagnostics to help identify the specific workload at risk and to give your operators the information they need to act quickly and accurately to isolate your workloads from hidden errors.

z/OS Management Facility (z/OSMF, 5655-S28) is the new face of z/OS and forms the platform for revolutionizing the management of z/OS environments. z/OSMF V1.13 is planned to add new management tasks and enhance those introduced in prior releases to simplify software deployment through the cloning of z/OS images, simplify disk storage volume management, simplify TCP/IP network and security configuration, and improve overall ease of use with the ability for cross-application linking and launching.

You can use z/OS to extend the value of your existing applications. This latest release is planned to deliver the foundation for batch modernization, enabling you to break down the traditional wall between batch and online workloads and allowing you to access and transform business data as never before. New enhancements are designed to help shorten your batch window, simplify batch programming, and give you more flexibility in deploying batch applications. z/OS V1.13 is also planned to deliver improved performance for web-based applications with better overall I/O response times for z/OS UNIX System Services workloads in a Parallel Sysplex.

The world we live and work in is more complex and more demanding than ever. The performance of your business today hinges on your ability to meet the demands of your customers, partners, and employees. Let the smarter system innovation in the zEnterprise and z/OS help you to optimize your workloads, be responsive to business needs, and deliver performance at lower costs.

Key prerequisites

z/OS V1.13 is planned to run on these IBM System z servers:

- z196
- z10 EC
- z10 BC
- z9™ EC (see note)
- z9 BC (see note)
- z990 (see note)
- z890 (see note)
- z900 (see note)

- z800 (see note)

Note: These products are withdrawn from marketing.

For a complete description of z/OS V1.13 software prerequisites, refer to *z/OS V1R13 Planning for Installation* (GA22-7504), when available.

Planned availability date

September 2011

Previews provide insight into IBM plans and direction. Availability, prices, ordering information, and terms and conditions will be provided when the product is announced.

Description

Ease of use

z/OS V1.13 is planned to introduce many new simplification capabilities. It is designed to address the need for skills by making existing personnel more productive and by reducing the time needed for someone new to gain proficiency on the platform. New function is planned to address overall operational efficiency by reducing the steps for tasks and introducing new streamlined processes. Ultimately, these new capabilities are intended to make your organization more responsive in meeting business needs.

z/OS Management Facility (z/OSMF, 5655-S28) is the IBM System z strategic direction for z/OS simplification. Although z/OSMF V1.13 and z/OS V1.13 are separate products, their development and technological integration are tightly linked. Current and future planned enhancements are intended not only to simplify individual z/OS system management tasks, but to link tasks together for an integrated and modern system programmer experience. z/OS Management Facility V1.13 is planned to deliver:

- A simplified process for cloning z/OS images and deploying z/OS software with a new software deployment task.
- A simplified process for adding capacity to SMS pool storage groups with a new disk management task.
- Simplified monitoring of z/OS capacity provisioning with a new Capacity Provisioning task.
- Simplified TCP/IP configuration with an updated Configuration Assistant for z/OS Communications Server task.
- Better integration between tasks by allowing z/OSMF applications to link to other applications.

In addition to the functions planned for z/OSMF V1.13, z/OS V1.13 itself has many usability improvements. Other usability enhancements are planned for Health Checker, IDCAMS, Catalog, ISPF, SDSF, DFSMSrmm™, DFSMSdfp™, SMF, and more. These updates are intended to help with the managing, monitoring, reporting, and operations of z/OS and its subsystems.

Details on the new simplification capabilities planned for z/OS and z/OSMF V1.13:

- Enhancements planned for z/OSMF V1.13:
  - A new software deployment function is planned for z/OSMF V1.13, which is planned to run on z/OS V1.13. The software deployment function is designed to provide the functions needed to create and deploy a copy, or clone, of an existing SMP/E-installed software image, including IBM software installed using ServerPac, CBPDO, or fee-based installation offerings, as well as ISV or customer software. The function is intended to help you create and distribute copies of system software, including target libraries, distribution libraries, SMP/

E zones, and related data sets you identify. Software deployment is designed as a z/OSMF application, and is intended to make it easier to manage your software images by simplifying and standardizing these deployment processes.

- A new, simplified process for adding capacity to SMS pool storage groups is planned. This new disk management task is designed to streamline the process of adding volumes to SMS pool storage groups, and is intended to allow you to perform storage group management tasks from within the application, reducing several manually intensive steps involving multiple applications to a single GUI.
- A new Capacity Provisioning Manager application is designed to support easier monitoring of z/OS Capacity Provisioning Manager (CPM) status. This capability can simplify the work of a z/OS Capacity Provisioning administrator and provides functionality to monitor connections and to view reports for domains, configurations, and policies. Capacity Provisioning Control Center is planned to continue to be available as a separate Microsoft® Windows-based stand-alone client.
- A new API is designed to improve the integration of z/OS tasks by enabling application launching not only between z/OSMF applications, but between z/OSMF applications and other browser-based applications as well. Application launching may support two-way context-sensitive connections or simple links. For example, between z/OSMF applications context-sensitive launching might be used to enter an application at a point where actions can be taken immediately to simplify complex task flows, while simple links would open another application so you could navigate to needed tasks. This capability is intended to help provide a more seamless experience in managing z/OS systems.
- z/OSMF is planned to extend its support for SAF-based security, so you can use it to manage z/OSMF user authorization and roles instead of using the current z/OSMF repository-based authorization support.
- Several enhancements are planned for the z/OSMF V1.13 Configuration Assistant for z/OS Communications Server:
  - Retrieving TCP/IP profile information from active TCP/IP stacks, enabling it to import lists of IP addresses that are available for policy configuration.
  - Allowing a single instance of the Configuration Assistant to be used to configure both z/OS V1.12 and z/OS V1.13 Communications Server. This is intended to allow you to configure systems in a mixed-release environment from a single instance of the Configuration Assistant running under z/OSMF.
  - Allowing a policy rule to be defined once for multiple stacks, to permit more efficient policy configuration for multiple systems without having to individually define every policy rule for every stack.

    Note: The Configuration Assistant for z/OS Communications Server is also available as an as-is, nonwarranted, Windows-based tool that is downloadable from the web. New functions and enhancements planned for the z/OSMF Configuration Assistant may not be provided in the Windows-based Configuration Assistant.

- In z/OS Communications Server, the TCP/IP PORTRANGE profile statement allows ranges of TCP/IP ports to be reserved for specific job names. This statement is planned to be enhanced to allow specification of the job name as a wildcard, specified as a 1-7 character prefix followed by an asterisk (*). This is planned to allow several jobs with the same prefix to have access to the ports in the specified port range.
- In z/OS V1.13, several batch enhancements are planned for JES2 environments. Also, see the Application integration section for additional improvements.
  - Support is planned for in-stream data sets to be used within JCL procedures and for include statements. This will improve usability of JCL procedures; for example, by making it possible for you to put utility control statements in the same member as the rest of the procedure.
  - Support is planned to allow jobs for which journaling is used to be stopped after a currently running step has finished and held for restart in the following step. This is intended to allow less-disruptive system shutdowns.

