



Preview: IBM z/OS Version 2 Release 3 - Engine for digital transformation

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At a glance

Digital transformation has become ubiquitous, driving higher data and transaction volumes and accelerating the rate of application changes made by enterprises. This results in an emerging need for a software-driven infrastructure that is more flexible and scalable, leading to better utilization of compute, storage, and network resources.

In response there is a rapid evolution toward hybrid IT architectures that rely on combinations of off-premises and on-premises IT resources. This evolution has surfaced challenges in capacity, scale, availability, and throughput required to improve business performance, meet response time objectives, protect sensitive data and transactions, and minimize operational risk for an exceptional customer experience. All areas of IT are affected, including data center investment, development of next-generation cloud applications, and application lifecycle management.

IBM^(R)'s z/OS^(R) V2.3 operating system delivers innovations designed to build the highly scalable and secure next-generation infrastructure needed. z/OS V2.3 delivers the performance, availability, scale, I/O support, and security to provide the infrastructure, on or off premises or provisioned as-a-service, that allows for instant reacting to business opportunities.

Overview

Companies need technologies that are smart, adaptive, trusted, and efficient in building an IT infrastructure that can respond quickly to change while reducing cost and driving profit. IBM z SystemsTM and z/OS V2.3 with world-class workload management are the right choice for infrastructure and workload needs as companies transition into next-generation computing. z/OS is designed to help clients keep applications and data available, system resources secure, server utilization high, and programming environments adaptable while maintaining compatibility for existing applications. With investment protection coupled with leading qualities of service, z/OS provides solution longevity and is a trusted foundation for next-generation IT solutions.

z/OS is designed to support companies' most mission-critical work while meeting stringent service levels, illustrated by clients that include the world's leading banks, financial services companies, healthcare enterprises, and governments. Focusing on three critical areas, Security, Simplification, and Cloud, z/OS V2.3 is planning to provide a simple, transparent, and consumable approach to enable extensive encryption of data, simplify the overall management of the z/OS ecosystem to increase productivity, and provide a simple, consumable approach for self-service

provisioning and rapid delivery of software as a service, while enabling for the API economy.

New approach to encryption

The threat of data breaches in conjunction with compliance mandates are driving the need for clients to adopt extensive use of encryption across their enterprises. z/OS V2.3 plans to replace application development efforts with transparent, policy-based data set encryption:

- Planning enhanced data protection for z/OS data sets, zFS file systems, and Coupling Facility structures to give users the ability to encrypt data without needing to make costly application program changes.
- Designing new z/OS policy controls to make it possible to use pervasive encryption to protect user data and simplify the task of compliance.
- z/OS Communications Server will be designed to include encryption readiness technology to enable z/OS administrators to determine which TCP and Enterprise Extender traffic patterns to and from their z/OS systems meet approved encryption criteria and which do not.

Simplify and modernize the user experience to enhance productivity

z/OS has been delivering simplification since it was introduced, but clients are faced with a mixed skills workforce composed of professionals who are new to z/OS and those who are already skilled in z/OS. z/OS V2.3 is being designed to simplify and modernize the user experience and help make pertinent information readily available and easily accessible:

- In z/OS V2.3, z/OSMF is planned to be optionally started late in IPL so that it is available all the time. The logon experience will be improved as well as the initial landing page. Facilities will be added to make administration of z/OSMF easier.
- Improving the time to value for new products is planned with enhancements to installation and configuration through facilities such as portable software packages and guided activities by z/OSMF workflows. Clients will have the tools to start to standardize and simplify the installation and configuration experience.
- Plans are to provide a new z/OSMF plug-in, Sysplex Management, that is designed to provide detailed views of sysplex infrastructure resources such as sysplexes and z/OS systems, CFs and CF structures, CF structure connectors, couple data sets and policies, and coupling links.

Transform from an IT cost center to a value-generating service provider

As the API economy develops, customers are incented to move their IT operations from a cost center model to a revenue-generating profit center model. The z/OS platform, known for its outstanding vertical scalability and speed, coupled with leading-edge security and reliability, provides the foundational capabilities that are ideal for private cloud service delivery:

- A z/OSMF enhancement is planned to support workflow extensions for IBM Cloud Provisioning and Management for z/OS.
- z/OS V2.3 is planned to deliver Real-Time SMF Analytics infrastructure support, which will enable faster processing for high-volume SMF data, providing the response time required for real-time analysis of SMF data in analytics and cloud application.
- Enabling the z/OS platform with these cloud capabilities will deliver innovations not only in certain infrastructure elements and components of the z/OS operating system, but also in selected levels of various z/OS software subsystems such as IBM CICS^(R) Transaction Server for z/OS, IBM IMSTM for z/OS, IBM DB2^(R) for z/OS, IBM MQ for z/OS, and IBM WebSphere^(R) Application Server for z/OS.