  - Support is planned for job return codes. This support will be designed to allow you to specify that the job return code be set to the highest return code encountered by any step, the last step, or a specified step in the job. This will help make it simpler to interpret the results of job execution.
  - Support is planned for a new UNALLOC parameter for the SPIN keyword on the DD statement, to allow you to specify that any output data set be spun off based on the interval, specific time of day, or number of output lines you choose. This is intended to help improve availability for long-running address spaces.
- The Microsoft Windows-based Capacity Provisioning Manager application is planned to support the specification of capacity increments for both provisioning and deprovisioning actions, and allow you to specify different quantities for obtaining the first capacity increment and subsequent increments. This will help you add the right amount of capacity more quickly, with fewer activation actions. Also, support is planned for the 32- and 64-bit versions of Microsoft Windows® 7 Professional Edition. In addition, the z/OSMF Capacity Provisioning application is planned to add support for displaying capacity increments.
- The Health Checker framework is planned to be enhanced to allow you to specify when health checks should be run for the first time, and when they should be repeated using a new SYNCVAL keyword in the HZSPRMxx parmlib member or on the Health Checker MODIFY command. This can help you schedule checks to run at more predictable times. Also, extensions to the Health Checker framework are planned to allow better control over messages and check intervals, and to allow checks to increase the severity of their exceptions as system conditions change. These changes are intended to allow programmers to write advanced health checks with improved usability.
- A new migration health check designed to warn you when the zFS configuration option is not set to sysplex=filesys is planned. This check is also planned to be made available for z/OS V1.11 and z/OS V1.12 with PTFs.
- New DFSMSrmm and DFSMSdfp function is planned for:
  - Allowing the system to automatically correct the volume list for multivolume tape data sets in many cases when a volume list does not include all necessary volumes or the volumes are specified out of order. This is intended to help you avoid problems when processing multivolume tape data sets ensuring that all the data associated with them is available to be read.
  - Allowing you to specify whether data sets are managed by expiration date or Vital Record Specifications (VRS) policy when they are created. This will help you simplify your retention policies, help you avoid batch VRS policy management, and enable you to determine how long a tape data set will be retained at the time it is created. Corresponding support is planned for the DFSMSrmm dialog, to show either the VRS retention date or the expiration date in data set and volume search results.
  - DFSMSrmm facilities tape copy applications that can be used to copy and restack tape data sets while retaining, and preventing incorrect settings for, data set attributes. Options are also planned to allow setting predictable retention periods for source data. This will simplify moving and copying tape data, particularly when implementing new tape technologies and replacing older media.
  - An enhanced SEARCHDATASET command to allow a more efficient search of tape data set metadata based on date ranges, including relative values, SMS constructs, and catalog status. This will make it easier to identify data sets that meet those criteria.
  - More control over automatic inventory management driven volume movement by allowing you to specify locations that are not eligible for automated movement during inventory management processing; for example, those that might otherwise be moved based on Vital Records Specifications (VRS). Also, the VRS dialog and commands are planned to support searching by last reference and change dates to help you find unused VRS policies, and DFSMSrmm is planned to support listing last changed information for all resources managed using its control data set.
  - The DATASET and VOLUME display panels to be extended with ISPF point-and-shoot fields to simplify dialog navigation. Also, a new CHAIN primary command

is designed to provide quick access to multivolume and multifile search results lists.

- A new parmlib member, IGGCATxx, is planned to allow you to specify a number of Catalog system parameters. A new CATALOG parameter in IEASYSxx is also planned to allow you to specify one or more IGGCATxx members, in which you can specify the maximum number of Catalog Address Space (CAS) user service tasks, a threshold value for how full a catalog can be made before a warning message is issued, whether functions that can be controlled using the ENABLE and DISABLE keywords of the MODIFY CATALOG command should be active, and the amount of primary and secondary space to be allocated for implicitly defined VSAM volume data sets (VVDSs). This new function is intended to make it easier to maintain those catalog parameters that are not needed very early during the IPL process.
- Access Method Services (IDCAMS) is planned to support a new option for the LISTCAT LEVEL command. This new option is designed to allow you to specify whether related component names be listed when a data set entry is listed based on the pattern specified by LEVEL. For example, if a cluster name is listed, the new option is designed to allow you to specify whether the DATA and INDEX entries are also listed. This is intended to make it easier to customize LISTCAT output and reduce unwanted or unneeded LISTCAT data.
- The system is planned to update volume information across a Parallel Sysplex when DFSMSdss™ or DFSMShsm Fast Replication Backup and Recovery processing complete successfully, and the volume serial or VTOC location, or both, have been changed. When a new REFUCB keyword is specified in a DEVSUPxx member of parmlib, this is intended to eliminate the requirement to issue VARY commands on sharing systems in the sysplex when volume information has been updated by these functions.
- DFSMSdfp Catalog processing and the IDCAMS utility are planned to be changed to issue an operator message that requires a response before allowing a user catalog to be deleted when RECOVERY is specified. This new function will be designed to be enabled using new operands of the MODIFY CATALOG command, and is intended to help prevent inadvertent deletion of user catalogs in batch jobs using IDCAMS.
- DFSMSdfp is planned to add function to ISMF to allow you to sort saved volume lists (using NaviQuest) by column and display space information in GB units, and is also planned to support a new display for pool storage groups. This new function will make ISMF easier to use.
- The SMF dump program used for processing SMF log streams (IFASMFDL) is planned to be enhanced to reduce the time it takes to extract the data. This new function is designed to allow you to specify a new SMARTENDPOINT keyword when running the utility, to limit the amount of data read from the log stream being processed. IFASMFDL will also be designed to allow you to specify that an entire SMF log stream be archived or deleted. ARCHIVE and DELETE processing is planned to process all the SMF data you specify that exists in a log stream, rather than a subset of the data. This is intended to allow you to easily migrate SMF data management processes based on archiving the entire content of SYS1.MAN SMF data sets to use SMF log streams.
- ISPF is planned to provide support for:
  - Line command level Edit macros, in addition to the existing Edit macro support. This new design is intended to allow you to write macros to be used as line commands, in addition to those you might have already written for use as Edit primary or initial processing commands.
  - A new AL line command on the Data Set List panel (option 3.4) command that you can use to allocate a new data set using a specified data set as a model for the new data set's attributes.
  - A new option on the z/OS UNIX Directory List panel to allow authorized users to update access control lists (ACLs) from within ISPF.
  - Enhancements to the support provided in z/OS V1.11, for extended statistics for partitioned data set members with more than 32,756 lines. In z/OS V1.13, display support is planned for extended statistics with a new INFO command to display extended line counts when the Extended PDS statistics function has been enabled.

  - Displaying job and step names stored by the system for data sets that are eligible to reside in the extended addressing space (EAS) on an extended address volume (EAV) in the Data Set List utility (option 3.4), and retrieving this information using the DSLIST and LMDLIST services. This is intended to allow you to find the creating job and step names easily.
- The Storage Management Initiative Specification (SMI-S) was published by the Storage Networking Industry Association (SNIA) and defines "an interface for the secure, extensible, and interoperable management of a distributed and heterogeneous storage system." The SMI-S specification defines the various domains of storage management in the form of Common Information Model (CIM) profiles and subprofiles. In z/OS V1.12, z/OS CIM Server added support for the Storage HBA and Host Discovered Resources (HDR) profiles. In z/OS V1.13, z/OS CIM Server will be designed to add support for CIM Indications to the Storage HBA and SB Multipath Management profiles. These extensions are intended to help form a basis for multiplatform storage management tools.
- z/OS CIM Server is planned to provide sequence identifiers in the indications profile. This is designed to allow unsuccessful deliveries to be retried by the CIM Server, lost and duplicate deliveries to be detected by a WBEM listener, and a listener to reorder any indications that arrive out of order. This new function can provide better reliability and robustness for event processing in CIM.
- SDSF is planned to add new support and to remove the requirement for IBM WebSphere® MQ for z/OS (5655-L82) in JES2 environments once all systems in a MAS are running z/OS V1.13 JES2. In this release, SDSF is designed to implement for JES3 all applicable functions that are supported for JES2. For JES2, new planned support includes JES network server and network connections displays. Once all systems in a JES3 complex are using z/OS V1.13 JES3, the new planned support includes displays for initiators, output, held information, job 0, punches, readers, JES network server, and JES Network Connections. The corresponding SDSF Java classes are planned to be updated to support the new displays and actions. These changes are intended to provide systems management improvements.
- z/OS V1.13 DFSMS™ is planned to record tape library errors during IPL, and display them with a new DMO_TAPE_LIBRARY_INIT_ERRORS health check. This health check is designed to provide information about tape library devices that had initialization errors during IPL, with suggested actions for resolving those errors.
- DFSMSdfp is planned to allow you to use a new keyword in a DEVSUPxx member of parmlib to specify that descriptive text, in addition to abend codes and return codes, be provided for many Open, Close, and End of Volume errors. This will make it easier to determine the reason for these errors quickly without having to look up the messages and return codes.
- DFSMSdfp changes are planned to recalculate the buffer size needed for each data set in a concatenation when accessed using QSAM. This is intended to avoid out of storage conditions that can arise for concatenated data sets having different block sizes when MULTSDN is specified in the data control block extension (DCBE).
- DFSMSdfp SMS processing is planned to determine whether the SMS configuration data set (CDS) has the REUSE attribute, and if not change it from NOREUSE to REUSE automatically during activation.
- A new utility, IEBPDSE, will be designed to verify that the structure of a PDSE is valid, and new programming services will be designed to perform similar checking to help programs verify the state of a PDSE before and after critical operations. These new functions are intended to help you detect errors in PDSE structures that might otherwise go undetected.
- The IBM Tivoli Directory Server for z/OS (LDAP) is planned to allow LDAP administrators to delegate LDAP administrative authority. This function is designed to allow the LDAP administrator to define an administrative group, add one or more distinguished names to that group, and assign one or more administrative roles to each user, either in LDAP or in an external security manager such as RACF. This is intended to provide more flexibility in LDAP administration, help improve auditability, and help improve security by allowing for separation of duties and eliminating reasons for identity sharing.

Scalability and performance

With z/OS V1.13 and related System z technologies, IBM intends to deliver improved performance, scale, and economics to the platform. These technologies are intended to help enable you to leverage existing resources better or to free up existing resources to run more workload within your existing System z servers more efficiently. The traditional view on scalability and performance has been to throw more hardware at something, or to wait and upgrade to faster hardware. z/OS has a different approach to these metrics of economics. With z/OS, IBM has long understood the balance between scalability, performance, and efficiency of the platform, and z/OS interacts with the major system components, such as the processors, storage, I/O, and software, to help manage system resources efficiently.

z/OS has had many scalability and performance improvements over the past several releases. For example, new and enhanced HiperDispatch function, large (1 MB) page support, Extended Address Volumes, XL C/C++ optimizations, VSAM Control Area Reclaim, Application-Transparent Transport Layer Security (AT-TLS), z/OS Integrated Cryptographic Service Facility (ICSF), and other enhancements have helped provide significant performance and scalability improvements for your workloads.

With z/OS V1.13, IBM intends to deliver function to improve the scale and performance of z/OS workloads -- giving you the ability to do more with the same system resources:

- Faster z/OS UNIX workloads in a Parallel Sysplex: for z/OS UNIX System Services, IBM plans to introduce fully shared zFS file systems across systems in a Parallel Sysplex with direct I/O and zFS internal restart. Applications that use zFS, such as z/OS UNIX System Services and WebSphere Application Server for z/OS, are expected to benefit.
- Simplified storage management: In z/OS V1.13, IBM plans to introduce FTP support for more data set types in the extended addressing space (EAS) of extended address volumes (EAVs), enabling FTP to access this additional DASD capacity when allocating, storing, and retrieving data sets that are eligible to reside there.

Additional detail on the scalability and performance improvements planned for z/OS V1.13:

- The maximum usable size of the VSAM volume data set (VVDS) is planned to be increased, which will increase the architectural maximum number of SMS-managed and VSAM data sets that can reside on a single volume by a factor of 16. For most data set types, this is expected to be an increase from hundreds of thousands of data sets to millions of data sets per volume, and is intended to allow the number of data sets per volume to scale with extended address volume (EAV) sizes.
- DFSMSdfp is planned to add support to Open/Close/End of Volume to allow subsystems to use BAM DCBs and ACBs with extended TIOTs (XTIOT). This can help provide virtual storage constraint relief for address spaces that allocate a large number of data sets.
- Catalog processing is planned to be enhanced to increase the number of aliases that can be defined for a user catalog. For example, if your master catalog is defined with the default record size, the maximum will be increased from approximately 3,500 single-level aliases per user catalog to approximately 250,000 or more. The actual maximums vary with the lengths of the aliases defined.
- zFS processing has been redesigned to allow all members of a Parallel Sysplex to perform zFS file system read and write I/O operations for shared file systems. This is expected to yield substantial performance gains for systems that would not have been zFS owning systems in the prior design, without performance impacts to systems that would have been zFS owning systems.
- z/OS will be designed to support some programs running in 64-bit storage, provided that they meet certain restrictions. This is intended to provide virtual storage constraint relief to applications, particularly those that imbed code in data areas for performance reasons.

- Extended address volumes (EAVs) allow more data to be stored on direct access storage devices. z/OS V1.13 Communications Server FTP, which already supports SMS-managed extended format sequential data sets, is planned to support these additional data set types when they reside in the extended addressing space (EAS) of an EAV: both SMS-managed and non-SMS-managed physical sequential basic and large format data sets, PDS and PDSE data sets, and GDG data sets.
- z/OS Communications Server is planned to add support to FTP for large format data sets. With this support, FTP will be designed to transfer, restart transfers for, and allocate large format data sets, which can have more than 65,525 tracks or more than 2 gigabytes of data, without requiring them to be SMS managed.
- VSAM record-level sharing (RLS) is planned to support a new storage class (STORCLAS) attribute you can use to specify whether VSAM RLS buffers and the associated resources are retained for a period of time after a VSAM RLS data set has been closed. You can delay the release of resources for data sets you intend to reopen quickly or eliminate the delay, if the data set is not to be reopened in a few minutes. IDCAMS DCOLLECT will be designed to include information about this new attribute in storage class (type SC) records. Additional enhancements are also planned to VSAM RLS buffer management algorithms to improve processing of "aged" buffers. These enhancements are expected to help improve performance when processing large VSAM RLS data sets.
- A Problem Documentation Upload utility is planned to be added to z/OS, and will be intended to be used to transmit dumps to IBM. This utility is designed to break dumps into segments that can be transmitted in multiple data streams to help reduce data transfer time and to support encryption. This utility is similar to the Problem Documentation Upload utility currently available for download, and is planned to have an alias entry point named MTFTPS for compatibility and to be called from the z/OSMF Incident Log function. If the dump is encrypted, you must provide IBM with the dump encryption key.

  Note: The Problem Documentation Upload utility can currently be downloaded from

  http://www14.software.ibm.com/webapp/set2/sas/f/zaids/pduf.html

- Enhancements are planned for the IEBCOPY utility that are intended to improve performance when copying a partitioned data set (PDS) to another PDS. In addition, IEBCOPY is planned to exploit 31-bit storage for track buffers, and the current requirement for APF authorization is planned to be removed in z/OS V1.13.
- In z/OS V1.13, support is planned for allowing you to specify longer data set retention periods using JCL, TSO/E, SMS management classes, and DFSMSrmm. The current limit of 9999 days (approximately 27 years) is planned to be increased to allow you to specify up to 93,000 days, or approximately 254 years. However, the system will continue to support a maximum expiration date of 31 December 2155 for data sets, even when you specify a retention period that would result in a later date. DFSMShsm and OAM are planned to honor these longer retention periods. Also, the maximum values for the RETPD and EVENTEXP keywords of OSREQ are planned to be extended from 32,767 days to 93,000 days. OAM objects are not subject to the system's Year 2155 expiration date limit for data sets, and will be retained for the amount of time you specify, and DFSMSrmm commands can be used to set expiration dates beyond the year 2155 for tape data sets as well. This new function is intended to make it easier to retain data for longer periods of time.
- Support is planned for unauthorized programs to use extended task I/O tables (XTIOTs) when a captured UCB is not requested. This new function will be designed to allow all programs to allocate more data sets than can be supported by TIOTs below 16 MB, and to take advantage of data set access blocks (DSABs) above 16 MB.
- In z/OS V1.8, Language Environment® began to support large nonextended format sequential (DSNTYPE=LARGE) data sets when accessed by C/C++ programs using QSAM (noseek). In z/OS V1.12, this function was extended to provide BSAM (seek) support for record I/O. In z/OS V1.13, BSAM (seek) is planned for binary and text I/O for sequential data sets. This new support is intended to let your Language Environment C/C++ applications take full

advantage of nonextended format sequential data sets using Language Environment.

- The CSSMTP application provided by z/OS Communications Server can be used to send bulk email from z/OS JES2 or JES3 spool. In z/OS V1.13, CSSMTP is planned to support extended retry processing for emails that cannot be delivered during the initial configured retry time. CSSMTP is planned to release memory and JES resources for emails in extended retries, allowing it to retry those emails for an extended period of time with less overall system impact.
- DFSMSdfp Open/Close/End of Volume processing is planned to be changed to reduce tape movement for tapes having ISO/ANSI Version 4 labels. This is intended to improve tape processing performance without requiring any application changes.

Application integration

z/OS V1.13 is planned to introduce many capabilities to help write new applications and systems programs, and extend existing programs. Businesses with applications on z/OS understand the value of the quality of service, availability, scalability, and security of these applications and data on z/OS. Extending these critical applications and expanding the access to the z/OS data hub can drive business agility, enhance usability, and provide unprecedented levels of business integration. Batch is just such a critical business workload. According to IBM research, about 90% of respondents consider batch to be mission critical with the majority choosing to run it on System z. Central to batch processing is the COBOL programming language. COBOL is simple, efficient, robust, and scalable. With hundreds of billions of lines of code, COBOL assets are almost everywhere and capable of supporting billions of transactions a day. Top analysts agree COBOL can be modernized to help revolutionize batch processing.