z SystemsTM and z/OS V2.3 team to deliver a platform capable of providing extreme qualities of service and supporting innovative workloads to meet the demands of the new digital enterprise. The challenges for companies are becoming more complex as they must meet the demands of the new era of digital business, while sustaining the high qualities of service their customers expect. Companies need to support the

growth of current business workloads while also supporting emerging cognitive and cloud workloads. They need to keep costs under control and manage their skill sets. The expectations for IT are high:

- Grow existing workloads while adding new ones, all delivered with improved service at reduced cost.
- Analyze data at the point of need for improved business insight.
- Deliver services through new delivery models, such as a private or hybrid cloud.
- Simplify management and reduce demands on skills.
- Manage risk, security, and compliance to meet evolving regulatory requirements.

Summary

Today's economy requires organizations to quickly consume, manipulate, and deliver vast amounts of information, extracting business insight while tapping into the capabilities of cloud services. The information must be securely managed, processed, and delivered across the globe. Such a fundamental shift away from traditional processing needs calls for a highly responsive and reliable platform that can support new workloads without impacting service levels of mission-critical work. The enhancements planned to be delivered in z/OS V2.3 provide the platform to smoothly transition businesses for this new IT environment. z/OS V2.3 is designed to deliver innovations to build the next-generation infrastructure.

Key prerequisites

z/OS V2.3 is planned to run on these IBM z Systems servers:

- IBM z13™
- IBM z13s
- IBM zEnterprise^(R) EC12 (zEC12)
- IBM zEnterprise BC12 (zBC12)

For a complete description of z/OS V2.3 software prerequisites, refer to *z/OS V2R3 Planning for Installation (GA32-xxxx)*, when available.

Planned availability date

September 29, 2017

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

Availability, scalability, and performance

Asynchronous CF Duplexing for lock structures is planned to be improved to be a continuously available solution that makes duplexing Coupling Facility (CF) Lock structures practical, even at extended distances. It is planned to deliver a general-purpose interface for any CF lock structure exploiters and provides substantial performance advantages for duplexing lock structures. Asynchronous CF Duplexing is currently available on IBM z13 and IBM z13s systems processors. It requires CFCC Level 21 with service level 02.16, or higher, z/OS V2.2 SPE with PTFs for APAR OA47796 and RMF™ V2.2 reporting support delivered with PTFs for APAR OA49148, CF to CF connectivity via coupling links, and exploitation, for example, DB2 V12.

PKI Services is planned to detect the unavailability of DB2 and provide notification. At a client's choice, PKI Services will either shut down when DB2 is not available or will be able to wait for a customer-specified period for DB2 to become available. This capability is intended to help reduce the volume of errors recorded in the job log.

Runtime Diagnostics capabilities and diagnostics are planned to be improved and enhanced by following the blockers of enqueue contention and GRS latch contention across a sysplex to find the source of the contention and detect deadlocks between these resources sysplex-wide.

zFS is planned to provide the ability for a system programmer, with appropriate authority, to initiate an online salvage of a zFS aggregate in order to repair a damaged file system while the file system is still mounted.

z/OS 2.3 will be designed to increase capacity for simultaneous IPsec tunnels in a sysplex by increasing the amount of sysplex-wide security association data that can be stored in the EZBDVIPA coupling facility structure, allowing up to 16,384 lists to be configured.

New z/OS support for High Frequency Throughput Statistics (HFTS) is planned to be provided to support a new SMF 98 record with an interval length in seconds to highlight workload inefficiencies before experiencing the consequences.

To support larger XML documents, the XML systems services component is planned to be updated to exploit 64-bit addressability.

WLM Sysplex Routing is planned to be sensitive to upcoming but not yet active soft capping. This will enable clients to optimize the four-hour rolling average for Workload License Charges.

Enhancements in DFSORT are planned to provide performance improvements in both CPU and elapsed times for several DFSORT functions that generate code at run time. The enhancements require no changes from DFSORT end users and are also available on z/OS V2.1 and V2.2 with PTFs for APAR PI58848.

z/OS MVS™ Allocation and DFSMSdfp enhancements are intended to provide improved performance and scalability for DB2 workloads by allowing the number of concurrent open data sets in a single address space to grow and by improving performance of data set open and close processing.

DFSMSdfp VSAM record-level sharing (RLS) is designed to replace the existing alternate index (AIX[®]) upgrade lock with record locks and redo processing to keep the upgrade set and the base cluster in sync for update requests without forcing the updates to be single threaded. Allowing concurrent AIX updates is intended to improve performance, most notably when updating numerous large records with many alternate keys.