With z/OS V1.13 IBM plans to deliver functionality intended to help reduce costs, and improve business agility and operational efficiencies of your COBOL batch environment, extending this powerful asset to a new realm of computing. A new base component, z/OS Batch Runtime, and associated new function are planned to be the foundation for a powerful, integrated, and modern batch application development, deployment, and runtime environment. Function planned for z/OS V1.13 is intended to be the foundation for "real-time batch" applications that enable concurrent batch and online data access.

In addition to updates for your batch environment, additional application development enhancements are planned for z/OS UNIX System Services, Language Environment, Program Management Binder, z/OS dbx debugger, z/OS Unicode, DFS™ SMB Server, and more.

Additional function, descriptions, and details in support of application integration planned for z/OS V1.13:

- z/OS V1.13 is planned to introduce many new batch programming capabilities:
  - The z/OS Batch Runtime environment is intended to form the foundation for resilient, highly available, secure, and scalable services for batch applications. It is intended to enable you to exploit the IBM portable batch programming model, a complete out-of-the-box solution, with comprehensive development and management tools, for building and deploying Java batch applications. The z/OS Batch Runtime is intended to provide the framework for Java to COBOL interoperability, for transactional updates to DB2, and for sharing database connections between Java and COBOL.

    New Java-COBOL interoperability capabilities are designed to enable you to re-use valuable COBOL assets by developing new and/or enhancing existing batch applications with Java. With this capability, for example, you can share a database connection between COBOL and Java -- allowing you to use Java subroutines directly in lieu of Java stored procedures. The Java portions of your batch applications can be eligible for the IBM System z Application Assist Processor, or the IBM System z Integrated Information Processor, using the zAAP on zIIP capability introduced with z/OS V1.11.

Initially, Java, DB2, and COBOL support is planned to be provided with IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6 (5655-R31), DB2 V9.1 for z/OS (5635-DB2) or later with PTFs, and IBM Enterprise COBOL for z/OS V4.1 (5655-S71) or later. In addition, this function requires the web services in the WebSphere Application Server OEM Edition for z/OS packaged with the z/OS Management Facility V1.13, or later.

  - JCL enhancements are designed to make programming JCL easier, and give you more control of your batch applications. Functions such as in-stream data in catalogue procedures, more options on reporting the return code for jobs, and the ability to stop and hold a job at the end of a step (not just at the end of the job) give much more granularity and control. These functions are planned to be available with JES2. For more detail see batch updates in the Ease of use section.

- A number of DFSORT™ programming enhancements are now available with PTF UK90025 for z/OS V1.10 and z/OS V1.11 and PTF UK90026 for z/OS V1.12. These include a variety of new functions for translating ASCII, EBCDIC, hex, and binary characters; a new RESIZE operator for ICETOOL that you can use to change output record lengths, new date field arithmetic operations, a new ACCEPT option for the OUTFIL statement you can use to process subsets of output records, a new grouping function based on key changes, support for SET and PROC symbol substitution in control statements, more information in reports, and a number of other enhancements. These changes provide new functions and improved flexibility, and can help simplify the use of DFSORT. For more information about these new functions, see *User Guide* for DFSORT PTFs UK90025 and UK90026 at

  http://www.ibm.com/support/docview.wss?rs=114&uid=isg3T7000242
- The Base Control Program internal interface (BCPii) is planned to allow authorized programs to perform functions related to CPC Image User groups on IBM zEnterprise and IBM System z10 servers with a minimum microcode level (MCL). This new function is designed to allow available CPC Image User groups on a particular CPC and their member images to be listed in, connected to, and disconnected from groups; to support queries for group attributes; and to support issuing most HWICMD BCPii commands to all the members of a specified group.
- Support in z/OS UNIX System Services is planned for user-level file system mounts. This is designed to provide support for limiting overall user mounts, the ability to allow these functions for specific users and groups of users, the ability to restrict which mount points a user may use, and the ability to allow user mounts only at empty mount points. Also, improved warning and failure messages are planned for some mount and unmount operations. The ability to move these mounts from system programmers or administrators directly to users can improve usability and flexibility, and make it easier to use z/OS UNIX.
- The Program Management Binder is planned to support new operations for unnamed ($PRIVATE) sections in load modules and program objects. This new design is planned to allow you to specify that all unnamed sections be deleted, or that specific unnamed sections be named (using CHANGE statements) or replaced. These new functions are intended to make it easier to maintain load modules and program objects in place while avoiding unnecessary growth and virtual storage use due to an accumulation of unnamed sections.
- In prior releases, the z/OS dbx debugger for C/C++ programs requires that the compiler insert Execute (EX) instructions (called hooks) so that the debugger can gain control during program execution to display information about the program and the data it processes. In z/OS V1.13, dbx is planned to provide support for debugging programs compiled without hooks, in addition to those compiled with hooks. This support is intended to allow you to debug programs whose sizes and performance characteristics are more closely aligned with production programs.
- Job-level return code support is planned. A new JOBRC keyword on the JOB statement will be designed to allow you to specify whether a job's return code should be set to the highest return code of any step that was run, the return code of the last step, or the return code of a specific step. This new support can make it simpler to determine whether a job succeeded or failed by looking in a single place for the result.

- z/OS Unicode conversion information service is planned to provide additional information about Coded Character Set Identifiers (CCSIDs), including information to identify substitution, newline, line feed, carriage return, end-of-file, and space character codes.
- The qsort() function is planned to be added to the z/OS Metal C Runtime Library. This function allows an array to be sorted using a function you supply, and is intended to relieve Metal C programmers from having to write sort routines with similar capabilities.
- Language Environment is planned to support recovery from additional abends during output and close operations for C/C++ programs, and to return to C/C++ programs indicating that an I/O error has occurred rather than issuing an abend. This is intended to provide a more predictable recovery environment for C/C++ programs when I/O errors are encountered.
- Support is planned to allow tasks in a WLM enclave that have subtasks to leave that enclave and for subtasks of a task joining a WLM enclave to be joined automatically to that enclave. In prior releases, enclave tasks with subtasks are not allowed to leave an enclave. Any subtasks created by a task that has joined an enclave are automatically added to the same enclave. This new support is designed to allow a task to leave an enclave along with its subtasks. This new support also allows a task joining an enclave to have its non-enclave subtasks joined to that enclave. This support is also available on z/OS V1.11 and z/OS V1.12 with the PTFs for APARs OA33344 and OA33406.
- z/OS UNIX System Services is planned to provide enhancements to the vi and ex editors to allow you to edit untagged text files and have them treated as if they contained text data using a codeset you specify. New support is also planned to allow you to override the built-in autoconversion function. This will make it easier to edit ASCII-encoded files under z/OS UNIX.
- The DFS SMB Server is planned to support clients running both the 32- and 64-bit versions of Microsoft Windows 7 Professional, Microsoft Windows 7 Enterprise, and Microsoft Windows 7 Ultimate Editions.
- NFS is planned to provide support for the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition with Open Text NFS Client or Open Text NFS Server installed.
- z/OS UNIX System Services is planned to provide a script command you can use to record the output of a shell session. For example, a script command could be used to create a session log file for auditing, or another output file intended to be processed later.
- z/OS UNIX System Services is planned to enhance support by providing the capability for IPv4 UDP datagram reply packets to flow on the same interface where the request arrived when a server system has multiple home addresses with multiple routes back to the client or is using a DVIPA. This support, designed to be similar to the existing support for IPv6, is intended to allow applications to require that the response to a request be restricted to the same IPv4 address from which the request was received.
- XCF is planned to provide a simplified set of interfaces for passing messages within a Parallel Sysplex. New services will be designed to allow a server to be established to process messages and for messages to be sent across the sysplex without first joining an XCF group. This is intended to make it easier to exploit XCF services for applications that do not require the member management and monitoring provided by the XCF group services interfaces.
- Language Environment is planned to add support for initializing multiple CEEPIPI main environments under one task control block (TCB) and to provide access to a user word for each environment both within and outside it. This is intended to help you migrate Preinitialization Compatibility Interface (PICI) environments to CEEPIPI.
- z/OS Unicode Services is planned to implement improved bidirectional character support for applications that process scripts such as those for the Arabic and Hebrew languages. These languages, among others, are written and read from right to left but often contain strings that read from left to right. This new function is designed to support such nested bidirectional ("Bidi") strings. Also, samples are planned to be supplied that show how to use these extended bidirectional services, and a sample object file is planned to be supplied that you

can include with C applications to make it easier to use z/OS Unicode Services functions defined by The Open Group's Bidi interface.