DFSMSdfp SAM and VSAM enhancements are planned to provide read-only access to data sets that reside on Peer-to-Peer Remote Copy (PPRC) secondary volumes. Certain applications can take advantage of redundant hardware and avoid interference with production work.

The z/OS NFS Client is planned to increase the size of the RSIZE/WSIZE parameters that can be specified on the MOUNT command. These parameters define the maximum size of data to be read from an NFS Server or written to an NFS Server by single RPC packet. In z/OS V2.3, the setting of RSIZE/WSIZE parameters can now be from 1 KB - 64 KB.

Enhancements to zFS file systems are designed to allow individual files to be compressed utilizing the zEDC compression card technology. Existing file systems can be compressed while in use. This is not limited to new zFS file systems, and existing file systems can be eligible for compression also.

XRC (z/GM) is being enhanced to utilize more buffer storage for in-flight updates, making it more resilient to transient events that may otherwise cause suspension or stalls. This is also available on z/OS V2.1 and V2.2 with PTFs for APAR OA49548.

Enhanced security and data protection

z/OS 2.3 will be designed to provide policy-enabled data protection for z/OS data sets, zFS file systems, and Coupling Facility structures, giving users the ability to encrypt data to strengthen compliance and audit responsiveness and provide simplified security processes and protection for mission-critical data. These planned enhancements include:

- DFSMS provides new enhancements that are designed to give users the ability to encrypt their data sets, using either SAF or SMS policies, without changing their application programs. DFSMS intends to make use of the Central Processor Assist for Cryptographic Functions (CPACF) to encrypt and decrypt extended format (version 2 only) sequential BSAM and QSAM data sets and all types of extended format VSAM data sets as written to and read from disk. In addition, data set level encryption is planned to allow the data to remain encrypted during administrative functions such as backup/restore, migration/recall, and replication.
- zFS plans to make use of the DFSMS data set encryption to support the encryption of individual files (file content), access control lists, security information, and symbolic link contents. The use of zFS encryption can be paired with compression to offset the overhead of encryption.
- z/OS plans to give users the ability to encrypt Coupling Facility data, including list and cache structures, under the control of the CFRM policy. z/OS plans to make use of the CPACF to encrypt and decrypt CF data as it is sent to and returned from the CF. The data will be encrypted as it travels on the CF link and will remain encrypted while resident in the CF.

z/OS Communications Server will be designed to include encryption readiness technology to enable z/OS administrators to determine which TCP and Enterprise Extender traffic patterns to and from their z/OS systems meet approved encryption criteria and which do not.

The Application Transparent TLS support in z/OS Communications Server is planned to be updated to support new System SSL functions, including updated NIST and IETF standards for encryption algorithms, use of keys and certificates, and Online Certificate Status Protocol updates.

PKI Services, ITDS server, Network Authentication Service (Kerberos) server, and System SSL will be designed to meet the NIST FIPS 140-2 Level 1 approved cryptography that is intended to comply with the guidelines of NIST SP800-131A Revision 1.

In z/OS V2.3, System SSL will be designed to be compliant with the following RFCs to maintain standards-based security and interoperability:

- RFC 6960 X.509 Internet Public Key Infrastructure Online Certificate Status Protocol (OCSP) by allowing a signature algorithm pairs list to be sent on an OCSP request, which can then be used to sign the OCSP response, and updating the signature verification checking of the OCSP response.
- RFC 6961 - The Transport Layer Security (TLS) Multiple Certificate Status Request Extension and RFC 6066 - Transport Layer Security (TLS) Extensions: These RFCs introduce extension definitions enabling clients to determine the revocation status of server certificates, including the intermediate CA and end-entity certificates, in the server's certificate chain.

PKI Services is planned to support WebSphere Liberty Profile to host the web pages interface. This simplifies installation and exploits the benefits of the smaller footprint of WebSphere Liberty Profile.

z/OS 2.3 IBM Tivoli^(R) Directory Server (ITDS) will be designed to implement a new z/OS Health Check that is designed to suggest when the DB2 REORG or RUNSTATS

utilities should be run for directories in TDBM to help avoid potential performance issues. This will help ITDS administrators determine when it is necessary to use the REORG utility to reorganize TDBM table spaces, indexes, and partitions to help maintain optimal database access performance.

When RACF^(R) is invoked to map UID(0) to a user ID, it is planned to return the same value defined in the SUPERUSER(x) keyword of BPXPRMxx. This will provide a consistent mapping to the user ID owning an object, such as a file or directory, as displayed by the UNIXTM's -l' command.

In z/OS V2.3, the RACF Field Level Access Checking support (FLAC) will be designed to provide additional granularity for administrators that do not have the RACF SPECIAL attribute. This planned design will allow controlled updates to RACF profiles by allowing the FLAC functionality to be optionally scoped, helping to reduce the overall RACF authority needed by an administrator to manage segments in RACF profiles.

New support is planned to be added to allow TSO/E user IDs to be eight characters long.

Planned for z/OS V2.3 is an enhancement to the z/OS UNIX SMF service to allow a more granular check of a new resource in the FACILITY class. In addition to BPX.SMF, the SMF service is planned to also check for BPX.SMF.xxx.yyy, where xxx is a specific TYPE and yyy is a specific SUBTYPE.

Simplification, usability, and skills

z/OS V2.3 plans to add a new workflow editor to z/OSMF to enable you to edit workflow in the UI instead of directly editing XML files.

z/OSMF installation and configuration is planned to be simplified in several ways:

- Several z/OSMF data sets are planned to be consolidated with other z/OS system data sets.
- Certain z/OSMF-unique configuration steps are planned to be eliminated.

Plug-in configuration is planned to make further use of the workflow engine to help guide and simplify plug-in enablement. This support is also available on z/OS V2.2 by PTF for APAR PI42838.

An enhancement is planned for PDSE attachment in the incident log application to support a member of PDS and PDSE as an attachment and support entire PDS or PDSE as an attachment. This support is also available on z/OS V2.2 by PTF for APAR PI55236.

z/OSMF enhancements are planned for the z/OS incident log to integrate with the IBM system (Retain) to search for a matching APAR before opening a PMR (problem) with IBM. Screen dialog enhancements have been designed to allow searching using the search strings sourced from the incident. This support is also available on z/OS V2.2 by PTF for APAR PI66840.

Enhancements are planned to be provided to the z/OSMF UI to support display of the users that are currently using the z Systems server. This support is also available on z/OS V2.2 by PTF for APAR PI66824.

Support is planned to be provided to the z/OSMF notification framework for user-supplied email addresses. This will allow any z/OSMF notification to optionally be sent to a user-specified email address. This support is also available on z/OS V2.2 by PTF for APAR PI57136.

z/OSMF is designed to support registration of a mobile device and notification to that mobile device through a push notification service of the client's choice, coupled with a suitable mobile application, such as the zEvent proof of concept. This can serve as an effective z/OS platform-based eventing faculty.

z/OSMF Workflow engine security is planned to be updated to allow more granular control over who can see workflows and workflow steps during execution. This support is also available on z/OS V2.1 by PTF for APAR PI56621 and V2.2 by PTF for APAR PI56641.

The z/OSMF workflow engine is planned to be updated to support immediate REXX and script execution, as well as configurable job card information. This support is also available on z/OS V2.2 by PTF for APAR PI66824.

Support for PDS member extended statistics in ISPF is planned to be improved. ISPF will be designed to automatically generate extended statistics for a PDS member when at least one of the line count values for the member exceeds 65535.

The SDSF browser-based UI is planned to be updated with new capability aligned with the 3270 UI. Added features include ENQ and SYM (refer to [IBM Redpaper](#)). This support is also available on z/OS V2.1 and V2.2 by PTF for APARs PI60412 and PI60831.

The IBM Configuration Assistant for z/OS Communications Server is planned to provide the ability to change an active TCP/IP stack configuration by generating the required VARY OBEY member.

An enhancement is planned to the Configuration Assistant for z/OS Communications Server to provide the capability to import configuration information from an existing TCP/IP profile to allow editing of that information from the Configuration Assistant's GUI. This support is also available on z/OS V2.2 by PTF for Configuration Assistant APAR PI66143 and by PTF for Communications Server APAR PI63449.

Knowledge Center Packaging and Configuration in z/OS V2.3 is planned to be upgraded to support the latest version of the local Knowledge Center. A Knowledge Center based message lookup feature is planned to provide message ID content and descriptions.

z/OSMF is now a required component of z/OS and is now expected to be installed and configured on at least one system in every sysplex. In support of this, enhancements have been planned to be made to z/OSMF configuration and start-up:

- z/OSMF PARMLIB member (IZUPRMxx) may be specified in IEASYSxx.
- z/OSMF is optionally started during IPL.
- First-time users of z/OSMF will see a new logon dialog.

z/OS platform software installation improvements

As announced in Software Announcement [216-392](#), dated October 4, 2016, IBM and other leading industry software vendors have been collaborating on a variety of installation-related improvements. IBM intends to help drive z/OS platform-wide improvements in installation and deployment, along with functions that are intended to enable software vendors to use them. Many of the functions designed to meet these requirements are now available in the z/OSMF component of z/OS V2.2 in PTFs, and more functions are planned. See the Statements of Direction section in the prior announcement for details.