- Storage management is planned to be changed to allow tasks using subspaces to access 64-bit private and 64-bit shared virtual storage without the overhead of a Branch in Subspace Group (BSG) instruction. This is intended to help provide virtual storage constraint relief by making it easier for applications to exploit 64-bit storage and to use system services that use 64-bit storage.
- These IBM Tivoli Directory Server for z/OS (LDAP) enhancements are planned:
  - DB2-based TDBM back end and bulk load utility are planned to be enhanced to support 64-bit addressing. This enhanced TDBM back end, when used with DB2 9 for z/OS (5635-DB2) with PTF UK50918 or a later release, is intended to improve scalability of IBM Tivoli Directory Server for z/OS for large LDAP deployments. In addition to this TDBM enhancement, a bulk load utility capable of executing in 64-bit addressing mode is planned to facilitate loading large LDAP directory databases.
  - Support is planned to be extended to enable Kerberos binds to be processed by Microsoft's Active Directory Server. This support is intended to improve the interoperability between z/OS applications that utilize the IBM Tivoli Directory Server for z/OS client services and Kerberos authentication in environments where Active Directory is being utilized.
  - Support is planned for server-side paged and sorted search results as described by RFC 2696 and RFC 2891. The first capability allows LDAP clients to specify that they should be passed a subset of search results (called a page) and successive pages one at a time rather than receiving an entire set of results. The second enables LDAP clients to receive sorted search results based on a list of criteria, where each criterion represents a sort key. For example, a client application might want to sort the list of employees at a particular work location by surname, common name, and telephone number. Rather than building two search lists, a client application can build a single search list for the server to use so the sorted list can be returned. This is intended to provide sorting capability for client applications that do not have available native sort functions and can help improve performance.
- HCM is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition.
- z/OS Communications Server is planned to provide a DISPLAY TCPIP,TELNET command to display a list of TN3270E Telnet servers.
- z/OS Communications Server is planned to support Network Management Interface (NMI) functions for the system resolver to allow the resolver configuration file and the contents of the global TCPIP.DATA file to be retrieved when they are in use. Also, the NMI TMI_Copybuffer callable services (EZBTMIC1, EZBTMIC4, and TMI_Copybuffer()) are planned to be available for use by unauthorized programs when the user IDs under which they run are given access to resources defined to an external security manager, such as RACF.
- In z/OS V1.12, a Java API was implemented for SDSF to allow Java applications access to the data available through SDSF panels. That API is a set of classes, with each class corresponding to a panel, with each instance representing a row, with methods to perform operations similar to action characters and overtypes, and with support for filtering. In z/OS V1.13, support for returning a subset of the requested data is planned. For example, if a set of filters match a large number of SDSF instances normally all returned in a list, a sublist can be requested in a similar manner where the caller can specify relative starting and ending indexes to limit the number of instances to be returned. This new support is intended to allow Java applications to request smaller amounts of data from SDSF.

Security

z/OS V1.13 is planned to introduce capabilities to assist you in managing the security around your z/OS environment. Security is often a moving target. New security-related capabilities are often followed by ever-more sophisticated and creative attempts to circumvent them. z/OS has a huge breadth of security capabilities built into the base of the operating system at no extra cost. Many z/OS security functions, such as data encryption, encryption key management, digital

certificates, and password synchronization can be deployed as part of enterprise-wide security solutions and can help accelerate implementation, mitigate risk, and reduce compliance costs. z/OS V1.13 is planned to deliver:

- Further integration of RACF and IBM Tivoli Directory Server for z/OS (TDS for z/OS, LDAP). RACF gives you tremendous power for user identification and authorization, resource protection, and overall auditing and reporting. TDS for z/OS, included in the base of z/OS, provides the capability for a simplified programmatic access to RACF function, and the ability to integrate with IBM Tivoli security products. This integration between RACF and TDS for z/OS gives you not only the ability to start synchronizing security processes and information across your enterprise, but also the ability to extend the power for RACF and z/OS security to non-z/OS users and resources. For z/OS V1.13, TDS for z/OS is expanded to include usage of SHA-2 based and salted SHA-2 based encryption standards.
- Integration and exploitation of new encryption standards. Encryption can obscure information, making it unreadable to unauthorized parties. Encryption can be used to protect the confidentiality, integrity, and availability of both data at rest and data being transmitted, and in general remains one of the strongest aspects of IT security. z/OS V1.13 is planned to be updated with many cryptographic capabilities. RACF is planned to support hardware-generated Elliptic Curve Cryptography (ECC) secure keys, giving you the ability to issue and use certificates' hardware-protected ECC keys. z/OS System SSL is planned to enable TLS-based communications to leverage ECC keys (software or hardware generated).
- Highly scalable and resilient digital certificate support. Digital certificates, often a required part of security compliance guidelines, can be used to help authenticate users and devices, and to establish secure communications or virtual private network (VPN) sessions. z/OS PKI Services is a complete digital certificate authority included in the base of z/OS at no additional charge. Relatively few z/OS resources can be used to generate hundreds of thousands of digital certificates. This capability can be useful in helping you to maintain your security standards while potentially reducing cost by virtue of generating and managing your own digital certificates from z/OS. For z/OS V1.13, z/OS PKI Services is planned to add support for DB2 9 for z/OS or later as its back-end key store, enabling enterprise-class scale and resilient certificate management.
- Network communications capabilities designed with security in mind. z/OS Communications Server supports a wide range of security technologies for your networks designed to help you create end-to-end secure networking solutions. Extended and enhanced support for Internet Key Exchange version 2 (IKEv2) and Federal Information Processing Standards (FIPS 140-2) can help you meet stringent government or industry security compliance guidelines.

Additional function, description, and detail in support of security planned for z/OS V1.13:

- The IBM Tivoli Directory Server for z/OS (LDAP) is planned to support SHA-2 hashing for user passwords stored in the LDBM, TDBM, and CDBM back ends. This is intended to help address the need for stronger hashing and cryptographic algorithms and enhance interoperability with distributed IBM TDS, openLDAP, and other LDAP servers. Also, this is intended to meet the National Institute of Standards and Technology (NIST) policy for the use of hash functions (see note). This extension is planned to support SHA-2 (SHA224, SHA256, SHA384, and SHA512) and salted SHA-2 (SSHA224, SSHA256, SSHA384, and SSHA512) hashing of user password attributes. This support is planned to use the persistent PKCS#11 token in ICSF to perform the hashing.

  Note: For more information, see

  http://csrc.nist.gov/groups/ST/hash/policy.html

- z/OS PKI services is planned to allow you to use DB2 9 for z/OS or later for Object Storage and for the Issued Certificate List. The optional use of DB2 by z/OS PKI is designed to allow you to take advantage of the scalability of DB2 for large-scale certificate deployments, and also take advantage of DB2 designs for high availability, backup, and recovery.