These improvements include support for:

- Non-SMP/E-packaged products in the z/OSMF Software Management task's deployment function, in addition to the existing support for SMP/E-packaged products. This function is designed to enable you to use Software Management to define software instances with arbitrary content. This is intended to enable you to use the deployment function for any software on the z/OS platform, no matter how it was installed or which service tools are used to maintain it. This function is available for z/OS V2.2 with the PTF for APAR PI66832 and for z/OSMF V2.1 with the PTF for APAR PI67819. Software Management's deployment function already supports making local copies of defined software instances, and making remote copies within a network-connected enterprise when z/OSMF is running on the remote system.

- Creating a software instance in a portable format ("exporting" a software instance). A portable software instance is intended to be placed on media or transmitted over the network and to be processed as input to a deployment operation using z/OSMF's Software Management task. The new function is available for z/OS V2.2 with the PTF for APAR PI66832 and for z/OSMF V2.1 with the PTF for APAR PI67819.
- An API for creating a portable software instance and exporting it from a program, including a program running as a batch job. This support is now available for z/OS V2.2 with the PTF for APAR PI72283.

The set of functions above is intended to create a browser-based product software packager and installer for z/OS platform software that is built into the operating system and to form a foundation from which IBM and other software vendors can provide further installation improvements.

In the future, IBM intends to provide a linkage between z/OSMF Software Management's deployment function and z/OSMF workflows so a workflow can be initiated by a deployment operation. (See the [Statements of general direction](#) section for details.) z/OSMF already supports one workflow calling another workflow. The new function will be designed to enable workflows to be used to manage installation-related and deployment-related tasks by linking from package-level workflows to product-level and component-level workflows as needed to help you perform these activities for both initial installation (for example, on a test system) and later deployments to additional systems (such as application test, application development, and production systems).

Systems management

Plans are for enhanced wildcard support for jobname on PORT and PORTRANGE statements: The ability to use wildcard characters when specifying jobnames on TCP/IP port reservation specifications is planned to be enhanced to enable specification of single-character wildcards and to use wildcard characters in any position in the jobname.

Communications Server plans to support enhanced system symbols: TCP/IP profile, System Resolver, OMPROUTE, CSSMTP, VTAMLST, and other networking configuration files that support MVS system symbols will be able to use MVS system symbols that contain underscores.

Plans are to provide a new z/OSMF plug-in, Sysplex Management, that is designed to provide detailed views of sysplex infrastructure resources such as sysplexes and z/OS systems, CFs and CF structures, CF structure connectors, couple data sets and policies, and coupling links.

New function is planned to be added to the Common Event Adapter (CEA) TSO launcher to specify the target system within a SYSPLEX. When the system name is specified, the TSO address space is launched on the target system and the data is returned to the requesting system.

A new SDSF function is planned to display information about the JES2 JCL PROCLIB and z/OS Dynamic Exits. This support is also available on z/OS V2.2 by PTFs for APARs PI64206, PI64210, and PI68831.

New support in SCRT is planned to be added to enable ISVs licensed for support to generate an ISV-unique SCRT report. SCRT is planned to be included as a component of z/OS.

Support is planned to provide enhancements to the XCF System Status Detection (SSD) partitioning protocol function and the related SSD partitioning protocol health check supplied with IBM Health Checker for z/OS. The enhancements will include:

- Improved health check reporting on the status of the SSD protocol environment requirements on a system
- Expanded health check reporting to include the connection status of the local system to all active CPC system images in the sysplex

- Support for recognizing dynamic central processor complex (CPC) name changes within the sysplex and updating the SSD partitioning protocol definitions without requiring an IPL of a z/OS image

The z/OSMF files and data sets REST API allows manipulation of UNIX (zFS) files, file systems, and z/OS data sets. New function is planned to be added to handle DFSMSHsm migrated data sets, editing large data sets efficiently, and adding support for pessimistic locking (data set enqueues and ISPF member enqueues). This support is also available on z/OS V2.2 by PTF for APAR PI52426.

Plans are to add to the InfoPrint Central component of InfoPrint Server to search for multiple forms using limited prefixes and wildcards. This will enable users to search for documents that have more than one form name.

Plans are to add InfoPrint Server IP Printway Automatic Printer Failover, which provides automatic failover to a specified alternative printer if the primary printer is offline.

Plans are to provide enhancements to the CIM component, including a new CIM server configuration, maxRepositoryBackups, to configure the number of repository backups that can be kept in the file system as well as a mechanism to automatically delete the old repository backups. Note that JMPI support is now removed and the CIM server has been updated to Open Pegasus 2.14.

Health Checker for z/OS is planned to be enhanced to support PARMLIB filtering using SYSTEM and SYSPLEX names. This support is also available on z/OS V2.2 via APAR OA49807.

In z/OS V2.3, an enhancement to z/OS system logger is planned to allow log stream staging data sets to be allocated greater than 4 gigabytes. The increasing demands on the volume of client data, particularly those for the more recent SMF log streams and for other high-transaction logging rates, for example, for IMS CQS and CTS (CICS) clients, demonstrate it is important to be able to allocate sufficient space in order to optimize their operations. Allowing larger log stream staging dataset sizes will provide for greater scalability in this higher availability/recoverability log stream configuration.

z/OS Workload Management (WLM) is planned to be enhanced with an option to cap a system to the MSU value that is specified as the soft cap limit regardless of the four-hour rolling average consumption. An IBM zEC12 (GA2), or higher, server is required. Absolute MSU capping is also available on z/OS V2.2 with PTF UA81256 and on z/OS V2.1 with PTF UA81257 for APAR OA49201.

z/OS V2.3 is planned to allow dynamic change of aggregate attributes for zFS so common MOUNT options can be changed dynamically without the overhead of unmounting and remounting the file system. Also, plans are to allow changing sysplex sharing status (RWSHARE/NORWSHARE) dynamically.

z/OS Workload Management will be designed to provide a control that allows service classes to be defined such that their specialty processor eligible work will not execute on general purpose processors. In addition, WLM resource groups are planned to be enhanced to limit the amount of real storage that may be used by the associated service classes. Both enhancements are designed to provide better control over the execution cost of new and existing workloads and reporting support for them is planned for RMF. These enhancements will also be made available on z/OS V2.1 and V2.2. z/OS Workload Management is designed to allow goal definitions for average and percentile response time goals down to 1 millisecond. z/OS RMF is enhanced to report on such shorter response times.

zFS will be designed to allow for the monitoring of important events in the System Management Facility (SMF). Examples of such events are dynamic growing of an aggregate and disablement of an aggregate. zFS will use record type 92, which is also used by z/OS UNIX System Services. In addition, general performance indicators, that is, the information that is currently shown in various MODIFY ZFS, QUERY operator commands, can also be stored. This will allow the ability to look back in time at the performance of zFS on the system.

The DFS/SMB server can be configured to start with all daemons in the DFS Server Address space or with the DFSKERN daemon in its own address space. z/OS V2.3 is designed to provide a method for the DFSKERN started task name to be configurable to allow for corporate naming conventions when running the DFSKERN daemon in its own address space. This support is also available on z/OS V2.2 by PTF for APAR OA50424.

To aid in the migration of data from HFS file systems to zFS file systems, a new facility is planned to be provided that no longer requires the source file system (HFS) to be unmounted. This is especially useful in environments where an application outage is not acceptable. A new command that invokes the facility will be available from TSO or the z/OS UNIX shell environment. Files that are in use during the migration process will be automatically and transparently moved to the target file system.

Note: See the [Statements of general direction](#) section for additional details.

A new directory called /global in the sysplex root is planned to be introduced in z/OS V2.3. This new directory can be used by clients as a mount point for a file system that could contain files whose content needs to be consistent across the multiple systems of the sysplex or as a convenient location to provide a view of multiple levels of program products (not shipped as part of z/OS), even though the product may be installed on only one member of the sysplex. This will not change where program products are installed.

Networking

z/OS V2.3 is planned to provide new support for fast, low-latency TCP/IP traffic between LPARs within a CEC using the Shared Memory Communications - Direct Memory Access (SMC-D) software protocol over firmware-provided Internal Shared Memory (ISM) devices. SMC-D is expected to provide substantial performance, throughput, response time, and CPU consumption benefits compared to standard TCP/IP communications over HiperSockets™. This support is also available on z/OS V2.2 by the PTFs for APARs OA48411 and PI45028.

In z/OS V2.3, Communications Server is planned to provide a new VTAM[®] start option that will enable improved user control of the default VTAM Internal Trace (VIT) options. Previously, a set of VIT options (API, PIU, SSCP, NRM, MSG, and CIO) were always active and could not be disabled. The VITCTRL start option will allow the enablement of a new "VIT Control" mode that provides the user with the capability of enabling and disabling any VIT option independently. While this capability is provided, it continues to be IBM's recommendation that the standard VIT options remain enabled to provide first-failure data capture capability for problem diagnosis.

This VIT control capability is also available on version 2.1 and version 2.2 through APAR OA50271.

Application development

z/OS V2.3 is designed to deliver Real-Time SMF Analytics infrastructure support, which provides a durable, scalable in-memory infrastructure for SMF data that reduces the time it takes to get from raw data to operational insight. It enables faster processing for high-volume SMF data and provides the response time required for real-time analysis of SMF data in analytics and cloud applications. This support is also available on z/OS V2.2 by PTF for APAR OA49263.