- z/OS PKI Services is planned to add support to enable Mozilla-based web browsers on Windows and Linux® platforms to use smart cards when generating certificates and to enable Microsoft Internet Explorer 6, Internet Explorer 7, and Internet Explorer 8 to use an updated PKI application that includes its own ActiveX controls, which allows users to install renewed certificates.
- z/OS PKI services is planned to support certificate revocation lists (CRLs) larger than 32K (32,767) bytes in size. This is intended to help support CRL distribution point environments, such as those using LDAP, for large certificate hosting environments and to improve the flexibility of z/OS PKI Services.
- System SSL is planned to extend its Elliptic Curve Cryptography (ECC) support to enable the creation of X.509 V3 certificates using the ECDSA and ECDH algorithms. This is planned to enable you to create these certificates in key database files or ICSF PKCS#11 tokens, and to allow applications that use certificate support through the Certificate Management Services (CMS) API to create ECC style certificates.
- System SSL is planned to extend its use of Elliptic Curve Cryptography (ECC) to enable TLS V1.0 and TLS V1.1 handshakes using ECC cipher suites and digital certificates during secure connection negotiations as described by RFC 4492.
- System SSL is planned to support Elliptic Curve Cryptography (ECC) certificates residing in SAF key rings with their private keys stored in the ICSF public key data set (PKDS). System SSL is planned to use the private keys in secure digital signature generation operations available through Crypto Express3 Coprocessor (CEX3C) cards on IBM zEnterprise servers.
- RACF Remote Sharing Facility (RRSF) will be designed to support the use of TCP/IP connections, in addition to the current support for SNA Advanced Peer-to-Peer Communications (APPC). When used with TCP/IP, RRSF will be designed to use Application-Transparent Transport Layer Security (AT-TLS) to authenticate peer RRSF nodes and encrypt replication traffic. AT-TLS provides encryption algorithms thought to be stronger than those available using APPC. A sample rule that specifies the strongest available encryption method is planned to be provided. The use of TCP/IP is intended to help improve usability, simplify network configuration, and improve the security of RACF data shared between RACF nodes in the RRSF network.
- Network Authentication Service is planned to support checking IP addresses in tickets for Kerberos, as described by RFC 4120. A new CHECKADDRS field in the KERB segment of the KERBDFLT profile in the REALM class is planned to allow you to specify whether address checking should be enabled or disabled.
- Network Authentication Service is planned to be updated to support the functions described by RFC 4537. This RFC defines an encryption type negotiation extension to the Kerberos protocol, to enable clients and servers to use stronger or different encryption mechanisms than are supported by the KDC. This is intended to help improve the security and interoperability of applications that use Kerberos and the GSS-API on z/OS and other platforms.
- RACF support is planned for generating Elliptic Curve Cryptography (ECC) secure keys using the Crypto Express3 Cryptographic Coprocessors (CEX3C) available for zEnterprise servers. New keywords on the RACDCERT command are designed to allow you to specify that an ECC key be stored in the ICSF public key data set (PKDS). Corresponding hardware ECC key support is planned for PKI Services. This new support is intended to allow you to expand your use of certificates with ECC keys protected by hardware.
- IBM Ported Tools for z/OS (5655-M23), a no-charge product designed to deliver ported tools and utilities for z/OS, is planned to provide the sudo utilities in the PTF for APAR OA34949, planned for availability in March 2011. This function, planned to be part of the Supplementary Toolkit for z/OS feature, is designed to deliver the sudo (su "do") open source tools that allow system administrators to delegate authority to users or groups of users for running specified commands as a superuser, or as another user, while providing an audit trail of the commands and their arguments. This command-line application is designed to run under z/OS UNIX System Services.
- z/OS Communications Server intrusion detection technology is planned to be enhanced to add support for IPv6 traffic and also additional attack types, including Enterprise Extender, data hiding, and out of sequence packet denial of service attacks. This is intended to provide IPv6 intrusion detection security

equivalent to that provided for IPv4 and help you prevent certain error situations and denial of service attacks on z/OS Communications Server from causing system-wide storage constraint situations. The Configuration Assistant for z/OS Communications Server is planned to provide a quick and easy interface to create the configuration for this new intrusion detection services (IDS) support.

- Internet Key Exchange version 2 (IKEv2) is the latest version of the Internet Key Exchange (IKE) protocol specified by RFC 5996, and support for IKEv2 was added to z/OS Communications Server V1.12. z/OS V1.13 Communications Server is planned to add Network Address Translation (NAT) traversal support using IKEv2 for IPv4 to make it easier to migrate to IKEv2 if you use NAT.
- Sysplex-wide security associations in z/OS Communications Server allow IPSec protected workloads to benefit from workload balancing. This function works in conjunction with Sysplex Distributor to support both takeover and distribution of IPSec tunnels and traffic for dynamic VIPAs in a Parallel Sysplex environment. In prior releases, this function supports tunnels negotiated using IKEv1 and IPv4 addresses; in z/OS V1.13, sysplex-wide security associations support is planned for IPSec tunnels negotiated using IKEv2 and IPv4 addresses.
- Resources defined to a security manager, such as RACF, are currently available to control which user IDs are allowed to create and destroy VIPARANGE DVIPAs. This capability is planned to be extended to allow you to specify authorization for specific ranges of VIPARANGE DVIPAs, or for individual VIPARANGE DVIPA addresses.
- IPSec support for FIPS 140-2 cryptographic mode is planned to be enhanced. AES-GCM and AES-GMAC support is planned when using sysplex-wide security associations in FIPS 140-2 mode, and the IKE daemon is planned to be enhanced to take advantage of new services provided by ICSF when running in FIPS mode.
- The FTP and TN3270 servers provided with z/OS Communications Server are planned to be updated to support password phrases. This is intended to enable FTP users and applications and TN3270 users to take advantage of the security and usability advantages of password phrases.
- Processing of the LIST=SUMMARY option of the DISPLAY NET,EEDIAG,TEST=YES command from z/OS Communications Server is planned to be enhanced. This will be designed to expedite Enterprise Extender connectivity test results and eliminate the dependency on ICMP messages, which are often blocked by firewalls. This is expected to provide value to you when your IP configuration includes firewalls that block ICMP messages, resulting in delayed EE connectivity test results. Processing for DISPLAY NET,EEDIAG,TEST=YES,LIST=DETAIL is planned to remain unchanged; it requires ICMP messages to display routing information for EE connections.

Availability

With z/OS V1.13, IBM plans to introduce new capabilities designed to improve z/OS system availability. According to IBM market research, the System z platform is recognized by both customers and industry analysts for its industry-leading resilience capabilities; furthermore, high availability is the top reason for running existing workloads on and migrating new workloads to System z. This success in availability is not just from the server being up, it stems from a long-term, holistic, system-wide perspective on system availability. The ability of System z to deliver hardware, I/O connectivity, operating system, networking, subsystem, database, and application availability is unmatched in the industry.

With this perspective IBM plans to continue to evolve z/OS high-resilience capabilities both for single systems and clustered Parallel Sysplex systems, and expand them to a new dimension of availability. z/OS V1.13 is planned to deliver:

- Smart technologies for improved system and subsystem availability. zSeries® File System (zFS) is planned to be updated with self-healing capability for internal errors, improving the availability of any application using zFS (such as WebSphere Application Server for z/OS).
- Improved data availability and agility. JES3 is planned to enable the capability of adding spool volumes without IPL. DFSMSdfp is planned to enable concurrent service for some components, to allow you to apply maintenance and updates without IPL.

- Predictive monitoring and diagnostics designed to help detect problems before they occur.
  - Predictive Failure Analysis (PFA), introduced with z/OS V1.11, enables your z/OS system to learn heuristically from its own environment to anticipate and report on system abnormalities, potentially detecting system problems before any outward symptoms occur. For z/OS V1.13 PFA is planned to add additional monitors for JES2 spool utilization and enqueue activity. In addition, PFA is planned to add the ability to automatically invoke Runtime Diagnostics to help you pinpoint the source of the anomaly even faster.
  - Runtime Diagnostics, introduced with z/OS V1.12, enables your z/OS system to quickly and automatically scan system components, analyze metrics, and report on components (such as address spaces or tasks) it suspects as being the cause of potentially abnormal system behavior. Runtime Diagnostics is designed to operate on a still-running z/OS system, giving your system programmers accurate information to work from in real time. z/OS V1.13 Runtime Diagnostics is planned to add additional monitoring of GRS latch and z/OS UNIX System Services file system latch contention.
  - The combination of PFA and Runtime Diagnostics can help improve your system availability by identifying potential issues before they can cause an unplanned outage.

Additional function, description, and detail on availability capabilities planned for z/OS V1.13:

- JES3 will be designed to support adding spool volumes dynamically; additional spool related JES3 initialization statements are planned to be processed by the *MODIFY CONFIG command and during JES3 hot starts with refresh. This is intended to help improve availability by removing the existing requirement for a JES3 complex-wide IPL when adding spool volumes.
- Runtime Diagnostics will be designed to provide more information intended to help you determine why a system is not running normally. It is planned to be extended to check for GRS latch and z/OS UNIX System Services file system latch contention.
- Predictive Failure Analysis (PFA) will be designed to monitor JES2 spool utilization for persistent address spaces, monitor the enqueue request rates for the persistent address spaces having the highest rates, and monitor the enqueue request rate for the entire system. Also, when PFA detects a rate that is too low for SMF arrival rates, message arrival rates, or enqueue request rates, it will be designed to invoke Runtime Diagnostics automatically; when Runtime Diagnostics indicates there is a problem, PFA will be designed to issue a health check exception and include that information. This new function is intended to help you quickly diagnose system problems and problems with persistent address spaces.
- I/O Supervisor (IOS) improvements to I/O error recovery are planned. IOS will be designed to track path-related errors and automatically remove failing paths from all affected devices for the affected control unit. This new capability is designed to reduce the time it takes the system to recover from path-related errors and help prevent system performance problems that can occur when a significant amount of time is spent in repetitive channel error recovery.
- zFS will be designed to automatically recover disabled aggregates when possible in single-system and in sysplex environments when multiple systems are running in zFS sysplex-aware mode. This is intended to eliminate the need to recover the file system manually before applications close and reopen the files to regain access to them. zFS will also be designed to maintain existing connections to file systems while recovering from internal errors when possible. This is intended to provide less-disruptive recovery from most internal zFS problems, and designed to allow applications with open files to retry file system operations successfully once zFS recovery has been completed.
- The Direct Access Device Storage Manager (DADSM) component is planned to provide Dynamic Exit support for both the preprocessing exit (IGGPRE00) and the postprocessing exit (IGGPOST0). In addition to providing the ability to change exits without interrupting the operation of the system, support for Dynamic Exits provides the ability to run multiple exit routines in an order you specify without having to integrate exits from multiple sources and vendors.

- The DADSM and CVAF components of DFSMSdfp are planned to support concurrent service. These components will be designed to allow you to dynamically update their programs without IPL. This is intended to help improve system and application availability.
- In prior releases, the CATALOG, LLA, VLF, RESOLVER, TCP/IP, DFSMSrmm, and TN3270 address spaces were marked reusable. In z/OS V1.13, the DEVMAN address space is planned to be marked reusable so that restarting it does not subtract from the system's maximum number of address spaces or from the system's reserve of nonrestartable address spaces when REUSASID(YES) is specified in DIAGxx. These changes are intended to help you improve system availability.
- In z/OS V1.11, GRS added support for latch obtainers to identify their latches to make it easier to determine who held them when reading messages from the DISPLAY GRS,ANALYZE command, and while troubleshooting problems using latch owner information contained in dumps. In z/OS V1.13, GRS is planned to add the same latch identity information to the output of the DISPLAY GRS,CONTENTION command.
- Command processing improvements are planned. The CMDS operator command, which among other options can be used to terminate the processing of a particular command, is planned to have a new FORCE option. As with other FORCE commands and keywords, the FORCE option will be intended to allow you to specify that a command be terminated, but because the effects of forcing command termination are not always predictable, it is intended to be used only when there is no other option but to IPL. In addition, new support is planned to allow command processors to specify whether the CMDS command should terminate its commands without the use of FORCE. A security profile in the OPERCMDS class is planned to be used to limit the use of FORCE to authorized users. This new function is intended to help improve system availability.
- The DISPLAY OMVS,WAITERS display is planned to be enhanced to show a table for file latch activity. Similar to the table for file system latches, it is also planned to show information about the holders, waiters, latches, file device numbers, file inode numbers, latch set identifiers, file names, and owning file systems. Additionally, filtering options are planned for the DISPLAY OMVS,WAITERS command. This new function is intended to make it easier to diagnose latch contention problems related to z/OS UNIX file systems.
- DFSMShsm control data set (CDS) backup processing is planned to be enhanced. This processing will be designed to begin the CDS backup function immediately instead of waiting for DFSMShsm requests to complete. When you specify that a point-in-time copy technique is to be used, CDS backup will also be designed to back up the journal with minimum impact to DFSMShsm request processing.
- Message flood automation processing is planned to be changed to increase the limit of message IDs from 50 to 1024, allow up to 128 address spaces to be tracked per system, and allow the default message set to be identified in a parmlib member. This is intended to increase the scope of message flood automation, improve its usability, and help improve system availability.
- The z/OS system resolver was enhanced in V1.12 to detect unresponsive name servers and issue operator messages when one is detected. In V1.13, this support is planned to be taken a step further so that the system resolver will automatically stop using name servers that become unresponsive, and automatically start using them again when they recover. This is intended to enhance network availability for processes that rely on name resolution services by avoiding long time-out periods for unresponsive name servers.
- The z/OS Communications Server sysplex distributor VIPAROUTE function is planned to be enhanced to make it more responsive to changes in the routing topology as a TCP/IP stack joins or rejoins a sysplex group, and when OMPROUTE is recycled. This is expected to improve responsiveness of distributed dynamic VIPA connections during TCP/IP initialization and when TCP/IP rejoins a sysplex group.
- z/OS V1.13 Communications Server processing is planned to be enhanced to provide autonomic recovery from APPN routing tree corruption. Support for manual recovery using an operator command is also planned to be provided for recovery from cases of incorrect route selection.

- Sysplex autonomics functions provided by z/OS Communications Server are planned to be enhanced to monitor for a CSM-constrained condition and take recovery action based on configuration options. This is designed to allow autonomic recovery actions to prevent CSM-constrained conditions from affecting overall sysplex operations.

Optimization and management capabilities

z/OS V1.13 is planned to introduce function to help improve the optimization of resources of your z/OS system. With the ability to intelligently manage workloads, reprioritize work, dynamically reallocate system resources between applications quickly and efficiently, and help meet business priorities, z/OS and System z can handle unexpected workload spikes and help improve your system's efficiency and availability.

- The z/OS Workload Manager can be considered the gold standard of IT workload management. z/OS WLM allows you to define performance goals and assign a business importance to each goal. You define the goals for work in business terms, and the system decides how much resource, such as CPU and storage, should be given to it to meet each goal. z/OS Workload Manager will constantly monitor the system and adapt processing to meet the goals. The scope of z/OS WLM extends from helping the management of incoming TCP/IP and SNA traffic, to managing requests for I/O. z/OS middleware like DB2, CICS®, IMS™, WebSphere MQ, and other WebSphere products can take advantage of z/OS WLM to manage the priority and execution of transaction requests across the z/OS system. For z/OS V1.13, RMF™ and z/OSMF enable you to work with WLM policies and goals more easily.
- Just as z/OS WLM helps to improve server utilization, DFSMS helps to improve storage utilization. A new DFSMShsm function called On Demand Migration (ODM) is planned to make DFSMShsm space management more responsive. Additional storage optimization improvements are planned for DFSMShsm and DFSMSdfp.

Additional function, description, and detail on optimization capabilities planned for z/OS V1.13:

- A new DFSMShsm function called On Demand Migration is planned, to allow you to specify that space management be done when any volume in a storage group for which automigration is enabled exceeds the utilization threshold, rather than waiting for Interval Migration processing. This function is intended to allow you to use On Demand Migration to replace Interval Migration processing, and to make DFSMShsm space management more responsive. Also, it is expected to reduce the high initial CPU utilization often associated with Interval Migration. Additionally, improvements are planned for DFSMShsm data set list processing to reduce the time before data movement starts once space management has begun for a particular volume.
- A number of other DFSMShsm enhancements are planned:
  - Support in ARCCMDxx parmlib members for BEGIN and END specifications and multiple host IDs for the ONLYIF keyword, to allow you to specify groups of parameters related to one or more DFSMShsm hosts with a single ONLYIF keyword.
  - A new SETSYS subcommand you can use in place of the existing patch command to reduce the number of fast replication backup messages.
  - A new subparameter for the RELEASE RECALL command you can use to specify that DFSMShsm avoid recalling data sets from missing or faulty tapes while releasing the hold on recalls from DASD.
  - Additional information in the output from the QUERY COMMONQUEUE(RECALL) command to identify the host from which a recall originated so you can more easily cancel a recall request.
  - A new patch you can use to suppress DFSMShsm messages when no storage groups or copy pools are eligible to be processed for various space management, backup, and restore operations.