Enhancements are planned to be made to XML System Services in support of COBOL for reducing split records. This support is also available on z/OS V2.2 by PTF for APAR OA49622.

A z/OSMF enhancement is planned to support workflow extensions for IBM Cloud Provisioning and Management for z/OS. Improvements to jobname creation, job card attributes, REST workflow steps, and a workflow editor are planned.

Planned new enhancements for email include:

- New interface to the email client via a REST API in z/OSMF called "notification."
- As previously announced, the sendmail daemon is removed from z/OS but a new sendmail to CSSMTP bridge is designed to provide a compatible subset of sendmail functions so that z/OS UNIX users can still use the sendmail command to send mail messages with the CSSMTP application. The sendmail to CSSMTP bridge will be available on version 2.1 and version 2.2 through the PTF for APAR PI71175.
- New support is added to SAF/RACF to convert a user ID to an email address and vice versa. JES2 job notification is enhanced to allow the specification of email in addition to the existing NOTIFY support via local send.

New support in JES2 is planned to allow an email notification to a user in addition to the current immediate notification. With this support, notifications can be issued to multiple email addresses and filtered based on job return codes.

Support is planned to be added to JES2 to allow specification of the user using an email address stored in SAF.

RACF is planned to allow the specification of an email address in the user profile. Products such as z/OSMF, for example, will be able to send email notifications to users based on the email address associated with the RACF user ID.

Enhancements are planned to the DFSORT E15 and E35 user exits to allow transfer blocks of records as input to DFSORT for sorting and receive blocks of sorted records as output, which avoids parsing the record blocks and processing each record separately. This support is designed to reduce the number of calls to the E15 and E35 user exits and to reduce excessive transfer of records between user storage and DFSORT storage, allowing for possible performance improvements due to the accelerated throughput of the records. The new function is also available on z/OS V2.1 and z/OS V2.2 with the PTF for APAR PI47000.

JES2 job group enhancements are planned to be added to specify a job group level notification, job group output descriptors, and more flexible scheduling of job groups.

For JES2 in z/OS V2.3, JCL simplification and improvements are planned to be made. The DLM keyword on SYSIN is extended from 2 characters to 18 characters to provide more granularity. Two new JCL symbolics are added for the current job name and the current job number.

The getaddrinfo (BPX1GAI/BPX4GAI) API in z/OS Communications Server is planned to be updated in z/OS V2.3. The updates are intended to comply with RFC 3493 and the Single UNIX specification version 3.

z/OSMF REST JOBS API supports active step information and is planned to support JES2 JOBGROUPs as well. This support is also available on z/OS V2.2 via PTF for APAR PI57523.

z/OS V2.3 XL C/C++ is planned to provide enhancements in the following areas:

- Usability:
 - Metal C is planned to create new function pointers that can act on environments as well as calling a function to allow similar coding patterns and automatic environment-based calling.
 - Hexadecimal offsets are planned to be provided for structure listings. The layout information can then be better compared and analyzed.
 - The DSECT utility is planned to create C structures/unions that align closer to the original assembler DSECT, to give the same size as the original DSECT.
- Performance: The architecture default is planned to change to ARCH(10) (EC12) to align with the minimum hardware level that z/OS V2.3 is planned to support.
- Security: Stack protection is planned to protect buffers that are susceptible to overflow and to stop returning from functions that detect overwriting.

- Debugging:
 - Metal C debug data blocks are planned to provide information linking the assembly or objects with the debugging data, providing synchronization of these files.
 - The Saved Option String Information (SOSINFO) utility is planned to emit options encoded in the PPA blocks to help in diagnosing problems.
 - DWARF debugging information in object files is planned to be added to the executable in an area that is not loaded at run time to allow access to both the debug data and executable code within the same file. DBX will support this feature.

z/OS support for z Systems

Plans are to provide RMF support to collect SMC-D related performance measurements in SMF 73 Channel Path Activity and SMF 74 subtype 9 PCIE Activity records and provide these measurements in the RMF Postprocessor and Monitor III PCIE and Channel Activity reports. This support is also available on z/OS V2.2 with PTF UA80445 for APAR OA49113.

z/OS V2.3 is designed to provide HCM support for zVM 6.4.

Statements of general direction

IBM published a statement of direction in Software Announcement [216-392](#), dated October 4, 2016: IBM intends to extend the ServerPac offering to provide the capability for it to support products packaged in ways that currently make them unavailable in ServerPac, including products that are not packaged using SMP/E. ServerPac will be designed to support packages with SMP/E-packaged products, non-SMP/E-packaged products, and a combination of both. This improvement will be intended to enable you to standardize your installation processes for the IBM products available for the z/OS platform. ServerPac will initially continue to use the existing ISPF-based CustomPac Dialog for installation.