- The system will be designed to support a new FREEVOL=EOV keyword on the JCL DD statement to allow you to specify that each volume of a multivolume tape data set that is being read be made available for other processing once the processing for that volume is finished. This is intended to allow overlapped processing for multivolume data sets, which can speed batch processing.
- Several improvements are planned for the Object Access Method (OAM) component of DFSMSdfp, including:
  - Adding to its current support of a storage hierarchy that includes disk, tape, and optical storage levels. In z/OS V1.13, OAM is planned to add support for file systems to the disk level for zSeries File System (zFS) and Network File System (NFS) file systems, in addition to the existing support for DB2-backed object storage. Support of file systems for primary OAM object storage is planned to allow you to use z/OS UNIX file systems to store, retrieve, and delete objects, and to move objects between file systems and other locations in the OAM hierarchy. This support is intended to provide you new, more flexible ways to configure your OAM storage hierarchy.
  - Adding wildcard support for the MODIFY OAM,START,STORGRP command to allow you to initiate OSMC storage group processing for multiple object and object backup storage groups in single commands.
  - Providing dynamic update capabilities to allow you to change the maximum number of tape drives OAM will allocate to a given object or object backup storage group without restarting OAM.
  - Enhancing the OAM media migration utility, MOVEVOL, to improve performance when moving objects from a source volume that contains a large number of OAM collections.
  - Shipping the OAM component trace member, CTICBR00, in the parmlib data set so that you can use parmlib concatenation to avoid having to copy it from the samplib data set to parmlib during migration to new releases of z/OS.
  - Enhancing SMF Type 85 records to add counter fields with higher maximum values, in addition to the existing fields in KB.
- The IBM Tivoli Directory Server for z/OS (LDAP) is planned to be extended to allow you to specify flexible search and time limits for LDAP groups. This new support is designed to enable LDAP administrators to balance LDAP server-enforced limits and the time needed by specific applications.
- With z/OS V1.13 and z/OSMF V1.13, RMF is intended to provide new CIM-based performance data gatherers for Linux on System z, Linux on System x®, and AIX® systems to provide a consistent monitoring solution for zEnterprise ensembles. Along with the Resource Monitoring plug-in for the z/OS Management Facility, first made available with z/OSMF V1.12, this is intended to display performance metrics from those platforms and combine them with z/OS metrics in common graphic views.
- PDSE support is planned to be enhanced with two new commands to simplify the identification of and recovery from some PDSE problems by allowing you to display all users of a specified PDSE, and to discard stale pages from PDSE directory cache.
- RMF is planned to provide additional system suspend lock, Global Resource Serialization (GRS) enqueue, and GRS latch contention information in a new Postprocessor Serialization Report and also in new SMF Type 72 subtype 5 records. This is expected to help make it easier to respond to serialization-related performance issues.
- RMF is also planned to take advantage of new WLM services to provide response time distribution information about all service classes for which velocity goals are set, in addition to those for which response time goals are set, in the Workload Activity Report. This is intended to give you a better view of response time distribution across all WLM service classes.
- Infoprint® Server is planned to support either a secondary JES2 subsystem or a primary JES2 subsystem. When a secondary JES2 subsystem is chosen, Infoprint Server will be designed to use the secondary JES2 spool for all output data sets. This is intended to allow you to isolate your print data on a secondary JES2 spool so that unexpectedly large amounts of print output cannot cause impacts to the primary JES2 subsystem.

- Infoprint Server PrintWay™ Extended Mode will be designed to allow you to select output to be printed based on the amount of the output to be printed for each job, and direct it appropriately. For example, you might direct large print jobs to high-speed, high-volume printers and small ones to lower-speed distributed printers. This new support is intended to remove one of the last significant inhibitors for migrating from Infoprint Server PrintWay Basic Mode to Extended Mode so you can take full advantage of its more advanced functions.
- Infoprint Server PrintWay Extended Mode is also planned to provide several enhancements for emailing documents, to allow you to:
  - Include text and line-data documents in the body of an email, so recipients can read them without opening an attachment
  - Use a subset of RFC 2822-compliant email headers in line-data documents without modifying JCL or printer definitions
  - Send different documents from a single print job to the same people or to different people using email headers, job attributes, or JCL, and include common introductory text in each.
- The browser-based Infoprint Central application that helps you display and control print status is planned to be enhanced to allow you to see the age of print jobs on the JES spool in all print job displays, display print jobs by age, and see new Infoprint Server PrintWay Extended Mode fields used for job selection in printer property displays.

Networking

It has been said "z/OS is not just a node on the network, z/OS is the network," and that is in large part due to the z/OS Communications Server and its wide array of networking technologies, including both TCP/IP and SNA. System and data security technologies, fault tolerance, autodetection and autorecovery capabilities -- all mean that z/OS can provide reliable and trustworthy networking services. With intelligent configuration, dynamic optimization, self tuning, and network routing, it adapts to different networking conditions and is capable of shifting workloads and traffic to meet quality of service and business needs.

An overview of networking improvements follows. Details about these improvements are in prior sections of this announcement.

In z/OS V1.13, there are several enhancements planned for the Configuration Assistant for z/OS Communications Server, to support:

- Retrieving TCP/IP profile information from active TCP/IP stacks
- Allowing a single instance of the Configuration Assistant to be used to configure both z/OS V1.12 and z/OS V1.13 Communications Server
- Allowing a policy rule to be defined once for multiple stacks

In z/OS Communications Server, support is planned for:

- More flexibility in specifying reserved ranges of TCP/IP ports
- Better memory and JES resource management for the CSSMTP server when retrying mail send operations
- Improved z/OS system resolver processing when name servers are unresponsive
- Autonomic recovery from APPN routing tree corruption
- Monitoring for CSM-constrained conditions and taking specified recovery actions
- Faster results from Enterprise Extender connectivity tests initiated using the DISPLAY NET,EEDIAG,TEST=YES command when firewalls block ICMP messages
- More-responsive VIPAROUTE processing when TCP/IP stacks join or leave the group and when OMPROUTE is recycled
- FTP support for more data set types in the extended addressing space (EAS) on extended address volumes (EAVs)
- A new DISPLAY TCPIP,TELNET command you can use to display a list of TN3270E Telnet servers

- New Network Management Interface (NMI) functions for the system resolver, and improvements to the NMI TMI_Copybuffer callable services
- Network Address Translation (NAT) traversal support using IKEv2 for IPv4, in addition to existing NAT traversal support for IKEv1
- More granular SAF-based security for VIPARANGE DVIPAs and individual VIPARANGE DVIPA addresses
- Password phrase support for the FTP and TN3270 servers
- Intrusion detection for IPv6 traffic and additional kinds of network attacks
- Sysplex Distributor takeover and distribution of IPSec tunnels and traffic for dynamic VIPAs using IKEv2 for better workload balancing
- AES-GCM and AES-GMAC when using sysplex-wide security associations in FIPS 140-2 mode, as well as IKE daemon exploitation of new ICSF services
- Large format data sets in FTP

Microsoft Windows client support

The Microsoft Windows-based Capacity Provisioning Manager application is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition.

The DFS SMB Server is planned to support clients running both the 32- and 64-bit versions of Microsoft Windows 7 Professional, Microsoft Windows 7 Enterprise, and Microsoft Windows 7 Ultimate Editions.

NFS is planned to provide support for the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition with Open Text NFS Client or Open Text NFS Server installed.

HCM is planned to support the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition.

z/OS PKI Services is planned to add support to enable Mozilla-based web browsers on Windows and Linux platforms to use smart cards when generating certificates and to enable Microsoft Internet Explorer 6, Internet Explorer 7, and Internet Explorer 8 to use an updated PKI application that includes its own ActiveX controls, which allows users to install renewed certificates.

Statements of direction

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

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

z/OS V1.13 is planned to be the last release to support multi-file system zSeries File System (zFS) aggregates, including zFS clones. Support for the zfsadm clone command and mount support for zFS file system data sets containing a cloned (.bak) file system will be removed. IBM recommends that you use copy functions such as pax and DFSMSdss to back up z/OS UNIX file systems to separate file systems. Support for zFS compatibility mode aggregates will remain.

z/OS V1.13 is planned to be the last release to support BPX.DEFAULT.USER. IBM recommends that you either use the BPX.UNIQUE.USER support that was introduced in z/OS V1.11, or assign unique UIDs to users who need them and assign GIDs for their groups.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

Reference information

Refer to:

- Software Announcement 207-339, dated December 11, 2007 (IBM Enterprise COBOL for z/OS V4.1)
- Software Announcement 209-244, dated August 25, 2009 (IBM Enterprise COBOL for z/OS V4.2)
- Software Announcement 210-199, dated July 06, 2010 (IBM Ported Tools for z/OS Version 1.2)
- Software Announcement 207-041, dated March 06, 2007 (IBM DB2 V9.1 for z/OS)
- Software Announcement 210-380, dated October 19, 2010 (IBM DB2 10 for z/OS)

Product number

5694-A01

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

https://www.ibm.com/partnerworld/mem/sla.jsp?num=211-007

Important websites

- z/OS website

  http://www.ibm.com/systems/z/os/zos/
- General literature

  http://www.ibm.com/systems/z/resources/
- Previously announced statements of direction

  http://www.ibm.com/systems/z/os/zos/zos_sods.html
- z/OS Internet Library

  http://www.ibm.com/systems/z/os/zos/bkserv/
- z/OS Basic Skills Information Center

  http://publib.boulder.ibm.com/infocenter/zos/basics/index.jsp
- Descriptions of courses worldwide

  http://www.ibm.com/services/learning
- z/OS downloads

  http://www.ibm.com/systems/z/os/zos/downloads/
- CustomPac

  http://www.ibm.com/services/custompac
- ShopzSeries

http://www.ibm.com/software/shopzseries

- z/OS Communications Server

  http://www.ibm.com/software/network/commserver/zos/

- z/OS Management Facility

  http://www.ibm.com/systems/z/os/zos/zosmf/

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