In this announcement, statements of direction appear for three new, related functions:

- The first will be designed to allow software product information to be added to a z/OSMF software instance that includes products that are not packaged with SMP/E so that information about software instances containing such products can be displayed. In addition, infrastructure is planned to be made available for providing end-of-service information for products that are not managed using SMP/E to complement the information already available for SMP/E-managed products for vendors who provide it.
- The second will be designed to enable you to download portable software instances from a remote server to a z/OS system, where they can be managed and installed by z/OSMF. This will be intended to simplify the process for acquiring portable software instances from software vendors who choose to provide products in this format.
- The third will be designed to support defining one or more z/OSMF workflows associated with a software instance, and executing those workflows during a z/OSMF Software Management deployment operation. In addition, this function will be designed to allow an Export action to include defined Workflows into portable software instances, and run during deployment for those software instances. This is intended to help you complete setup tasks for the products included in the software instance provided by a software vendor that provides the necessary supporting Workflows.

The release after z/OS V2.3 is planned to be the last release of the operating system to support the HFS (Hierarchical File System) data structure used by the z/OS UNIX environment. IBM has provided equivalent if not superior functionality with the z/OS File System (zFS). Customers should migrate from HFS to zFS using the utilities provided in the operating system to convert their entire file system hierarchy.

z/OS V2.3 will be the last release of z/OS to support the Server-Requester Programming Interface (SRPI). SRPI was introduced in TSO/E in the 1980s to provide a programming interface that enhances the environment of IBM workstations communicating with IBM mainframes running z/OS. Customers with applications using SRPI should start using TCP/IP for z/OS to provide similar function. Documentation for SRPI is available in *TSO/E Guide to the Server-Requester Programming Interface*, SA22-7785, and this publication as well as documentation for SRPI-related functions, such as the MVSSERV command, will be removed.

Starting with IBM SDK for z/OS, Java™ Technology Edition, V8 SR17_03, support will be for z9^(R) hardware and forward only.

Starting in z/OS V2.3, z/OS system logger will no longer support the log stream DRXRC duplex mode option. z/OS V2.2 was announced as being the last release for system logger to support the DRXRC log stream duplex staging data set option. See the statement of direction in Software Announcement [215-006](#), dated January 14, 2015 (Preview: IBM z™/OS Version 2 Release 2 - Fueling the new digital enterprise). Also refer to the logger migration health check (ZOSMIGV2R2_NEXT_IXG_REMOVE_DRXRC), provided in the PTFs for APAR OA49507, to aid in identifying whether any log stream is defined in the sysplex with the DUPLEXMODE(DRXRC) attribute.

Starting in z/OS V2.3, the Library Server ALS indexed z/OS Elements and Features PDF collection, SK4T-4949, is deprecated. Included instead are the z/OS V2R2 Acrobat Indexed PDF Collection, SC27-8430, and the z/OS Base and Features KC4z plug-in collection, SK4T-9263. To provision KC4z, use Softcopy Librarian as you have done in the past for BookManager^(R) books and PDFs.

Starting at z/OS V2.3 GA, IBM Knowledge Center will no longer contain z/OS V1R13 documentation plug-ins. You can continue to access and download z/OS V1R13 documentation in PDF format through the IBM Publications Center.

This is a statement of direction to notify InfoPrint Server clients of a planned change in default behavior in a future release. IBM intends to enable dynamic configuration as the default behavior. This change in default behavior will be mandatory and not reversible. You can disregard this statement if you already enabled dynamic configuration. See the InfoPrint Server Customization publication (SA38-0691) for details on how to enable and the advantages of enabling dynamic configuration.

Some advantages of enabling dynamic configuration include:

- Authorized administrators can use the InfoPrint Server ISPF panels or the Printer Inventory Definition Utility (PIDU) to view and change the dynamic attributes rather than editing the `/etc./Printsrv/aopd.conf` file.
- If you change an attribute in the system configuration definition, with a few exceptions, you do not need to stop and restart InfoPrint Server for the change to take effect.
- You can configure InfoPrint Server to start and stop individual daemons.
- You can benefit from new functions in InfoPrint Server that require dynamic configuration. For example, you can use the MVS system logger function.

Withdrawal of tape feature for z/OS product and service orders

IBM intends to discontinue delivery of z/OS platform products and service on magnetic tape in the future. IBM recommends downloading products and service. However, if you have a requirement for physical media, products and service are also available on DVD.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver

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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^(R) ID and password are required (use IBMid).

[BP Attachment for Announcement Letter 217-085](#)

Statement of good security practices

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